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Statement of Environmental Effects

Section 4.55 (2) Modification to consent for Approved Composting Facility at 442 Anambah Road, Gosforth NSW

Prepared for Ditton Properties Pty Ltd / Riverbend Organics Pty Ltd

7 June 2022

AEP Ref 2573

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Document Control

Document Name	Statement of Environmental Effects for Section 4.55 (2) Modification to consent for Approved Development Application at 442 Anambah Road, Gosforth, NSW.
Project Number	2573
Client Name	Ditton Properties Pty Ltd
AEP Project Team	Natalie Black Dennis Neader Frances O'Brien

Revision

Revision	Date	Authors	Reviewed	Approved
00	13/05/2022	Natalie Black	Dennis Neader	Natalie Black
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Distribution

Revision	Date	Name	Organisation
00	13/05/2022	Chris Ditton	Ditton Properties Pty Ltd
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02	23/05/2022	Chris Ditton	Ditton Properties Pty Ltd
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EXECUTIVE SUMMARY

At the request of Ditton Properties Pty Ltd (the Client), Anderson Environment and Planning (AEP) has prepared a Statement of Environmental Effects (SEE) to accompany an application under *Environmental Planning Assessment Act 1979* (EP&A Act), Section 4.55 (2) - Modification of Consents for proposed modifications to the composition of existing waste intakes under Condition of Consent No. 2 of DA 15-433 at the composting facility operated Riverbend Organics Pty Ltd at 442 Anambah Road, Gosforth NSW (Lot 22 DP 1069012) (the Subject Site).

Section 4.55 (2) requires Maitland City Council (MCC), the Determining Authority, to fully consider the potential impacts of any proposed activities. This SEE has also been prepared in accordance with Clause 100 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Reg) which details elements to be considered when assessing the potential impact of an activity on the environment.

The environmental assessment within this SEE is informed by the following:

- Environmental Assessment (AEP 2022);
- Hydrology (surface water and groundwater) and Waste Assessment (AK Environmental (AKE) 2022); and
- Air Quality Assessment (Todoroski Air Sciences 2022).

These reports have been referred to throughout the SEE where applicable.

The Facility employs in-vessel composting within aerated concrete bunkers enclosed by Gore covers to allow for oxygen/temperature monitoring and control. The Facility is approved under Development Application no. DA15-433 ":1" and condition of above consent defines the permissible waste input load as:

- Garden Waste as defined by Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act);
- Wood Waste as defined by Schedule 1 of the POEO Act;
- Natural Organic Fibrous Materials as defined by Schedule 1 of the POEO Act;
- Paper and Cardboard - general solid waste (non-putrescible); and
- Food waste - general solid waste (putrescible) (max. of 8,000 t/a).

The Client intends to modify its development consent and diversify accepted waste types to accommodate processing of food organics and garden organics (FOGO). A two-fold amendment is proposed which includes:

1. Allow for up to 20% General Solid Waste (putrescible) which comes under Category 3 mixed residual waste containing putrescible organics (DEC 2004); and
2. Allow the Category 2 waste biosolids and manures (DEC 2004) to be included in the 8,000 t/a already approved Food waste - general solid waste (putrescible).

The existing capacity of the facility will not be varied by the modification and remains at 20,000 t/a waste input for current Stage 1 and 40,000 t/a waste input for future Stage 2.

The facility operates in accordance with Environment Protection Licence (EPL) 12510 and detailed operating procedures are documented in the Operational Environmental Management Plan (OEMP) (AKE 2019a), which is provided for reference as **Appendix H.** NSW Environment Protection Authority (NSW EPA) has restricted waste type processing during the first three years of Stage 1 operation to the exclusion of food waste. As this period has now lapsed, the Client can

apply to NSW EPA to vary EPL 12510 to have food waste accepted. The ability to process the new waste types introduced by the modification will also require approval from NSW EPA.

The proposed modifications are an integral component of the approved Composting Facility, providing for a broader range of customers including primary producers in regional areas. The modification will allow for and encourage a reduction in organic waste going to landfill, increase reuse of by-products and has the potential to increase local employment within the industry itself and associated industries such as transport.

Assessment of the perceived environmental impact, mostly water and odour, has shown limited to no environmental impact. Accordingly, the proposal represents a positive benefit, with minimal environmental impact.

The SEE has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed modification and has concluded that the proposal warrants MCC support.

Study Certification and Licensing

The fieldwork and report were undertaken by Natalie Black BSc (Hons), MPL & Cert IV TAE & MSc (BAAS no. 19076) of Anderson Environment & Planning.

Certification:

As the principal author, I, Natalie Black, make the following certification:

The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the proposed development all surveys which occurred on site were undertaken in accordance with commonwealth, state and local government Act, Regulations, policies and guidelines to inform this report.

Principal Author and Certifier:

Natalie Black

Senior Environmental Manager

Anderson Environment & Planning

BAAS no. 19076

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1.0 Introduction

In 2015, a Development Application (DA 15-433 refer to **Appendix A**) was lodged by Ditton Properties Pty Ltd (the Client) and approved by Maitland City Council (MCC) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for a composting facility (the Facility) at 442 Anambah Road, Gosforth (Lot 22 DP 1069012) (the Subject Site). MCC issued Conditions of Consent (No. 2 of DA 15-433, amended 2017), permitting the facility to receive up to 40,000 tonnes per annum (t/a) of various wastes, including up to 20% of the total permitted waste intake (8000 t/a) comprising of Category 2 waste type specifically pertaining to "Other natural or processed vegetable organics" (as per Table 3 from *Composting and Related Organics Processing Facilities* (DEC 2004)). **Appendix B** provides a copy of the approved plans for the Facility.

Within the existing allowances of Category 2 waste type pursuant to Condition of Consent No. 2 of DA 15-433, the Proponent wishes to modify the type of general solid waste (putrescible) permitted to be processed at the Facility; this amendment seeks to include biosolids and manures within the existing 8000 t/a allowance of Category 2 waste intake, focusing on the processing of animal manure and mixtures of manure and biodegradable animal bedding organics, and will exclude sewage biosolids.

At the request of the Client, Anderson Environment and Planning (AEP) have prepared this SEE to accompany an application under Section 4.55 (2) - Modification of consents for proposed modifications to the composition of existing waste intakes under Condition of Consent No. 2 of DA 15-433.

A description of the proposed works and associated environmental impacts have been undertaken in context of Section 4.55 (2) of the EP&A Act, Clause 100 of the *Environmental Planning and Assessment Regulations 2021* (EP&A Regs), the *Biodiversity Conservation Act 2016* (BC Act), *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Maitland City Council Pre - Lodgement Meeting Minutes dated 3 February 2021 (refer **Appendix C**). In doing so, the SEE helps to fulfil the requirements of Section 4.55 (2) of the EP&A Act to ensure that MCC examines and considers to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The SEE will consider:

- Whether the proposed modification is likely to have a significant impact on the environment and therefore necessitate an EIS to be prepared and approval to be sought from the Minister for Planning and Environment under the EP&A Act;
- The significance of any impact on threatened species as defined by the BC Act and/or *Fisheries Management Act 1995* (FM Act), in Section 5AA of the EP&A Act and therefore the requirement for a Species Impact Statement (SIS); and
- The potential for the proposal to significantly impact Matters of National Environmental Significance (MNES) or Commonwealth land, and the need to make a referral to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

For the purposes of referencing, this document should be referred to as:

> AEP (2022). Anambah Composting Facility. *Modification to Putrescible General Waste Intake, Statement of Environmental Effects.* Unpublished report for Ditton Properties Pty Ltd, Anambah.

2.0 Project Description and Background

The proposal is an application under EP&A Act, Section 4.55 (2) - Modification of consent, which seeks to modify the composition of existing waste intakes under Condition of Consent No. 2 of DA 15-433.

The Proponent wishes to modify the type of General Solid Waste (putrescible) permitted to be processed at the Facility within existing allowances of Category 2 waste type, pursuant to Condition of Consent No. 2 of DA 15-433. This amendment seeks to include biosolids and manures within the existing 8000 t/a allowance of Category 2 waste intake, focusing on the processing of animal manure and mixtures of manure and biodegradable animal bedding organics and will exclude sewage biosolids (as per Table 3 from Composting and Related Organics Processing Facilities (DEC 2004)). Thus, the amendment only seeks a minor modification in the type of Category 2 General Solid Waste (putrescible) being processed at the facility without any change to currently approved permissible waste intake quantities.

As part of the abovementioned DA amendment, numerous investigations have been undertaken with regards to expected environmental effects as a result of the development modification. The findings from these investigations will be included within this SEE where relevant.

3.0 Project Location and Context

The Subject Site is located at 442 Anambah Road, Gosforth NSW (Lot 22 DP 1069012), which is located approximately six kilometres northwest of Rutherford. The Subject Site is shown in **Figure 1**.

Under MMC's Condition of Consent No. 2 of DA 15-433, the Riverbend Composting Facility is currently approved to process up to 40,000 t/a of Category 1 and Category 2 organic material, which is sourced predominantly from municipal waste facilities in the Hunter Region, supplemented by green waste brought to the facility by the general public. This will be processed to produce up to 24,000 t/a of high-quality compost. Currently the facility is permitted to process garden waste, wood waste, natural organic fibrous materials, general solid waste (non-putrescible) and waste derived from food.

3.1 Site Description and Locality

Table 1 provides a description of the site and location.

Table 1 – Site Particulars

Item	Comments
Client	Ditton Properties Pty Ltd
Address	442 Anambah Road, Gosforth NSW
Title(s)	Lot 22 DP 1069012
Subject Site Area	31.50ha
LGA	Maitland City Council
Zoning	RU2 – Rural Landscape (**Figure 3**)
Current Land Use	Commercial operation as composting waste management facility for the processing of general solid wastes to high quality composts for gardening and agricultural use (refer **Appendix D** for site photographs).

Item	Comments
Surrounding Land Use	The current surrounding land use was determined to be agricultural, generally grazing, zoned as RU2 – Rural Landscape. The land directly to the west of the Subject Site is identified as Anambah Urban Release Area (AURA) consisting of the following land zonings: • B1 - Neighbourhood Centre; • C4 - Environmental Living; • R1 - General Residential; • R5 - Large Lot Residential; • RE1 - Public Recreation; and • RU2 - Rural Landscape (refer **Figure 3**).

3.2 Site Plan

A scaled plan showing the existing layout of the approved and constructed facility is provided in **Figure 2.**

3.3 Greater Context

The Subject Site lies on the eastern limb of the Lochinvar anticline, which is relatively close to the Mooki Thrust fault system. The quarry walls are characterised by four different strata: conglomerate, sandstone, siltstone and coal.

The Subject Site is situated along an undulating ridgeline which traverses the main valley of the Hunter River in a southeast to northwest direction. The catchment area for the Subject Site is a small unnamed first-order watercourse which flows into the Hunter River approx. 2km southeast of the site.

The existing land use surrounding the site largely comprise of rural land uses including some rural residential development. The majority of the surrounding area is cleared for grazing with the remnant bushland mostly confined to ridges, hills, creeklines and roadsides.

3.4 Landuse and Ownership

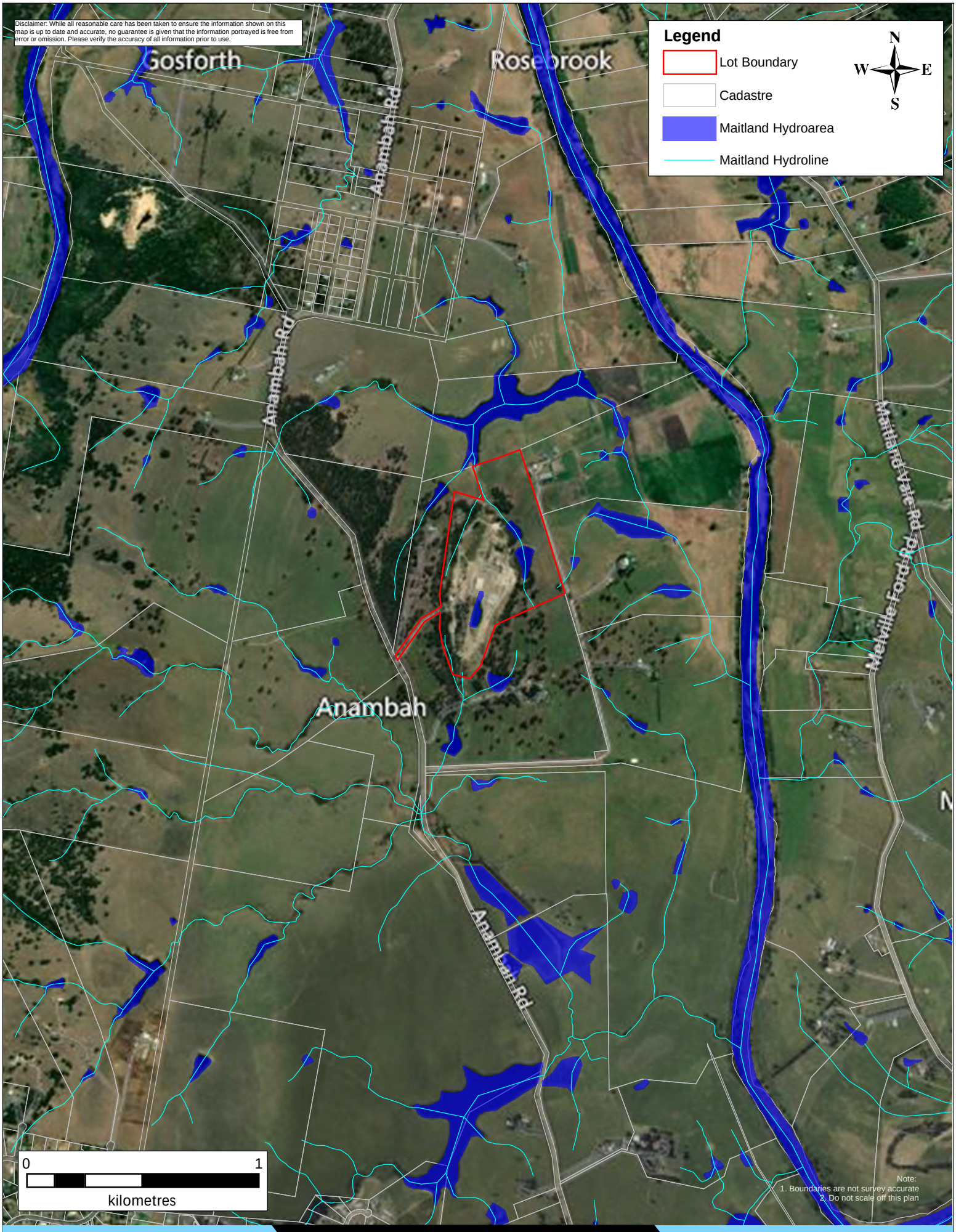
The facility and surrounding lands within Lot 22 DP 1069012 are zoned RU2 - Rural Landscape under the Maitland Local Environmental Plan 2011. Land zoned RU1 – Primary Production, borders the Subject Site to the north. Land directly opposite the facility across Anambah Road has been demarcated as the Anambah Urban Release Area (AURA) (see **Table 1** above).

The site is currently owned by the Client and is under commercial operation as a composting waste management facility for the processing of general solid wastes to high quality composts for gardening and agricultural use.

3.5 Project Justification and Consideration of Alternatives

The processing of a diverse range of putrescible waste types at Riverbend Composting Facility will alleviate strain on other local waste management facilities, reducing the amount of general wastes that would otherwise be sent to landfill, for reuse in a multitude of productive applications as high quality compost, and for improving soil health, sequestering carbon, and boosting crop yields. This action will assist in creating more sustainable waste management techniques by moving more waste into the circular economy as outlined by targets in the *NSW Waste and Sustainable Materials Strategy 2041* (2021).

The do-nothing approach would result in this putrescible waste being sent to landfill unnecessarily, costing local ratepayers more in waste management fees and releasing more carbon emissions in a region already subject to localised effects of climate change.



AEP

Title: Figure 1 - Site Location

Date: May 2022

Location: 442 Anambah Road, Anambah, NSW

Client: AK Environmental Pty Ltd

AEP Ref: 2573

4.0 Detailed Scope of Works

This project will consist of the following works:

4.1 Access

The site will continue to be accessed from the south via the New England Highway and Anambah Road and via Anambah Road from the north. The recently upgraded intersection at Anambah Road gains access to approximately 300m of driveway leading to the weighbridge (refer **Figure** 2).

4.2 Design

There is no design modification required for the s4.55 (2) application.

4.3 Footprint

There are no proposed modifications to the overall footprint for the Anambah Road intersection, internal access roads and the approved and constructed facility.

4.4 Excavation/Spoil/Disturbance

There is no excavation or disturbance required for the proposed modification.

4.5 Works Method

The proposal involves the following modification to Consent Condition Number 2 of Development Application no. DA15-433:

- Allow for up to 20% General Solid Waste (putrescible) which comes under Category 3 Mixed residual waste containing putrescible organics; and
- Allow the Category 2 waste Biosolids and manures to be included in the 8,000 tonnes/annum already approved Category 2 waste load, noting only Other natural or processed vegetable organics is currently approved. Refer to **Table 2** extracted from *Composting and Related Organics Processing Facilities* Table 3 (DEC 2004) below, which outlines the changes to materials being processed at the approved facility.

Table 2 – Categorisation of Organics (extracted from *Table 3 Composting and Related Organics Processing Facilities* (DEC 2004))

Potential to have environmental Impact	Organics category	Types of organics permitted in categories (Categories with larger numbers may contain types from classes with smaller numbers)	
		Type	Examples of Organics
Lower potential environmental impact	Category 1	Garden and Landscaping organics	Grass, leaves, plants, lopping, branches, tree trunks and stumps
		Untreated Timber	Sawdust, shavings, timber offcuts, crates, pallets, wood packaging
		Natural organic fibrous organics	Peat, seed bulls/husks. straw, bagasse and other natural organic fibrous
		Processed Fibrous organics	Paper, cardboard, paper processing sludge, non-synthetic textiles

Potential to have environmental Impact	Organics category	Types of organics permitted in categories (Categories with larger numbers may contain types from classes with smaller numbers)	
		Type	Examples of Organics
Greater Potential environmental impact than category 1, less potential impact than category 3	Category 2	Other natural or processed vegetable organics	Vegetables, fruit and seeds, and processing sludges and wastes, wineries, breweries and distilleries wastes, food organics excluding category 3
		Biosolids and Manures	Sewerage biosolids, animal manures and mixtures of manures and biodegradable animal bedding products.
Greatest potential environmental impact	Category 3	Meat, fish and fatty foods	Carcasses and parts of carcasses, blood, bone, fish, fatty processing, or food
		Fatty and oily sludges and organics of animals and vegetable origins	Dewatered grease traps, fatty and oily sludges of animals and vegetable origins.
		Mixed residual wastes containing putrescible organics	Waste containing putrescible organics, including household and domestic waste that is set aside for kerbside collection or delivery by household directly to a processing facility and waste from commerce and industry.

4.5.1 Establish Traffic Control Measures in Accordance with an approved Traffic Management Plan

The proposal will not result in traffic volumes on Anambah Road exceeding the capacity set by the RMS for rural roads, meaning there will be no adverse impact on the amenity of residents along Anambah Road.

The proposal will have no adverse impacts on the operation of the New England Highway / Anambah Road roundabout. The approved access road intersection with Anambah Road will operate uninterrupted in accordance with approved development conditions.

The proposed modification to the approved development will have no impact on public transport, pedestrian or bicycle infrastructure required to support the development, consistent with the approved consent.

The approved 51 movements per day will not increase as a result of the modification. There will also be no increase to peak hour traffic as the modification will not generate additional vehicle movements.

Therefore, it has been determined that there is no change to the approved traffic movements, the current road network and access is sufficient as there is no proposed increase or change in vehicles required with the proposed modification. As a result, the existing conditions 28, 29 and 30 have been met.

4.5.2 Installation of On-Site Environmental Controls

As there are no proposed construction works, the approved and current management practices for erosion and sediment controls will continue to be implemented.

4.5.3 Installation of On-Site Compound

As there are no construction works required for the proposal, there is no requirement for on-site compound facilities.

4.5.4 Ongoing Waste Management

AKE (2022) states there is no reliable data regarding the expected fraction of non-processable waste in residential FOGO, but the availability of otherwise empty trucks to backhaul material off-site means there is no discernible environmental impact.

Riverbend Organics will continue to keep a clean, tidy and orderly facility at all times, with contractors being educated as to the importance of recycling and waste reduction. Waste management protocols are included within the Operational Environmental Management Plan (OEMP) and include:

- Promote use of recycled resources through the purchasing policy;
- Minimise use of packaging materials and recycle packaging products where possible;
- Waste concrete shall be sent to a concrete recycling plant where possible;
- Chemical and contaminated waste shall be disposed of through an approved and licensed facility;
- Office waste paper would be recycled and reused where possible; and
- General waste that is not recyclable would be disposed of in a bin/skip provided by an approved waste disposal operator.

Appendix E provides the detailed assessment on waste prepared by AKE (2022).

4.5.5 Remediate Area in Accordance with Standard Environmental Safeguards

As there are no construction works proposed with the modification, there is no requirement for remediation under this proposal.

4.5.6 Earthworks

There are no proposed earthworks.

4.5.7 Ancillary Facilities

As there are no proposed construction works for the modification, there is no requirement for additional facilities and existing facilities will be used by staff and visitors.

4.6 Timing and Staging

The proposed change to the materials being processed at the facility is anticipated to start in July 2022. It should be noted that there is no proposal to change the approved operating hours (Consent Condition 17), which remain as:

- Monday to Friday: 7:00am to 5:00pm;
- Saturdays: 7:00am to 5:00pm; and
- No operations permitted on Sundays and Public Holidays.

4.7 Construction Environmental Management Plan

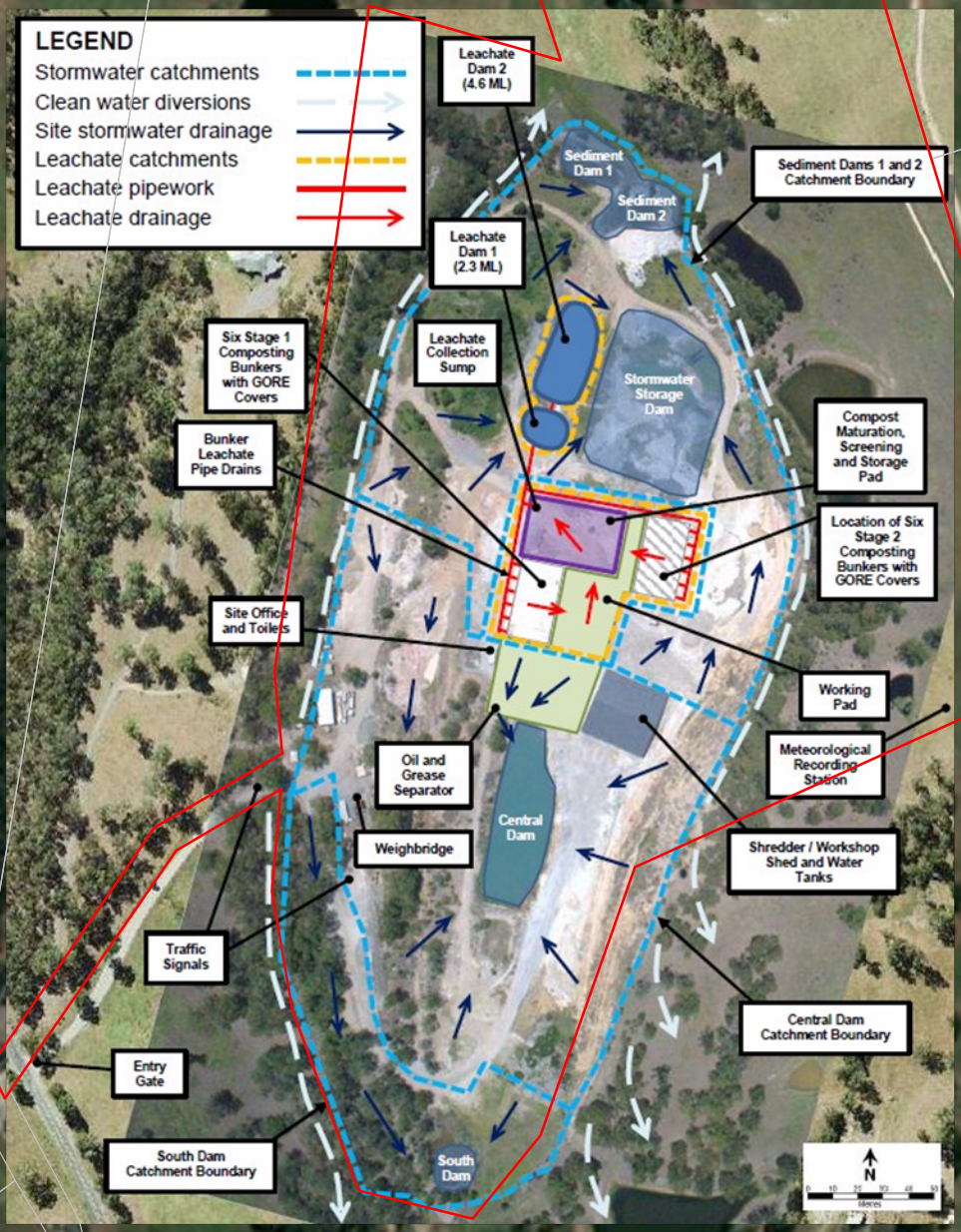
As the proposed modification does not require construction works, there is no requirement for a CEMP. The facility will continue to operate in accordance with the existing OEMP. It is noted that upon approval of the proposed modification the OEMP will need to be updated to reflect the type of waste accepted.

Legend

Lot Boundary

Cadastre

N W E S



0 250

metres

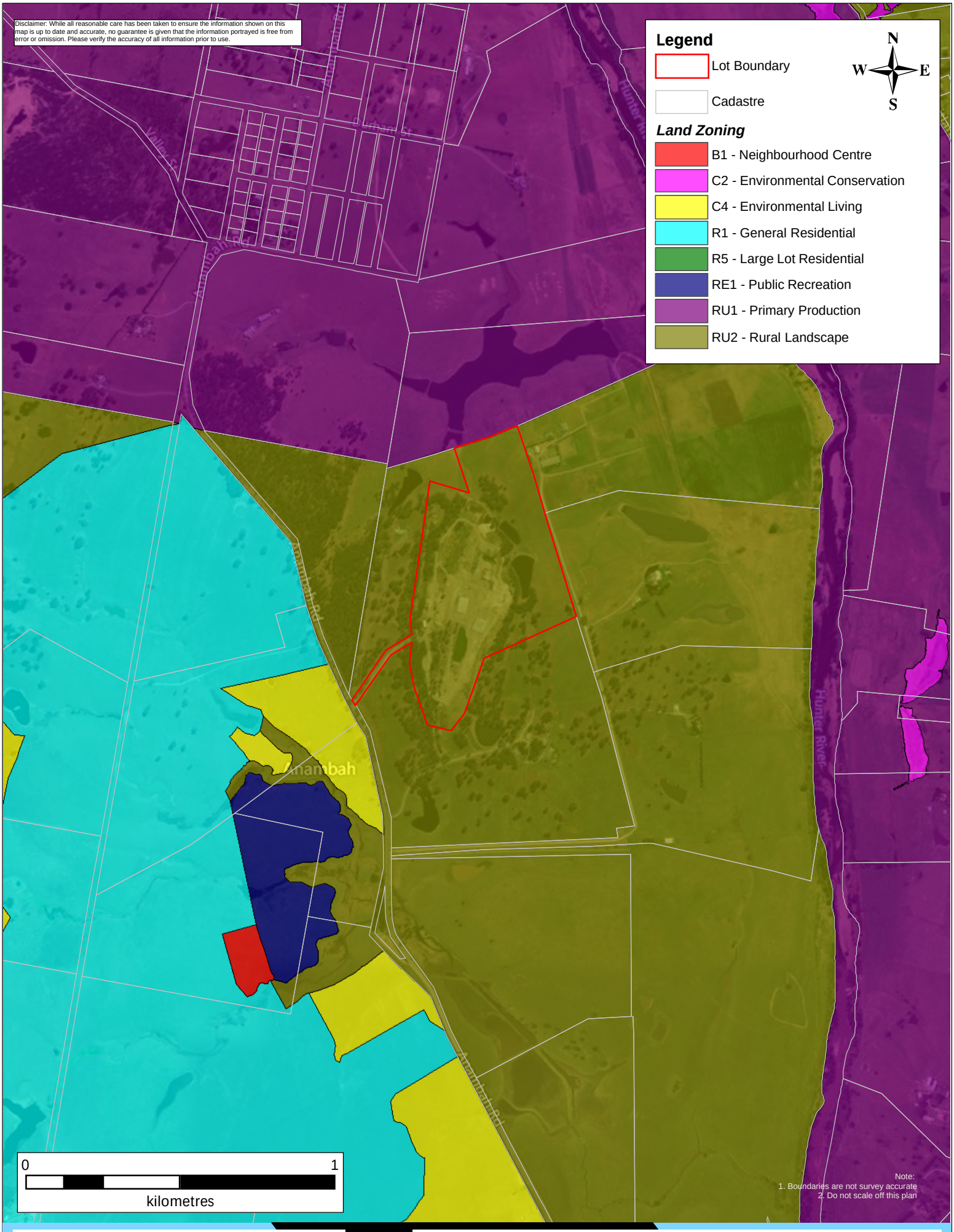
Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan

AEP

Title: Figure 2 - Operational Layout Location: 442 Anambah Road, Anambah, NSW Client: AK Environmental Pty Ltd

Date: May 2022

AEP Ref: 2573



AEP

Title: Figure 3 - Land Zoning

Date: May 2022

Location: 442 Anambah Road, Anambah, NSW

Client: AK Environmental Pty Ltd

AEP Ref: 2573

5.0 Statutory and Planning Context

5.1 Commonwealth legislation

5.1.1 Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act protects MNES, including threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places.

Any actions that will, or are likely to have a significant impact on the matters of MNES require referral and approval from the Commonwealth Environment Minister. Significant impacts are defined by the Commonwealth (DEWHA 2013) for matters of MNES. An MNES search was conducted in May 2019 and May 2022.

EPBC Act Assessment Conclusion:

No vegetation is proposed to be impacted or removed as part of this amendment. As such, consideration of the EPBC Act indicates that it is considered unlikely that significant impacts on MNES will occur as a result of the amendment.

5.2 State Legislation

5.2.1 Environmental Planning and Assessment Act, 1979 (EP&A Act)

Section 4.55 of the EP&A Act is assessed in detail below, showing that the proposed modification to the material being processed at the approved Riverbend Organic Composting Facility, Anambah Road, Gosforth, is a minor modification to the approved DA.

5.2.2 Section 4.55 Assessment

4.55 Modification of consents—generally

(1) Modifications involving minor error, misdescription or miscalculation

A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify a development consent granted by it to correct a minor error, misdescription or miscalculation. Subsections (1A), (2), (3), (5) and (6) and Part 8 do not apply to such a modification.

This application is a 4.55 (2)

(2) Other modifications

A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—

(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and

The proposed modification is to diversify accepted waste types to accommodate processing of food organics and garden organics (FOGO) which includes:

- **Allow for up to 20% General Solid Waste (putrescible) which comes under Category 3 mixed residual waste containing putrescible organics (DEC 2004); and**
- **Allow the Category 2 waste biosolids and manures (DEC 2004) to be included in the 8,000 t/a already approved Food waste - general solid waste (putrescible).**

With no proposed construction or increase in traffic, it has been determined that additional traffic, biodiversity, heritage, noise and vibration impacts will not occur from the proposed modification. Further assessment was undertaken to determine the environmental impacts for:

- **Odour;**
- **Surface water;**
- **Groundwater;**
- **Flooding;**
- **Soil; and**
- **Waste generation.**

The detailed odour assessment for the above showed that the proposed development will not have an impact on residential receptors (Appendix F).

The assessment of the proposed modification and the potential impact on surface water parameters concluded no additional surface water mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered sufficient (Appendix H).

The assessment of the proposed modification and the potential impact on groundwater parameters shows no additional groundwater mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and reporting requirements specified in EPL 12510 are considered adequate (Appendix H).

The assessment of the proposed modification and the potential impact on flooding indicates mitigation measures are not required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate, particularly those related to embankment integrity inspections of Sediment Dams 1 and 2 (Appendix H).

The assessment of the proposed modification and the potential impact on soil indicates protection measures are not required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate (Appendix H).

The assessment of the proposed modification and the potential impact on waste generation indicates protection measures are not required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate. It is noted the OEMP will need to be updated to reflect the type of waste accepted in accordance with the modification (Appendix H).

Therefore, it has been demonstrated that the Consent Authority (being MCC) is able to assess the application as a m*odification involving minimal environmental impact.*

(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and

Applicable to the Consent Authority.

(c) it has notified the application in accordance with —

(i) the regulations, if the regulations so require, or

(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and

As stated in Section 5.2 of the MCC DCP modifications may require re-advertising and referrals to government authorities. Therefore, MCC will re-advertise and referrals to government authorities.

(d) it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.

Applicable to the Consent Authority.

(3) In determining an application for modification of a consent under this section, the consent authority must take into consideration such of the matters referred to in section 4.15(1) as are of relevance to the development the subject of the application. The consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified.

This SEE considers the permissibility of the proposed modification in accordance with MCC LEP and DCP, the assessment of these policies determined that as per the original consent, the modification to change the category of organic waste material processed within the facility is permissible and complies with local and state controls.

The assessment has also demonstrated that the proposed modification has limited to no impact on the hydrology within the Greater Hunter Catchment Area. The detailed odour assessment shows the modification will not result in an increase in odours for all surrounding residential receptors.

Given there is no proposed construction or changes to traffic movements it has been determined that the proposed modification has limited to no impact on the environment.

(4) The modification of a development consent in accordance with this section is taken not to be the granting of development consent under this Part, but a reference in this or any other Act to a development consent includes a reference to a development consent as so modified.

Not Applicable to this application

5.2.3 Biodiversity Conservation Act 2016 (BC Act)

Part 7 of the BC Act provides the environmental assessment requirements for activities being assessed under Part 4 of the EP&A Act 1979. If a significant impact is likely, the EIS is to be accompanied by a SIS, or if the proponent so elects – a Biodiversity Development Assessment Report (BDAR). Section 7.2(1)(a) and 7.3 describe the assessment requirements and thresholds for what is considered a significant impact.

AEP has conducted a review of the proposed modification to the approved DA 15-433 and AKE hydrological assessment (2022). This review has shown that operation of the composting facility by Riverbend Organics is currently meeting or exceeding all environmental and water quality outcomes underlined by MCC Conditions of Consent. The proposed modification to DA15-433 ":1" does not include construction works or expansion of existing approved development footprint and associated infrastructure, as such there are no further expected direct or indirect impacts to biodiversity (refer **Appendix G**).

5.2.4 Local Land Services Act 2013 (LLS Act)

The objects of the Act include 'to ensure the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development. The Act regulates the clearing of native vegetation, however the proposed modification to DA15-433 ":1" does not include construction works or expansion of existing approved development footprint and associated infrastructure. As such there are no further expected direct or indirect impacts to native vegetation.

5.2.5 Fisheries Management Act 1995 (FM Act)

The FM Act provides for the protection, conservation, and recovery of threatened species, populations and ecological communities of fish and marine vegetation and fish habitats, as well as promoting the development and sharing of fishery resources in NSW.

The activity does not involve harm to mangroves or other protected marine vegetation, dredging or reclamation, blocking of fish passage and does not involve impact to a Key Fish Habitat waterway. Therefore, the works will not require a permit issued by the Minister in accordance with *Part 7* of the FM Act.

5.2.6 National Parks and Wildlife Act 1974 (NPW ACT)

The NPW Act regulates the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others). The main aim of the Act is to conserve the natural and cultural heritage of NSW. As there is no construction, the modification to the DA is highly unlikely to disturb Aboriginal objects, therefore there is no requirement for an Aboriginal Heritage Impact Permit (AHIP).

5.2.7 Heritage Act 1977

The proposed activity does not involve an item or place listed on the NSW State Heritage Register or the subject of an interim heritage order or listing and is therefore not a controlled activity. Approval of works on the site is therefore not required under *Part 4* of the Heritage Act (refer to **Appendix I**).

5.2.8 Protection of the Environment Operations Act 1997 (POEO ACT)

The POEO Act is the key environmental protection and pollution statute. The POEO Act is administered by the EPA and establishes a licensing regime for waste, air, water and pollution. Relevant sections of the Act are listed below:

- Part 5.3 Water Pollution;
- Part 5.4 Air Pollution;
- Part 5.5 Noise Pollution; and
- Part 5.6 Land Pollution and Waste.

Any work potentially resulting in pollution must comply with the POEO Act. Relevant licences must be obtained if required. No licences have been identified as being required, including an EPL. AKE and Todoroski Air Sciences Pty Ltd assessments of the proposed modification show the approved facility is functioning within the DA conditions and that no further licences are required.

The facility operates in accordance with EPL 12510 and detailed operating procedures are documented in the OEMP which is provided for reference **in Appendix H**. NSW EPA has restricted waste type processing during the first three years of Stage 1 operation to the exclusion of food waste. As this period has now lapsed, the Client can apply to NSW EPA to vary EPL to have food waste accepted. The ability to process the new waste types introduced by the modification will also require approval from NSW EPA.

5.2.9 Water Management Act 2000 (WM Act)

The WM Act's main objective is to manage NSW water in a sustainable and integrated manner that will benefit today's generations without compromising future generations' ability to meet their needs. *Section 91E* of the Act establishes an approval regime for controlled activities within waterfront land. As there are no proposed construction works, an approval under the WM Act is not required.

5.2.10 Biosecurity Act 2015

The primary obligations of this Act are to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers.

There is no proposed construction or expansion of existing infrastructure, and as a result no additional management is required. It should be noted that the Subject Site has been recorded as containing *Lantana camara*, and *Senecio madagascariensis* (Fireweed), which are species listed as priority weeds for the Hunter Local Lands Services Region. Management to reduce these species on the Subject Site is a continual obligation.

5.2.11 State Environmental Planning Policy (Resilience and Hazards) 2021

The *State Environmental Planning Policy (Resilience and Hazards) 2021* (R&H SEPP) provides controls for undertaking development and activities within the coastal zone. As there no proposed works for the modification, the R&H SEPP does not apply.

5.2.12 State Environmental Planning Policy (Biodiversity Conservation) 2021

The Chapter 3 of the BC SEPP aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for *Phascolarctos cinereus* (Koala) to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline.

With no proposed construction or works, no provision of the policy would apply to the modification.

6.0 Existing Environment and Impact Assessment

It is a requirement under Section 4.55 (2) of the EP&A Act that all matters likely to affect the environment by reason of the activity be taken into account to the fullest extent possible. The potential environmental impacts of the proposed modification have been generated based on the following:

- The changes to materials being processed within the Facility;
- The legislative framework within which the works must comply; and
- The existing environmental conditions.

In order to reduce any potential impacts derived from the above, where appropriate, mitigation methods are proposed for ongoing operation phase of the project.

6.1 Landform, Geology, Soils, Contaminated Land and Acid Sulfate Soils

6.1.1 Existing Environment

The Subject Site lies on the eastern limb of the Lochinvar Anticline, which is relatively close to the Hunter-Mooki Thrust Fault system (Bioregional Assessment Programme (2014)). The quarry walls are characterised by four different strata: conglomerate, sandstone, siltstone and coal.

The Subject Site is situated along an undulating ridgeline which traverses the main valley of the Hunter River in a southeast to northwest direction. The catchment area for the site is an unnamed first-order watercourse which flows via road verges and streams, and dams on neighbouring properties, eventually flowing into the Hunter River.

The existing land use surrounding the Subject Site largely comprise of rural land uses including some rural residential development. The majority of the surrounding area is cleared for grazing with the remnant bushland mostly confined to ridges, hills, creeklines and roadsides.

Examination of NSW Planning Portal (2019) Acid Sulfate Soils (ASS) mapping has confirmed that the Subject Site is classified as Class 5. As ASS are not typically found in Class 5, risk of any works encountering ASS is considered very low.

6.1.2 Impact Assessment

As the proposal does not include any construction or changes to approved infrastructure, it has been determined unlikely that these contaminants will be impacted as a result of the modification.

6.1.3 Mitigation Measures

No additional landform protection measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and DA conditions of consent as these are deemed adequate.

6.2 Water Quality, Hydrology and Flooding

6.2.1 Existing Environment

Watercourses/Drainage Lines: The nearest watercourse is unnamed and in the east of the approved development. This ephemeral watercourse drains via natural gullies, dams and streams, eventually flowing into the Hunter River in high rainfall events.

See Section 4.3.1 of AKE (2022) for the existing environment for flooding.

6.2.2 Impact Assessment

AKE (2022) concluded that the proposed modification will not result in volumetric increase to leachate generation and will not otherwise affect stormwater runoff generation or flow direction. No impact to the surface water management systems will result from the change to processed waste type.

AKE (2022) reports concluded the top of bank elevation of Leachate Dam 1 is 19.57 mAHD and Leachate Dam 2 is 19.60 mAHD. The 100-year ARI flood event would likely inundate both dams if not for the downstream protection offered by the constructed embankment of Sediment Dams 1 and 2, which is some 0.8 m above than the 100-year ARI flood height.

The surface elevation of the composting pad floor level is approximately 25.0 mAHD, which provides significant clearance above the 100-year ARI flood event.

AKE (2022) confirmed that the only possible pathway for leachate (in the form of contact stormwater) to infiltrate through to underlying groundwater is via a compromised clay liner. Inspection of the clay liner surface at the (i) compost maturation/screening/storage pad, (ii) working pad, (iii) Leachate Dam 1 and (iv) Leachate Dam 2 was undertaken by Dr Andrew Krause (AKE Principal Environmental Engineer) on 8 March 2022. At no location was the clay liner found to be damaged, cracked or otherwise compromised. The robustness of the engineered clay liner is confirmed as no degradation or deformation is evident after three years of heavy vehicle usage.

6.2.3 Mitigation Measures

No additional water quality or hydraulic water mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

Appendix E provides a detailed surface water and groundwater assessment.

6.3 Biodiversity

6.3.1 Existing Environment

The species recorded during the recent site inspection were mobile species, i.e. Eastern Grey Wallaby, Rabbit, Kookaburra, Noisy Minor, Magpie, Galah, Striped Marsh Frog, Common Eastern Froglet and Eastern Water Dragon. These species are unlikely to be solely dependent on habitat that the Subject Site would afford.

Weeds/Pests: The Subject Site has been recorded as containing *Lantana camara* and *Senecio madagascariensis*, species listed as priority weeds for the Hunter Local Lands Services Region.

No listed flora or fauna were identified on the Subject Site.

6.3.2 Impact Assessment

As there are no construction or proposed changes to existing infrastructure it is considered that the proposed modification is unlikely to have any significant impact on the local population of the above mobile species and they are unlikely to be solely dependent on habitat that the Subject Site would afford.

Management of weeds must continue in accordance with the DA and *Biosecurity Act 2015* to reduce the spread of weeds present within the Subject Site.

6.3.3 Mitigation Measures

No additional biodiversity mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

6.4 Aboriginal Heritage

6.4.1 Existing Environment

An examination of NSW State Heritage Inventory (2022) showed there are no items of Aboriginal heritage, nor Aboriginal sites or places, located on or within the vicinity of the Subject Site.

6.4.2 Impact Assessment

As the proposed modification does not require construction or changes to existing infrastructure, it has been determined that there would be no impact on any Aboriginal heritage conservation areas or items given the significant distance of the works from these areas.

6.4.3 Mitigation Measures

No additional Aboriginal heritage mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the DA Conditions of Consent are considered sufficient.

6.5 Historic Heritage

6.5.1 Existing Environment

A search of the NSW heritage database and Commonwealth EPBC heritage list has also been conducted to reveal that no items are located on or near the Subject Site (refer to **Appendix I**).

6.5.2 Impact Assessment

As the proposed modification does not require construction or changes to existing infrastructure, it has been determined that there would be no impact on any historic heritage conservation areas or items.

6.5.3 Mitigation Measures

No additional historic heritage mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

6.6 Noise and vibration

6.6.1 Existing Environment

- **Sensitive Land Uses**: The nearest future dwelling to the approved development is greater than 500m to the north. There are no schools, nursing homes or roosting native fauna populations that are within the vicinity of the Subject Site.
- **Critically Sensitive Receivers:** There are no critically sensitive receivers such as hospitals or schools in the nearby vicinity.
- **Vibration**: As existing dwellings are not located close to the Facility, an assessment of vibration impact is not required.

6.6.2 Impact Assessment

As the proposed modification does not require construction or changes to existing infrastructure or changes to traffic movement (including vehicle types), it has been determined that there would be no impact on receivers.

6.6.3 Mitigation Measures

As the proposed modification does not require construction or changes to existing infrastructure or changes to traffic movement (including vehicle types), it has been determined that there would be no impact on receivers. Therefore, continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

6.7 Air quality

6.7.1 Existing Environment

The air quality of the approved and working composting facility is managed in accordance with the DA consent conditions. There are no schools, hospitals or nursing homes within the vicinity of the Subject Site.

Air quality criteria are benchmarks set to protect the general community against adverse health and nuisance effects arising from air pollution. The NSW EPA (2017) Approved Methods for the Modelling and Assessment of Air Pollutants in NSW outlines acceptable levels of odour ranging from 2 to 7 OU, with the more stringent 2 OU criteria applicable to densely populated urban areas and the 7 OU criteria applicable to sparsely populated rural areas. The NSW odour goals are based on the risk of odour impact within the general population of a given area. In sparsely populated areas, the criteria assume there is a lower risk that some individuals within the community would find the odour unacceptable, hence higher criteria apply (Todoroski Air Sciences 2022).

Given that the number of dwellings surrounding the Facility is small, the potential population is estimated at <10 and thus an odour criterion of 6.0 OU has been applied, which has also been used to assess impacts previously in Todoroski Air Sciences, 2015. The AURA boundary has land zoned for an urban release area with residential development and would have a higher population as such a criterion of 2OU has been adopted (Todoroski Air Sciences 2022). Other factors such as climate and ambient air quality in the area surrounding the Subject Site were also considered (Todoroski Air Sciences 2022).

6.7.2 Impact Assessment

As stated by Todoroski Air Sciences (2022) (**Appendix F**) activities with potential to release significant odour are required to be assessed to predict the likely odour impact that may arise. This is done by using air dispersion modelling which can calculate the level of dilution of odours emitted from the source point to where odour reaches surrounding receptors. This approach allows the air dispersion model to produce results in terms of odour units.

Dust

Dust emissions due to composting operations are determined to be small due to the inherent moisture of the material being processed and as such, potential impacts from these operations would be negligible. The Project does not seek change the approved processing rate and there would not be any additional dust generated. Thus, dust impacts have not been assessed in this report.

Odour

The odour assessment by Todoroski Air Sciences (2022) states that the applied odour emission rates used in the Todoroski Air Sciences (2015) *"*Riverbend Quarry and Compost Facility Air Quality Impact Assessment", prepared for VGT Pty Ltd, July 2015 (AQIA) for the approved development were based

on odour measurements of composting material that consisted of a mixture of green waste domestic food waste and garden organics, liquid food and organic wastes, including highly odorous grease trap waste and commercial and industrial food wastes (up to 40% of the windrow). These odour measurements are expected to be representative of the proposed 20% general solid waste putrescible, biosolids and manures in the composting mixture.

A key difference between the approved operations and the proposed is the location of activities at the Subject Site. The approved operations were based on indicative plans available at the time and were since refined during the construction phase. The change in total available area for composting has been reduced by 800m^2, thus resulting in a reduction of potential odour emissions generated by these activities.

It should also be noted that the leachate ponds to the north have been included in the modelling, whereas previously the leachate pond was located to the south.

Figure 6-2 within Todoroski Air Sciences (2022) (extracted below – refer **Figure 4**) shows the spatial distribution of the dispersion modelling predictions for the proposed modification to the approved composting facility presented as an isopleth diagram showing the 99th percentile nose-response ground level odour concentrations.

The results show a similar distribution to the previous modelling and indicate that impacts are predicted to shift marginally to the east and south.

The extent of impact on the AURA area is relatively comparable to the previous modelling for the approved operations, with a minor increase in the E4/C4 (Environmental Living) and RE1 (Public Recreation) areas. The revised modelling also indicates a reduction in the predicted impacts in the north-western section of the R1 (General Residential) area.

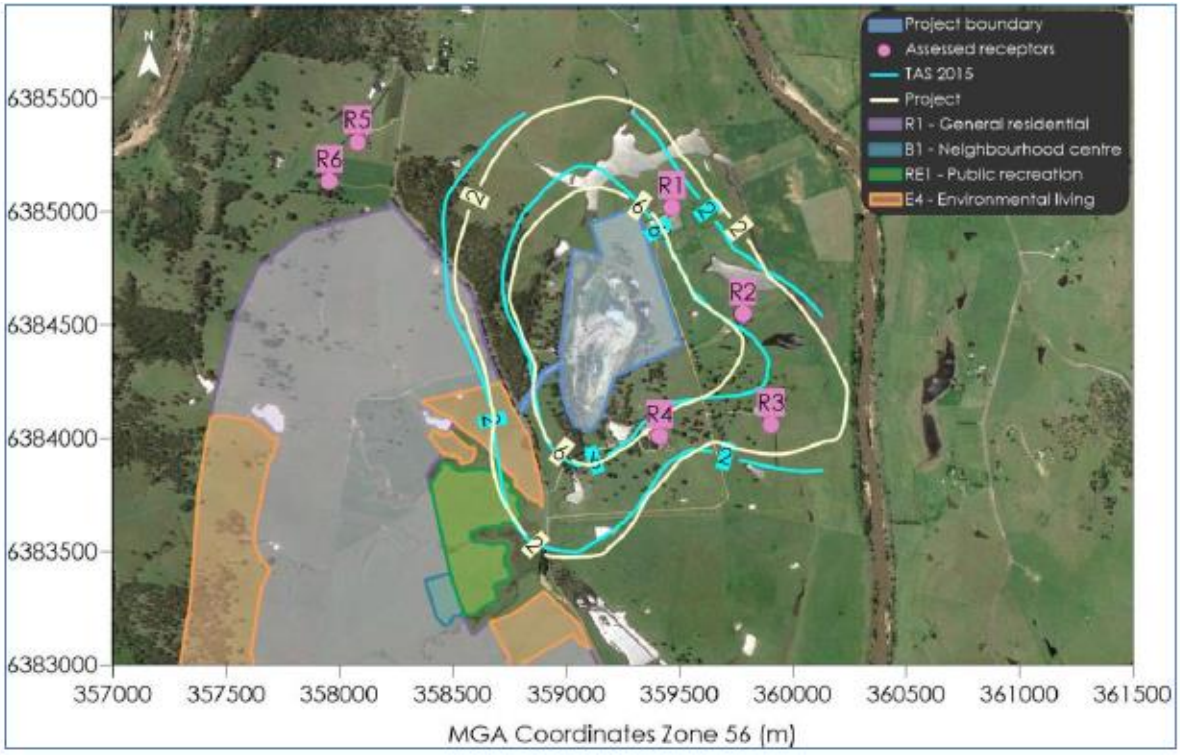


Figure 4 – Comparison of predicted 99th percentile nose-response average ground level odour concentrations for the Project and approved operations (extracted from Todoroski Air Sciences (2022)).

6.7.3 Mitigation Measures

The approved mitigation measures that are used to ensure the Facility maintains acceptable odour levels will be sufficient in providing residential receptors with acceptable odour levels. All odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable. Therefore, continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

6.8 Waste Management

6.8.1 Existing Environment

AKE (2022) outlines the existing waste loads as a limited amount of non-processable waste (e.g., plastics, metal, rock) is currently separated from incoming green waste during facility operation. The waste material is stored in a designated bin in the Shredder/Workshop Shed from where it is removed by truck on backhaul for disposal at a licensed waste processing facility. Records of all off-site waste disposal quantities are reported in the Annual Environmental Management Report.

6.8.2 Impact Assessment

The existing process of screening input waste in the Shredder/Workshop Shed will continue for proposed incoming FOGO. There exists no reliable data regarding the expected fraction of non-processable waste in residential FOGO, however, the availability of otherwise empty trucks to backhaul material offsite means there is no discernible environmental impact.

6.8.3 Mitigation Measures

No additional waste generation protection measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate. The OEMP will need a minor modification to update the type of waste accepted in accordance with the modification.

6.9 Traffic

6.9.1 Existing Environment

The existing road network is sufficient for the proposed modification, as the modification will have no increase in vehicle movements or the types of vehicles entering the facility. In addition, the proposal will not result in traffic volumes on Anambah Road exceeding the capacity set by the RMS for rural roads, meaning there will be no adverse impact on the amenity of residents along Anambah Road.

The existing approval includes the upgrade of the intersection with the facility access and Anambah Road via a turning and merging lane access which replaces the existing single lane access. Assessment against Austroads *Guide to Traffic Management – Part 6 – Intersections, Interchanges & Crossings* (2009). This upgrade has been completed.

6.9.2 Impact Assessment

As the proposed modification does not require construction or changes to existing infrastructure or changes to traffic movement (including vehicle types) it has been determined that there would be no impact to existing roads or users. Therefore, continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

6.10 Visual amenity/landscape

6.10.1 Existing Environment

The approved facility is located within an old hard rock quarry pit which ceased operation in 2020, surrounded by rural lands. The surrounding residents have limited to no view of the facility given the distance, topography and vegetation.

6.10.2 Impact Assessment

As the proposed modification does not propose change the approve facility, it has been determined that there will be no visual impact to surrounding residents and the scenic value will be retained.

6.10.3 Mitigation measures

Based on the existing environment and impact assessment of the proposed modification, no mitigation methods are considered necessary on a visual impact basis.

6.11 Socio-economic Considerations

6.11.1 Existing Environment

The existing facility provides employment and a facility for local businesses to dispose of organic waste while also reducing their environmental footprint, as the processes undertaken at the approved facility allow for the waste products to be reused. The facility also provides employment to local people within the facility itself and also the transport industry.

6.11.2 Impact Assessment

As the proposed modification does not require changes to approve facility, the socio-economic impacts are as a result of the material being processed. This variation allows for a growth of organic waste composting within the region, reducing organic waste within the local landfill sites. The support for the region's farmers, potential reduction in waste and increase employment opportunities within the local area are deemed positive outcomes both socially and economically. It is unlikely that the modification will create any negative socio-economic impacts.

6.11.3 Mitigation Measures

No additional safeguards or management measures are required beyond compliance with DA Conditions of Consent.

7.0 Consultation

7.1 Adjoining and/or Affected Landholders

The proposed modification has been deemed to have limited to no impact on adjoining landholders. Assessment of all potential impacts above clearly demonstrate the proposed modification to the materials being processed within the facility are not likely to result any impacts on adjoining land owners. To ensure the adjoining landowners are aware of the proposal, notification of individual adjoining landowners is recommended.

7.2 General Community

It is considered that the proposed modification is minor and as a result the consultation previously undertaken for the approved DA is sufficient.

Furthermore, the modification requires no construction or changes to traffic movements and hence is deemed inconsequential to the border community. Despite this, the contractor would be required to maintain a complaints register and adequately respond to any complaints received.

7.3 Environmental Protection Agency

The facility operates in accordance with EPL 12510 and detailed operating procedures are documented in the OEMP (AKE 2019a) which is provided for reference in **Appendix H**.

NSW EPA has restricted waste type processing during the first three years of Stage 1 operation to the exclusion of food waste. As this period has now lapsed, the Client can apply to NSW EPA to vary EPL 12510 to have food waste accepted. The ability to process the new waste types introduced by the modification will also require approval from NSW EPA.

8.0 Conclusion

Summary of Beneficial Effects

The proposed modifications are an integral component of the approved Composting Facility, providing for a broader range of customers including primary producers in regional areas. The modification will allow for and encourage a reduction in organic waste going to landfill, increase reuse of by-products and potentially increase local employment within the industry itself and associated industries such as transport.

Assessment of the perceived environmental impact, mostly water and odour, has shown limited to no environmental impact. Accordingly, the proposal represents a positive benefit, with minimal environmental impact.

Summary of Adverse Effects

The assessment undertaken for this SEE has identified potential adverse effects on the physical, biophysical and social environment. However, the assessment showed that these impacts do not exceed the impacts assessed with the approved development application. Therefore, it has been determined that the adverse impacts are minimal.

This SEE has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed modification and has concluded that the proposal warrants MCC support.

9.0 References

Atlas of Living Australia (2022). Occurrence records map. Viewed April 2022. Atlas of Living Australia. Commonwealth Scientific and Industrial Research Organisation (CSIRO).

AK Environmental (2019a) Operational Environmental Management Plan Anambah In-vessel Composting Facility, 442 Anambah Road, Anambah NSW 2320 (version 2.1), issued 3 April 2019.

AK Environmental (2019b) Leachate management system - Briefing Note 2059-1445, FINAL for Environment Protection Licence Application (version 3.0), issued 3 April 2019.

AK Environmental (2020) As-constructed verification of leachate management system - Briefing Note 2059-1478, FINAL issued 13 January 2020.

AK Environmental (2022) Environmental Review for DA Modification, Draft issued 13 April 2022.

Anderson Environment & Planning (2019). 5-Part Test Assessing Potential Impacts of Removal Vegetation in Road Verge for Proposed Access Works Alignment, 422 Anambah Road Anambah, NSW. Unpublished report for AK Environmental on behalf of Ditton Properties Pty Ltd, August 2019.

Bioregional Assessment Programme (2014) Hunter-Mooki Thrust Fault. Bioregional Assessment derived Dataset. Accessed from <www.data.bioregionalassessments.gov.au/dataset/93191c4f-ae62-4210-a6f9-14818fdef5c3>.

Department of Environment and Conservation (DEC) (2004) Environmental Guidelines – Composting and Related Organics Processing Facilities, DEC NSW, Sydney South.

Department of Environment and Conservation (2004). Threatened biodiversity survey and assessment - Guidelines for developments and activities (2004 working draft). NSW Department of Environment and Conservation (DEC). Sydney.

Department of Agriculture, Water and the Environment (2013), Significant Impact Guidelines 1.1 - Matters of National Environmental Significance, https://www.awe.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2011). Survey Guidelines for Australia's Threatened Mammals. DSEWPC. Canberra.

Intersect Traffic Pty Ltd (2015) Traffic Impact Assessment Composting Facility Riverbend Quarry 442 Anambah Road, Gosforth. Unpublished report for Ditton Properties Pty Ltd, July 2015.

Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines 2004 (the "Blue Book").

NSW Government (2019), Maitland Local Environmental Plan 2011, <www.legislation.nsw.gov.au.

OD Hydrology (2015) Surface Water and Groundwater Assessment, Composting Facility Anambah Road, Anambah, NSW. Unpublished report for Ditton Properties Pty Ltd, September 2015.

Pulver Cooper & Blackley (2015) Environmental Impact Statement In-Vessel Composting Facility 44 Anambah Road, Anambah NSW 2320. Unpublished report for Ditton Properties Pty Ltd, September 2015.

Todoroski Air Sciences Pty Ltd (2022) Riverbend Compost Facility Modification Air Quality Impact Assessment. Unpublished report for Ditton Properties Pty Ltd.

Appendix A – Development Approval Conditions of Consent

ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT, 1979 (As Amended)

maitland
city council

NOTICE OF DETERMINATION

DEVELOPMENT APPLICATION
(AMENDED)

To the Applicant:

Pulver Cooper and Blackley
PO Box 729
NEWCASTLE NSW 2300

LAND:

442 ANAMBAH ROAD,ANAMBAH
LOT 22 DP1069012

DEVELOPMENT:

S96 (2) Modification to Amend Condition No.2 (Waste Definitions)

The application submitted on 13 April 2017 to modify **Development Application No. DA-15-433** pursuant to Section 96(2) of the Environmental Planning and Assessment Act, 1979, (as amended) has been modified in the manner and to the extent indicated in the Amended Schedule of Conditions as attached.

Those conditions which have been modified, existing conditions which have been deleted and new conditions which have been added are identified within the shaded boxes contained within the schedule.

Amended Consent Issued: 12 July 2017

Original Consent Endorsement Date: 11 October 2016

PER GENERAL MANAGER

This notice should be retained and read in conjunction with the original Notice of Determination issued on 11 October 2016 and Previous Section 96 Amendments dated 30 March, 2017. Please note the date of consent remains the original endorsement date, and that the consent lapses 5 years from this original endorsement date unless the conditions of consent specify a reduced period. Any reference in the Environmental Planning and Assessment Act, 1979 or any other Act to a development consent shall, in the case of this matter, be a reference to the original development consent as modified herein.

Right of Appeal:
If you are dissatisfied with this decision, section 96(6) of the Environmental Planning and Assessment Act, 1979 gives you the right to appeal to the Land and Environment Court.

Schedule of Conditions DA 15-433

(As amended by Section 96(2) dated 12 July, 2017)

Reason for Condition(s)

The following condition(s) have been applied to the development, subject of this consent, to ensure that the development meets the requirements of the NSW Environmental Planning and Assessment Act 1979, the NSW Environmental Planning and Assessment Regulation 2000, and the various policies and development controls of Maitland City Council and other government agencies relevant to the development being undertaken.

APPROVED PLANS AND DOCUMENTATION

1. The development shall be carried out in accordance with the stamped approved plans and documentation as detailed in the following schedule and any amendments arising through conditions to this consent or as shown in red colour on the plans:

Plan Ref No.	Sheet No.	Revn No.	Revision Date	Prepared by: (consultant)
1084_EIS_CDA_C003_V2_F3.cdr Contour Map with Aerial	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C004_V2_F4cdr Traffic Flow	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility	1 of 1	V4	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility Hunter Water Stamped Plan	1 of 1	A	16/02/2016	VGT Pty Ltd
1084_EIS_CDA_C006_V2_F6.cdr Processing Area	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C007_V2_F7.cdr Proposed Shed	1 of 1	V2	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C008_V2_F8.cdr Proposed slow speed shredder shed	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C015_V2_F91.cdr Detailed plan of proposed slow speed shredder shed	1 of 1	V0	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C009_V2_F10.cdr Compost Pad Windrows	1 of 1	V3	01/07/2015	VGT Pty Ltd
Documents	Sheet No	Revn No.	Revision Date	Prepared by: (consultant
Environmental Impact Statement In Vessel Composting Facility	-	-	July 2015	PCB Pty Ltd
Response to Submissions Report			April 2016	PCB Pty Ltd

LIMITS ON APPROVAL

2. The applicant shall ensure that this approved Composting facility does not:

(i) Process more than 40,000 tonnes per annum of the following materials:

a) Garden Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

b) Wood Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

c) Natural Organic Fibrous Materials as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

d) General Solid Waste non putrescible –paper and cardboard;

e) Process more than 8,000 tonnes derived from food waste - vegetables, fruit, brewery and distillery waste; and

(ii) No more than 24,000 tonnes of final produce per annum of fine compost.

Any increase or type of waste to be processed at this facility requires approval from Council and variation to the EPA licence.

Condition Amended 12 July 2017

SURRENDER OF CONSENT

3. DA 95- 163 for quarrying shall be surrendered to Council on full operation of Scenario 1 being 40,000 tonnes of waste being processed at the site or five (5) years from commencement of composting operations whichever occurs first.

CONTRIBUTIONS AND FEES

4. Pursuant to Section 80A(1) of the Environmental Planning and Assessment Act 1979, and the Maitland S94A Levy Contributions Plan 2006, a contribution of $17,000 shall be paid to the Council. The above amount may be adjusted at the time of the actual payment, in accordance with the provisions of the Maitland City Council S94A Levy Contributions Plan 2006.

Payment of the above amount shall apply to Development Applications as follows:

- *Building work only - prior to issue of the Construction Certificate.*
- *Subdivision and building work - prior to the issue of the Construction Certificate, or*
- *Subdivision Certificate, whichever occurs first.*
- *Where no construction certificate is required - prior to issue of an Occupation Certificate.*

The above "contribution" condition has been applied to ensure that:

i) Where the proposed development results in an increased demand for public amenities and services, payment towards the cost of providing these facilities/services is made in accordance with Council's adopted contributions plan prepared in accordance with the provisions of section 94A of the Environmental Planning and Assessment Act, 1979.

ii) Council's administration expenses are met with respect to the processing of the application.

WASTE SCREENING AND ACCEPTANCE

5. The Applicant must:

a) implement auditable procedures to:
   i) ensure that the site does not accept wastes that are prohibited; and
   ii) screen incoming waste loads; and

b) ensure that:
   i) all waste that are controlled under a tracking system have the appropriate documentation prior to acceptance at the site; and

ii) staff receive adequate training in order to be able to recognise and handle any hazardous or other prohibited waste.

CERTIFICATES

6. The applicant shall submit to Council a "Notice of Commencement" form at least two (2) days prior to the commencement of construction works.

7. **Prior to the commencement of works** an application for a Construction Certificate shall be submitted to, and be approved by, the Accredited Certifier.

8. **Prior to the issue of an Occupation Certificate** all conditions of development consent shall be complied with.

9. **Prior to commencement of any composting operations from the** site an Occupation Certificate shall be issued by the Principal Certifying Authority.

VEGETATION & LANDSCAPING

10. The recommendations of the Ecological Assessment Report prepared by Anderson Environment and Planning dated February 2015 shall be adhered to for this composting facility as follows:

    a. Ensuring protection of the northern and southern dams is considered important for general biodiversity. These areas offer suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur. Maintaining the existing drainage system regimes utilised by quarry operations would suffice;

    b. Ensuring protection of the surrounding areas of Lower Hunter Spotted Gum Ironbark Forest EEC vegetation. These areas provide suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur (tree flowering). Appropriate demarcation of no go areas should be applied during any construction activity;

    c. Appropriate erosion and sedimentation controls should be employed during any construction to limit movement of soils, and in particular into the above identified dam areas to maintain water quality;

    d. Consideration should be given to weed control within the wider site to address negative impacts associated with on going weed colonisation.

11. A Construction Certificate shall not be issued over any part of the site requiring a Controlled Activity Approval under the *Water Management Act 2000* until a copy of the approval has been provided to Council.

12. The development is to comply with the General Terms of Approval issued by NSW Department of Primary Industries – Water, File No. ERM 2013/0073 dated 14 July 2016 and included as an attachment to this schedule.

REHABILITATION PLAN

13. Prior to the Issue of the Construction Certificate, the proponent shall prepare and implement an updated Rehabilitation Plan for the site taking into consideration both the composting and quarrying operations on site and be submitted to Council for approval. This plan must be:

a. Be prepared in consultation with EPA, Department of Primary Industries (Water) and Council by a suitably qualified and experienced expert;
b. Define the objectives and criteria for rehabilitation;
c. Describe the measures and timing that would be implemented to achieve the specified objectives and criteria for rehabilitation;
d. Describe the performance of these measures would be monitored over time.

BUSHFIRE

14. The following bushfire mitigation measures shall be implemented and details provide to the certifying authority prior to issue of a construction certificate:

- A minimum 20m Asset Protection Zone shall be created around any buildings and combustible material stock-piles on site and shall be maintained as fuel free area as detailed in Appendix 2 of Planning for Bushfire Protection 2006;
- Construct any buildings to comply with Level 3 specifications in AS3959 -Construction of Buildings in Bushfire Prone Areas;
- Provision of suitable on site fire access trails to connect with access road off Anambah Road that satisfy Planning for Bushfire Protection 2006;
- Provision of appropriate water storage tanks, fire fighting pump with 25mm hose (fitted with a suitable spray nozzle),hose reels of suitable length and so that it can circulate any proposed building or stockpiles on site and the water tanker shall remain full at all times; and
- Preparation of an evacuation plan prior to composting operations commencing on site.

VISUAL AMENITY

15. Any buildings or structure on site shall be of non reflective and colours of materials and finishes shall blend with the surrounding rural locality and details provided to the certifying authority prior to the issue of a construction certificate

LIGHTING

16. All external lighting associated with the development shall be mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadways. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.

HOURS OF OPERATION

17. The hours of operation of the composting facility shall be confined to within the following times:

Monday to Friday	7.00am to 5.00pm
Saturday	7.00am to 5.00pm

No operations permitted on Sunday and Public Holidays

NOISE

18. Concurrent quarrying and composting operations shall only be undertaken during neutral (i.e. no wind) weather conditions

19. Prior to any composting operations commencing on site the proponent must prepare a Noise Management Plan that includes, but is not limited to:

a) Key performance indicators;
b) Monitoring method;
c) Location, frequency and duration of monitoring;
d) Record keeping
e) Complaint handling system;
f) Response mechanisms; and
g) Compliance reporting.

A copy of this Plan shall be submitted to and approved by Council prior to any composting commencing on site.

ODOUR

20. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for the composting facility in accordance with the EPA licence for any odour event shall be submitted to and approved by Council.

DUST MANAGEMENT

21. During construction and operations, the proponent shall ensure that:

a) All vehicles on site do not exceed a speed limit of 30 kilometres per hour;
b) All loaded vehicles entering or leaving the site and around the site have their loads covered; and
c) All loaded vehicles leaving the site are cleaned of dirt, sand and other materials before they leave the site, to avoid tracking these materials on public roads.

22. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for this composting facility in accordance with the EPA licence for any dust event shall be submitted to and approved by Council.

SOIL, WATER AND LEACHATE

Leachate Management and Collection System

23. No waste is permitted to be disposed of or received at the site until the applicant has constructed the leachate management and collection system to the satisfaction of the EPA and details provided to Council.

Stormwater Management

24. Prior to issue of the Construction Certificate a stormwater management system incorporating the requirements of the Stormwater Management scheme plan shall be submitted to Council for approval and be in accordance with any EPA requirements.

25. Prior to operation of the development all stormwater drainage works and associated infrastructure facilities, shall be provided in accordance with this consent and any EPA licensing requirements.

26. Discharge of any stormwater from the subject site shall meet the water quality requirements of the Soil and Water Management Plan and any state authority licensing requirements.

BUNDING

27. The Applicant shall store all chemicals, fuels and oils used on-site in appropriately bunded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's Storing and Handling Liquids: Environmental Protection – Participants Handbook.

ROAD WORKS

28. Road construction of all intersection works, together with all necessary stormwater drainage and ancillary infrastructure facilities, shall be provided in accordance with Councils Manual of Engineering Standards and the following:

- An access intersection type treatment shall be provided within Anambah Road at the junction of the existing site access in accordance with SD031 and Councils Manual of Engineering Standards. Provide swept paths demonstrating that the maximum design vehicle does not cross the Anambah Road centreline.
- No entry features or signage shall be located within the road reserve. (i.e. removal of the concrete pillars is required)
- Truck turning signs W5-22, W5-205 and W8-207 shall be installed in accordance with RMS Traffic Control Plan 195 and maintained and replaced at no cost to council on each approach direction along Anambah Road

CIVIL WORKS – CERTIFICATION

29. Prior to commencement of works within Anambah Road:

- an engineering design, in accordance with Council's Manual Of Engineering Standards, shall be submitted to Council for approval;
- consent under the Roads Act for the approved works, shall be issued by Council;
- all relevant Council fees shall be paid;
- a traffic control plan in accordance with the RTA publication "Traffic Control at Worksites" shall be submitted to, and be approved by, Council.

30. Prior to operation of the development, all works associated with the Roads Act Approval shall be carried out to the satisfaction of the roads authority in accordance with this consent and Council's Manual of Engineering Standards.

OPERATIONAL EVIRONMENTAL MANAGEMENT PLAN

31. The proponent shall prepare and implement an Operational Environmental Management Plan for the project taking include consideration EPA requirements. This plan must:
    a. be prepared in consultation with Council and the EPA by a suitably qualified and experienced expert;
    b. be submitted to and approved by Council prior to commencement of operations;
    c. describe in detail the management measures that would be implemented to address: relevant matters referred to in Section 4 and Appendix B of the EPA'S *Environmental Guidelines for Composting & Related Organics Processing Facilities*; and conditions of consent;
    d. include a copy of:
        - management plans and monitoring programs required in this approval;
        - a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2;
    e. describe the procedures that would be implemented to:
        - keep the local community and relevant agencies informed about the operation and environmental performance of the composting facility;
        - receive, handle, respond to, and record complaints;
        - resolve any disputes that may arise during the course of the composting facility;
    f. respond to emergencies; describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of this composting facility;.
    g. details of an Annual Environment Management Report being an annual audit of operations outlining but not limited to:
        - summary of any monitoring of odour, dust, noise runoff, etc. in the past year;
        - an analysis of monitoring results against relevant:
            - impact assessment criteria;
            - monitoring from previous years;
            - predictions in the EIS;
        - performance measures;
        - complaints and any handling of complaints;
        - any actions to ensure compliance of relevant criteria within the EIS.

GREENHOUSE GAS

32. The proponent must ensure that all composting is undertaken in accordance with *Australian Standard AS 4454-2003: Composts, Soil Conditioners and Mulches,* Appendix N Best practice guidelines for Composting Systems, or other practices approved by the EPA.

EROSION CONTROLS

33. An erosion and sediment plan must be submitted to and approved by the certifying authority prior to issue of any construction certificate including:

    a) being consistent with the requirements of the latest version of Managing Urban Stormwater: Soils and Construction (Landcom);
    b) identify the activities on site that could cause soil erosion and generate sediment;
    c) describe what measures would be implemented to:
        - minimise soil erosion and the transport of sediment to downstream waters, including location, function and capacity of any erosion and sediment control structures; and
        - maintain these structures over time.

BUILDING CONSTRUCTION

34. All building work shall be carried out in accordance with the provisions of the Building Code of Australia.

35. All excavations and backfilling shall be executed safely, in accordance with appropriate professional standards and shall be properly guarded and protected to prevent the works from being dangerous to life or property.

36. Unless otherwise approved by Council in writing, all general building work shall be carried out between the hours of:

    a. 7.00am to 6.00pm Monday to Friday

    b. 7.00am to 1.00pm Saturday

    No work shall be performed on Sunday's or Public Holidays.

SERVICES & EQUIPMENT

37. Upon completion of the building BUT prior to its occupation, a Final Fire Safety Certificate with respect to each critical and essential fire safety measure installed in the building shall be submitted to Council. Such certificates shall be prepared in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation, 2000.

38. A copy of the Fire Safety Schedule and Fire Safety Certificate shall be prominently displayed in the building in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation 2000.

39. A Fire Safety Statement in respect of each required essential and/or critical fire safety measure installed within the building shall be submitted to Council and the NSW Fire Commissioner annually (or at a more frequent interval for supplementary statements).

    Statements shall be prepared and issued in accordance with Division 5 of Part 9 of the Environmental Planning and Assessment Regulation, 2000. Note that monetary penalties may apply for failure to lodge a fire safety statement within the prescribed timeframe.

    Statements to the NSW Fire Commissioner are to be submitted electronically to afss@fire.nsw.gov.au.

    Standard forms and further information for lodging Fire Safety Statements may be downloaded from Councils website.

SITE CONSIDERATIONS

40. All excavated and/or filled areas are to be retained or battered and suitably drained so as to prevent any subsidence of the area and constructed so as to deny any flow of water into or around the building or neighbouring buildings or onto neighbouring land.

    Where a retaining wall is planned for this purpose and such wall requires consent (refer to State Environmental Planning Policy -Exempt and Complying Development Codes, 2008) plans and specifications of the wall shall be approved by Council and/or an accredited certifier.

    Note: The submission of a separate Development Application is not required for a retaining wall associated with this approval and indicated on the approved plans.

41. Rubbish generated from the development is to be suitably contained on site at all times. No rubbish shall be stockpiled in a manner which facilitates the rubbish to be blown off site.

42. Approved toilet facilities are to be provided, at or in the vicinity of the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. The provision of toilet facilities in accordance with this Clause must be completed before any other work is commenced.

43. The site is to be cleared of all building refuse and spoil immediately after completion of the building/structure.

44. Suitable and adequate measures are to be applied to restrict public access to the site and building works, materials and equipment.

OPERATION OF PLANT AND EQUIPMENT

45. The proponent shall ensure that all plant and equipment used on site is:
    a) maintained in a proper and efficient condition; and
    b) operated in a proper and efficient manner.

SECURITY FENCING

46. The proponent shall
    a) install and maintain a perimeter stock fence and security gates on site; and
    b) ensure that the security gates on site are locked whenever the site is unattended.

    Suitable fencing shall be installed prior to any composting operations commencing on site.

CONSOLIDATION OF LOTS

47. Prior to any composting operations commencing on site Lot 22 DP 1069012 shall be consolidated with Lot 1 DP 862654 and details of registration with Land Title office shall be provided to Council.

ENVIRONMENTAL PROTECTION AUTHORITY

48. The proposed development is to comply with the General Terms of Approval issued by NSW EPA Notice No. 1536955 dated 21 January 2016 and included as an attachment to this schedule

ADVICES

A. The development is located within an area of recognised bushfire risk. It is recommended that relevant publications be obtained from NSW Rural Fire Service to minimise the bushfire risk to property. Further information is also available on their website www.rfs.nsw.gov.au.

B. You are advised that in regard to potential soil erosion from the construction site, such pollution of the environment is an offence under the Protection of the Environment & Operations (POEO) Act and may incur infringement fines.

General Terms of Approval

for work requiring a controlled activity approval under s91 of the *Water Management Act 2000*

Number	Condition	File No: ERM2013/0073
Site Address:	Lot 22 Anambah Road, Gosforth	
DA Number:	DA15-433	
LGA:	Maitland City Council	
Plans, standards and guidelines		
1	These General Terms of Approval (GTA) only apply to the activities described in the plans and associated documentation relating to DA15-433 and provided by Council: (i) Environmental Impact Statement, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, September 2015, prepared by Pulver Cooper and Blackley Pty Ltd. (ii) Response to submissions report, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by Pulver Cooper and Blackley Pty Ltd. (iii) Hydrological impact assessment, Response to request for additional information, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by OD Hydrology (iv) Surface water and groundwater assessment, Composting facility, September 2015, prepared by OD Hydrology Pty Ltd. (v) Soil and water management plan, Riverbend Quarry, January 2015, prepared by VGT Pty Ltd. (vi) Rehabilitation Plan, Northern Section, Gosforth quarries, May 2015, prepared by Advitech Pty Ltd. Any amendments or modifications to the proposed activities may render these GTA invalid. If the proposed activities are amended or modified DPI Water (formerly the NSW Office of Water) must be notified to determine if any variations to these GTA will be required.	
2	Prior to the commencement of any controlled activity (works) on waterfront land, the consent holder must obtain a Controlled Activity Approval (CAA) under the Water Management Act from DPI Water. Waterfront land for the purposes of this DA is land and material in or within 40 metres of the top of the bank or shore of the river identified.	
3	The consent holder must prepare or commission the preparation of: (i) Updated Rehabilitation Plan (ii) Vegetation Management Plan (iii) Works Schedule (iv) Erosion and Sediment Control Plan (v) Soil and Water Management Plan	
4	All plans must be prepared by a suitably qualified person and submitted to the DPI Water for approval prior to any controlled activity commencing. Plans must be prepared in accordance with DPI Water's guidelines located at www.water.nsw.gov.au/ Water-Licensing/Approvals.	
5	The consent holder must (i) carry out any controlled activity in accordance with approved plans and (ii) construct and/or implement any controlled activity by or under the direct supervision of a suitably qualified professional and (iii) when required, provide a certificate of completion to DPI Water.	
Rehabilitation and maintenance		

6	The consent holder must carry out a maintenance period of two (2) years after practical completion of all controlled activities, rehabilitation and vegetation management in accordance with a plan approved by the DPI Water.
7	The consent holder must reinstate waterfront land affected by the carrying out of any controlled activity in accordance with a plan or design approved by the DPI Water.
Reporting requirements	
8	The consent holder must use a suitably qualified person to monitor the progress, completion, performance of works, rehabilitation and maintenance and report to DPI Water as required.
Bridge, causeway, culverts, and crossing	
9	The consent holder must ensure that the construction of any bridge, causeway, culvert or crossing does not result in erosion, obstruction of flow, destabilisation or damage to the bed or banks of the river or waterfront land, other than in accordance with a plan approved by DPI Water.
Disposal	
10	The consent holder must ensure that no materials or cleared vegetation that may (i) obstruct flow, (ii) wash into the water body, or (iii) cause damage to river banks; are left on waterfront land other than in accordance with a plan approved by DPI Water.
Drainage and Stormwater	
11	The consent holder is to ensure that all drainage works (i) capture and convey runoffs, discharges and flood flows to low flow water level in accordance with a plan approved by DPI Water; and (ii) do not obstruct the flow of water other than in accordance with a plan approved by DPI Water.
12	The consent holder must stabilise drain discharge points to prevent erosion in accordance with a plan approved by DPI Water.
Erosion control	
13	The consent holder must establish all erosion and sediment control works and water diversion structures in accordance with a plan approved by DPI Water. These works and structures must be inspected and maintained throughout the working period and must not be removed until the site has been fully stabilised.
Excavation	
14	The consent holder must ensure that no excavation is undertaken on waterfront land other than in accordance with a plan approved by DPI Water.
15	The consent holder must ensure that any excavation does not result in (i) diversion of any river (ii) bed or bank instability or (iii) damage to native vegetation within the area where a controlled activity has been authorised, other than in accordance with a plan approved by DPI Water.
Maintaining river	
16	The consent holder must establish a riparian corridor along any waterfront land on the project site in accordance with a plan approved by DPI Water.
Groundwater	
17	The consent holder must ensure that any excavation below ground level is appropriately licensed and does not result in the need for dewatering, other than in accordance with a licence issued by DPI Water.
END OF CONDITIONS	

Attachment B – EPA General Terms of Approval

Environmental Planning and Assessment Act 1979

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

The EPA varies GTA conditions as follows:

Current GTA condition

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below any waste received at the premises is subject ot those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	*Garden Waste*	*As defined in Schedule 1 of the POEO Act as in force from time to time.*	*Composting* *Waste Storage*	*no more than 40,000 tonnes per annum.*

The EPA's assessment of the proposal has been undertaken on the basis of the facility processing wastes as listed above and does not include provisions for the acceptance of food waste. In the event food waste or other waste types are proposed to be accepted and processed at the facility, additional assessment of environmental impacts will be required to be undertaken prior to the processing of that waste.

Modified Condition now states

Waste

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	Garden Waste	As defined in Schedule 1 of the POEO Act as in force from time to time.	Composting Waste Storage	No more than 40,000 tonnes per annum in total, with no more than 8,000 tonnes being derived from Food Waste.
	Woodwaste	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	Natural Organic Fiborous Materials	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	General Solid Waste non-putrescible	Paper and Cardboard		
	Food Waste	Vegetables, Fruit and Winery, Brewery and Distillery Waste		

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

Current GTA condition

Odour

No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

The Proponent shall ensure the development does not cause or permit the emission of any offensive odour (as defined by the POEO Act).

The Proponent shall develop an odour management plan which outlines the process of how odour complaints will be investigated and managed.

The facility shall be run in a proper and efficient manner consistent with the processes described within the Environmental Impact Statement. This includes, but is not limited to:

- *regular turning of material in a controlled and efficient manner within concrete bays*
- *immediate covering of all newly formed and turned windrows.*
- *aeration of on-site leachate storage*
- *maintain an odour complaint logbook and in the event of a complain conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken.*
- *avoid or minimise handling of material during poor air dispersion conditions.*

Modified Condition now states

1. No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the *Protection of the Environment Operations Act* 1997. Note: Section 129 of the *Protection of the Environment Operations Act* 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

2. The facility shall be run in a proper and efficient manner. This includes, but is not limited to:
   - All waste processing, including waste receipt and shredding, must be undertaken within an enclosed building;
   - Regular turning of material in a controlled and efficient manner within covered concrete bays;
   - Covered concrete bays must have aeration;
   - Aeration of on-site leachate storage;
   - Maintain an odour complaint logbook. In the event of a complaint, conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken; and
   - Avoid or minimise handling of material during poor dispersion conditions.

Current GTA condition

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- *Key performance indicator(s);*
- *Monitoring method(s);*
- *Location, frequency and duration of monitoring;*
- *Record keeping;*

- *Response mechanisms; and*
- *Compliance reporting.*

The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Modified Condition now states

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- Key performance indicator(s);
- Monitoring method(s);
- Location, frequency and duration of monitoring;
- Record keeping, including complaints records;
- Response mechanisms; and
- Compliance reporting.

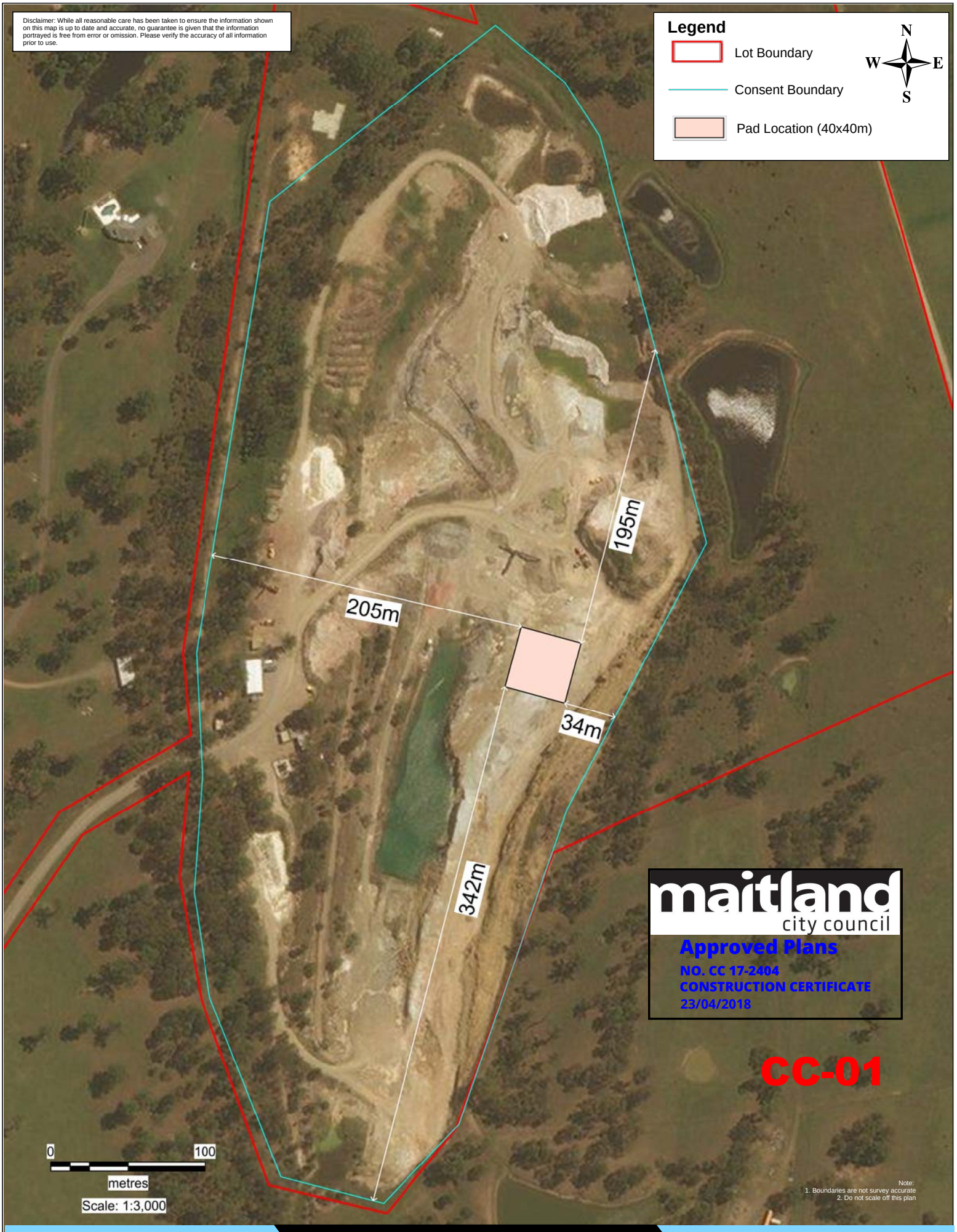
The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Additional Condition

For the life of the composting operations, the Proponent shall ensure that there is a meteorological station in the vicinity of the premises that complies with the requirements in the EPA document *'Approved Methods for Sampling of Air Pollutants in New South Wales'*.

Condition Amended 12 July 2017

Appendix B – Approved Plans



AEP

Title: Pad Location

Date: 8.3.18

Location: Anambah

Client: Riverbend Quarry

Our Ref: 1348

Plan of:	Riverbend Quarry EIS Compost DA - Proposed Compost Facility
Figure:	FIVE
Sheet:	1 of 1
Version/Date:	A 16/02/2015

maitland city council
Approved Plans
NO. DA 15-433
DEVELOPMENT APPLICATION
11/10/2016

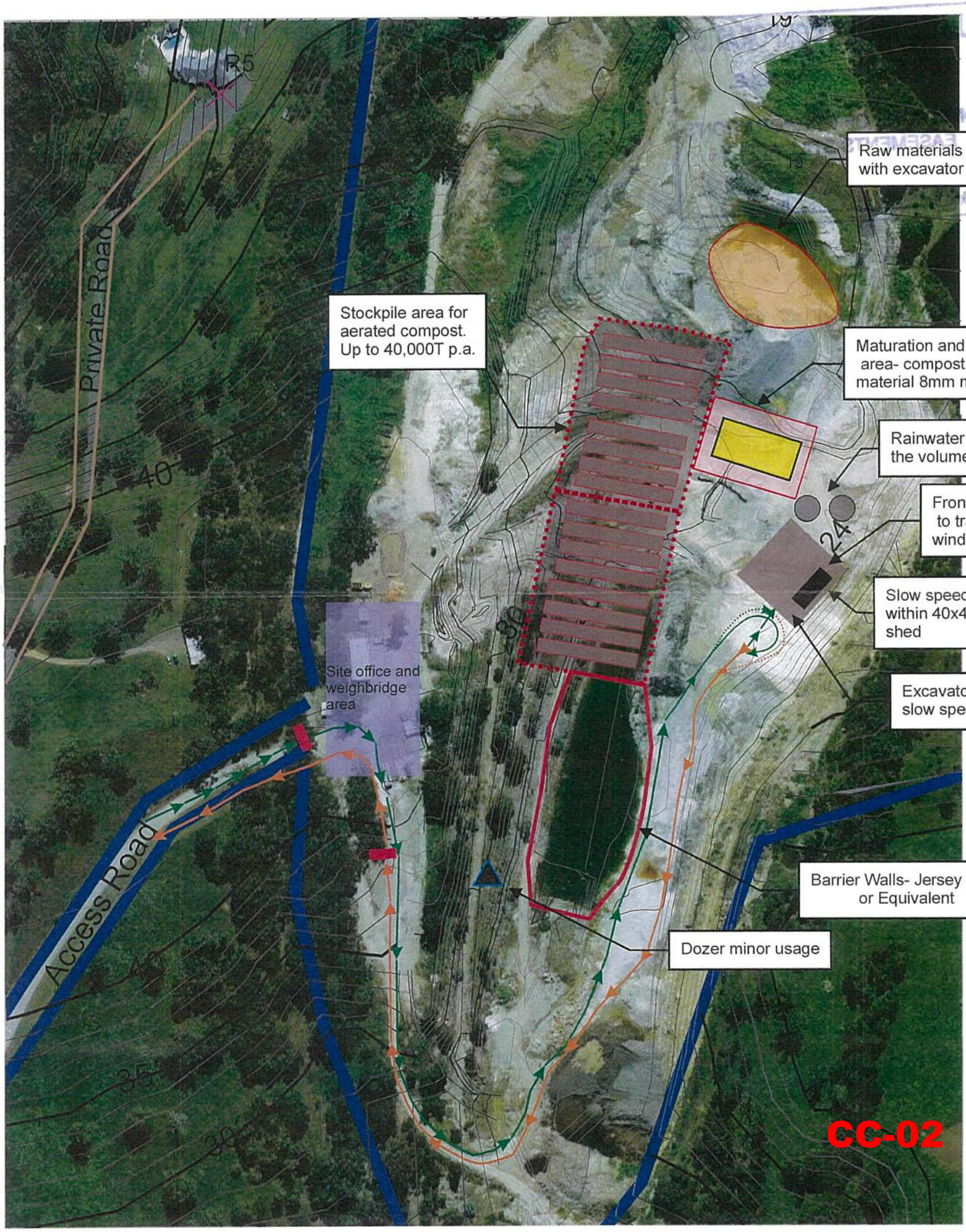
maitland city council
Approved Plans
NO. CC 17-2404
CONSTRUCTION CERTIFICATE
23/04/2018

vgt

N

Scale: 0 20 40 60 80m

Location:	Gosforth	**Source:**	VGT Pty Ltd	**Our Ref:**	V:1084_EIS_CDA_C005_R3_F5.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	1 metre	**Office:**	Thornton



Legend					
→	Ingress to site		Shed for slow speed shredder and rain tanks		Property Boundary
→	Egress from site		Traffic signal lights		Weighbridge and site office
	Concrete base for composting		Windrows to be covered with tarp		Private Road

VGT Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 fax: (02) 4028 6413 email: mail@vgt.com.au www.vgt.com.au ABN: 79 103 636 353

Plan of:	Riverbend Quarry EIS Compost DA - Proposed Compost Facility
Figure:	FIVE
Sheet:	1 of 1
Version/Date:	V4 01/07/2015

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

maitland city council
Approved Plans
NO. DA 15-433
DEVELOPMENT APPLICATION
11/10/2016

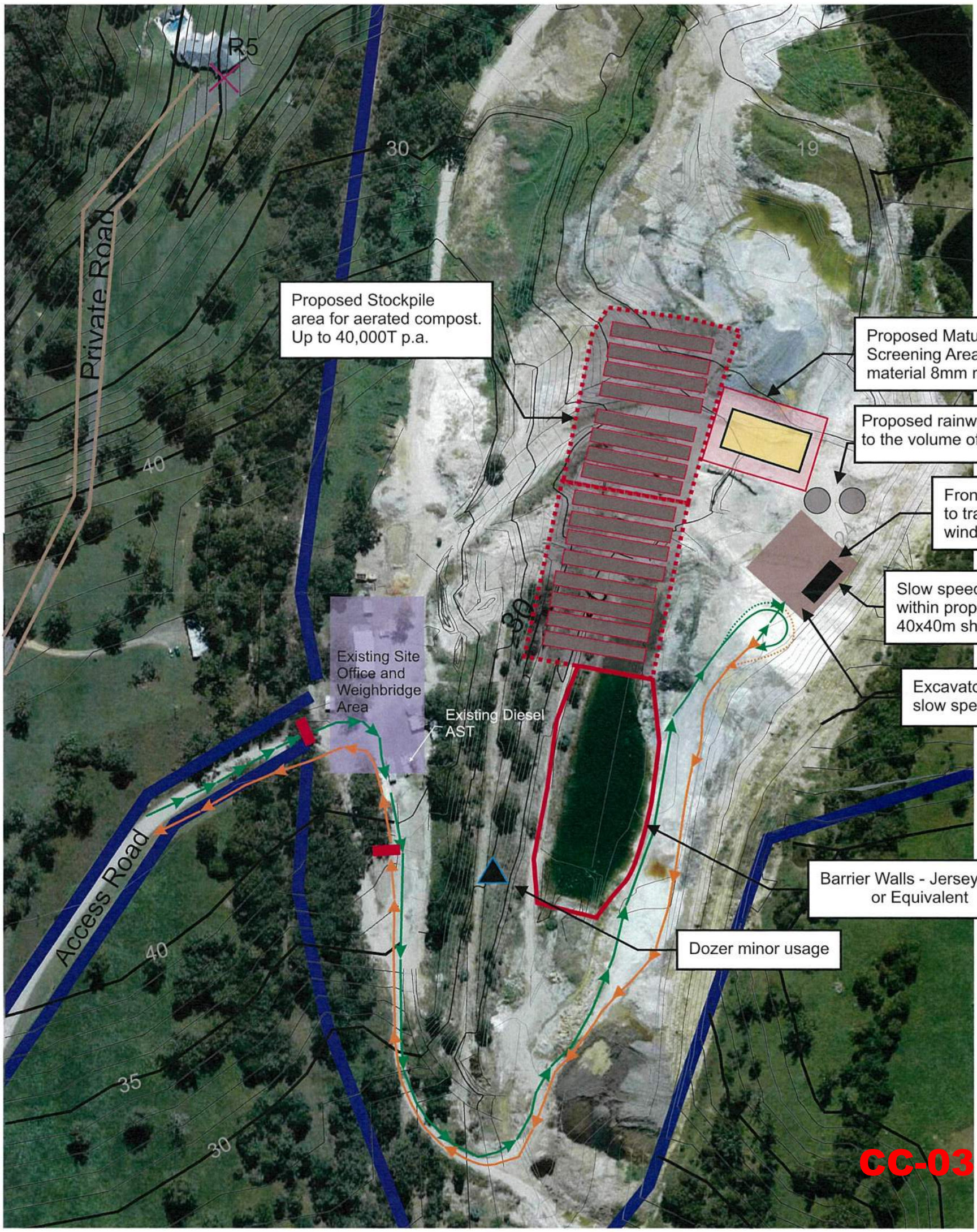
vgt Environmental Compliance Solutions

N

Scale: 0 20 40 60 80m

Location:	863 Anambah Road, Gosforth, NSW	**Source:**	VGT Pty Ltd	**Our Ref:**	1084_EIS_CDA_C005_V4_F5.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO/JD
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	1m	**Office:**	Thornton

maitland city council
Approved Plans
NO. CC 17-2404
CONSTRUCTION CERTIFICATE
23/04/2018

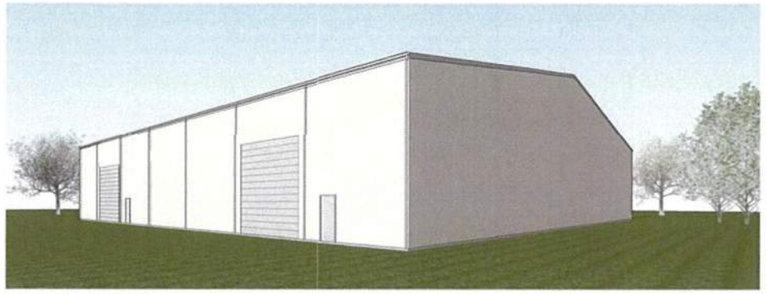


Legend					
→	Ingress to Site		Shed for Slow Speed Shredder and Rain Tanks		Property Boundary
→	Egress from Site		Traffic Signal Lights		Weighbridge and Site Office
▭	Concrete Base for Composting		Windrows to be Covered with Tarp		Private Road

VGT Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 fax: (02) 4028 6413 email: mail@vgt.com.au www.vgt.com.au ABN: 79 103 636 353

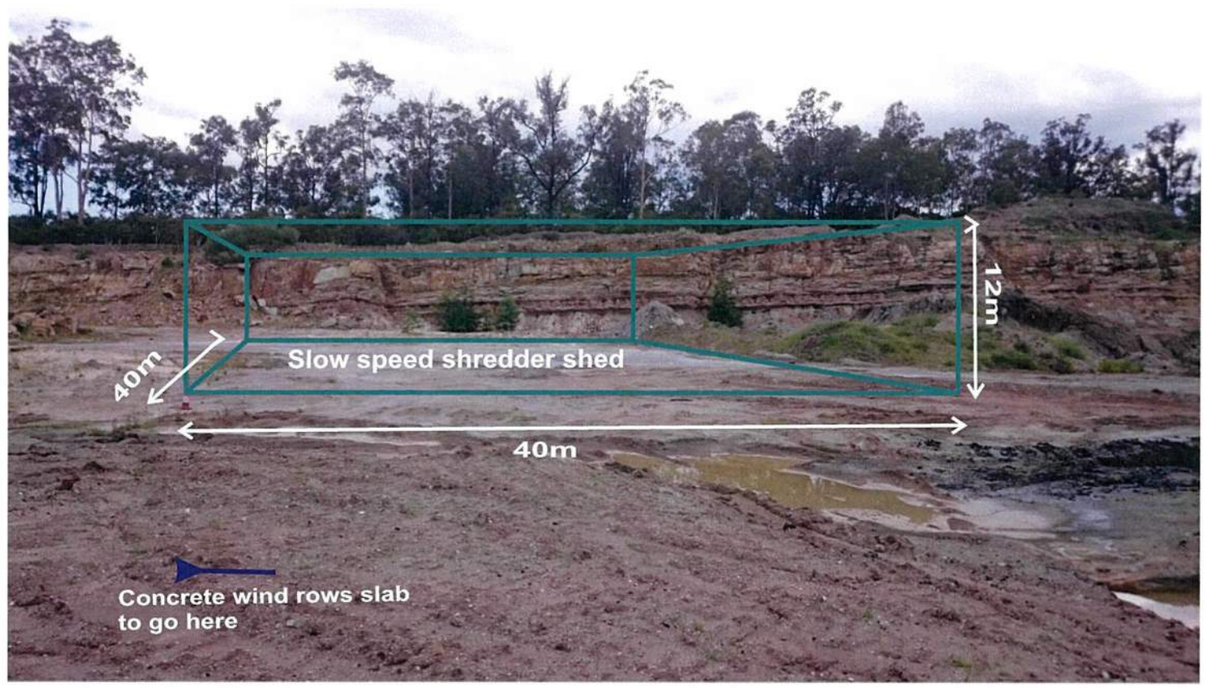
Plan of:	Riverbend Quarry EIS Compost DA - Proposed Shed	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	VGT Pty Ltd, PCB	***Our Ref:***	1084_EIS_CDA_C007_V2_F7.cdr
Figure:	SEVEN	***Council:***	Maitland City Council	***Survey:***	N/A	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Licence No. 12510	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V2 02/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

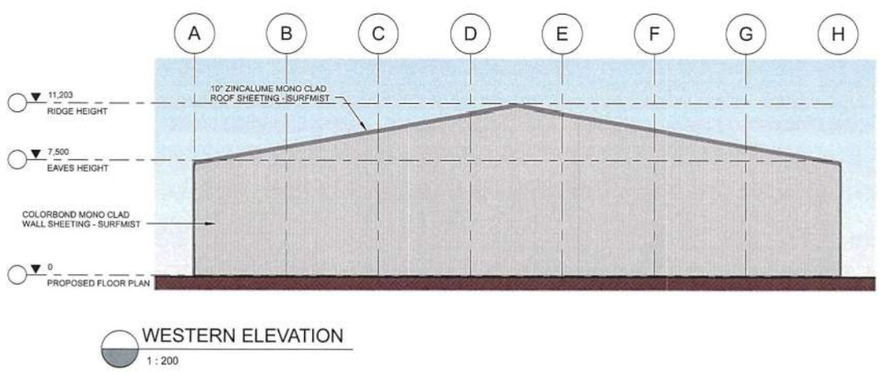
vgt
Environmental Compliance Solutions



Area for Shed and Slow Speed Shredder

Proposed Shed Location





WESTERN ELEVATION
1 : 200

maitland city council
Approved Plans
NO. DA 15-433
DEVELOPMENT APPLICATION
11/10/2016

maitland city council
Approved Plans
NO. CC 17-2404
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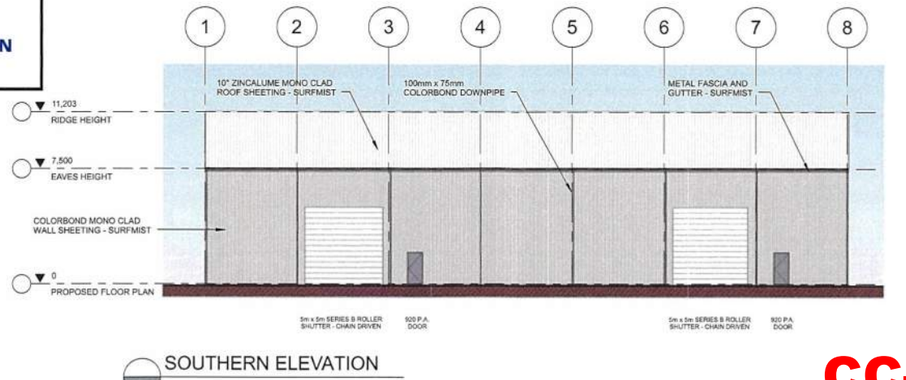

SOUTHERN ELEVATION
1 : 200

CC-04

Plan of:	Riverbend Quarry EIS Compost DA - Proposed Slow Speed Shredder Shed
Figure:	EIGHT
Sheet:	1 of 1
Version/Date:	V3 02/07/2015

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

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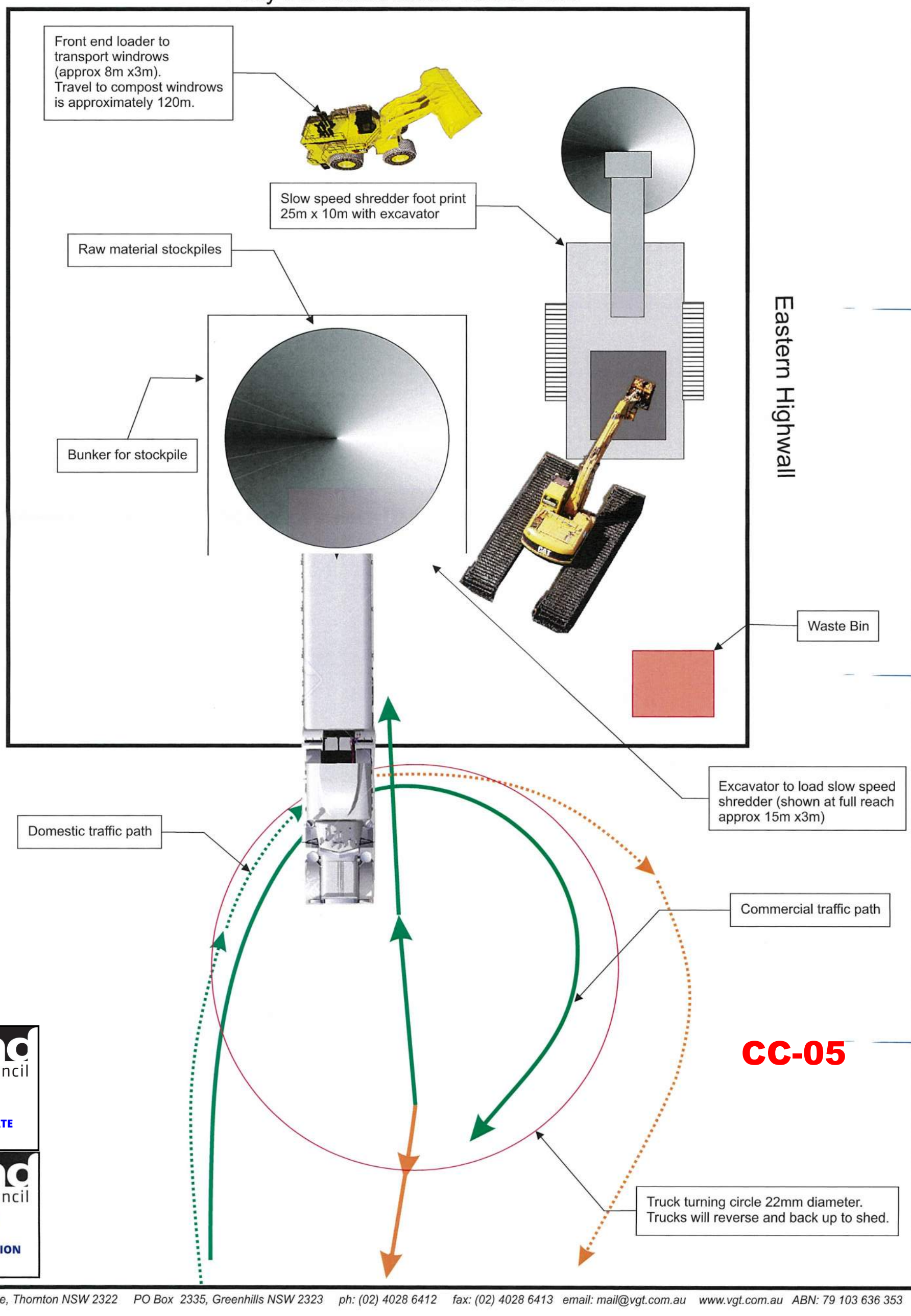
Not to Scale

Location:	Gosforth	**Source:**	VGT Pty Ltd	**Our Ref:**	1084_EIS_CDA_C008_V3_F8.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO/JD
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	N/A	**Office:**	Thornton

Fully Enclosed Shed 40m x 40m



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11/10/2016

CC-05

Plan of:	Riverbend Quarry EIS Compost DA - Detailed Plan of Proposed Slow Speed Shredder Shed	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	PCB and The Williams River Steel 08/04/2015	***Our Ref:***	1084_EIS_CDA_C015_V0_F91.cdr
Figure:	NINE	***Council:***	Maitland City Council	***Survey:***	N/A	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Licence No. 12510	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V0 02/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

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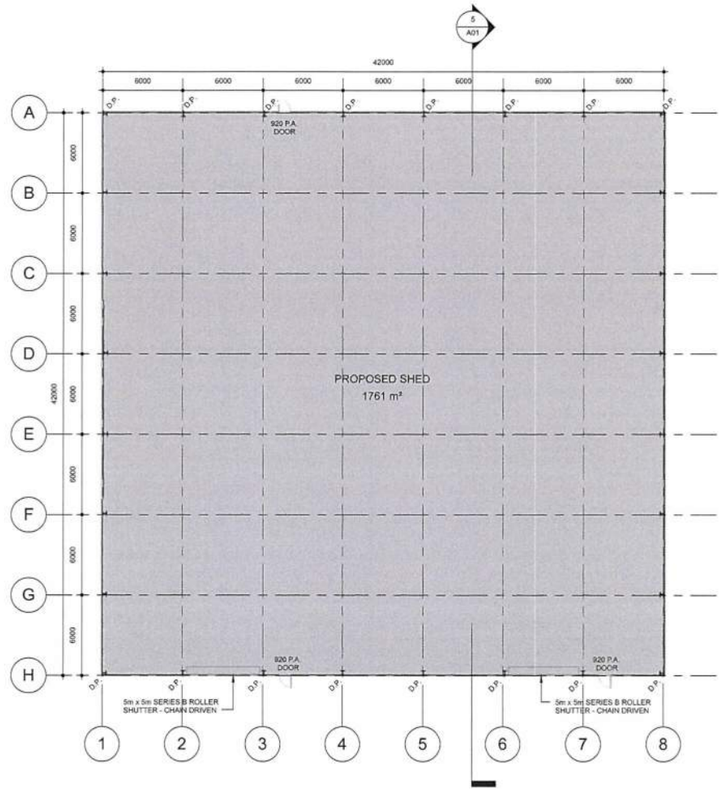
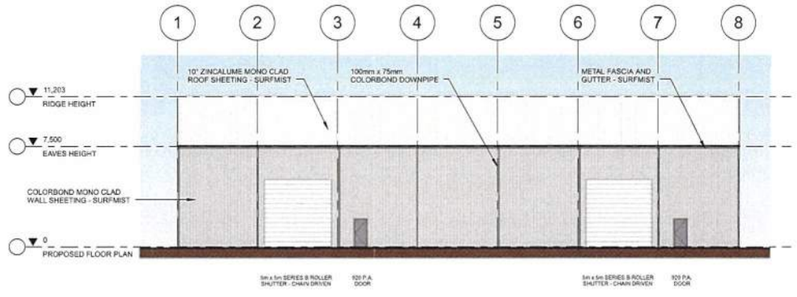
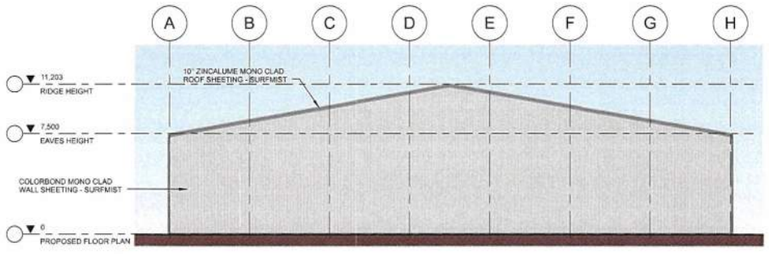


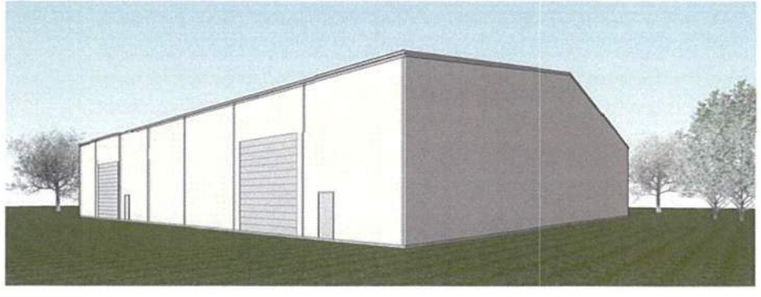
PROPOSED FLOOR PLAN
1 : 200

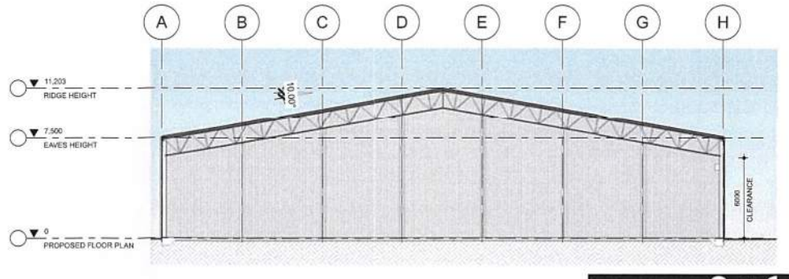


SOUTHERN ELEVATION
1 : 200



WESTERN ELEVATION
1 : 200





SECTION A-A
1 : 200

CC-06

ISSUE	DESCRIPTION	DATE
1	CONCEPT FOR REVIEW	08/04/2015

The WILLIAMS RIVER STEEL GROUP OF COMPANIES
There is a Difference
25 OLD PUNT ROAD, TOMAGO, NSW 2323
PHONE: 02 49852000 EMAIL: wrsteel@wrsteel.com.au
FAX: 02 49852099 WEB: www.wrsteel.com.au
AUSTRALIA WIDE: 1300 263 121 WEB: www.precastpanels.com.au

PROPOSED BUILDING

RIVERBEND QUARRY, 863 ANAMBAH ROAD, GOSFORTH, NSW, 2320

RIVERBEND QUARRY

CONCEPT

FLOOR PLAN

DRAWN:	ST	CHECKED:	RF
JOB No: JN612598	DATE: 08/04/2015	SCALE:	1:100
PAGE SIZE: A1	SHEET: A01	ISSUE:	1

INDUSTRIAL • COMMERCIAL • PRE - CAST PANEL

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Plan of:	Riverbend Quarry EIS Compost DA - Processing Area
Figure:	SIX
Sheet:	1 of 1
Version/Date:	V3 02/07/2015

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

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N

Scale: 0 10 20m

Location:	863 Anambah Road, Gosforth, NSW	**Source:**	VGT Pty Ltd	**Our Ref:**	1084_EIS_CDA_C006_V3_F6.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO/JD
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	1m	**Office:**	Thornton

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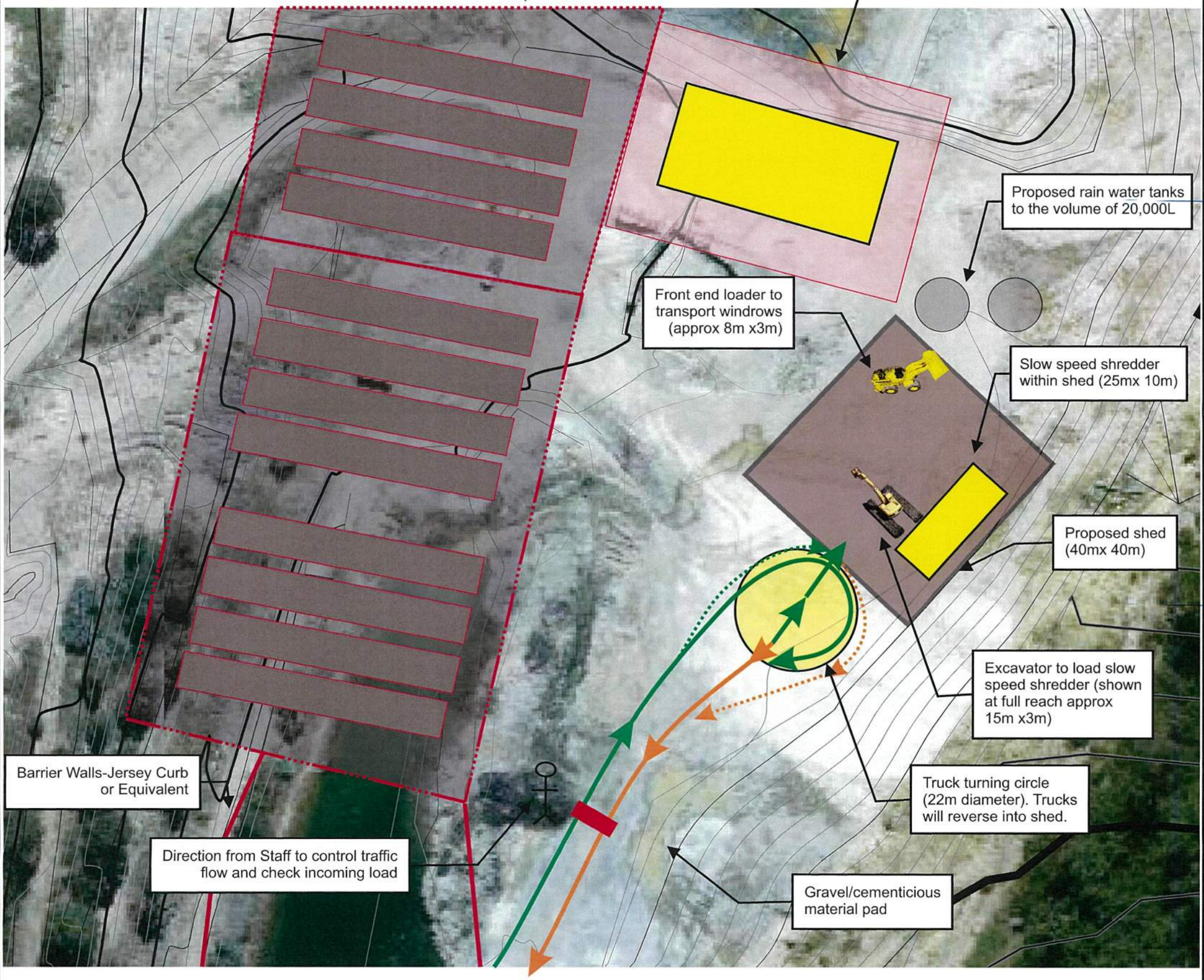
Proposed stockpile area for aerated compost. Up to 40,000Tpa.

Proposed Screening/Maturation Area- compost material 8mm minus



CC-07

Legend					
→	Commercial Ingress to Site	⇢	Domestic Ingress to Site		Gravel/Cementicious Material Pad
→	Commercial Egress from Site	⇢	Domestic Egress from Site		Screening/Maturation Pad
	Traffic Signal Lights		Concrete Base for Composting		Shed to Hold Slow Speed Shredder within

Plan of:	Riverbend Quarry EIS Compost DA - Compost Pad Windrows	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	VGT Pty Ltd	***Our Ref:***	1084_EIS_CDA_C009_V3_F10.cdr
Figure:	TEN	***Council:***	Maitland City Council	***Survey:***	N/A	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Licence No. 12510	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V3 01/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

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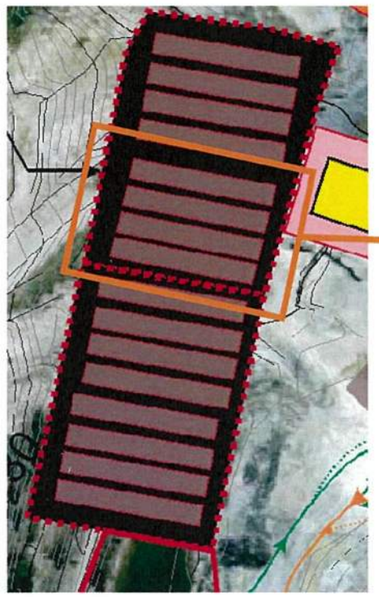
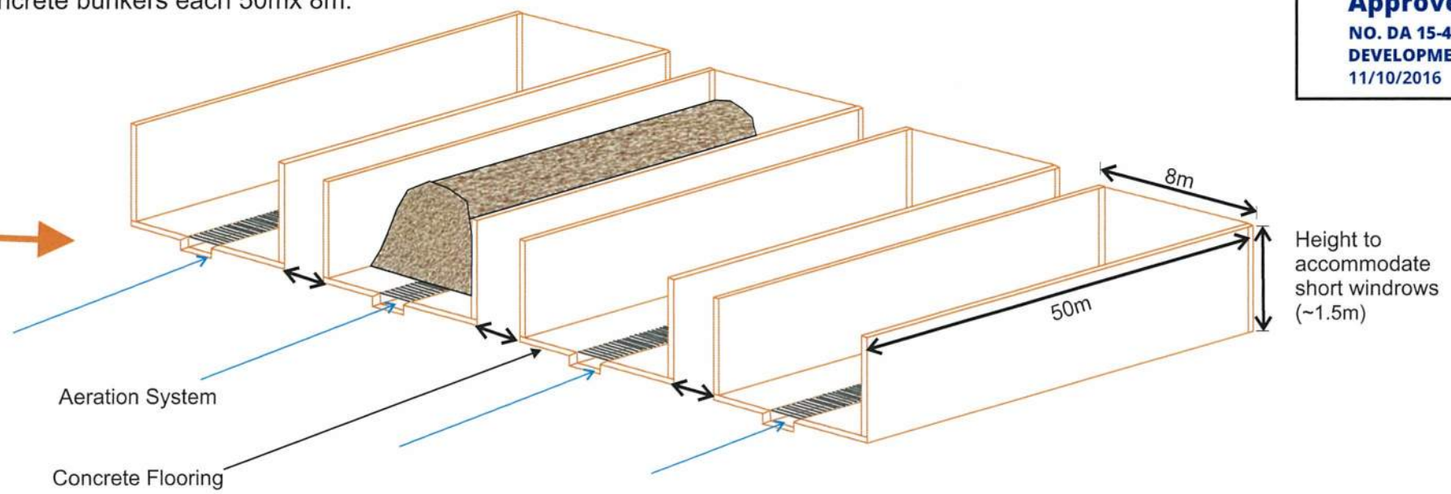
Concrete area to hold windrows.

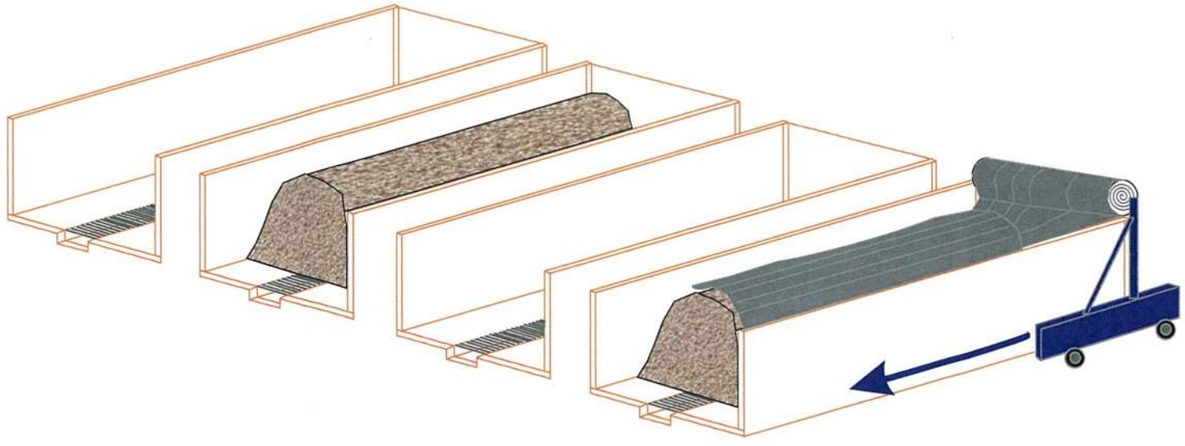


Note:
Not to scale.
Approx 8 concrete bunkers each 50mx 8m.



Windrows are to be enclosed with barriers and tarp to be pulled over similarly to this system. Windrows will be approximately 1-1.5m tall.

Tarps trap odour and minimise the need for turning. In combination with aeration that occurs at base of the windrow.



CC-08

Plan of:	Riverbend Quarry EIS Compost DA - Contour Map with Aerial	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	PCB Survey	***Our Ref:***	1084_EIS_CDA_C003_V2_F3.cdr
Figure:	THREE	***Council:***	Maitland City Council	***Survey:***	2014	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Licence No. 12510	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V2 01/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

N

0 50 100 150 200m

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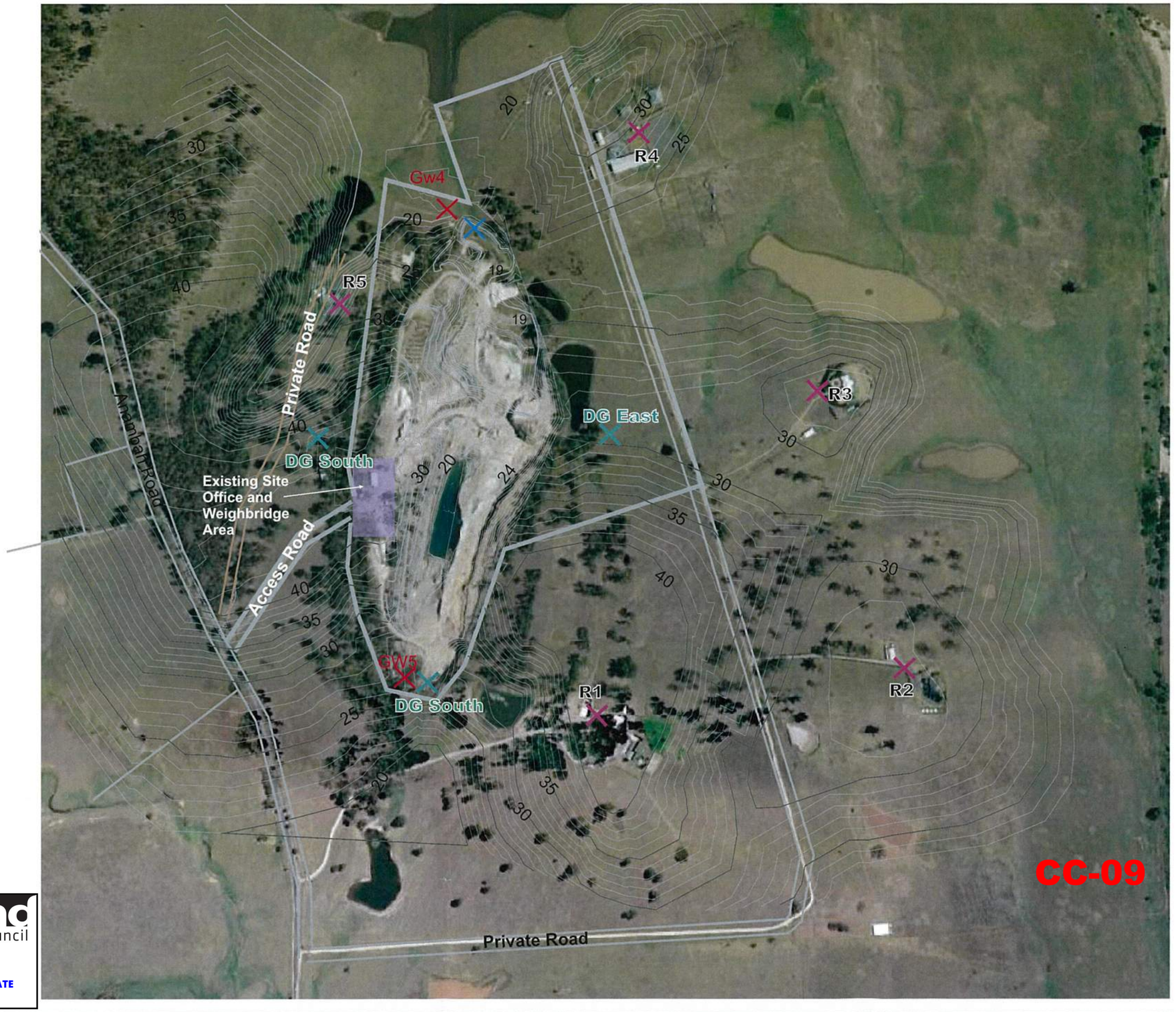
Key	
	Survey by PCB
	Interpolated survey by VGT from 1:25,000 Topography Maitland & Greta maps.
	Dust Monitoring
	Residents
	Groundwater Monitoring
	Surface Water Monitoring
	Roads
	Property Boundary
	Site Office and Weighbridge Area



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Plan of:	Riverbend Quarry EIS Compost DA - Traffic Flow	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	VGT Pty Ltd ,PCB Survey and Google Earth	***Our Ref:***	1084_EIS_CDA_C004_V2_F4.cdr
Figure:	FOUR	***Council:***	Maitland City Council	***Survey:***	N/A	***Plan By:***	TO/JD
Sheet:	1 of 1	***Tenures:***	N/A	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V2 01/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

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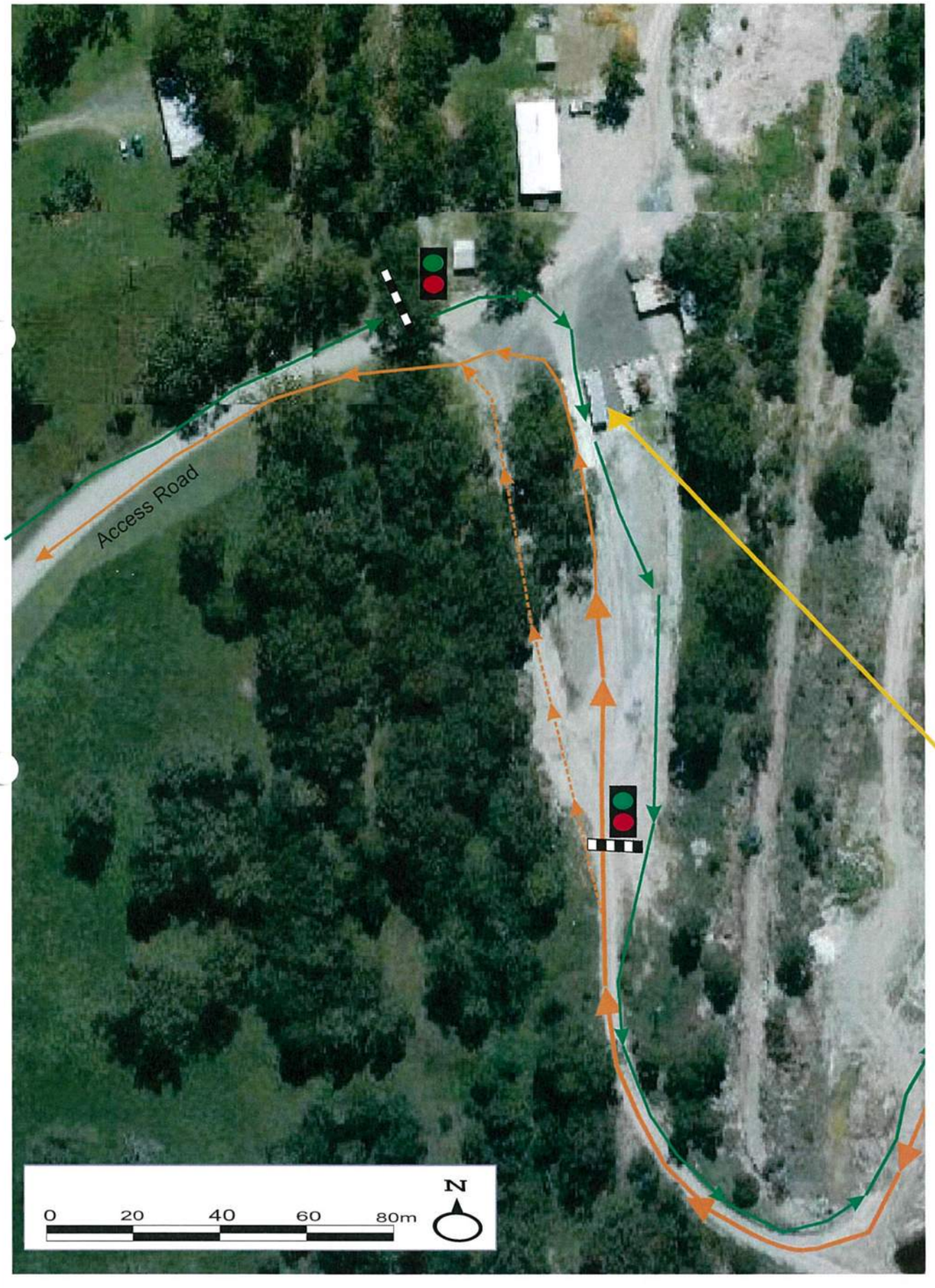

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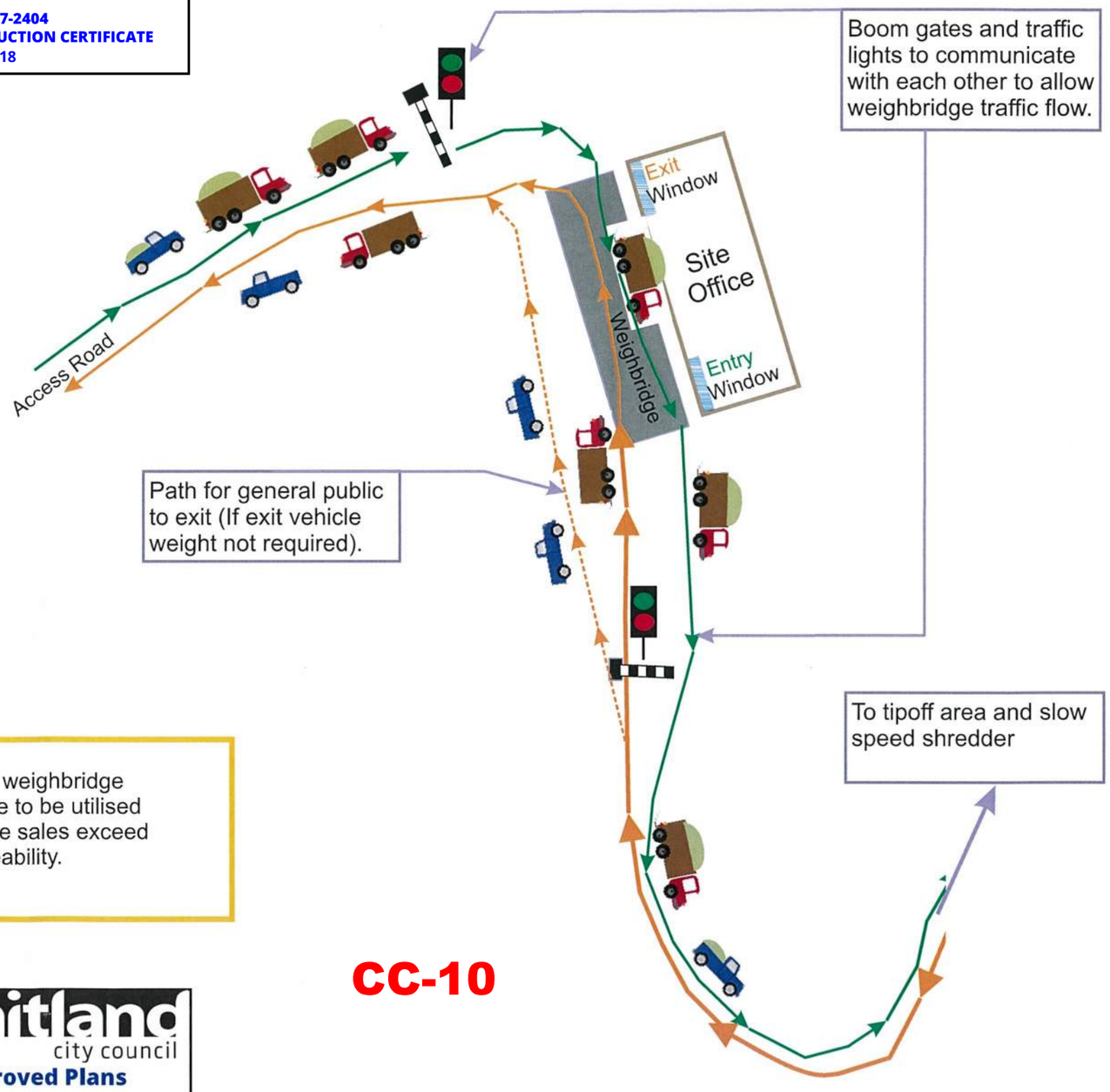
Second weighbridge available to be utilised when the sales exceed manageability.



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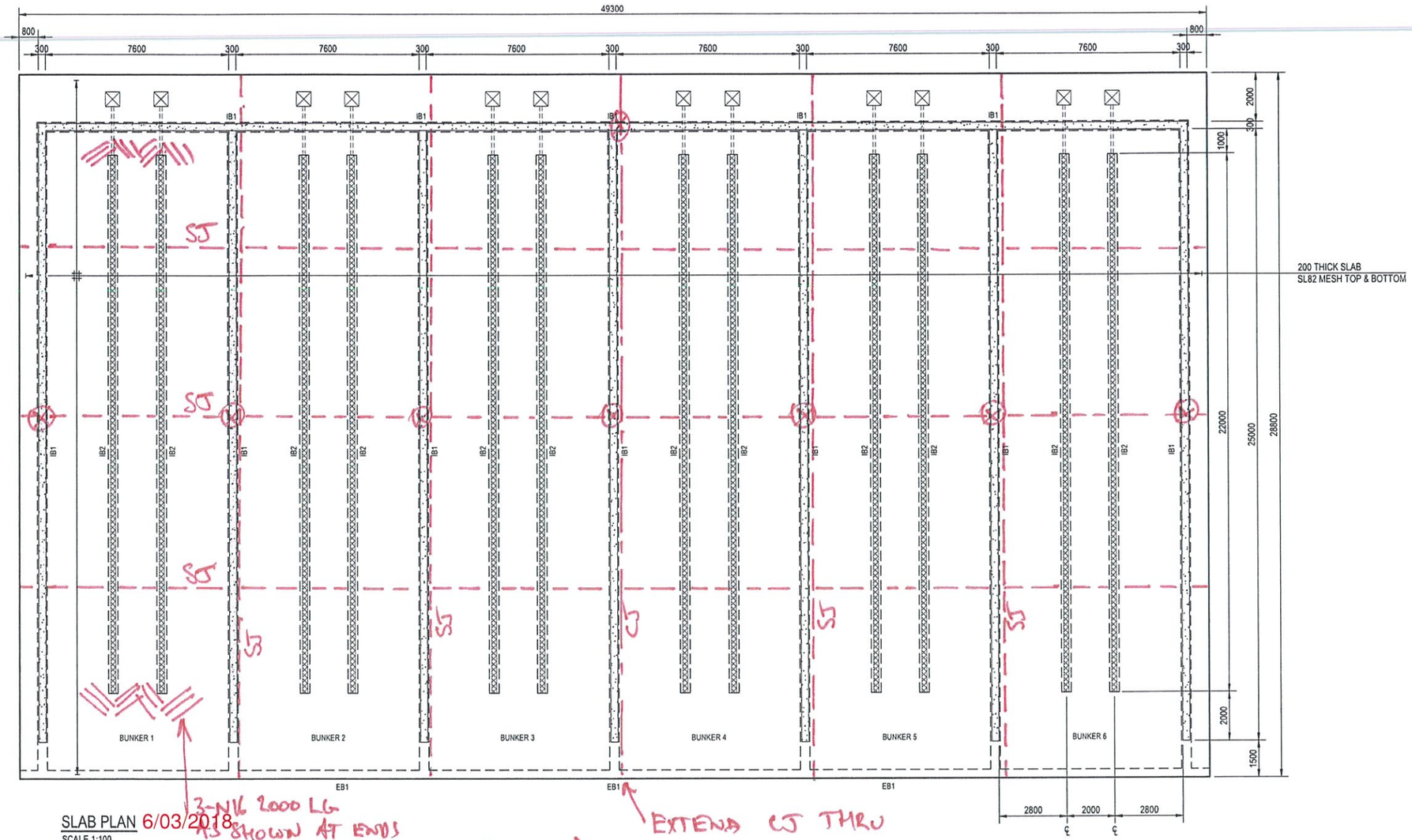
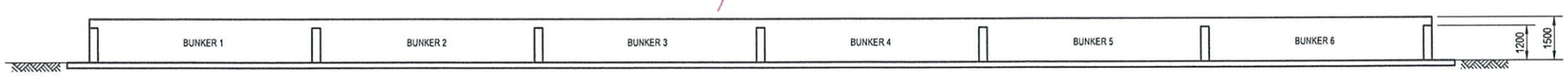
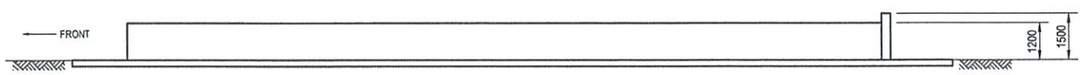
CC-10



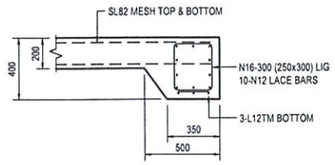
SLAB PLAN 6/03/2018
SCALE 1:100



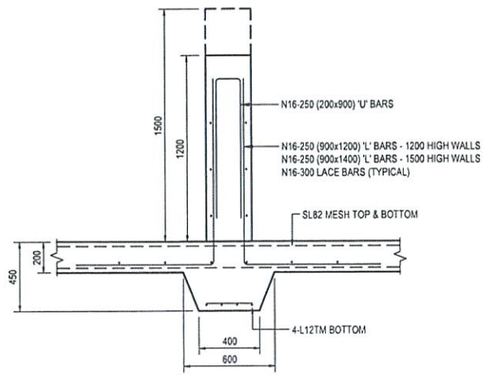
FRONT ELEVATION
SCALE 1:100



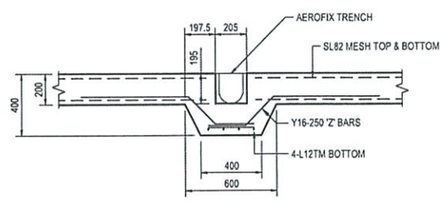
SIDE ELEVATION
SCALE 1:100



EDGE BEAM EB1
SCALE 1:20



INTERNAL BEAM IB1
SCALE 1:20



INTERNAL BEAM IB2
SCALE 1:20

CJ - CONSTRUCTION JOINT
SJ - SAWN JOINT
(X) - EXPANSION JOINT TO WALL - REFER TO DETAIL

REFER TO DRG 13568-001 FOR NOTES & CONSTRUCTION DETAILS.

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Rev	Date	Ammendments
1	16-10-17	ISSUED FOR CONSTRUCTION

paul clarke & associates pty ltd
We have checked the structural aspects shown on this drawing.
B.Clarke, BE, MIE Aust,
NER Civil/Struct 464884 RPEQ 18010
6/03/2018

SCALE	SCALE	NOTED	PROJECT:	CONCRETE BUNKERS
DESIGNED	DESIGNED	-	CUSTOMER:	RBQ
DRAWN	DRAWN	LC	DETAILS:	SLAB & WALL PLAN & DETAILS
CHECKED	CHECKED	-		-
APPROVED	APPROVED	-		
DATE	DATE	16-10-17		
DRAWING NUMBER	176 - RBQ - 001		SHEET 1 OF 1	AMD 1 SIZE A3

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SLAB LAYOUT AND DETAILS PREPARED BY N DOWLING, REF: 176-RBQ-001

GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.
3. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.
4. SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE BUILDER.
5. DURING THE CONSTRUCTION, THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVER-STRESSED. TEMPORARY STRUCTURES, FORMWORK, FALSEWORK, TEMPORARY BRACING, SHORING AND THE LIKE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
6. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITIONS, INCLUDING AMENDMENTS, OF THE RELEVANT SAA STANDARDS AND SAA CODES OF PRACTICE, EXCEPT AS VARIED BE THE CONTRACT DOCUMENTS AND OF THE LAWS AND REQUIREMENTS OF STATUTORY AUTHORITIES.
7. SUBSTITUTIONS ARE TO BE MADE ONLY WITH THE APPROVAL OF THE ENGINEER.
8. WHERE THE ENGINEERS ARE ENGAGED FOR INSPECTIONS AND/OR SUPERVISION, A MINIMUM OF 24 HOURS NOTICE SHALL BE GIVEN.

BULK EARTHWORKS

1. THE SITE SHALL BE STRIPPED TO A NOMINAL DEPTH OF 150 mm UNDER PAVEMENTS AND BUILDINGS. ALL EXISTING FILL, ORGANIC MATERIAL, REFUSE AND ROOTS SHALL BE REMOVED.
2. AFTER APPROVAL, THE EXCAVATED SUB GRADE LEVEL SHALL BE PROOF ROLLED FOR A MINIMUM OF SIX (6) PASSES USING A VIBRATING ROLLER, MINIMUM DEADWEIGHT TEN TONNES. SOFT, WET AND UNSUITABLE SPOTS SHALL BE REMOVED AND REPLACED BY APPROVED SITE MATERIAL AS DIRECTED BY THE SUPERINTENDENT. THE SUB GRADE SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.
3. WHERE FILL IS REQUIRED TO ACHIEVE ROAD PAVEMENT SUB GRADE LEVEL, IT SHALL BE APPROVED RIPPED SANDSTONE, HAVING A MAXIMUM PARTICLE SIZE OF 75 mm UNLESS DIRECTED OTHERWISE. IT SHALL BE PLACED IN 150 mm LOOSE LAYERS AND COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.
4. ALL BATTERS SHALL BE 1 IN 4 MAXIMUM UNO.

SUB GRADE PREPARATION

1. THE SITE SHALL BE EXCAVATED TO LEVELS SHOWN ON RELEVANT DRAWINGS.
2. THE SITE SHALL BE STRIPPED TO ROCK. PRIOR TO THE FILL OPERATION. ALL EXISTING FILL, ORGANIC MATTER, REFUSE AND ROOTS SHALL BE REMOVED.
3. COMPACTED FILL MAY BE PLACED UNDER SLABS AS NOTED BELOW.
4. ALL FILL SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.
5. ALL SELECT ROAD BASE AND HARD-CORE FILLING SHOWN UNDER SLABS ON DRAWINGS SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.
6. ALL EDGE AND INTERNAL BEAMS SHALL BE PIERED TO ROCK USING 400mm DIA MASS CONCRETE PIERS SPACED AT MAX 2400MM C/C.

FOOTINGS

1. FOOTINGS & SLABS HAVE BEEN DESIGNED FOR THE FOLLOWING SAFE BEARING PRESSURE OF 250 kPa AND A SKIN FRICTION OF 15 kPa.
2. FOUNDATION MATERIAL SHALL BE INSPECTED AND APPROVED IN WRITING BY A GEOTECHNICAL ENGINEER FOR THE ABOVE SAFE BEARING PRESSURE BEFORE PLACING CONCRETE.
3. SLAB ON GROUND HAS BEEN DESIGNED FOR MIN. C.B.R. 5 IN ACCORDANCE WITH CEMENT & CONCRETE ASSOCIATION, CONCRETE INDUSTRIAL FLOOR & PAVEMENT DESIGN.
4. SUB GRADE SHALL BE INSPECTED AND APPROVED IN WRITING BY A GEOTECHNICAL ENGINEER FOR THE ABOVE C.B.R.

REINFORCED CONCRETE

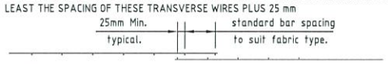
1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS:

ELEMENT	SLUMP mm	MAX SIZE AGG. mm	CEMENT TYPE	f'c AT 28 DAYS MPa	ADMIXTURE
ALL U.N.O.	80	20	PA	32	-

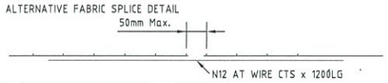
3. MINIMUM CLEAR CONCRETE COVER TO REINFORCEMENT INCLUDING TIES AND STIRRUPS SHALL BE AS FOLLOWS UNO.

ELEMENT	CAST AGAINST FORMS COMPLYING WITH CURRENT SAA CODE		NO FORMWORK mm
	SHELTERED LOCATION mm	EXPOSED LOCATION mm	
WALLS	20	40	65
SLABS	20	40	65

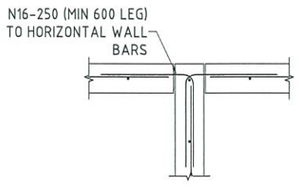
4. COVER TO REINFORCEMENT SHALL BE OBTAINED BY THE USE OF APPROVED BAR CHAIRS. ALL CHAIRS SHALL BE SPACED AT 1000 CTS MAXIMUM.
5. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED. VIBRATORS SHALL NOT BE USED TO SPREAD CONCRETE.
6. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
7. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
8. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO APPROVAL OF THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE SCABBLED OVER THE WHOLE FACE AND ANY UNSOUND MATERIAL REMOVED.
9. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY; IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
10. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN OR AS APPROVED BY THE ENGINEER. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT AS SPECIFIED IN AS3600. COGS AND HOOKS SHALL BE STANDARD UNLESS SHOWN OTHERWISE.
11. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
12. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.
13. REINFORCEMENT SYMBOLS:
    N - DENOTES GRADE 500Y HIGH STRENGTH DEFORMED BARS TO AS1302.
    R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS1302.
    SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304.
    RL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304.
    L - DENOTES HARD-DRAWN WIRE TRENCH MESH TO AS 1304.
14. ALL REINFORCING FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED IN FLAT SHEETS.
15. SPLICES IN FABRIC: THE OUTERMOST TRANSVERSE WIRES SHALL BE OVERLAPPED BY AT LEAST THE SPACING OF THESE TRANSVERSE WIRES PLUS 25 mm



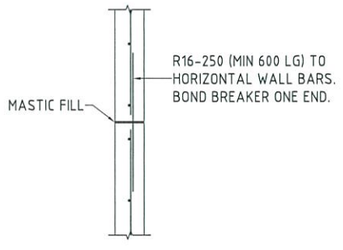
ALTERNATIVE FABRIC SPLICE DETAIL



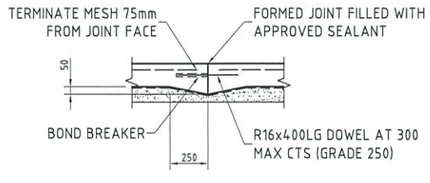
16. EXPOSED CORNERS SHALL BE 20 mm CHAMFERED UNO.
17. ALL REINFORCEMENT SHALL BE INSPECTED BY THE SUPERINTENDENT OR ENGINEER PRIOR TO PLACING CONCRETE.
18. ALL SLAB CONCRETE TO BE CURED IN AN APPROVED MANNER FOR A MINIMUM OF 7 DAYS.
19. ALL ABBREVIATIONS ARE IN ACCORDANCE WITH AS1100.



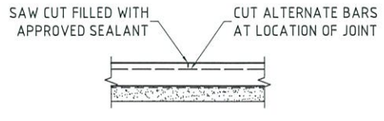
CONCRETE WALL
CORNER BAR DETAIL



CONCRETE WALL
EXPANSION JOINT DETAIL



CONSTRUCTION JOINT CJ



SAWN JOINT SJ

maitland city council
Approved Plans
NO. CC 17-2404
CONSTRUCTION CERTIFICATE
23/04/2018

REV	DATE	AMENDMENT
A	05/03/2018	ISSUED FOR CONSTRUCTION

paul clarke & associates pty ltd
Consulting Civil & Structural Engineers
553 East Seaham Road
SEAHAM EAST NSW 2324
Phone: (02) 4988 6111
Fax: (02) 4988 6707
e-mail: mail@pcassoc.com.au

PROJECT	PROPOSED SLAB	DRAWN	SS	DATE	05/03/2018
LOCATION	ANAMBAH ROAD ANAMBAH via RUTHERFORD	CHECKED	BC	SCALE	NTS
		DESIGN	BC	TITLE	CONSTRUCTION NOTES & DETAILS
DEVELOPER	N DOWLING / RBQ	DESIGN CHECKED	PC	PROJECT APPROVAL	B.S. CLARKE B.Eng,MIEAust

A1	JOB NUMBER 13568	SHEET 001	REV A

O:\13401-13600\13568-N.Dowling-Anambah Road Rutherford\PCA Drawings\13568 - Slab Details and Notes 05/03/2018 4:35

maitland
city council

FIRE SAFETY SCHEDULE

Issued in accordance with Division 1 of Part 9 of the Environmental Planning & Assessment Regulation 2000

Proposed Fire Safety Measure	Minimum Standard Of Design
Portable Fire Extinguishers	Australian Standard AS2444-2001 (Portable Fire Extinguishers and Fire Blankets – Selection and Location) and Part E1.6 of the Building Code of Australia
Exit Signs	Australian Standard AS2293 Part 1 - 2005 (Emergency Escape Lighting and Exit Signs for Buildings - System Design, Installation and Operation) and Part E4.8 of the Building Code of Australia
Emergency Lighting	Australian Standard AS2293 Part 1 – 2005 (Emergency Escape Lighting and Exit Signs for Buildings – System Design, Installation and Operation) and Part E4.4 of the Building Code of Australia
Fire Hose Reels	Australian Standard AS2441-2005 (Installation of Hose Reels) and Part E1.4 of the Building Code of Australia

Notes: This schedule specifies the fire safety measures (both current and proposed) that should be implemented in the building premises.
Existing Fire Safety Measures are those that are currently implemented in the building.
Proposed Fire Safety Measures are those required to be (or proposed) to be implemented in the building.
Any existing fire safety schedule is superseded by this fire safety schedule.
As soon as practicable after a Final Fire Safety Certificate is issued, the owner of the building must forward a copy of the Final Fire Safety Certificate (together with a copy of this schedule) to the Commissioner of the New South Wales Fire Brigade.
As soon as practicable after an Annual/Supplementary Fire Safety Statement is issued, the owner of the building must forward a copy of the Annual/Supplementary Fire Safety Statement (together with a copy of this schedule) to the Commissioner of the New South Wales Fire Brigade.

A copy of this Fire Safety Schedule must be prominently displayed in the building.

CC 17-2404

285 - 287 High Street
Maitland NSW 2320
t 02 4934 9700
f 02 4933 3209
info@maitland.nsw.gov.au
maitland.nsw.gov.au
All correspondence should be directed to: General Manager P.O. Box 220 Maitland NSW 2320

CONSTRUCTION CERTIFICATE

maitland
city council

Environmental Planning and Assessment Act, 1979 as amended

APPLICANT:

Riverbend Quarry Pty Ltd
863 Anambah Road
GOSFORTH NSW 2320

Pursuant to Section 6.3 of the Environmental Planning and Assessment Act, 1979 notice is hereby given of the determination by the Council of the City of Maitland of Application No. **17-2404** relating to the land and development described as follows:

I certify that the proposed work completed in accordance with documentation accompanying the application for the certificate (with such modifications verified by the certifying authority as may be shown on that documentation) will comply with the requirements of this Regulation as are referred to in section 6.6 of the Environmental Planning and Assessment Act, 1979.

LAND:

442 ANAMBAH ROAD,ANAMBAH
LOT 22 DP1069012

PROPOSAL:

Compost Facility and Associated Infrastructure

BCA CLASS:

Class 7 & 8

DETERMINATION:

Approved

ENDORSEMENT DATE:

23 April 2018

PER GENERAL MANAGER

285 - 287 High Street
Maitland NSW 2320

t 02 4934 9700
f 02 4933 3209

info@maitland.nsw.gov.au
maitland.nsw.gov.au

All correspondence should be directed to: General Manager P.O. Box 220 Maitland NSW 2320

NOTICE OF INSPECTIONS
CONSTRUCTION CERTIFICATE

maitland
city council

Clause 103A
Environmental Planning and Assessment Regulation, 2000 as amended

The following information provides details as to what inspections and information is required by Council throughout the construction of the proposed development. As the Principal Certifying Authority (PCA), Maitland City Council is the only Authority that can issue an Occupation Certificate for the works covered by the attached Construction Certificate. **An Occupation Certificate can only be issued if all of the conditions of development consent have been complied with and all of the critical stage inspections have been completed.**

APPLICANT: Riverbend Quarry Pty Ltd
863 Anambah Road
GOSFORTH NSW 2320

Pursuant to Section 6.6(2)(B) of the Environmental Planning and Assessment Act, 1979 notice is hereby given of the inspections required by the Council of the City of Maitland relating to the land and development described as follows:

LAND: 442 ANAMBAH ROAD ANAMBAH

DEVELOPMENT: Compost Facility and Associated Infrastructure

BCA CLASS: Class 7 & 8

DEVELOPMENT CONSENT NUMBER DA-15-433

CONSTRUCTION CERTIFICATE NUMBER: CC-17-2404

285 - 287 High Street
Maitland NSW 2320
t 02 4934 9700
f 02 4933 3209
info@maitland.nsw.gov.au
maitland.nsw.gov.au
All correspondence should be directed to: General Manager P.O. Box 220 Maitland NSW 2320

INSPECTIONS:

1. **After excavation** for, and prior to the placement of, any footings, and

2. **Prior to pouring** any in-situ reinforced concrete building element, and

3. **Prior to covering** of the framework for any floor, wall, roof or other building element, and

4. **Prior to covering** any stormwater drainage connections including any on-site detention system, control pits or tanks, and

5. **Final Inspection** - After the building work has been completed and prior to any occupation certificate being issued in relation to the building/development, and

Where appropriate certain inspections may be conducted concurrently.

Examples of this may include:

- The commencement of building works combined with the footing inspection on a dwelling or outbuilding.
- A waterproofing, building frame and stormwater drainage inspection.
- A building frame, stormwater drainage and final on a pre-fabricated shed with no internal linings.

If in any doubt as to concurrent inspections please ring and confirm with Council PRIOR to proceeding with any further works.

Concurrent inspections are only appropriate where the work is uncovered and capable of being inspected. it is not possible to certify an inspection retrospectively where work has been completed and covered prior to being inspected. For example – pier holes filled with concrete, slab reinforcement covered with concrete, insulation materials or cladding placed over framework, coverings placed over wet area flashings or backfilled stormwater drainage lines will not be capable of being passed.

Inspections must be arranged at least the working day (prior to 3pm) prior to when the inspection is required.

Cancellations should be notified to Council as soon as possible. A re-inspection fee may be applied where no cancellation has been received and the work is not ready for inspection.

Failure to call for an inspection may result in the Occupation Certificate being refused. It is an offence to occupy or use the development without an Occupation Certificate.

Where an inspection reveals unsatisfactory or defective results, a re-inspection may be required and fees may be applied for any subsequent or additional inspections.

Please phone 4934 9865, 4934 9866 or 4934 9741 to arrange an inspection. Inspections will generally be carried out between 9.30am and 4.00pm on the day requested.

Specific timings for inspections may be made with the relevant inspecting officer by arrangement only.

Required Certification

In addition Maitland City Council will require the following Certificates/Information to be submitted prior to the issue of an Occupation Certificate:

Note: The submission of a certificate or information does not substitute for any inspection that is required to be carried out by Council.

Any additional certificate, that may be required by Council, in order to issue the Occupation Certificate.

The person having the benefit of the development consent associated with this Notice of Inspections must, prior to the commencement of any works (if not carrying out the work as an owner-builder):

- **Appoint** a principal contractor for the building work who must be the holder of a contractor licence if any residential building work is involved, and
- **Notify** Council of any such appointment, and
- **Notify** the principal contractor of the inspections that are required to be carried out and of the information that is to be submitted to Council in respect of the building work.

PER GENERAL MANAGER

FIRE ENGINEERING DESIGN PTY LTD

Fire Safety Engineering Report

maitland city council
Approved Plans
NO. CC 17-2404
CONSTRUCTION CERTIFICATE
23/04/2018

PROPOSED COMPOSTING FACILITY

442 ANAMBAH ROAD

ANAMBAH 2320

For

DITTON PROPERTIES P/L

Date: April 2018

Version: A

93 Excelsior Parade
Carey Bay
NSW 2283
Australia

ABN 13 097 166 010

MBL: 0414 44 00 88
E-mail: fedesign@bigpond.com

REPORT ISSUE AUTHORISATION

Project: Proposed Composting Facility– Anambah 2320

Project No. 2018046

Version	Date	Status	Prepared
A	April 2018	Issue For CC	MWR

Version	Extent of revision

This report caters specifically for the requirements for this project, the client and associated regulatory /approval process. No warranty is intended or implied for use by any other third party and no responsibility is undertaken to any other third party for any material contained herein.

Fire safety solutions described in this report may be alternative solutions to those given by the BCA Deemed-to-Satisfy Provisions. Consideration of protection of the building owner's property may not be included unless this has been specifically requested – refer to Section 1.4of this report.

Prepared by: _____

Mike Radford
Accredited Fire Safety Engineer
BE, ME (Fire), CPEng, NPER
C10 Accredited Certifier (Fire Safety Engineering Compliance, BPB0337)

EXECUTIVE SUMMARY

This report addresses Proposed Composting Facility at 442 Anambah Road, Anambah 2320, for compliance with the Performance Requirements of the Building Code of Australia 2016.

The area of design that is the subject of an Alternative Solution which deviates from the prescriptive requirements Deemed-to-Satisfy Provisions of the BCA relates to;

Clause E1.3 – Fire Hydrants
Although the area of the proposed building exceeds 500m2, it is not proposed to install a hydrant system.
Performance Requirement EP1.3 is addressed.

A Performance based assessment has been carried out on this aspect of the design, with the Objective being satisfaction of the above mentioned Performance Requirements of the BCA.

It has been established that these objectives will be met by the proposed design of the building.

Ongoing compliance of the building with this report can be achieved by compliance with the following conditions:

1. The Scope of Works specified within Section 1.3 of this report is carried out; and
2. The Limitations Specified within Section 1.4 of this report are considered.

It is assumed that the Scope of Works, Limitations and Assumptions of this report are read and understood.

The author of this report should be contacted if there are any queries in regards to the content.

CONTENTS

1 INTRODUCTION

1.1 Report Purpose

The purpose of this report is to present an Alternative Fire Safety Solution which deviates from the Prescriptive Requirements of the Building Code of Australia 2016.

1.2 Relevant Stakeholders

The following groups are considered to be stakeholders in the development of the fire safety design process for the subject proposal.

Table 1-1: Relevant Stakeholders.

Name	Company	Role
Chris Dutton	Ditton Properties P/L	Client
Chris Thompson	Maitland City Council	Approval Authority
Mike Radford	Fire Engineering Design P/L	Fire Safety Engineer

1.3 Scope of Works

The primary assumption of this report is that with the exception of the specific non-compliance issues addressed by this report for the new works, the balance of the fire safety design for the building complies with the DTS provisions of the BCA.

Given this, the Alternative Solutions presented herein, permit the following deviations from the Prescriptive Requirements of the DTS provisions of the BCA.

1.3.1 The Alternative Solution presented herein has demonstrated that Fire Hydrants pursuant to Clause E1.3 of the BCA and AS2419:2005 are **NOT REQUIRED.**

1.4 Assumptions & Limitations

(i) BCA Compliance

The primary assumption of this report is that with the exception of the specific non-compliance issue addressed by this report, the balance of the Fire Safety Design for the subject building works complies with the Building Code of Australia 2016 (BCA) Deemed-to-Satisfy provisions for Fire Safety.

(ii) Property Protection

The design proposed herein complies with the Performance Requirements of the Building Code of Australia, 2016, which is primarily concerned with Life Safety, Property Protection and Fire Brigade Intervention.

Given the above, unless specifically requested by the client or stated in our report, issues above and beyond the BCA requirements as described above have not been considered.

This may include, but is not necessarily limited to, considerations of business continuance, disabled egress and extent and availability of insurance.

Similarly, multiple arson attack, malicious acts, acts of terrorism and the resulting impact of fires on the building performance have not been addressed, as they are not considered to be a reasonable scenario in this instance.

As specifically requested by the client, we have provided a Performance Solution to omit the requirement for the installation of a hydrant system.

(iii) Generally

It is assumed that the Scope of Works, Limitations and Assumptions of this report are read and understood.

The author of this document should be contacted if there is any ambiguity or if there are any queries/clarifications required in regard to the content herein.

2 BUILDING DETAILS

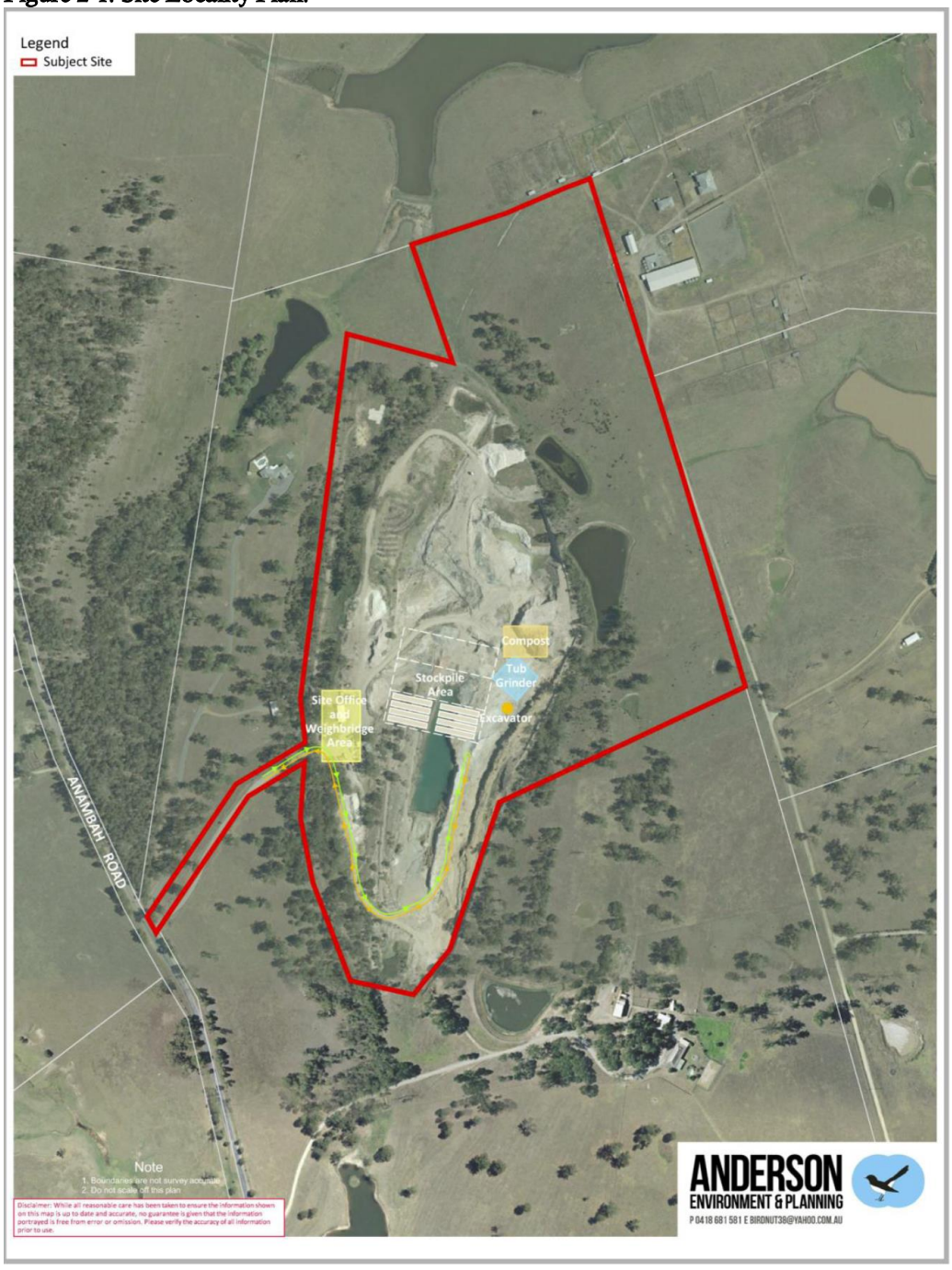
2.1 Description of Building

The Proposed Composting Facility is located at 442 Anambah Road in Anambah 2320.

The land is located approximately six (6) kilometres north west of Rutherford, via the New England Highway and Anambah Road.

The site locality plan is shown in the following figure.

Figure 2-1: Site Locality Plan.



The facility will process up to 40,000 tonnes of Class 1 and Class 2 organic material, which will be sourced predominantly from municipal waste facilities in the Hunter Region, supplemented by green waste brought to the facility by the general public.

This will be processed to produce approximately 24,000 tonnes per annum of high quality compost.

The subject single storey pre-fabricated building, which will contain a ***slow speed shredder***, is to be 42m by 42m giving a total floor area of 1761m^2.

The height of the building will range from 7.5m at the eaves, to 11.203m at the ridge giving an average height of 9.35m and a Total Volume of 16,496m^3.

It is to be constructed from non fire rated steel columns and trusses, with colorbond monoclad wall sheeting and Zincalume Mono Clad Roof Sheeting.

A 3 dimensional render of the proposed slow speed shredder building is illustrated in the following figure.

Figure 2-2: Artists impression of proposed building.

The Architectural Plans of the slow speed shredder building are attached in Appendix A at the end of this report for ease of reference.

2.2 Building Code of Australia Description Summary

The general description of, and subsequent requirements, for the building under the current DTS provisions of the BCA are as indicated in the table hereunder.

Table 2-1: BCA General Description & Requirements.

BCA Clause		Description or Requirement
A1.1	Effective Height	<12m.
A3.2	Classification	Class 7b.
C1.2	Rise in Storeys	1 with 1 Contained.
C1.1	Type of Construction Required	B.
C2.2	Floor Areas & Volume Limitations	3,500m^2 21,000m^3.

3 BCA REQUIREMENTS

The following table outlines the Performance based Fire Safety Solutions, that are the subject of this report.

Table 3-1: Performance Solutions Summary.

Relevant BCA Clause	DTS Non-Compliance	Performance Solution	Relevant BCA Performance Requirement	Assessment Method
Clause E1.3	Although the area of the proposed building exceeds 500m2, it is not proposed to install a hydrant system.	Given the use of the building, its remote location/proximity to other Fire Source Features and Allotment Boundaries, it is shown that the "Actual Risk" is less than could otherwise be permitted under the DTS provisions of the BCA. In addition, it is shown that the Objectives and Functional Statements of the BCA are inherently satisfied.	EP1.3	Qualitative & Quantitative assessment in accordance with Clauses A0.3(a)(i) and A0.5(b)(ii) of the BCA.

4 COMPLIANCE WITH THE EP&A REGULATIONS 2000[1]

As the total floor are of the building does not exceed 2000m^2, the Alternative Solution presented herein, is **NOT** required to be submitted to Fire & Rescue New South Wales, *(F&R NSW)*, pursuant to Clause 144(1) of the EP&A Regulations.

This report is provided in accordance with the requirements of Clause 144A, sub clause (3)(b) the Environmental Planning & Assessment Regulations 2000.

The Author of this report is a ***C10 Accredited Fire Safety Engineer*** under the Building Professional Act 2005, and a *Competent Fire Safety Practitioner,* pursuant to Clause 167A(2)(a) of the EP&A Regulations.

The relevant extracts from the EP&A regulations are attached in ***Appendix B*** at the end of this report for ease of reference.

[1] As at March 1st 2018.

5 DTS PROVISIONS OF THE BCA

5.1 General

The DTS provisions of the BCA prescribe generic fire safety solutions for each of the different building classifications that are defined.

The intent of these prescriptive requirements, is to provide users with a simple method of applying adequate fire safety measures for various buildings and to provide society with a design methodology that achieves some level of consistency between similar buildings.

These arbitrary/generic provisions, have been derived from the consideration of possible or potential use, location, proximity to other property & occupant characteristics that ***MAY*** occur within any given building.

Therefore, they do not take into consideration any atypical or unique characteristics of the specific building being assessed.

Further to this the DTS provisions of the BCA does not generally cater for buildings that are not normally occupied and/or constructed in remote locations where fire spread to adjoining buildings is unlikely or even possible, which is the case for the subject building.

As such, although various buildings of the same classification may achieve full compliance with the DTS provisions, *in that they are consistent in the fire safety measures that are required/installed*, the applied fire safety measures do not necessarily provide the same level of fire safety throughout these buildings.

The intention of achieving compliance with the DTS provisions is not to ensure that occupants or adjoining property are absolutely safe from fire, but rather to provide a level of fire safety that has been deemed reasonable & acceptable by society.

In providing a fire engineered Performance Solution, it is therefore preferable to apply a level of safety that is considered to be acceptable to society, rather than attempting to achieve an absolute level of safety.

The Performance Solution proposed herein, therefore provides a level of fire safety that is considered to be reasonable and acceptable for the subject building based on the specific risks given its remote location and intended use, rather than apply a generic solution that is based on an assumed worst case scenario.

6 PERFORMANCE SOLUTION ASSESSMENTS

6.1 Fire Hydrants

6.1.1 GENERAL

Although the area of the proposed building exceeds 500m2, it is not proposed to install a hydrant system.

6.1.2 DTS PROVISIONS OF THE BCA

Clause E1.3(a) of the BCA states;

E1.3 Fire hydrants

(a) A fire hydrant system must be provided to serve a building—
  (i) having a total floor area greater than 500 m^2; and
  (ii) where a fire brigade is available to attend a building fire.

(b) The fire hydrant system—
  (i) must be installed in accordance with AS 2419.1, except a Class 8 electricity network substation need not comply with clause 4.2 of AS 2419.1 if—
    (A) it cannot be connected to town main supply; and
    (B) one hour water storage is provided for firefighting;

6.1.3 PERFORMANCE SOLUTION

It is considered disproportionate to the risk to install a hydrant system for the subject building in this instance as discussed below.

Fire requires oxygen and fuel, which is provided by the organic materials typically composted[8.1.9.3].

Compost fires can be caused by spontaneous combustion, lightning strikes, heat from equipment or vehicles, sparks from welding activities, wildfires and arson, however spontaneous combustion is the most common cause.

Spontaneous combustion occurs when materials self-heat to a temperature high enough to cause them to ignite.

Typically, composting materials ignite at temperatures between 150 and 200°C.

As the temperature rises, the speed of temperature increase also rises.

For example, heat is generated about 16 times faster at 100°C than at 60°C because the reaction rate approximately doubles with each 10°C rise in temperature.

In a compost pile, the organic matter and microbial activity generate heat from the biological activities. This activity causes the compost temperature to reach 70 to 80°C.

At this point, the microorganisms die or become dormant, and the biological heating stops.

From that point to the temperature at which organic materials ignite (150°C and higher), heat-releasing chemical reactions take over.

These actions include chemical oxidation, *slow pyrolysis (chemical decomposition brought about by heat) and condensation of gases within dry charred particles*.

Key conditions to facilitate spontaneous combustion in compost include;

- Large and well insulated & undisturbed piles,
- Limited air flow,
- Prolonged storage time enabling excessive heat build up.

These conditions are all more prevalent within large undisturbed piles that contain raw feedstocks, curing compost and finished compost than in an active composting system.

Biological activity generates heat within organic matter, a goal for composting.

However, the temperature is controlled by heat loss through evaporation of moisture, aeration and mechanical turning.

Internal bulk green waste storage fires as a result of spontaneous combustion can be prevented by[8.1.9.4],

- Aerating piles by regular turning and/or providing internal ventilation.
- Monitoring the temperature and moisture levels within piles stored for **periods greater than 3 months.**

As detailed in the Environmental Impact Statement Report[8.1.9.5], all green waste will be unloaded into the **shredder building** and then shredded & unloaded to the n-vessel composter within 24 hours.

Given this, the risk of spontaneous combustion is considered to be nugatory.

Notwithstanding the above, consideration must however be given to a fire occurring, irrespective of the source of ignition.

The Guide to the BCA states that the intent of providing Fire Hydrants is to ***"Facilitate the Fire Brigades Fire Fighting operations"***.

Further to this the Guide states;

1. Fire hydrants are needed to prevent the spread of fire *between buildings and fire compartments*.

2. The floor area of 500m^2 referred to in E1.3(a)(i) represents the level of *Hazard* which justifies the installation of a fire hydrant system.

Each of the above is specifically addressed below;

6.1.3.1 Fire Spread

As relates to the above, the subject building forms a single fire compartment and is located more than 3m from the property boundary or 6m from an adjoining building on the same allotment.

From the provisions of Clause C3.2 of the BCA, where a building is located greater than 6m from an adjoining fire source feature, it may have 100% unprotected openings and is considered to mitigate fire spread to the degree necessary.

The notable exception to this however is buildings of Type B construction, ***where any load bearing external walls***, *such as those supporting the roof*, are required to achieve an FRL where they are located between 9m and 18m from any fire source feature, pursuant to Table 4 of Specification C1.1 of the BCA.

Typically, Class 7b *(or 8)* buildings that are constructed from Type B construction, are Large Warehouse buildings that have the ability to accommodate high bay *and/or* rack storage.

These buildings often have significant fire loads which, if located within the vicinity of other buildings/property could pose significant risk in regard to spread of fire.

This is considered as Clause C1.2(c) of the BCA states;

(c) In a Class 7 or 8 building, a storey that has an average internal height of more than 6 m is counted as—
(i) one storey if it is the only storey above the ground; or
(ii) 2 storeys in any other case.

Given the above, The DTS provisions of the BCA would therefore permit a three (3) storey Class 7b or 8 building with an effective height of 18m, *if a mezzanine is provided at the upper level which exceeds 200m^2 in floor area. Ref. C1.2(d).*

As such the generic assumption under the DTS provisions, is that if a Class 7b or 8 building is located 17.99m from the boundary it requires an FRL of 240/60/- .

This level of FRL is usually achieved by Concrete or Masonry construction which is considered to mitigate spread of fire ***between buildings to the degree necessary***.

As the premise of the BCA is to protect occupants, adjoining buildings/property AND fire-fighting personnel, Performance Requirement CP5 of the BCA requires that;

"A concrete external wall that could collapse as a complete panel, must be designed so that in the event of a fire within the building, the likelihood of outward collapse is avoided".

The latter is to mitigate both risk of injury to brigade personnel as well as physical damage to adjoining property in the event that external walls fail in an outward direction from the building.

As the subject building is located MORE than 18m from the boundary allotment, and the external walls are of non-combustible construction/cladding, spread of fire and physical damage is therefore considered to be mitigated to the degree necessary in accordance with the ***Intent, Objectives and Functional Statements of the BCA***.

Given this, in the event of a fire within the subject building, assuming brigade intervention does NOT occur as a result of the proposed omission of the hydrant system, the risk of spread of fire and/or physical damage to adjoining property is considered to be mitigated to a level that is no greater than could otherwise be permitted under a DTS permitted solution.

6.1.3.2 Fire Hazard

The following has been extracted from the EIS report.

> *"Green waste will be delivered to the site by commercial and Council trucks, and by smaller private vehicles.*
>
> *All feedstock material received at the site will be inspected, weighed, and documented at the site office.*
>
> *Loaded vehicles will bring in green waste via the weighbridge, and then proceed to the fully enclosed tipping area* ***and stockpile within the proposed shredder building****.*
>
> *Commercial vehicles will pass back over the weighbridge upon exit to establish the tonnage of green waste dropped at the facility.*
>
> *Every load will be visibly inspected for contaminants. In this case, contaminants will include foreign materials that are incompatible with the composting process, and that are prohibited under the EPL conditions likely to be proscribed by the EPA.*
>
> *Council-delivered loads are usually fully enclosed.*
>
> *However, Council's own on-vehicle inspection systems will be relied on to check for high Contaminant levels.*
>
> *Loads with an unacceptably high proportion of contamination, or with prohibited materials, will be turned around at the weighbridge.*
>
> *Contaminants discovered following tipping will be removed from the tipping floor and stored in appropriate containers prior to delivery to a suitably licenced waste management facility. Procedures for inspection, testing and screening, for handling unacceptable material, and for record-keeping, will be developed as components of an Operations Environmental Management Plan.*
>
> *Green waste delivered to the site will be stored temporarily in a stockpile bunker.*
>
> *The stockpile bunker will be located within the fully enclosed shredder building, and loaded into the shredder within 24 hours of being received.*
>
> *All green waste feedstock will be shredded and loaded to the n-vessel composter within 24 hours.*
>
> *Raw Materials will not be left on the receival building floor for longer than 24 hours.*
>
> *Internal temperatures of the composting pile will be monitored and maintained through regulating the pile profile, moisture content and air supply.*
>
> *The compost material is non-combustible due to its moisture content."*

6.1.3.3 DTS Permitted Solution Vs Actual Scneario

The DTS provisions of the BCA would permit the following **WITHOUT** the requirement for a fire hydrant system.

- A 12m high and ***normally occupied*** Class 7b or 8 building with a floor area of 500m^2. *This is considered to be a 2 storey building as per Clause C1.2 of the BCA.*
- The building located 3m from the boundary where the Total Volume of the building does not exceed 12,000m^3, which permits the building to;
    - Be of Type C construction and,
    - Have 100% unprotected openings facing the property boundary and,
    - Negates the building from being considered as an Occupancy of Excessive Hazard, pursuant to Clause E1.5 of the BCA and,
    - Contain a significant Fire Load, *excluding dangerous goods and the like*. Examples of this could include, Tyre storage, Candle manufacturing and storage, cardboard storage (Dry), Storage of Milk Powder, Paper Storage, plastic Manufacturing and storage, Plywood storage, Rubber Storage etc.

All of the above have a significantly higher fire load than that which is expected within the subject building, yet the DTS provisions of the BCBA considers that the risk to the occupants, brigade personnel and fire spread to adjoining property to be mitigated to the degree necessary **without the need for a hydrant system**.

In comparison, the subject building is,

- Remote from the allotment boundaries and/or any other building, i.e. significantly more than 18m and,
- Not a ***normally*** occupied building and,
- The building is used to hold green waste, which has a significant moisture content.

Based on the above, it can be seen that the actual and specific risk associated with the subject building is less than or **"at least equivalent"** to a DTS permitted solution, where Hydrants would not otherwise be required.

Although the above is considered to demonstrate that Performance Requirements of the BCA are inherently satisfied in this instance, ***without the installation of a fire hydrant system for the subject building***, further consideration is given to the Objectives and Functional Statements of the BCA as detailed in the following Sections.

6.1.3.4 Objectives of Section C - *(Fire Resistance)* of the BCA

The Objectives of Section C of the BCA are reproduced below for ease of reference in *Italics*.

Comments in regard to the Objectives as relate to the subject building are indicated in Blue Text and are provided with a bar in the right margin.

CO1
The Objective of this Section is to—

(a) Safeguard people from illness or injury due to a fire in a building; and

N/A as relates to the omission of Fire Hydrants.
Further to this the building is not a normally occupied space.

(b) Safeguard occupants from illness or injury while evacuating a building during a fire; and

N/A as relates to the omission of Fire Hydrants.
Further to this the building is not a normally occupied space.

(c) Facilitate the activities of emergency services personnel; and

Given the limited fire load, the risk is shown to be less than that which would otherwise be permissible under the DTS provisions of the BCA.

(d) Avoid the spread of fire between buildings; and

The risk is considered to be significantly lower than that of a DTS permitted solution for the Scenario described above, given the actual use of the building and its remote location/proximity to any adjoining building and/or the property boundary.

(e) Protect other property from physical damage caused by structural failure of a building as a result of fire.

As above.
The subject building is less than 12m in height to the Apex/ridge, however it is located more than 18m from the property boundary.

Basis of Objective
*This Objective is based on the **belief that a building should**:*

- *Provide people with an environment which, during a fire, will minimise the risk of them suffering illness or injury;*
  N/A as relates to the omission of Fire Hydrants.

- *Provide people with an evacuation route which will minimise the risk of them suffering illness or injury while escaping a fire;*
  N/A as relates to the omission of Fire Hydrants.

- *Facilitate the role of emergency services personnel, such as the fire brigade, **if it becomes necessary for them to undertake such operations as fire-fighting and search and rescue**;*

  The risk is considered to be significantly lower than that of a DTS permitted solution for the Scenario described above, given the actual use of the building and its remote location/proximity to any adjoining building and/or the property boundary.

- *assist in minimising the risk of fire spreading from one building to another; and*

  The risk is considered to be significantly lower than that of a DTS permitted solution for the Scenario described above, given the actual use of the building and its remote location/proximity to any adjoining building and/or the property boundary.

- *Not have a structural failure during a fire that results in damage to another building, allotment or road.*

  As above.
  The subject building is less than 12m in height to the Apex/ridge, however it is located more than 18m from the property boundary.

Spread of fire

There is a continuing debate regarding the means by which the BCA should minimise the risk of fire spreading from one building to another.

Should the greater degree of fire protection be in the building on fire, or should it be in the building at potential risk of the fire spreading?

Generally, the BCA provisions aim to minimise the spread of fire from the building on fire, but there are some provisions that limit the spread of fire from an adjacent building.

*Consequently, **CO1(d)** states that the spread of fire is to be avoided "between buildings"—that is, in either direction.*

Based on the above, this risk is considered to be mitigated to the degree necessary for spread of fire to or from buildings.

Protection of other property

The BCA is principally designed to maximise (within reasonable bounds) the safety, health and amenity of people in and around buildings.

Protection of property, either the subject building or what is termed "other property", is not generally a primary aim of the BCA—although it may sometimes be a consequence of the provisions of the BCA.

*However, there are some exceptions to this rule, and the inclusion of "other property" in **CO1(e)**is one of these.*

In this context, a building is expected to maintain the level of structural sufficiency necessary to prevent it causing damage to any other property as a result of fire.

Not likely to occur given the remote location of the subject building and its proximity to the adjoining allotment.

*The reason **CO1(e)** concerns itself with the protection of other property is primarily because fire from a building should not pose a serious risk to the health, safety and amenity of the public or occupants of another building.*

6.1.3.5 Functional Statements of Section C - *(Fire Resistance)* of the BCA

The ***Functional Statements*** of Section C of the BCA are reproduced below for ease of reference in *Italics*.

Comments in regard to the ***Functional Statements*** as relate to the subject building are indicated in Blue Text and are provided with a bar in the right margin.

CF1
A building is to be constructed to maintain structural stability during fire to—
(a) Allow occupants time to evacuate safely; and

N/A as relates to the omission of Hydrants.

(b) Allow for fire brigade intervention; and

Not considered necessary given the use of the building, it remote location and its proximity to adjoining property.

(c) Avoid damage to other property.

As above.
The subject building is less than 12m in height to the Apex/ridge, however it is located more than 18m from the property boundary.

CF2
A building is to be provided with safeguards to prevent fire spread—

(a) so that occupants have time to evacuate safely without being overcome by the effects of fire; and

N/A as relates to the omission of Hydrants.

(b) to allow for fire brigade intervention; and

Not considered necessary given the use of the building, it remote location and its proximity to adjoining property.

(c) to sole-occupancy units providing sleeping accommodation; and

N/A.

(d) to adjoining fire compartments; and

N/A.

(e) between buildings.

N/A as relates to the omission of Hydrants.

Structural stability

A building must remain structurally stable during a fire to:

- Allow the occupants to safely evacuate;

  N/A as relates to Hydrants.

- Allow the fire brigade to undertake search and rescue, if necessary, and fire-fighting operations; and

  Not considered necessary given the use of the building, being a non normally occupied building, its remote location and its proximity to adjoining property.

- Avoid damage to another building, allotment or road.

  As above.
  The subject building is less than 12m in height to the Apex/ridge, however it is located more than 18m from the property boundary.

Instability may not contravene the BCA

So long as a building does not endanger life or other property, and the BCA's structural stability criteria have been satisfied, then the building may become structurally unstable after a fire and still comply with the objectives of Section C.

It could even collapse, provided none of the building falls in a way that endangers the public or causes damage to another building. For example, if a building falls onto a road, it could endanger the safety of the public and would therefore not achieve the Functional Statement.

The subject building is considered to meet the Functional Requirements of the BCA as highlighted above.

Spread of fire

A building must have in-built safeguards to prevent the spread of fire:

- To allow sufficient time for the occupants to safely evacuate;

  N/A as relates to Hydrants.

- To allow the fire brigade to undertake search and rescue, if necessary, and fire-fighting operations;

  Not considered necessary given the use of the building, being a non normally occupied building, its remote location and its proximity to adjoining property.

- In Class 2 or Class 3 buildings or Class 4 parts used as sole-occupancy units that provide sleeping accommodation to allow sufficient time for the occupants to safely evacuate;

  N/A.

- To an adjoining fire compartment; and

  N/A for the subject building.

- From one building to another building.

  As above.
  The subject building is less than 12m in height to the Apex/ridge, however it is located more than 18m from the property boundary. There are no other adjoining buildings.

Spread of fire may not contravene the BCA

So long as a building fire does not endanger life or other property, and the BCA's spread of fire criteria have been satisfied, then the building may burn and still comply with the aims of **Section C**.

The subject building is considered to meet the Functional Requirements of the BCA as highlighted above.

6.1.4 SUMMARY

Based on all of the above, it is considered that Fire Hydrants need not be provided for the subject building and that performance requirement EP1.3 is satisfied to the degree necessary in this instance in accordance with Clauses A0.3(a)(i) and A0.5(b)(ii) of the BCA as summarised in the following Table.

Table 6-1: Performance Requirement EP1.3

PERFORMANCE REQUIREMENT	ALTERNATIVE SOLUTION
A fire hydrant system must be provided to the degree necessary to facilitate the needs of the fire brigade appropriate to-	
(a) Fire-fighting operations; and	The subject building is not a normally occupied space and is remote from any other buildings and/or property boundaries. It is shown that there are significantly greater risks under the DTS provisions of the BCA where hydrants would not otherwise be required, when compared to the subject building.
(b) The floor area of the building; and	<2,000m^2.
(c) The fire hazard.	Significantly lower than that of a DTS permitted solution where Hydrants would not otherwise be required, given the buildings remote location, limited fire load, limited occupancy etc.

7 REPORT BASIS INFORMATION

The report is based on the following:

i. Architectural Plans as attached in Appendix A at the end of this report.

ii. The Environmental Impact Statement, "In-Vessel Composting Facility – 442 Anambah Road, Anambah NSW 2320", Prepared by Pulver Cooper & Blackley, dated July 2015.

8 CONCLUSION

This report has addressed Proposed Composting Facility at 442 Anambah Road in Anambah 2320, for compliance with the Performance Requirements of the Building Code of Australia 2016.

It has been established herein that the objectives for the design, being Performance Requirement EP1.3 of the Building Code of Australia has been satisfied to the degree necessary in this instance< without the requirement to install a Fire Hydrant System.

Where building alterations or a change use within building occurs, the validity of this fire safety engineering analysis may be compromised and further analysis may be required.

9 REFERENCES

9.1. ABCB, *Building Code of Australia 2005*, Australian Building Codes Board, Sydney, Australia, 2016.

9.2. Australian Building Codes Board (ABCB), *Guide to the BCA Class 2 to Class 9 Buildings,* Australian Building Codes Board, Canberra, Australia, 2016.

9.3. Fires at Composting Facilities, R Rynk.

9.4. Department of Fire & Emergency Services, Govt. of Western Australia – Information Note Sept 2014.

9.5. Environmental Impact Statement, "In-Vessel Composting Facility – 442 Anambah Road, Anambah NSW 2320", Prepared by Pulver Cooper & Blackley, dated July 2015.

Plan of:	Riverbend Quarry EIS Compost DA - Proposed Compost Facility
Figure:	FIVE
Sheet:	1 of 1
Version/Date:	A 16/02/2015

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NO. DA 15-433
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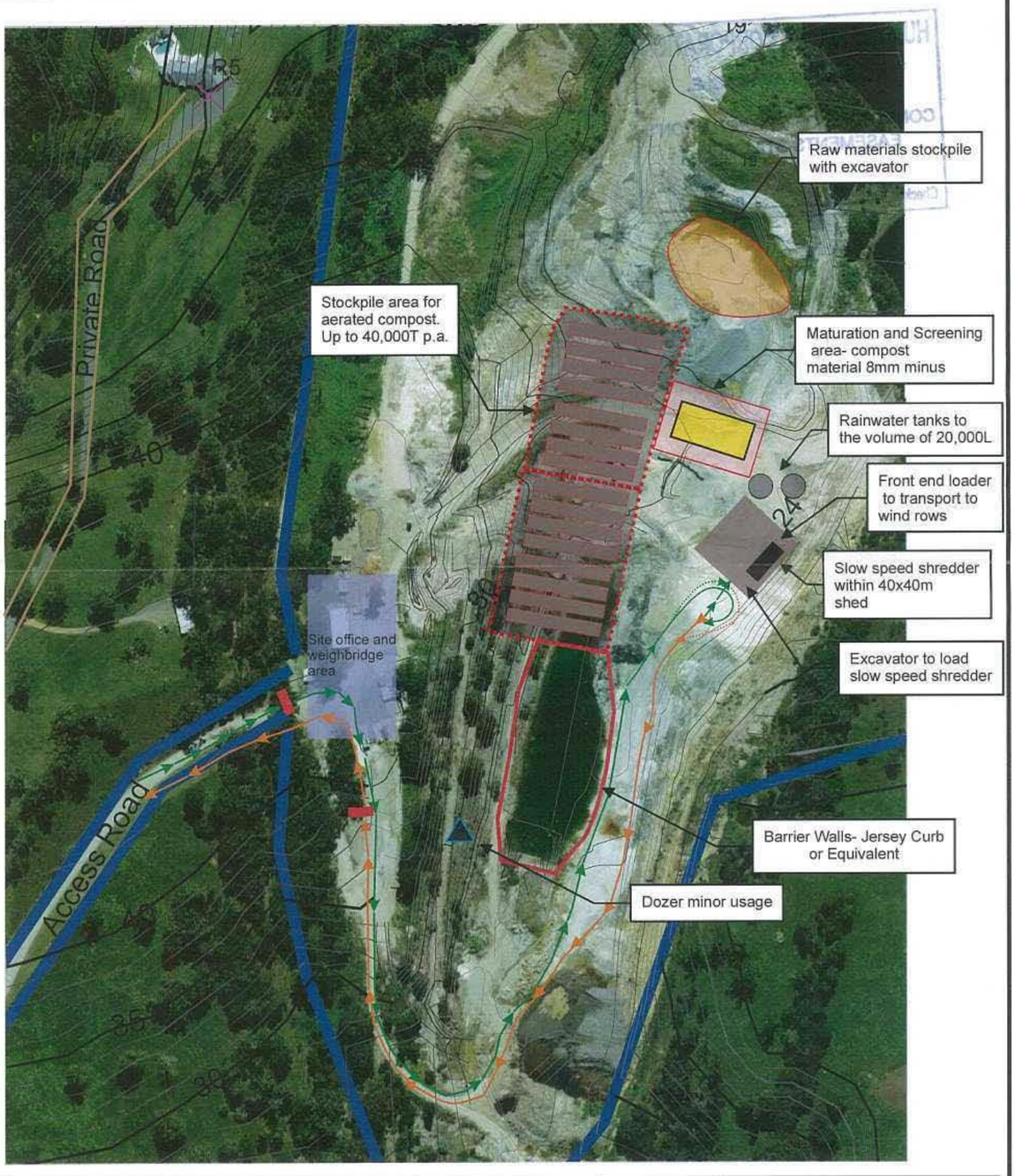
11/10/2016

vgt

N

Scale: 0 20 40 60 80m

Location:	Gosforth	**Source:**	VGT Pty Ltd	**Our Ref:**	V:1084_EIS_CDA_C005_R3_F5.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	1 metre	**Office:**	Thornton



Legend					
	Ingress to site		Shed for slow speed shredder and rain tanks		Property Boundary
	Egress from site		Traffic signal lights		Weighbridge and site office
	Concrete base for composting		Windrows to be covered with tarp		Private Road

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Plan of:	Riverbend Quarry EIS Compost DA - Processing Area
Figure:	SIX
Sheet:	1 of 1
Version/Date:	V3 02/07/2015

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

vgt Environmental Compliance Solutions

N

Scale: 0 10 20m

Location:	863 Anambah Road, Gosforth, NSW	**Source:**	VGT Pty Ltd	**Our Ref:**	1084_EIS_CDA_C006_V3_F6.cdr
Council:	Maitland City Council	**Survey:**	N/A	**Plan By:**	TO/JD
Tenures:	Licence No. 12510	**Projection:**	N/A	**Project Manager:**	GVT
Client:	Riverbend Quarry Pty Ltd	**Contour Interval:**	1m	**Office:**	Thornton

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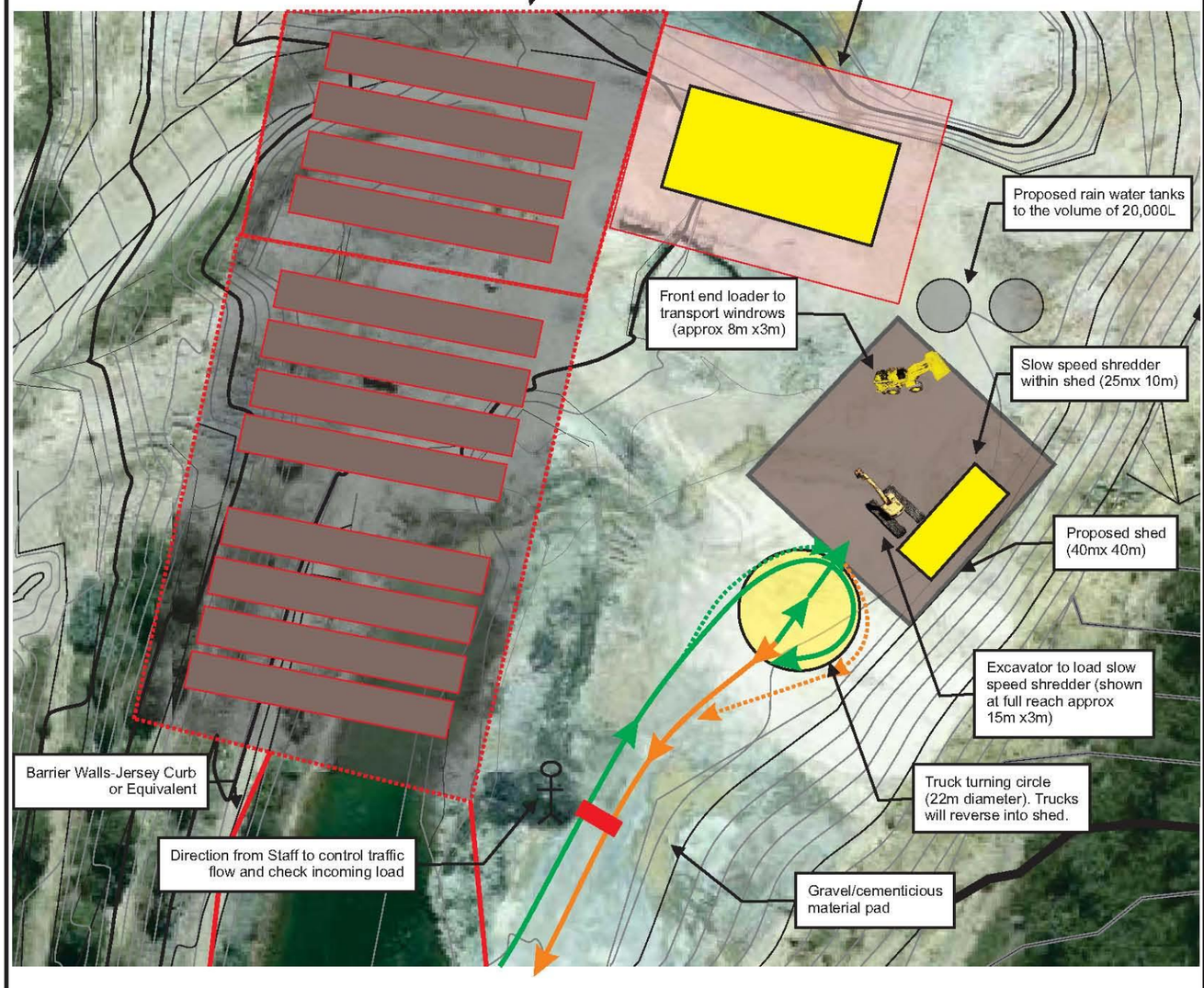
11/10/2016



Legend

→	Commercial Ingress to Site	⇢	Domestic Ingress to Site	▭	Gravel/Cementicious Material Pad
→	Commercial Egress from Site	⇢	Domestic Egress from Site	▭	Screening/Maturation Pad
🚦	Traffic Signal Lights	▭	Concrete Base for Composting	▭	Shed to Hold Slow Speed Shredder within

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Plan of:	Riverbend Quarry EIS Compost DA - Detailed Plan of Proposed Slow Speed Shredder Shed	***Location:***	863 Anambah Road, Gosforth, NSW	***Source:***	PCB and The Williams River Steel 08/04/2015	***Our Ref:***	1084_EIS_CDA_C015_V0_F91.cdr
Figure:	NINE	***Council:***	Maitland City Council	***Survey:***	N/A	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Licence No. 12510	***Projection:***	N/A	***Project Manager:***	GVT
Version/Date:	V0 02/07/2015	***Client:***	Riverbend Quarry Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

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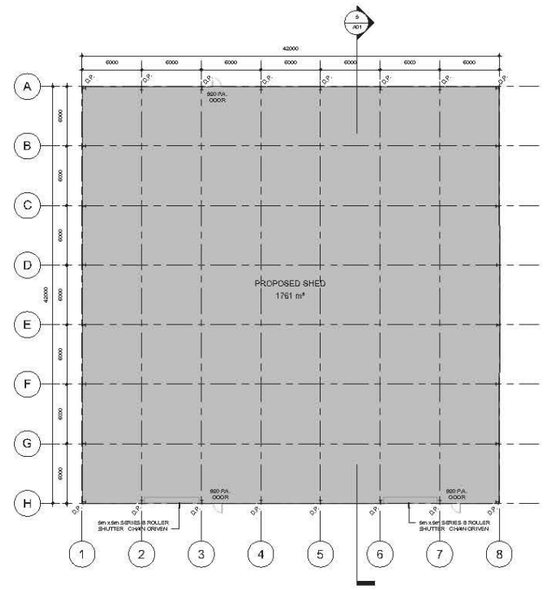
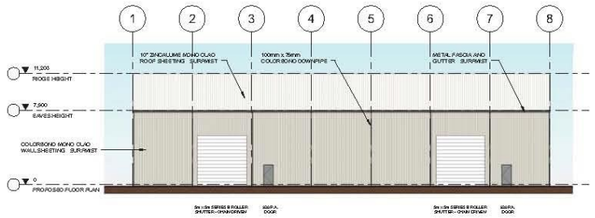
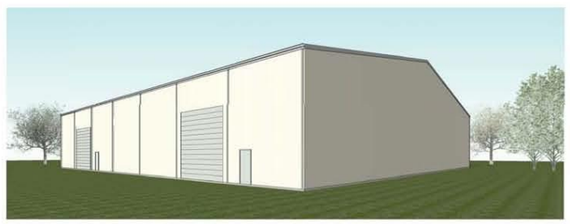


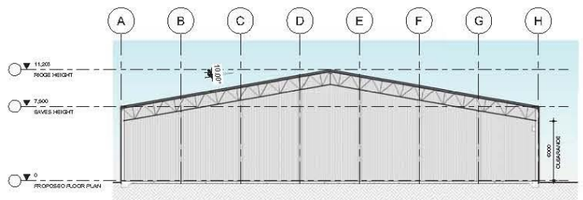
PROPOSED FLOOR PLAN
1 : 200



SOUTHERN ELEVATION
1 : 200

WESTERN ELEVATION
1 : 200





SECTION A-A
1 : 200

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ISSUE	DESCRIPTION	DATE
1	CONCEPT FOR REVIEW	08/04/2015

The WILLIAMS RIVER STEEL There is a Difference

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FAX: 02 49582099 WEB: www.wrsteel.com.au
AUSTRALIA WIDE: 1300 365 121 WEB: www.precastpanels.com.au

PROPOSED BUILDING

RIVERBEND QUARRY, 863 ANAMBAH ROAD, GOSFORTH, NSW, 2320

RIVERBEND QUARRY

CONCEPT

FLOOR PLAN

DRAWN:	ST	CHECKED:	RF
JOB No: JN612598	DATE: 08/04/2015	SCALE:	1:100
PAGE SIZE: A1	SHEET: A01	ISSUE:	1

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APPENDIX B – EP&A REGULATIONS 2000[2]

144 Referral of certain plans and specifications to New South Wales Fire Brigades (cf clause 79F of EP&A Regulation 1994)

(1) This clause applies to:
- (a) a class 9a building that is proposed to have a total floor area of 2,000 square metres or more, or
- (b) a building (other than a class 9a building) that is proposed to have:
  - (i) a fire compartment with a total floor area of more than 2,000 square metres, or
  - (ii) a total floor area of more than 6,000 square metres,

where:

- (c) the building is the subject of an application for erection, rebuilding, alteration, enlargement or extension, and
- (d) the plans and specifications for the erection, rebuilding, alteration, enlargement or extension provide for an alternative solution to meet the performance requirements contained in any one or more of the Category 2 fire safety provisions.

(2) Within 7 days after receiving an application for a construction certificate for a building to which this clause applies, the certifying authority must forward to the Fire Commissioner:
- (a) a copy of the application, and
- (b) a copy of the plans and specifications for the building, and
- (c) details of the performance requirements that the alternative solution is intended to meet, and
- (d) details of the assessment methods to be used to establish compliance with those performance requirements, which may be delivered by hand, forwarded by post or transmitted electronically, but may not be sent by facsimile transmission.

(3) The Fire Commissioner must notify the certifying authority of the date of receipt of documents under subclause (2) (the document receipt date) within 2 days after receiving those documents and must, within 10 days after receiving those documents, notify the certifying authority whether or not an initial fire safety report for the building will be provided.

(4) The Fire Commissioner may provide the certifying authority with an initial fire safety report for the building, but only if notice has been given to the certifying authority in accordance with subclause (3) that an initial fire safety report will be provided.

(5) An initial fire safety report may recommend conditions to be imposed on the erection, rebuilding, alteration, enlargement or extension of the building to which the report relates.

[2] As at 1st March 2018

(6) The certifying authority must not issue a construction certificate for a building to which this clause applies unless it has taken into consideration an initial fire safety report for the building issued in accordance with this clause.

(6A) The certifying authority may issue a construction certificate without taking an initial fire safety report into consideration if:

(a) the Fire Commissioner has notified the certifying authority in accordance with subclause (3) that an initial fire safety report will not be provided, or

(b) the Fire Commissioner has failed to notify the certifying authority within 10 days after the document receipt date whether or not an initial fire safety report will be provided, or

(c) the Fire Commissioner has given notice in accordance with subclause (3) that an initial fire safety report will be provided, but such a report is not provided within 28 days after the document receipt date.

(6B) If the certifying authority does not adopt any recommendation in an initial fire safety report that it is required to take into consideration because the certifying authority does not agree with the recommendation, the certifying authority must cause written notice to be given to the Fire Commissioner of the fact that it has not adopted the ` recommendation and of the reasons why it has not adopted the recommendation.

(6C) If the Fire Commissioner has notified the certifying authority within 10 days after the document receipt date that an initial fire safety report will be provided but has failed to provide the report within 28 days after the document receipt date, the certifying authority must notify the Fire Commissioner in writing if a construction certificate is issued.

(7) If the certifying authority adopts any condition recommended by an initial fire safety report:

(a) it must ensure that the terms of the recommended condition have been included in the plans and specifications for the building work, in the case of a condition whose terms are capable of being so included, or

(b) it must attach to the construction certificate a condition in the same terms as those of the recommended condition, in the case of a condition whose terms are not capable of being so included.

(8) Compliance with the requirement that the terms of a recommended condition be included in the plans and specifications for building work is sufficiently complied with:

(a) if the plans and specifications are redrawn so as to accord with those terms, or

(b) if those terms are included by way of an annotation (whether by way of insertion, deletion or alteration) marked on the relevant part of those plans and specifications.

(9) In this clause:

initial fire safety report means a written report specifying whether or not the Fire Commissioner is satisfied, on the basis of the documents referred to in subclause (2):

(a) that the alternative solution will meet such of the performance requirements as it is intended to meet, and

(b) that the fire hydrants in the proposed fire hydrant system will be accessible for use by Fire and Rescue NSW, and

(c) that the couplings in the system will be compatible with those of the fire appliances and equipment used by Fire and Rescue NSW.

144A Alternative solution report required for certain fire safety aspects of building work

(1) A certifying authority must not issue a construction certificate for building work that involves an alternative solution under the Building Code of Australia in respect of a fire safety requirement unless the certifying authority:

(a) has obtained or been provided with an alternative solution report that:
- (i) was prepared by or on behalf of a person with the qualifications required by this clause, and
- (ii) includes a statement that the alternative solution complies with the relevant performance requirements of the Building Code of Australia, and
- (iii) where relevant, identifies the deemed-to-satisfy provisions of the Building Code of Australia being varied, and
- (iv) describes and justifies the alternative solution, including the acceptance criteria and parameters on which the justification is based and any restrictions or conditions on the alternative solution, and
- (v) includes a copy of the brief on which the justification of the alternative solution is based, and

(b) is satisfied that:
- (i) the report correctly identifies both the performance requirements and the deemed-to-satisfy provisions of the Building Code of Australia, and
- (ii) the plans show, and the specifications describe, the physical elements of the alternative solution (where they are capable of being shown and described).

(2) This clause does not apply to building work relating to a class 1a or 10 building, as defined in the Building Code of Australia.

(3) A person has the qualifications required by this clause if:
(a) the person is a competent fire safety practitioner who is also a fire safety engineer and the report is about an alternative solution under the Building Code of Australia in respect of the requirements set out in EP1.4, EP2.1, EP2.2, DP4 and DP5 in Volume 1 for:
- (i) a class 9a building, as defined in the Building Code of Australia, that is proposed to have a total floor area of 2,000 square metres or more, or
- (ii) any building (other than a class 9a building so defined) that is proposed to have a fire compartment, as defined in the Building Code of Australia, with a total floor area of more than 2,000 square metres, or
- (iii) any building (other than a class 9a building so defined) that is proposed to have a total floor area of more than 6,000 square metres, or

(b) the person is a competent fire safety practitioner, in the case of any other report.

Fire Safety Engineer means a person holding Category C10 accreditation under the Building Professionals Act 2005.

167A Competent fire safety practitioners

(1) The Secretary may, by order published in the Gazette, recognise a class of persons as competent fire safety practitioners for the purposes of one or more provisions of this Regulation.

(2) Without limiting the classes of persons who may be recognised, they may include:
  (a) a class of persons holding a specified category of certificate of accreditation under the Building Professionals Act 2005, or
  (b) a class of persons holding a specified category of certificate of accreditation under the Building Professionals Act 2005 and having some other characteristic or qualification, or
  (c) a class of persons who have undergone particular training or assessment carried out by a specified professional organisation or body or an industry organisation or body.

(3) In determining whether or not to make an order under this clause, the Secretary must have regard to any guidelines published by the Secretary about the steps that professional or industry organisations or bodies are to follow in order to be considered for inclusion in such an order, including requirements about auditing and complaints handling.

(4) Until an order is published under subclause (1) and one or more persons have been recognised as a competent fire safety practitioner for a particular function under this Regulation:
  (a) for the purposes of the functions referred to in clauses 130, 136AA, 144A, 146B and 164B, any person who, in the written opinion of the relevant certifying authority or principal certifying authority, as the case may be, is competent to perform the fire safety assessment functions under those clauses is taken to be a competent fire safety practitioner, and
  (b) for the purposes of the functions referred to in Divisions 4 and 5 of Part 9, any person who, in the written opinion of the relevant building owner, is competent to perform the fire safety assessment functions under those Divisions is taken to be a competent fire safety practitioner.

(5) In this clause:
Secretary means the Secretary of the Department of Finance, Services and Innovation.

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

G2. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED. THE ENGINEERS' DRAWINGS SHALL NOT BE SCALED.

G3. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVER STRESSED UNDER CONSTRUCTION ACTIVITIES. TEMPORARY BRACING SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED.

G4. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT SAA CODES INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

G5. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE ENGINEER.

G6. ALL DIMENSIONS ARE IN MILLIMETERS UNO. ALL LEVELS ARE EXPRESSED IN METRES.

G7. THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING:

LIVE LOADS: (TO AS1170.1)

AREA	kN/m ^{2}
ROOF	0.25
-	-
-	-

WIND LOADS: (TO AS1170.2)

WIND VELOCITY - Ms = 0.85
- Mt = 1.00
- Md = 1.00

TERRAIN CATEGORY - TC = 3

EARTHQUAKE LOADS: (TO AS1170.4)

EARTHQUAKE ZONE = a = 0.11, S=1.0, I = 1.0

BULK EARTHWORKS

BE1. THE SITE SHALL BE STRIPPED TO A NOMINAL DEPTH OF 150 mm UNDER PAVEMENTS AND BUILDINGS. ALL EXISTING FILL, ORGANIC MATERIAL, REFUSE AND ROOTS SHALL BE REMOVED.

BE2. AFTER APPROVAL, THE EXCAVATED SUB GRADE LEVEL SHALL BE PROOF ROLLED FOR A MINIMUM OF SIX (6) PASSES USING A VIBRATING ROLLER, MINIMUM DEADWEIGHT TEN TONNES. SOFT, WET AND UNSUITABLE SPOTS SHALL BE REMOVED AND REPLACED BY APPROVED SITE MATERIAL AS DIRECTED BY THE SUPERINTENDENT. THE SUB GRADE SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

BE3. WHERE FILL IS REQUIRED TO ACHIEVE ROAD PAVEMENT SUB GRADE LEVEL, IT SHALL BE APPROVED RIPPED SANDSTONE, HAVING A MAXIMUM PARTICLE SIZE OF 75 mm UNLESS DIRECTED OTHERWISE. IT SHALL BE PLACED IN 150 mm LOOSE LAYERS AND COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

BE4. ALL BATTERS SHALL BE 1 IN 4 MAXIMUM UNO.

SUB GRADE PREPARATION

- FOR SLABS ON GROUND AND RAFT SLABS.

E1. THE SITE SHALL BE EXCAVATED TO LEVELS SHOWN ON RELEVANT DRAWINGS.

E2. THE SITE SHALL BE STRIPPED TO A DEPTH OF 150 mm MIN. PRIOR TO THE FILL OPERATION. ALL EXISTING FILL, ORGANIC MATTER, REFUSE AND ROOTS SHALL BE REMOVED.

E3. PROOF ROLL THE EXCAVATED AREA BEFORE FILLING. AREAS OF LOCAL SOFTENING REVEALED DURING EXCAVATION OR STRIPPING SHALL BE COMPACTED TO 100% STANDARD DRY DENSITY RATIO TO AS1289 5.1.1.

E4. CLAY MATERIAL FREE OF ORGANIC MATERIAL FROM CUT AREAS MAY BE USED AS ENGINEERING FILL PROVIDED THAT IT HAS BEEN TESTED. ALL IMPORTED SELECTED FILL SHALL BE TESTED AND APPROVED BY THE ENGINEER.

E5. ALL FILL SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

E6. ALL SELECT ROAD BASE AND HARD-CORE FILLING SHOWN UNDER SLABS ON DRAWINGS SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

FOOTINGS

F1. FOOTINGS HAVE BEEN DESIGNED FOR THE FOLLOWING SAFE BEARING PRESSURE: 150 kPa

F2. FOUNDATION MATERIAL SHALL BE INSPECTED AND APPROVED IN WRITING BY A GEOTECHNICAL ENGINEER FOR THE ABOVE SAFE BEARING PRESSURE BEFORE PLACING CONCRETE.

F3. FOR FOUNDING CONDITIONS REFER TO GEOTECHNICAL INVESTIGATION REPORT REFERENCE BY

F4. SLAB ON GROUND HAS BEEN DESIGNED FOR MIN C.B.R. 5 IN ACCORDANCE WITH CEMENT & CONCRETE ASSOCIATION, CONCRETE INDUSTRIAL FLOOR & PAVEMENT DESIGN.

F5. SUB GRADE SHALL BE INSPECTED AND APPROVED IN WRITING BY A GEOTECHNICAL ENGINEER FOR THE ABOVE C.B.R.

REINFORCED CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS:

ELEMENT	SLUMP mm	MAX. SIZE AGG. mm	CEMENT TYPE	F'c AT 28 DAYS - MPa	ADMIXTURE
ALL, UNO	80	20	A	25	-

C3. MINIMUM CLEAR CONCRETE COVER TO REINFORCEMENT INCLUDING TIES AND STIRRUPS SHALL BE AS FOLLOWS UNO.

ELEMENT	CAST AGAINST FORMS COMPLYING WITH CURRENT SAA CODE		NO FORM WORK mm
	IN SHELTERED LOCATION mm	EXPOSED TO GROUND OR WEATHER mm	
PAD FOOTINGS	-	65	75
STRIP FOOTINGS	-	50	65
COLUMNS	40	50	75
WALLS	20	40	65
BEAMS	25	40	65
SLABS	20	40	65

C4. COVER TO REINFORCEMENT SHALL BE OBTAINED BY THE USE OF APPROVED BAR CHAIRS. ALL CHAIRS SHALL BE SPACED AT 1000 CTS MAXIMUM.

C5. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED. VIBRATORS SHALL NOT BE USED TO SPREAD CONCRETE.

C6. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C7. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

C8. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO APPROVAL OF THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE SCABBLED OVER THE WHOLE FACE AND ANY UNSOUND MATERIAL REMOVED.

C9. REINFORCEMENT IS REPRESENTED DIAGRAMMATIC ALLY; IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

C10. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN OR AS APPROVED BY THE ENGINEER. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT AS SPECIFIED IN AS3600. COGS AND HOOKS SHALL BE STANDARD UNLESS SHOWN OTHERWISE.

C11. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.

C12. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.

C13. REINFORCEMENT SYMBOLS:

N - DENOTES DEFORMED GRADE 500 NORMAL DUCTILITY REINFORING BARS TO AS/NZS4671.
H - DENOTES ROUND GRADE 250 NORMAL DUCTILITY REINFORCING BARS TO AS/NZS4671.
SL - DENOTES DEFORMED GRADE 500 LOW DUCTILITY REINFORING MESH TO AS/NZS4671.
L-TM - DENOTES DEFORMED GRADE 500 LOW DUCTILITY TRENCH MESH TO AS/NZS4671.

C14. ALL REINFORCING FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED IN FLAT SHEETS.

C15. SPLICES IN FABRIC: THE OUTERMOST TRANSVERSE WIRES SHALL BE OVERLAPPED BY AT LEAST THE SPACING OF THESE TRANSVERSE WIRES PLUS 25 mm

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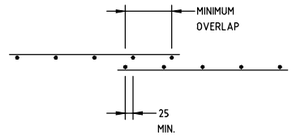
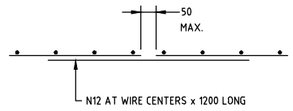


ALTERNATIVE FABRIC SPLICE DETAIL:



C16. EXPOSED CORNERS SHALL BE 20 mm CHAMFERED UNO.

C17. ALL REINFORCEMENT SHALL BE INSPECTED BY THE SUPERINTENDENT OR ENGINEER PRIOR TO PLACING CONCRETE.

C18. ALL SLAB CONCRETE TO BE CURED IN AN APPROVED MANNER FOR A MINIMUM OF 7 DAYS

C19. ALL FORM WORK AND PROPS FOR SLABS AND BEAMS SHALL BE REMOVED BEFORE CONSTRUCTION OF ANY MASONRY WALLS OR PARTITIONS ON THE FLOOR

C20. SLAB HAS BEEN DESIGNED FOR 2 TONNE FORKLIFT LOADS, MAXIMUM.

C21. SLAB AND FOUNDATIONS TO BE CAST ON A NATURAL COMPACTED SUB GRADE OR APPROVED COMPACTED FILL, (COMPACTION TO BE TO A MINIMUM OF 98% STANDARD DRY DENSITY TO A.S. 1289 E1.1, HAVING:

- A CBR NOT LESS THAN 8.

- A SAFE BEARING CAPACITY OF NOT LESS THAN 150 kPa. SITE TO BE CONFIRMED AS MEETING THESE DESIGN REQUIREMENTS.

C22. ALL ABBREVIATIONS ARE IN ACCORDANCE WITH AS1100.

PRE CAST CONCRETE

PC1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 AND THE SPECIFICATION.

PC2. CONCRETE GRADE SHALL BE: 32 MPa

CONCRETE STRENGTH AT REMOVAL FROM MOULDS SHALL BE: 20 MPa (min)

PC3. CONCRETE MIX, SIZE AND COLOUR OF AGGREGATE, METHOD OF CURING AND FINISH SHALL BE APPROVED BY ENGINEER.

PC4. DIMENSIONS SHOWN ARE FINAL STRUCTURAL SIZES AND ADDITIONAL CONCRETE MUST BE PROVIDED TO ALLOW FOR LOSS OF STRUCTURAL THICKNESS DUE TO THE USE OF RETARDING AGENTS AND SURFACE TREATMENT.

PC5. PANEL STRUCTURAL THICKNESS SHALL BE AS NOTED.

PC6. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS, REBATES, DRIPS, SEALS, BAFFLES, ETC..

PC7. ALL METAL WORK AND CAST-IN FIXINGS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS1650 UNO. TOP SURFACE LIFTING FERRULES LEFT FINALLY EXPOSED SHALL BE STAINLESS STEEL. PROJECTING REINFORCEMENT SHALL BE COATED WITH A CEMENT SLURRY WHICH MUST BE REMOVED PRIOR TO BUILDING

PC8. ALL CAST-IN FERRULES SHOWN ON THE DRAWINGS ARE TO REMAIN SEALED UNTIL THE ERECTION OF THE PANEL. THEY ARE NOT TO BE USED FOR LIFTING PURPOSES.

PC9. INTERFACES OF THE PRE CAST UNITS THAT ARE TO HAVE INSITU CONCRETE CAST AGAINST THEM SHALL BE THOROUGHLY ROUGHENED AN AMPLITUDE OF 5 mm.

PC10. NO INSERTS SHALL BE 'SHOT' (FIRED) OR DRILLED INTO THE UNITS WITHOUT APPROVAL BY THE ENGINEER.

PC11. CLEAR CONCRETE COVER TO REINFORCEMENT SHALL BE AS INDICATED ON THE DRAWINGS.

TOLERANCES:
OUTSIDE FACE: +5 mm -0 mm
INSIDE FACE: +5 mm -0 mm

PC12. FABRIC IN PANELS SHALL BE OF ONE SHEET - NO LAPPING IS PERMITTED UNLESS SHOWN ON STRUCTURAL DRAWINGS.

PC13. PENETRATIONS FOR SERVICES SHALL BE NEAT FORMED HOLES. HOLE BORING THROUGH PANELS WILL NOT BE PERMITTED.

PC14. TEMPORARY STEEL PACKERS TO BE USED FOR LEVELING UNDER CORBELS AS SHOWN ON DRAWINGS MAY BE LEFT PERMANENTLY PROVIDED THEY HAVE A MINIMUM OF 50 mm GROUT COVER AND ENSURE BEARING PRESSURE LESS THAN 7 MPa. STEEL PACKERS SHALL NOT BE USED BETWEEN UNIT JOINTS.

PC15. PRE CAST CONCRETE PANELS SHALL NOT BE ERECTED UNTIL ALL THE PROPS HAVE BEEN REMOVED.

PC16. ALL SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION COMMENCES. SHOP DRAWINGS SHALL SHOW ALL CAST IN INSERTS.

PC17. THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE ENGINEER FULL DETAILS AND COMPUTATIONS BY A CHARTERED ENGINEER EXPERIENCED IN THIS TYPE OF WORK. THESE SHALL COVER THE HANDLING PROCEDURE OF THE UNITS THROUGHOUT ALL STAGES INCLUDING STRIPPING, LIFTING, STACKING, TRANSPORTING AND ERECTION. CONCRETE STRESSES THROUGHOUT HANDLING SHALL NOT CAUSE CRACKING. COMPUTATIONS AND DETAILS SHALL INCLUDE LOCATION AND SIZE OF INSERTS AND TEST PROVING ANCHORAGE CAPACITY OF LIFTING FERRULES.

STRUCTURAL STEEL WORK

S1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS4100.

S2. QUALIFICATION OF WELDING PROCEDURES AND PERSONNEL SHALL CONFORM TO SECTION 4 OF AS1554.1. NON DESTRUCTIVE TESTING OF WELDS SHALL INCLUDE 100% VISUAL INSPECTIONS AND ADDITIONAL TESTING AS SHOWN ON THE DRAWINGS.

S3. ALL WELDS SHALL BE 6 mm CONTINUOUS FILLET TYPE SP UNO. BUTT WELDS WHERE INDICATED ON THE DRAWINGS SHALL BE COMPLETE PENETRATION WELDS AS DEFINED IN AS1554.1.

S4. BOLT DESIGNATION:

4.6/S - COMMERCIAL BOLTS OF GRADE 4.6 TO AS1111 TIGHTENED TO A SNUG TIGHT FIT.
8.8/S - HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 TIGHTENED TO A SNUG TIGHT FIT.
8.8/TB - HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS1511 AS A BEARING JOINT.
8.8/TF - HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS1511 AS A FRICTION JOINT WITH FACING SURFACES LEFT UNCOATED.

UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE M20 GRADE 8.8/S AND NO STEEL TO STEEL CONNECTIONS SHALL HAVE LESS THAN 2 COMMERCIAL BOLTS 4.6/S.

S5. HIGH STRENGTH TB AND TF BOLTS SHALL BE INSTALLED USING APPROVED LOAD INDICATING WASHERS.

S6. GUSSET PLATES SHALL BE 10 mm THICK, UNO.

S7. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS IS NECESSARY TO STABILIZE THE STRUCTURE DURING ERECTION.

S8. THE CONTRACTOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL TO STEEL AND TIMBER TO STEEL WHETHER OR NOT DETAILED IN THE DRAWINGS.

S9. CONCRETE ENCASED STEEL WORK SHALL BE WRAPPED WITH F41 FABRIC AND SHALL HAVE 50 mm COVER UNO ON THE DRAWINGS.

S10. STEEL WORK NOT CONCRETE ENCASED, SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION:

ELEMENT	SURFACE CLEANING	PRIMING
ALL BRICKWORK BUILT-IN AND EXTERNAL STEEL WORK	TO AS1650	HOT-DIPPED GALVANIZED
ALL INTERNAL STEEL WORK	ABRASIVE BLAST TO CLASS 2.5 (AS1627)	INORGANIC ZINC SILICATE

S11. WHERE SEALED TUBE MEMBERS ARE TO BE HOT DIPPED GALVANIZED, THE FABRICATOR SHALL PROVIDE ALL DRILL HOLES AS NECESSARY.

S12. THE CONTRACTOR SHALL PREPARE AND SUBMIT 3 COPIES OF ALL WORKSHOP DRAWINGS FOR APPROVAL. FABRICATION SHALL NOT COMMENCE UNTIL APPROVAL HAS BEEN OBTAINED.

S13. ALL TRANSPORT AND ERECTION DAMAGE, SITE WELDS ETC. SHALL BE REINSTATED TO AN EQUIVALENT FINISH TO ADJACENT STEELWORK.

BLOCKWORK

B1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3700.

B2. REINFORCED CONCRETE BLOCKWORK SHALL COMPLY WITH THE FOLLOWING, UNO:
- BLOCKS : GRADE 15 CONFORMING TO AS1500.
- MORTAR : 1 CEMENT / 0.25 LIME / 3 SAND.
- PROVIDE CLEANOUT HOLES AT BASE OF WALL & ROD CORE HOLES TO REMOVE PROTRUDING MORTAR FINS.
- CORE FILLING : f'c = 20 MPa, 10 AGG, 230 SLUMP +/- 30 mm.
- COVER : 55 mm MIN. FROM OUTSIDE OF BLOCKWORK.

B3. BACKFILL TO RETAINING WALLS TO BE FREE DRAINING GRANULAR MATERIAL, UNO. PROVIDE SUBSOIL DRAIN BEHIND WALL AND AT WEEP HOLES.

B4. VERTICAL CONTROL JOINTS SHALL BE PROVIDED AT 10 m MAX. CENTRES.

B5. NO ADMIXTURES SHALL BE USED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

NOTE: ENGINEER TO REVIEW / APPROVE SHOP DRAWINGS- PRIOR TO FABRICATION AND INSTALLATION.

REV	REVISION	BY	DATE	APPR.

DRAWN	B.L.M	DATE	20/2/18
CHECKED	A.D	DATE	22/2/18
APPROVED	A.D	DATE	22/2/18
DWG No.	3605	SCALE	1:200

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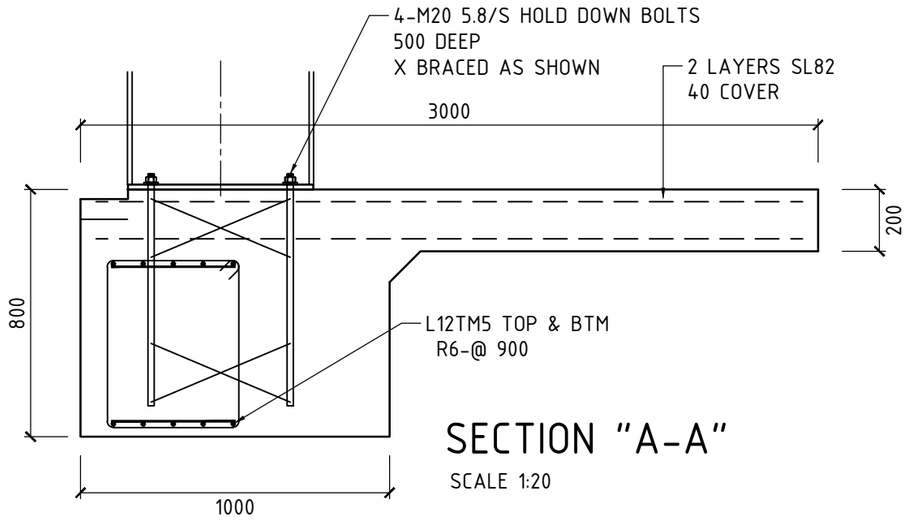
Approved :

DRAWING PROPOSED BUILDING

TITLE RIVERBEND QUARRY PTY LTD
442 ANAMBAH ROAD
ANAMBAH NSW

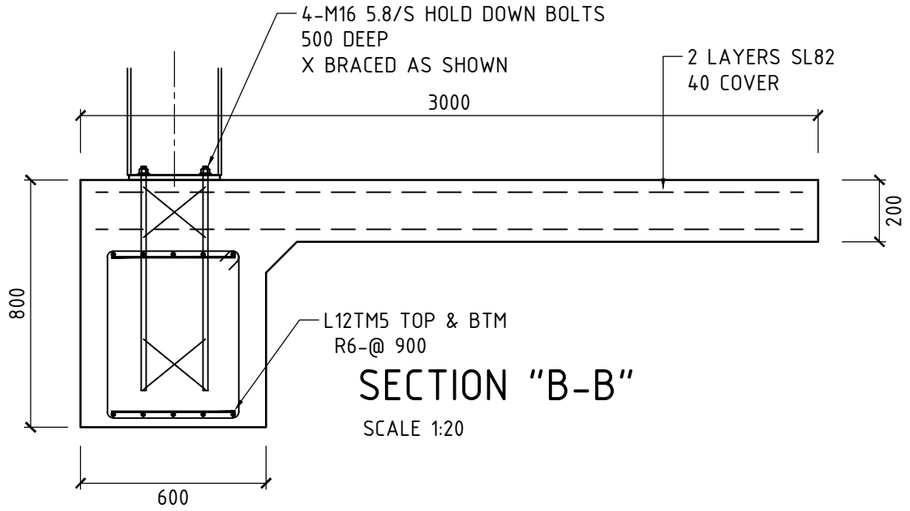
DRAWING No. RI-3606 S01

REV.



SECTION "A-A"

SCALE 1:20



SECTION "B-B"

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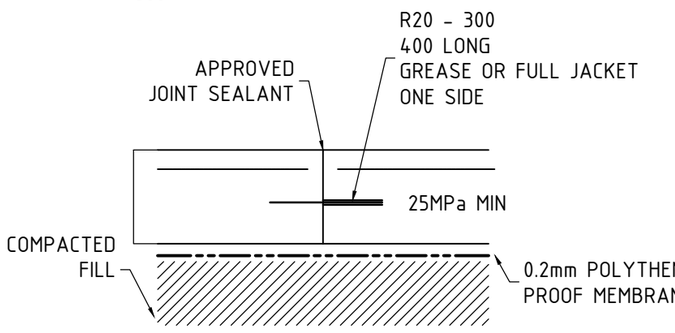

CONTROL JOINT DETAIL - "CJ"

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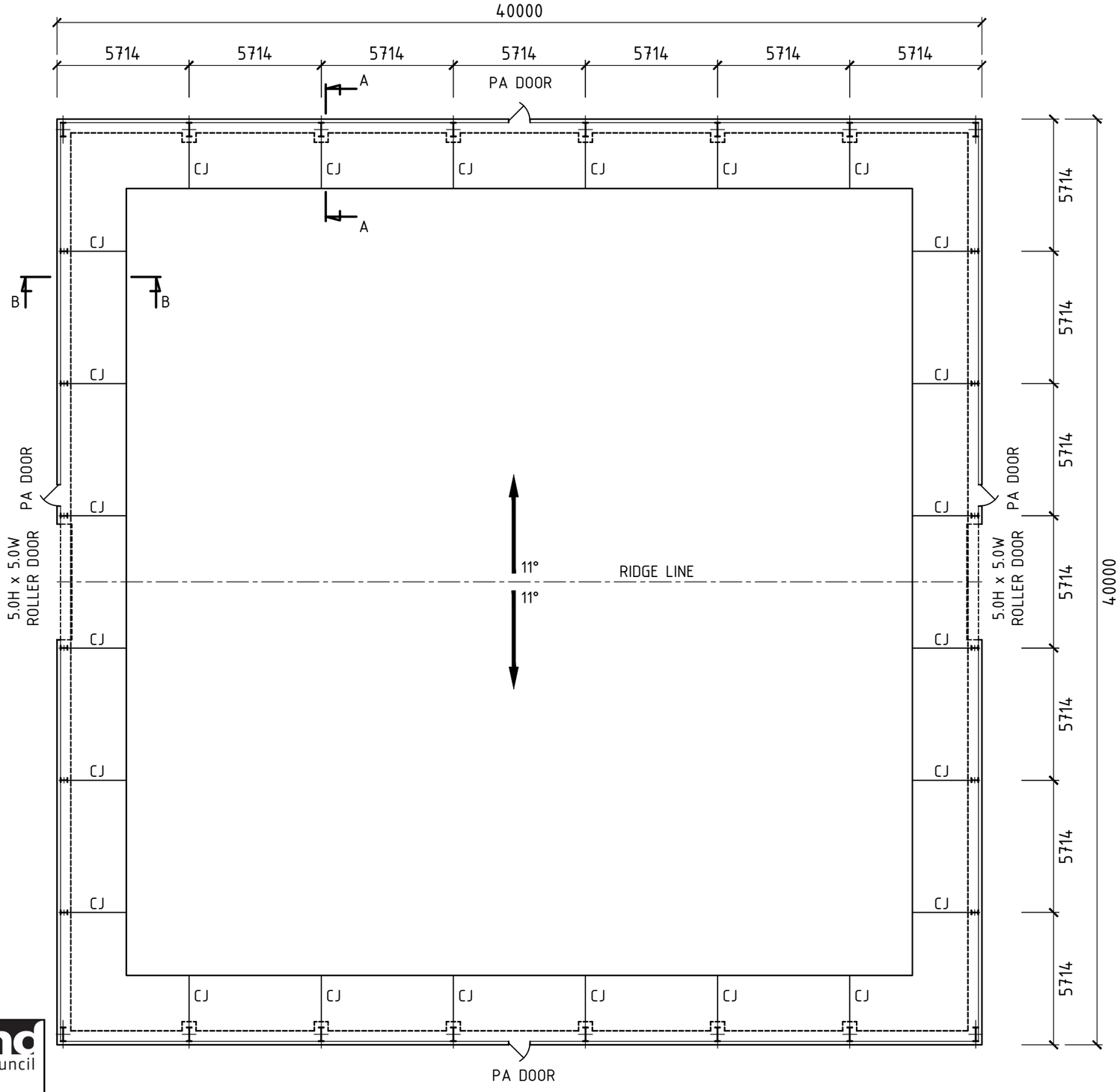

FLOOR PLAN

maitland city council
Approved Plans
NO. CC 17-2404
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TITLE RIVERBEND QUARRY PTY LTD
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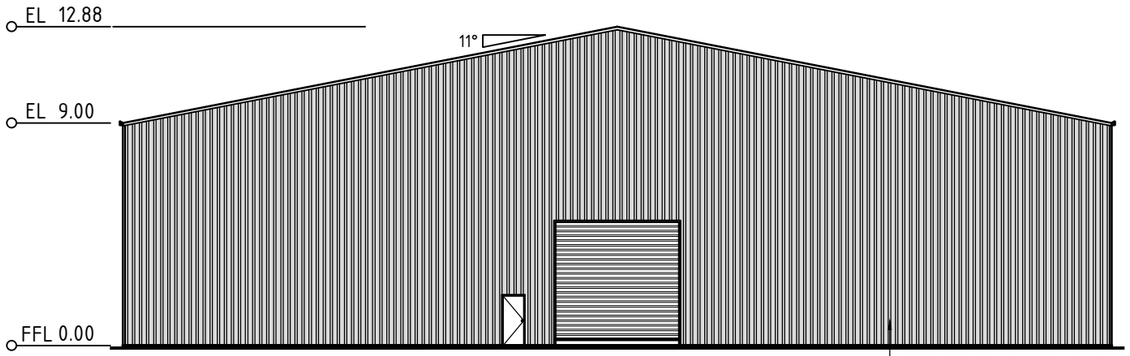
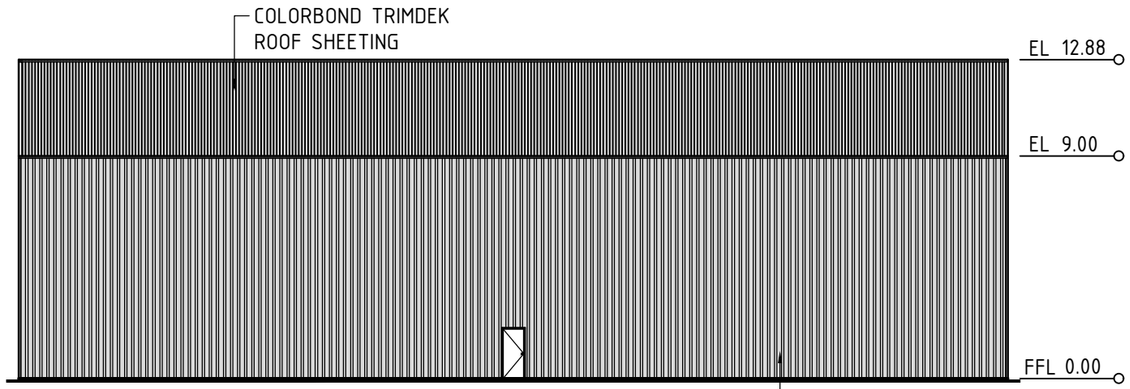
ANAMBAH NSW
REV.
DRAWING No. RI-3606 S02



ELEVATION VIEW "2"
SCALE 1:250



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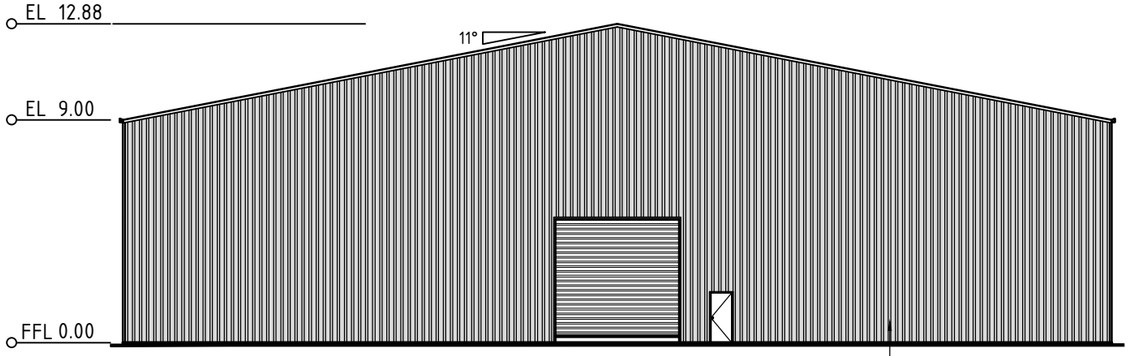

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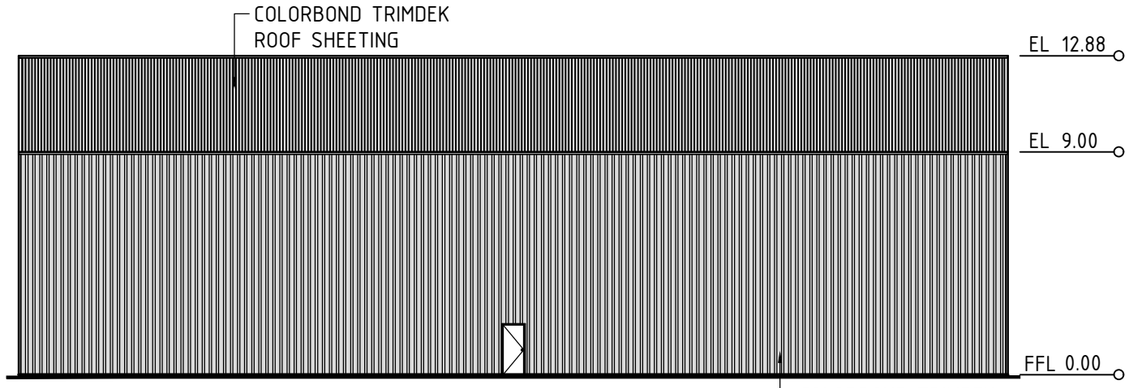

ELEVATION VIEW "3"
SCALE 1:250

PORTAL FRAME MEMBER SCHEDULE

DESCRIPTION	SECTION SIZE REQUIRED	DESCRIPTION	SECTION SIZE REQUIRED
COLUMNS C1	610UB 101 GRADE 300 PLUS	WALL GIRT G2	C/15012 - 1500 C/C MAX SPACING (0 ROW BRID)
WEB TRUSS T1	100x5 SHS CHORDS 1100 C/C (GRADE 450) 65x4 SHS WEBS (GRADE 450) 75x5 SHS WEBS (GRADE 450) LAST 4 WEBS @ COLUMN END	FASCIA	C20015 - (BRID AS PER BAY)
		R/DOOR STYLES DS1	2/C15015 (GRADE450)
		R/DOOR HEADER H1	1/C15012 (GRADE450)
ROOF PURLIN P1	C/15012 - 1500 C/C MAX SPACING, (1 ROW BRID)	ROOF & WALL BRACING	75 x 6 EA
MULLION	310UB 40 GRADE 300 PLUS	RS1 STRUTS	100x100x3 SHS
WALL GIRT G1	C/15012 - 1500 C/C MAX SPACING (1 ROW BRID)	WS1 & ES1 STRUTS	100x100x3 SHS

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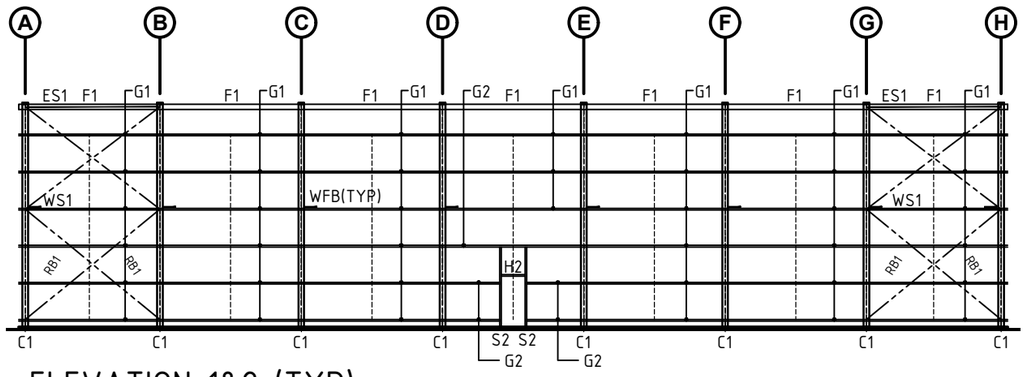
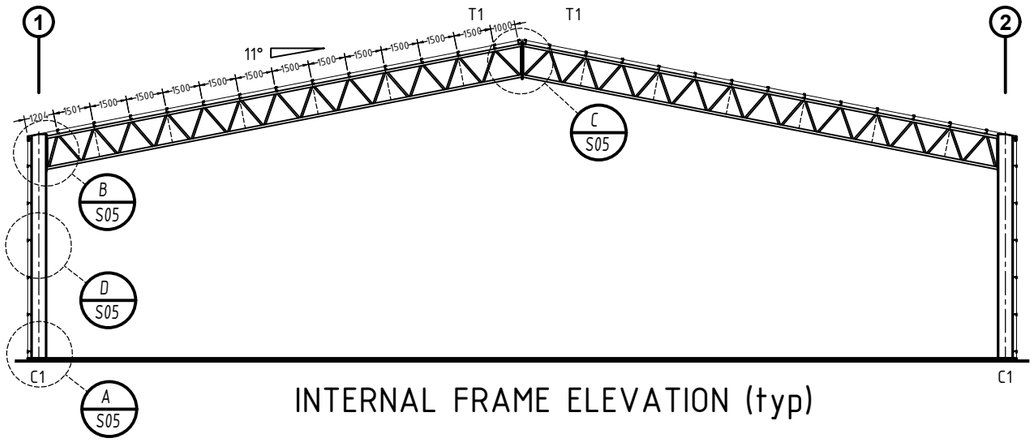
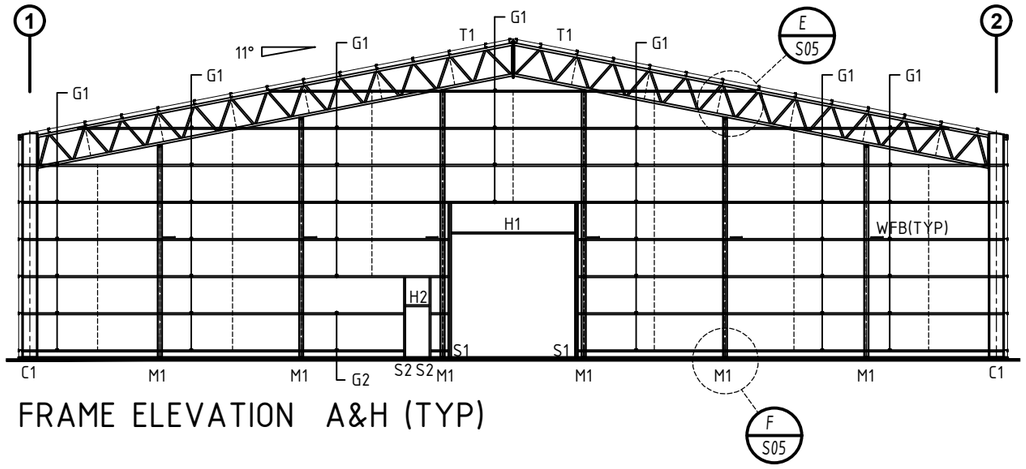
DRAWING No. RI-3606 S03



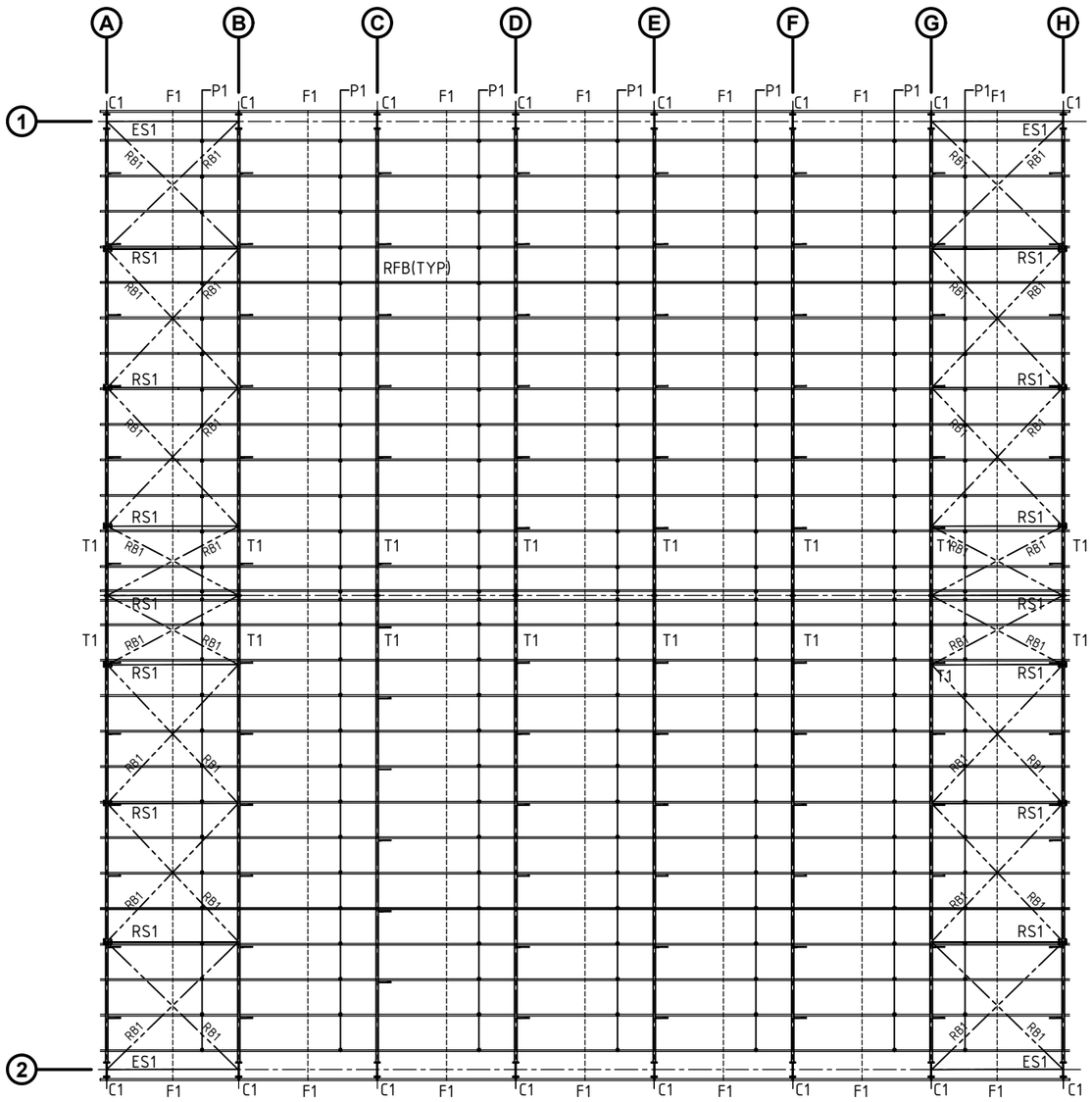
ELEVATION 1&2 (TYP)



INTERNAL FRAME ELEVATION (typ)



FRAME ELEVATION A&H (TYP)



ROOF MARKING PLAN

maitland city council

Approved Plans

NO. CC 17-2404
CONSTRUCTION CERTIFICATE
23/04/2018

REV	REVISION	BY	DATE	APPR.

DRAWN	B.L.M	DATE	20/2/18
CHECKED	A.D	DATE	22/2/18
APPROVED	A.D	DATE	22/2/18
DWG No.	3605	SCALE	1:250

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THOMAS & ASSOCIATES CONSULTING Pty. Ltd.
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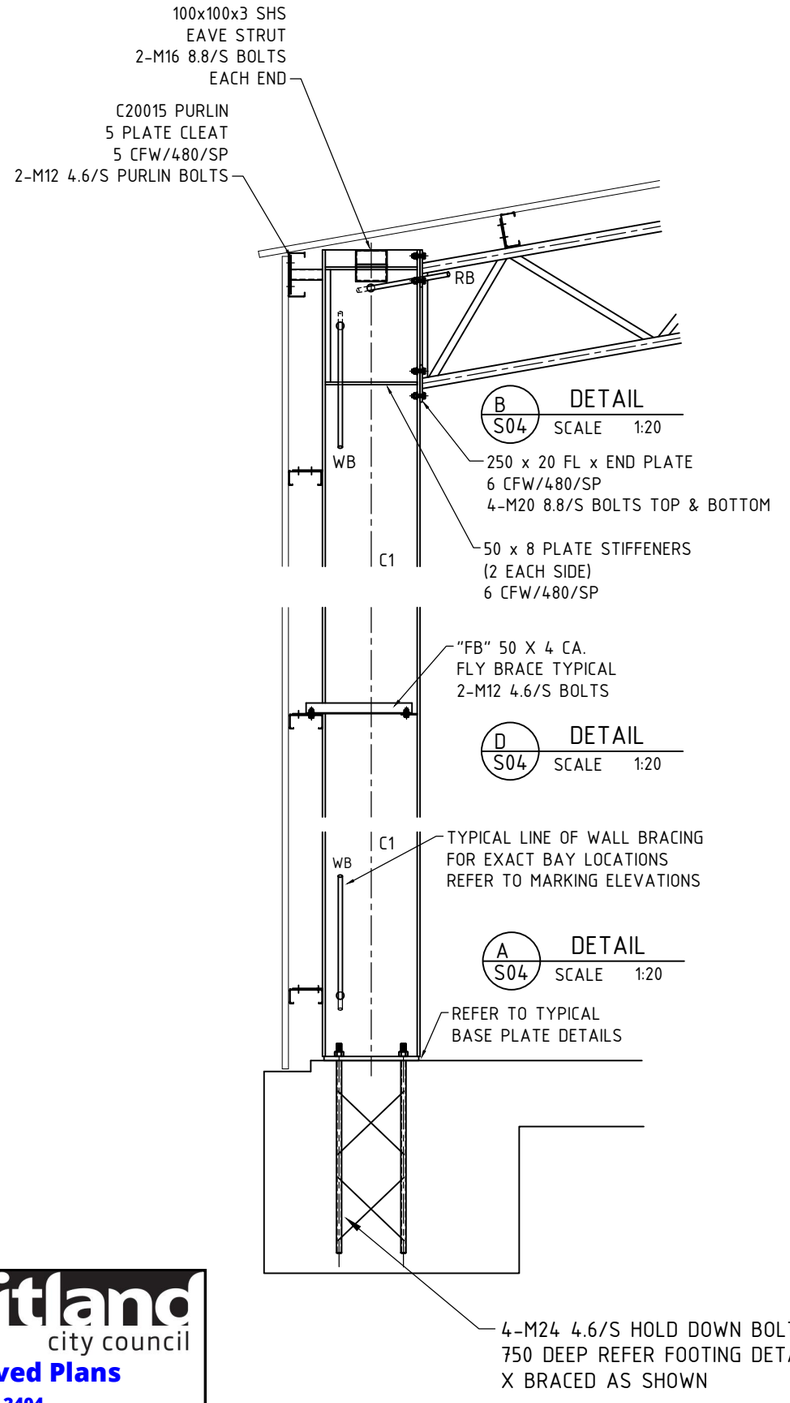
Approved :

DRAWING PROPOSED BUILDING

TITLE RIVERBEND QUARRY PTY LTD
442 ANAMBAH ROAD
ANAMBAH NSW

REV.

DRAWING No. RI-3606 S04



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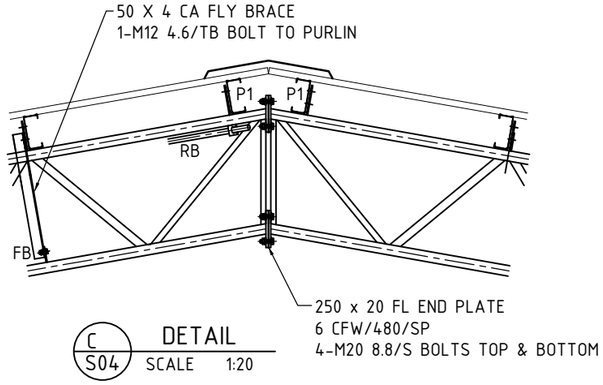

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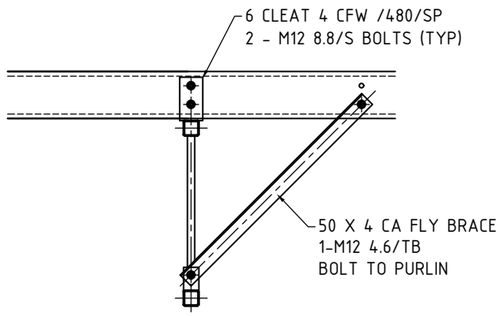

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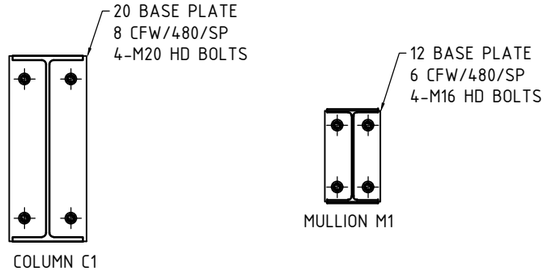

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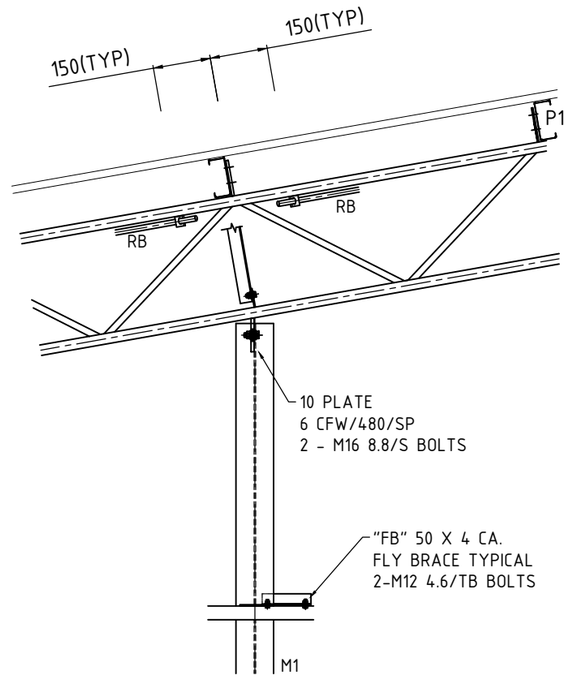

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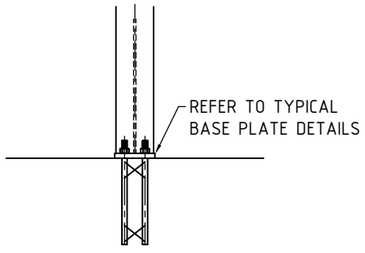

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maitland city council

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23/04/2018

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TITLE RIVERBEND QUARRY PTY LTD
442 ANAMBAH ROAD
ANAMBAH NSW

REV.

DRAWING No. RI-3606 S05

Appendix C – Correspondence from MCC

Pre-Lodgement Meeting Minutes

MEETING DETAILS:	
Meeting Date:	3 February 2021
Commenced & Completed:	10:18am-11.02am
Proposed Development:	The proposed development includes the following: • Modification to development consent DA/15/433:1 • Proposal to change Condition 2 of consent which relates to the type of waste permitted to be processed at the facility. • Currently the facility is permitted to process garden waste, wood waste, natural organic fibrous materials, general solid waste non-prescible and waste derived from food. • Proposal seeks to include prescible waste processing at the facility, however overall amount of waste will not exceed the approved 40,000t • Proposed modification to also include Category 2 Waste Type 'Biosolids and manures' (as per Table 3 from Composting and Related Organics Processing Facilities (DEC2004)).
Attendee(s):	Andrew Krause – AK Environmental Terry Ditton – RiverBend Organics
Council Officers:	Emily O'Halloran – Town Planner Kristy Cousins – Coordinator Planning & Development Gemma McMahon – Team Leader Compliance Sarah Roberts – Environmental Health Officer
Applicant/ Proponent(s):	Andrew Krause – AK Environmental
Attachments and Plans:	Include details on any plans reviewed (include plan date and revision number etc.) Volumetric Survey – 7224 VOL-V3

PROPERTY DETAILS:	
Property Address:	442 Anambah Road, Anambah
Lot and DP:	Lot 22 DP 1069012
Zoning:	The subject site is zoned RU2 Rural Landscape pursuant to the Maitland Local Environmental Plan (MLEP) 2011. The proposed development is defined as Waste or Resource Management Facility which is permissible with consent in the RU2 zone.

Site Constraints:	The subject site is partially mapped as bushfire prone land. The site is mapped as potentially containing Class 5 Acid Sulfate Soils. The lot is partially mapped as flood affected. Subject site is located within 500m of R1 General Residential Land.
Aerial Map:	

STATUTORY CONSIDERATIONS:	
Legislation/ Policy/ Guidelines Applicable – (including, but not limited to):	• *Environmental Planning & Assessment Act 1979;* • *Environmental Planning & Assessment Regulation 2000;* • *SEPP (Infrastructure) 2007;* • *Maitland Local Environmental Plan 2011 (MLEP);* • *Maitland Development Control Plan 2011: A4 – Community Participation, B3 – Hunter River Floodplain, B6 – Waste Not – Site Waste Minimisation and Management.* *However please note that all relevant areas of the DCP should be visited and any other possible legislation, policies and/or guidelines that may be applicable included in any application submitted to Council;* • *Section 7.11 – Maitland Wide Development Contributions Plan.*
Additional MLEP Clauses:	• Clause 2.6 – Subdivision • Clause 2.7 - Demolition • Clause 4.1 – Minimum subdivision lot size • Clause 7.2 – Earthworks

Development Classification:	1. The proposed development may be classed as integrated development, and will be referred to NSW EPA (*Protection of the Environment Operations Act 1997* – Environment protection licence to authorise carrying out of scheduled activities at any premises). 2. The proposed development may be classed as designated development, noting that the proposal has a significant increase in environmental impact, particularly due to potential odour impacts 3. The proposed development may be required to be advertised, noting the proposal is Designated Development.
Capital Investment Value/ Cost of Works	Any DA lodged with Council must clearly state the estimated cost of works (COW) of the proposed development. Please refer to the Department of Planning, Industry and Environment's Planning Circular PS 10-008 which describes what items must be included and excluded when calculating the COW/Capital Investment Value (CIV) for development. Depending upon the COW/CIV, the DA may be determined by the Hunter Central Coast Regional Planning Panel (HCCRPP) or reported to a full Council meeting should it exceed the delegations of Council officers.

Planning Advice

1. A detailed statement of environmental effects (SEE) is required that fully addresses the likely environmental impacts of the development (including impacts on both the natural and built environments), the social and economic impacts in the locality, and how the environmental impacts of the development have been identified. The SEE should demonstrate how identified impacts will be mitigated. A detailed discussion is required, but not limited to the applicable: the objectives of the RU2 Rural Landscape zone, 88b instrument, Flooding, Stormwater, Waste Management, etc. The SEE must also address site suitability and demonstrate that in designing the proposal you have fully considered and responded to the applicable site constraints legislative provisions. Additionally, the SEE must demonstrate that the proposed modification is substantially the same development. Any departures from Council's policies and DCP should be justified with appropriate reasons for justification.

2. As mentioned above, the SEE should provide strong justification that the proposed modification is substantially the same development.

3. The proposal must demonstrate if the modification will result in a net increase to environmental impacts. If there is an increase to environmental impacts then the application is designated development pursuant to Schedule 7 Part 2 Clause 35 of the *Environmental Planning and Assessment Regulation 2000*. Additionally, if the proposal is considered to be Designated Development, the application is Regional Development pursuant to Schedule 7 Clause 7 of the *State Environmental Planning Policy (State and Regional Development)*.

Development Engineering Advice

1. The application should detail if the proposed change in waste type will result in any changes to current traffic arrangements, including the number of vehicles, truck movements. If there is a significant increase to traffic, then a traffic impact assessment shall be submitted with the application.

Environmental Health Advice

1. Statement of Environmental Effects / Environmental Impact Statement must address the EPA's *Composting and Related Facilities – EIS Guideline*

2. The submitted documents indicate that the waste will be processed in the bunkers. Council has concerns as to how the odour can be mitigated using this method.

3. The application should include detail regarding the concentration levels of the leachate and if there will be any

External Referrals

1. The application may be referred to the following external agencies for comment:
    - NSW EPA regarding changes to existing licence for operation.

SUMMARY	

Plans/Technical Reports:	Should include but not limited to;
	• Development Plans including:
	  o Proposed site plan,
	  o Vehicle manoeuvring and access plan (if traffic movements differ to original consent),
	  o Erosion and Sedimentation Control Plan,
	  o Stormwater Management Plan,
	  o Demolition plan, construction and operational waste management plan,
	• Odour Modelling
	• Statement of Environmental Effects, detailing the following:
	  o Demonstrating the proposal is substantially the same development in accordance with Clause 4.55(2) of the Environmental Planning and Assessment Act 1979
	  o EPA Guideline for Composting and Related Facilities

General	• Owners Consent from all owners of the property is required. • Discussion with neighbouring properties regarding the proposed development should be undertaken.

	• Section 7.11 – A quote can be obtained upon request for approximate Section 7.11 fees when the concept is closer to finalisation. • Note: If any submissions are received during the notification/exhibition period, it will be determined at full Council.
Advice Note:	This advice is based on the proposed development as described by the applicant. Should the development or any relevant planning policy change in any way prior to the lodgement of a development application (DA) then this advice may no longer be fully accurate or complete. Please note that this advice is preliminary in nature and that no detailed assessment of the site or proposed development has been undertaken. Following lodgement of the DA and a detailed assessment, additional issues may arise that are not detailed in this correspondence that may require the proposed development to be modified or additional information to be provided. Council may also determine that the proposed development cannot be supported on the site.

.....

Chairperson

NOTE: ANY ADVICE PROVIDED BY THE DCU SHOULD NOT BE CONSTRUED AS GRANTING APPROVAL, IN PRINCIPLE OR OTHERWISE, TO ANY PROPOSED ACTIVITY OR DEVELOPMENT. THE DETERMINATION OF ANY PROPOSAL CAN ONLY BE MADE ONCE A DEVELOPMENT APPLICATION HAS BEEN LODGED WITH THE COUNCIL AND THIS APPLICATION COMPREHENSIVELY ASSESSED AGAINST ALL RELEVANT LEGISLATION AND COUNCIL POLICY

Appendix D – Site Photographs

Above: Photo taken within the Facility. Below: Photo taken of material within the Facility before processing.

Above: Constructed concrete bunker with pair of dual purpose channels for aeration input and leachate drainage. Below: Air compressors mounted at the back wall of each compost bunker and covering plates over a pair of leachate drainage sumps per bunker.

Above: External Bunkers. Below: Material being processed at the Facility.

Above: Leachate Dams 1 and 2 operating levels in February 2022

Appendix E – AK Environmental (2022), Environmental Review for DA Modification

Document: 2096-1525
Status: FINAL
Issued: 23 April 2022

AK Environmental PTY LTD

ENVIRONMENTAL CONSULTANTS

Environmental Review for DA Modification

Riverbend Organics Composting Facility
442 Anambah Road, Anambah NSW 2320
Lot 22 DP1069012

Ditton Properties Pty Ltd / Riverbend Organics Pty Ltd

Ph: 0431 678362
akrause@akenvironmental.com.au

Document Status

Report Type	Environmental Review for DA Modification
Project Location	442 Anambah Road, Anambah NSW 2320
Client	Ditton Properties Pty. Limited
Facility Operator	Riverbend Organics Pty. Limited
Document Number	2096-1525
Report Version	2.0
Report Status	FINAL
Date of Issue	23 April 2022
Author	 Dr Andrew Krause Principal Environmental Engineer AK Environmental Pty. Limited

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List of Figures

1. Introduction

The Anambah composting facility is owned by Ditton Properties Pty. Limited (the Client) and operated by Riverbend Organics Pty. Limited. The facility employs *in-vessel composting* undertaken within aerated concrete bunkers which are enclosed by Gore covers to allow for oxygen/temperature monitoring and control.

The facility is approved under Development Application no. DA15-433:1 and Consent Condition No. 2 defines the permissible waste input load as:

a) Garden Waste as defined by Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act);
b) Wood Waste as defined by Schedule 1 of the POEO Act;
c) Natural Organic Fibrous Materials as defined by Schedule 1 of the POEO Act;
d) Paper and Cardboard - general solid waste (non-putrescible); and
e) Food waste - general solid waste (putrescible) (max. of 8,000 t/a).

The Client intends to modify its development consent and diversify accepted waste types to accommodate processing of food organics and garden organics (FOGO). A two-fold amendment is proposed which includes:

1. Allow for up to 20% General Solid Waste (putrescible) which comes under Category 3 *mixed residual waste containing putrescible organics* (DEC 2004); and
2. Allow the Category 2 waste *biosolids and manures* (DEC 2004) to be included in the 8,000 t/a already approved Food waste - general solid waste (putrescible).

The existing capacity of the facility will not be varied by the modification and remains at 20,000 t/a waste input for current Stage 1 and 40,000 t/a waste input for future Stage 2.

The facility operates in accordance with Environment Protection Licence 12510 and detailed operating procedures are documented in the Operational Environmental Management Plan (OEMP) (AKE 2019a) which is provided for reference in Appendix A.

NSW Environment Protection Authority (NSW EPA) has restricted waste type processing during the first three years of Stage 1 operation to the exclusion of food waste. As this period has now lapsed, the Client can apply to NSW EPA to vary EPL 12510 to have food waste accepted. The ability to process the new waste types introduced by the modification will also require approval from NSW EPA.

1.1 Purpose of the report

Anderson Environment and Planning Pty. Limited (AEP) is managing the environmental assessment and modification submission process to Maitland City Council (MCC) on behalf of the Client. AK Environmental Pty. Limited (AKE) has been engaged by the Client to assess impacts of the proposed modification on the following environmental topic areas:

- surface water;
- groundwater;
- flooding;
- soil; and
- waste generation.

This report is part of a detailed Statement of Environmental Effects which will accompany the modification submission to MCC.

2. Site Layout

The composting facility layout and catchment areas are provided in Figure 1. The site is located within an old hard rock quarry pit which ceased operation in 2020.

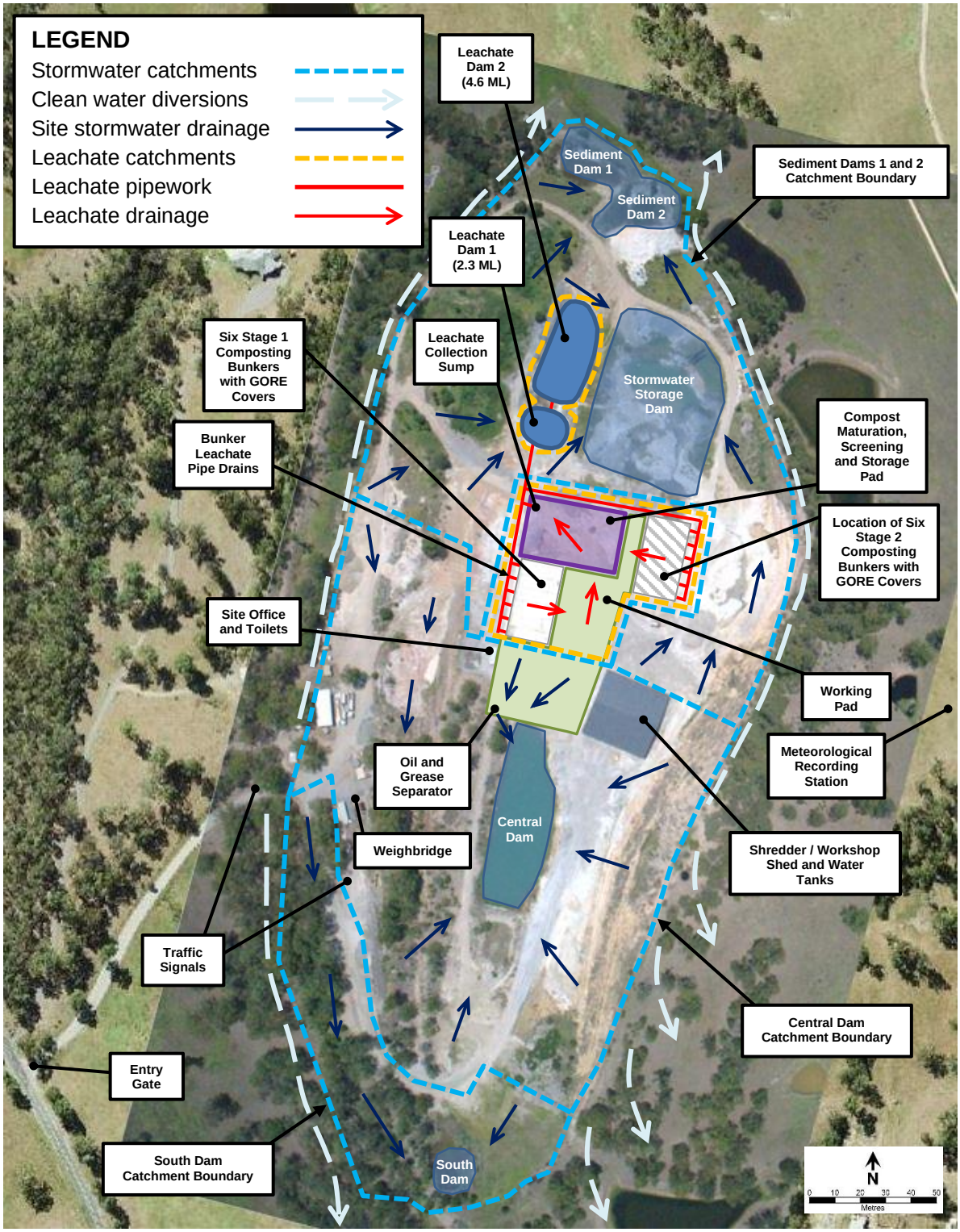

Figure 1 – Operational layout and catchment areas

3. Expected key physical changes due to the modification

The proposed modification is expected to result in a limited number of key physical process changes at the facility and these are described below.

3.1 Leachate generation rate

Category 1 organics such as garden materials, wood and fibrous materials generally form leachates only when additional water (including rainfall) is introduced (Haug 1993). Category 3 organics such as food, usually contain sufficient quantities of moisture to generate leachate without extra water being added.

The facility is currently permitted to processes garden waste, wood waste, natural organic fibrous materials and paper/cardboard. Moisture pre-conditioning of the waste pile (manual addition of water content prior to Gore cover encapsulation) is conducted as a critical step to ensure optimal conditions for compost progression. This means current processing of non-putrescible wastes is characterised by low generation rates of leachate. A reduced quantity of moisture pre-conditioning is expected for future putrescible waste processing consistent with the higher initial moisture content of this waste material. Ultimately, the initial moisture content of current and future piles will be similar and consequently the rate of future leachate generation is expected to be similar to that currently experienced at the facility.

3.2 Generated leachate quality

A key operational function of static pile composting (no manual turning of the pile) is maintenance of optimal aerobic conditions. If composting progresses in an uncontrolled manner, anaerobic conditions can prevail and generation of acidic or alkaline leachates may result depending on carbon to nitrogen ratios of the waste organics (DEC 2004).

To ensure aerobic composting progression at this facility, each bunker incorporates an inbuilt aeration system at the base, which doubles as a conduit for leachate drainage away from the bunker (Figure 2). Oxygen/temperature probes continually monitor oxygen levels in the waste pile, and when oxygen input is required, a compressor forces air upward through the pile matrix (Figure 3), also eliminating the need to turn the windrow.

The application of monitoring control technology at the facility provides a high degree of certainty that composting can progress under optimal aerobic conditions. As such, FOGO generated leachate is expected to be comparable in quality to that currently produced by composting of garden waste, wood waste, natural organic fibrous materials and paper/cardboard.

Figure 2 – Constructed concrete bunker with pair of dual purpose channels for aeration input and leachate drainage.

Figure 3 – Air compressors mounted at the back wall of each compost bunker and covering plates over a pair of leachate drainage sumps per bunker.

3.3 Solid waste generation

The *mixed residual waste containing putrescible organics* (FOGO) will be sourced from residential kerb side collection. Education programs are run by Councils to assist residents understand how best to separate waste types, however, the potential exists for unwanted non-processable waste to be disposed by residents in green lid bins (e.g. plastics, metal, rock).

The existing process of screening input waste in the Shredder/Workshop Shed will continue for incoming FOGO prior to the waste being shredded. Unwanted waste material will be collected in designated bins awaiting removal by trucks on backhaul for disposal at a licensed waste processing facility. No reliable data exist regarding the expected fraction of non-processable waste in residential FOGO but the availability of otherwise empty trucks to backhaul material offsite means there is no discernible environmental impact.

4. Impact Assessment of Key Environmental Topic Areas

Impacts of the proposed modification on selected key environmental topic areas are discussed below.

4.1 Surface water

4.1.1 Existing environment

The facility site has two separate surface water management/catchment systems (Figure 1) which target control of:

1. Combined flows of generated leachate and *contact stormwater* (which is rainfall runoff that may contact compost and which must be managed as leachate in accordance with DEC (2004)); and
2. Sediment-laden rainfall runoff emanating from the remainder of the site.

Leachate capture, storage and reuse occurs within a management system which has been sized conservatively at 6.5 ML for the protection of downstream surface water and underlying groundwater resources. The design approach is detailed in AKE (2019b) (see Appendix B) and has resulted in site leachate storage capacity at the site being 70% larger than the estimated water balance-based requirement and nearly an order-of-magnitude larger than the design storm requirement of DEC (2004). The design approach was reviewed by NSW EPA as a requirement for the re-issuing of EPL 12510 to accommodate composting operations.

The sediment basin system was constructed for the now discontinued hard rock quarry operation. The adequacy of the system is documented in OEMP Section 4.5.2.

4.1.2 Impact assessment

The proposed modification will not result in volumetric increase to leachate generation and will not otherwise affect stormwater runoff generation or flow direction. No impact to the surface water management systems will result from the change to processed waste type.

It is noted design of the leachate management system was based on a synthetic historical climate record (QLD DSITI, 2018) of 38 full calendar years (1 January 1980 to 31 December 2017). The facility has operated for a further three calendar years (2019 to 2021) for which there exists onsite observational weather station data. Due to the persistence of La Niña conditions during 2020 and 2021, the above average recorded annual rainfall totals shown in Figure 4 have translated to high stormwater generation at the site and elevated storage levels in Leachate Dams 1 and 2 (Figure 5). Importantly, the 80% capacity high level alarm system has not been triggered and the Client has observed more than 1.5 m of freeboard has remained throughout the period. This observation provides confidence the leachate management system is robustly designed and that it offers significant protection against leachate release.

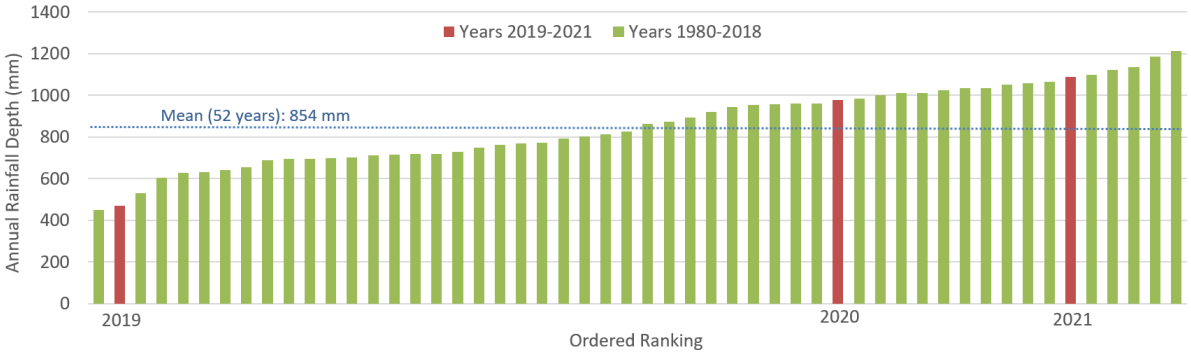

Figure 4 – Ranked annual rainfall totals at site from synthetic climate data (QLD DSITI, 2022) and onsite weather station data (2019-2021).

Figure 5 – Leachate Dams 1 and 2 operating levels in February 2022.

4.1.3 Mitigation measures

No additional surface water mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered sufficient.

4.2 Groundwater

4.2.1 Existing environment

Annual reporting of groundwater level depth observations is a requirement of EPL 12510 and the historical record forms part of each Annual Environmental Management Report (AEMR) (reporting period is 24 March to 23 March the following year). The data record from the 2021 AEMR is shown in Figure 6 and groundwater depth is observed to remain relatively consistent through time.

Groundwater quality is also monitored, and observations are included in the AEMR. Since the commencement of composting operations there has been no reported impact to groundwater quality.

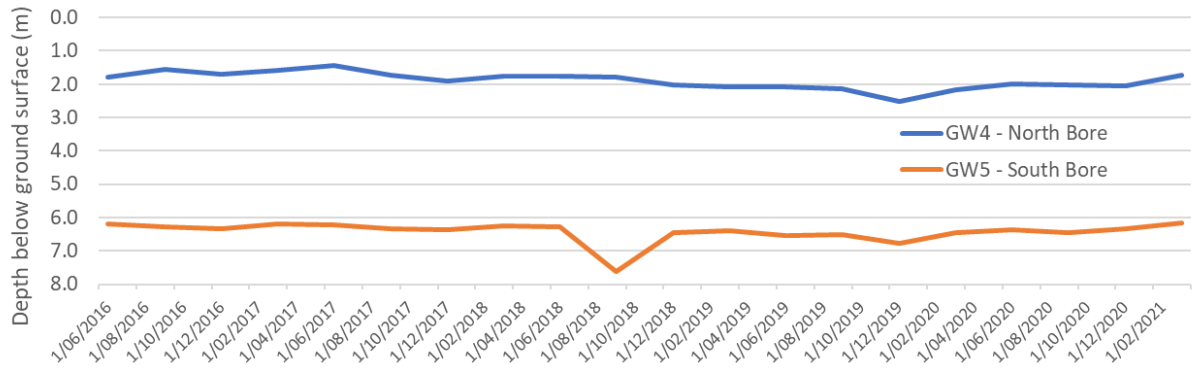

Figure 6 – Observed site groundwater level data 2016 to 2021.

4.2.2 Impact assessment

Verification that the leachate management system was constructed to meet DEC (2004) guideline specifications is provided in AKE (2020) (see Appendix C). The only possible pathway for leachate (in the form of contact stormwater) to infiltrate through to underlying groundwater is via a compromised clay liner. Inspection of the clay liner surface at the (i) compost maturation/screening/storage pad, (ii) working pad, (iii) Leachate Dam 1 and (iv) Leachate Dam 2 was undertaken by Dr Andrew Krause (AKE Principal Environmental Engineer) on 8 March 2022. At no location was the clay liner found to be damaged, cracked or otherwise compromised. The robustness of the engineered clay liner is evident in Figure 7 as no degradation or deformation is evident after three years of heavy vehicle usage.

Figure 7 – Trafficable engineered clay liner adjacent to the composting bunkers showing no signs of degradation or deformation.

4.2.3 Mitigation measures

No additional groundwater mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and reporting requirements specified in EPL 12510 are considered adequate.

4.3 Flooding

4.3.1 Existing environment

The *Hunter River Branxton to Green Rocks Flood Study* (WMA Water 2010) maps the site as within the 100 year ARI (average recurrence interval) zone, with the flood height modelled below 21.0 mAHD (metres above Australian Height Datum) (Figure 8). MCC subsequently adopted the *Hunter River Floodplain Risk Management Study and Plan* (WMA Water 2015) on 24 November 2015. The northern portion of the site is mapped as *flood storage* and *flood fringe* on the hydraulic categorisation map for the 100 year ARI event (Figure 9). VGT (2015) reported the embankment height of Sediment Dams 1 and 2 to be 21.8 mAHD. This embankment prevents the 100 year ARI flood from entering further upstream into the site (ie. south towards the composting pad).

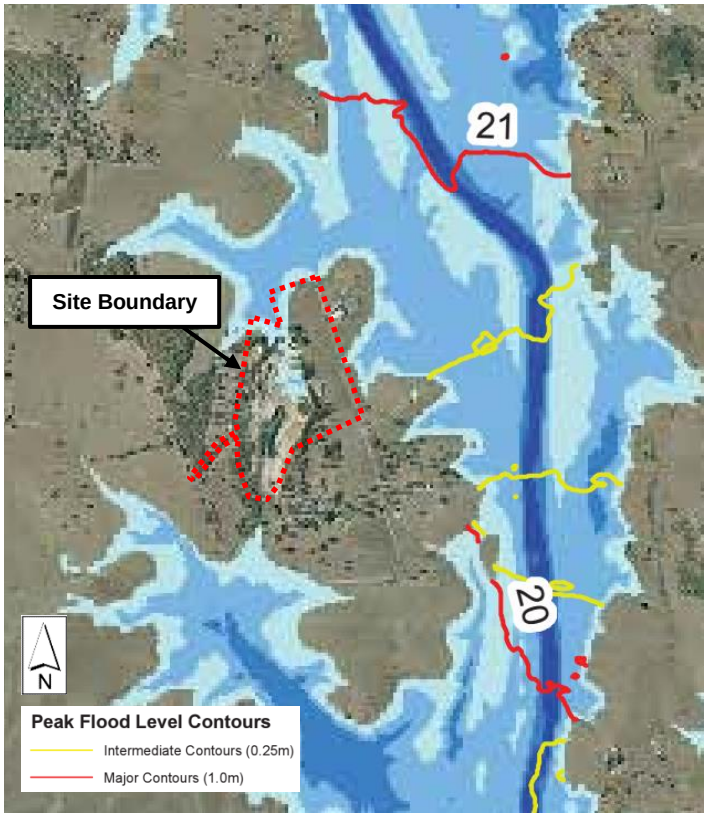

Figure 8 – 100 year ARI flood level (WMA Water 2010) with site boundary annotated

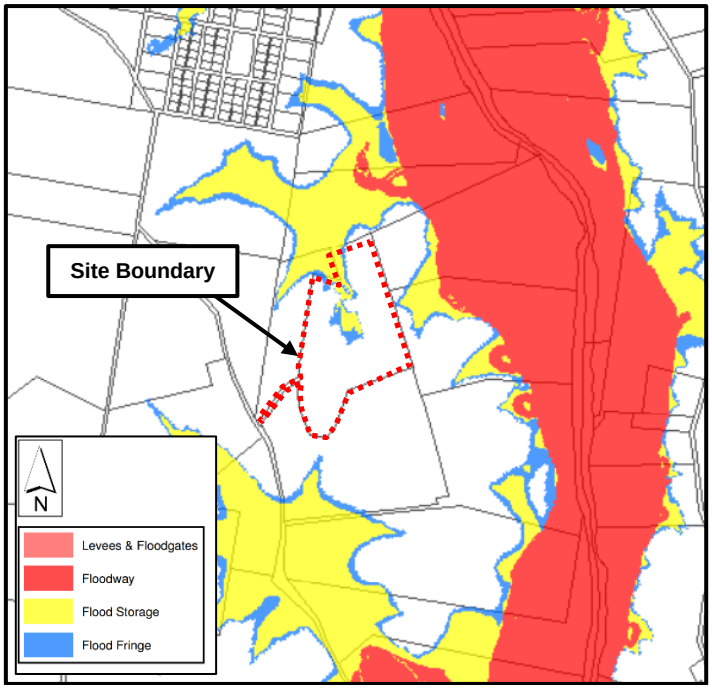

Figure 9 – Hydraulic categorisation of the 100 year ARI flood event (WMA Water 2015) with site boundary annotated

4.3.2 Impact assessment

The elevation survey of Leachate Dams 1 and 2 is provided in Appendix C. Top of bank elevation of Leachate Dam 1 is 19.57 mAHD and Leachate Dam 2 is 19.60 mAHD. The 100 year ARI flood event would likely inundate both dams if not for the downstream protection offered by the constructed embankment of Sediment Dams 1 and 2, which is some 0.8 m above than the 100 year ARI flood height.

The surface elevation of the composting pad floor level is approximately 25.0 mAHD, which provides significant clearance above the 100 year ARI flood event.

4.3.3 Mitigation measures

No additional groundwater mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate, particularly those related to embankment integrity inspections of Sediment Dams 1 and 2.

4.4 Soil

4.4.1 Existing environment

The previous quarrying land use has removed substantial vegetation from the working areas of the site and the composting facility consists primarily of engineered clay liner surfaces, roads and structures. The OEMP contains operating procedures for inspection of the general site, grass swales and dam embankments for evidence of soil loss through erosion and general soil structure decline. No inspections have determined any need for soil erosion remediation actions, and it is assumed soil degradation is not occurring at the site.

4.4.2 Impact assessment

The only possible impact on soil resources which might be caused by the proposed modification is through failure of the leachate management system permitting seepage to contact underlying soil strata. As discussed in Section 4.2.2, the integrity of the protective clay liners remains as per design and construction requirements, and hence no impact on soil resources is expected.

4.4.3 Mitigation measures

No additional soil protection measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate.

4.5 Waste generation

4.5.1 Existing environment

A limited amount of non-processable waste (e.g. plastics, metal, rock) is currently separated from incoming green waste during facility operation. The waste material is stored in a designated bin in the Shredder/Workshop Shed from where it is removed by truck on backhaul for disposal at a licensed waste processing facility. Records of all offsite waste disposal quantities are reported in the AEMR.

4.5.2 Impact assessment

The existing process of screening input waste in the Shredder/Workshop Shed will continue for incoming FOGO prior to the waste being shredded. There exists no reliable data regarding the expected fraction of non-processable waste in residential FOGO but the availability of otherwise empty trucks to backhaul material offsite means there is no discernible environmental impact.

4.5.3 Mitigation measures

No additional waste generation protection measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP are considered adequate. It is noted the OEMP will need to be updated to reflect the type of waste accepted in accordance with the modification.

5. References

AK Environmental (2019a), *Operational Environmental Management Plan (OEMP) Anambah In-vessel Composting Facility, 442 Anambah Road, Anambah NSW 2320*, version 2.1 issued 3 April 2019.

AK Environmental (2019b), *Leachate management system - Briefing Note 2059-1445*, FINAL for Environment Protection Licence Application, version 3.0 issued 3 April 2019.

AK Environmental (2020), *As-constructed verification of leachate management system – Briefing Note 2059-1478*, FINAL issued 13 January 2020.

Department of Environment and Conservation (DEC) (2004), *Environmental Guidelines – Composting and Related Organics Processing Facilities*, DEC NSW, Sydney South.

Haug, R. T. (1993), *The Practical Book of Compost Engineering*, Lewis Publishers, Boca Raton, United States of America.

QLD DSITI (2022), The Long Paddock – SILO Climate Data, The State of Queensland (Department of Science, Information Technology and Innovation), accessed 25 March 2022, <https://www.longpaddock.qld.gov.au/silo/>.

VGT (2015), *Soil and Water Management Plan – Riverbend Quarry Via Gosforth*, doc ref: 1084_RB_SWMP_R4.

WMA Water (2010), *Hunter River Branxton to Green Rocks Flood Study*, Final Issue, September 2010.

WMA Water (2015), *Hunter River Floodplain Risk Management Study and Plan*, Final Issue, November 2015.

Appendix A. Operational Environmental Management Plan

AKE Document: 2057-1438
Version: 2.1
Issued: 3 April 2019

AK Environmental PTY LTD

ENVIRONMENTAL CONSULTANTS

Operational Environmental Management Plan (OEMP)

Anambah In-vessel Composting Facility
442 Anambah Road, Anambah NSW 2320

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Document Status

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Client	Ditton Properties Pty. Limited
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Issue Recipients	Anderson Environment and Planning Ditton Properties Pty. Limited
Author	 Dr Andrew Krause Principal Environmental Engineer AK Environmental Pty. Limited

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1. Background

1.1 Introduction

The Anambah In-vessel Composting Facility (AICF) is owned by Ditton Properties Pty. Limited (Ditton Properties) and operated by RB Organics Pty. Limited (RB Organics). In-vessel composting is undertaken using a covered and aerated static pile. The AICF operates under Development Approval DA 15-433 (see Appendix A) issue by Maitland City Council (MCC) for the purpose of composting up to 40,000 t/a of organic green waste to produce a maximum of 24,000 t/a of saleable high-quality compost.

1.2 Description of Site

The AICF is located at Lot 22 DP1069012, which comprises an area of 32.1 ha (Figure 1). The site remains an active quarry with approval for continued operation until 2028. It is proposed that quarrying operations will begin to be wound down after the commencement of composting operations. The excavated pit currently extends across approximately 70% of the site. The pit void is approximately 30 m deep, is 650 m in length from north to south, and 300 m in length from east to west. The AICF is located at the floor of the pit void.

The existing land uses surrounding the site largely comprise rural land uses, with most of the surrounding areas cleared for grazing. Four individual rural residential developments are in near proximity to the east and north east of the AICF lot boundary. Lot 1 DP862654 is situated west of the AICF lot boundary, and it contains the nearest residence to the development. The residence is not considered an amenity receptor because the lot is held under ownership by AICF management. A covenant has been placed over the property deed to ensure Lot 1 DP862654 cannot be sold separately to Lot 22 DP1069012.

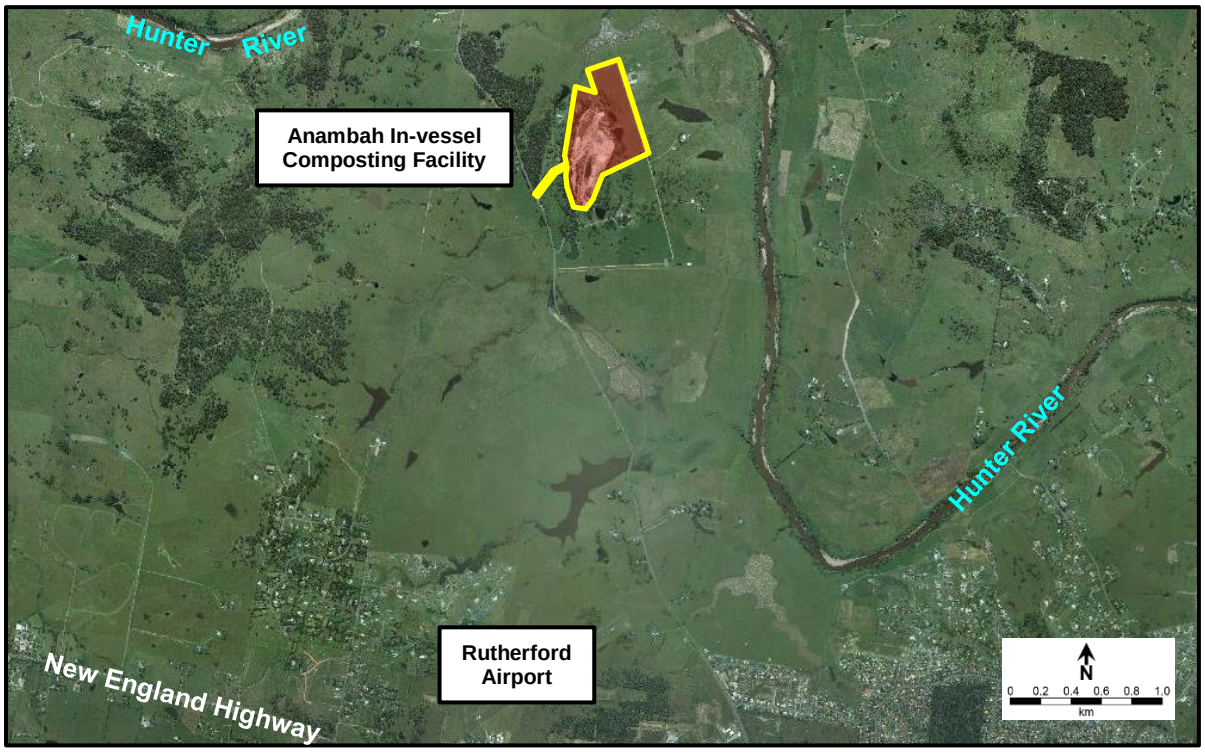

Figure 1 – Site lot boundary and general locality (source: SixMaps)

1.3 Description of Operations and Staging

The in-vessel composting process is outlined in Figure 2. The facility has a maximum waste processing capacity of 40,000 t/a of Category 1 and Category 2 waste organic material. Imported waste organics will be sourced from (i) commercial industry and (ii) self-haul green waste drop-off by the general public. All delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. Self-haul green waste deliveries by the public will be restricted to between 8:30am and 3:30pm to reduce conflict with high-volume commercial traffic periods. No operations of any kind are permitted on Sundays or Public Holidays.

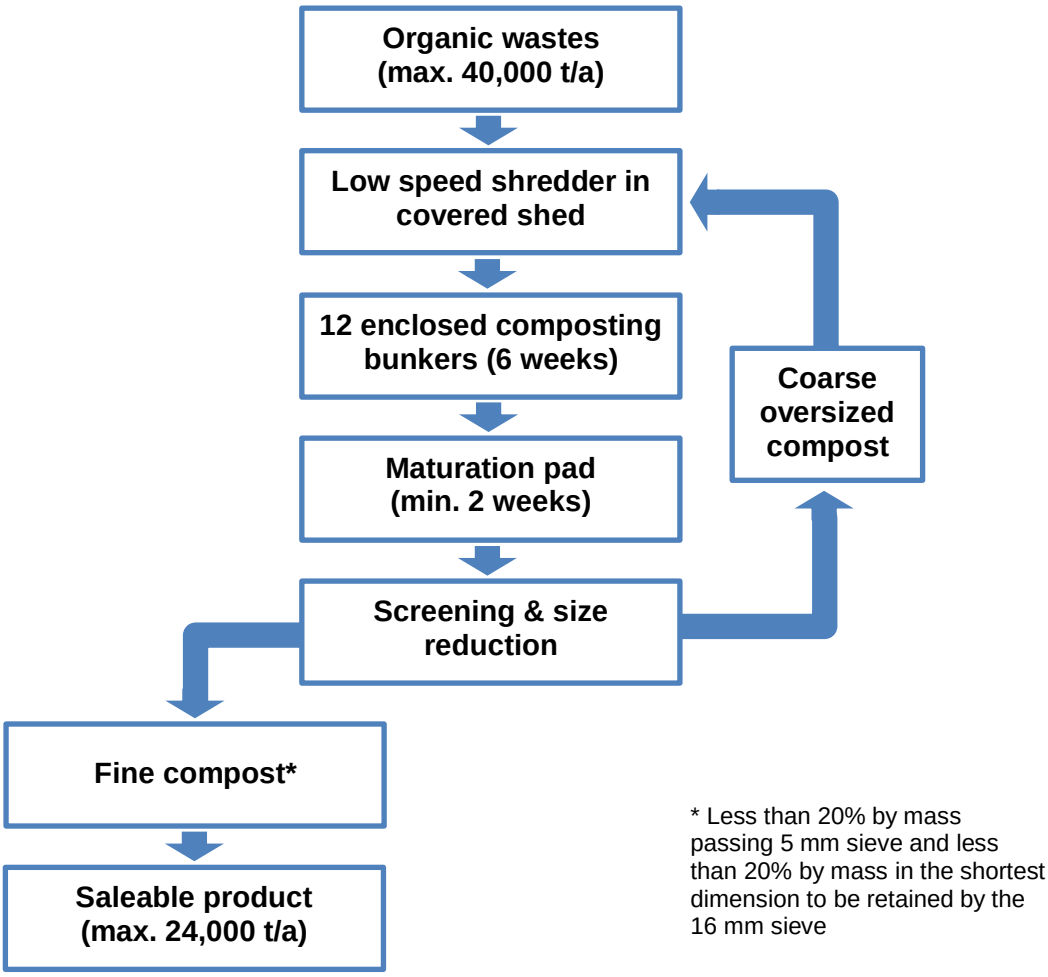

Figure 2 – AICF operational process flow with annual tonnage at full development of Stage 2 (source: Pulver Cooper & Blackley (2015))

1.3.1 Variation of Development Staging

The AICF development application did not envisage any requirement to stage construction. Inability to secure tender opportunities during 2018 has meant a lower than expected availability of input organic waste. This provides an economic driver to stage the development

while awaiting expansion of supply markets. Subsequently, development of the AICF facility will be staged as follows:

- Stage 1 (50% of maximum capacity) - green waste input of up to 20,000 t/a and compost production of up to 12,000 t/a; and
- Stage 2 (maximum capacity) - green waste input of up to 40,000 t/a and compost production of up to 24,000 t/a.

1.3.2 Improved Understanding of Composting Bunker Requirements

During project planning in 2015, Ditton Properties was advised a total of 16 European-designed GORE cover in-vessel composting bunkers with a combined floor area of 6,400 m^2 (individual floor area of 8 m x 50 m = 400 m^2) would be required to achieve the maximum waste processing capacity of 40,000 t/a.

An on-site AICF trial during November 2018 used nearly 200 t of green waste and determined the composting efficiency of the aerated in-vessel static pile bunkers to be significantly higher than under European conditions (due primarily to beneficial warmer climate factors). This is supported by recently obtained process information provided by Cleanaway, which manages a similar GORE cover in-vessel organics processing facility at Moree NSW.

Based on the newly available composting information, a review of capacity calculations was undertaken by Ditton Properties. The now approved 16 bunker composting development could have (theoretically) processed up to 91,000 t/a on a six weeks composting schedule, which is more than twice the maximum input capacity of 40,000 t/a.

It is now estimated that the maximum input capacity can instead be achieved by a total of 12 GORE cover in-vessel composting bunkers with a reduced combined floor area of 2,400 m^2 (individual floor area of 8 m x 25 m = 200 m^2) (see Figure 3). The capacity calculation applies the same six weeks composting schedule. The input of organics by stage are:

- Stage 1 – 330 t per batch with 6 bays equates to 17,200 t/a; and
- Stage 2 – 330 t per batch with 12 bays equates to 34,400 t/a.

It is acknowledged the calculated inputs are marginally lower than the Stage 1 and Stage 2 maximum allowable inputs of 20,000 t/a and 40,000 t/a, respectively. This is to account for potential fluctuations in solid waste density above the 500 kg/m^3 specified by *Australian Standard 4454-2012 - Composts, soil conditioners and mulches*.

The 2,400 m^2 Stage 2 compost bunker footprint represents a significant 62% areal reduction compared to the 6,400 m^2 of the approved 16 bunker design.

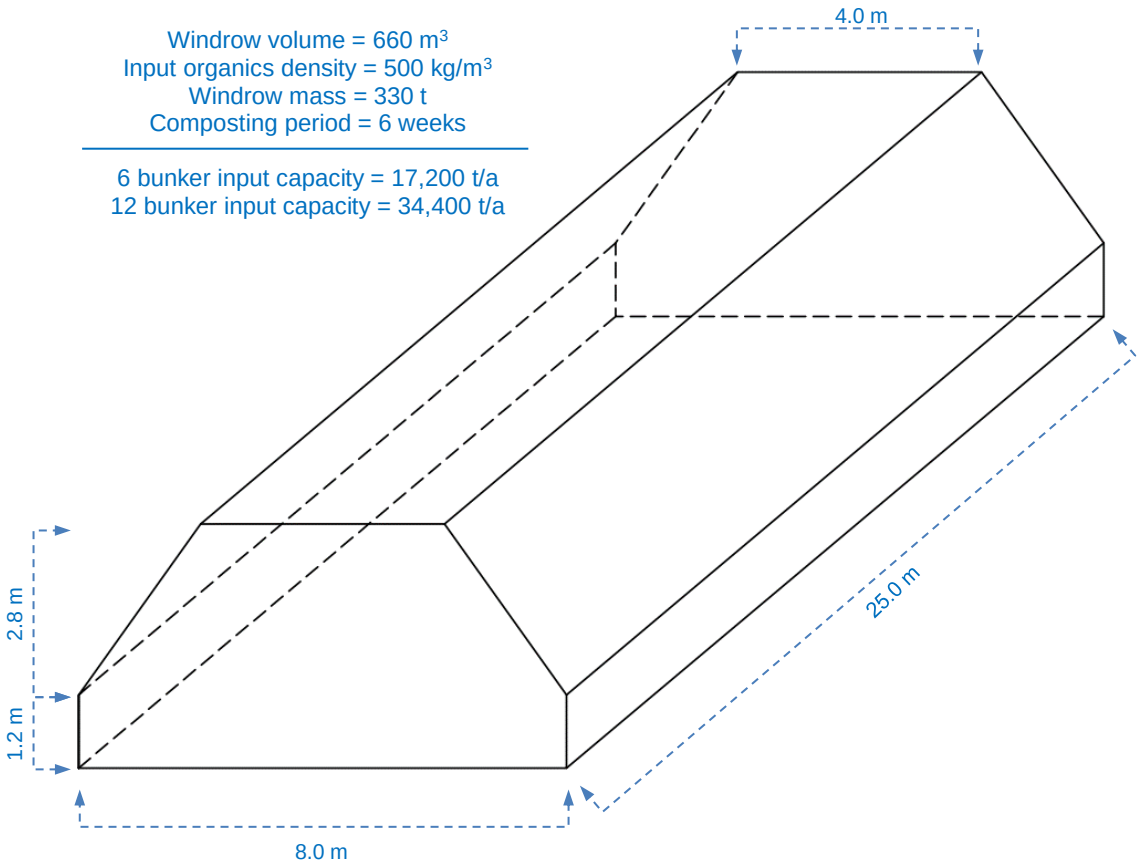

Figure 3 – Composting bunker window dimensions with a 200 m^2 floor area

1.3.3 Works Area Footprint Reduction

To accommodate the approved 16 bunker design and the adjacent working pad, additional excavation of the western embankment foot slope would have been required to create a flat pad of sufficient area. The smaller 12 bunker Stage 2 design has meant these pad expansion works have not been undertaken. As such, the bunker re-design has not resulted in an enlargement of trafficable working areas that might have otherwise increased the source footprint of dust emissions.

1.3.4 Variation of Leachate Management

The approved leachate storage system comprised a 23,000 L (23 m^3) concrete leachate containment sump based on the design of OD Hydrology (2015). However, the sizing process only considered direct *leachate* generation from compost bunkers and neglected to account for generation of *contact stormwater* (stormwater runoff which has contacted any form of organic material). The leachate storage system has been re-designed to be consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). Details are provided in Appendix C. The key variation is a capacity increase of Leachate Dam to 6.5 ML, which equates to a 280-fold volumetric enlargement compared to the approved design.

1.3.5 Environmental Impacts of Development Amendments

Due to the introduction of key staging and developmental footprint amendments described in Sections 1.3.1 to 1.3.4, an explanatory note is provided in Appendix B to detail the relationship between a staged composting operation and relevant environmental management commitments at AICF as detailed in *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015* (Pulver Cooper & Blackley 2015). Because none of the amendments will result in an increase to the scale of the development, the environmental impacts of a staged AICF are considered equal to or less than those permitted under the existing development approval.

1.3.6 AICF Layout

The AICF layout is shown in Figure 4. The development consists of:

- site operations and storage office;
- sealed internal access roads (tar seal or stabilised gravel standard);
- Anambah Road intersection upgrade (entry road widening and overtaking lane addition on Anambah Road);
- site entry and road traffic signage;
- entry road security gate;
- weighbridge with boom gates at entry and exit;
- weighbridge office;
- on-slab shed to house drop-off stockpile, slow speed shredder and workshop;
- concrete composting bunkers each of 200 m^2 floor area (8 m x 25 m) and each with a GORE cover system (Stage 1 with six bunkers and Stage 2 with 12 bunkers);
- floor-inset bunker air injection system and leachate collection drainage system;
- compost maturation/screening/storage area on 1,350 m^2 stabilised gravel pad (30 m x 45 m);
- working pad area;
- leachate containment dam (6.5 ML capacity), high-level alarm system, floating pontoon aerator and leachate return pump;
- surface water and sediment management dams (Sediment Dams 1 and 2, Central Dam, South Dam and Stormwater Storage Dam);
- above ground (bunded 110%) diesel storage tanks (2 x 12,000 L) and re-fuelling area;
- oil and grease separator for stormwater at south-east corner of pad;
- submersible pump (25 L/s) on floating pontoon at Central Dam;
- water tanks (4 x 23,000 L) for roof rainwater collection and top-up transfer from Central Dam pump;
- fire-fighting system (2 x high-flow pressurised hose reels at slow speed shedder shed supplied by water tanks, water tanker with water cannon and diesel pump; fire extinguishers at re-fuelling area); and
- pump out toilets at site office.

In addition to fixed plant, mobile plant will be employed at the AICF to handle solid waste and undertake dust suppression of unsealed trafficable areas.

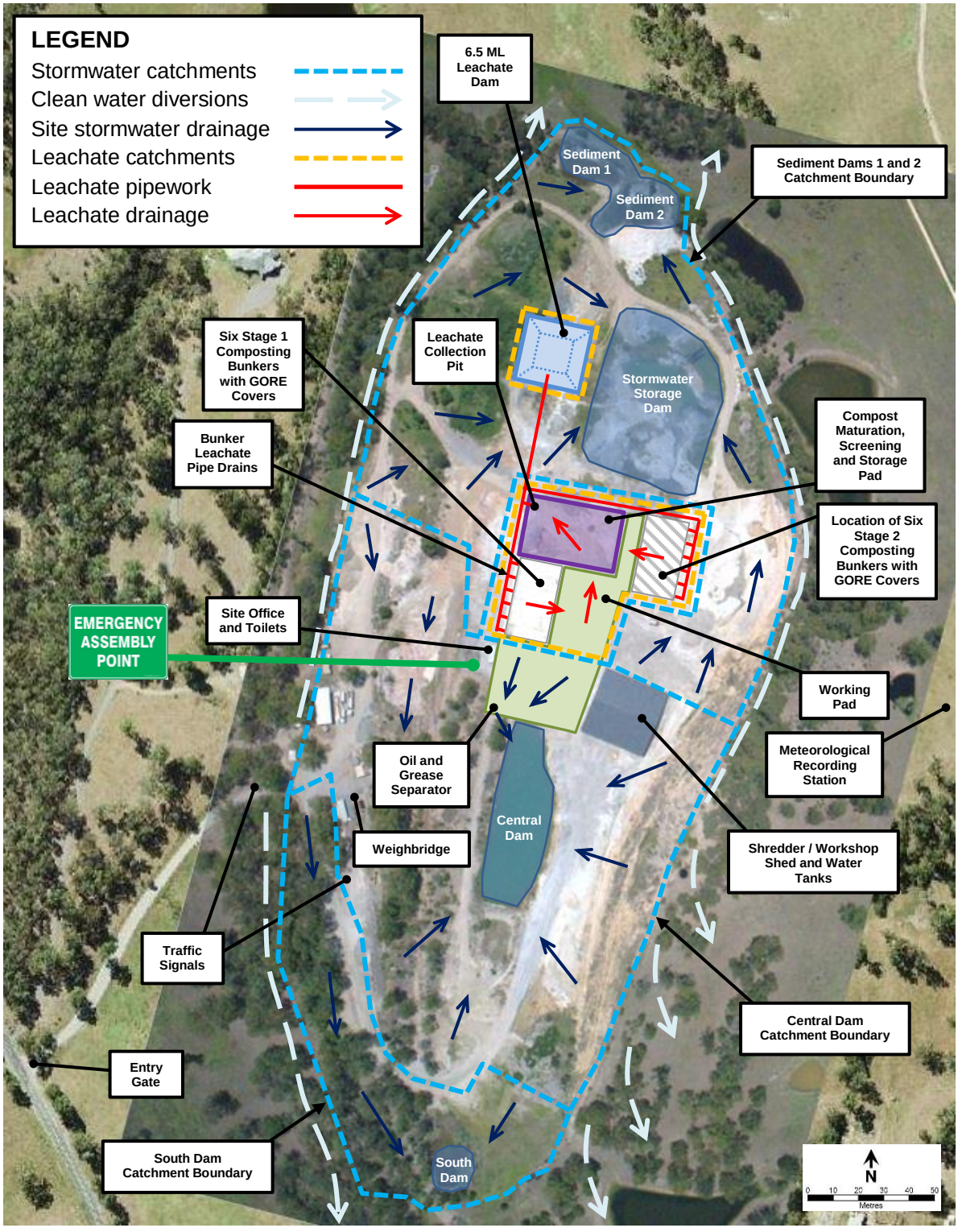

Figure 4 – AICF operational layout and catchment areas

1.4 OEMP Context

Notice of determination of Development Approval DA 15-433 was originally issued by MCC on 11 October 2016. Ditton Properties subsequently applied to vary the permissible waste types and an amended approval was issued 12 July 2017 (see Appendix A). The requirement for this Operational Environmental Management Plan (OEMP) is contained in development consent condition 31, which states:

"The proponent shall prepare and implement an Operational Environmental Management Plan for the project taking include consideration [sic] *EPA requirements. This plan must:*

- *a) be prepared in consultation with Council and the EPA by a suitably qualified and experienced expert;*
- *b) be submitted to and approved by Council prior to commencement of operations;*
- *c) describe in detail the management measures that would be implemented to address:*
  - *relevant matters referred to in Section 4 and Appendix B of the EPA'S Environmental Guidelines for Composting & Related Organics Processing Facilities; and*
  - *conditions of consent;*
- *d) include a copy of:*
  - *management plans and monitoring programs required in this approval;*
  - *a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2[1];*
- *e) describe the procedures that would be implemented to:*
  - *keep the local community and relevant agencies informed about the operation and environmental performance of the composting facility;*
  - *receive, handle, respond to, and record complaints;*
  - *resolve any disputes that may arise during the course of the composting facility;*
- *f) respond to emergencies; describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of this composting facility;*
- *g) details of an Annual Environment Management Report being an annual audit of operations outlining but not limited to:*
  - *summary of any monitoring of odour, dust, noise runoff, etc. in the past year;*
  - *an analysis of monitoring results against relevant:*
    - *impact assessment criteria;*
    - *monitoring from previous years;*
    - *predictions in the EIS;*
  - *performance measures;*
  - *complaints and any handling of complaints;*
  - *any actions to ensure compliance of relevant criteria within the EIS."*

The development of this OEMP has been undertaken in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004).

Operational commitments to environmental management at AICF are detailed in *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015* (Pulver Cooper & Blackley 2015) which accompanied the Development Application for the AICF. Pulver Cooper & Blackley (2015) contains the

[1] Has been superseded by *HB 90.3-2000 (R2016) The Construction Industry - Guide to ISO 9001:2000*

following relevant specialist studies undertaken to assess potential environmental impacts of ongoing AICF operations:

- OD Hydrology (2015) *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment* (doc ref: 44001-rpt01d.docx);
- OD Hydrology (2016) *Responses to request for additional information (Composting Facility, Anambah Road, Anambah, NSW* (doc ref: 44001-ltr01b.docx);
- VGT (2015) *Soil and Water Management Plan - Riverbend Quarry Via Gosforth* (doc ref: 1084_RB_SWMP_R4);
- Todoroski Air Sciences (2015) *Riverbend Quarry and Compost Facility - Air Quality Impact Assessment*;
- Todoroski Air Sciences (2018) *Air Quality and Noise Management Plan Anambah Quarry and Composting Facility*;
- Global Acoustics (2015) *Composting at Gosforth Quarry - Noise Impact Assessment February 2015*;
- Fire Engineering Design (2018) *Fire Safety Engineering Report – Proposed Composting Facility 442 Anambah Road Anambah 2320* (doc ref: 20128046MWRR001A.docx);
- Intersect Traffic (2015) *Traffic Impact Assessment - Composting Facility, Riverbend Quarry – Amended July 2015*; and
- Anderson Environment and Planning (2015) *Ecological Assessment Report for Proposed Composting Facility at Anambah Road, Gosforth NSW.*

Development Approval DA 15-433 consent contains General Terms of Approval from Department of Primary Industries (Water) which requires preparation of a Soil and Water Management Plan (SWMP) and an Erosion and Sediment Control Plan (ESCP). The AK Environmental (2017) document *Soil and Water Management Plan - In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW* satisfies the requirements of DPI-Water (including an ESCP) and is relied upon in this OEMP.

1.5 OEMP Objectives

The objectives of the OEMP are to:

- apply best practice environmental management to the site;
- implement Pulver Cooper & Blackley (2015) and the conditions of consent for the project;
- comply with environmental legislation and Environment Protection Licence (EPL) 12510;
- ensure that environmental risks associated with the ongoing operation of the site are properly managed;
- define details of who, what, where and when environmental management and mitigation measures are to be implemented;
- maintain an up-to-date Pollution Incident Response Management Plan (PIRMP) which is integrated with the OEMP;
- demonstrate due diligence; and
- demonstrate an active environmental improvement program.

1.6 Site Environmental Policy

AICF management is committed to protecting the health and safety of the community, its employees and the environment. The following environmental policy applies to operation of the AICF.

1.6.1 Policy Scope

This policy applies across the AICF operations, including contractors/sub-contractors and visitors to the workplace/worksite. AICF will continually improve environmental performance, prevent environmental harm associated with activities, develop employee environmental awareness, report on environmental performance and minimise waste.

1.6.2 Policy Rules

Overall policy rules are as follows:

- wherever practicable, AICF employees will reduce the volume of waste generated and reuse and recycle;
- whenever possible new products and supplies should be reusable and/or recyclable;
- where possible, purchase products responsibly, for example, purchase local products to reduce transport emissions and support the local community;
- when it is safe to do, prevent work activities causing environmental damage by following preventative procedures;
- in the event of an incident/accident, follow the emergency procedures, making sure that the appropriate equipment is available for clean-up and that a quick response is applied to eliminate or reduce any damage; and
- be aware of environmental issues and safeguards, including erosion and sediment control, weed invasion, threatened vegetation and fauna, air quality, noise, and waste.

1.6.3 Policy Responsibilities

The AICF Onsite Manager must:

- implement and review this policy;
- consult with workers about this policy;
- provide resources, information, training and supervision for workers to allow them to adhere to the requirements of the site OEMP and any applicable legislation, and have the knowledge and resources to follow the procedures and understand their roles and responsibilities;
- comply with statutory requirements, codes, standards and guidelines;
- implement and comply with the site OEMP;
- make sure all equipment is serviced as per manufacturers requirements and not showing visible emissions;
- make sure noise and air pollution are kept to the appropriate levels;
- provide areas for chemical storage;
- make sure all incidents are appropriately investigated and reported and, if required, appropriate disciplinary action carried out; and
- undertake site environmental inspections using the Weekly Environmental Inspection Checklist and monitor liquid and solid waste details.

Workers must:

- comply with this OEMP and follow environmental procedures;
- not act in a manner that places the environment at risk;
- use, store and dispose of chemicals as per the Safety Data Sheet (SDS);
- remove waste from the workplace / worksite and place in designated storage areas;
- minimise the damage to flora and fauna;
- wash machinery in designated area;
- make sure correct measures are in place for sediment control;
- report any incidents or complaints to the AICF Onsite Manager;
- participate in consultation and training in relation to environmental management; and
- advise AICF Onsite Manager of any potential breaches of plans or statements, and sightings of threatened flora and fauna, archaeological or heritage items.

2. Environmental Management

2.1 Environmental Management Structure and Responsibility

Management of environmental issues is regarded as the responsibility of all AICF employees and contractors. The AICF organisational structure is shown in Figure 5, with specific accountabilities outlined in the following sections.

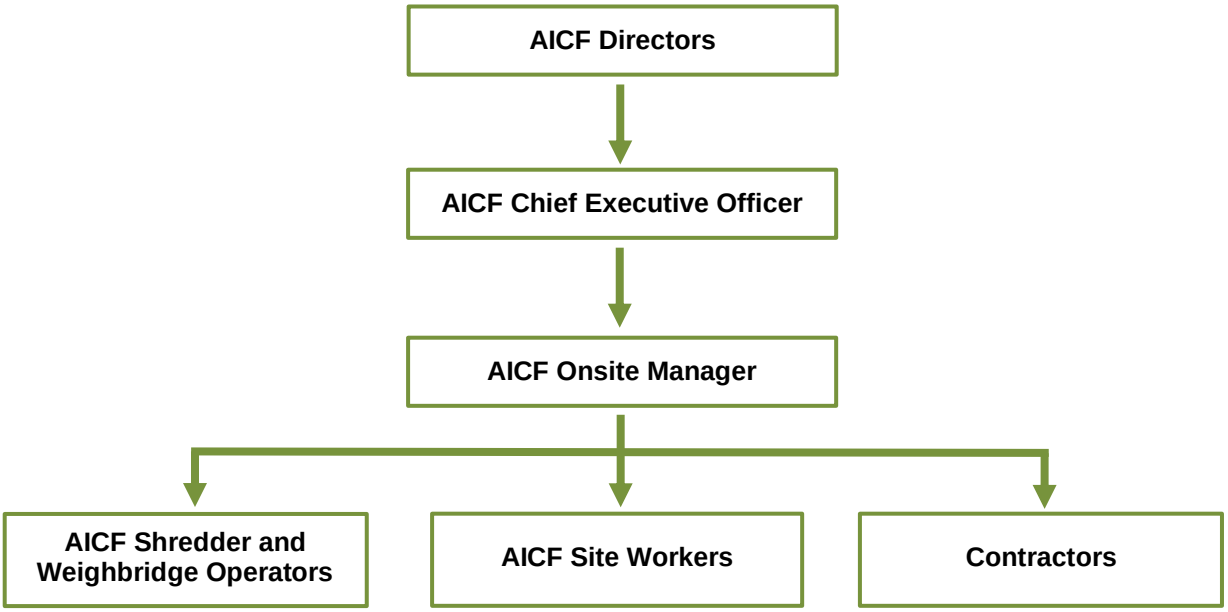

Figure 5 – Management structure diagram

2.1.1 AICF Directors

The AICF Director's responsibilities are:

- acquire and keep up-to-date knowledge of environmental matters relevant to the business;
- gain an understanding of the nature of the operation of the business or undertaking and general environmental issues associated with those operations;
- ensure that there is available for use by those engaged in the business, appropriate resources and processes to eliminate or minimise risks to the environment and non-compliance with licences during the conduct of the business or undertaking;
- ensure that people engaged in the business have appropriate processes for receiving and considering information regarding environmental incidents, hazards and risks, and respond in a timely way to that information;
- ensure that those engaged in the business have in place and implement processes for complying with any duty or obligation of the business under NSW legislation, including complying with licence conditions and notices served; and
- verify the provision and use of the resources and processes set out above.

2.1.2 AICF Chief Executive Officer

The AICF Chief Executive Officer is responsible for:

- promoting and maintaining good environmental management, and ensuring that this OEMP is effectively implemented;
- supporting the AICF Onsite Manager and holding them accountable for their specific responsibilities;
- ensuring regular environmental risk assessments are undertaken to identify risks; and
- ensuring immediate remedial actions are undertaken to minimise the impact from any environmental events should they occur.

2.1.3 AICF Onsite Manager

The AICF Onsite Manager is responsible for inducting all staff and contractors undertaking work at the AICF.

The AICF Onsite Manager is responsible for directing site activities in accordance with this OEMP, and for taking all practical measures to ensure the site is operating with acceptable risks to the environment. The AICF Onsite Manager is responsible for undertaking assessments of site operating conditions to identify any non-compliance or environmentally risky conditions. If the AICF Onsite Manager does not have the necessary authority to fix a problem, they are responsible for reporting the matter promptly and recommending remedial action to the AICF Chief Executive Officer.

2.1.4 AICF Staff

All staff are required to attend site inductions and follow this OEMP. Workers are responsible for advising the AICF Onsite Manager of any potential environmental issues.

2.1.5 Contractors

All contractors engaged to perform work for AICF management are required, as part of their contract/engagement, to comply with this OEMP and to comply with directions from the AICF staff. Failure to comply will be considered a breach of the contract and sufficient grounds for termination of the contract.

2.2 Approval and Licensing Requirements

2.2.1 Development Approval Conditions

Development Approval DA 15-433 was originally issued 11 October 2016. Ditton Properties subsequently applied to vary the permissible waste types and an amended approval was issued 12 July 2017 (see Appendix A).

The amended Development Approval contains consent conditions which relate to the operational phase of the AICF. Specific reference is made to consent condition 31d, which states *"a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2"*. As noted in Section 1.4, this standard has been superseded by *HB 90.3-2000 (R2016) The Construction Industry - Guide to ISO 9001:2000*. Documentation in accordance with the handbook requirements is provided in Appendix C to satisfy consent condition 31d.

2.2.2 Environment Protection Licence

In accordance with the Protection of the Environment Operations Act 1997 (POEO Act), the existing quarry operates under environment protection licence (EPL) no. 12510 (referred to as EPL12510). A copy of EPL12510 is provided in Appendix C. EPL12510 will be varied to accommodate the new scheduled activities of *composting* and *waste storage*. It is noted the site was previously subject to land-filling operations by a previous owner, but this scheduled activity component was removed from EPL12510 in 2011 under NSW Environment Protection Authority (EPA) notice 1095549.

Under POEO Act and the Regulations made under POEO Act, AICF's obligations are stated in the licence as follows:

- *"ensure persons associated with you* [Ditton Properties Pty. Limited as the licensee] *comply with this licence, as set out in section 64 of the POEO Act;*
- *control the pollution of waters and the pollution of air; and*
- *report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the POEO Act."*

All holders of an EPL are required under the *Protection of the Environment Legislation Amendment Act 2011* (POELA Act) and the requirement under Part 5.7A of the POEO Act to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP). The site-specific PIRMP shown in Appendix E has been prepared to describe the processes required to make preparations for, and respond to, a pollution incident at the AICF.

2.3 Reporting Requirements

It is the responsibility of the AICF Onsite Manager to document an Annual Environmental Management Report (AEMR), which details the environmental performance of the facility.

2.3.1 Reporting Year

The AEMR reporting year will be 24 March to 23 March the following year, which coincides with the anniversary date of EPL12510.

2.3.2 Scope and Purpose

The AEMR will be a summary of the environmental performance of the AICF for the reporting year. The AEMR will:

- describe the activities that were carried out in the previous year, and the activities that are proposed to be carried out over the next year;
- include a summary of the monitoring results and complaints records including a comparison of these results against the:
    - conditions, approvals/licenses, limits and performance objectives;
    - requirements of this OEMP;
    - monitoring results of previous years; and
    - relevant predictions made in assessment documentation.
- identify any non-conformance over the previous year and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data from the commencement of this OEMP;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies;

- identify measures that could be implemented to improve the environmental performance of the AICF if required; and
- identify suggested changes to the OEMP when it is next reviewed.

2.3.3 Timing

The AEMR will be submitted by 1 June (or nearest working day) each year and shall report on the previous operating year (24 March to 23 March the following year).

2.4 Environmental Training

All employees are required to undergo environmental awareness training and training about their responsibilities under this OEMP, which includes the site's PIRMP. The training ensures that all AICF employees, contractors and subcontractors understand their obligation to exercise due diligence for environmental management.

Environmental training includes:

- a site induction for staff;
- a site induction for contractors and sub-contractors;
- familiarisation with the requirements of the OEMP;
- environmental emergency response training;
- familiarisation with site environmental controls;
- familiarisation with management procedures for those activities with risk of causing environmental harm; and
- targeted environmental training for specific personnel working with equipment which may cause environmental harm.

A record of all site inductions will be maintained by the AICF Onsite Manager. Details of the induction and personnel are to be recorded on the Site Induction Register (Appendix F).

A record of all environmental training will be maintained by the AICF Onsite Manager. Specific details of training undertaken by all personnel are to be recorded on the Environmental Training Register (Appendix F).

2.5 Emergency Contacts and Response

The site PIRMP is provided in Appendix E of this OEMP. The PIRMP contains:

- the procedures to be followed regarding notification in the event of a pollution incident;
- a detailed description of the action that will be taken immediately after a pollution incident to minimise and control any pollution; and
- the emergency contacts details of any notified authorities or persons, and the procedures that will be followed regarding coordinating with such authorities or persons.

Chemicals and fuels kept and/or used onsite are listed in the PIRMP, and safety data sheets (SDS) are provided in Appendix G of this OEMP. Safe use of chemicals/fuels and spill-handling procedures are in accordance with SDS documentation.

3. Implementation

3.1 Risk Assessment

A risk assessment has been undertaken for development of the PIRMP to determine the following:

- identification of hazard events;
- identification of potential exacerbating circumstances;
- documentation of preventative measures and monitoring; and
- assessment of the residual risk (likelihood and consequence).

The risk register is shown in Table 3 of the PIRMP (see Appendix E of this OEMP). The risk assigned to each potential pollution incident event is the residual risk when all preventative actions/measures are considered.

The PIRMP sets out the criteria used to undertake the risk assessment, including the definition of likelihood, consequence and the resultant risk rating.

4. Operating Procedures

4.1 Weekly Environmental Inspection Checklist

4.1.1 Objective

To provide a checklist of weekly inspection activities relating to environmental management.

4.1.2 Procedures

Who:	AICF Onsite Manager, AICF Staff	
Where:	Whole of site	
When:	Weekly	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake inspections and complete the Weekly Environmental Inspection Checklist every week.		AICF Onsite Manager
The AICF Onsite Manager shall undertake and/or coordinate remedial action if required as a result of completing the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall record on the Weekly Environmental Inspection Checklist if a non-compliance has triggered the need for a Non-compliance and Corrective Action Report.		AICF Onsite Manager
If required, a Non-compliance and Corrective Action Report shall be prepared.		AICF Onsite Manager
Staff will be responsible for undertaking any remedial action as directed by the AICF Onsite Manager.		Staff
The AICF Onsite Manager shall inspect and sign-off on the Weekly Environmental Inspection Checklist when remedial action work has been adequately completed.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that the Weekly Environmental Inspection Checklist is appropriately filed (hard copy or electronic copy), that records are kept on site for a minimum of four (4) years and records are made available to EPA upon request.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Non-compliance and Corrective Action Report (see Appendix F)	
References:	-	

4.2 Liquid Waste Management System

4.2.1 Objectives

Liquid waste at the AICF comprises leachate generated by processing of organic wastes and raw sewage from onsite toilet facilities.

Leachate is produced directly by organics undergoing in-vessel composting. In accordance with NSW DEC (2004), *contact stormwater* must also be managed in the same manner as leachate. *Contact stormwater* at the AICF is any rainfall runoff which could come into contact with organics. This includes runoff which contacts the northern portion of the working pad and the compost maturation/screening/storage pad. No handling of organics will occur south of the Stage 1 bunkers, hence the southern portion of the working pad is excluded from the leachate catchment area shown in Figure 2.

The leachate management system has been designed, and will be operated, and maintained consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004), and has the following objectives:

- Working surfaces - ensure storage areas, active composting surfaces, and associated access roads are constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles;
- Leachate barrier system - prevent the pollution by leachate of subsoil, groundwater and surface water bodies over the period that raw organics or products remain on the premises, beyond the closure of the facility, and until the premises has ceased to pose potential environmental threats;
- Leachate collection system - ensure that leachate is collected efficiently at the composting and related processing facility for further management, thereby avoiding water pollution and/or odour problems; and
- Leachate storage system - ensure that leachate is stored efficiently at the composting facility for further management, thereby avoiding water pollution and/or odour problems.

The raw sewage management system comprises proprietary toilets with sewage containment tanks. Raw sewage will be disposed off-site with no on-site treatment permissible.

4.2.2 Design Considerations

The trafficable working surface is constructed from compacted clay and shaped and bunded to permit drainage of *contact stormwater* from the northern portion of the pad to the leachate collection pit (see drainage directions in Figure 2). To ensure leachate and stormwater are separated, a 1.0m high compacted clay bund is constructed where necessary around the perimeter of the leachate catchment (includes working pad and maturation/screening/storage pad). Note, the bund does not extend across the working pad as it has been formed with an inflection to ensure the southern portion of the working pad slopes south. No handling of organics is permitted at the southern portion of the working pad (south of the Stage 1 composting bunkers) and runoff generated there is considered stormwater which is directed to Central Dam via a stormwater inlet pit fitted with an oil and grease separator.

Design details of the leachate barrier/collection/storage systems and NATA accredited geotechnical verification of clay liner materials and finished earthworks are provided in Appendix C.

The leachate barrier system comprises:

- concrete pad of minimum 400 mm thickness underlying the composting bunkers;
- concrete pad of minimum 200 mm thickness underlying the drop-off stockpile and slow speed shredder/workshop shed; and
- a liner consisting of minimum 600 mm thickness of recompacted clay with an in-situ permeability (K) of less than $1x10^{-7}$ ms^{-1} underlying the working pad and compost maturation/ screening/storage area.

The leachate collection system comprises:

- all solid waste management procedures are undertaken on purpose-built pads or concrete surfaces;
- composting bunkers have floor-inset collection drains and floor slope is to the back wall, preventing leachate breaching the open entry side;
- stormwater pit at north west corner of the compost maturation/screening/storage pad; and
- leachate drainage is transferred via underground pipes which discharge directly to the leachate dam.

The leachate storage system comprises:

- 6.5 ML Leachate Dam;
- floating pontoon aerator and return pump;
- high-level alarm system with warning activation at 85% capacity, which equates to:
  - 1.0 ML of remaining storage capacity (which is equivalent to the *contact stormwater* generated by the AICF in response to a 250 mm rainfall event); and
  - freeboard depth of 1.0 m.
- critical high-level alarm notification at 95%; and
- a leachate storage dam liner consisting of minimum 900 mm thickness of recompacted clay with an in-situ permeability (K) of less than $1x10^{-9}$ ms^{-1}.

4.2.3 Procedures

Who:	AICF Onsite Manager	
Where:	Leachate management system - working surfaces, leachate barrier system, leachate collection system and leachate storage system Raw sewage at toilet facilities	
When:	Weekly, immediately following rainfall events >20mm in 24 hours, prior to re-stocking of any individual composting bunker	
Actions:		**Person(s) Responsible**

The AICF Onsite Manager shall undertake inspections (weekly and immediately following rainfall events >20mm in 24 hours) of the leachate management system which includes:
• working surfaces;
• leachate barrier system:
  ○ composting bunkers;
  ○ drop-off stockpile and low speed shredder shed area;
  ○ working pad; and
  ○ compost maturation/screening/storage area.
• leachate collection system; and
• leachate storage system (includes Leachate Dam, floating pontoon aerator, return pump and return pipework).
Record of the inspection shall be maintained on the Weekly Environmental Inspection Checklist in accordance with Section 4.1.
		AICF Onsite Manager

Observations to be made at working surfaces are: • cracking/leakage potential or changes from previous inspections; and • all-weather vehicular access to any part of the processing site is maintained.	AICF Onsite Manager
Observations to be made at the leachate barrier system are: • cracking/leakage potential of concrete at composting bunkers; • cracking/leakage potential of concrete at drop-off stockpile and low speed shredder shed floor; and • cracking/leakage potential of clay liner at screening and storage pad area.	AICF Onsite Manager
Observations to be made at the leachate collection system are: • clay liner cracking/leakage potential at Leachate Dam; • testing the integrity of each closable valve at each composting bunker; • check for blockages in the collection pits/drains and leakages in pipework; and • inspect the fabric integrity and placement of the GORE Covers to ensure that covered bunkers direct 100% of rainfall to the site surface water management system.	AICF Onsite Manager
Observations to be made at the leachate storage system are: • testing the operation of the leachate return pump; • ensure the floating pontoon aerator is operational to prevent formation of odour generating anaerobic conditions; and • ensure high-level alarm system at Leachate Dam is operational and set to activate at 85% and 95% capacities.	AICF Onsite Manager
Following notification by the high-level alarm system that Leachate Dam has reached 85% capacity, the AICF Onsite Manager shall assess the weather forecast (http://www.bom.gov.au/places/nsw/rutherford/) to determine the likelihood of rainfall exceeding 250 mm and to option the availability of stand-by water tankers to drawdown Leachate Dam.	AICF Onsite Manager
Following notification by the high-level alarm system that Leachate Dam has reached 95% capacity, the AICF Onsite Manager shall engage a water tanker contractor to drawdown Leachate Dam to maintain storage under 95% capacity.	AICF Onsite Manager
The AICF Onsite Manager shall undertake weekly inspections of the toilet facilities to confirm the integrity and the remaining capacity of the sewage containment tanks. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any faulty sewage containment tank to restore its operability.	AICF Onsite Manager
AICF Onsite Manager shall ensure the sewage containment tanks are emptied by a licensed waste collection contractor when they are nearing capacity. A receipt from a licensed waste management facility must accompany each record of removal off-site.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report
References:	NSW DEC (2004)

4.3 Solid Waste Management

4.3.1 Objectives

To ensure solid wastes are managed to:

- record quantities of solid waste delivered to site for composting;
- promote optimal composting conditions of solid waste;
- minimise the quantity of contaminated solid waste delivered to site;
- record quantities of contaminated solid waste disposed to landfill; and
- minimise and clean up inadvertent spillage from vehicles of solid waste whilst trafficking the site and leaving the site.

4.3.2 Material Considerations

Compostable materials are categorised by NSW DEC (2004) as shown in Table 1. After three years of processing only Category 1 materials, Category 2 organics will be introduced into the facility. Category 2 organics will be restricted to natural or processed vegetable material. The facility will continue to process Category 1 organics. It is not intended that the facility will compost Category 3 organics.

Restrictions on the type of solid waste permitted to be processed at the AICF are detailed in Development Approval DA 15-433 and EPL12510 (see Table 2). The maximum quantity of 'Food Waste' permitted for receipt is 8,000 t/a.

Contaminated solid wastes are deemed to be any wastes inadvertently received which do not comply with the compostable material specifications of the AICF.

Table 1 – Categorisation of organics (DEC 2004)

Potential to have environmental impact	Organics category	Types of organics permitted in categories[1] (Categories with larger numbers may contain types from classes with smaller numbers.)	
		Type	**Examples of organics**
Lowest potential environmental impact	**Category 1**	**Garden and landscaping organics**	Grass[2]; leaves; plants; loppings; branches; tree trunks and stumps.
		Untreated timber	Sawdust; shavings; timber offcuts; crates; pallets; wood packaging.
		Natural organic fibrous organics	Peat; seed hulls/husks; straw; bagasse and other natural organic fibrous organics.
		Processed fibrous organics	Paper; cardboard; paper-processing sludge; non-synthetic textiles.
Greater potential environmental impact than Category 1, less potential impact than Category 3.	**Category 2**	**Other natural or processed vegetable organics**	Vegetables; fruit and seeds and processing sludges and wastes; winery, brewery and distillery wastes; food organics excluding organics in Category 3.
		Biosolids[3] and manures	Sewage biosolids, animal manure and mixtures of manure and biodegradable animal bedding organics.
Greatest potential environmental impact	**Category 3**	**Meat, fish and fatty foods**	Carcasses and parts of carcasses; blood; bone; fish; fatty processing or food.
		Fatty and oily sludges and organics of animal and vegetable origin	Dewatered grease trap; fatty and oily sludges of animal and vegetable origin.
		Mixed residual waste containing putrescible organics	Wastes containing putrescible organics, including household domestic waste that is set aside for kerbside collection or delivered by the householder directly to a processing facility, and waste from commerce and industry.

Notes:

1. These categories are used only to facilitate reference to these groupings of waste and organics (with different potential environmental impacts) in these guidelines and in environment protection licences: they are **not** used in waste legislation.
2. Particular care should be taken when grass clippings are present in the feedstock. It is well known that careful process management is required to mitigate odour and leachate problems when processing grass clippings (e.g. Buckner 2002). High moisture content, high nitrogen levels, abundance of readily available organic matter and poor structure and tendency to mat mean that grass can easily become anaerobic and odorous.
3. Conditions applying to processing and use can be found in *Environmental Guidelines: Use and Disposal of Biosolids Products* (EPA 1997).

Table 2 – Received waste restrictions in accordance with Development Approval DA 15-433 and EPL12510

Waste	Description	Activity	Other Limits
Garden Waste	As defined in Schedule 1 of the POEO Act as in force from time to time.	Composting Waste Storage	No more than 40,000 tonnes per annum in total, with no more than 8,000 tonnes being derived from Food Waste.
Woodwaste	As defined in Schedule 1 of the POEO Act as in force from time to time.		
Natural Organic Fiborous Materials	As defined in Schedule 1 of the POEO Act as in force from time to time.		
General Solid Waste non-putrescible	Paper and Cardboard		
Food Waste	Vegetables, Fruit and Winery, Brewery and Distillery Waste		

4.3.3 Procedures

Who:	AICF Onsite Manager, Staff
Where:	Entry gate, drop-off stockpile, low speed shredder shed and composting bunkers
When:	As required

Actions:	**Person(s) Responsible**
The AICF Onsite Manager shall ensure signage is installed to advise commercial operators and private vehicle drivers of the type of organics accepted at the AICF. The types of organics not accepted at the AICF will also be displayed.	AICF Onsite Manager
The AICF Onsite Manager shall ensure signage is installed to advise commercial operators and private vehicle drivers that they can be fined for any litter on public roads resulting from improper transport upon exiting the site.	AICF Onsite Manager
AICF entry gate staff are to ensure that vehicle loads entering the site are covered.	Staff
Upon entry to the site, AICF entry gate staff are to inspect incoming commercial and private vehicle loads to identify contaminated solid waste. The owner of any load containing incompatible waste will be instructed to not unload, re-cover the load and to leave the premises immediately.	Staff
Upon entry to the site, the AICF Onsite Manager shall undertake random inspections of Council waste collection vehicles. The driver of any load containing incompatible waste will be instructed to not unload, re-cover the load and to leave the premises immediately.	AICF Onsite Manager
After each drop-off of solid waste by all vehicles, AICF staff are to inspect the drop-off stockpile for contaminated solid waste. Contaminated solid waste is to be removed and placed immediately in the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
General refuse will be placed in small bins located around the facility by all staff members on a daily basis. All staff are responsible for ensuring small bins are emptied into the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
AICF Onsite Manager shall ensure the main skip bin located in the drop-off stockpile and slow speed shredder shed is collected by a licensed waste collection contractor when it is nearing capacity.	AICF Onsite Manager
AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shed to minimise noise, dust and fugitive emissions.	AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows in the composting bunkers, and immediate placement of the GORE cover system over all newly formed windrows.	AICF Onsite Manager, Staff
Staff shall ensure the overloading of excavators and front end loaders is prevented to avoid spillage of organic material. If spillage occurs, the organic material is to be cleaned up daily.	Staff
The quantity of each category of organics received at the premises shall be recorded, together with its source, in accordance with the conditions specified in EPL12510.	AICF Onsite Manager
The quantity of contaminated solid waste and general refuse removed from the site shall be reported in the AEMR in accordance with Section 2.3. A receipt from a licensed waste management facility must accompany each record of removal off-site.	AICF Onsite Manager

The quantity of composted organics dispatched from the premises shall be recorded in accordance with the conditions specified in EPL12510.		AICF Onsite Manager
Records:	Contaminated Solid Waste Removal Record (see Appendix F) Annual Environmental Management Report EPL12510	
References:	NSW DEC (2004)	

4.4 Soil Management

4.4.1 Objectives

To effectively manage the soil resource on the site to:

- minimise soil loss through erosion; and
- prevent soil structural decline.

4.4.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	Monthly	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake monthly inspections of the general site, grass swales and dam embankments. Record of the inspection shall be maintained on Weekly Environmental Inspection Checklist for that week.		AICF Onsite Manager
The AICF Onsite Manager shall identify any areas of exposed soil that may be prone to erosion and include remedial action on Weekly Environmental Checklist. Particular attention will be made to the grass swale drains and all dam embankments		AICF Onsite Manager
Staff shall advise the AICF Onsite Manager if they observe any areas where active erosion is present.		Staff
The AICF Onsite Manager shall ensure that all directional and advisory traffic signage is in place during the weekly inspection. All traffic movement and parking shall be restricted to sealed roads or gravelled areas and designated pad areas.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F)	
References:	-	

4.5 Surface Water Management

4.5.1 Objectives

To provide an integrated surface water management system that:

- maximises the harvesting and reuse of site water to reduce potable demand;
- limits peak site discharge from the developed site to less than existing levels;
- uses best management practices to manage the quality of the surface water leaving the site so that it is consistent with adjacent catchment runoff; and
- prevents the potential for surface water pollution.

4.5.2 Design Considerations

In accordance with NSW DEC (2004) the AICF *"should be designed to contain one or more catch basins capable of collecting all surface water generated from the design of a 1-in-10 year, 24-hour-period storm event without overflowing"*. The capacities of existing sediment dams (estimated previously by VGT (2015)) and their upslope catchment areas are shown in Table 3. Stormwater Storage Dam is formed in a large excavation remaining in the post-quarry landform. The dam surface is 9,000 m^2 (90 m x 100 m). There is a 100 mm diameter overflow pipe 7.0 m above floor level. Below the pipe inlet elevation the storage capacity is 63 ML.

Figure 6 – Inlet of 100 mm diameter overflow pipe at Stormwater Storage Dam which directs flow to Sediment Dam 1 and 2

At the site location (lat -32.65, long 151.50), the 24 hour rainfall depth with a 1 in 10 yr recurrence is 151 mm (Bureau of Meteorology 2018). Assuming a conservative site-wide runoff coefficient of 0.7 (70%), the minimum stormwater requirement has been determined for

each dam in accordance with NSW DEC (2004) (see Figure 4 for catchment boundaries). As shown in Table 3, all dams have sufficient capacity.

Table 3 – Sediment dam volumes, respective catchment areas and required capacity volumes in accordance with NSW DEC (2014) (after VGT (2015))

Dam	Catchment Area (ha)	Storage volume requirement (ML)	Actual storage volume (ML)
Sediment Dam 1 and 2	1.0	1.1	2.6
Central Dam	6.1	6.4	7.1[A]
Stormwater Storage Dam	4.8	5.1	63

[A]VGT (2015) reported the capacity as 3.5 ML with 1.0 m of freeboard. Based on the 3,600 m^2 surface area, this equates to an additional 3.6 ML, providing a total storage volume of 7.1 ML.

Note, South Dam was not considered for this assessment as the 2.2 ha drainage catchment contains no facility infrastructure and the area consists primarily of forested vegetation.

4.5.3 Procedures

Who:	AICF Onsite Manager, Staff
Where:	Sediment dams, internal drains and undisturbed area diversions
When:	Monthly and immediately following rainfall depth >20mm in 24 hours

Actions:	**Person(s) Responsible**
The AICF Onsite Manager shall establish when rainfall depth has exceeded 20 mm during the past 24 hours by confirmation via the onsite meteorological recording station.	AICF Onsite Manager
Each month and when rainfall depth has exceeded 20 mm during the past 24 hours, the AICF Onsite Manager shall undertake inspections of the site sediment dams. Visual inspection will be undertaken of: • accumulated sediment depth; • internal embankment condition; • downstream embankment condition; and • discharge location condition. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any damage to sediment dams or to restore their stability and operability. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
To ensure tree roots do not cause piping issues, the AICF Onsite Manager shall organise maintenance actions to be undertaken to remove any tree seedlings on, or immediately downstream of, dam embankments. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall undertake monthly inspections of the internal drains, headwalls and undisturbed area diversions. Visual inspection will be undertaken of condition and ability to maintain design function. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any damage to internal drains, headwalls and undisturbed area diversions to restore their operability. Record of the	AICF Onsite Manager

inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	
If sediment dam storage is to be discharged offsite via pump, the AICF Onsite Manager shall organise pH monitoring of sediment dams and ensure any pH control actions (e.g. mixing with gypsum) are undertaken prior to discharge. Water quality monitoring requirements and concentration limits are presented in Section 5.1 of this OEMP.	AICF Onsite Manager
The AICF Onsite Manager shall undertake monthly inspections of the depth level indicators in all sediment dams to ensure they are intact and marker levels are clearly visible. Marker levels must allow the current sediment storage volume and the current settling volume void to be determined. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to restore sediment capacity in any sediment dam should sediment accumulation exceed 10% of the storage capacity shown in Table 3. Sediments removed from the dams shall be used as beneficial material for site rehabilitation purposes. Record of the actions shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure that all fuel, oils and chemicals used on site are stored in the approved and bunded lockable chemical shed.	AICF Onsite Manager, Staff
In the event of a fuel or chemical spill, all efforts will be made by all workers to contain and clean up the spill, but ONLY where safe to do so. Personal protective equipment is kept at the site office.	AICF Onsite Manager, Staff
A fuel or chemical spill or other chemical handling incident will be reported as an incident by the worker(s) involved and the AICF Onsite Manager shall complete a Pollution Incident Reporting Form.	AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure the oil and grease trap on the working pad is inspected monthly to ensure operability. When servicing is required, a licensed contractor is to be engaged to clean out the oil and grease trap.	AICF Onsite Manager
The quantity of oil and grease removed from the site shall be reported in the AEMR in accordance with Section 2.3. A receipt from a licensed waste management facility must accompany each record of off-site removal.	AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure that all solid wastes are stored in designated areas. No solid waste is to be placed in or near any waterway or drain. Any spilled waste will be removed immediately from areas within five metres of likely concentrated or high velocity flows, especially waterways and access roads.	AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure re-fuelling of mobile plant occurs only at the designated area adjacent to the diesel storage tanks.	AICF Onsite Manager, Staff
Surface water management inspection information shall be reported in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Pollution Incident Reporting Form (see Appendix D of Appendix E) Annual Environmental Management Report
References:	AK Environmental (2017)

4.6 Groundwater Management

4.6.1 Objective

To manage the site to prevent measurable changes to groundwater quality conditions down gradient of the facility.

4.6.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Leachate management system, sediment dams, general site	
When:	Monthly	
Actions:		**Person(s) Responsible**

The AICF Onsite Manager shall undertake inspections (weekly and immediately following rainfall events >20mm in 24 hours) of the leachate management system to identify any damage which may cause uncontrolled release of leachate that might otherwise infiltrate the ground surface and contact groundwater. Components of the leachate management system include:
• working surfaces;
• leachate barrier system:
  ○ composting bunkers;
  ○ drop-off stockpile and low speed shredder shed area; and
  ○ compost maturation/screening/storage area.
• leachate collection system; and
• leachate storage system, including Leachate Dam and return pipework.
Record of the inspection shall be maintained on the Weekly Environmental Checklist.
		AICF Onsite Manager

The AICF Onsite Manager shall undertake monthly inspections of the sediment dams to identify any damage which may cause uncontrolled release of stored water that might otherwise infiltrate the ground surface and contact groundwater. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.		AICF Onsite Manager
The AICF Onsite Manager and workers shall ensure that all fuel, oils and chemicals used on site are stored in the approved and bunded lockable chemical shed.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure re-fuelling of mobile plant occurs only at the designated area adjacent to the diesel storage tanks.		AICF Onsite Manager, Staff
In the event of a fuel or chemical spill, all efforts will be made by all AICF Staff to contain and clean up the spill, but ONLY where safe to do so. Personal protective equipment is kept at the site office.		AICF Onsite Manager, Staff
A fuel or chemical spill or other chemical handling incident will be reported as an incident by the worker(s) involved and the AICF Onsite Manager shall complete the Pollution Incident Reporting Form.		AICF Onsite Manager, Staff
Staff shall ensure that all solid wastes are stored in the designated solids stockpile areas. Inspection of the solids stockpile area shall be undertaken weekly in accordance with Section 4.3.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Pollution Incident Reporting Form (see Appendix D of Appendix E)	
References:	-	

4.7 Dust Management

4.7.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for dust generation and impacts on local air quality.

4.7.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager and staff shall remain constantly vigilant of dust plumes generated by onsite activities and disturbed surfaces. Record of the occurrence of noticeable dust plumes, and any contributing meteorological conditions or activities, shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of potential dust generation and to also inspect the operability of dust monitoring stations. Record of the inspection shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager
AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shredder shed to minimise dust emissions.		AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure when loading and unloading material, the drop height of the material is minimised as far as is practical, for example the front end loader should tip the bucket only when it is close to the ground, the bed of the truck or the material pile being added to, or trucks should “block dump” loads partially onto existing piles		AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows and immediate placement of the GORE Cover system over all newly formed windrows.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff are responsible for continually employing dust control measures as required. Appropriate dust control measures shall include: • strategic watering (at least daily on exposed areas and stockpiles, or more frequently as required to ensure moisture content of material handling is sufficient to minimise dust generation); • sweeping and/or cleaning of hard surfaces; and • not undertaking potential dust generating activities in adverse conditions (adverse conditions defined as when there has been no rain in the past 72 hours, with temperatures above 38 degrees Celsius and wind speeds above 8 m/s blowing towards the sensitive receivers).		AICF Onsite Manager, Staff
Landscaping shall be watered and maintained until well established to provide barriers to wind and dust movement.		AICF Onsite Manager, Staff
Dusty material stockpiles shall be located as far away from sensitive receivers as possible.		AICF Onsite Manager, Staff

The AICF Onsite Manager shall ensure that all drivers adhere to posted speed limits (maximum site speed limit of 30 km/hr).	AICF Onsite Manager
Staff shall ensure the watering of gravelled areas provides sufficient moisture to minimise dust generation by traffic, but not so much as to cause mud/dirt track out to occur.	AICF Onsite Manager, Staff
General traffic movement will be restricted to sealed and/or gravelled areas.	AICF Onsite Manager, Staff
Staff shall ensure the overloading of the excavators is prevented to avoid spillage.	Staff
AICF entry gate staff are to ensure that vehicle loads entering and leaving the site are covered to prevent unnecessary dust emissions from vehicle movements.	Staff
Any dust complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of dust complaints, their causes and corrective actions shall be provided in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report
References:	Todoroski Air Sciences (2015) Todoroski Air Sciences (2018)

4.8 Odour Management

4.8.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for odour generation impacts on local air quality.

4.8.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Composting windrow bunkers, solid waste handling, leachate management system	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of potential odour generation. Record of the inspection shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shed to minimise fugitive emissions.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections of the aerator systems at the composting bunkers and the leachate storage system to prevent formation of odour generating anaerobic conditions.		AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows and immediate placement of the GORE cover system over all newly formed windrows, and continual aeration of concrete composting bunkers.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure no stockpiling of raw materials for more than 24 hours under normal operating conditions.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall arrange removal within 48 hours of any stockpiled solids that are generating a strong odour that is noticeable at the site boundary in a downwind direction.		AICF Onsite Manager
The AICF Onsite Manager shall arrange immediate removal of any spill which has the potential to generated fugitive odour.		AICF Onsite Manager
Any odour complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of odour complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Todoroski Air Sciences (2015) Todoroski Air Sciences (2018)	

4.9 Noise Management

4.9.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for noise generating activities to impact on the local amenity.

4.9.2 Procedures

Who:	AICF Manager, AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
All staff are to ensure delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. No operations of any kind are permitted on Sundays or Public Holidays.		AICF Onsite Manager, Staff
The AICF Manager shall ensure that training is provided to all staff relating to: • specific operational noise mitigation measures; • relevant licence and approval conditions; • permissible hours of work; • location of nearest sensitive receptors; and • designated loading/unloading areas and procedures.		AICF Manager
To limit the use of tonal reversing alarms/beepers, the AICF Onsite Manager and staff shall ensure: • all vehicles must enter and exit the site in a forward direction; and • parking and loading/unloading are planned activities.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections to ensure that mobile plant is fitted with appropriate silencers where available, acoustic shielding is maintained around all stationary noise sources and that all plant and equipment is maintained in good working order. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
Staff are to immediately report to AICF Onsite Manager any deficiencies identified in mobile plant which could lead to excessive noise generation.		Staff
The AICF Onsite Manager shall organise prompt servicing of any plant which has been identified as producing excessive noise generation.		AICF Onsite Manager
Site signage shall be used to reinforce the need to minimise noise and for vehicles to adhere to a maximum speed limit when trafficking the access road.		AICF Onsite Manager
Staff shall ensure truck engines are switched off when not in use for extended periods.		Staff
Any noise complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of noise complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Global Acoustics (2015) Todoroski Air Sciences (2018)	

4.10 Traffic Management

4.10.1 Objectives

To manage traffic movement on site to:

- reduce heavy vehicle/light vehicle conflict points;
- reduce vehicle/pedestrian interaction;
- limit the speed of vehicles; and
- to minimise the potential for dust generation.

4.10.2 Procedures

Who:	AICF Onsite Manager	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any traffic movement or parking issues. Record of the inspection shall be maintained on Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall ensure: • all directional and advisory traffic signage is in place (including: stop sign at exit to Anambah Road; internal speed limit of 30 km/hr); • general traffic movement is restricted to defined sealed and/or gravelled/pad areas; • all vehicles must enter and exit the site in a forward direction; and • unloading and loading of solid waste only at the approved locations within the site.		AICF Onsite Manager
The AICF induction for staff shall include details of internal speed limits and traffic movement areas.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure that all drivers adhere to posted speed limits.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that all drivers are advised by appropriate signage that pedestrian access is only permitted when a vehicle has been parked at the loading/unloading area, and then only for the purpose of loading/unloading of solid waste. Staff are to remain vigilant at all times of pedestrian activity.		AICF Onsite Manager, Staff
Parking will be only in defined parking areas that are sealed or gravelled.		AICF Onsite Manager
Any traffic complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of traffic complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Intersect Traffic (2015)	

4.11 Flora and Fauna Management

4.11.1 Objectives

To manage weeds on site to:

- maintain and protect identified habitat;
- control existing weeds present on the site by containing the distribution of weeds present on the site; and
- minimise the potential for the importation of noxious weeds.

4.11.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of noxious weed growth. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall direct workers to apply targeted herbicide to noxious weeds within one week of their identification.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure traffic movement is restricted to defined sealed and/or gravelled/pad areas.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that inspections of Sediment Dams 1 and 2 and South Dam are kept to the minimum frequency as required by this OEMP to limit disturbance sedentary species and mobile species that may utilise these areas in times when suitable conditions occur.		AICF Onsite Manager
The AICF Onsite Manager shall ensure drainage system utilised by the previous quarry operations would be protected and maintained.		AICF Onsite Manager
The AICF Onsite Manager shall ensure the surrounding areas of Lower Hunter Spotted Gum Ironbark Forest EEC vegetation, which provide suitable habitat resources for both sedentary species and mobile species, would be protected and maintained.		AICF Onsite Manager
The AICF Onsite Manager shall ensure appropriate erosion and sedimentation controls would be employed during any construction or reparation activity to limit movement of sediment and contaminants into the Sediment Dams 1 and 2 and South Dam.		
Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation.		AICF Onsite Manager, Staff
Imported solid waste is a potential seed bank of noxious weeks. The AICF Onsite Manager shall ensure that no solid wastes are spread or reused on site.		AICF Onsite Manager
A summary of identified noxious weed species shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report	
References:	Anderson Environment and Planning (2015) Anderson Environment and Planning (2017)	

4.12 Fire Management

4.12.1 Objectives

To manage fire prevention on site and to ensure fire-fighting provisions are maintained.

4.12.2 Design considerations

In accordance with Fire Engineering Design (2018), a fire hydrant system is not required for the AICF.

The primary fire-fighting system will instead consist of two pressurised high-flow fire hose reels located at the slow speed shredder shed. The reels will be supplied via the four 23,000 L water tanks. These tanks will capture rainwater roof runoff from the slow speed shredder shed, and also receive top-up water as required from Central Dam.

Mobile plant will each be fitted with mobile fire extinguishers.

4.12.3 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Fire-fighting equipment, General site	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any processes which are non-compliant in that they might raise risk levels associated with onsite fire generation potential. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall record on the Weekly Environmental Inspection Checklist if a non-compliance has triggered the need for a Non-compliance and Corrective Action Report.		AICF Onsite Manager
The AICF Onsite Manager shall ensure water supply tanks, fire hose reels and fire extinguishers are maintained in accordance with *AS 1851–2012 Routine service of fire protection systems and equipment*.		AICF Onsite Manager
The AICF Onsite Manager shall ensure all staff are trained in the correct operation of fire hose reels and extinguishers.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure all green waste feedstock would be unloaded inside the slow speed shredder shed, and shredded and loaded to the in-vessel composter within 24 hours.		AICF Onsite Manager
The AICF Onsite Manager shall ensure internal temperatures of the composting pile would be monitored and maintained through regulating the pile profile, moisture content, and air supply.		AICF Onsite Manager
The AICF Onsite Manager shall ensure existing water stores would be maintained on the site, and a water cart would be always maintained with a full tank and in-service pump and fire hose.		AICF Onsite Manager
The AICF Onsite Manager shall ensure smoking areas would be designated within the facility that are remote from combustion sources and that have a dedicated receptacle for extinguishing and receiving butts.		AICF Onsite Manager

The AICF Onsite Manager shall ensure site security will be maintained to minimise the risk of arson from trespassers.	AICF Onsite Manager
The AICF Onsite Manager shall ensure signage is maintained to inform visitors that flammable liquids are not permitted on the site.	AICF Onsite Manager
Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation. All fuels or flammable solvents for operational use should be stored in an appropriately ventilated and secure store.	AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure quantities of combustible contaminants that have been separated from the received organics will be placed immediately in the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
Fire management inspection information shall be reported in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report
References:	Anderson Environment and Planning (2015)

4.13 Indigenous Australian Heritage

4.13.1 Objectives

To raise awareness of indigenous Australian heritage and ensure protection of Aboriginal items uncovered at site.

4.13.2 Procedures

Who:	Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that during site inductions all employees understand their obligation to exercise due diligence for management of indigenous Australian heritage.		AICF Onsite Manager
All staff are to cease work immediately should any items of potential indigenous Australian heritage significance be discovered during site preparation, construction, demolition or demobilisation.		Staff
Following the cessation of work, the staff member who has uncovered the potential item of indigenous Australian heritage significance must inform the AICF Onsite Manager.		Staff
Upon notification of an uncovered potential item of indigenous Australian heritage significance, the AICF Onsite Manager must notify the Aboriginal Heritage Information Management System (AHIMS) Registrar at the Office of Environment and Heritage (Phone: (02) 9585 6345).		AICF Onsite Manager
Following notification of an uncovered potential item of indigenous Australian heritage significance, the AICF Onsite Manager must ensure works do not recommence until the Office of Environment and Heritage has advised on appropriate management measures.		AICF Onsite Manager
If skeletal remains are identified, the AICF Onsite Manager must ensure both the NSW Police (Phone: 000) and OEH (Phone: (02) 9585 6345) would be immediately informed.		AICF Onsite Manager
A summary of identified items of indigenous Australian heritage significance shall be provided in the AEMR.		AICF Onsite Manager
Records:	Annual Environmental Management Report	
References:	-	

4.14 Complaints Management

4.14.1 Objectives

To ensure any complaint received is recorded and kept correctly, investigated, and options for avoiding recurrence are considered.

4.14.2 Dispute Resolution

AICF will strive to maintain good relations with all external stakeholder groups through effective communication, and to avoid disputes arising through consultation with relevant external stakeholders and through addressing any concerns in a timely manner. Should any disputes arise that cannot be resolved through direct consultation, the dispute resolution processes discussed below will be implemented.

If a neighbouring landowner considers that the operations of the AICF are exceeding the impact assessment criteria, then the landowner may ask, in writing, for an independent review of the impacts of AICF on their land.

If the AICF Chief Executive Officer is satisfied that an independent review is warranted, then within one month of the Secretary's decision, AICF must:

- commission a suitably qualified, experienced and independent person, whose appointment has been approved by the AICF Chief Executive Officer, to:
    - consult with the landowner to determine his / her concerns.
    - conduct monitoring to determine whether the development is complying with the relevant criteria set out in this OEMP.
    - if the AICF is not complying with these criteria then identify measures that could be implemented to ensure compliance with the relevant criteria.
    - provide copies of the independent review to the AICF Chief Executive Officer and the land owner.

4.14.3 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that the public is aware of Council's contact for complaints (telephone number (02) 4932 6998), and that it is operational during operating hours.		AICF Onsite Manager
Any complaint received by any staff member at AICF shall be reported immediately to the AICF Onsite Manager.		AICF Onsite Manager, Staff

All details of any complaint and subsequent investigation will be recorded on the Complaints Register by the AICF Onsite Manager. Details shall include: • the date and time of the complaint; • the means by which the complaint was made (in person, telephone, mail or email); • any personal details of the complainant that were provided, or if no details were provided, a note to that effect; • the nature of the complaint; • any actions taken in relation to the complaint, including timeframes for implementing the action; and • if no action was undertaken in relation to the complaint, the reasons why no action was taken.	AICF Onsite Manager
The AICF Onsite Manager will ensure that the record of a complaint will be kept for at least four (4) years after the complaint was made, and that the records are available to any authorised officer of the EPA who asks to see them.	AICF Onsite Manager
The AICF Onsite Manager shall be responsible for follow-up investigation for all complaints received and for assessing options for avoiding recurrence.	AICF Onsite Manager
Where required, the AICF Onsite Manager shall provide acknowledgement and feedback to community members following closure of a compliant raised by a community member.	AICF Onsite Manager
A summary of complaints, their causes and corrective actions shall be provided in the AEMR.	AICF Onsite Manager
Records:	Complaints Register (see Appendix F) Annual Environmental Management Report
References:	-

4.15 Environmental Incident Management

4.15.1 Objective

To ensure that all incidents with the potential to impact adversely on the environment are investigated and documented, and that options for avoiding recurrence are implemented.

4.15.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
All incidents that may result in an adverse impact on the environment must be reported by workers immediately (once safe and practicable to do so) to the AICF Onsite Manager. AICF Onsite Manager contacts details: • mobile phone – 0439 989 993 • office phone - (02) 4932 6998		AICF Onsite Manager, Staff
In the event of a 'Pollution Incident', AICF Onsite Manager shall follow procedures detailed in the site's Pollution Incident Response Management Plan (see Appendix E).		AICF Onsite Manager
Each 'Pollution Incident' shall be recorded in the Pollution Incident Reporting Form, which is located in Appendix D of the Pollution Incident Response Management Plan (see Appendix E of this OEMP).		AICF Onsite Manager
Periodic testing of this operating procedure shall be coordinated by the AICF Onsite Manager (e.g. mock environmental incidents).		AICF Onsite Manager
A summary of environmental incidents, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Pollution Incident Reporting Form (see Appendix D of Appendix E) Annual Environmental Management Report	
References:	Pollution Incident Response Management Plan (see Appendix E).	

4.16 Staff Training

4.16.1 Objective

To ensure all current and new staff are trained in the appropriate OEMP procedures, are aware of and comply with the requirements of the OEMP, and are aware of their responsibilities with respect to environmental management.

4.16.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that all site staff have received the appropriate operator training.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that all site staff have received training in the following: • a site induction; • familiarisation with the requirements of the OEMP; • environmental emergency response training; • familiarisation with site environmental controls; • familiarisation with management procedures for those activities with risk of causing environmental harm; and • targeted environmental training for specific personnel working with equipment which may cause environmental harm.		AICF Onsite Manager, Staff
All staff who complete training shall sign off on the Environmental Training Register.		AICF Onsite Manager, Staff
Records of training shall be maintained by the AICF Onsite Manager.		AICF Onsite Manager
Records:	Environmental Training Register (see Appendix F)	
References:	-	

5. Monitoring

5.1 Surface Water Quality Monitoring

All surface water sampling locations are shown in Figure H-1 of Appendix H.

In accordance with EPL12510, surface waters will be monitored quarterly at location SW1 ('Point 1') and SW6 ('Point 2'). The analytes required to be monitored quarterly are listed in Table 4.

Offsite discharge from sediment dams may occur following extreme rainfall conditions. In preparation for offsite discharge, surface water monitoring of all boundary sediment dams (see SW1, SW2 and SW3 in Figure H-1 of Appendix H) will be undertaken. Note, Leachate Dam has a 6.5 ML capacity and is not permitted to overflow, and hence no discharge monitoring is required.

In accordance with EPL12510, 'special frequency' monitoring will occur at SW1 ('Point 1') on each day that offsite surface water discharge occurs from Sediment Dam 1 and 2. The analytes required to be monitored at 'special frequency' are the same listed in Table 4 for quarterly monitoring.

Onsite reuse of stormwater runoff captured in on-site dams will be undertaken for dust suppression purposes. Water is preferentially sourced from the Stormwater Storage Dam ahead of water from the sediment dams (Sediment Dam 1 and 2, Central Dam or South Dam). Prior to pumping from any on-site dam, surface waters will be monitored for pH to ensure the level is within EPL12510 limits of 6.5 to 8.0 pH units.

Laboratory testing of surface waters will be undertaken only by facilities accredited to assess the nominated analytes by the National Association of Testing Authorities (NATA). Sampling shall be carried out in accordance with AS/NZS 5667.1:1998 (R2016), and samples will be handled under acceptable chain-of-custody protocols. In-field testing of a limited number of analytes (e.g. pH) will be performed with hand-held meters which are maintained and calibrated to manufacturer's specifications.

Table 4 – Water quality limits for surface water quality monitoring based on EPL12510 requirements

Parameter	Units	EPL limit
pH	pH units	6.5 – 8.5
Total suspended solids	mg/L	50
Oil and grease	mg/L	10
Ammonia	mg/L	0.9

5.2 Groundwater Quality and Level Monitoring

All groundwater sampling locations are shown in Figure H-1 Appendix H.

In accordance with EPL12510, groundwater will be monitored quarterly at locations GW4 ('Point 4') and GW5 ('Point 5'). All of the analytes listed in Table 5 are required to be monitored during regular quarterly groundwater sampling. Standing water level in GW4 and GW5 will monitored continuously by installed loggers.

The potential for offsite discharge of surface water (dirty water) from sediment dams is discussed in Section 5.1. In accordance with EPL12510, on each day that offsite surface water discharge occurs from Sediment Dam 1 and 2 or South Dam, monitoring will occur at GW4 ('Point 4') and GW5 ('Point 5'). Only 'special frequency' analytes are required to be monitored for groundwater during such events (see Table 5).

Laboratory testing of groundwater will be undertaken only by facilities accredited to assess the nominated analytes by the National Association of Testing Authorities (NATA). Sampling shall be carried out in accordance with AS/NZS 5667.1:1998 (R2016), and samples will be handled under acceptable chain-of-custody protocols. In-field testing of a limited number of analytes (e.g. pH) will be performed with hand-held meters which are maintained and calibrated to manufacturer's specifications.

Table 5 – Water quality limits for groundwater monitoring and nominated special frequency analytes in accordance with EPL12510

Parameter	Units	NEPM[A]	Special frequency monitoring
Alkalinity	mg $CaCO_3$/L	-	Yes
Aluminium	mg/L	0.1	-
Ammonia	mg/L	0.9	Yes
Arsenic	mg/L	0.05	-
Barium	mg/L	-	-
Benzene	µg/L	300	-
BOD	mg/L	-	-
Cadmium	mg/L	0.0002	-
Calcium	mg/L	-	-
Chloride	mg/L	-	-
Chlorinated volatile compounds	µg/L	-	-
Chromium (total)	mg/L	0.01	-
Cobalt	mg/L	-	-
Electrical Conductivity	µS/cm	-	-
Copper	mg/L	0.002	-
Dissolved oxygen	mg/L	-	-
Ethyl benzene	µg/L	-	-
Fluoride	mg/L	-	-
Iron	mg/L	1.0	-
Lead	mg/L	0.001	-
Magnesium	mg/L	-	-
Manganese	mg/L	-	-
Mercury	mg/L	0.0001	-
Nitrate	mg/L	-	-
OC pesticides	µg/L	0.01	-
OP pesticides	µg/L	-	-
PCBs	µg/L	3	-
pH	pH units	6.5	Yes
Phosphate	mg/L	-	-
Polycyclic aromatic hydrocarbons	µg/L	-	-
Potassium	mg/L	-	-
Sodium	mg/L	-	-
Standing water level	mbgl	-	Continuous
Sulfate	mg/L	-	-
Toluene	µg/L	-	-
Total dissolved solids	mg/L	-	Yes
Total organic carbon	mg/L	-	-
TPH	mg/L	-	-
Total Phenolics	mg/L	-	-
Total suspended particles (solids)	mg/L	50	-
Zinc	mg/L	0.05	-

5.3 Solid Waste Monitoring

The handled solid waste streams will be monitored in accordance with Section 0. These include:

- quantity and source of solid waste received;
- quantity of fine compost despatched; and
- quantity of contaminated waste and general refuse disposed of at a licensed waste management facility.

5.4 Dust Deposition Monitoring

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method*.

Dust monitoring will occur at the three nearest sensitive receptors, each of which located east of the AICF (Figure 7). The frequency of monitoring is monthly.

In accordance with Approved Methods for the *Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA 2017), where dust deposition levels are within the impact assessment criteria of 4g/m²/month, then all other dust criteria are assumed to be met.

Figure 7 – Site lot boundary and dust and noise monitoring locations (after Todoroski Air Sciences 2018)

5.5 Odour Monitoring

Odour monitoring will be conducted in accordance with Standards Australia *AS/NZS 4323.3:2001 Stationary source emissions Part 3: Determination of odour concentration by dynamic olfactometry*.

Odour monitoring will be conducted during the proving phase period that includes the commissioning and the initial period of composting for the AICF. Sampling will be undertaken at the solid waste handling and composting areas of the site.

The odour monitoring results will be used to verify the assumptions in the air quality modelling. Additional odour monitoring will be required if operation of the facility requires an additional proving phase period.

In the event of an odour complaint from a neighbouring sensitive receptor, targeted monitoring will be conducted.

5.6 Noise Monitoring

Noise monitoring is conducted using a sound level meter that meets the specifications of a precision (Class 1) or general-purpose (Class 2) sound level meter as stated in Standards Australia *AS IEC 61672.1-2004: Electroacoustics – Sound level meters specifications*.

The equipment should have a current laboratory calibration certificate or label, and also be calibrated in the field.

Attended noise monitoring is proposed to be carried out at each of the six nearest sensitive receivers shown in Figure 7.

Attended noise monitoring will be conducted monthly during the first 12 months of operation and following this monitoring would occur quarterly. Additional noise monitoring will be conducted when new or additional composting equipment is commissioned or following a noise-related complaint being received.

5.7 Meteorological monitoring

The onsite meteorological monitoring station will, as a minimum, continuously record the parameters listed in Table 6.

The weather station is to be sited in accordance with AM-2 of *Guide for measurement of horizontal wind for air quality applications* (AS 2923-1987 or AS/NZS 3580.14-2014), and AM-4 of *Meteorological monitoring guidance for regulatory modelling applications EPA 454/R-99-005* (USEPA (2000)).

Table 6 – Meteorological monitoring parameters (Todoroski 2018)

Parameter	Units of measure	Sample frequency	Averaging period	Method
Wind speed at 10 m	m/s	Continuous	15 minutes	AM-2 & AM-4
Wind direction at 10 m	degrees	Continuous	15 minutes	AM-2 & AM-4
Sigma Theta at 10 m	degrees	Continuous	15 minutes	AM-2 & AM-4
Temperature at 2 m	Celsius	Continuous	15 minutes	AM-4
Temperature at 10 m	Celsius	Continuous	15 minutes	AM-4
Solar radiation	W/m²	Continuous	15 minutes	AM-4
Rainfall	mm	Continuous	1 hour	AM-4

5.8 Traffic Monitoring

Traffic will be monitored via complaints in accordance with Section 4.10.2.

6. OEMP Review

6.1 Revision of Operating Procedures

This OEMP shall remain a ‘live’ document for the duration of AICF operations.

At any time, AICF can engage a suitably qualified and practising professional to adapt the OEMP to the outcomes of any incident report or modifications to the conditions of approval.

6.2 Document Control

The following will be classed as 'major’ revisions:

- changes to processes;
- additional procedures or improvement actions;
- changes made in response to an incident; and
- changes requested by the EPA.

Major revisions shall be identified by the whole number in the version number (i.e. 1.0, 2.0, 3.0….). When the changes address formal requests made by EPA, Council shall consult with EPA for approval.

The following will be classed as 'minor' revisions:

- minor typing and grammar corrections;
- changes to position titles and telephone contact numbers;
- updates to recording forms to suit operations; and
- changes/additions to Appendices.

Minor revisions shall be identified after the decimal point in the version number (ie. 1.1, 1.2, 1.3....).

7. References

AK Environmental (2017). *Soil and Water Management Plan - In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW*, November 2017.

DIPNR (2004). *Guideline for the Preparation of Environmental Management Plans,* Department of Infrastructure, Planning and Natural Resources, Sydney NSW.

Intersect Traffic (2015). *Traffic Impact Assessment - Composting Facility, Riverbend Quarry – Amended July 2015.*

Fire Engineering Design (2018). *Fire Safety Engineering Report – Proposed Composting Facility 442 Anambah Road Anambah 2320* (doc ref: 20128046MWRR001A.docx);

NSW EPA (2017). *Modelling and Assessment of Air Pollutants in New South Wales.* January 2017.

NSW DEC (2004). *Environmental guidelines: composting and related organics processing facilities*. Sydney: Dept. of Environment and Conservation. http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf

NSW Landcom (2004). *Managing Urban Stormwater: Soils and Construction, Volume 1*, March 2004.

OD Hydrology (2015). *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater* Assessment, doc ref: 44001-rpt01d.docx.

OD Hydrology (2016). *Responses to request for additional information (Composting Facility, Anambah Road, Anambah,* NSW, doc ref: 44001-ltr01b.docx.

Pulver Cooper & Blackley (2015). *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015*. Prepared for: Ditton Properties Pty. Ltd.

Todoroski Air Sciences (2015). *Riverbend Quarry and Compost Facility - Air Quality Impact Assessment.*

Todoroski Air Sciences (2018). *Air Quality and Noise Management Plan - Anambah In-vessel Composting Facility*, 17 September 2018*.*

US EPA (2000). *Meteorological monitoring guidance for regulatory modelling applications EPA 454/R-99-005*, US EPA, Research Triangle Park, North Carolina 27711, 2000.

VGT (2015). *Soil and Water Management Plan – Riverbend Quarry Via Gosforth*, doc ref: 1084_RB_SWMP_R4.

Appendix A. Development Approval DA 15-433

ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT, 1979 (As Amended)

maitland
city council

NOTICE OF DETERMINATION

DEVELOPMENT APPLICATION
(AMENDED)

To the Applicant:

Pulver Cooper and Blackley
PO Box 729
NEWCASTLE NSW 2300

LAND:

442 ANAMBAH ROAD,ANAMBAH
LOT 22 DP1069012

DEVELOPMENT:

S96 (2) Modification to Amend Condition No.2 (Waste Definitions)

The application submitted on 13 April 2017 to modify **Development Application No. DA-15-433** pursuant to Section 96(2) of the Environmental Planning and Assessment Act, 1979, (as amended) has been modified in the manner and to the extent indicated in the Amended Schedule of Conditions as attached.

Those conditions which have been modified, existing conditions which have been deleted and new conditions which have been added are identified within the shaded boxes contained within the schedule.

Amended Consent Issued: 12 July 2017

Original Consent Endorsement Date: 11 October 2016

PER GENERAL MANAGER

This notice should be retained and read in conjunction with the original Notice of Determination issued on 11 October 2016 and Previous Section 96 Amendments dated 30 March, 2017. Please note the date of consent remains the original endorsement date, and that the consent lapses 5 years from this original endorsement date unless the conditions of consent specify a reduced period. Any reference in the Environmental Planning and Assessment Act, 1979 or any other Act to a development consent shall, in the case of this matter, be a reference to the original development consent as modified herein.

Right of Appeal:
If you are dissatisfied with this decision, section 96(6) of the Environmental Planning and Assessment Act, 1979 gives you the right to appeal to the Land and Environment Court.

Schedule of Conditions DA 15-433

(As amended by Section 96(2) dated 12 July, 2017)

Reason for Condition(s)

The following condition(s) have been applied to the development, subject of this consent, to ensure that the development meets the requirements of the NSW Environmental Planning and Assessment Act 1979, the NSW Environmental Planning and Assessment Regulation 2000, and the various policies and development controls of Maitland City Council and other government agencies relevant to the development being undertaken.

APPROVED PLANS AND DOCUMENTATION

1. The development shall be carried out in accordance with the stamped approved plans and documentation as detailed in the following schedule and any amendments arising through conditions to this consent or as shown in red colour on the plans:

Plan Ref No.	Sheet No.	Revn No.	Revision Date	Prepared by: (consultant)
1084_EIS_CDA_C003_V2_F3.cdr Contour Map with Aerial	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C004_V2_F4cdr Traffic Flow	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility	1 of 1	V4	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility Hunter Water Stamped Plan	1 of 1	A	16/02/2016	VGT Pty Ltd
1084_EIS_CDA_C006_V2_F6.cdr Processing Area	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C007_V2_F7.cdr Proposed Shed	1 of 1	V2	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C008_V2_F8.cdr Proposed slow speed shredder shed	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C015_V2_F91.cdr Detailed plan of proposed slow speed shredder shed	1 of 1	V0	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C009_V2_F10.cdr Compost Pad Windrows	1 of 1	V3	01/07/2015	VGT Pty Ltd
Documents	Sheet No	Revn No.	Revision Date	Prepared by: (consultant
Environmental Impact Statement In Vessel Composting Facility	-	-	July 2015	PCB Pty Ltd
Response to Submissions Report			April 2016	PCB Pty Ltd

LIMITS ON APPROVAL

2. The applicant shall ensure that this approved Composting facility does not:

(I) Process more than 40,000 tonnes per annum of the following materials:

a) Garden Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

b) Wood Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997*;

c) Natural Organic Fibrous Materials as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

d) General Solid Waste non putrescible –paper and cardboard;

e) Process more than 8,000 tonnes derived from food waste - vegetables, fruit, brewery and distillery waste; and

(ii) No more than 24,000 tonnes of final produce per annum of fine compost.

Any increase or type of waste to be processed at this facility requires approval from Council and variation to the EPA licence.

Condition Amended 12 July 2017

SURRENDER OF CONSENT

3. DA 95- 163 for quarrying shall be surrendered to Council on full operation of Scenario 1 being 40,000 tonnes of waste being processed at the site or five (5) years from commencement of composting operations whichever occurs first.

CONTRIBUTIONS AND FEES

4. Pursuant to Section 80A(1) of the Environmental Planning and Assessment Act 1979, and the Maitland S94A Levy Contributions Plan 2006, a contribution of $17,000 shall be paid to the Council. The above amount may be adjusted at the time of the actual payment, in accordance with the provisions of the Maitland City Council S94A Levy Contributions Plan 2006.

Payment of the above amount shall apply to Development Applications as follows:

- *Building work only - prior to issue of the Construction Certificate.*
- *Subdivision and building work - prior to the issue of the Construction Certificate, or*
- *Subdivision Certificate, whichever occurs first.*
- *Where no construction certificate is required - prior to issue of an Occupation Certificate.*

The above "contribution" condition has been applied to ensure that:

i) Where the proposed development results in an increased demand for public amenities and services, payment towards the cost of providing these facilities/services is made in accordance with Council's adopted contributions plan prepared in accordance with the provisions of section 94A of the Environmental Planning and Assessment Act, 1979.

ii) Council's administration expenses are met with respect to the processing of the application.

WASTE SCREENING AND ACCEPTANCE

5. The Applicant must:

a) implement auditable procedures to:
   i) ensure that the site does not accept wastes that are prohibited; and
   ii) screen incoming waste loads; and

b) ensure that:
   i) all waste that are controlled under a tracking system have the appropriate documentation prior to acceptance at the site; and

ii) staff receive adequate training in order to be able to recognise and handle any hazardous or other prohibited waste.

CERTIFICATES

6. The applicant shall submit to Council a "Notice of Commencement" form at least two (2) days prior to the commencement of construction works.

7. Prior to the commencement of works an application for a Construction Certificate shall be submitted to, and be approved by, the Accredited Certifier.

8. Prior to the issue of an Occupation Certificate all conditions of development consent shall be complied with.

9. Prior to commencement of any composting operations from the site an Occupation Certificate shall be issued by the Principal Certifying Authority.

VEGETATION & LANDSCAPING

10. The recommendations of the Ecological Assessment Report prepared by Anderson Environment and Planning dated February 2015 shall be adhered to for this composting facility as follows:

    a. Ensuring protection of the northern and southern dams is considered important for general biodiversity. These areas offer suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur. Maintaining the existing drainage system regimes utilised by quarry operations would suffice;

    b. Ensuring protection of the surrounding areas of Lower Hunter Spotted Gum Ironbark Forest EEC vegetation. These areas provide suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur (tree flowering). Appropriate demarcation of no go areas should be applied during any construction activity;

    c. Appropriate erosion and sedimentation controls should be employed during any construction to limit movement of soils, and in particular into the above identified dam areas to maintain water quality;

    d. Consideration should be given to weed control within the wider site to address negative impacts associated with on going weed colonisation.

11. A Construction Certificate shall not be issued over any part of the site requiring a Controlled Activity Approval under the *Water Management Act 2000* until a copy of the approval has been provided to Council.

12. The development is to comply with the General Terms of Approval issued by NSW Department of Primary Industries – Water, File No. ERM 2013/0073 dated 14 July 2016 and included as an attachment to this schedule.

REHABILITATION PLAN

13. Prior to the Issue of the Construction Certificate, the proponent shall prepare and implement an updated Rehabilitation Plan for the site taking into consideration both the composting and quarrying operations on site and be submitted to Council for approval. This plan must be:

a. Be prepared in consultation with EPA, Department of Primary Industries (Water) and Council by a suitably qualified and experienced expert;
b. Define the objectives and criteria for rehabilitation;
c. Describe the measures and timing that would be implemented to achieve the specified objectives and criteria for rehabilitation;
d. Describe the performance of these measures would be monitored over time.

BUSHFIRE

14. The following bushfire mitigation measures shall be implemented and details provide to the certifying authority prior to issue of a construction certificate:

- A minimum 20m Asset Protection Zone shall be created around any buildings and combustible material stock-piles on site and shall be maintained as fuel free area as detailed in Appendix 2 of Planning for Bushfire Protection 2006;
- Construct any buildings to comply with Level 3 specifications in AS3959 -Construction of Buildings in Bushfire Prone Areas;
- Provision of suitable on site fire access trails to connect with access road off Anambah Road that satisfy Planning for Bushfire Protection 2006;
- Provision of appropriate water storage tanks, fire fighting pump with 25mm hose (fitted with a suitable spray nozzle),hose reels of suitable length and so that it can circulate any proposed building or stockpiles on site and the water tanker shall remain full at all times; and
- Preparation of an evacuation plan prior to composting operations commencing on site.

VISUAL AMENITY

15. Any buildings or structure on site shall be of non reflective and colours of materials and finishes shall blend with the surrounding rural locality and details provided to the certifying authority prior to the issue of a construction certificate

LIGHTING

16. All external lighting associated with the development shall be mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadways. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.

HOURS OF OPERATION

17. The hours of operation of the composting facility shall be confined to within the following times:

Monday to Friday	7.00am to 5.00pm
Saturday	7.00am to 5.00pm

No operations permitted on Sunday and Public Holidays

NOISE

18. Concurrent quarrying and composting operations shall only be undertaken during neutral (i.e. no wind) weather conditions

19. Prior to any composting operations commencing on site the proponent must prepare a Noise Management Plan that includes, but is not limited to:

a) Key performance indicators;
b) Monitoring method;
c) Location, frequency and duration of monitoring;
d) Record keeping
e) Complaint handling system;
f) Response mechanisms; and
g) Compliance reporting.

A copy of this Plan shall be submitted to and approved by Council prior to any composting commencing on site.

ODOUR

20. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for the composting facility in accordance with the EPA licence for any odour event shall be submitted to and approved by Council.

DUST MANAGEMENT

21. During construction and operations, the proponent shall ensure that:

a) All vehicles on site do not exceed a speed limit of 30 kilometres per hour;
b) All loaded vehicles entering or leaving the site and around the site have their loads covered; and
c) All loaded vehicles leaving the site are cleaned of dirt, sand and other materials before they leave the site, to avoid tracking these materials on public roads.

22. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for this composting facility in accordance with the EPA licence for any dust event shall be submitted to and approved by Council.

SOIL, WATER AND LEACHATE

Leachate Management and Collection System

23. No waste is permitted to be disposed of or received at the site until the applicant has constructed the leachate management and collection system to the satisfaction of the EPA and details provided to Council.

Stormwater Management

24. Prior to issue of the Construction Certificate a stormwater management system incorporating the requirements of the Stormwater Management scheme plan shall be submitted to Council for approval and be in accordance with any EPA requirements.

25. Prior to operation of the development all stormwater drainage works and associated infrastructure facilities, shall be provided in accordance with this consent and any EPA licensing requirements.

26. Discharge of any stormwater from the subject site shall meet the water quality requirements of the Soil and Water Management Plan and any state authority licensing requirements.

BUNDING

27. The Applicant shall store all chemicals, fuels and oils used on-site in appropriately bunded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's Storing and Handling Liquids: Environmental Protection – Participants Handbook.

ROAD WORKS

28. Road construction of all intersection works, together with all necessary stormwater drainage and ancillary infrastructure facilities, shall be provided in accordance with Councils Manual of Engineering Standards and the following:

- An access intersection type treatment shall be provided within Anambah Road at the junction of the existing site access in accordance with SD031 and Councils Manual of Engineering Standards. Provide swept paths demonstrating that the maximum design vehicle does not cross the Anambah Road centreline.
- No entry features or signage shall be located within the road reserve. (i.e. removal of the concrete pillars is required)
- Truck turning signs W5-22, W5-205 and W8-207 shall be installed in accordance with RMS Traffic Control Plan 195 and maintained and replaced at no cost to council on each approach direction along Anambah Road

CIVIL WORKS – CERTIFICATION

29. Prior to commencement of works within Anambah Road:

- an engineering design, in accordance with Council's Manual Of Engineering Standards, shall be submitted to Council for approval;
- consent under the Roads Act for the approved works, shall be issued by Council;
- all relevant Council fees shall be paid;
- a traffic control plan in accordance with the RTA publication "Traffic Control at Worksites" shall be submitted to, and be approved by, Council.

30. Prior to operation of the development, all works associated with the Roads Act Approval shall be carried out to the satisfaction of the roads authority in accordance with this consent and Council's Manual of Engineering Standards.

OPERATIONAL EVIRONMENTAL MANAGEMENT PLAN

31. The proponent shall prepare and implement an Operational Environmental Management Plan for the project taking include consideration EPA requirements. This plan must:
    a. be prepared in consultation with Council and the EPA by a suitably qualified and experienced expert;
    b. be submitted to and approved by Council prior to commencement of operations;
    c. describe in detail the management measures that would be implemented to address: relevant matters referred to in Section 4 and Appendix B of the EPA'S *Environmental Guidelines for Compostihg & Related Organics Processing Facilities*; and conditions of consent;
    d. include a copy of:
        - management plans and monitoring programs required in this approval;
        - a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2;
    e. describe the procedures that would be implemented to:
        - keep the local community and relevant agencies informed about the operation and environmental performance of the composting facility;
        - receive, handle, respond to, and record complaints;
        - resolve any disputes that may arise during the course of the composting facility;
    f. respond to emergencies; describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of this composting facility;.
    g. details of an Annual Environment Management Report being an annual audit of operations outlining but not limited to:
        - summary of any monitoring of odour, dust, noise runoff, etc. in the past year;
        - an analysis of monitoring results against relevant:
            - impact assessment criteria;
            - monitoring from previous years;
            - predictions in the EIS;
        - performance measures;
        - complaints and any handling of complaints;
        - any actions to ensure compliance of relevant criteria within the EIS.

GREENHOUSE GAS

32. The proponent must ensure that all composting is undertaken in accordance with *Australian Standard AS 4454-2003: Composts, Soil Condltioners and Mulches,* Appendix N Best practice guidelines for Composting Systems, or other practices approved by the EPA.

EROSION CONTROLS

33. An erosion and sediment plan must be submitted to and approved by the certifying authority prior to issue of any construction certificate including:

    a) being consistent with the requirements of the latest version of Managing Urban Stormwater: Soils and Construction (Landcom);
    b) identify the activities on site that could cause soil erosion and generate sediment;
    c) describe what measures would be implemented to:
        - minimise soil erosion and the transport of sediment to downstream waters, including location, function and capacity of any erosion and sediment control structures; and
        - maintain these structures over time.

BUILDING CONSTRUCTION

34. All building work shall be carried out in accordance with the provisions of the Building Code of Australia.

35. All excavations and backfilling shall be executed safely, in accordance with appropriate professional standards and shall be properly guarded and protected to prevent the works from being dangerous to life or property.

36. Unless otherwise approved by Council in writing, all general building work shall be carried out between the hours of:

    a. 7.00am to 6.00pm Monday to Friday

    b. 7.00am to 1.00pm Saturday

    No work shall be performed on Sunday's or Public Holidays.

SERVICES & EQUIPMENT

37. Upon completion of the building BUT prior to its occupation, a Final Fire Safety Certificate with respect to each critical and essential fire safety measure installed in the building shall be submitted to Council. Such certificates shall be prepared in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation, 2000.

38. A copy of the Fire Safety Schedule and Fire Safety Certificate shall be prominently displayed in the building in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation 2000.

39. A Fire Safety Statement in respect of each required essential and/or critical fire safety measure installed within the building shall be submitted to Council and the NSW Fire Commissioner annually (or at a more frequent interval for supplementary statements).

    Statements shall be prepared and issued in accordance with Division 5 of Part 9 of the Environmental Planning and Assessment Regulation, 2000. Note that monetary penalties may apply for failure to lodge a fire safety statement within the prescribed timeframe.

    Statements to the NSW Fire Commissioner are to be submitted electronically to afss@fire.nsw.gov.au.

    Standard forms and further information for lodging Fire Safety Statements may be downloaded from Councils website.

SITE CONSIDERATIONS

40. All excavated and/or filled areas are to be retained or battered and suitably drained so as to prevent any subsidence of the area and constructed so as to deny any flow of water into or around the building or neighbouring buildings or onto neighbouring land.

    Where a retaining wall is planned for this purpose and such wall requires consent (refer to State Environmental Planning Policy -Exempt and Complying Development Codes, 2008) plans and specifications of the wall shall be approved by Council and/or an accredited certifier.

    Note: The submission of a separate Development Application is not required for a retaining wall associated with this approval and indicated on the approved plans.

41. Rubbish generated from the development is to be suitably contained on site at all times. No rubbish shall be stockpiled in a manner which facilitates the rubbish to be blown off site.

42. Approved toilet facilities are to be provided, at or in the vicinity of the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. The provision of toilet facilities in accordance with this Clause must be completed before any other work is commenced.

43. The site is to be cleared of all building refuse and spoil immediately after completion of the building/structure.

44. Suitable and adequate measures are to be applied to restrict public access to the site and building works, materials and equipment.

OPERATION OF PLANT AND EQUIPMENT

45. The proponent shall ensure that all plant and equipment used on site is:
    a) maintained in a proper and efficient condition; and
    b) operated in a proper and efficient manner.

SECURITY FENCING

46. The proponent shall
    a) install and maintain a perimeter stock fence and security gates on site; and
    b) ensure that the security gates on site are locked whenever the site is unattended.

    Suitable fencing shall be installed prior to any composting operations commencing on site.

CONSOLIDATION OF LOTS

47. Prior to any composting operations commencing on site Lot 22 DP 1069012 shall be consolidated with Lot 1 DP 862654 and details of registration with Land Title office shall be provided to Council.

ENVIRONMENTAL PROTECTION AUTHORITY

48. The proposed development is to comply with the General Terms of Approval issued by NSW EPA Notice No. 1536955 dated 21 January 2016 and included as an attachment to this schedule

ADVICES

A. The development is located within an area of recognised bushfire risk. It is recommended that relevant publications be obtained from NSW Rural Fire Service to minimise the bushfire risk to property. Further information is also available on their website www.rfs.nsw.gov.au.

B. You are advised that in regard to potential soil erosion from the construction site, such pollution of the environment is an offence under the Protection of the Environment & Operations (POEO) Act and may incur infringement fines.

Attachment A- Department of Primary Industries (Water) General Terms of Approval

General Terms of Approval

for work requiring a controlled activity approval under s91 of the *Water Management Act 2000*

Number	Condition	File No: ERM2013/0073
Site Address:	Lot 22 Anambah Road, Gosforth	
DA Number:	DA15-433	
LGA:	Maitland City Council	
Plans, standards and guidelines		
1	These General Terms of Approval (GTA) only apply to the activities described in the plans and associated documentation relating to DA15-433 and provided by Council: (i) Environmental Impact Statement, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, September 2015, prepared by Pulver Cooper and Blackley Pty Ltd. (ii) Response to submissions report, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by Pulver Cooper and Blackley Pty Ltd. (iii) Hydrological impact assessment, Response to request for additional information, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by OD Hydrology (iv) Surface water and groundwater assessment, Composting facility, September 2015, prepared by OD Hydrology Pty Ltd. (v) Soil and water management plan, Riverbend Quarry, January 2015, prepared by VGT Pty Ltd. (vi) Rehabilitation Plan, Northern Section, Gosforth quarries, May 2015, prepared by Advitech Pty Ltd. Any amendments or modifications to the proposed activities may render these GTA invalid. If the proposed activities are amended or modified DPI Water (formerly the NSW Office of Water) must be notified to determine if any variations to these GTA will be required.	
2	Prior to the commencement of any controlled activity (works) on waterfront land, the consent holder must obtain a Controlled Activity Approval (CAA) under the Water Management Act from DPI Water. Waterfront land for the purposes of this DA is land and material in or within 40 metres of the top of the bank or shore of the river identified.	
3	The consent holder must prepare or commission the preparation of: (i) Updated Rehabilitation Plan (ii) Vegetation Management Plan (iii) Works Schedule (iv) Erosion and Sediment Control Plan (v) Soil and Water Management Plan	
4	All plans must be prepared by a suitably qualified person and submitted to the DPI Water for approval prior to any controlled activity commencing. Plans must be prepared in accordance with DPI Water's guidelines located at www.water nsw.gov.au/ Water-Licensing/Approvals.	
5	The consent holder must (i) carry out any controlled activity in accordance with approved plans and (ii) construct and/or implement any controlled activity by or under the direct supervision of a suitably qualified professional and (iii) when required, provide a certificate of completion to DPI Water.	
Rehabilitation and maintenance		

6	The consent holder must carry out a maintenance period of two (2) years after practical completion of all controlled activities, rehabilitation and vegetation management in accordance with a plan approved by the DPI Water
7	The consent holder must reinstate waterfront land affected by the carrying out of any controlled activity in accordance with a plan or design approved by the DPI Water
Reporting requirements	
8	The consent holder must use a suitably qualified person to monitor the progress, completion performance of works, rehabilitation and maintenance and report to DPI Water as required.
Bridge, causeway, culverts, and crossing	
9	The consent holder must ensure that the construction of any bridge, causeway, culvert or crossing does not result in erosion, obstruction of flow, destabilisation or damage to the bed or banks of the river or waterfront land, other than in accordance with a plan approved by DPI Water.
Disposal	
10	The consent holder must ensure that no materials or cleared vegetation that may (i) obstruct flow, (ii) wash into the water body, or (iii) cause damage to river banks, are left on waterfront land other than in accordance with a plan approved by DPI Water.
Drainage and Stormwater	
11	The consent holder is to ensure that all drainage works (i) capture and convey runoffs, discharges and flood flows to low flow water level in accordance with a plan approved by DPI Water, and (ii) do not obstruct the flow of water other than in accordance with a plan approved by DPI Water
12	The consent holder must stabilise drain discharge points to prevent erosion in accordance with a plan approved by DPI Water.
Erosion control	
13	The consent holder must establish all erosion and sediment control works and water diversion structures in accordance with a plan approved by DPI Water. These works and structures must be inspected and maintained throughout the working period and must not be removed until the site has been fully stabilised.
Excavation	
14	The consent holder must ensure that no excavation is undertaken on waterfront land other than in accordance with a plan approved by DPI Water.
15	The consent holder must ensure that any excavation does not result in (i) diversion of any river (ii) bed or bank instability or (iii) damage to native vegetation within the area where a controlled activity has been authorised, other than in accordance with a plan approved by DPI Water.
Maintaining river	
16	The consent holder must establish a riparian corridor along any waterfront land on the project site in accordance with a plan approved by DPI Water.
Groundwater	
17	The consent holder must ensure that any excavation below ground level is appropriately licensed and does not result in the need for dewatering, other than in accordance with a licence issued by DPI Water.
END OF CONDITIONS	

Attachment B – EPA General Terms of Approval

Environmental Planning and Assessment Act 1979

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

The EPA varies GTA conditions as follows:

Current GTA condition

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below any waste received at the premises is subject of those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	*Garden Waste*	*As defined in Schedule 1 of the POEO Act as in force from time to time.*	*Composting* *Waste Storage*	*no more than 40,000 tonnes per annum.*

The EPA's assessment of the proposal has been undertaken on the basis of the facility processing wastes as listed above and does not include provisions for the acceptance of food waste. In the event food waste or other waste types are proposed to be accepted and processed at the facility, additional assessment of environmental impacts will be required to be undertaken prior to the processing of that waste.

Modified Condition now states

Waste

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	Garden Waste	As defined in Schedule 1 of the POEO Act as in force from time to time.	Composting Waste Storage	No more than 40,000 tonnes per annum in total, with no more than 8,000 tonnes being derived from Food Waste.
	Woodwaste	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	Natural Organic Fiborous Materials	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	General Solid Waste non-putrescible	Paper and Cardboard		
	Food Waste	Vegetables, Fruit and Winery, Brewery and Distillery Waste		

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

Current GTA condition

Odour

No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

The Proponent shall ensure the development does not cause or permit the emission of any offensive odour (as defined by the POEO Act).

The Proponent shall develop an odour management plan which outlines the process of how odour complaints will be investigated and managed.

The facility shall be run in a proper and efficient manner consistent with the processes described within the Environmental Impact Statement. This includes, but is not limited to:

- *regular turning of material in a controlled and efficient manner within concrete bays*
- *immediate covering of all newly formed and turned windrows.*
- *aeration of on-site leachate storage*
- *maintain an odour complaint logbook and in the event of a complain conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken.*
- *avoid or minimise handling of material during poor air dispersion conditions.*

Modified Condition now states

1. No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the *Protection of the Environment Operations Act* 1997. Note: Section 129 of the *Protection of the Environment Operations Act* 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

2. The facility shall be run in a proper and efficient manner. This includes, but is not limited to.
   - All waste processing, including waste receipt and shredding, must be undertaken within an enclosed building;
   - Regular turning of material in a controlled and efficient manner within covered concrete bays;
   - Covered concrete bays must have aeration;
   - Aeration of on-site leachate storage;
   - Maintain an odour complaint logbook. In the event of a complaint, conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken; and
   - Avoid or minimise handling of material during poor dispersion conditions.

Current GTA condition

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- *Key performance indicator(s);*
- *Monitoring method(s);*
- *Location, frequency and duration of monitoring;*
- *Record keeping;*

- *Response mechanisms; and*
- *Compliance reporting.*

The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Modified Condition now states

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- Key performance indicator(s);
- Monitoring method(s);
- Location, frequency and duration of monitoring;
- Record keeping, including complaints records;
- Response mechanisms; and
- Compliance reporting.

The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Additional Condition

For the life of the composting operations, the Proponent shall ensure that there is a meteorological station in the vicinity of the premises that complies with the requirements in the EPA document *'Approved Methods for Sampling of Air Pollutants in New South Wales'*.

Condition Amended 12 July 2017

Appendix B. Impacts of Operational and Staging Amendments to AICF Development

Key AICF staging and development footprint amendments which differ to the proposed development are described in Sections 1.3.1 to 1.3.4 of the OEMP. These amendments have been introduced in response to:

- market-driven organics sourcing limitations;
- improved composting understanding; and
- an incomplete leachate management design.

Discussion is provided here regarding the limiting of relevant environmental impacts of the amended development to equal or less than those permitted under Development Approval DA 15-433.

Liquid waste

The footprint of the bunkers will be reduced and the generation of the contact stormwater (as leachate) will be subsequently reduced due to the smaller area open to incident rainfall when the maximum of two GORE covers are removed at any time.

The capacity of the leachate containment dam has been increased from 23 m^3 to 680 m^3 and is now consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). For conservative environmental protection purposes, a more rigorous dam sizing approach was applied than required by the guidelines.

Within design constraints, leachate has been demonstrated to be a recyclable resource for compost moisture conditioning. The reduced leachate generation rate and the over-sized leachate containment dam provides a higher degree of environmental protection over the approved 16 composting bunker scenario.

Groundwater

The scale of the development will not increase, and there will be a reduction in the generation of liquid waste.

The leachate containment dam will be constructed with a clay liner which is consistent with requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). Specifically, the liner will be:

- constructed to minimum 900 mm compacted thickness;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring underlying layers to avoid lamination of layers.

The existing groundwater monitoring location GW4 (‘Point 4’) will be monitored quarterly, and also daily during every overflow event from any sediment dam or the leachate containment dam in accordance EPL12510. Due to the low permeability of fractured geology underlying the leachate containment dam (Coffey Partners International 1992), it is inappropriate to locate a new groundwater monitoring bore immediately adjacent to the leachate containment dam because the alignment of fractures is unknown, and unfavourable alignment could deliver percolating water to a down gradient location. The existing GW4 (‘Point 4’) borehole is approximately 60 m down gradient of the leachate containment dam and is therefore considered to be a more suitable location for groundwater monitoring which targets the potential for leachate percolation to underlying groundwater.

Surface water

The scale of the development will not increase. The leachate containment dam has been over-sized for environmental protection purposes and the generation of leachate has been reduced by the smaller bunker footprint. Surface water impacts will at worst remain unchanged.

Odour

The scale of the development will not increase. The 2,400 m^2 Stage 2 compost bunker footprint represents a significant 62% areal reduction compared to the 6,400 m^2 of the approved 16 bunker design. The reduction in the odour emission footprint will result in a lessening of odour impacts.

Dust

The scale and footprint of the development will not increase, and dust impacts will remain unchanged at full development of Stage 2. A halving of haulage and material handling requirements will result in a lessening of dust impacts during Stage 1.

Noise

The scale and footprint of the development will not increase, and noise impacts will remain unchanged at full development of Stage 2. A halving of haulage and material handling requirements will result in a lessening of noise impacts during Stage 1.

Contaminated solid waste

The scale of the development will not increase, and the organic materials to be processed remain unchanged from those specified in Development Approval DA 15-433 and EPL12510. As such, contaminated solid waste production will remain unchanged at full development of Stage 2. A halving of organics input will result in a lessening of contaminated solid waste quantities requiring offsite disposal during Stage 1.

Traffic

The scale and footprint of the development will not increase, and traffic impacts will remain unchanged at full development of Stage 2. A halving of haulage requirements will result in a lessening of traffic impacts during Stage 1.

References

Coffey Partners International Pty Ltd (1992). *Quarry Assessment Gosforth*.

Appendix C. Leachate Management System

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BRIEFING NOTE

Project	Anambah In-vessel Composting Facility
Subject	Leachate management system
Client	Ditton Properties Pty. Limited
Document Number	2059-1445
Document Status	FINAL for Environment Protection Licence Application v3.0
Date	03/04/2019

1. Background

Composting facilities in NSW are required to design and construct a leachate management system in compliance with *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). AK Environmental Pty. Limited has been engaged by Ditton Properties Pty. Limited (Ditton Properties) to design the Anambah In-vessel Composting Facility's (AICF) leachate barrier and containment systems, and to document the geotechnical compliance of constructed clay liner earthworks.

This Briefing Note forms part of the Operational Environmental Management Plan (OEMP) for the AICF.

2. Site Layout and Staging

A site layout is shown in Figure A-1 of Appendix A.

Development of the AICF facility will be staged as follows:

- Stage 1 (50% of maximum capacity) - green waste input of up to 20,000 t/a and compost production of up to 12,000 t/a; and
- Stage 2 (maximum capacity) - green waste input of up to 40,000 t/a and compost production of up to 24,000 t/a.

Stage 1 of the AICF development comprises six composting bunkers. When Stage 2 is constructed, the number of bunkers will double to 12 in total.

3. Compost Bunkers

The geometry of a windrow within each composting bunker is shown in Figure 1. Each of the composting bunkers has a concrete floor area of 200 m^2 (25 m x 8 m) and is fitted with a GORE cover to shed rainfall away from the composting windrow. Stage 1 consists of six bunkers and Stage 2 consists of 12 bunkers. Each bunker has a floor-inset air injection channel, which also acts as a collection drain for any direct *leachate* generated by the composting process.

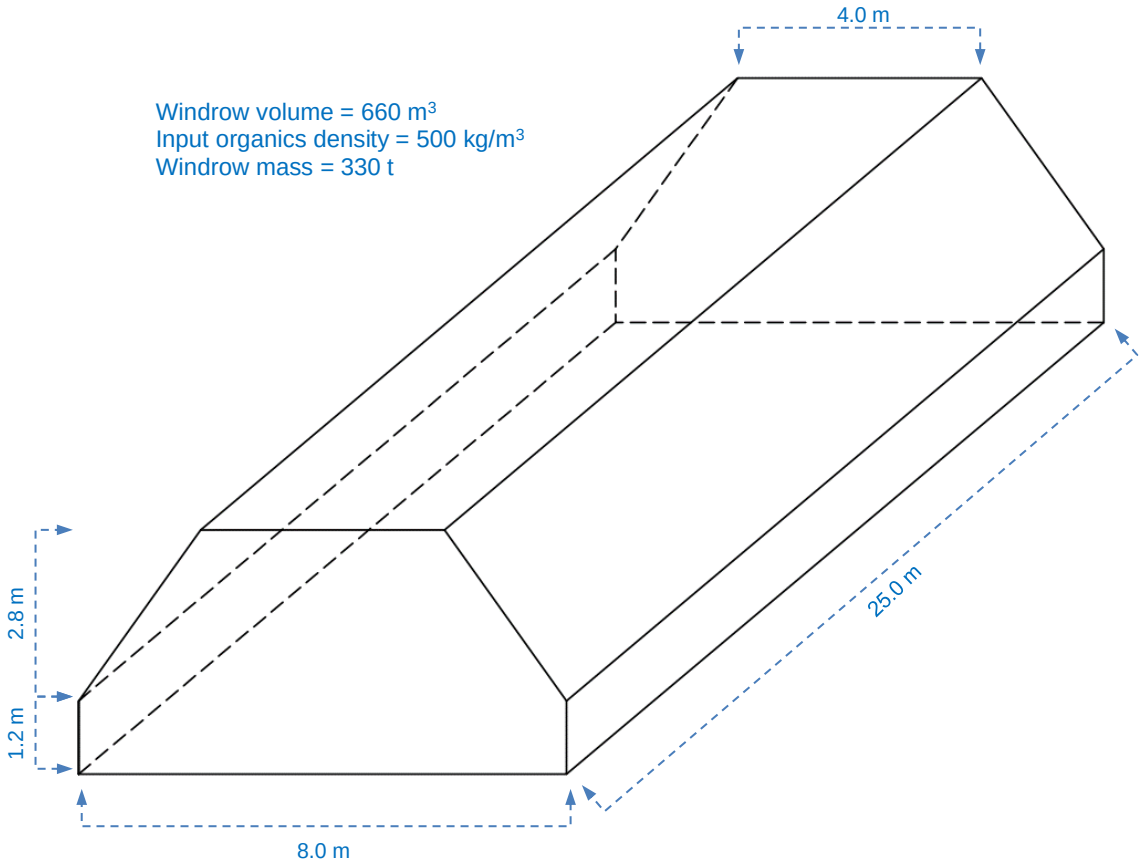

Figure 1 – Composting bunker windrow dimensions

4. Leachate Generation Areas

The composting process directly generates *leachate*. Stormwater runoff which has contacted any form of organic material is considered *contact stormwater*. Dilution by rainfall means that *contact stormwater* has significantly lower pollutant loads than direct compost *leachate*. Nonetheless, it is a requirement of NSW DEC (2004) that *contact stormwater* be managed in the same manner as *leachate* and must be considered for sizing of Leachate Dam.

As shown in Figure A-1 of Appendix A, there are two leachate generation catchments at the site. Note, the catchment boundaries apply to Stage 2, which includes the eastern bunkers. During Stage 1 this area will remain an extension of the working pad area with stormwater directed north to Stormwater Storage Dam.

The smaller leachate catchment consists only of the 1,600 m^2 area (40 m x 40 m square at top of bank) within Leachate Dam's 'turkey's nest' perimeter. All incident rainfall runoff

becomes additional dam storage and effectively contributes to *leachate* generation. External stormwater drainage is prevented from entry by the elevated top of bank structure.

The larger leachate catchment encompasses the composting bunkers (Stage 1 – 1,200 m^2; Stage 2 – 2,400 m^2), the compost maturation/screening/storage pad (1,350 m^2) and the northern portion of the working pad (2,000 m^2). Note, earthworks have ensured that portion of the working pad which is south of the Stage 1 bunkers also slopes south and directs any generated stormwater to Central Dam.

Stormwater generated at the uncovered compost maturation/screening/storage pad is *contact stormwater* due to the storage of compost in windrows.

Because loading/unloading of bunkers by front end loader may result in limited quantities of organic material spillage (spillage to be minimised and removed daily if occurs – see Section 4.3.3 of the OEMP for management actions), stormwater flowing on the northern portion of the working pad is deemed to be *contact stormwater*. The site layout configuration dictates that *clean stormwater* emanating from bunker GORE covers is directed to the northern portion of the working pad. This originally clean water then becomes *contact stormwater* and must also be considered for sizing of Leachate Dam.

All *contact stormwater* is ultimately directed to the leachate collection pit at the north west corner of the compost maturation/screening/storage pad, from which it is piped underground to Leachate Dam.

5. Design Requirements for the Protection of Waters

5.1 Working Surfaces

Compost storage areas, active composting surfaces, and associated access roads are required to be constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles.

No requirements exist in NSW DEC (2004) for achieving measurable geotechnical properties of working surfaces. Instead, the AICF's OEMP sets out inspection procedures which target the integrity of working surfaces (cracking/leakage potential, maintenance of all-weather access) and requires that maintenance actions be undertaken when working surfaces are found to be compromised.

To provide all-weather vehicular access, the AICF working pad and the compost maturation/screening/storage pad will both be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm. The stabilising component is a cement additive, which is mechanically blended through the clay-gravel component in a pugmill to achieve a uniformly mixed product.

5.2 Leachate Barrier System

To prevent the pollution by leachate of subsoil, groundwater and surface water bodies, material processing and storage areas of the AICF must have a leachate barrier system that forms a secure hydrological barrier between groundwater, soil and substrata and the composting and storage of organics.

Acceptable leachate barrier options are defined by NSW DEC (2004) as either:

1. *"a clay or modified soil liner consisting of at least 600 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-7}ms^{-1}$. Such liners should be placed in successive layers up to 300 mm uncompacted thickness. Each underlying layer should be scoured to prevent excessive permeability due to the lamination.*
2. *a natural geological barrier that is proven by competent geotechnical investigations to provide a secure barrier between the groundwater, soil and substrata and the composting organics, equivalent to the 600 mm recompacted clay in Option 1.*
3. *a concrete or asphalt cement pad of a thickness of at least 100 mm, designed to withstand the loads from all machines, vehicles and equipment that are required to operate the facility."*

The AICF site is underlain by geology which permits seepage (Coffey Partners International 1992), making the sediment dams a source of recharge to groundwater (OH Hydrology 2016). On this basis, the option of a natural geological barrier does not exist to protect leachate migration into groundwater.

Compost maturation/screening/storage pad and working pad

The AICF compost maturation/screening/storage pad and working pad will be:

- constructed with a minimum 600 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness;
- constructed by surface scouring underlying layers to avoid lamination of layers; and
- be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm.

Samples of three potential clay liner materials were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Each sample exhibited a permeability rate significantly lower than $10^{-7}ms^{-1}$ at ~95% compaction, and hence any of the three materials is suitable as a liner for the screening and compost storage pad in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the compost maturation/screening/storage pad and working pad, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

Composting bunkers

The floor of the composting bunkers is reinforced concrete, which has a minimum thickness exceeding 400 mm (see Figure C-1 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

Shredder/workshop shed

The floor of the shredder/workshop shed is reinforced concrete, which has a minimum thickness exceeding 200 mm (see Figure C-2 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

5.3 Leachate Collection System

To ensure that leachate is collected efficiently, thereby avoiding water pollution and/or odour problems, the following design requirements have been implemented in satisfaction of NSW DEC (2004):

- all solid waste management procedures are undertaken on purpose-built pads (see Sections 3 and 4 for details);
- composting bunkers have floor-inset collection drains and floor slope is to the back wall (west), preventing *leachate* breaching the open entry side (east);
- stormwater pit at north west corner of the compost maturation/screening/storage pad to capture *contact stormwater*; and
- *leachate* and *contact stormwater* are transferred via underground pipes which discharge directly to Leachate Dam (see Figure A-1 of Appendix A).

5.4 Leachate Storage System

Amendment of Approved Design

The approved leachate storage system comprises a 23,000 L (23 m^3) concrete leachate containment sump based on the design of OD Hydrology (2015). The sizing process only considered direct *leachate* generation from compost bunkers and neglected to account for generation of *contact stormwater*. A more rigorous design approach is presented here which conforms to requirements set out in NSW DEC (2004). The re-designed AICF leachate storage system ensures leachate is stored efficiently for further management, thereby minimising potential water pollution and/or odour generation.

Leachate Dam Capacity Sizing Guideline

Leachate Dam receives direct rainfall, *leachate* from composting bunkers and *contact stormwater* originating from composting bunkers, the compost maturation/screening/storage pad and the northern portion of the working pad. NSW DEC (2004) states that storage capacity control of open leachate dams must adhere to a two-fold requirement. The first is it *"must be capable of at least accepting the runoff or leachate generated by any 1-in-10-yr, 24-hr-period storm event"*, and the second is that it must operate *"without overflowing".*

At the location of the AICF (lat - 32.65, long 151.50), the 24 hr rainfall depth with a 1 in 10 yr recurrence is 151 mm (Bureau of Meteorology 2018). An open leachate dam sized by the design storm requirement which holds no storage at the commencement of this storm event will contain all generated stormwater/leachate. If a leachate dam holds any storage at the commencement of this storm event, or the storm event exceeds the design storm requirement, then stormwater/leachate would overflow from the dam.

To satisfy the additional 'no overflow' requirement, AK Environmental understands a management plan must be in place to intervene before overtopping occurs. Management actions may include drawing down leachate dam storage by pumping to tankers for offsite disposal.

Adopted Leachate Dam Sizing Approach

AK Environmental opines the combination of 'design storm sizing' and 'no spill' requirements will lead to environmental compliance uncertainty and safety concerns for the facility operator due to the following reasons:

- the frequency of leachate overflows is dependent on rainfall conditions which occur prior to large storm events, and these remain unknown because no attempt to understand rainfall sequences is accounted for by the design storm sizing approach; and
- the requirement to involve external contractors (e.g. tanker operators) during adverse weather characterised by high rainfall poses potential for high-risk working conditions for such contractors and also those staff who would be required to assist.

To address these concerns, it is instead proposed that sizing of the AICF Leachate Dam utilise a time-series modelling approach which incorporates the climatic history at the site, including all rainfall events experienced during recent decades.

For completeness, and to satisfy requirements of NSW DEC (2004), a comparison will also be made to the *1-in-10-yr, 24-hr-period* design storm capture requirement.

Water Balance Model

Leachate Dam capacity sizing is based on a time-series of inputs (*leachate* and rainfall-derived *contact stormwater*) and outputs (*leachate* reuse for composting pile moisture control and dam surface evaporation). This approach is considered more rigorous than applying design storm criteria as it employs meteorological understanding, and ultimately provides for a higher degree of environmental protection.

Separate water balance models were required for the Stage 1 and Stage 2 processing scenarios. Stage 2 requires twice the number of bunkers and twice the quantity of recycled leachate for moisture control of composting.

The water balance model parameters are outlined as follows and differences are noted between Stage 1 and Stage 2 process parameterisation:

- simulation period of 38 full calendar years (1 January 1980 to 31 December 2017) which significantly exceeds the nominal 10 year recurrence interval in NSW DEC (2004);
- daily totals of rainfall and Morton's evaporation over shallow lakes (Morton 1983) derived from QLD DSITI (2018) data drill for the site location with latitude -32.65 degrees and longitude 151.50 degrees (see monthly averages in Figure D-1 of Appendix D);
- assumed nominal 2,000 L/day and 4,000 L/day leachate generated by Stage 1 and Stage 2 covered composting bunkers, respectively (based on experience of GORE system engineer that leachate generation is negligible under Australian conditions [G. Hemm pers. comm. 27 August 2018]);
- total *contact stormwater* catchment area of 4,550 m^2 at Stage 1 with 6 bunkers (or 5,750 m^2 at Stage 2 with 12 bunkers) consisting of:
    - 1,200 m^2 of Stage 1 bunkers (or 2,400 m^2 of Stage 2 bunkers)
    - 1,350 m^2 at the uncovered compost maturation/screening/storage pad
    - 2,000 m^2 at the northern portion of the working pad
- Leachate Dam parameters (see Figure 2):
    - square floor (20 m x 20 m)
    - internal 35° batter slope
    - assume no infiltration loss through clay liner
    - open water evaporation assumed equal to depth of Morton's evaporation over shallow lakes
    - nominal initial starting leachate volume of 0.2 ML

- runoff coefficients
    - bunker GORE covers – 1.0 or 100%
    - compost maturation/screening/storage pad - 0.7 or 70% (estimate based on Wilson *et al.* (2014) who found an average of 68% of rainfall incident on a saturated compost windrow will eventually become runoff)
    - internal Leachate Dam batters - 1.0 or 100% (includes open water surface)
    - northern portion of the working pad - 0.9 or 90% applicable to hardstand surface
- average leachate reuse rate of 15,700 L/day for moisture control of in-bunker composting during Stage 1 and 31,400 L/day during Stage 2, based on:
    - 6 active composting bunkers during Stage 1 and 12 active composting bunkers during Stage 2
    - composting batch period of 6 weeks
    - composting windrows as per Figure 1 which equates to a solid waste batch mass of 330 tonnes[1] (mean solid waste density 500 kg/m^3)
    - average batch moisture addition requirement of one third of mass (110 m^3)

It is noted open-water evaporation from the Leachate Pond is assumed equal to 100% of the Morton's shallow lake evaporation rate. This is considered a conservative approach (leading to a larger Leachate Dam volume requirement) because evaporation from the surface of ponds is known to be higher than for small lakes due to highest evaporation rates occurring near waterbody edges (Morton 1983).

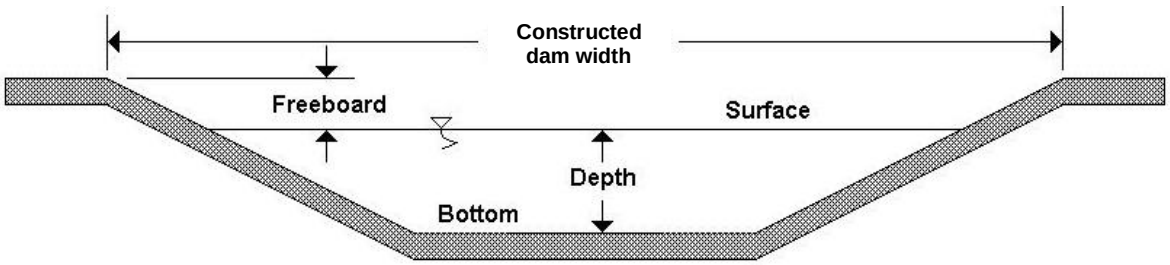

Figure 2 – Leachate Dam cross-section schematic

Leachate Dam Volume Estimates

Time series' of Leachate Dam holding volumes for Stage 1 and Stage 2 developments are shown in Figures D-2 and D-3 in Appendix D, respectively. To contain all inflows during the 38 years modelling period, a Leachate Dam capacity of 4,110 m^3 (4.1 ML) is required during Stage 1 and 2,910 m^3 (2.9 ML) is required during Stage 2. Capacity requirement is larger for the Stage 1 development scenario (6 composting bunkers) due to the increase of leachate reuse in Stage 2 (increased water demand for moisture conditioning of organics across 12 composting bunkers) exceeding the increase in *contact stormwater* generation afforded by the bunkers.

[1] Stage 1 – 6 weeks batch period and 330 t per batch with 6 bunkers equates to 17,200 t/a.
Stage 2 – 6 weeks batch period and 330 t per batch with 12 bunkers equates to 34,400 t/a.
These throughputs are marginally lower than the Stage 1 and Stage 2 maximum allowable capacities of 20,000 t/a and 40,000 t/a, respectively, to account for potential fluctuations in solid waste density.
Use of the lower throughputs in the water balance model is conservative due to lowering of demand for reuse of leachate for batch moisture addition. This in turn leads to a larger leachate dam volume requirement.

Applying the same runoff coefficients used in the water balance model to the 1 in 10 yr 24 hr design storm with a total rainfall depth of 151 mm determines that Leachate Dam capacity requirements for Stages 1 and 2 are 600 m^3 (0.60 ML) and 780 m^3 (0.78 ML), respectively.

The Leachate Dam capacity estimates derived by the water balance method are significantly larger than those calculated using the NSW DEC (2004) design storm method. This demonstrates the elevated environmental risk of the latter method because it offers no insight to a facility manager regarding the potential magnitude of any spill event, and may instead lead to implementation of unsafe management actions by staff and contractors. Furthermore, the design storm method predicts a larger Leachate Dam is required for the Stage 2 development based primarily on the larger *contact stormwater* catchment footprint. The water balance estimates a larger capacity requirement for Stage 1 development, which clearly demonstrates that reuse of leachate at AICF for moisture conditioning of bunkers (twice the volume used for Stage 2) is more influential on Leachate Dam sizing that catchment area.

It is also noted the simulation period included five storm events which exceeded the 151 mm design 24 hr rainfall depth advocated by NSW DEC (2004) (see Figure D-4 in Appendix D). A Leachate Dam volume of 4.1 ML was modelled to contain all leachate generated during the 38 yr period. This capacity is adopted as the minimum requirement for the AICF Leachate Dam.

Constructed Leachate Dam Capacity

Due to the post-quarry landform at the site, the location of Leachate Dam (see Figure A-1 of Appendix A) would require in-filling to reduce the capacity of the existing void. Ditton Properties has instead decided to enlarge Leachate Dam to 6.5 ML to match the void extent. The dam will be shaped as an inverted truncated square pyramid with 20 m floor edges, 40 m sides at top of bank and 7.0 m depth to floor. At nearly an order-of-magnitude larger than the design storm requirement and 70% more capacity than the water balance-based requirement, it is evident this storage provides an extremely high degree of environmental protection to local groundwater and surface waters.

At 4.1 ML storage capacity, Leachate Dam still has 2.4 ML of remaining storage (equates to 1.7 m of available freeboard). This in-built safety factor against overtopping negates the need for a spillway. To add an additional level of environmental protection, management actions are provided in Section 4.2.3 of the OEMP to option the availability of stand-by water tankers to drawdown Leachate Dam if the storage level exceeds 85% capacity. At this level 1.0 m of freeboard remains and a further 250 mm of rainfall, and subsequent runoff, is required to fill Leachate Dam.

Leachate Dam Monitoring Equipment

A high-level alarm system will be fitted to alert the AICF Onsite Manager when stored volume reaches 85% capacity.

Leachate Dam Clay Liner

To prevent leachate pollution by infiltration, Leachate Dam must have a liner that forms a secure hydrological barrier between groundwater, soil and substrata.

An acceptable leachate barrier option as defined by NSW DEC (2004) is a *"clay or modified soil liner consisting of at least 900 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-9}ms^{-1}$. Successive layers should be of compatible material, and each underlying layer should be scoured to prevent excessive permeability due to the lamination. The sides should generally have a slope not exceeding a gradient of one vertical to three horizontal, in*

order to allow suitable compaction of the barrier and to facilitate subsequent testing." The AICF Leachate Dam clay liner will be:

- constructed with a minimum 900 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring underlying layers to avoid lamination of layers.

As discussed in Section 4.2, three potential clay liner material samples were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Only the 'black' material sample achieved a permeability rate lower than $10^{-9}ms^{-1}$ at ~95% compaction, and hence it is a suitable liner for Leachate Dam in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the Leachate Dam clay liner, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

6. Summary

The AICF working surfaces, leachate barrier system, leachate collection system and leachate storage system have each been designed to comply with NSW DEC (2004).

Geotechnical testing of potential clay liners has identified suitable materials for use in construction. In-situ geotechnical testing of clay liner compaction will be required to verify construction in accordance with NSW DEC (2004) requirements.

Author Dr Andrew Krause
Principal Environmental Engineer
AK Environmental Pty. Limited

References

Bureau of Meteorology (2018), 2016 Rainfall IFD Data System - accessed 6 September 2018, <http://www.bom.gov.au/water/designRainfalls/revised-ifd>.

Coffey Partners International (1992), *Quarry Assessment – Gosforth*.

OD Hydrology (2015), *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment,* doc ref: 44001-rpt01d.docx.

OD Hydrology (2016), *Responses to request for additional information (Composting Facility, Anambah Road, Anambah,* NSW, doc ref: 44001-ltr01b.docx.

Morton, F.I. (1983), *Operational estimates of lake evaporation*, Journal of Hydrology, vol. 66, pp. 77-100.

NSW DEC (2004), *Environmental guidelines: composting and related organics processing facilities*. Sydney: Dept. of Environment and Conservation, <http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf>.

QLD DSITI (2018), The Long Paddock – SILO Climate Data, The State of Queensland (Department of Science, Information Technology and Innovation), accessed 6 September 2018, <https://www.longpaddock.qld.gov.au/silo/>.

Wilson, B.G., Haralampides, K. and Levesque, S. (2004), *Stormwater runoff from open windrow composting facilities*, Journal of Environmental Engineering and Science, 2004, 3 (6), 537-540, 10.1139/s04-024.

Appendix A – Site Layout

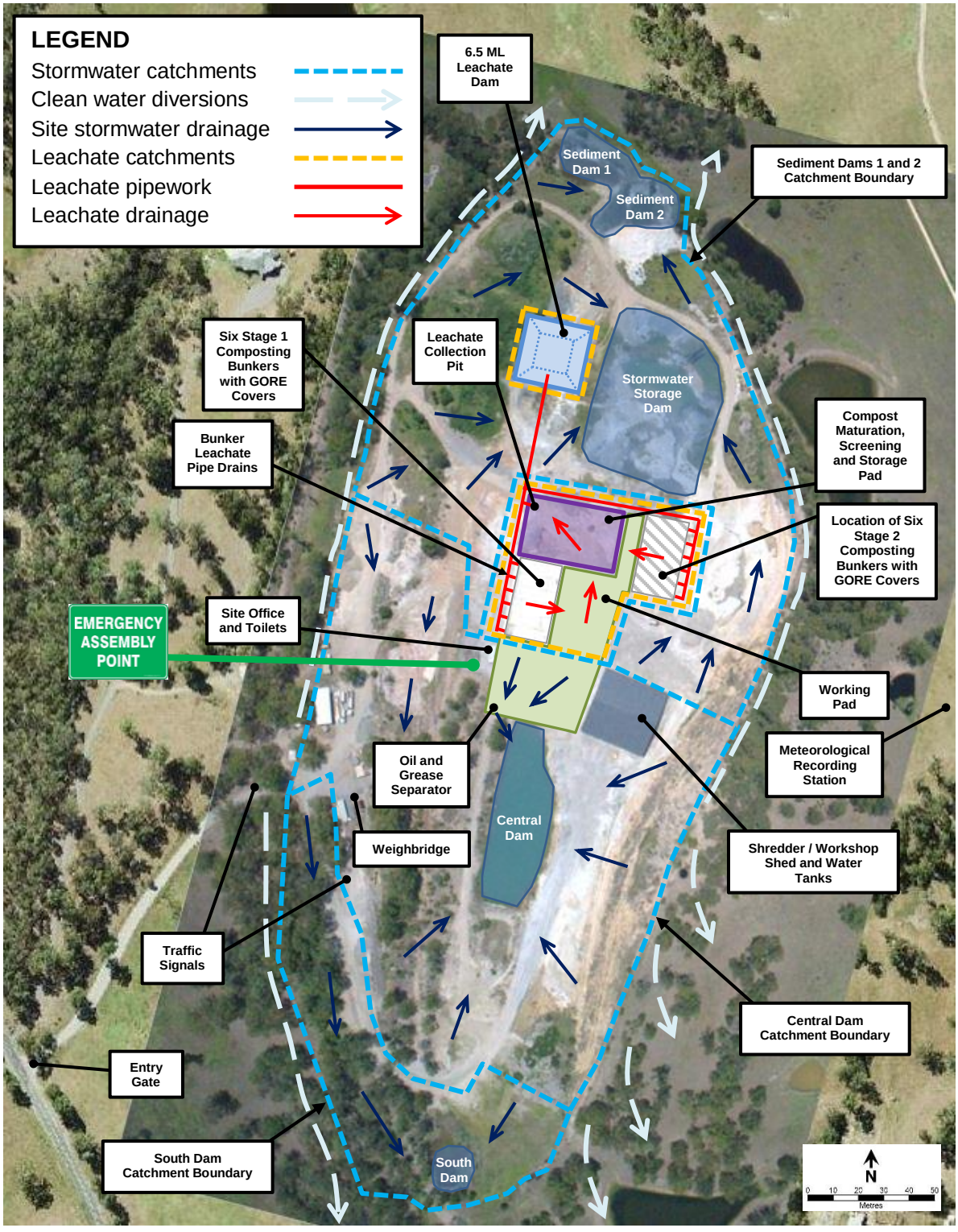

Figure A-1: AICF operational layout and catchment areas

Appendix B – Laboratory Datasheets

Qualtest LABORATORY (NSW) PTY LTD
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Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S01
Issue Number: 1
This report replaces all previous issues

Client: Riverbend Quarry Pty Ltd
863 Anambah Road
Gosforth, NSW 2320
Principal:
Project Number: NEW17P-0179
Project: Various Assesments and Testing
Lot Number: -
TRN: -

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing
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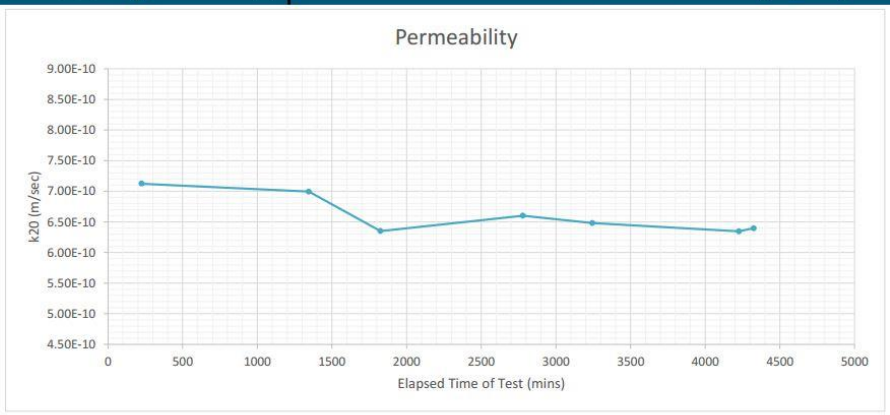
Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Black			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S01			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.56	Moulding Dry Density	t/m³	1.47
Optimum Moisture Content	%	24	Laboratory Moisture Ratio	%	101.5
Compactive Effort		Standard	Laboratory Density Ratio	%	94.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	23.8	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	24.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.83	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.4 x 10 $^{-10}$**	(m/sec)	



Comments:

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ABN: 98 153 268 896

Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S02
Issue Number: 1
This report replaces all previous issues

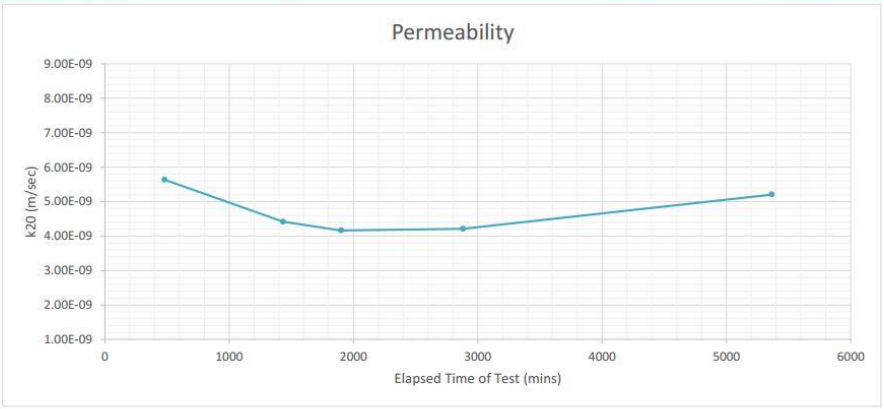
NATA WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory:	Brent Cullen
Title:	Senior Geotechnician
Date of Issue:	17/09/2018
NATA Accredited Laboratory Number:	18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Brown			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S02			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.73	Moulding Dry Density	t/m³	1.64
Optimum Moisture Content	%	16.4	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	94.5
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	13.7	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	16.4	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.91	Material Retained on Sieve	%	12
Permeability	$K_{(20)}$=		**4.7 x 10 $^{-9}$**		(m/sec)



Comments:

Qualtest
LABORATORY (NSW) PTY LTD

8 Ironbark Close Warabrook NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S03
Issue Number: 1
This report replaces all previous issues

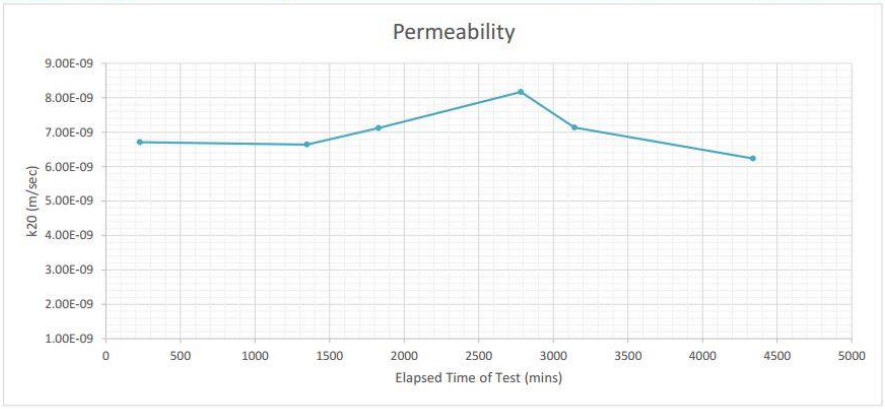
NATA
WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	-
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Grey			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S03			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.76	Moulding Dry Density	t/m³	1.67
Optimum Moisture Content	%	15.3	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	95.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	15.4	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	15.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.93	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.7 x 10 $^{-9}$**		(m/sec)



Comments:

Appendix C – Concrete Floor Structures

Figure C-1: In-situ concrete floor depth of composting bunkers

Figure C-2: In-situ concrete floor depth of shredder shed

Appendix D – Water Balance Modelling Results

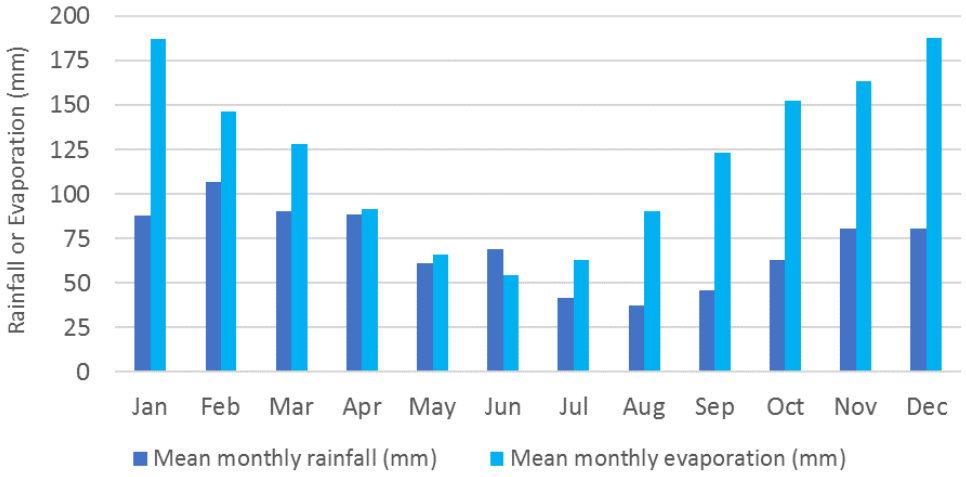


Figure D-1: Average monthly rainfall and evaporation for 1980 to 2017

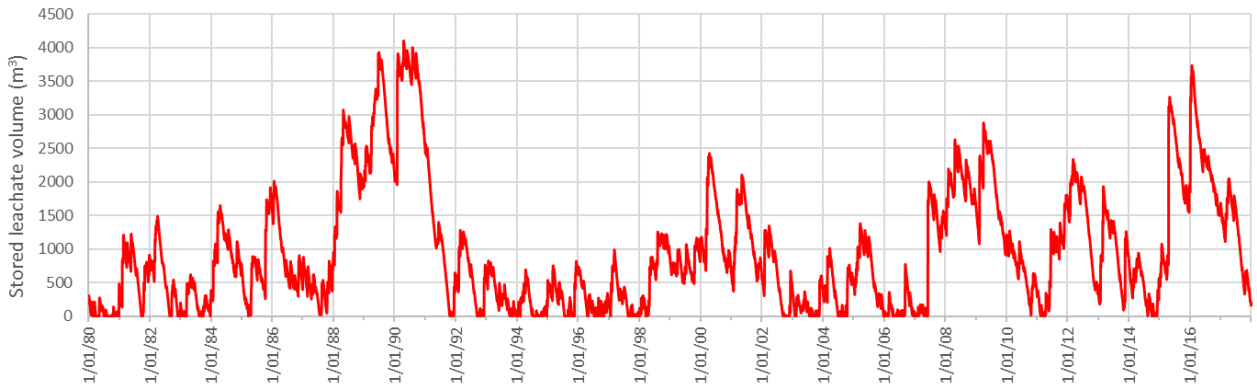


Figure D-2: Stage 1 - time series of leachate pond stored volume for modelled period 1980 to 2017

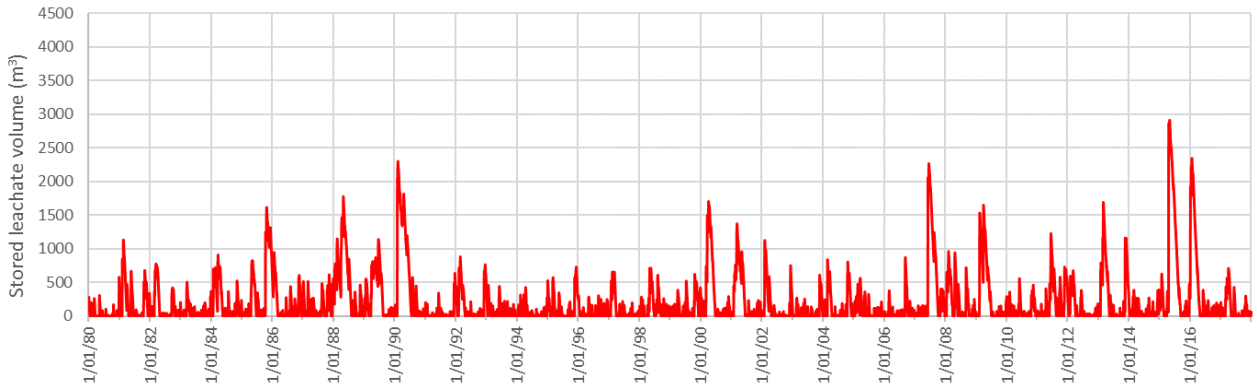


Figure D-3: Stage 2 - time series of leachate pond stored volume for modelled period 1980 to 2017

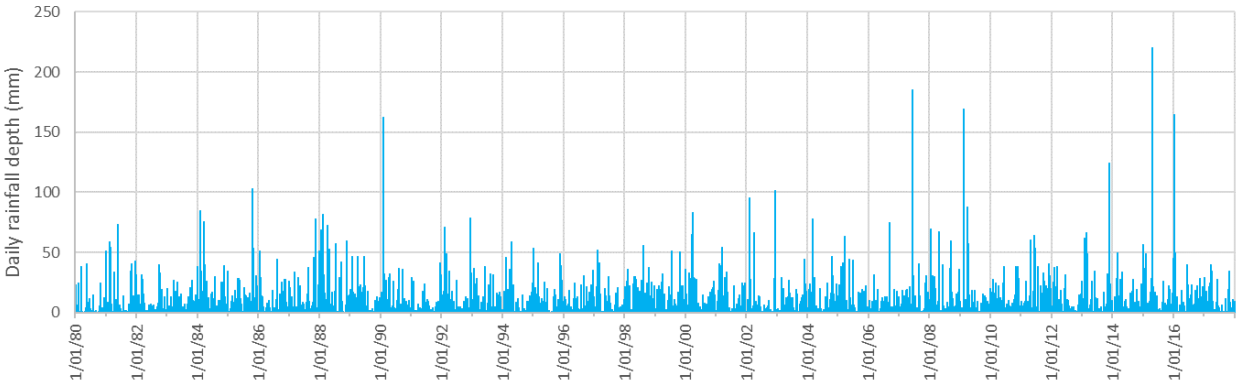


Figure D-4: Time series of daily rainfall depth for 1980 to 2017

Appendix D. Environment Protection Licence

Environment Protection Licence

Licence - 12510

Licence Details	
Number:	12510
Anniversary Date:	23-March

Licensee

DITTON PROPERTIES PTY LIMITED

863 ANAMBAH ROAD

GOSFORTH NSW 2320

Premises

DITTON PROPERTIES PTY LIMITED

442 ANAMBAH ROAD

GOSFORTH NSW 2320

Scheduled Activity

Extractive Activities

Fee Based Activity	Scale
Land-based extractive activity	> 50000-100000 T extracted, processed or stored

Region

Waste & Resources - Waste Management

59-61 Goulburn Street
SYDNEY NSW 2000

Phone: (02) 9995 5000

Fax: (02) 9995 5999

PO Box A290 SYDNEY SOUTH

NSW 1232

Environment Protection Licence

Licence - 12510

Environment Protection Licence

Licence - 12510

Environment Protection Licence

Licence - 12510

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 12510

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

DITTON PROPERTIES PTY LIMITED
863 ANAMBAH ROAD
GOSFORTH NSW 2320

subject to the conditions which follow.

Environment Protection Licence

Licence - 12510

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Extractive Activities	Land-based extractive activity	> 50000 - 100000 T extracted, processed or stored

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
DITTON PROPERTIES PTY LIMITED
442 ANAMBAH ROAD
GOSFORTH
NSW 2320
LOT 22 DP 1069012

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

Environment Protection Licence

Licence - 12510

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Dischrage Point - Surface Waste Monitoring	Dischrage Point - Surface Waste Monitoring	Depicted as "discharge Point" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd
4	Groundwater Quality Monitoring - North Bore - downstream	Groundwater Quality Monitoring - North Bore - downstream	Depicted as "Groundwater bore" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd
5	Groundwater Quality Monitoring - Southern Bore - Upstream	Groundwater Quality Monitoring - Southern Bore - Upstream	Depicted as "groundwater bore" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

Environment Protection Licence

Licence - 12510

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Ammonia	milligrams per litre				0.9
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005	As specified in each particular resource recovery exemption	NA
NA	Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA

L4 Noise limits

L4.1 A maximum $L_{A(eq\ 15\ minute)}$ noise emission level of 35dB(A) is to be achieved at the nearest affected receiver

to the residential receiver at location (to be announced), and an $L_{A(eq15\ minute)}$ noise emission criterion of level of 39dB(A) is to be achieved at the residential receiver at location (to be announced).

L5 Hours of operation

L5.1 Hours of operation are to be confined to 7:00am to 5:00pm Monday to Saturday inclusive. No operations or deliveries are to be undertaken on Sundays or Public Holidays.

L6 Potentially offensive odour

L6.1 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O2.2 **Maintenance of sedimentation system and leachate holding ponds**

The sedimentation and leachate pond(s)/basin(s) must be maintained to ensure that their design capacity is available for the storage of stormwater and leachate respectively in the event of rainfall.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from

the premises.

O3.2 Mobile water plant for dust suppression must be operational and functioning to prevent dust during hours of operation.

O4 Emergency response

O4.1 The licensee must maintain, and implement as necessary, a current emergency response plan for the premises. The licensee must keep the emergency response plan on the premises at all times. The emergency response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. If a current emergency response plan does not exist at the date on which this condition is attached to the licence, the licensee must develop an emergency response plan within three months of that date.

O5 Waste management

O5.1 The licensee must prevent the tracking of waste and mud by vehicles outside the premises.

O5.2 **Maintenance of capping over landfilled waste**

The Licencee must ensure that the cap over the landfilled waste is maintained to prevent erosion and water infiltration through that cap.

Note: The clay capping over waste fill area is depicted as *Waste Fill area 2700m²* in enclosed map of *Detail and Contour survey plan of Gosforth Quarries Pty Ltd Lot 22 DP 1069012 June 2008 Survey* by Anambah Road, Gosforth by Asquith deWitt Pty Ltd;

O6 Other operating conditions

O6.1 **Management of surface waters**

Surface water drainage must be diverted away from any area where waste has been landfilled.

O6.2 Surface water run-off from all disturbed areas at the premises which may liberate suspended solids when stormwater runs over these areas must be diverted into sedimentation basins.

O6.3 Any leachate storage pond must be designed to prevent stormwater running into it.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must

be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Ammonia	milligrams per litre	Special Frequency 1	Grab sample
Oil and Grease	milligrams per litre	Special Frequency 1	Grab sample
pH	pH	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample

POINT 4,5

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams of calcium carbonate per litre	Special Frequency 1	Grab sample
Aluminium	milligrams per litre	Quarterly	Grab sample
Ammonia	milligrams per litre	Special Frequency 1	Grab sample
Arsenic	milligrams per litre	Quarterly	Grab sample
Barium	milligrams per litre	Quarterly	Grab sample
Benzene	milligrams per litre	Quarterly	Grab sample
Biochemical oxygen demand	milligrams per litre	Quarterly	Grab sample
Cadmium	milligrams per litre	Quarterly	Grab sample
Calcium	milligrams per litre	Quarterly	Grab sample

Environment Protection Licence

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Chloride	milligrams per litre	Quarterly	Grab sample
Chlorinated volatile compounds	milligrams per litre	Quarterly	Grab sample
Chromium (total)	milligrams per litre	Quarterly	Grab sample
Cobalt	milligrams per litre	Quarterly	Grab sample
Conductivity	siemens	Quarterly	Grab sample
Copper	milligrams per litre	Quarterly	Grab sample
Dissolved Oxygen	milligrams per litre	Quarterly	Grab sample
Ethyl benzene	milligrams per litre	Quarterly	Grab sample
Fluoride	milligrams per litre	Quarterly	Grab sample
Iron	milligrams per litre	Quarterly	Grab sample
Lead	milligrams per litre	Quarterly	Grab sample
Magnesium	milligrams per litre	Quarterly	Grab sample
Manganese	milligrams per litre	Quarterly	Grab sample
Mercury	milligrams per litre	Quarterly	Grab sample
Nitrate	milligrams per litre	Quarterly	Grab sample
Organochlorine pesticides	milligrams per litre	Quarterly	Grab sample
Organophosphate pesticides	milligrams per litre	Quarterly	Grab sample
PCBs	milligrams per litre	Quarterly	Grab sample
pH	pH	Special Frequency 1	Grab sample
Phosphate	milligrams per litre	Quarterly	Grab sample
Polycyclic aromatic hydrocarbons	milligrams per litre	Quarterly	Grab sample
Potassium	milligrams per litre	Quarterly	Grab sample
Sodium	milligrams per litre	Quarterly	Grab sample
Standing Water Level	metres	Continuous	Continuously
Sulfate	milligrams per litre	Quarterly	Grab sample
Toluene	milligrams per litre	Quarterly	Grab sample
Total dissolved solids	milligrams per litre	Special Frequency 1	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample
Total Phenolics	milligrams per litre	Quarterly	Grab sample
Total suspended particles	milligrams per litre	Quarterly	Grab sample
TPH	milligrams per litre	Quarterly	Grab sample
Zinc	milligrams per litre	Quarterly	Grab sample

Note: For the purposes of this licence “special frequency 1” refers to;
a) sampling each quarter; and
b) sampling daily during discharge periods.

M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
a) a Statement of Compliance; and
b) a Monitoring and Complaints Summary.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

R4.1 **Assessment of Surface Water leachate and Groundwater Monitoring**

The licensee must assess all water monitoring data collected in relation to the premises and compare this data against:
a) Identified concentrations / units of uncontaminated water on the premises; and/or
b) ANZECC Trigger Values; and/or
c) Limits in this licence.

R4.2 The Assessment Report must be;
a) forwarded to the EPA within 90 days of the end of each annual licence reporting period; and
b) identify trends in water quality; and
c) be reported in tabular and graphical form.

7 General Conditions

G1 Copy of licence kept at the premises or plant

Environment Protection Licence

Licence - 12510

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Environment Protection Licence

Licence - 12510

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Mitchell Bennett

Environment Protection Authority

(By Delegation)

Date of this edition: 23-March-2007

End Notes

1	Licence varied by notice 1075886, issued on 30-May-2008, which came into effect on 30-May-2008.
2	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
3	Licence varied by notice 1095549, issued on 01-Mar-2011, which came into effect on 01-Mar-2011.
4	Licence transferred through application 1500784 approved on 09-Aug-2011 , which came into effect on 10-Aug-2011
5	Licence format updated on 10-Aug-2011
6	Licence varied by notice 1502199 issued on 31-Oct-2011
7	Licence varied by notice 1529270 issued on 17-Apr-2015

Appendix E. Pollution Incident Response Management Plan

AKE Document: 2057-1441
Version: 2.1
Issued: 3 April 2019

AK Environmental PTY LTD

ENVIRONMENTAL ENGINEERING & CONSULTING

Pollution Incident Response Management Plan (PIRMP)

Anambah In-vessel Composting Facility
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Document Control

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Version	Date	Action	Responsible Person
1.0	25 September 2018	Prepared	Andrew Krause
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2.1	3 April 2019	Approved	Chris Ditton

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1. Context of the PIRMP

1.1 Purpose

This Pollution Incident Response Management Plan (PIRMP) has been prepared to describe the processes required to make preparations for, and respond to, a pollution incident at the Anambah In-vessel Composting Facility (AICF).

1.2 Legislative Requirements

Ditton Properties Pty, Limited (Ditton Properties) owns the AICF and RB Organics Pty. Limited operates the AICF. Ditton Properties holds environment protection licence (EPL) 12510 (EPL12510) issued by the Environment Protection Authority (EPA). All holders of an EPL are required under the *Protection of the Environment Legislation Amendment Act 2011* (POELA Act) and the requirement under Part 5.7A of the *Protection of the Environment and Operations Act 1997* (POEO Act) to prepare, keep, test and implement a PIRMP.

This PIRMP has been prepared in response to these requirements.

1.3 Objectives

The objectives of a PIRMP are set out in the *EPA Guidelines: Preparation of pollution incident response management plans, March 2012*. The objectives of the PIRMP are to:

- ensure comprehensive and timely communication about a pollution incident to staff at the premises, the Environment Protection Authority (EPA), other relevant authorities specified in the POEO Act (such as local councils, Ministry of Health, SafeWork NSW, and Fire and Rescue NSW) and people outside the facility who may be affected by the impacts of the pollution incident;
- minimise and control the risk of a pollution incident at the facility by requiring identification of risks and the development of planned actions to minimise and manage those risks; and
- ensure that the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability.

1.4 Definition of a Pollution Incident

NSW EPA defines a pollution incident as:

> *"an incident or set of circumstances during, or as a consequence of, which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise."*

1.5 Duty to Notify

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

> *"(a) harm to the environment is material if:*
> *(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
> *(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and*
>
> *(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment."*

The requirement to notify a pollution incident equally applies where the harm is caused only within the premises where the pollution incident occurs, and also where the harm is caused external to the premises.

It is also a requirement to report incidents **immediately** (ie. promptly without delay) to EPA, Ministry of Health, Fire and Rescue NSW, SafeWork NSW and local councils.

1.6 Scope of PIRMP

The scope of the AICF PIRMP is as follows:

- description and likelihood of hazards;
- pre-emptive actions to be taken;
- inventory of pollutants;
- safety equipment;
- contact details;
- communicating with neighbours and the local community;
- minimising harm to persons on the premises;
- maps showing the location of scheme components;
- actions to be taken during or immediately after a pollution incident; and
- staff training.

In summary, the PIRMP is required to include the following:

- the procedures to be followed regarding notification in the event of a pollution incident;
- a detailed description of the action that will be taken immediately after a pollution incident to minimise and control any pollution;
- the procedures that will be followed regarding coordinating with any notified authorities or persons; and
- any other matter required by the regulations.

2. The Premises

2.1 Site Location

The AICF is located at 442 Anambah Road, Anambah (Figure 1). The operations are undertaken at Lot 22 DP1069012. The Hunter River is approximately 1 km to the east of the site.

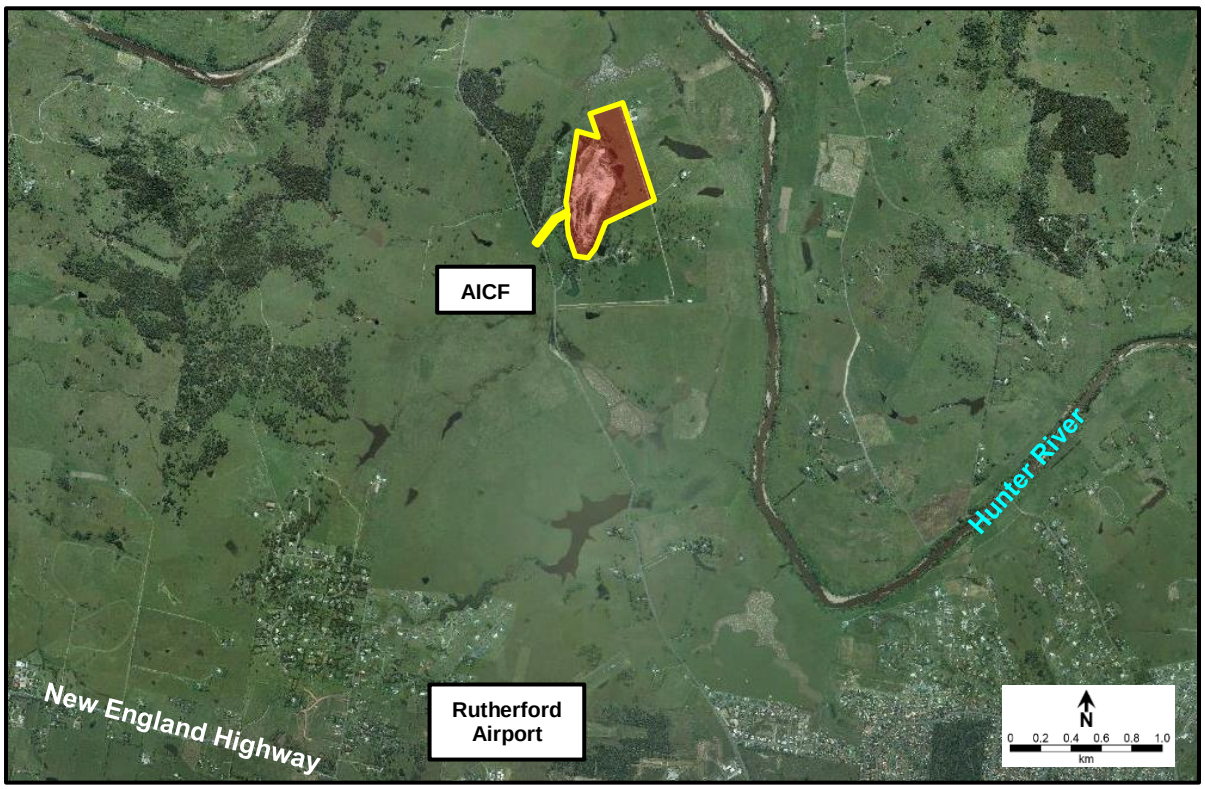


Figure 1 – Site lot boundary and general locality (image source: SixMaps)

2.2 Site Characteristics

The AICF is cited near sensitive receptors (Figure 2) which require implementation of considered environmental management. The sensitive receptors are:

- adjacent neighbouring residences (note the residence located immediately west of the composting operations area is now within the consolidated site lot and is not considered to be sensitive); and
- the Hunter River.

The 32 ha site is accessed via Anambah Road to the west. The land surface slopes have been highly modified by previous quarrying operations. As shown in Figure 3, the northern portion of the site drains to Sediment Dams 1 and 2, the central portion drains to Central Dam, and the small southern portion drains to Sediment Dam 3.

The offsite surface water overflow locations are at the northern embankment of Sediment Dams 1 and 2, and the southern embankment of Sediment Dam 3 (see Figure 3). According to the *Greta 1:25,000 Topographic Map (9132-1S)* (Land and Property Information 2016), the waterway flow path to the Hunter River is approximately 2.5 km in length. Overflows to the

north enter a very large farm dam approximately 300 m to the north. There is no defined waterway connection between the dam and the Hunter River, however, anecdotal evidence indicates overtopping events to the Hunter River occur periodically.

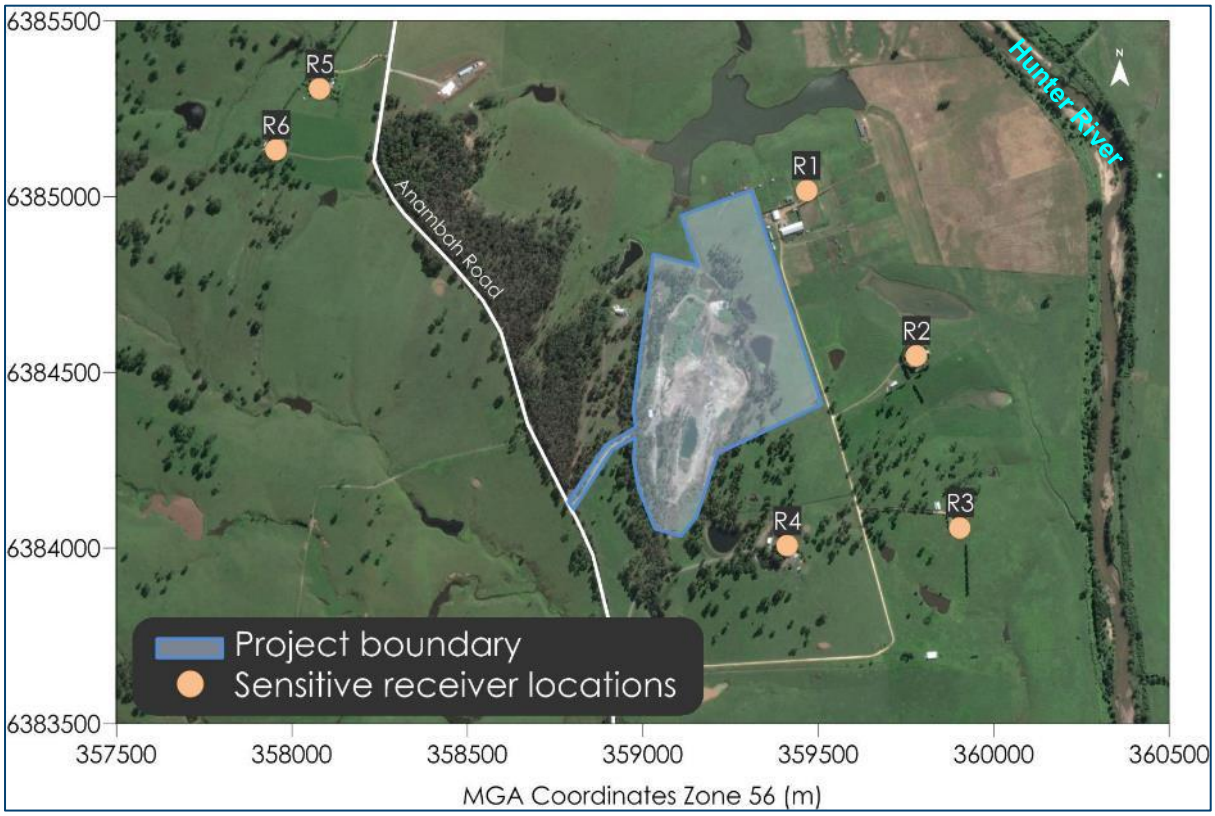


Figure 2 – Site lot boundary and sensitive neighbouring receptors (Todoroski 2018)

2.3 Site Supervision

The AICF Onsite Manager performs the day to day management responsibilities at the facility. All delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. AICF staff are present during these operating times. No operations of any kind are permitted on Sundays or Public Holidays. A lockable security gate at the entry road prevents the entry of traffic outside of operating times.

Vehicles movements are controlled by signage.

2.4 Site Development

Notice of determination of Development Approval DA 15-433 was issued by Maitland City Council (Council) on 12 July 2017. A condition of consent is that:

> *"DA 95-163 for quarrying shall be surrendered to Council on …. 40,000 tonnes of waste being processed at the site or five (5) years from commencement of composting operations whichever occurs first."*

This PIRMP applies to operation the AICF only. A separate PIRMP is already in place for the quarrying operation. It is expected that both PIRMP documents would be remain applicable until quarrying operations cease.

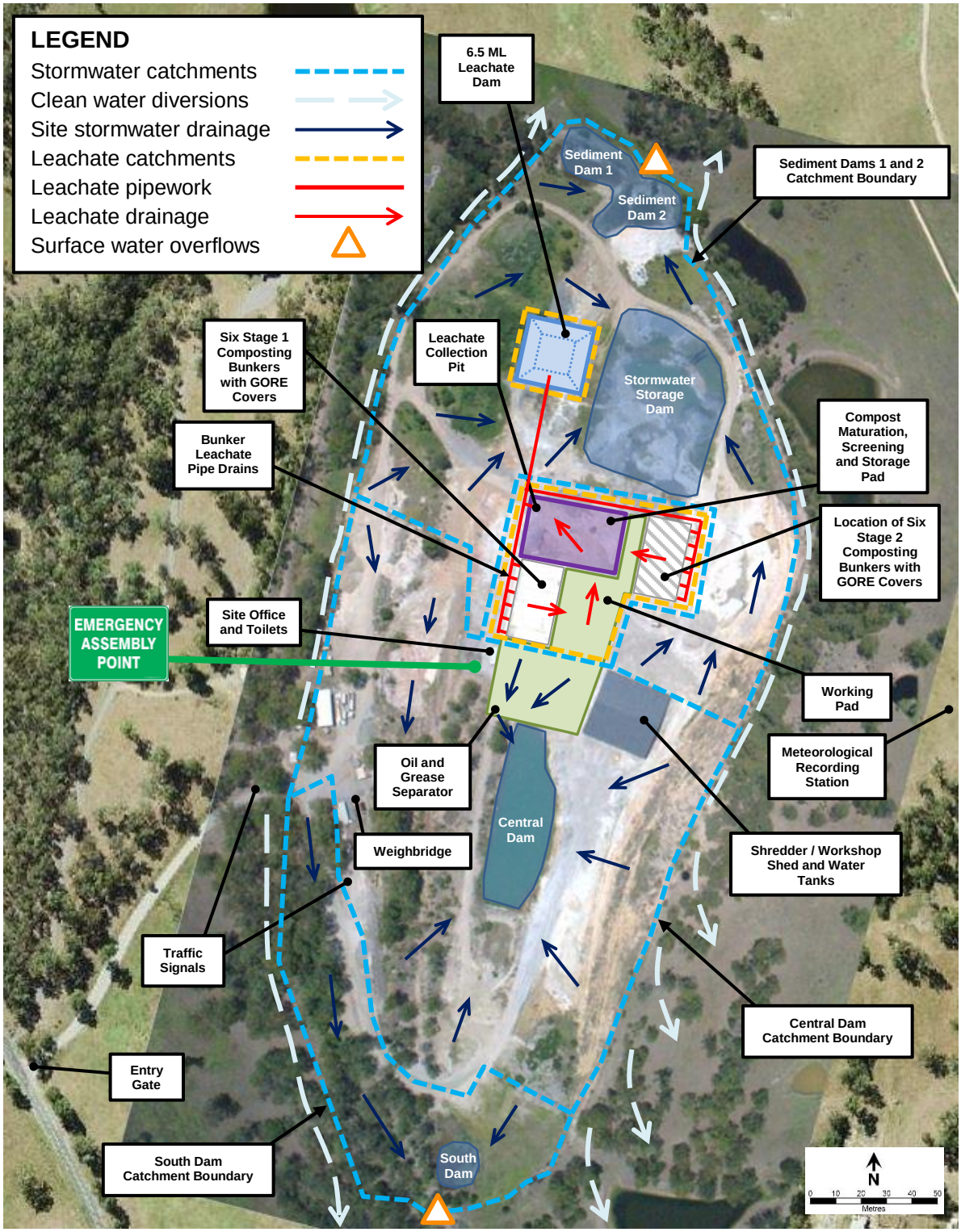


Figure 3 – AICF operational layout, catchment areas and offsite surface water discharge locations

2.4.1 AICF Site Description

The AICF layout is shown in Figure 3. The development consists of:

- site operations and storage office;
- sealed internal access roads (tar seal or stabilised gravel standard);
- Anambah Road intersection upgrade (entry road widening and overtaking lane addition on Anambah Road);
- site entry and road traffic signage;
- entry road security gate;
- weighbridge with boom gates at entry and exit;
- weighbridge office;
- on-slab shed to house drop-off stockpile, slow speed shredder and workshop;
- concrete composting bunkers each of 200 m^2 floor area (8 m x 25 m) and each with a GORE cover system (Stage 1 with six bunkers and Stage 2 with 12 bunkers);
- floor-inset bunker air injection system and leachate collection drainage system;
- compost maturation, screening and storage area on 1,350 m^2 stabilised gravel pad (30 m x 45 m);
- Leachate Dam (6.5 ML capacity), high-level alarm system, floating pontoon aerator and leachate return pump;
- surface water sediment management dams (Sediment Dams 1 and 2, Central Dam and South Dam) and Stormwater Storage Dam;
- above ground (bunded 110%) diesel storage tanks (2 x 12,000 L) and re-fuelling area;
- oil and grease separator for stormwater at south-east corner of pad;
- submersible pump (25 L/s) on floating pontoon at Central Dam;
- water tanks (4 x 23,000 L) for roof rainwater collection and top-up transfer from Central Dam pump;
- fire-fighting system (2 x high-flow pressurised hose reels at slow speed shedder shed supplied by water tanks, water tanker with water cannon and diesel pump; fire extinguishers at re-fuelling area); and
- pump out toilets at site office.

In addition to fixed plant, mobile plant will be employed at the AICF to handle solid waste and undertake dust suppression of unsealed trafficable areas.

2.4.2 AICF Site OEMP

Prior to the issuing of an occupation certificate for the AICF, an Operational Environmental Management Plan (OEMP) will be developed and submitted to Council.

3. Operational Risk Management

To inform the site risk assessment presented in Section 0, the following Section 0 describes AICF operational procedures and design aspects which impact the management of risk at the facility.

3.1 Liquid Waste Management

In accordance with *Environmental guidelines: composting and related organics processing facilities* (DEC 2004), leachate is all waters which contact compostable organic materials.

Protection of groundwater and surface water is afforded by a leachate management system has been designed, and will be operated, and maintained consistent with the principles and requirements of DEC (2004), and has the following components:

- working surfaces;
- leachate barrier system;
- leachate collection system; and
- leachate storage system.

The raw sewage management system comprises proprietary toilets with sewage containment tanks. Raw sewage will be disposed off-site with no on-site treatment permissible.

Sections 4.2.1 and 4.2.2 of the site OEMP detail the objectives and design considerations which have been applied to management of liquid waste at the AICF. Operational procedures and responsibilities are detailed in Section 4.2.3 of the site OEMP.

3.2 Solid Waste Management

Compostable materials are categorised by DEC (2004). During the first three years of compost processing, the AICF will receive only Category 1 materials, with Category 2 material accepted thereafter. The maximum quantity of 'Food Waste' permitted for receipt is 8,000 tonnes annually. It is not intended that the facility will compost Category 3 organics, and receipt of other contaminated solids will not be permitted. Further details regarding the AICF solid waste specifications and management objectives are provided in Sections 4.3.1 and 4.3.2 of the site OEMP.

Operational procedures and responsibilities for the management of solid waste are detailed in Section 4.2.3 of the site OEMP.

3.3 Surface Water Management

Stormwater runoff generated within the AICF sub-catchment areas shown in Figure 3 will be directed to onsite sediment dams for treatment. The dams are designed to limit the volumetric quantity of downstream surface water releases, and to manage the quality of surface water leaving the site.

Sections 4.5.1 and 4.5.2 of the site OEMP detail the objectives and design considerations which have been applied to management of leachate at the AICF. Operational procedures and responsibilities are detailed in Section 4.5.3 of the site OEMP.

3.4 Pollutants and Chemicals

Compost leachate and raw sewage from the onsite toilets are the liquid waste pollutants generated by the AICF which are potentially hazardous to public health and the environment. Liquid waste management of pollutants is detailed in Section 3.1.

The chemicals and fuels listed in Table 1 are stored/used at the site. Diesel fuels are maintained in secured and bunded locations. For those chemicals/fuels which have safety data sheets (SDS), these are kept on site and updated as required (see Appendix F of the OEMP). Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation.

Table 1 – Treatment chemicals and fuels

Chemical/Fuel	Typical quantity	Stored?	Safety Data Sheet Kept at site?
Diesel	24,000 L max	Above ground tanks at refuelling area (110% bunded)	Yes
Oil (Engine/Hydraulic)	50 L	Off-site (plant maintenance vehicle)	Yes
Grease	20 L	Off-site (plant maintenance vehicle)	Yes
Hand soap	20 L	Site office	No

3.5 Groundwater Management

In accordance with findings in *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment* (OD Hydrology 2015), groundwater levels are not expected rise to ground surface levels, and hence direct mixing of groundwater and surface water will not occur. Hence, vertical downward infiltration of surface waters is the only potential pathway for pollution of underlying groundwater.

Sections 3.1 to 3.4 cover the management of liquid waste, solid waste, surface water and pollutants and chemicals, and these are all considered relevant to the protection of groundwater. Furthermore, Sections 4.6.1 and 4.6.2 of the site OEMP detail the objectives and operational procedures which have been applied to management of groundwater at the AICF.

3.6 Air Quality Management

Air quality pollutant types associated with organic composting are dust and odour.

Sections 4.7.1 and 4.7.2 of the site OEMP detail the objectives and design considerations which have been applied to management of dust emissions at the AICF. Operational procedures and responsibilities are detailed in Section 4.7.3 of the site OEMP.

Sections 4.8.1 and 4.8.2 of the site OEMP detail the objectives and design considerations which have been applied to management of odour at the AICF. Operational procedures and responsibilities are detailed in Section 4.8.3 of the site OEMP.

3.7 Environmental Monitoring

An on-site meteorological station will continuously monitor weather conditions.

Surface water quality and groundwater quality will be monitored quarterly in accordance with EPL12510. Groundwater levels will be continuously monitored.

In accordance with EPL12510, surface water quality and groundwater quality will be monitored on each day that offsite discharges of surface water occur.

Dust monitoring will occur at the three nearest sensitive receptors, each of which located east of the AICF. The frequency of monitoring is monthly.

Attended noise monitoring will be conducted monthly during the first 12 months of operation, after which monitoring would occur quarterly. Additional noise monitoring will be conducted when new or additional composting equipment is commissioned or following a noise-related complaint being received.

Odour monitoring will be enacted in response to an odour complaint from a neighbouring sensitive receptor.

3.8 Fire Management

Management actions which control the potential for fires are:

- maintain machinery in good working order to reduce potential for ignition;
- compost stockpiles are turned regularly until removal from site;
- regular testing of fire hydrants and fire extinguishers; and
- regular site patrols.

3.9 Vandalism

A stock fence is erected at the site boundary and the entry road access is security gated.

AICF staff are present 7:00am to 5:00pm Monday to Saturday.

Staff are required to remain vigilant to any suspicious behaviour. It is a requirement for staff as soon as they become aware of instances of malicious damage or anti-social behaviour, that Police are notified.

3.10 Safety equipment and PPE

Safety equipment and personal protective equipment (PPE) are provided to workers to minimise the risk to human health and the environment. The purpose of this safety equipment and PPE is to contain, control or prevent contact with potential pollutants.

The following safety equipment is maintained at the premises:

- fire hydrants and high-pressure hoses;
- fire extinguishers and fire blankets; and
- PPE for undertaking of works concerning untreated sewage. Shovels and hand equipment are also available to limit contact with waste material.

The types of PPE kept at site are shown in Table 2, and the locations of firefighting and PPE components are shown in Figure 4.

Table 2 – Personal protective equipment and storage locations

Equipment	Purpose	Location
Safety helmets	Head protection in shredder shed	Site operations/storage office
Prickle proof gloves	Material waste handling	Site operations/storage office
Hi-vis vests	Visible identification	Site operations/storage office
Dust masks	Breathing protection	Site operations/storage office

3.1 Site Inductions

All AICF staff and contractors conducting work at the AICF are to be inducted to the site by the AICF Onsite Manager. This induction must cover the purpose, requirements and responsibilities detailed in this PIRMP.

All work carried out will be managed under AICF's Integrated Risk Management system and prior to completing any task a risk assessment, standard operating procedure and/or safe work method statement will be completed and adhered to.

3.2 Evacuation Procedure

In the event of an emergency, AICF staff will notify all workers and visitors currently onsite via verbal communication. All staff and visitors are to go to the emergency assembly point, which is located near the site office as shown in Figure 4.

3.3 Training

Training is provided to all AICF staff conducting work at the AICF. The nature of the training is determined by the level of risk and likelihood of incidents and is further the position the employee holds. Training is provided with the principle objective of statutory compliance and knowledge and application of procedures and plans. Additional training is provided to supplement knowledge and skills as well as providing breadth knowledge. Training is provided in the form of:

- formal training courses/certificates;
- toolbox talks; and
- internal training on PIRMP and incident response.

All staff should receive sufficient training to enable them to carry out their assigned duties in a competent and safe manner. All staff must be:

- capable of using the fire-fighting equipment;
- capable of identifying potential pollution incidents; and
- familiar with the requirements and procedures contained within this PIRMP.

The staff training register for each position is shown in Appendix A.

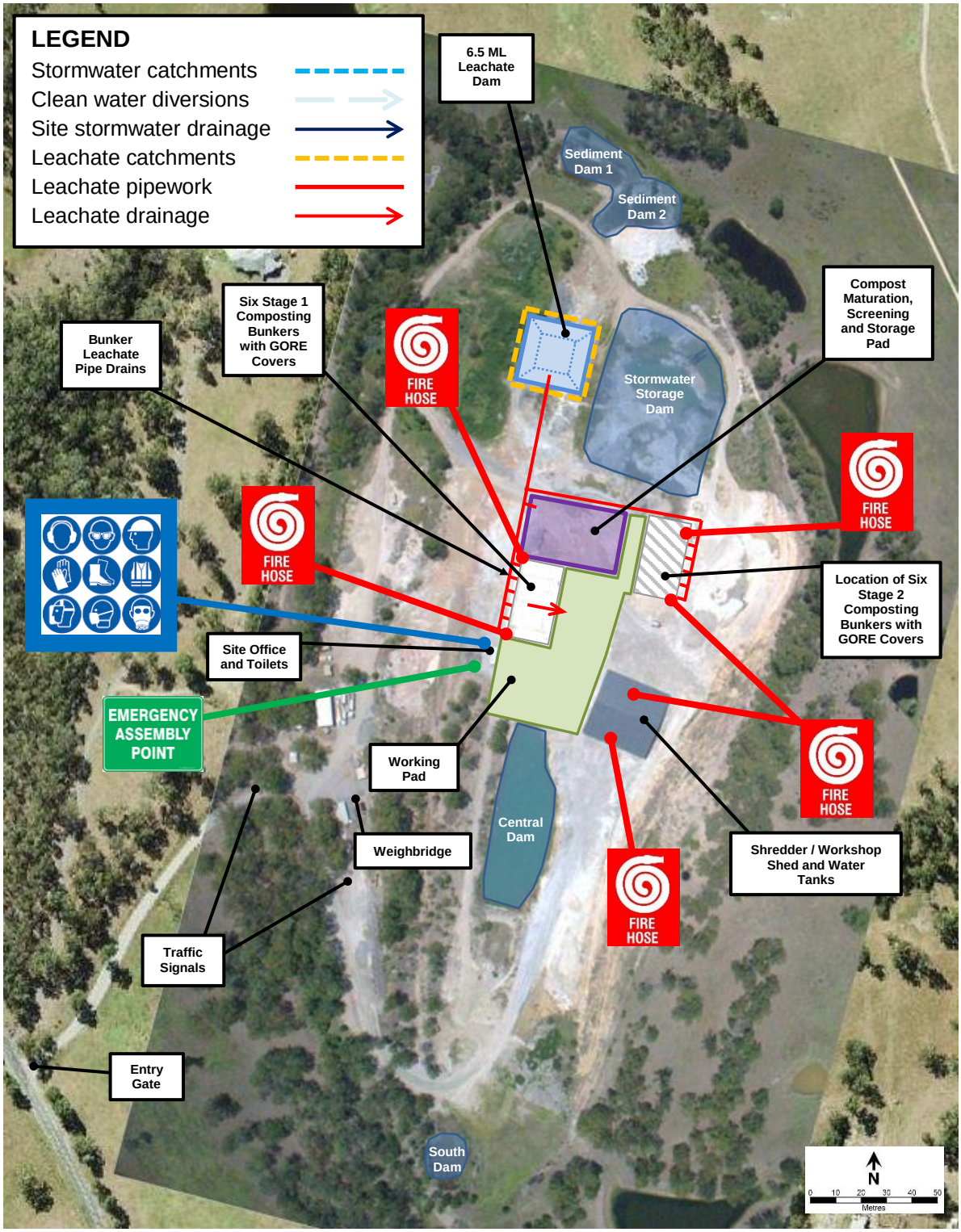


Figure 4 – Site locations of firefighting components, PPE storage and emergency assembly point

4. Risk Assessment

A risk assessment has been undertaken to determine the following:

- identification of hazard events;
- identification of potential exacerbating circumstances;
- documentation of preventative measures and monitoring; and
- assessment of the residual risk (likelihood and consequence).

4.1 Structure of Risk Assessment

The criteria used to undertake the risk assessment is set out in AICF's Risk Analysis Audit Tables (see Appendix B), including definitions of likelihood, consequence and the resultant risk matrix.

4.2 AICF Risk Assessment

The risk register is shown in Table 4. The risk assigned to each potential pollution incident event is the *residual risk* when all preventative actions/measures are considered.

Table 3 – AICF risk matrix

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Failure of sediment dam system	Structural embankment failure (Sediment Dam 1+2 and South Dam)	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance, including remove tree seedlings
	Structural embankment failure (Central Dam)	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance, including remove tree seedlings
Failure of leachate barrier system	Structural failure of underlying infiltration control surface	Cracking of concrete pad underlying composting bunkers	Possible	Moderate	**HIGH**	Regular pad integrity inspections for cracking/leakage potential
		Cracking of concrete pad underlying shredder shed	Possible	Moderate	**HIGH**	Regular pad integrity inspections for cracking/leakage potential
		Weathering of clay liner under screening and maturation area	Possible	Moderate	**HIGH**	Regular liner integrity inspections Routine maintenance

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Failure of leachate collection system	Structural failure of composting bunker leachate conveyance network	Collapse of floor drain or underground pipework	Unlikely	Moderate	**MEDIUM**	Regular integrity inspections
		Inoperable control value	Possible	Moderate	**HIGH**	Regular testing of valve integrity
	Structural failure of the GORE covers	Degradation by weathering and handling	Possible	Minor	**MEDIUM**	Regular integrity inspections
Failure of leachate storage system	Structural embankment failure of leachate dam	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
	Overtopping of leachate dam	Discharge permissible above design storm rainfall Extreme rainfall conditions	Rare	Major	**MEDIUM**	Storage constructed with additional 70% capacity over historical water balance requirement High-level alarm system Overflow directed into stormwater sump for containment onsite
Fire	Self-combustion of compost stockpiles	Incomplete waste stockpile handling Excessive period of stockpiling	Possible	Major	**HIGH**	Continuous composting pile temperature monitoring fitted with high temperature alarm control Water cart always maintained with a full tank and in-service pump and fire hose cannon

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Generation of offensive odour beyond site boundary	Failure of solids management processing	Incomplete aeration of compost stockpiles leading to anaerobic conditions	Possible	Moderate	**MEDIUM**	Regular scheduled inspections Regular aeration of composting pile by aeration pump fitted with alarm control GORE covers over composting piles Regular turning of composting piles
		Incorrect stockpiling of solid wastes	Possible	Minor	**MEDIUM**	Regular scheduled inspections Stockpiling limited to 24 hours under normal operating conditions Removal of offensive odour generating stockpiles within 48 hours
	Failure of leachate management system	Incomplete aeration of leachate leading to anaerobic conditions	Possible	Moderate	**MEDIUM**	Regular scheduled inspections Continuous aeration of leachate storage by aeration pump fitted with alarm control
Generation of visible dust plumes crossing site boundary	Failure of solids handling processing	Incorrect handling procedures	Possible	Minor	**MEDIUM**	Regular scheduled inspections Material drop-off and shredding conducted only in the shredder shed Minimisation of drop height for loading/unloading Efficient pile turning procedures Strategic watering Restriction of activities in adverse conditions
		Incomplete covering of loads	Possible	Insignificant	**LOW**	Signage at entry/exit
	Traffic movements generating dust from unsealed and disturbed surfaces	Incomplete moisture management	Possible	Minor	**MEDIUM**	Regular scheduled inspections Strategic watering
		Traffic movements on restricted and disturbed surfaces	Likely	Insignificant	**MEDIUM**	Signage at entry and within site

5. Actions in Response to Pollution Incident

A Pollution Incident Decision Flow Chart is shown in Appendix C. The flow chart is to be used in the event of a pollution incident to ensure all notifications and actions are correctly identified and subsequently enacted.

5.1 Timing of Notification Response

The notification of the relevant authority when material harm to the environment or human health is caused or threatened must be **immediate**, meaning **promptly without delay**. Notwithstanding the requirement for immediacy of the response, priority may still need to be given beforehand to actions which prevent, limit, or make good harm to the environment.

5.2 Responsibilities and Contact Details

When a pollution incident causes or threatens material harm to the environment or human health, it is the direct responsibility of the AICF Onsite Manager to contact the regulatory authorities listed in Table 4.

For 'notifiable incidents' under the Work Health & Safety Act (2011) NSW, the AICF Supervisor should immediately contact the Integrated Risk Management Team who will manage the notification to SafeWork NSW.

Table 4 – External Emergency Contact Details

Organisation	Details	Contact Info	Phone
Emergency Services	Police, Fire & Rescue, Ambulance, HAZMAT	Emergency Only	000
NSW EPA	NSW EPA Pollution Line	24 hours	131 555
NSW Health	Public Health Unit - Newcastle Office (note: After Hours diverts to John Hunter Hospital - ask for Public Health Officer on call)	Public Health Officer	(02) 4924 6477
Fire & Rescue NSW	Pollution Incident Notification	24 hours	1300 729 579
	Rutherford Fire Station	24 hours	(02) 4932 8223
	Fire & Rescue NSW Zone Office Metropolitan North Zone 3	Business hours 8:30am - 4:30pm	(02) 4932 6411
SafeWork NSW		24 hours	13 10 50

Emergency contact details of all responsible AICF staff are provided in Table 5.

Table 5 – ACIF Emergency Contact Details

Position	Name	Phone
AICF Directors	Chris Ditton	0407 252 009
	Denise Ditton	0438 326 998
AICF Chief Executive Officer	TBC	TBC
AICF Onsite Manager	Terry Ditton	0439 989 289

5.3 Relevant Information to be Notified

Section 150 of the POEO Act defines the information which needs to be reported in the event of a pollution incident. The relevant information is:

> *"(1) The relevant information about a pollution incident required under section 148 consists of the following:*
> *a) the time, date, nature, duration and location of the incident,*
> *b) the location of the place where pollution is occurring or is likely to occur,*
> *c) the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known,*
> *d) the circumstances in which the incident occurred (including the cause of the incident, if known),*
> *e) the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known,*
> *f) other information prescribed by the regulations."*

The AICF Onsite Manager is responsible for supply of this information immediately after the pollution incident is known. If some information is not known to the AICF Onsite Manager at the time the pollution incident is notified, is the responsibility of the AICF Onsite Manager to provide the remainder of information immediately after it becomes known.

A Pollution Incident Reporting Form is provided in Appendix D.

5.4 On-site Harm Minimisation Actions

5.4.1 Pollution containment actions

All site personnel with relevant training must make every effort to contain the pollution incident on-site, without putting themselves or others at risk of harm.

In the case of a fire and where safe, trained personnel must attempt to extinguish or contain the fire immediately.

In the event of a chemical spill that is not contained by bunding, the chemical spill kits must be used by trained personnel to restrict the spread of the chemical.

Where a breach of the stormwater sediment management system has occurred, on-site earthworks machinery should be used to contain surface water discharge as far as practicable.

5.4.2 Staff and visitor notification

In the event of a pollution incident, all ACIF staff are to be contacted as soon as is practical via mobile phone (numbers listed in Table 5).

If visitors are present at site, the AICF Onsite Manager is responsible for notifying visitors of a pollution incident.

All staff and visitors are to be mustered by AICF staff to the Emergency Assembly Point shown in Figure 4, from which they can be safely evacuated from site as required.

5.4.3 Neighbouring properties notification

In the event of notification of a pollution incident, EPA will determine whether neighbouring properties should be notified. EPA has the formal powers to direct Ditton Properties to make notifications to the neighbouring properties. The six (6) neighbouring properties shown in Figure 2 must be notified by ‘door knocking’ when direction is received from EPA.

6. Continuous Improvement Process

6.1 Evaluation

This PIRMP is required to be reviewed, tested and updated at least once every 12 months. Following the occurrence of a pollution incident, this PIRMP is to be updated within one month. The review will consist of the following:

- review of the risk assessments for the ACIF against current operations and control measures;
- identification of any additional or emerging issues or trends; and
- determination of priorities in procedural improvements and asset upgrades.

6.2 PIRMP Update

The result of the evaluation will be documented and the PIRMP updated. To ensure clarity regarding the most recent version of the PIRMP, a Document Control is provided at the commencement of this document, and the current version and month of issue are recorded on each page at the bottom left hand corner. The next review date is shown in the Document Control. Each reviewed copy will be kept in AICF's record keeping system.

6.3 Publication of this PIRMP

A copy of this plan will be issued to relevant AICF personnel. At a minimum, copies will be held at the following locations:

- AICF's record keeping system; and
- AICF site office.

If the licensee has a website, under the *Protection of the Environment (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012*, only certain parts of the PIRMP need to be made available either on the website. These parts are outlined in the POEO Act under section 153C(a) and clause 98C(1)(h) and (i) or (2)(b) and (c).

If the licensee does not have a website, then they must provide a copy of the plan to any person who makes a written request. As defined above, only certain parts of the PIRMP need to be made available.

7. References

DEC (2004). *Environmental guidelines: composting and related organics processing facilities*. Sydney: NSW Department of Environment and Conservation. http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf

OD Hydrology (2015), *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater* Assessment, doc ref: 44001-rpt01d.docx.

Todoroski Air Sciences (2018). *Air Quality and Noise Management Plan - Anambah In-vessel Composting Facility*, 17 September 2018.

Appendix A. Staff Training Register

Staff Training Register

Date	Staff Member	Description of Training

Appendix B. Risk Analysis Audit Tables

Risk Matrix

		Consequence				
		Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Likelihood	**Almost Certain**	MEDIUM	HIGH	HIGH	EXTREME	EXTREME
	Likely	MEDIUM	MEDIUM	HIGH	HIGH	EXTREME
	Possible	LOW	MEDIUM	MEDIUM	HIGH	HIGH
	Unlikely	LOW	LOW	MEDIUM	MEDIUM	HIGH
	Rare	LOW	LOW	MEDIUM	MEDIUM	HIGH

Risk Levels

EXTREME	The proposed or identified task or process activity cannot proceed. Steps must be taken to lower the risk level to as low as reasonably practicable using a hierarchy of risk controls.
HIGH	The proposed or identified activity can only proceed, provided that: (i) the risk level has been reduced to as low as reasonably practicable using a hierarchy of risk controls; (ii) the risk assessment has been reviewed and approved by the AICF Onsite Manager; (iii) a Safe Working Procedure or Safe Work Method has been prepared; and (iv) the AICF Onsite Manager must review and document the effectiveness of the implemented risk controls.
MEDIUM	The proposed or identifies task or process can proceed, provided that: (i) the risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls; (ii) the risk assessment has been reviewed and approved by the AICF Onsite Manager; and (iii) a Safe Working Procedure or Safe Work Method has been prepared.
LOW	Managed by documented routine procedures which must include application of the hierarchy of risk controls.

Likelihood Table

Likelihood	Health/Safety	Event Frequency	Industry History
Almost certain	Expected to occur in most circumstances involving normal operations	More than once per year	Expected to occur, occurs regularly in the industry
Likely	Could happen at any time	Once per year	Will probably occur, has occurred many times in the industry
Possible	Could happen sometimes	Once every 10 years	Might occur, has occurred several times in the industry
Unlikely	Could happen, but very rarely	Once every 50 years	Not likely to occur, has occurred once or twice in the industry
Rare	Could happen but probably never will	Less than once every 50 years	May only occur in exceptional circumstances, unheard of in the industry

Consequence Table

Consequence	People	Environmental	Legal
Insignificant	Minor injury, no first aid required	Minimal environmental impact; isolated and immediately reversible	Isolated non-compliance or breach; minimal failure of internal controls
Minor	Minor injury; first aid required	Minor environmental impact; isolated and reversible or localised and immediately reversible	Contained non-compliance or action with short term significance; some impact on normal operations
Moderate	Injury or illness requiring medical attention	Moderate environmental impact; localised and reversible or isolated and irreversible	Significant claim or breach involving statutory authority or investigation; prosecution possible
Major	Significant injury or long term illness; hospitalisation	Significant environmental impact; regional and reversible or localised and irreversible	Major breach with litigation/ fines and long-term significance; critical failure of internal controls
Catastrophic	Fatality; permanent disability, illness or disease	Catastrophic environmental impact; national and reversible or regional and irreversible	Extensive litigation/fines with possible class action; indictable offences

Appendix C. Pollution Incident Response Flow Chart

Pollution identified

Notify ACIF Site Manager immediately

Is it a notifiable 'pollution incident' with risk of material harm to environment and/or human health?

No

Is the pollution fully contained within the site boundary?

No

Follow general management protocols as per the OEMP

Yes

Follow OEMP procedures to make the polluted environment safe

Yes

Is the pollution fully contained within the site boundary?

No

Contact Fire & Rescue NSW immediately on

Call 1300 729 579

Yes

Does an immediate threat to human health or property exist which requires an emergency response?

Yes

Call Emergency Services immediately

Call 000

No

Is an emergency evacuation required?

No

Commence emergency evacuation procedures

Commence actions to make polluted environment safe

Immediately notify these authorities:

Maitland City Council
Call (02) 4934 9700

EPA Pollution Line
Call 131 555

NSW Health
Call (02) 4924 6477

SafeWork NSW
Call 13 10 50

Fire & Rescue NSW
Call 1300 729 579

Ask EPA if notification of neighbours is required?

Yes

Contact all neighbours by 'door knock'

Provide regular updates to notified authorities (and neighbours if notified)

No

Complete Pollution Incident Response Form

Review and update PIRMP within 30 days of pollution incident

Appendix D. Pollution Incident Reporting Form

Pollution Incident Reporting Form

Where details are unknown at the time of the notification write 'unknown' in the relevant box.

Information	Details known at time of notification
Name of person completing form:	
Date / time form completed:	**Date:** **Time:**
Premises details:	**Anambah In-vessel Composting Facility** **442 Anambah Road, Anambah NSW 2320**
Date / time of incident:	**Date:** **Time:**
Specific location of incident:	
Pollutant: **(e.g. Leachate, Odour, Pond Waters …. etc.)**	**Date:** **Volume:**
Pollutant emitted to: **(e.g. Stormwater, Land, Air, Groundwater … etc.)**	
Spatial extent of pollution: **(e.g. area of impacted soil, length of waterway … etc.)**	
Cause: **(e.g. structural failure, mechanical failure, human error … etc.)**	
Weather conditions:	**Rainfall depth (prior 24 hrs) (mm):** **Temperature (deg C):** **Wind direction (from):** **Wind strength (m/s):**

Immediate actions taken in response:	
Forecast / future needs / concerns / considerations:	

Appendix F. Forms

Site Induction Register

Date of Induction	Inductee Name	Inductee's Company	Inductee Signature	Name of Person Performing Induction	Signature of Person Performing Induction

Weekly Environmental Inspection Checklist

Week commencing: _____ Completed by: _____ Signature: _____

When?: W = weekly, M = monthly, R = when rainfall depth has exceeded 20 mm during the past 24 hours

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Liquid waste	**Working surfaces**	**W**			
	Leachate barrier system	**W**			
	Leachate collection system	**W**			
	Leachate storage and return system	**W**			
	Toilet sewage tanks	**W**			
Solid waste	**Information signage**	**M**			
	Skip bins	**W**			

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Soil	Grassed swales	M			
	Sediment dam embankments	M			
	General site	W			
Surface water	Sediment dams	M,R			
	Site drainage features	M			
	Oil / grease traps	M			
Dust	Monitoring stations	M			
	Generation areas	W			

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Odour	Generation areas	W			
	Bunker aeration system	W			
Noise	Mobile plant silencers	W			
	Stationary shields	W			
Traffic	Movement or parking issues	W			
Flora	Invasive species	W			
Fire	Fire-fighting equipment	W			
	Composting temperature compliance	W			

Non-compliance and Corrective Action Report

Type of Non-compliance	
☐ Site Establishment	☐ Work Health and Safety
☐ Works outlined in contract	☐ Environmental Management
☐ Supplier	☐ Quality Management
☐ Customer complaint	☐ Other:

Description of non-compliance

Outline the evidence obtained for non-compliance

Proposed corrective action

Responsible Person	Completion Date

Sign off - corrective or preventative action is complete and dealt with by responsible person	
Name:	
Date:	
Signature:	

Complaints Register

Date: _____ Complaint no. _____

Time: _____

Complainant Details (If Provided):

_____

_____

How was complaint lodged:

_____

_____

Nature and details of complaint:

_____

_____

_____

_____

Cause:

_____

_____

_____

Corrective action (If none, state why):

_____

_____

Follow up contact required?

_____

_____

Weather conditions:
Wind speed _____ Wind Direction _____
Rainfall past 24 hours (mm) _____

Signature: _____ Name: _____

Contaminated Solid Waste Removal Record

Date	Estimated Quantity of Solid Waste (m^3)	Removed By?	Disposal Facility Name and Receipt Number

Appendix G. Safety Data Sheets (SDS)

SAFETY DATA SHEET

SHELL DIESEL

Infosafe No.: LQ4CF
ISSUED Date : 18/07/2016
ISSUED by: VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD)

1. IDENTIFICATION

GHS Product Identifier
SHELL DIESEL

Company Name
VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD) (ABN 46 004 610 459)

Address
Level 16, 720 Bourke Street Docklands
Victoria 3008 Australia

Telephone/Fax Number
Tel: +61 (0)3 8823 4444
Fax: +61 (0)3 8823 4800

Emergency phone number
1800 651 818 (Australia) / Poisons Information Centre:13 11 26 (Australia)

Recommended use of the chemical and restrictions on use
Fuel for on-road diesel-powered engines, in marine diesel engines, boilers, gas turbines and other combustion equipment. This product is intended for use in closed systems only.

Other Names

Name	Product Code
DIESOLINE B5	
DIESOLINE	
SHELL DIESEL EXTRA	
SHELL DIESEL EXTRA B5	
SHELL V POWER DIESEL B5	
SHELL ALPINE DIESEL EXTRA	
AUTOMOTIVE DIESEL FUEL	
SHELL V POWER ALPINE DIESEL	
SHELL EROMANGA DIESEL	
SHELL MARINE DIESEL	
SHELL DIESOLINE 10	
SHELL V POWER DIESEL	
SHELL MARINE GAS OIL	

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Aspiration Hazard: Category 1

Carcinogenicity: Category 2

Flammable Liquids: Category 4

Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2

Signal Word (s)

DANGER

Hazard Statement (s)

AUH066 Repeated exposure may cause skin dryness or cracking.

H227 Combustible liquid.

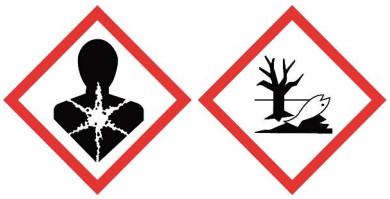
H304 May be fatal if swallowed and enters airways.

H351 Suspected of causing cancer.

H411 Toxic to aquatic life with long lasting effects.

Pictogram (s)

Health hazard,Environment



Precautionary statement – Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

Precautionary statement – Response

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P331 Do NOT induce vomiting.

P370+P378 In case of fire: Use foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only for extinction.

P391 Collect spillage.

Precautionary statement – Storage

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Name	CAS	Proportion
Fuels, diesel	68334- 30- 5	95- 100 %
Fatty acids, vegetable oil, methyl esters	68990- 52- 3	0- 5 %

Preparation Description
Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v. May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present.

4. FIRST-AID MEASURES

Inhalation
If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.

Ingestion
Do NOT induce vomiting. Wash out mouth and lips with water. Where vomiting occurs naturally have affected person place head below hip level in order to reduce risk of aspiration. Seek immediate medical attention.

Skin
Remove all contaminated clothing immediately. Wash affected area thoroughly with soap and water. Wash contaminated clothing before reuse or discard. Seek medical attention.

Eye contact
If in eyes, hold eyelids apart and flush the eyes continuously with running water. Remove contact lenses. Continue flushing for several minutes until all contaminants are washed out completely. If symptoms develop and/or persist seek medical attention.

First Aid Facilities
Eyewash and normal washroom facilities.

Advice to Doctor
Treat symptomatically.

Other Information
For advice in an emergency, contact a Poisons Information Centre or a doctor at once. (131 126)

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media
Do not use water in a jet.

Hazards from Combustion Products
Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide, oxides of sulphur and oxides of nitrogen.

Specific Hazards Arising From The Chemical
This product will burn if exposed to fire.

Decomposition Temperature
Not available

Precautions in connection with Fire
Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. Water spray may be used to cool down heat-exposed containers. Fight fire from safe location. This product should be prevented from entering drains and watercourses.

Other Information
Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures
Wear appropriate personal protective equipment and clothing to prevent exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert absorbent, non combustible material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national

regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid inhalation of vapours and mists, and skin or eye contact. Use only in a well ventilated area. Keep containers sealed when not in use. Prevent the build up of mists or vapours in the work atmosphere. Do not use near ignition sources. Do not pressurise, cut, heat or weld containers as they may contain hazardous residues. Maintain high standards of personal hygiene by washing hands prior to eating, drinking, smoking or using toilet facilities. Avoid exposure. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Keep containers closed when not in use, securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Take precautions against static electricity discharges. Use proper grounding procedures. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS1940 - The storage and handling of flammable and combustible liquids.

Storage Regulations

Classified as a Class C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS1940.

Recommended Materials

For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Materials

Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene.; However, some may be suitable for glove materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values

No exposure standards have been established for the mixture. However, over-exposure to some chemicals may result in enhancement of pre-existing adverse medical conditions and/or allergic reactions and should be kept to the least possible levels.

Biological Limit Values

No biological limits allocated.

Appropriate Engineering Controls

This substance is hazardous and should be used with a local exhaust ventilation system, drawing vapours away from workers' breathing zone. A flame-proof exhaust ventilation system is required. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn. Refer to relevant regulations for further information concerning ventilation requirements.

Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 60079.10.1:2009 Explosive atmospheres - Classification of areas - Explosive gas atmospheres, for further information concerning ventilation requirements.

Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Eye Protection

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

Hand Protection

Wear gloves of impervious material such as nitrile gloves (Breakthrough time of > 240 minutes), neoprene, PVC gloves. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.
Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

Body Protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Other Information

No exposure standards have been established for this material, however, the TWA exposure standards for refined mineral oil mist is 5 mg/m³. As with all chemicals, exposure should be kept to the lowest possible levels.
TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.
Source: Safe Work Australia

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Liquid

Appearance
Colourless to straw liquid.

Colour
Colourless to straw

Odour
May contain a reodorant

Decomposition Temperature
Not available

Melting Point
Not available

Freezing Point
Not available

Boiling Point
170 - 390 °C

Solubility in Water
Not available

Specific Gravity
0.82 - 0.85 gm/cm at 15°C

pH
Not available

Vapour Pressure
< 1 hPa at 20 °C

Vapour Density (Air=1)
Not available

Evaporation Rate
Not available

Odour Threshold
Not available

Viscosity
Not available

Partition Coefficient: n-octanol/water
3 - 6

Density
Typical 0.84 g/cm³ at 15 °C

Flash Point
Typical 63 °C (ASTM D-93 / PMCC)

Flammability
Combustible

Auto-Ignition Temperature
> 220 °C

Flammable Limits - Lower
1 %(V)

Flammable Limits - Upper
6 %(V)

Kinematic Viscosity
2 - 4.5 mm^2/s at 40 °C

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions of storage and handling.

Reactivity and Stability
Reacts with incompatible materials.

Conditions to Avoid
Avoid heat, sparks, open flames and other ignition sources.

Incompatible materials
Strong oxidising agents.

Hazardous Decomposition Products
Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide and oxides of nitrogen.

Possibility of hazardous reactions
Not available

Hazardous Polymerization
Not available

11. TOXICOLOGICAL INFORMATION

Toxicology Information
The available toxicity data for material given below.

Acute Toxicity - Oral
LD50:(Rat): >2000 mg/kg

Acute Toxicity - Inhalation
LD50:(Rat): >5 mg/l / 4 h

Acute Toxicity - Dermal
LD50:(Rabbit): >2000 mg/kg

Ingestion
May be fatal if swallowed and enters airways. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause severe pulmonary injury that may lead to death. May cause irritation to the mouth, throat, esophagus and stomach with symptoms of nausea, abdominal discomfort, vomiting and diarrhoea.

Inhalation
Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.

Skin
Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.

Eye
May be irritating to eyes. The symptoms may include redness, itching and tearing.

Respiratory sensitisation
Not expected to be a respiratory sensitiser.

Skin Sensitisation
Not expected to be a skin sensitiser.

Germ cell mutagenicity
Not considered to be a mutagenic hazard.

Carcinogenicity
Suspected of causing cancer. Classified as a suspected human carcinogen.

Reproductive Toxicity
Not considered to be toxic to reproduction.

STOT-single exposure
Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure
Not expected to cause toxicity to a specific target organ.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Other Information
Repeated Dose Toxicity: Kidney: Caused kidney effects in male rats which are not considered relevant to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic life with long lasting effects.

Persistence and degradability
Major constituents are expected to be inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.

Mobility
Floats on water. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.

Bioaccumulative Potential
Contains constituents with the potential to bioaccumulate.

Other Adverse Effects
Films formed on water may affect oxygen transfer and damage organisms.

Environmental Protection
Do not discharge this material into waterways, drains and sewers.

Acute Toxicity - Other Organisms
LL/EL/IL50:(Aquatic organisms): 1-10 mg/l

13. DISPOSAL CONSIDERATIONS

Disposal considerations
Dispose of waste according to applicable local and national regulations. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes including emptied containers are controlled wastes and should be disposed of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

Transport Information
Road and Rail Transport (ADG Code):
Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)
This product meet the requirement of special provision AU01.

Note: Special Provision AU01:
Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in:

packagings that do not incorporate a receptacle exceeding 500 kg(L); or
IBCs

This product is not classified as Dangerous Goods UN number 1202.

Note: Special Provision AU02:
GAS OIL or DIESEL OIL or HEATING OIL, LIGHT or PETROLEUM DISTILLATE is not subject to this Code if it does not meet the criteria of Chapter 2.3 for assignment to Class 3; i.e. if the flash point is more than 60 oC and the substance is not offered for transport at a temperature above its flash point. Such substances will normally be C1 combustible liquids which are not classified as dangerous goods for transport purposes. However, the presence of a C1 combustible liquid in one or more compartments of a tank vehicle or portable tank transporting other refined petroleum products must be considered when determining the application of UN Number 1270 in accordance with 3.2.5.4 and 5.3.1.3.3.

Marine Transport (IMO/IMDG):
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.
Class/Division: 9
UN No: 3082
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS: FUEL, DIESEL)(MARINE POLLUTANT)
Packing Group: III
EMS : F-A, S-F
Special Provisions: 274, 335, 969

Air Transport (ICAO/IATA):
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.
Class/Division:
UN No: 3082
Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Contains: Fuel, diesel)
Packing Group: III
Packaging Instructions (passenger & cargo): 964
Packaging Instructions (cargo only): 964
Hazard Label: Miscellaneous
Special Provisions: A97, A158, A197

U.N. Number
None Allocated

UN proper shipping name
None Allocated

Transport hazard class(es)
None Allocated

IMDG Marine pollutant
Yes

Transport in Bulk
Not available

Special Precautions for User
Not available

Other Information
This product is classified as Oils under MARPOL Annex I. MARPOL Annex I rules apply for bulk shipments by sea.

15. REGULATORY INFORMATION

Regulatory information
Classified as Hazardous according to the Globally Harmonised System of classification and labelling of chemicals (GHS) including Work, Health and Safety regulations, Australia.

SUSMP Schedule: Not scheduled. When packed in containers having capacity of greater than 20 litres.

SAFETY DATA SHEET

Castrol RX Super 15W-40

Section 1. Identification

GHS product identifier Castrol RX Super 15W-40

Product code 450407-AU22

SDS no. 450407

Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/ mixture Engine Oils.
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

Manufacturer

Supplier

Castrol Australia Pty Ltd
Level 17, 717 Bourke Street
Docklands, Victoria 3008
ABN 87 008 459 407
www.castrol.com.au

Tel: +61 (03) 9268 4111
Fax: +61 (03) 9268 3321

EMERGENCY TELEPHONE NUMBER +61 2801 44558 (or 1800 14 14 74 within Australia)

OTHER PRODUCT INFORMATION Technical Advice Helpline Number: 1300 557 998

Section 2. Hazard(s) identification

Classification of the substance or mixture Not classified.

GHS label elements

Signal word No signal word.

Hazard statements No known significant effects or critical hazards.

Precautionary statements

General P103 - Read label before use.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

Prevention Not applicable.

Response Not applicable.

Storage Not applicable.

Disposal Not applicable.

Supplemental label elements Not applicable.

Other hazards which do not result in classification Defatting to the skin.
USED ENGINE OILS
Used engine oil may contain hazardous components which have the potential to cause skin cancer.
See Toxicological Information, section 11 of this Safety Data Sheet.

Section 3. Composition and ingredient information

Substance/mixture Mixture

Highly refined base oil (IP 346 DMSO extract < 3%). Proprietary performance additives.

Ingredient name	% (w/w)	CAS number
Base oil - unspecified	≥75 - ≤90	Varies - See Key to abbreviations
Distillates (petroleum), solvent-dewaxed heavy paraffinic	≤5	64742-65-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Skin contact Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects.

Specific treatments No specific treatment.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet.

Specific hazards arising from the chemical In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products Combustion products may include the following:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Not suitable

Prolonged exposure to elevated temperature

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Base oil - unspecified	**Safe Work Australia (Australia).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 5/1995 Form: Mist
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Safe Work Australia (Australia).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 5/1995 Form: Mist

Section 8. Exposure controls and personal protection

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety glasses with side shields.

Skin protection

Hand protection

Wear protective gloves if prolonged or repeated contact is likely. Wear chemical resistant gloves. Recommended: Nitrile gloves. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Skin protection

Use of protective clothing is good industrial practice.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Refer to standards:

Respiratory protection:AS/NZS 1715 and AS/NZS 1716
Gloves:AS/NZS 2161.1
Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Amber.
Odour	Mild
Odour threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	Not available.
Flash point	Open cup: 210°C (410°F) [Cleveland.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	<1000 kg/m³ (<1 g/cm³) at 15°C
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Kinematic: 125 mm^2/s (125 cSt) at 40°C Kinematic: 15.7 to 16.3 mm^2/s (15.7 to 16.3 cSt) at 100°C

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame).
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Aspiration hazard

Name	Result
Distillates (petroleum), solvent-dewaxed heavy paraffinic	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure	Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact	No known significant effects or critical hazards.
Inhalation	Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure.

Section 11. Toxicological information

Skin contact Defatting to the skin. May cause skin dryness and irritation.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Inhalation No specific data.

Skin contact Adverse symptoms may include the following:
irritation
dryness
cracking

Ingestion No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

General USED ENGINE OILS
Combustion products resulting from the operation of internal combustion engines contaminate engine oils during use. Used engine oil may contain hazardous components which have the potential to cause skin cancer. Frequent or prolonged contact with all types and makes of used engine oil must therefore be avoided and a high standard of personal hygiene maintained.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Section 12. Ecological information

Persistence and degradability

Expected to be biodegradable.

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Special Precautions for Landfill or Incineration

No additional special precautions identified.

Section 14. Transport information

	ADG	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

Special precautions for user

Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not regulated.

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International lists

National inventory

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Australia inventory (AICS)

All components are listed or exempted.

Canada inventory

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

Japan inventory (ENCS)

All components are listed or exempted.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

Section 15. Regulatory information

Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.
United States inventory (TSCA 8b)	All components are listed or exempted.

Section 16. Any other relevant information

History

Date of printing	17/08/2017
Date of issue/Date of revision	17/08/2017
Date of previous issue	27/04/2017
Version	2.01
Prepared by	Product Stewardship

Key to abbreviations

ADG = Australian Dangerous Goods
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
NOHSC = National Occupational Health and Safety Commission
STEL = Short term exposure limit
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations
TWA = Time weighted average
VOC = Volatile Organic Compound
SADT = Self-Accelerating Decomposition Temperature
Varies = may contain one or more of the following 101316-69-2, 101316-70-5, 101316-71-6, 101316-72-7, 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64741-97-5, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-64-9, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1, 74869-22-0, 90669-74-2

Procedure used to derive the classification

Classification	Justification
Not classified.	

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions

Section 16. Any other relevant information

that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

Revision: 17/11/16

SAFETY DATA SHEET

1. Product and Company Identification

Company Name:	Sierra (Aust) Pty Ltd 17 Delta Street, Geebung QLD 4034 sierra@optusnet.com.au	Ph	(07) 3216 5099
Emergency Contact:	Sierra **(07) 3216 5099**	Poisons Information Centre **13 11 26**	

Product Name: **Hydraulic Oils 68**
Product Code: 4883, 4884, 4886
Intended Use: Hydrailic Fluid, lubricant
Chemical Nature: Liquid

2. Hazards Identification

Not classified as Hazardous according to Safe Work Australia and GHS

GHS Signal Word: None

GHS Label Elements: None

No Hazard Statements have been provided.

Precautionary Statements General:

P101 If medical advice is needed, have product container or label at hand
P102 Keep out of reach of children
P103 Read label before use

3. Composition / Information on Ingredients

Substance / Mixture: Mixture

Chemical Name	Cas Number	% In Product
Distillates hydrotreated heavy paraffinic; Baseoil - unspecified	64742-54-7	>80%

4. First aid Measures

Inhalation
Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Skin contact
Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Eye contact
Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion
First aid is normally not required. Seek medical attention if discomfort occurs.

5. Fire Fighting Measures

Suitable extinguishing equipment
In case of fire use dry chemical, foam or carbon dioxide fire extinguisher. DO NOT use water.

Specific hazards arising from the chemical
Combustion products may contain carbon monoxide and carbon dioxide and smoke. Closed containers may explode when exposed to extreme heat. Containers close to fire should be removed if safe to do so. Use water spray to cool fire exposed containers.

Special protective equipment and precautions for firefighters
Wear Safe Work Australia approved self-contained breathing apparatus and full protective clothing.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
No action should be taken which might involve personal risk or without suitable training. Use Safe Work Australia approved respiratory protection, chemical resistant gloves, protective clothing and safety boots.
Evacuate all non-essential personnel from affected area. Do not breathe vapours. Ensure adequate ventilation. Extinguish all sources of ignition. Avoid sparks and open flames. No smoking.

Environmental precautions
In the event of a major spill, prevent spillage from entering drains or water courses, basements or confined spaces. Dyke far ahead of liquid spill for later recovery and disposal.

Methods and materials for Containment and cleaning up
Stop leak if safe to do so and absorb spill with sand, earth, vermiculite or some other absorbent material.
Collect the spilled material and place into a suitable container for disposal according to local regulations, preferably using a licensed waste disposal contractor.

7. Handling and Storage

Precautions for safe handling
Use appropriate personal protective equipment – see Section 8. Use safe work processes to avoid eye or skin contact and inhalation of vapours. Use only in well ventilated areas.
Do not store in contact with food, beverages or tobacco products. Eating drinking or smoking in areas where this product is stored or processed should be prohibited. Always wash thoroughly after handling. Wash contaminated clothing and other protective equipment before storage or reuse. Provide eyewash fountains and safety showers in close proximity to points of use.

Conditions for safe storage
Store in accordance with local regulations in a cool, dry and well ventilated area. Store in original container tightly closed and away from incompatible materials (see Section 10). Check regularly for leaks and physical damage. Opened containers should be carefully resealed and stored in an upright position. Empty containers may contain residues and be dangerous. Store and use only in equipment designed for use with this type of product. Use appropriate bunding or containment to prevent environmental contamination.

8. Exposure Controls and Personal Protection

Exposure control measures
Mineral Oil Mist TWA 5mg/m^3 Safe Work Australia

Engineering controls
Engineering controls should be in place as a primary source of protection over the use of Personal Protective Equipment. Ensure adequate ventilation of the working area or provide exhaust ventilation to keep the relevant airborne concentrations below acceptable levels.

Individual protection measures
Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.
Eye and face protection: If contact is likely, safety glasses with side shields are recommended.
Skin protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The

types of gloves to be considered for this material include chemical resistant, nitrile or viton.
Long sleeve and long pants will provide protection.
Respiratory protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. A particulate type respirator should be considered for this material. No special requirements under ordinary conditions of use and with adequate ventilation.
For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

9. Physical and Chemical Properties

Appearance: *Form*	Viscous liquid
Colour	Clear, pale straw
Odour	Mild oil
Odour Threshold	Not determined
pH-Value	Not applicable
Melting point/Melting range	Not applicable
Initial Boiling Point/Boiling Range	> 280 ℃
Flash Point	> 210 ℃ (ASTM D-93)
Flammability	Combustible Liquid Class 2
Auto-ignition Temperature	>320 ℃
Decomposition Temperature	No information available
Explosion Limits: *Lower*	1 Vol % (typical)
Upper	10 Vol % (typical)
Vapour Pressure at 20 ℃	< 0.5 Pa
Relative Density at 15 ℃	0.86-0.92
Vapour Density	>1
Evaporation Rate	Not applicable
Solubility in Water	Negligible
Viscosity at 40 ℃	~68 cSt
Viscosity at 100 ℃	~8.8 cSt

10. Stability and Reactivity

Reactivity: Will not occur.

Chemical stability: Stable at ambient temperature and under normal conditions of use.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Excessive heat. High energy sources of ignition.

Incompatible materials: Strong oxidisers.

Hazardous decomposition products: Material does not decompose at ambient temperatures.

11. Toxicological Information

Acute Toxicity: LD50/LC50 values relevant	
Oral LD 50	Not available
Dermal LD50	Not available
Inhalation LC50	Not available
Acute Health Effects	
Inhalation	No adverse health effects expected
Skin	No irritating effect
Eye	No irritating effect
Ingestion	No adverse health effects expected
Skin Corrosion / Irritation	Based on classification principles, the classification criteria are not met
Serious Eye Damage / Irritation	Based on classification principles, the classification criteria are not met

Respiratory or Skin Sensitisation	Based on classification principles, the classification criteria are not met
Germ Cell Mutagenicity	Based on classification principles, the classification criteria are not met
Carcinogenicity	Mineral oils, highly-refined are classified by IARC as Group 3 – not classifiable as to its carcinogenicity to humans
Reproductive Toxicity	Based on classification principles, the classification criteria are not met
Specific Target Organ Toxicity (STOT) -	
Single Exposure	Based on classification principles, the classification criteria are not met
Repeated Exposure	Based on classification principles, the classification criteria are not met
Aspiration Hazard	Based on classification principles, the classification criteria are not met
Chronic Health Effects	No information available
Existing Conditions Aggravated by Exposure	No information available

12. Ecological Information

Ecotoxicity: Expected to be harmful to aquatic organisms.

Persistence and degradability: Base Oil component is expected to be inherently biodegradable.
Additive components show moderate biodegradation.

Bioaccumulative Potential: Limited potential for bioaccumulation.

Mobility in soil: Low solubility and miscibility. Floats on water. Expected to migrate from water to land.

13 Disposal Considerations

Disposal method and Containers
Dispose according to applicable local and state government regulations.
Empty containers may contain residue and can be dangerous. Packaging should be recycled and disposal via incineration or landfill should only be considered when recycling not possible. Do not pressurize, cut, weld, braze, solder, drill grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death.

Special precautions for incineration or landfill
Consult your state Land Waste Management Authority for more information. Product may be suitable for burning in an enclosed controlled burner for fuel value or disposal by incineration at very high temperatures.

14. Transport Information

	Australian Dangerous Goods (ADG)	**International Maritime Dangerous Goods (IMDG)**	**International Air Transport Association (IATA)**
UN Number	Not regulated	Not regulated	Not regulated
UN Proper Shipping Name	n/a	n/a	n/a
Dangerous Goods Class	n/a	n/a	n/a
Packing Group	n/a	n/a	n/a

15. Regulatory Information

Standard for the Uniform Scheduling of Drugs and Poisons (SUSMP) – Poison Schedule
Not scheduled
Australian Inventory of Chemical Substances (AICS)
All components are listed or exempt

16. Other Information

This SDS contains only safety related information. For other information see product literature.

Every endeavor has been made to ensure that the information contained in this publication is reliable and offered in good faith. It is meant to describe the safety requirements of our products and should not be construed as guaranteeing specific properties. Customers are encouraged to conduct their own tests as end user suitability of the product for particular uses is beyond our control. The information is not intended as an inducement to bargain and no warranty expressed or implied is made as to its accuracy, reliability or completeness. Sierra (Aust) Pty Ltd accepts no liability for loss, injury or damage arising from reliance upon the information contained in this data sheet except in conjunction with the proper use of the product to which it refers. Due care should be taken that the use and disposal of this product is in compliance with appropriate Federal, State and Local Government regulations.

SAFETY DATA SHEET
Multi-Purpose Grease
According to Regulation (EC) No 1907/2006, Annex II, as amended.Commission Regulation (EU) No 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Multi-Purpose Grease

Product number MPG, EMPG50T, ZE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Lubricant.

Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier

ELECTROLUBE. A division of HK WENTWORTH LTD
ASHBY PARK, COALFIELD WAY,
ASHBY DE LA ZOUCH, LEICESTERSHIRE LE65 1JR
UNITED KINGDOM
+44 (0)1530 419600
+44 (0)1530 416640
info@hkw.co.uk

1.4. Emergency telephone number

Emergency telephone +44 1865 407333

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Not Classified

Environmental hazards Not Classified

2.2. Label elements

Hazard statements NC Not Classified

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Composition comments None of the ingredients are required to be listed.

SECTION 4: First aid measures

4.1. Description of first aid measures

Multi-Purpose Grease

General information	Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.
Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Ingestion	Rinse mouth thoroughly with water. Remove any dentures. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Skin contact	Remove affected person from source of contamination. Rinse immediately with plenty of water.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

4.2. Most important symptoms and effects, both acute and delayed

General information	See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	May cause temporary eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.
Specific treatments	No special treatment required.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Containers can burst violently or explode when heated, due to excessive pressure build-up.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

5.3. Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak.

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Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage.

6.2. Environmental precautions

Environmental precautions	Avoid discharge to the aquatic environment. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Reuse or recycle products wherever possible. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

Reference to other sections	For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid the formation of mists.
Advice on general occupational hygiene	Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store away from incompatible materials (see Section 10). Store in accordance with local regulations.
Storage class	Unspecified storage.

7.3. Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

Multi-Purpose Grease

8.1. Control parameters

8.2. Exposure controls

Protective equipment

Appropriate engineering controls	Provide adequate ventilation. Good general ventilation should be adequate to control worker exposure to airborne contaminants.
Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. The following protection should be worn: Chemical splash goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.
Other skin and body protection	Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.
Hygiene measures	Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke.
Respiratory protection	Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Provide adequate ventilation. Large Spillages: If ventilation is inadequate, suitable respiratory protection must be worn.
Environmental exposure controls	Not regarded as dangerous for the environment.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Grease.
Colour	Light brown.
Odour	Oil-like.
pH	Not available.
Melting point	Not available.
Initial boiling point and range	Not available.
Flash point	230°C/446°F COC (Cleveland open cup).
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.

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Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Bulk density	Not available.
Solubility(ies)	Not available.
Partition coefficient	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not considered to be explosive.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity See the other subsections of this section for further details.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions No potentially hazardous reactions known.

10.4. Conditions to avoid

Conditions to avoid There are no known conditions that are likely to result in a hazardous situation.

10.5. Incompatible materials

Materials to avoid No specific material or group of materials is likely to react with the product to produce a hazardous situation.

10.6. Hazardous decomposition products

Hazardous decomposition products Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects Not regarded as a health hazard under current legislation.

Acute toxicity - oral

Notes (oral LD_{50}) Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD_{50}) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

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Notes (inhalation LC_{50})	Based on available data the classification criteria are not met.

Skin corrosion/irritation

Animal data	Based on available data the classification criteria are not met.

Serious eye damage/irritation

Serious eye damage/irritation	Based on available data the classification criteria are not met.

Respiratory sensitisation

Respiratory sensitisation	Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation	Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro	Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity	Based on available data the classification criteria are not met.
IARC carcinogenicity	None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility	Based on available data the classification criteria are not met.
Reproductive toxicity - development	Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard	Based on available data the classification criteria are not met.

General information	No specific health hazards known. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	May cause temporary eye irritation.
Route of entry	Ingestion Inhalation Skin and/or eye contact
Target organs	No specific target organs known.

SECTION 12: Ecological Information

Ecotoxicity	Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Toxicity	Based on available data the classification criteria are not met.

Multi-Purpose Grease

12.2. Persistence and degradability

Persistence and degradability The degradability of the product is not known.

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not available.

12.4. Mobility in soil

Mobility No data available.

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

Disposal methods Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste packaging should be collected for reuse or recycling. Incineration or landfill should only be considered when recycling is not feasible. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of the local water authority.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

Transport labels
No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

Multi-Purpose Grease

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations Health and Safety at Work etc. Act 1974 (as amended).
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
EH40/2005 Workplace exposure limits.

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Commission Regulation (EU) No 2015/830 of 28 May 2015.
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

None of the ingredients are listed or exempt.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.
IMDG: International Maritime Dangerous Goods.
CAS: Chemical Abstracts Service.
ATE: Acute Toxicity Estimate.
LC_{50}: Lethal Concentration to 50 % of a test population.
LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).
EC_{50}: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: Very Persistent and Very Bioaccumulative.

Training advice Read and follow manufacturer's recommendations. Only trained personnel should use this material.

Issued by Bethan Massey

Revision date 18/01/2017

Revision 0

SDS number 845

Multi-Purpose Grease

SUSMP Schedule: S5. When packed in containers having capacity of less than 20 litres.

Poisons Schedule
S5

16. OTHER INFORMATION

Date of preparation or last revision of SDS
SDS Reviewed: July 2016
Supersedes: April 2015

References
- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

- Standard for the Uniform Scheduling of Medicines and Poisons.

- Australian Code for the Transport of Dangerous Goods by Road & Rail.

- Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

- Workplace exposure standards for airborne contaminants, Safe work Australia.

- American Conference of Industrial Hygienists (ACGIH).

- Globally Harmonised System of classification and labelling of chemicals.

END OF SDS

Appendix H. Water Monitoring Locations

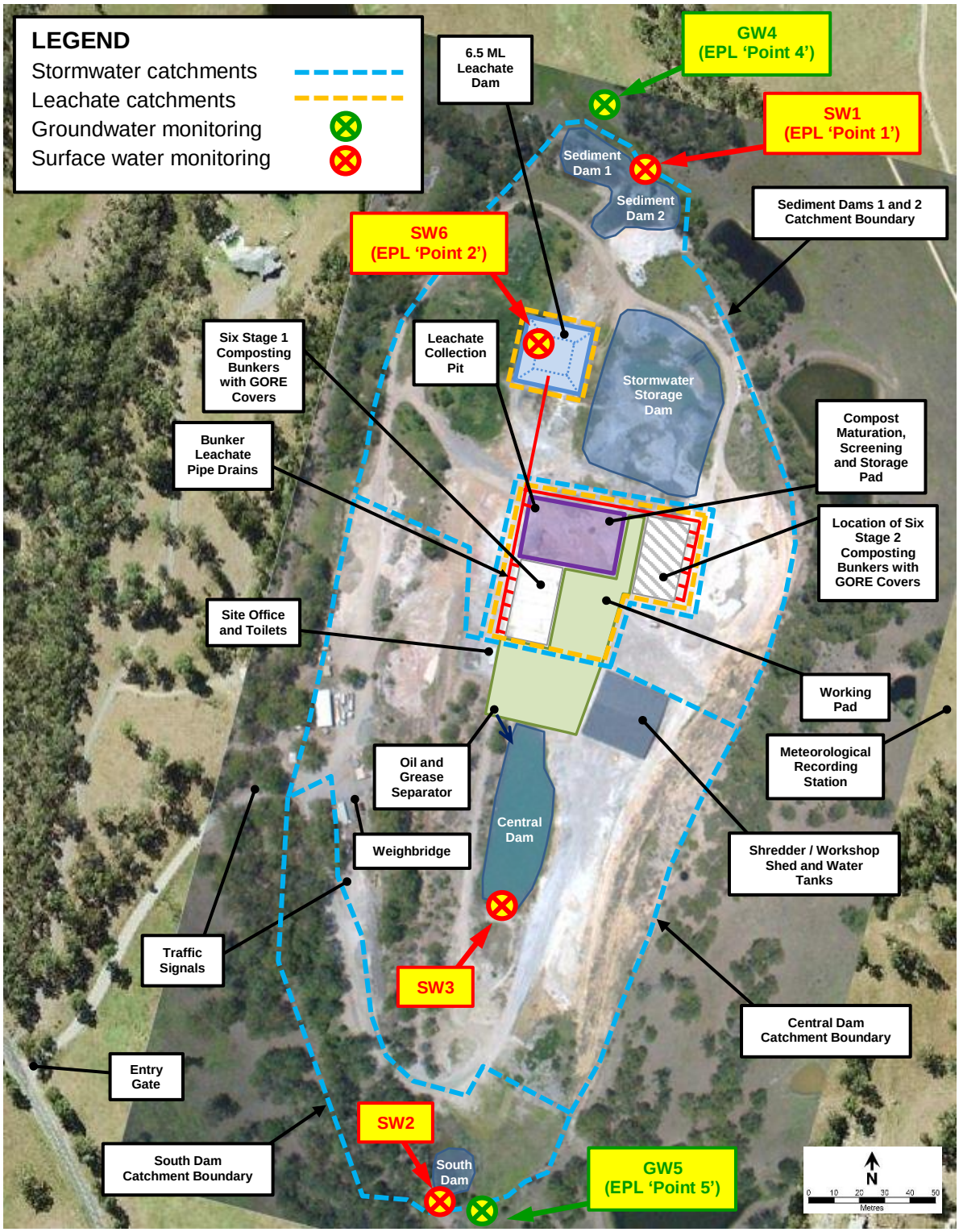

Figure H-1 – Water Monitoring Location Plan

Appendix B. Leachate management system design

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BRIEFING NOTE

Project	Anambah In-vessel Composting Facility
Subject	Leachate management system
Client	Ditton Properties Pty. Limited
Document Number	2059-1445
Document Status	FINAL for Environment Protection Licence Application v3.0
Date	03/04/2019

1. Background

Composting facilities in NSW are required to design and construct a leachate management system in compliance with *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). AK Environmental Pty. Limited has been engaged by Ditton Properties Pty. Limited (Ditton Properties) to design the Anambah In-vessel Composting Facility's (AICF) leachate barrier and containment systems, and to document the geotechnical compliance of constructed clay liner earthworks.

This Briefing Note forms part of the Operational Environmental Management Plan (OEMP) for the AICF.

2. Site Layout and Staging

A site layout is shown in Figure A-1 of Appendix A.

Development of the AICF facility will be staged as follows:

- Stage 1 (50% of maximum capacity) - green waste input of up to 20,000 t/a and compost production of up to 12,000 t/a; and
- Stage 2 (maximum capacity) - green waste input of up to 40,000 t/a and compost production of up to 24,000 t/a.

Stage 1 of the AICF development comprises six composting bunkers. When Stage 2 is constructed, the number of bunkers will double to 12 in total.

3. Compost Bunkers

The geometry of a windrow within each composting bunker is shown in Figure 1. Each of the composting bunkers has a concrete floor area of 200 m^2 (25 m x 8 m) and is fitted with a GORE cover to shed rainfall away from the composting windrow. Stage 1 consists of six bunkers and Stage 2 consists of 12 bunkers. Each bunker has a floor-inset air injection channel, which also acts as a collection drain for any direct *leachate* generated by the composting process.

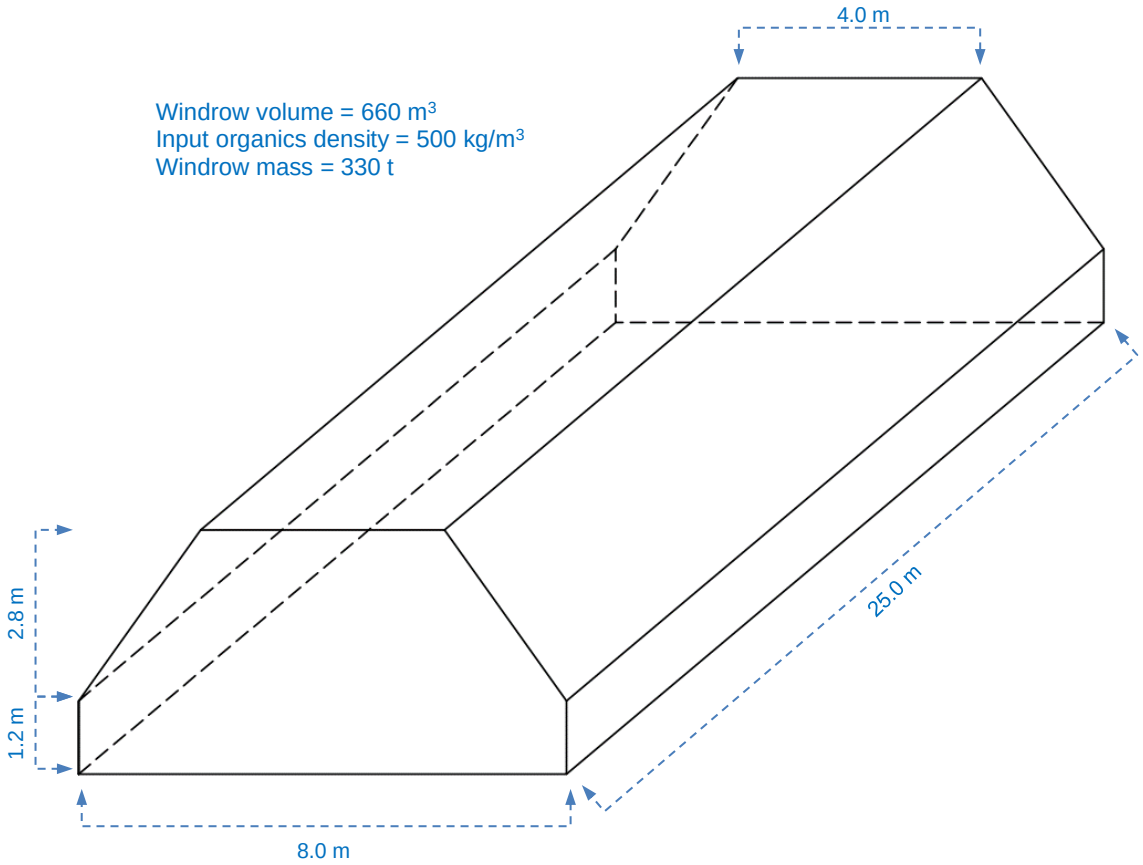

Figure 1 – Composting bunker windrow dimensions

4. Leachate Generation Areas

The composting process directly generates *leachate*. Stormwater runoff which has contacted any form of organic material is considered *contact stormwater*. Dilution by rainfall means that *contact stormwater* has significantly lower pollutant loads than direct compost *leachate*. Nonetheless, it is a requirement of NSW DEC (2004) that *contact stormwater* be managed in the same manner as *leachate* and must be considered for sizing of Leachate Dam.

As shown in Figure A-1 of Appendix A, there are two leachate generation catchments at the site. Note, the catchment boundaries apply to Stage 2, which includes the eastern bunkers. During Stage 1 this area will remain an extension of the working pad area with stormwater directed north to Stormwater Storage Dam.

The smaller leachate catchment consists only of the 1,600 m^2 area (40 m x 40 m square at top of bank) within Leachate Dam's 'turkey's nest' perimeter. All incident rainfall runoff

becomes additional dam storage and effectively contributes to *leachate* generation. External stormwater drainage is prevented from entry by the elevated top of bank structure.

The larger leachate catchment encompasses the composting bunkers (Stage 1 – 1,200 m^2; Stage 2 – 2,400 m^2), the compost maturation/screening/storage pad (1,350 m^2) and the northern portion of the working pad (2,000 m^2). Note, earthworks have ensured that portion of the working pad which is south of the Stage 1 bunkers also slopes south and directs any generated stormwater to Central Dam.

Stormwater generated at the uncovered compost maturation/screening/storage pad is *contact stormwater* due to the storage of compost in windrows.

Because loading/unloading of bunkers by front end loader may result in limited quantities of organic material spillage (spillage to be minimised and removed daily if occurs – see Section 4.3.3 of the OEMP for management actions), stormwater flowing on the northern portion of the working pad is deemed to be *contact stormwater*. The site layout configuration dictates that *clean stormwater* emanating from bunker GORE covers is directed to the northern portion of the working pad. This originally clean water then becomes *contact stormwater* and must also be considered for sizing of Leachate Dam.

All *contact stormwater* is ultimately directed to the leachate collection pit at the north west corner of the compost maturation/screening/storage pad, from which it is piped underground to Leachate Dam.

5. Design Requirements for the Protection of Waters

5.1 Working Surfaces

Compost storage areas, active composting surfaces, and associated access roads are required to be constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles.

No requirements exist in NSW DEC (2004) for achieving measurable geotechnical properties of working surfaces. Instead, the AICF's OEMP sets out inspection procedures which target the integrity of working surfaces (cracking/leakage potential, maintenance of all-weather access) and requires that maintenance actions be undertaken when working surfaces are found to be compromised.

To provide all-weather vehicular access, the AICF working pad and the compost maturation/screening/storage pad will both be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm. The stabilising component is a cement additive, which is mechanically blended through the clay-gravel component in a pugmill to achieve a uniformly mixed product.

5.2 Leachate Barrier System

To prevent the pollution by leachate of subsoil, groundwater and surface water bodies, material processing and storage areas of the AICF must have a leachate barrier system that forms a secure hydrological barrier between groundwater, soil and substrata and the composting and storage of organics.

Acceptable leachate barrier options are defined by NSW DEC (2004) as either:

1. *"a clay or modified soil liner consisting of at least 600 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-7}ms^{-1}$. Such liners should be placed in successive layers up to 300 mm uncompacted thickness. Each underlying layer should be scoured to prevent excessive permeability due to the lamination.*
2. *a natural geological barrier that is proven by competent geotechnical investigations to provide a secure barrier between the groundwater, soil and substrata and the composting organics, equivalent to the 600 mm recompacted clay in Option 1.*
3. *a concrete or asphalt cement pad of a thickness of at least 100 mm, designed to withstand the loads from all machines, vehicles and equipment that are required to operate the facility."*

The AICF site is underlain by geology which permits seepage (Coffey Partners International 1992), making the sediment dams a source of recharge to groundwater (OH Hydrology 2016). On this basis, the option of a natural geological barrier does not exist to protect leachate migration into groundwater.

Compost maturation/screening/storage pad and working pad

The AICF compost maturation/screening/storage pad and working pad will be:

- constructed with a minimum 600 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness;
- constructed by surface scouring underlying layers to avoid lamination of layers; and
- be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm.

Samples of three potential clay liner materials were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Each sample exhibited a permeability rate significantly lower than $10^{-7}ms^{-1}$ at ~95% compaction, and hence any of the three materials is suitable as a liner for the screening and compost storage pad in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the compost maturation/screening/storage pad and working pad, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

Composting bunkers

The floor of the composting bunkers is reinforced concrete, which has a minimum thickness exceeding 400 mm (see Figure C-1 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

Shredder/workshop shed

The floor of the shredder/workshop shed is reinforced concrete, which has a minimum thickness exceeding 200 mm (see Figure C-2 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

5.3 Leachate Collection System

To ensure that leachate is collected efficiently, thereby avoiding water pollution and/or odour problems, the following design requirements have been implemented in satisfaction of NSW DEC (2004):

- all solid waste management procedures are undertaken on purpose-built pads (see Sections 3 and 4 for details);
- composting bunkers have floor-inset collection drains and floor slope is to the back wall (west), preventing *leachate* breaching the open entry side (east);
- stormwater pit at north west corner of the compost maturation/screening/storage pad to capture *contact stormwater*; and
- *leachate* and *contact stormwater* are transferred via underground pipes which discharge directly to Leachate Dam (see Figure A-1 of Appendix A).

5.4 Leachate Storage System

Amendment of Approved Design

The approved leachate storage system comprises a 23,000 L (23 m^3) concrete leachate containment sump based on the design of OD Hydrology (2015). The sizing process only considered direct *leachate* generation from compost bunkers and neglected to account for generation of *contact stormwater*. A more rigorous design approach is presented here which conforms to requirements set out in NSW DEC (2004). The re-designed AICF leachate storage system ensures leachate is stored efficiently for further management, thereby minimising potential water pollution and/or odour generation.

Leachate Dam Capacity Sizing Guideline

Leachate Dam receives direct rainfall, *leachate* from composting bunkers and *contact stormwater* originating from composting bunkers, the compost maturation/screening/storage pad and the northern portion of the working pad. NSW DEC (2004) states that storage capacity control of open leachate dams must adhere to a two-fold requirement. The first is it *"must be capable of at least accepting the runoff or leachate generated by any 1-in-10-yr, 24-hr-period storm event"*, and the second is that it must operate *"without overflowing".*

At the location of the AICF (lat - 32.65, long 151.50), the 24 hr rainfall depth with a 1 in 10 yr recurrence is 151 mm (Bureau of Meteorology 2018). An open leachate dam sized by the design storm requirement which holds no storage at the commencement of this storm event will contain all generated stormwater/leachate. If a leachate dam holds any storage at the commencement of this storm event, or the storm event exceeds the design storm requirement, then stormwater/leachate would overflow from the dam.

To satisfy the additional 'no overflow' requirement, AK Environmental understands a management plan must be in place to intervene before overtopping occurs. Management actions may include drawing down leachate dam storage by pumping to tankers for offsite disposal.

Adopted Leachate Dam Sizing Approach

AK Environmental opines the combination of 'design storm sizing' and 'no spill' requirements will lead to environmental compliance uncertainty and safety concerns for the facility operator due to the following reasons:

- the frequency of leachate overflows is dependent on rainfall conditions which occur prior to large storm events, and these remain unknown because no attempt to understand rainfall sequences is accounted for by the design storm sizing approach; and
- the requirement to involve external contractors (e.g. tanker operators) during adverse weather characterised by high rainfall poses potential for high-risk working conditions for such contractors and also those staff who would be required to assist.

To address these concerns, it is instead proposed that sizing of the AICF Leachate Dam utilise a time-series modelling approach which incorporates the climatic history at the site, including all rainfall events experienced during recent decades.

For completeness, and to satisfy requirements of NSW DEC (2004), a comparison will also be made to the *1-in-10-yr, 24-hr-period* design storm capture requirement.

Water Balance Model

Leachate Dam capacity sizing is based on a time-series of inputs (*leachate* and rainfall-derived *contact stormwater*) and outputs (*leachate* reuse for composting pile moisture control and dam surface evaporation). This approach is considered more rigorous than applying design storm criteria as it employs meteorological understanding, and ultimately provides for a higher degree of environmental protection.

Separate water balance models were required for the Stage 1 and Stage 2 processing scenarios. Stage 2 requires twice the number of bunkers and twice the quantity of recycled leachate for moisture control of composting.

The water balance model parameters are outlined as follows and differences are noted between Stage 1 and Stage 2 process parameterisation:

- simulation period of 38 full calendar years (1 January 1980 to 31 December 2017) which significantly exceeds the nominal 10 year recurrence interval in NSW DEC (2004);
- daily totals of rainfall and Morton's evaporation over shallow lakes (Morton 1983) derived from QLD DSITI (2018) data drill for the site location with latitude -32.65 degrees and longitude 151.50 degrees (see monthly averages in Figure D-1 of Appendix D);
- assumed nominal 2,000 L/day and 4,000 L/day leachate generated by Stage 1 and Stage 2 covered composting bunkers, respectively (based on experience of GORE system engineer that leachate generation is negligible under Australian conditions [G. Hemm pers. comm. 27 August 2018]);
- total *contact stormwater* catchment area of 4,550 m^2 at Stage 1 with 6 bunkers (or 5,750 m^2 at Stage 2 with 12 bunkers) consisting of:
    - 1,200 m^2 of Stage 1 bunkers (or 2,400 m^2 of Stage 2 bunkers)
    - 1,350 m^2 at the uncovered compost maturation/screening/storage pad
    - 2,000 m^2 at the northern portion of the working pad
- Leachate Dam parameters (see Figure 2):
    - square floor (20 m x 20 m)
    - internal 35° batter slope
    - assume no infiltration loss through clay liner
    - open water evaporation assumed equal to depth of Morton's evaporation over shallow lakes
    - nominal initial starting leachate volume of 0.2 ML

- runoff coefficients
    - bunker GORE covers – 1.0 or 100%
    - compost maturation/screening/storage pad - 0.7 or 70% (estimate based on Wilson *et al.* (2014) who found an average of 68% of rainfall incident on a saturated compost windrow will eventually become runoff)
    - internal Leachate Dam batters - 1.0 or 100% (includes open water surface)
    - northern portion of the working pad - 0.9 or 90% applicable to hardstand surface
- average leachate reuse rate of 15,700 L/day for moisture control of in-bunker composting during Stage 1 and 31,400 L/day during Stage 2, based on:
    - 6 active composting bunkers during Stage 1 and 12 active composting bunkers during Stage 2
    - composting batch period of 6 weeks
    - composting windrows as per Figure 1 which equates to a solid waste batch mass of 330 tonnes[1] (mean solid waste density 500 kg/m^3)
    - average batch moisture addition requirement of one third of mass (110 m^3)

It is noted open-water evaporation from the Leachate Pond is assumed equal to 100% of the Morton's shallow lake evaporation rate. This is considered a conservative approach (leading to a larger Leachate Dam volume requirement) because evaporation from the surface of ponds is known to be higher than for small lakes due to highest evaporation rates occurring near waterbody edges (Morton 1983).

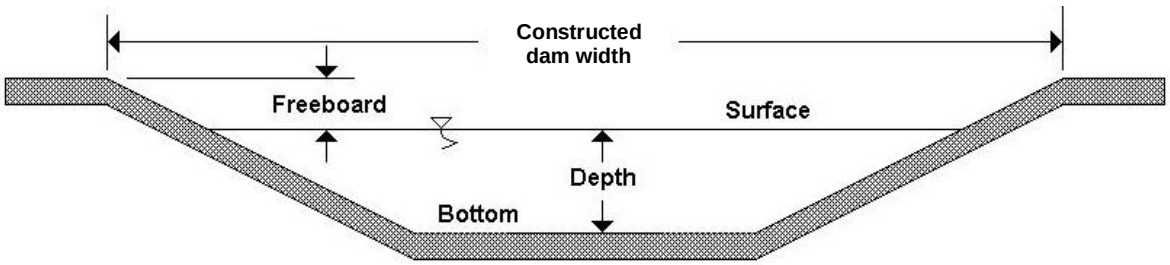

Figure 2 – Leachate Dam cross-section schematic

Leachate Dam Volume Estimates

Time series' of Leachate Dam holding volumes for Stage 1 and Stage 2 developments are shown in Figures D-2 and D-3 in Appendix D, respectively. To contain all inflows during the 38 years modelling period, a Leachate Dam capacity of 4,110 m^3 (4.1 ML) is required during Stage 1 and 2,910 m^3 (2.9 ML) is required during Stage 2. Capacity requirement is larger for the Stage 1 development scenario (6 composting bunkers) due to the increase of leachate reuse in Stage 2 (increased water demand for moisture conditioning of organics across 12 composting bunkers) exceeding the increase in *contact stormwater* generation afforded by the bunkers.

[1] Stage 1 – 6 weeks batch period and 330 t per batch with 6 bunkers equates to 17,200 t/a.
Stage 2 – 6 weeks batch period and 330 t per batch with 12 bunkers equates to 34,400 t/a.
These throughputs are marginally lower than the Stage 1 and Stage 2 maximum allowable capacities of 20,000 t/a and 40,000 t/a, respectively, to account for potential fluctuations in solid waste density.
Use of the lower throughputs in the water balance model is conservative due to lowering of demand for reuse of leachate for batch moisture addition. This in turn leads to a larger leachate dam volume requirement.

Applying the same runoff coefficients used in the water balance model to the 1 in 10 yr 24 hr design storm with a total rainfall depth of 151 mm determines that Leachate Dam capacity requirements for Stages 1 and 2 are 600 m^3 (0.60 ML) and 780 m^3 (0.78 ML), respectively.

The Leachate Dam capacity estimates derived by the water balance method are significantly larger than those calculated using the NSW DEC (2004) design storm method. This demonstrates the elevated environmental risk of the latter method because it offers no insight to a facility manager regarding the potential magnitude of any spill event, and may instead lead to implementation of unsafe management actions by staff and contractors. Furthermore, the design storm method predicts a larger Leachate Dam is required for the Stage 2 development based primarily on the larger *contact stormwater* catchment footprint. The water balance estimates a larger capacity requirement for Stage 1 development, which clearly demonstrates that reuse of leachate at AICF for moisture conditioning of bunkers (twice the volume used for Stage 2) is more influential on Leachate Dam sizing that catchment area.

It is also noted the simulation period included five storm events which exceeded the 151 mm design 24 hr rainfall depth advocated by NSW DEC (2004) (see Figure D-4 in Appendix D). A Leachate Dam volume of 4.1 ML was modelled to contain all leachate generated during the 38 yr period. This capacity is adopted as the minimum requirement for the AICF Leachate Dam.

Constructed Leachate Dam Capacity

Due to the post-quarry landform at the site, the location of Leachate Dam (see Figure A-1 of Appendix A) would require in-filling to reduce the capacity of the existing void. Ditton Properties has instead decided to enlarge Leachate Dam to 6.5 ML to match the void extent. The dam will be shaped as an inverted truncated square pyramid with 20 m floor edges, 40 m sides at top of bank and 7.0 m depth to floor. At nearly an order-of-magnitude larger than the design storm requirement and 70% more capacity than the water balance-based requirement, it is evident this storage provides an extremely high degree of environmental protection to local groundwater and surface waters.

At 4.1 ML storage capacity, Leachate Dam still has 2.4 ML of remaining storage (equates to 1.7 m of available freeboard). This in-built safety factor against overtopping negates the need for a spillway. To add an additional level of environmental protection, management actions are provided in Section 4.2.3 of the OEMP to option the availability of stand-by water tankers to drawdown Leachate Dam if the storage level exceeds 85% capacity. At this level 1.0 m of freeboard remains and a further 250 mm of rainfall, and subsequent runoff, is required to fill Leachate Dam.

Leachate Dam Monitoring Equipment

A high-level alarm system will be fitted to alert the AICF Onsite Manager when stored volume reaches 85% capacity.

Leachate Dam Clay Liner

To prevent leachate pollution by infiltration, Leachate Dam must have a liner that forms a secure hydrological barrier between groundwater, soil and substrata.

An acceptable leachate barrier option as defined by NSW DEC (2004) is a *"clay or modified soil liner consisting of at least 900 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-9}ms^{-1}$. Successive layers should be of compatible material, and each underlying layer should be scoured to prevent excessive permeability due to the lamination. The sides should generally have a slope not exceeding a gradient of one vertical to three horizontal, in*

order to allow suitable compaction of the barrier and to facilitate subsequent testing." The AICF Leachate Dam clay liner will be:

- constructed with a minimum 900 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring underlying layers to avoid lamination of layers.

As discussed in Section 4.2, three potential clay liner material samples were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Only the 'black' material sample achieved a permeability rate lower than $10^{-9}ms^{-1}$ at ~95% compaction, and hence it is a suitable liner for Leachate Dam in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the Leachate Dam clay liner, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

6. Summary

The AICF working surfaces, leachate barrier system, leachate collection system and leachate storage system have each been designed to comply with NSW DEC (2004).

Geotechnical testing of potential clay liners has identified suitable materials for use in construction. In-situ geotechnical testing of clay liner compaction will be required to verify construction in accordance with NSW DEC (2004) requirements.

Author Dr Andrew Krause
Principal Environmental Engineer
AK Environmental Pty. Limited

References

Bureau of Meteorology (2018), 2016 Rainfall IFD Data System - accessed 6 September 2018, <http://www.bom.gov.au/water/designRainfalls/revised-ifd>.

Coffey Partners International (1992), *Quarry Assessment – Gosforth*.

OD Hydrology (2015), *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment,* doc ref: 44001-rpt01d.docx.

OD Hydrology (2016), *Responses to request for additional information (Composting Facility, Anambah Road, Anambah,* NSW, doc ref: 44001-ltr01b.docx.

Morton, F.I. (1983), *Operational estimates of lake evaporation*, Journal of Hydrology, vol. 66, pp. 77-100.

NSW DEC (2004), *Environmental guidelines: composting and related organics processing facilities*. Sydney: Dept. of Environment and Conservation, <http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf>.

QLD DSITI (2018), The Long Paddock – SILO Climate Data, The State of Queensland (Department of Science, Information Technology and Innovation), accessed 6 September 2018, <https://www.longpaddock.qld.gov.au/silo/>.

Wilson, B.G., Haralampides, K. and Levesque, S. (2004), *Stormwater runoff from open windrow composting facilities*, Journal of Environmental Engineering and Science, 2004, 3 (6), 537-540, 10.1139/s04-024.

Appendix A – Site Layout

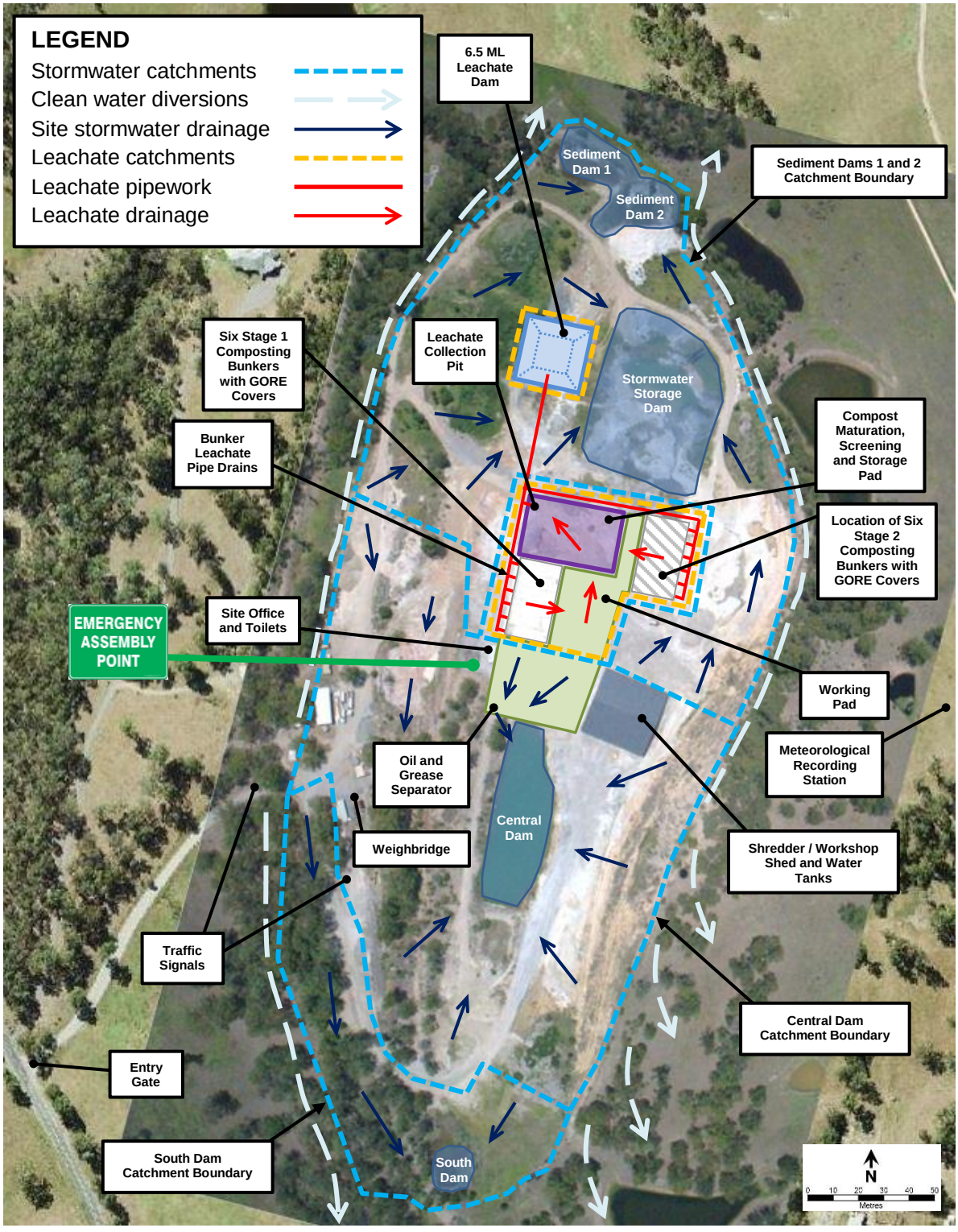

Figure A-1: AICF operational layout and catchment areas

Appendix B – Laboratory Datasheets

Qualtest LABORATORY (NSW) PTY LTD
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Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S01
Issue Number: 1
This report replaces all previous issues

Client: Riverbend Quarry Pty Ltd
863 Anambah Road
Gosforth, NSW 2320
Principal:
Project Number: NEW17P-0179
Project: Various Assesments and Testing
Lot Number: -
TRN: -

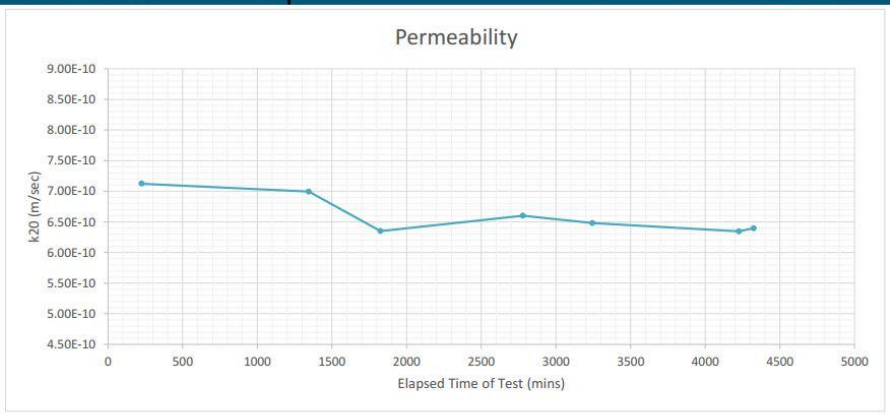
NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing
{This document may not be reproduced except in full.}

Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Black			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S01			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.56	Moulding Dry Density	t/m³	1.47
Optimum Moisture Content	%	24	Laboratory Moisture Ratio	%	101.5
Compactive Effort		Standard	Laboratory Density Ratio	%	94.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	23.8	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	24.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.83	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.4 x 10 $^{-10}$**	(m/sec)	



Comments:

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Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S02
Issue Number: 1
This report replaces all previous issues

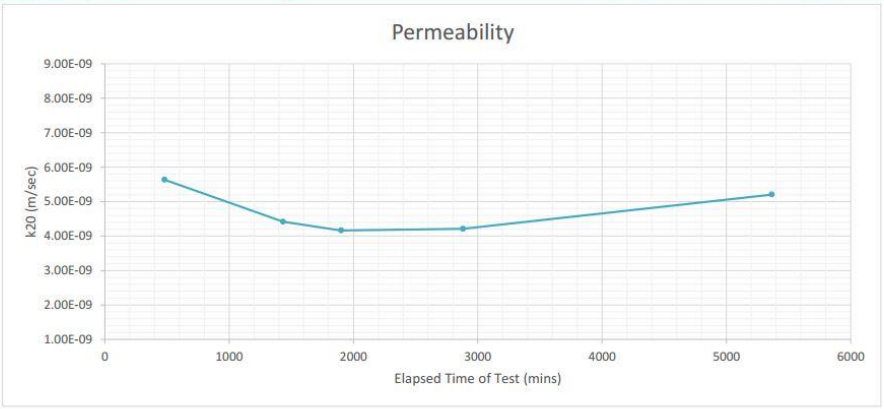
NATA WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory:	Brent Cullen
Title:	Senior Geotechnician
Date of Issue:	17/09/2018
NATA Accredited Laboratory Number:	18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Brown			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S02			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.73	Moulding Dry Density	t/m³	1.64
Optimum Moisture Content	%	16.4	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	94.5
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	13.7	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	16.4	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.91	Material Retained on Sieve	%	12
Permeability	$K_{(20)}$=		**4.7 x 10 $^{-9}$**		(m/sec)



Comments:

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Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S03
Issue Number: 1
This report replaces all previous issues

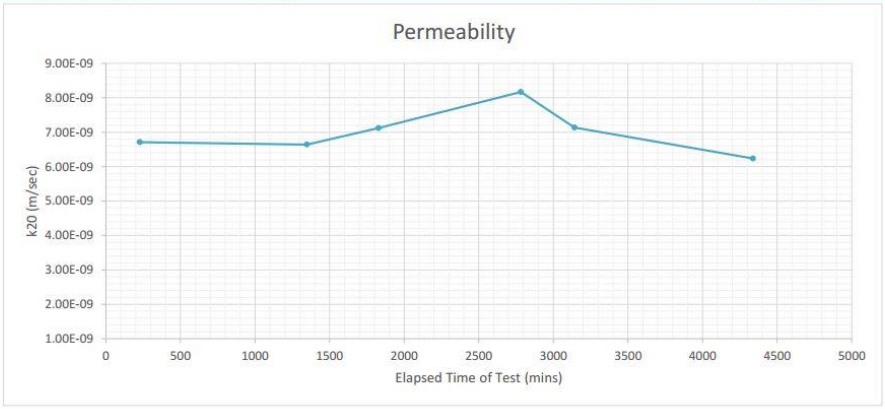
NATA
WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	-
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Grey			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S03			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.76	Moulding Dry Density	t/m³	1.67
Optimum Moisture Content	%	15.3	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	95.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	15.4	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	15.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.93	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.7 x 10 $^{-9}$**		(m/sec)



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Appendix C – Concrete Floor Structures

Figure C-1: In-situ concrete floor depth of composting bunkers

Figure C-2: In-situ concrete floor depth of shredder shed

Appendix D – Water Balance Modelling Results

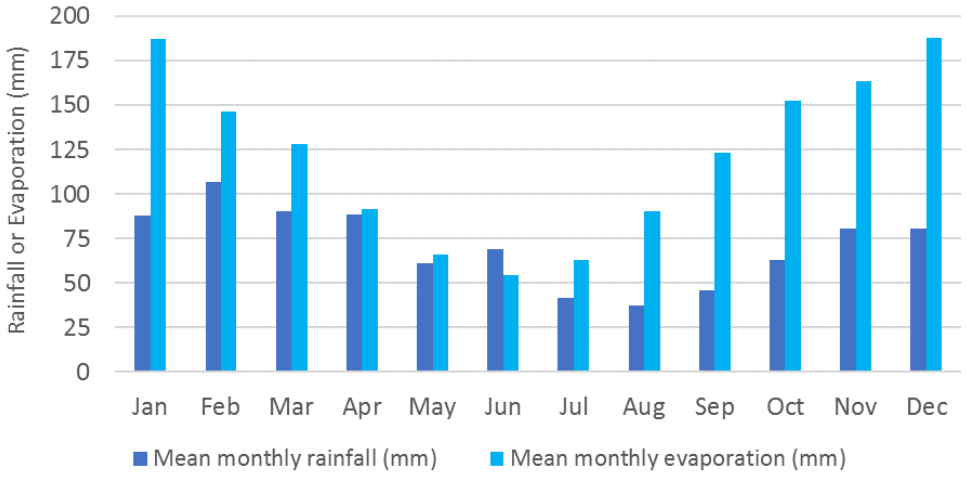

Figure D-1: Average monthly rainfall and evaporation for 1980 to 2017

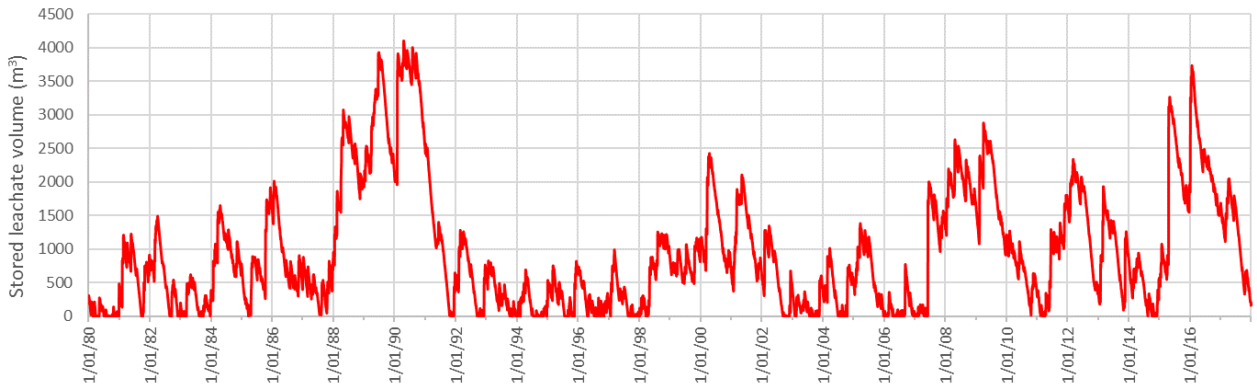

Figure D-2: Stage 1 - time series of leachate pond stored volume for modelled period 1980 to 2017

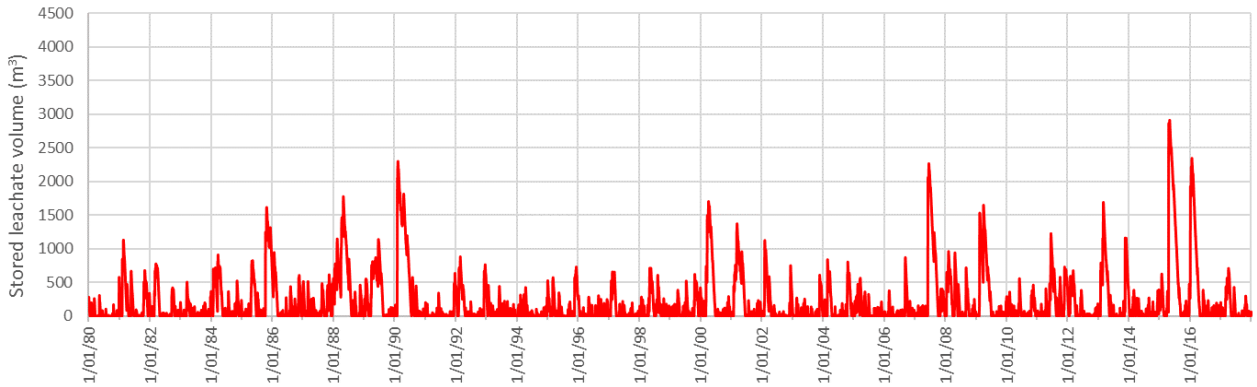

Figure D-3: Stage 2 - time series of leachate pond stored volume for modelled period 1980 to 2017

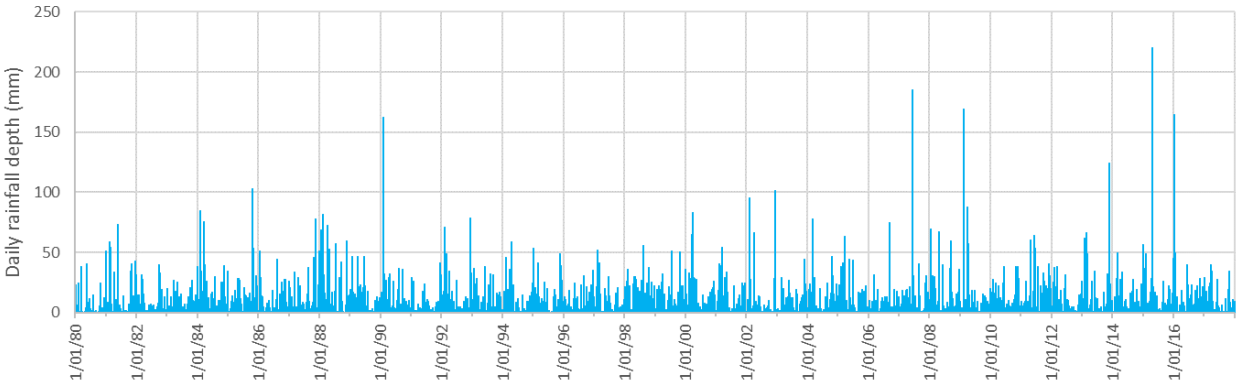

Figure D-4: Time series of daily rainfall depth for 1980 to 2017

Appendix C. As-constructed verification of leachate management system

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BRIEFING NOTE

Project	Anambah In-vessel Composting Facility
Subject	As-constructed verification of leachate management system
Client	Ditton Properties Pty. Limited
Document Number	2059-1478
Document Status	FINAL
Date	13/01/2020

1. Background

Composting facilities in NSW are required to design and construct a leachate management system in compliance with *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). During 2019, AK Environmental Pty. Limited (AK Environmental) was engaged by Ditton Properties Pty. Limited (Ditton Properties) to design the leachate barrier and containment systems for Anambah In-vessel Composting Facility (AICF), and to document the geotechnical compliance process for constructed clay liner earthworks. (refer to *Briefing Note no. 2059-1445: Anambah In-vessel Composting Facility - Leachate management system* (AK Environmental 2019) which forms part of the Operational Environmental Management Plan (OEMP) for the AICF).

This briefing note presents details of the as-constructed compliance of the AICF leachate barrier and containment systems.

2. Compliance details

2.1 Leachate Dams 1 and 2

2.1.1 Volumetric requirement

The minimum leachate dam volumetric requirement is 0.78 ML in accordance with the NSW DEC (2004) design storm method. Ditton Properties has instead adopted a much more conservative “no spill” approach to leachate management, which resulted in a water balance method being adopted for sizing and an alternative 4.1 ML volumetric estimate for leachate containment (AK Environmental 2019). At full capacity, the dam used in the water balance model had a storage depth exceeding 8.0 m.

To maximise earthworks efficiency within the post-quarry landform, it was decided during construction of the leachate containment to form two separate and adjacent dams (Figure 1) with a combined volume of 6.9 ML. A volumetric survey of Leachate Dam 1 (2.26 ML) and Leachate Dam 2 (4.64 ML) is provided as Attachment 1.

Figure 1 – Construction of Leachate Dam 1 (foreground) and Leachate Dam 2

The two dams are significantly shallower than the dam modelled in the water balance. Due to the larger potential open water surface and higher average water temperature (associated with shallower water bodies), the average evaporation rate will be higher than modelled. This is conservative as it would lead to the water balance method predicting a lower volumetric storage capacity. In view of this understanding, there is no benefit to be gained by re-modelling the site water balance.

Inflow from the AICF is directed to Leachate Dam 1. The dams are connected by a 10 m x 250 mm diameter PVC pipe with headwall. Because the pipe constrains flow to Leachate Dam 2, an investigation was undertaken to determine whether the pipe would affect the "no spill" design requirement. The pipe inlet in Leachate Dam 1 is at an elevation of 18.5 m, which equates to 1.0 ML of storage volume or 45% capacity of Leachate Dam 1. The remaining 55% capacity represents an airspace volume of 1.26 ML with a freeboard depth of 1.2 m.

The largest storm event within the 38 years assessed by the water balance model occurred during April 2015 (AK Environmental 2019). The storm event generated an estimated 1.1 ML of inflow within the initial 24 hours and a further 1.2 ML during the following 24 hours.

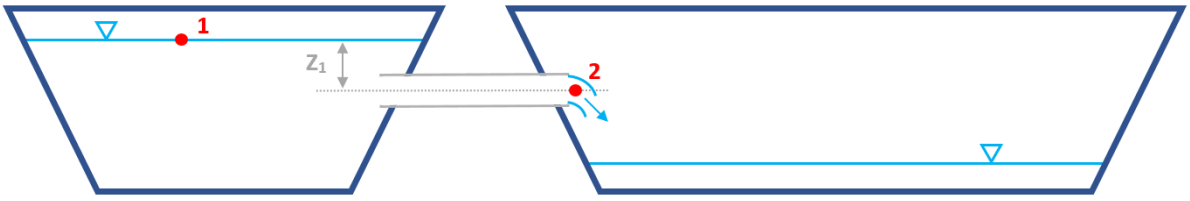
To assess the capacity of pipe flow transfer between dams under a high flow condition, the Bernoulli (Energy) Equation in head form for steady incompressible flow (Equation 1) was applied from points 1 to 2 in Figure 2.

$$\frac{V_1^2}{2g} + \frac{P_1}{\rho g} + Z_1 = \frac{V_2^2}{2g} + \frac{P_2}{\rho g} + Z_2 + H_F + H_K \qquad \text{.....Equation 1}$$

$$H_K = K\frac{V_2^2}{2g} \qquad \text{.....Equation 2}$$

where:

Z_1 = upstream elevation (m)
Z_2 = downstream elevation (m)
P_1 = upstream pressure (N/m^2)
P_2 = downstream pressure (N/m^2)
V_1 = upstream velocity (m/s)
V_2 = downstream velocity (m/s)
H_F = energy (head) loss due to pipe friction (m)
H_K = energy (head) loss due to pipe entrance (m)
K = head loss coefficient for pipe entrance
ρ = fluid mass density (kg/m^3)
g = acceleration due to gravity (m/s^2)



Leachate Dam 1 – 2.26 ML Leachate Dam 2 – 4.64 ML

Figure 2 – Schematic of pipe flow between the AICF leachate storage dams

H_F is considered negligible due to the short pipe length and relatively large diameter to length ratio. The pipe inlet has been installed with a headwall resulting in 'square' pipe entrance conditions for which the head loss coefficient K is 0.5.

For Z_1 of 1.0 m, the pipe discharge is calculated to be 0.14 m^3/s or 1.24 ML/d. This exceeds the maximum daily storm inflow observed during the water balance modelling.

The available airspace above the pipe inlet height in Leachate Dam 1 and the high pipe flow rate into Leachate Dam 2 both combine to provide a high level of confidence that leachate (direct leachate + contact stormwater) generated by the worst storm during the past 38 years would be safely captured by the AICF leachate containment system. It is also noted that this assessment is a worst case in that it assumes the capacity of Leachate Dam 1 is already at 1.0 ML at the commencement of the April 2015 storm. Continual drawing down of Leachate Dam 1 for compost conditioning would typically ensure that additional storage airspace would be available at the commencement of any storm event.

2.1.2 Clay Liner

To prevent leachate pollution by infiltration, Leachate Dams 1 and 2 must have a liner that forms a secure hydrological barrier between groundwater, soil and substrata.

An acceptable leachate barrier option defined by NSW DEC (2004) is a *"clay or modified soil liner consisting of at least 900 mm of recompacted clay with an in-situ permeability (K) of less than 10^{-9}ms^{-1}. Successive layers should be of compatible material, and each underlying layer*

should be scoured to prevent excessive permeability due to the lamination. The sides should generally have a slope not exceeding a gradient of one vertical to three horizontal, in order to allow suitable compaction of the barrier and to facilitate subsequent testing."

The clay liners of Leachate Dams 1 and 2 have been:

- constructed with a minimum 900 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring of underlying layers to avoid lamination of layers.

As reported in AK Environmental (2019), three potential clay liner material samples were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Only the 'black' material sample achieved a permeability rate lower than $10^{-9}ms^{-1}$ at ~95% compaction, and hence it was selected as a suitable liner material. During earthworks construction of Leachate Dams 1 and 2, QualTest Laboratory undertook in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfied the 95% relative compaction requirements. Data sheets are provided in Attachment 2. Compaction exceeded 100% at each of the five sampling locations, which indicates the permeability rates of the dam liners are $<10^{-9}ms^{-1}$ and fit for purpose.

2.1.3 Internal batter slope

The maximum internal batter slope recommended by NSW DEC (2004) is "*one vertical to three horizontal"* (1V:3H). Based on the volumetric survey, a portion of the south west internal batter of Leachate Dam 1 is observed as the steepest (Figure 3). The slope has a vertical elevation change of 3.8 m over a horizontal distance of 13.0 m, or 1V:3.4H, which satisfies the design requirement.

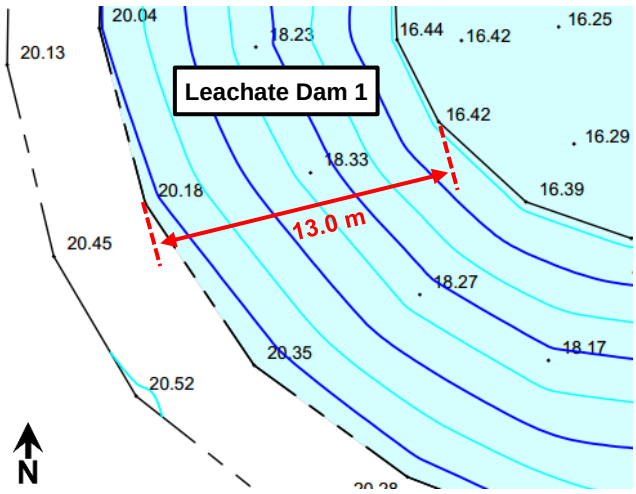


Figure 3 – Location of the steepest internal batter slope within the AICF leachate storage dams

It is noted the internal batter slopes at the pipe inflow location within each storage is protected by a 250 mm thick layer of 80 mm rock rip-rap for scour protection purposes.

2.1.4 High-level Alarm System

A high-level alarm has been installed in Leachate Dam 1 at the 80% capacity level (RL 19.2 m) when 0.44 ML of airspace remains. The alarm is solar battery charged and notifies the AICF Onsite Manager directly via SMS. It is noted the pipe to Leachate Dam 2 would be flowing when this capacity level is reached. It is the responsibility of the AICF Onsite Manager to assess the potential for further rainfall and decide whether pumping to Leachate Dam 2 should be undertaken to supplement pipe discharge.

2.2 Compost maturation/screening/storage pad and working pad

2.2.1 Clay leachate barrier

To prevent the pollution by leachate of subsoil, groundwater and surface water bodies, material processing and storage areas of the AICF must have a leachate barrier system that forms a secure hydrological barrier between groundwater, soil and substrata and the composting and storage of organics.

An acceptable leachate barrier option defined by NSW DEC (2004) is a *"a clay or modified soil liner consisting of at least 600 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-7}ms^{-1}$. Such liners should be placed in successive layers up to 300 mm uncompacted thickness. Each underlying layer should be scoured to prevent excessive permeability due to the lamination".*

The AICF compost maturation/screening/storage pad and working pad has been:

- constructed with a minimum 600 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness;
- constructed by surface scouring underlying layers to avoid lamination of layers; and
- be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm.

As reported in AK Environmental (2019), three potential clay liner materials were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Each sample exhibited a permeability rate significantly lower than $10^{-7}ms^{-1}$ at ~95% compaction, and hence any of the three materials was suitable as a liner for the screening and compost storage pad.

During earthworks construction of the compost maturation/screening/storage pad and working pad, Coffey Services Australia undertook in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfied relative compaction requirements. Data sheets are provided in Attachment 3. Compaction exceeded 100% at each of the five sampling locations, which indicates the permeability rates of the dam liners are $<10^{-9}ms^{-1}$ and fit for purpose.

3. Summary

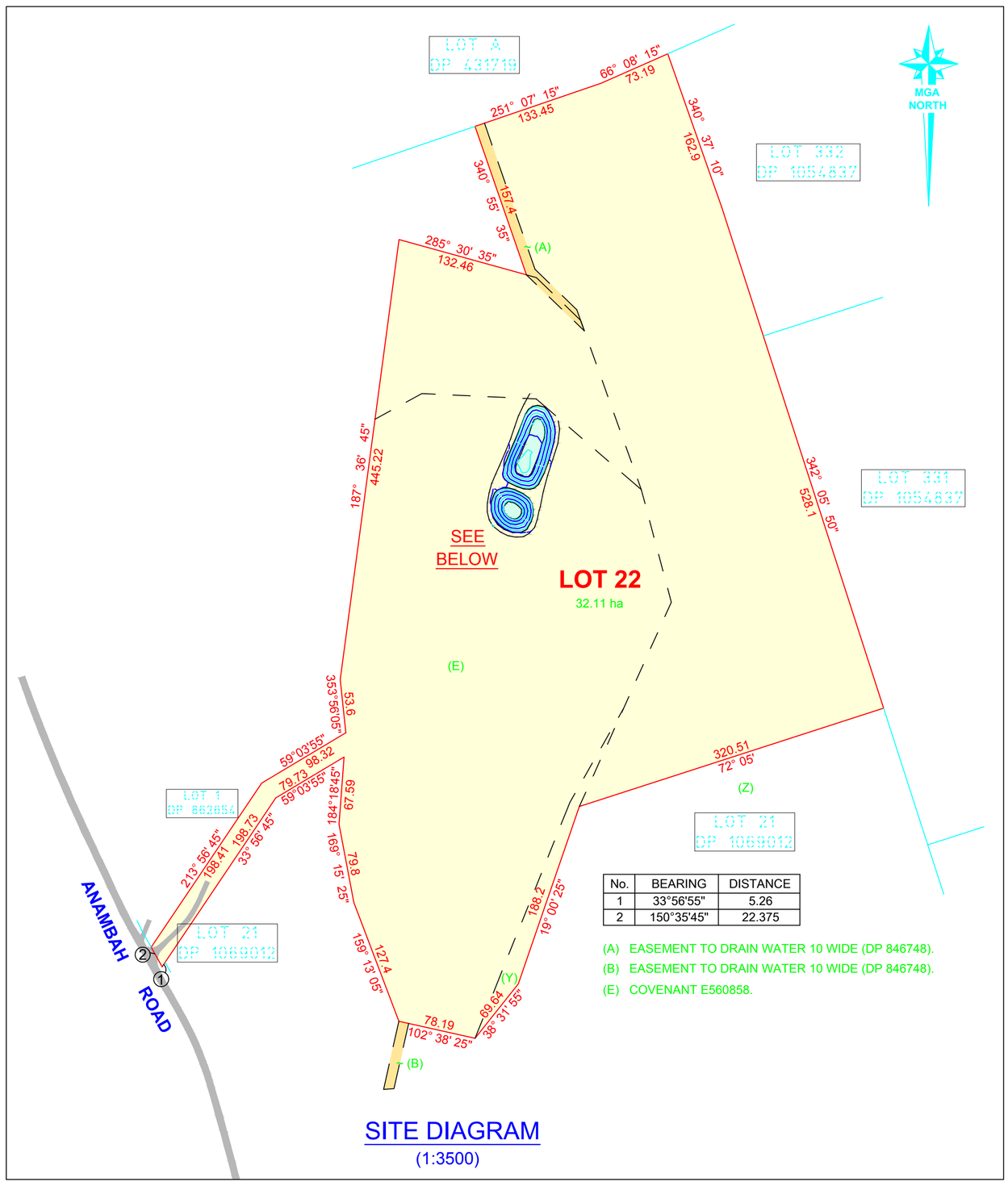
The AICF working surfaces, leachate barrier system, leachate collection system and leachate storage system have each been designed and constructed to comply with NSW DEC (2004).

In-situ geotechnical testing of placed clay liners has verified that construction methods have successfully compacted select materials in accordance with NSW DEC (2004) requirements to achieve suitably low permeability properties.

Author Dr Andrew Krause
Principal Environmental Engineer
AK Environmental Pty. Limited

Attachment 1 Volumetric Survey of Leachate Dams 1 and 2

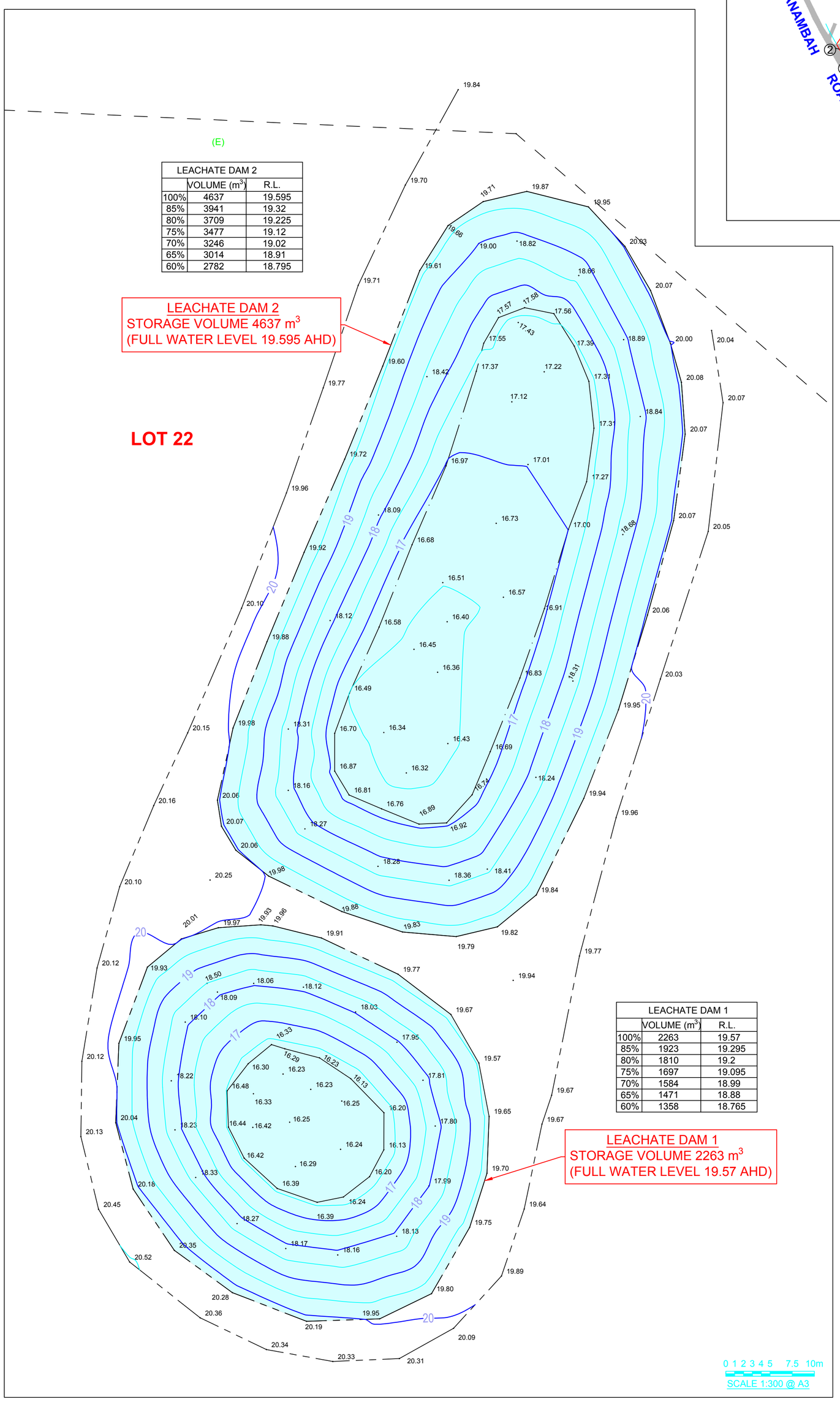
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG



No.	BEARING	DISTANCE
1	33°56'55"	5.26
2	150°35'45"	22.375

(A) EASEMENT TO DRAIN WATER 10 WIDE (DP 846748).
(B) EASEMENT TO DRAIN WATER 10 WIDE (DP 846748).
(E) COVENANT E560858.

SITE DIAGRAM
(1:3500)



LEACHATE DAM 2		
	VOLUME (m^3)	R.L.
100%	4637	19.595
85%	3941	19.32
80%	3709	19.225
75%	3477	19.12
70%	3246	19.02
65%	3014	18.91
60%	2782	18.795

LEACHATE DAM 1		
	VOLUME (m^3)	R.L.
100%	2263	19.57
85%	1923	19.295
80%	1810	19.2
75%	1697	19.095
70%	1584	18.99
65%	1471	18.88
60%	1358	18.765

0 1 2 3 4 5 7.5 10m
SCALE 1:300 @ A3

LEGEND
TOP OF BATTER
TOE OF BATTER

NOTES - GENERAL

1. This plan may be colour coded and black & white copies may not fully disclose the information hereon.
2. This plan has been prepared for the exclusive use of the client named hereon. No responsibility is taken for any loss incurred by any third party resulting from unauthorised use of the plan.

NOTES - BOUNDARY

1. Bearings, distances & areas of subject land are by Title and/or Deed only. No boundary investigation has been carried out in the determination of the shown boundary dimensions.
2. The subject land is burdened by Easement(s) as shown on the plan.
3. The subject land is burdened by Restriction(s) on the Use of Land and/or Covenant(s) and/or Positive Covenant(s) as shown on the Certificate of Title. The relevant conditions of the affectation should be checked in relation to the improvements or proposed development/works for compliance.
4. Do not scale off this plan. Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further boundary survey.

NOTES - TOPOGRAPHICAL

1. Service lines and service structures have only been located and shown hereon where they were visible at the time of survey. Phone "Dial Before You Dig" on 1100 prior to any excavation or earthworks.
2. The accuracy of this data may not be suitable for building construction and therefore survey marks should be placed prior to any construction commencing.
3. Contours shown are a computer interpretation only which depict the topography. Except at spot levels shown they do not represent the exact level at any particular point. The spot levels are true for their location, & are intended to be useful to represent the general terrain. Care should be taken if extrapolating.
4. Storage volumes and water levels are calculated using interpolated computer generated surfaces and are not exact.

LE MOTTEE GROUP
SURVEYING | CIVIL ENGINEERING | TOWN PLANNING | PROJECT MANAGEMENT
STRATA CERTIFICATION | ECOLOGY | BUSHFIRE ASSESSMENT

4/199 ADELAIDE STREET
PO BOX 363
RAYMOND TERRACE, 2324
P: 4987 1748
reception@lemottee.com
ABN 38 136 535 156

Technical Details:
Azimuth - MGA
Origin - PM 76242
Easting - 358 919.468
Northing - 6 383 574.364
Datum - AHD
Origin - PM 76242
R.L. - 12.37 (AHD)
Contour Int. - 0.5 METRE

Surveyed: MB - 17/12/19
Drafted: CW - 10/01/20
Checked: CW - 10/01/20

Title: VOLUMETRIC SURVEY
Client: RIVERBEND QUARRY
Site: LOT 22 DP 1069012 - No.442 ANAMBAH ROAD
Locality: ANAMBAH LGA: MAITLAND

Our Ref: 7224 VOL-V3
Original Size: A1
Sheet No.: 1 of 1

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Attachment 2 Qualtest datasheets for Leachate Dams 1 and 2

QUALTEST Laboratory (NSW) Pty Ltd (20708)
8 Ironbark Close Warabrook NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Report No: HDR:NEW19W-3758
Issue No: 1

HILF Density Ratio Report

Client: Riverbend Quarry Pty Ltd
863 Anambah Road
Gosforth NSW 2320

Principal:
Project No.: NEW17P-0179
Project Name: Various Assesments and Testing

Approved Signatory: Jeremy Betz
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 5/11/2019

Sample Details

Location:	Gosforth, NSW
Client Request ID:	-
Specification Requirements:	Minimum HILF Density Ratio of 100% Standard (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method::	AS1289.1.2.1 cl 6.4b
Source::	On-Site
Material::	General Fill
Lot No.:	-
Test Request No.:	-

Sample Data

Sample ID:	NEW19W-3758--S01	NEW19W-3758--S02	NEW19W-3758--S03	NEW19W-3758--S04	NEW19W-3758--S05
Date Tested:	31/10/2019	31/10/2019	31/10/2019	31/10/2019	31/10/2019
Time Tested:	11:50	12:00	12:10	12:25	12:45
Location:	Dam Overflow	Dam Overflow	Dam Overflow	Dam	Dam
	Floor	Wall	Top of Wall	Top of Wall	Wall
	See Atttached Plan	See Atttached Plan	See Atttached Plan	See Atttached Plan	See Atttached Plan
Soil Description:	Gravelly CLAY	Gravelly CLAY	Gravelly CLAY	Gravelly CLAY	Gravelly CLAY
Field and Laboratory Data					
Depth of Test (mm)	300	300	300	300	300
Depth of Layer (mm)	300	300	300	300	300
AS Sieve Size (mm)	19.0	19.0	19.0	19.0	19.0
Oversize Wet (%)	0	0	0	0	0
Field Moisture Content (%)	12.4	18.7	17.7	13.3	19.5
Field Wet Density (t/m³)	2.10	2.05	2.01	2.03	2.05
Field Dry Density (t/m³)	1.87	1.73	1.71	1.79	1.72
Peak Converted Wet Density (t/m³)	1.99	2.00	2.00	2.02	2.01
Optimum Moisture Content (%)	15.0	18.5	17.5	14.5	19.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	83.5	102.5	102.0	90.0	103.5
Moisture Variation (%)	2.5 dry	0.5 wet	0.5 wet	1.5 dry	0.5 wet
Hilf Density Ratio (%)	**105.5**	**102.5**	**100.5**	**100.5**	**102.0**

Comments

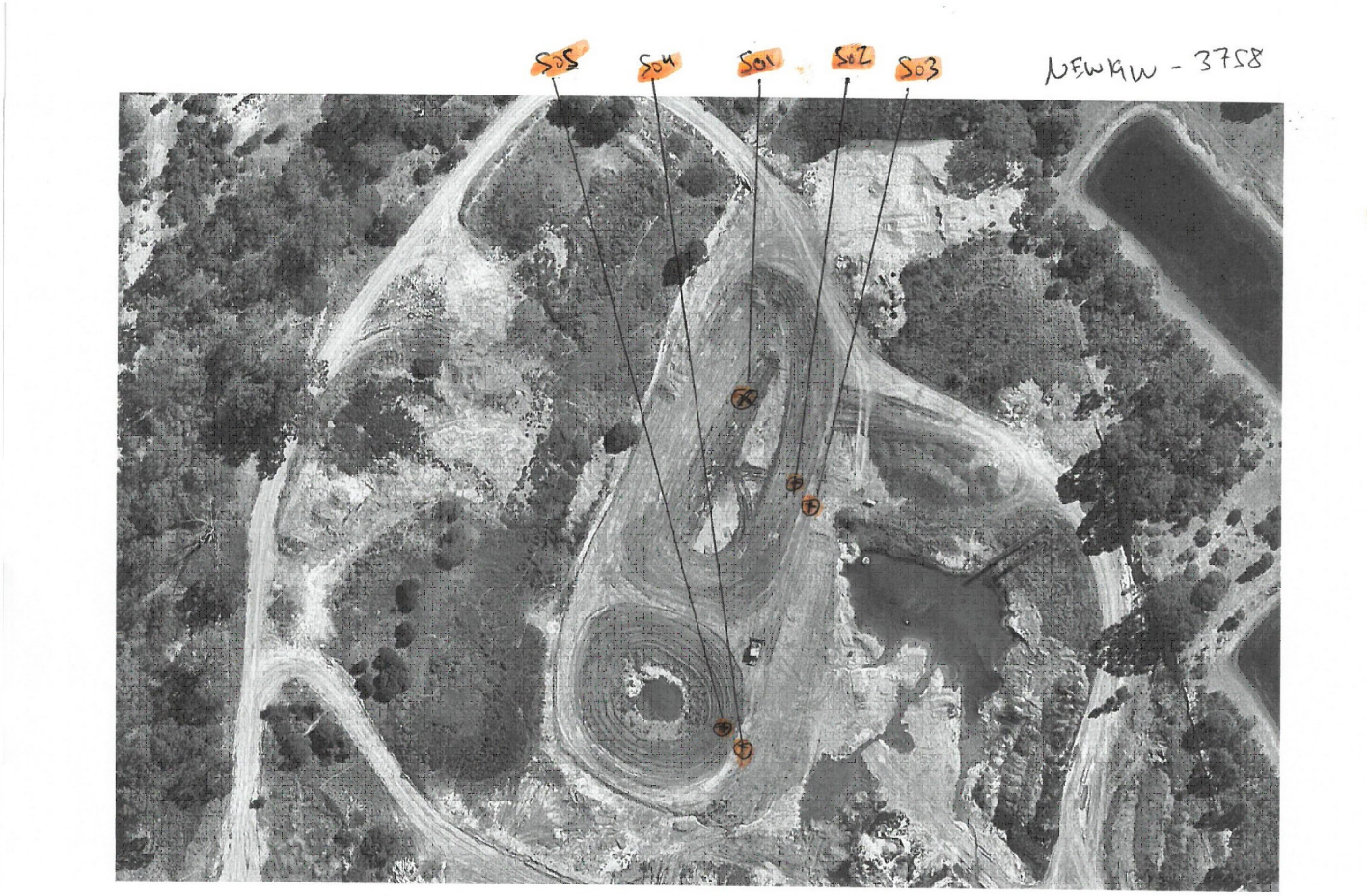
QUALTEST Laboratory (NSW) Pty Ltd (20708)
8 Ironbark Close Warabrook NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Report No: HDR:NEW19W-3758
Issue No: 1

HILF Density Ratio Report

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth NSW 2320
Principal:	
Project No.:	NEW17P-0179
Project Name:	Various Assesments and Testing

Approved Signatory: Jeremy Betz
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 5/11/2019



Attachment 3 Coffey datasheets for Compost maturation/ screening/storage pad and working pad

Newcastle Laboratory

Coffey Services Australia Pty Ltd
16 Callistemon Close
Warabrook NSW 2304

ABN 55 139 460 521
Phone: +61 2 4016 2300
Fax: +61 2 4016 2380

Report No: HDR:NEWC19W00755
Issue No: 1

HILF Density Ratio Report

Client: River Bend Quarry Pty Ltd
863 Anambah Road
Gosforth NSW 2320

Principal:
Project No.: 754-NEWC00721AA
Project Name: Processing Pad
Lot No.: - **TRN:** -

Accredited for compliance with ISO/IEC 17025 - Testing.

The results of the tests, calibrations and/or measurements included in this document are traceable

Approved Signatory: Matthew George (Geotechnician)
NATA Accredited Laboratory Number:431
Date of Issue: 11/03/2019

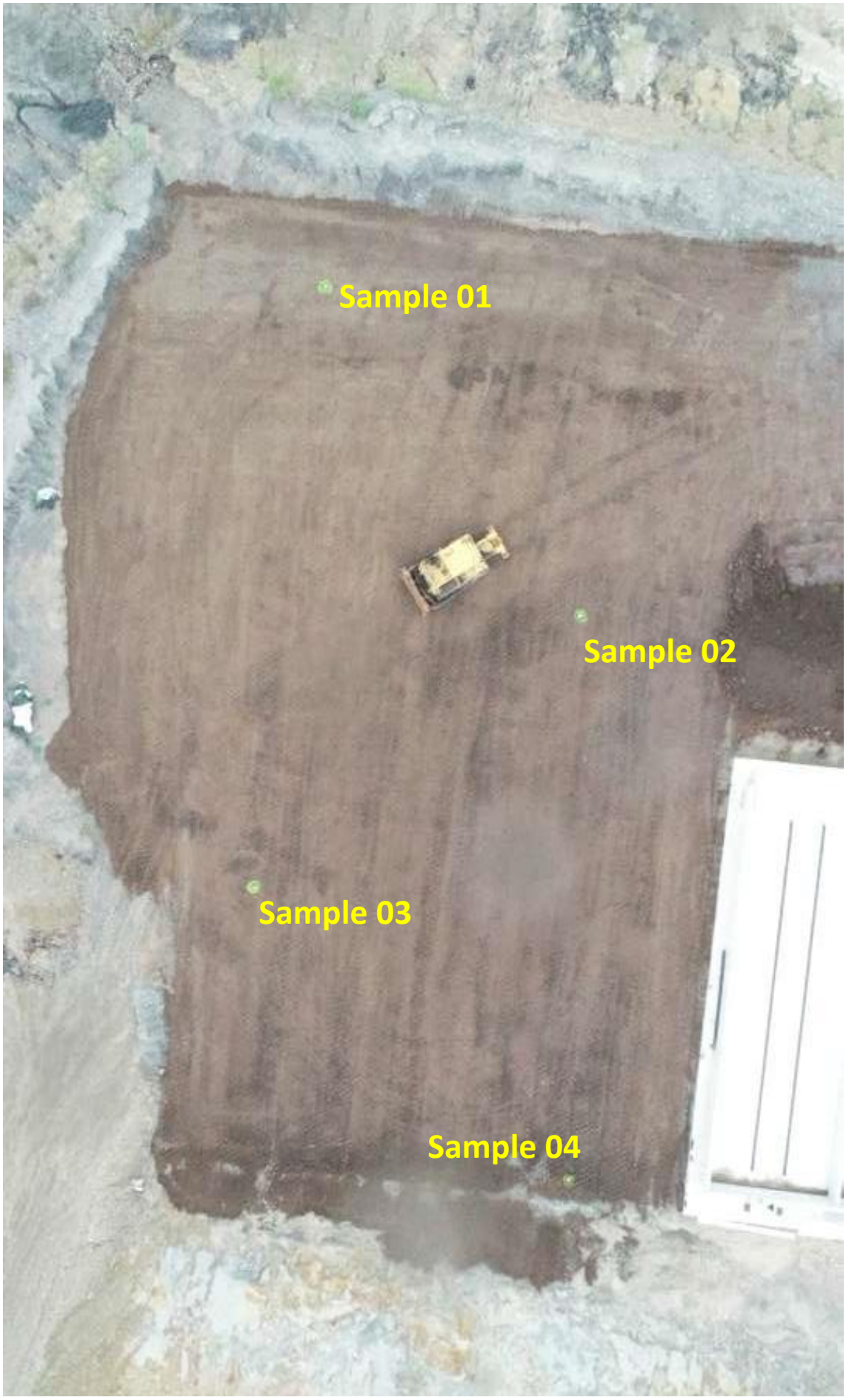
Sample Details

Location:	Gosforth, NSW
Client Request ID:	-
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 100% of Standard Compaction (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	On-Site
Material:	General Fill

Sample Data

Sample ID	NEWC19S-01187	NEWC19S-01188	NEWC19S-01189	NEWC19S-01190
Field Sample ID	00001	00002	00003	00004
Date Tested	21/02/2019	21/02/2019	21/02/2019	21/02/2019
Time Tested	08:55	09:05	09:15	09:25
Location	Processing Pad	Processing Pad	Processing Pad	Processing Pad
	Refer to Attached Plan	Refer to Attached Plan	Refer to Attached Plan	Refer to Attached Plan
	Layer 1	Layer 1	Layer 1	Layer 1
Soil Description	Silty CLAY	Silty CLAY	Silty CLAY	Silty CLAY
Field and Laboratory Data				
Depth of Test (mm)	300	300	300	300
Depth of Layer (mm)	300	300	300	300
AS Sieve Size (mm)	19.0	19.0	19.0	19.0
Oversize Wet (%)	0	0	0	0
Field Moisture Content (%)	16.0	15.0	14.9	17.0
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	2.09	2.02	2.00	2.00
Field Dry Density (t/m³)	1.80	1.76	1.74	1.71
Peak Converted Wet Density* (t/m³)	1.96	1.93	1.92	1.91
Optimum Moisture Content (%)	18.5	19.0	19.0	20.0
Compactive Effort	Standard	Standard	Standard	Standard
Moisture Ratio (%)	85.5	78.5	78.5	84.5
Moisture Variation (%)	2.5 dry	4.0 dry	4.0 dry	3.0 dry
Hilf Density Ratio (%)	**106.5**	**105.0**	**104.5**	**104.5**
legend * adjusted for oversize material				

Comments


Sample 01
Sample 02
Sample 03
Sample 04

Appendix F – Todoroski Air Sciences Pty Ltd (2022) Riverbend Compost Facility Modification Air Quality Impact Assessment

RIVERBEND COMPOST FACILITY MODIFICATION AIR QUALITY IMPACT ASSESSMENT

AK Environmental

19 May 2022

Job Number 12110145D

Prepared by

Todoroski Air Sciences Pty Ltd

Suite 2B, 14 Glen Street
Eastwood, NSW 2122
Phone: (02) 9874 2123
Fax: (02) 9874 2125
Email: info@airsciences.com.au

Riverbend Compost Facility Modification

Air Quality Impact Assessment

DOCUMENT CONTROL

Report Version	Date	Prepared by	Reviewed by
DRAFT - 001	21/04/2022	E Aragnou	P Henschke
DRAFT - 002	11/05/2022	E Aragnou	
FINAL - 001	11/05/2022	E Aragnou	
FINAL - 002	19/05/2022	E Aragnou	

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1 INTRODUCTION

Todoroski Air Sciences has prepared this report for AK Environmental on behalf of Ditton Properties Pty Limited (hereafter referred to as the Proponent). It provides an air quality impact assessment for the proposed modifications to the Riverbend Compost Facility (hereafter referred to as the Project).

The Riverbend Compost Facility currently has approval to process garden waste, wood waste, natural organic fibrous material, general solid waste non-putrescible and waste derived from food at the facility. The potential air quality impacts for the approved operations were assessed in the *Riverbend Quarry and Compost Facility Air Quality Impact Assessment* (AQIA) (**Todoroski Air Sciences, 2015**). The Project seeks to modify this approval to allow for up to 20% general solid waste putrescible and allow for biosolids and manures be included in the 8,000 tonnes per annum approved Category 2 waste loads.

This air quality (odour) impact assessment has been prepared in general accordance with the New South Wales (NSW) Environment Protection Authority (EPA) document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2017**).

To assess the potential air quality impacts associated with the Project, this report comprises:

- A background to the Project and description of the site and proposed operations;
- A review of the existing meteorological and air quality environment surrounding the site;
- A description of the dispersion modelling approach and emission estimation used to assess potential air quality impacts; and,
- Presentation of the predicted results and discussion of the potential air quality impacts; and,
- An outline of associated air quality mitigation and management measures for the Project.

2 PROJECT BACKGROUND

2.1 Project setting

The Project site is located approximately 5.5 kilometres (km) northwest of Rutherford in the Hunter Valley, NSW. The land use in the surrounding area can be described as rural with agricultural activities and scattered dwellings. There is a development area located to the west of the Project known as the Anambah Urban Release Area (AURA) which has the potential for future residential dwellings.

Figure 2-1 presents the location of the Project with reference to the receptor locations assessed in this report as well as the AURA boundary.

Figure 2-2 presents a pseudo three-dimensional visualisation of the topography in the general vicinity of the Project. Hilly terrain characterises the topography east and north of the site with the terrain generally more open and flat to the south.

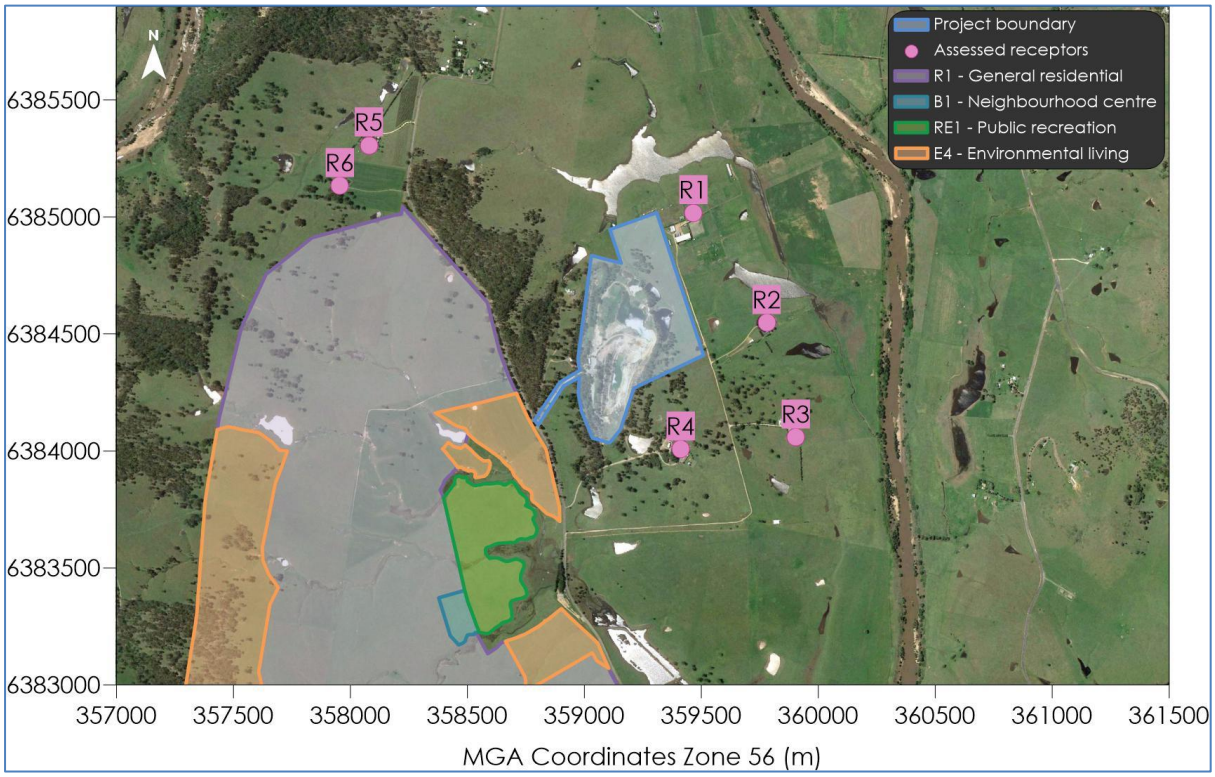

Figure 2-1: Project setting

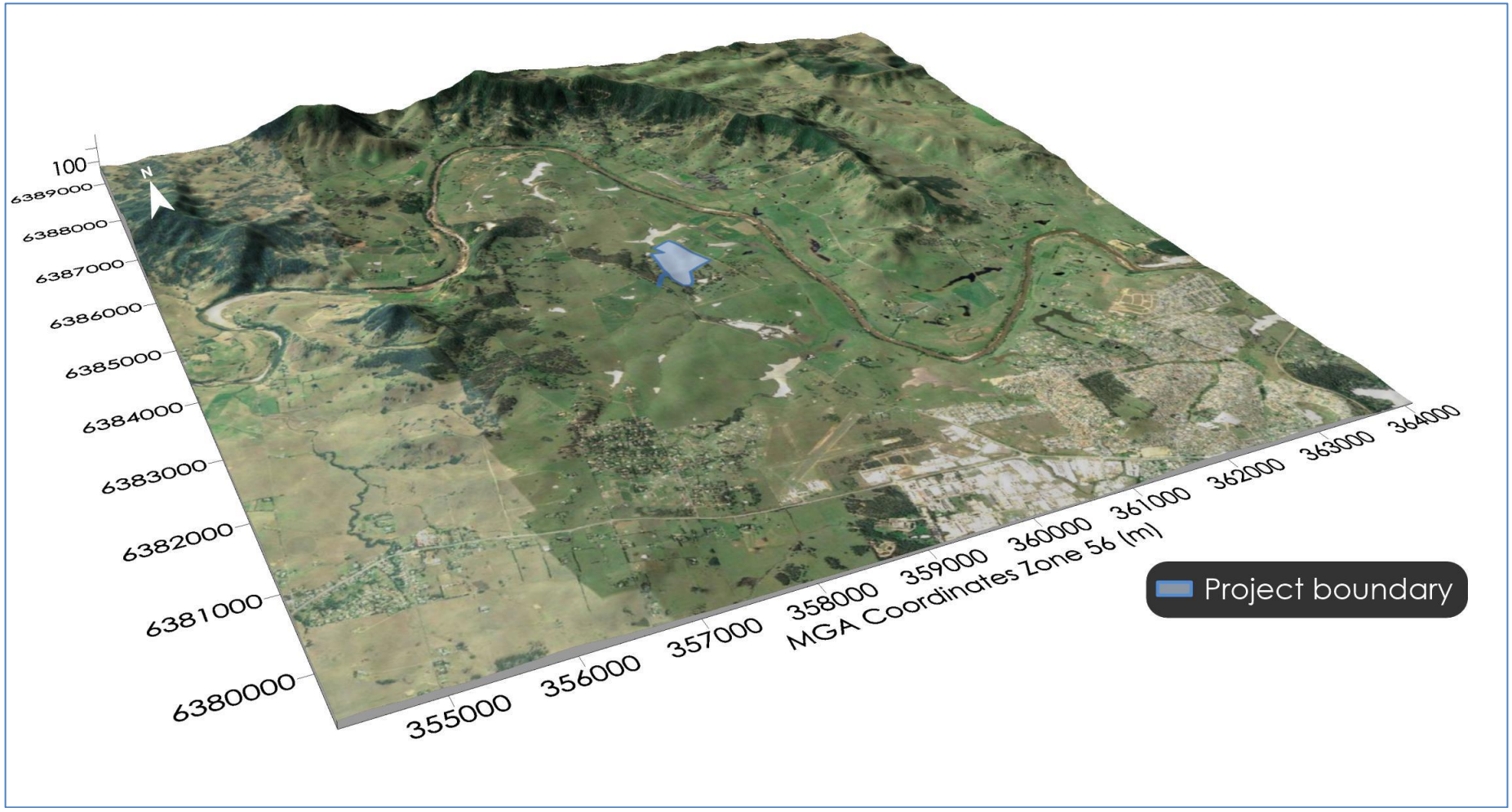

Figure 2-2: Representative visualisation of topography in the area surrounding the Project

2.2 Project description

The site currently has approval to processes up to 40,000 tonnes per annum (tpa) of material sourced from municipal waste facilities in the Hunter Region. The material processed at the facility comprises of garden waste, wood waste, natural organic fibrous materials, general solid waste non-putrescible and waste derived from food.

The processing of material occurs towards the centre of the site, with the composting activities taking place on designated hardstand areas and compost bays with concrete side walls and sub floor to cater for forced air supply and drainage systems. Each compost pad is covered with a gore cover system to assist with the composting process and the odour management of the composting material. Mobile equipment such as front-end loaders and a shredder is used in the initial processing of the material.

The Project seeks to include in the composting process up to 20% general solid waste putrescible as well as biosolids and manures. There would be no change to the overall amount of waste material processed at the site and the material would be incorporated using the same existing approved composting process at the site.

Figure 2-3 presents an indicative site layout for the Project. It is to be noted that the site is located within an old hard rock quarry pit which ceased operation in 2020.

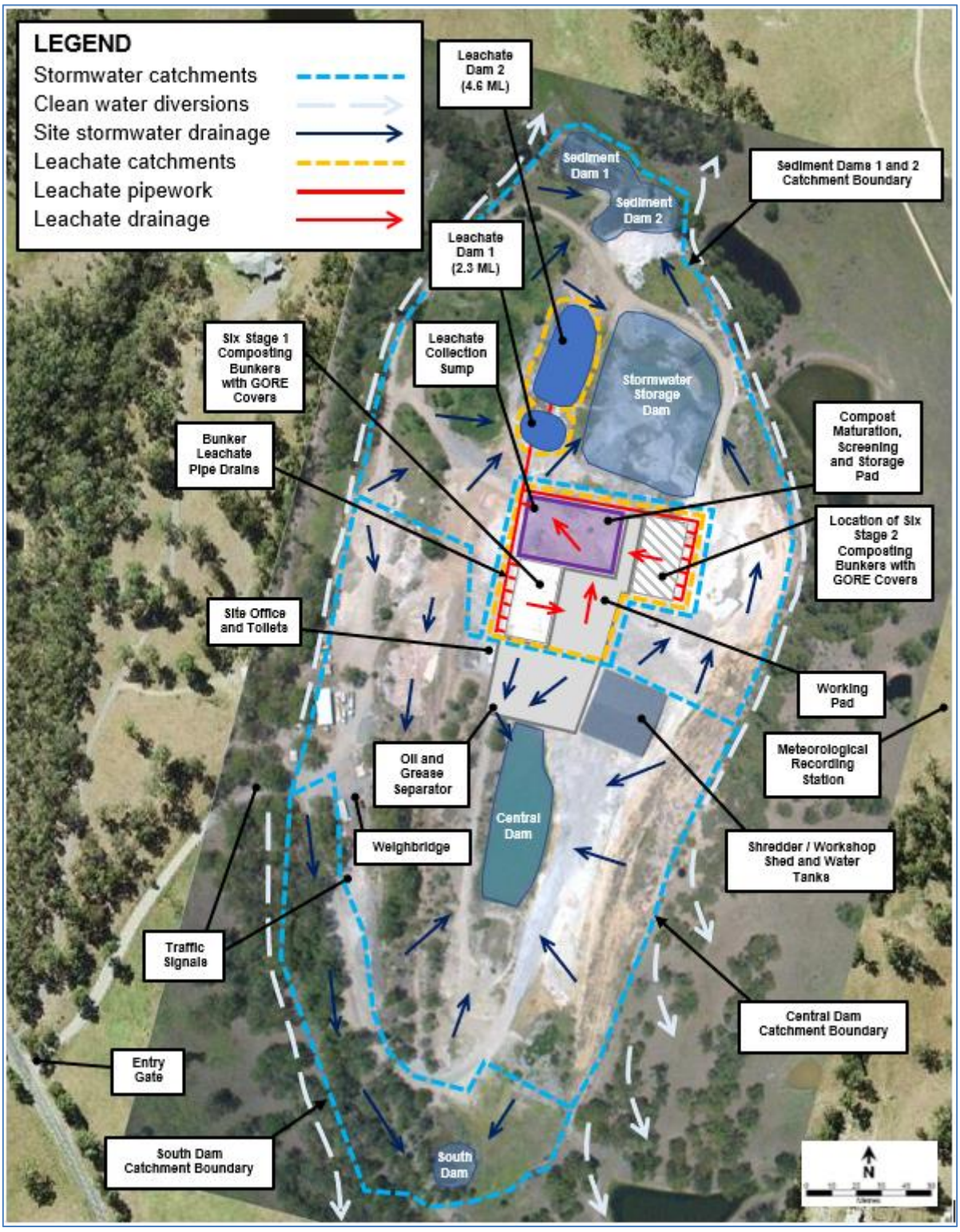

Figure 2-3: Indicative site layout

3 AIR QUALITY ASSESSMENT CRITERIA

3.1 Preamble

Air quality criteria are benchmarks set to protect the general community against adverse health and nuisance effects arising from air pollution. This section identifies the relevant air quality criteria that are applicable to the Project.

3.2 Odour

3.2.1 Introduction

Odour in a regulatory context needs to be considered in two similar, but different ways depending on the situation.

NSW legislation (NSW *Protection of the Environment Operations Act 1997)* prohibits emissions that cause offensive odour to occur at any off-site receptor. Offensive odour is evaluated in the field by authorised officers, who are obliged to consider the odour in the context of its receiving environment, frequency, duration, character and so on and to determine whether the odour would interfere with the comfort and repose of the normal person unreasonably. In this context, the concept of offensive odour is applied to operational facilities and relates to actual emissions in the air.

However, in the approval and planning process for proposed new operations or modifications to existing projects, no actual odour exists, and it is necessary to consider hypothetical odour. In this context, odour concentrations are used and are defined in odour units. The number of odour units represents the number of times that the odour would need to be diluted to reach a level that is just detectable to the human nose. Thus, by definition, odour less than one odour unit (1 OU), would not be detectable to most people.

The range of a person's ability to detect odour varies greatly in the population, as does their sensitivity to the type of odour. The wide-ranging response in how any particular odour is perceived by any individual poses specific challenges in the assessment of odour impacts and the application of specific air quality goals related to odour. The NSW Odour Policy (**NSW DEC, 2006**) sets out a framework specifically to deal with such issues.

It needs to be noted that the term odour refers to complex mixtures of odours, and not "pure" odour arising from a single chemical. Odour from a single, known chemical very rarely occurs (when it does, it is best to consider that specific chemical in terms of its concentration in the air). In most situations odour will be comprised of a cocktail of many substances which is referred to as a complex mixture of odour, or more simply odour.

For activities with potential to release significant odour it may be necessary to predict the likely odour impact that may arise. This is done by using air dispersion modelling which can calculate the level of dilution of odours emitted from the source at the point to where odour reaches surrounding receptors. This approach allows the air dispersion model to produce results in terms of odour units.

The NSW criteria for acceptable levels of odour range from 2 to 7 OU, with the more stringent 2 OU criteria applicable to densely populated urban areas and the 7 OU criteria applicable to sparsely populated rural areas, as outlined below.

3.2.2 Complex Mixtures of Odorous Air Pollutants

Table 3-1 presents the assessment criteria as outlined in the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (**NSW EPA, 2017**). This criterion has been refined to take into account population densities of specific areas and is based on a 99th percentile of dispersion model predictions calculated as 1-second averages (nose-response time).

Table 3-1: Impact assessment criteria for complex mixtures of odorous air pollutants (nose-response-time average, 99th percentile)

Population of affected community	Impact assessment criteria for complex mixtures of odorous air pollutants (OU)
Urban (≥~2000) and/or schools and hospitals	2.0
~500	3.0
~125	4.0
~30	5.0
~10	6.0
Single rural residence (≤~2)	7.0

Source: NSW EPA, 2017

The NSW odour goals are based on the risk of odour impact within the general population of a given area. In sparsely populated areas, the criteria assume there is a lower risk that some individuals within the community would find the odour unacceptable, hence higher criteria apply.

Given that the number of dwellings surrounding the Project is small, the potential population is estimated at <10 and thus an odour criterion of 6.0 OU has been applied, which has also been used to assess impacts previously in **Todoroski Air Sciences, 2015**. The AURA boundary has land zoned for an urban release area with residential development and would have a higher population as such a criterion of 2OU has been adopted.

Peak-to-mean factors are applied to account for any odour fluctuation above and below the mean odour level of the 1-hour averaging time. The criteria in **Table 3-1** are compared with modelled results that include peaking factors to account for the time-averaging limitations of air dispersion models. The peak-to-mean factors developed by **Katestone Scientific Pty Ltd (1995, 1998)** for NSW EPA are applied to convert the modelled (1-hour) averaging time to 1-second peak concentrations which are appropriate.

A summary of the peak-to-mean values is provided in **Table 3-2**.

Table 3-2: Peak-to-mean values

Source Type	Pasquill-Gifford stability class	Near field P/M 60*	Far field P/M 60*
Area	A, B, C, D	2.5	2.5
	E, F	2.3	1.9
Line	A-F	6	6
Surface point	A, B, C	12	4
	D, E, F	25	7
Tall wake-free point	A, B, C	17	3
	D, E, F	35	6
Wake-affected point	A-F	2.3	2.3
Volume	A-F	2.3	2.3

*Ratio of peak 1-second average concentrations

4 EXISTING ENVIRONMENT

This section characterises the existing environment surrounding the Project site according to the climate and ambient air quality in the area surrounding the Project.

4.1 Local climatic conditions

Long-term climatic data from the nearest Bureau of Meteorology weather station located at Paterson (Tocal) (Site No. 061250) are used to characterise the local climate in the proximity of the Project. The Paterson (Tocal) automatic weather station (AWS) is located approximately 10km northeast of the Project.

Table 4-1 and **Figure 4-1** present a summary of data from Paterson (Tocal) collected over a 34-to-54-year period for the various meteorological parameters.

The data indicate that January is the hottest month with a mean maximum temperature of 30.0 degrees Celsius (°C) and July is the coldest month with a mean minimum temperature of 6.2°C.

Rainfall decreases during the cooler months, with an annual average rainfall of 939.9 millimetres (mm) over 89.3 days. The data indicate that March is the wettest month with an average rainfall of 121.6mm over 9.4 days and August is the driest month with an average rainfall of 37.2mm over 5.0 days.

Relative humidity levels exhibit variability over the day and seasonal fluctuations. Mean 9am relative humidity ranges from 64% in September and October to 80% in March and May. Mean 3pm relative humidity levels range from 46% in August and September to 59% in June.

Wind speeds during the warmer months have a greater spread between the 9am and 3pm conditions compared to the cooler months. Mean 9am wind speeds range from 5.5 kilometres per hour (km/h) in February to 13.3km/h in August. Mean 3pm wind speeds range from 11.3km/h in April to 17.9km/h in August.

Table 4-1: Monthly climate statistics summary – Paterson (Tocal) AWS

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann.
Temperature													
Mean max. temperature (ºC)	30.0	29.0	27.1	24.3	20.8	17.8	17.5	19.5	22.6	25.2	26.9	29.2	24.2
Mean min. temperature (ºC)	17.8	17.6	15.8	12.6	9.6	7.6	6.2	6.6	9.0	11.5	14.1	16.3	12.1
Rainfall													
Rainfall (mm)	106.9	119.6	121.6	84.5	68.7	77.2	39.1	37.2	48.1	67.0	84.9	80.4	939.9
Mean No. of rain days (≥1mm)	8.5	9.0	9.4	7.5	7.0	7.7	5.8	5.0	5.8	7.4	8.6	7.6	89.3
9am conditions													
Mean temperature (ºC)	22.7	22.0	20.6	18.0	14.6	11.9	11.0	12.6	16.2	19.1	20.1	22.2	17.6
Mean relative humidity (%)	74.0	79.0	80.0	77.0	80.0	78.0	76.0	69.0	64.0	64.0	69.0	69.0	73.0
Mean wind speed (km/h)	7.0	5.5	5.8	7.0	8.4	11.0	11.5	13.3	13.1	11.1	9.5	8.5	9.3
3pm conditions													
Mean temperature (ºC)	28.3	27.4	25.7	23.0	19.7	16.8	16.4	18.3	20.9	23.3	25.1	27.5	22.7
Mean relative humidity (%)	52.0	56.0	58.0	56.0	58.0	59.0	55.0	46.0	46.0	48.0	49.0	49.0	53.0
Mean wind speed (km/h)	14.6	12.3	11.6	11.3	11.4	13.8	15.0	17.9	17.8	16.5	16.5	16.1	14.6

Source: **Bureau of Meteorology, 2022 (March 2022)**

R.H. – Relative Humidity, W.S. – wind speed

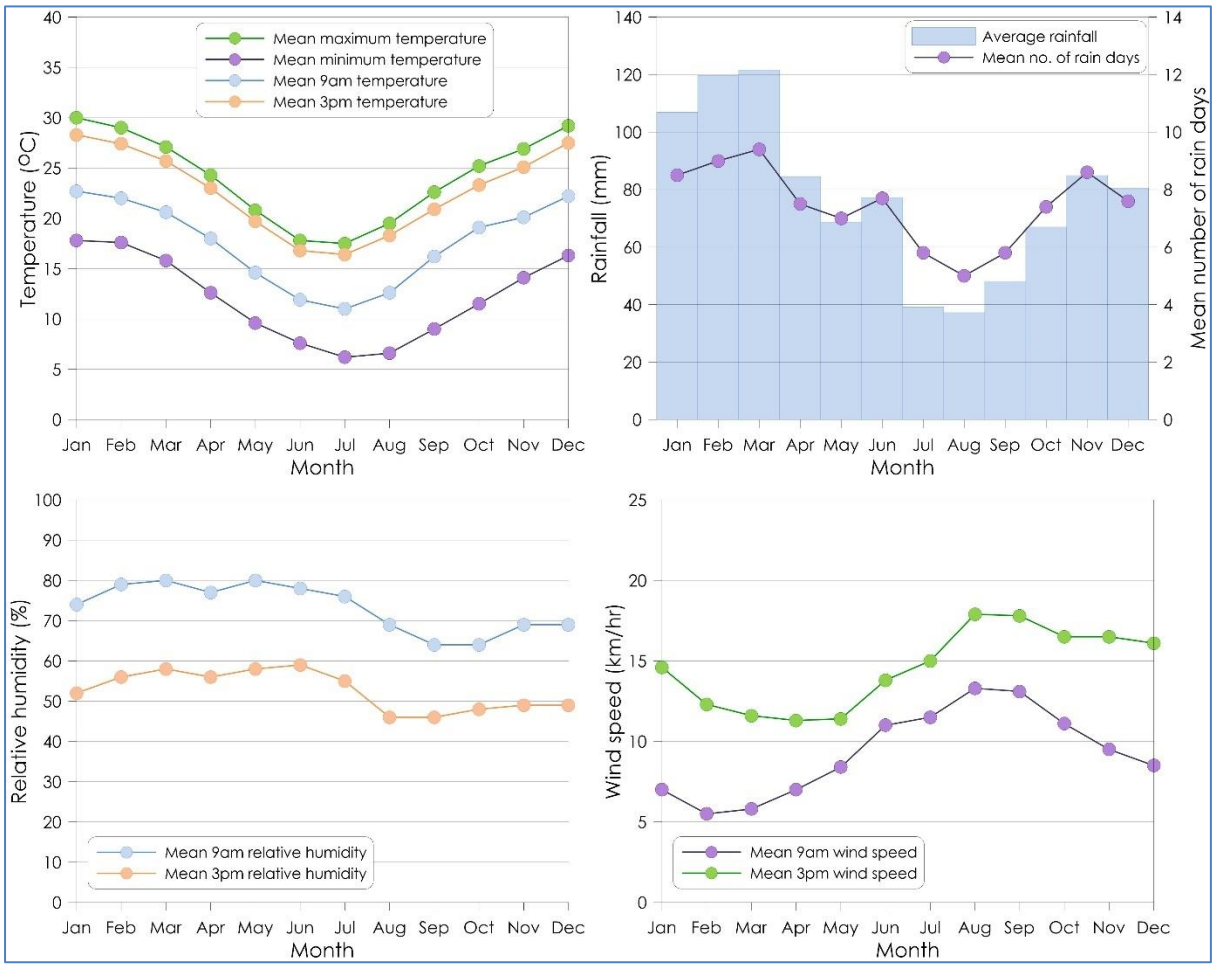

Figure 4-1: Monthly climate statistics summary – Paterson (Tocal) AWS

4.2 Local meteorological conditions

Annual and seasonal windroses at Paterson (Tocal) AWS weather station during the 2011 calendar period is presented in **Figure 4-2**.

The 2011 calendar year was selected as the meteorological year for the dispersion modelling based on an analysis of long-term data trends in meteorological data recorded.

On an annual basis, winds predominantly follow a west-northwest to southeast axis with varied winds from other directions. In summer, winds occur predominantly from the southeast quadrant. The autumn and spring windrose follow a similar pattern to the annual distribution with winds following a west-northwest to southeast axis. During winter, winds primarily occur from the northwest quadrant.

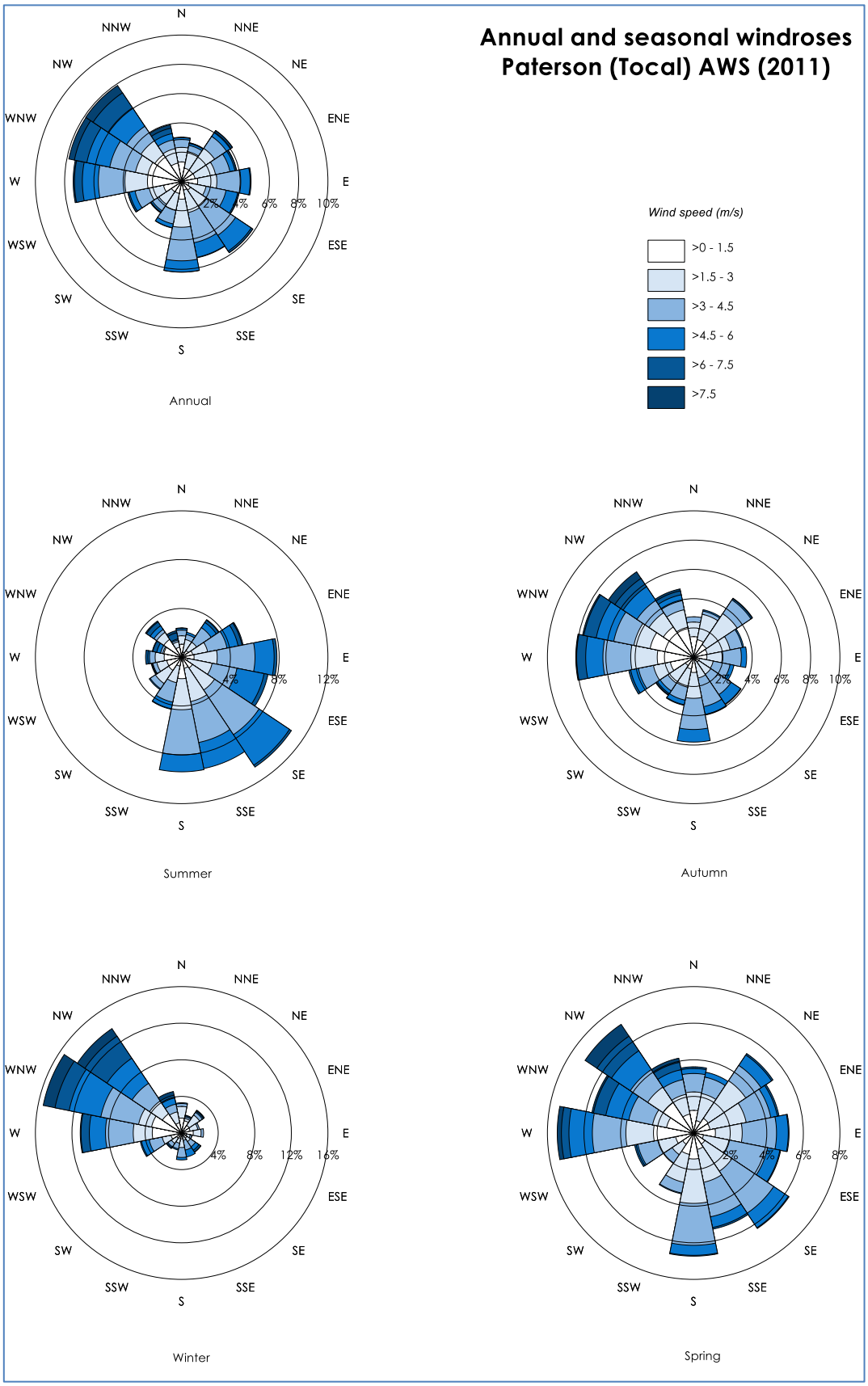

Figure 4-2 : Annual and seasonal windroses – Paterson (Tocal) AWS (2011)

5 DISPERSION MODELLING APPROACH

The following sections are included to provide the reader with an understanding of the model and modelling approach applied for the assessment

5.1 Modelling Methodology

To investigate what effect the proposed changes have on the approved operations, air dispersion modelling was performed to predict the potential change associated with Project and provide a comparison with the approved operations and the extent of air quality impacts.

To allow for a direct comparison with the approved operations, the air dispersion model was setup identically (apart from adding in the activities associated with the Project). Full details regarding the dispersion model setup can be found in the *Riverbend Quarry and Compost Facility Air Quality Impact Assessment* (**Todoroski Air Sciences, 2015**).

5.2 Emission estimation

5.2.1 Dust emissions

Quarrying operations associated with the site are no longer active, hence dust emissions from these activities would not occur. Fugitive dust emissions due to composting operations would be small due to the inherent moisture of the material being processed and as such, potential impacts from these operations would be negligible. The Project does not seek change the approved processing rate and there would not be any additional dust generated. Thus, dust impacts have not been assessed in this report.

5.2.2 Odour emissions

Odour emissions from the Project would potentially arise from a range of sources with varying rates of odour emissions at different times due to the operational activities conducted. The main sources of odour emissions from the Project are identified as the compost windrows, from the processing of the input material streams and other sources such as the leachate water storage and composting handling activities.

The odour emissions estimates for these sources are identical to those applied in the AQIA (**Todoroski Air Sciences, 2015**) and were also applied for this Project. Further detail regarding the odour emission estimates are found in the AQIA (**Todoroski Air Sciences, 2015**).

As noted in a clarification to Council regarding the Riverbend Quarry and Composting Facility (**Todoroski Air Sciences, 2016**), the applied odour emission rates used in the AQIA were based on odour measurements of composting material that consisted of a mixture of green waste domestic food waste and garden organics, liquid food and organic wastes, including highly odorous grease trap waste and commercial and industrial food wastes (up to 40% of the windrow). These odour measurements are expected to representative of the proposed 20% general solid waste putrescible, biosolids and manures in the composting mixture.

A key difference between the approved operations and the Project is the location of activities at the site. The approved operations were based on indicative plans available at the time and were since refined during the construction phase.

Figure 5-1 presents a comparison of the site layout of the modelled approved operations in the AQIA (**Todoroski Air Sciences, 2015**) and the site layout for the Project. The comparison shows the shredder and workshop shed are located further south, with the working pad and maturation areas separated by six composting bunkers. The approved operations included eight composting bunkers with dimensions of approximately 50m x 8m (3,200m^2). The current operations consist of six composting bunkers with dimensions of 25m x 8m (1,200m^2) with the Project seeking an additional six composting bunkers being added to the east of the current bunkers, resulting in a total combined composting area of 2,400m^2. The change in total available area for composting has been reduced by 800m^2, thus resulting in a reduction of potential odour emissions generated by these activities.

Additionally, the leachate ponds to the north have been included in the modelling, whereas previously the leachate pond was located to the south.

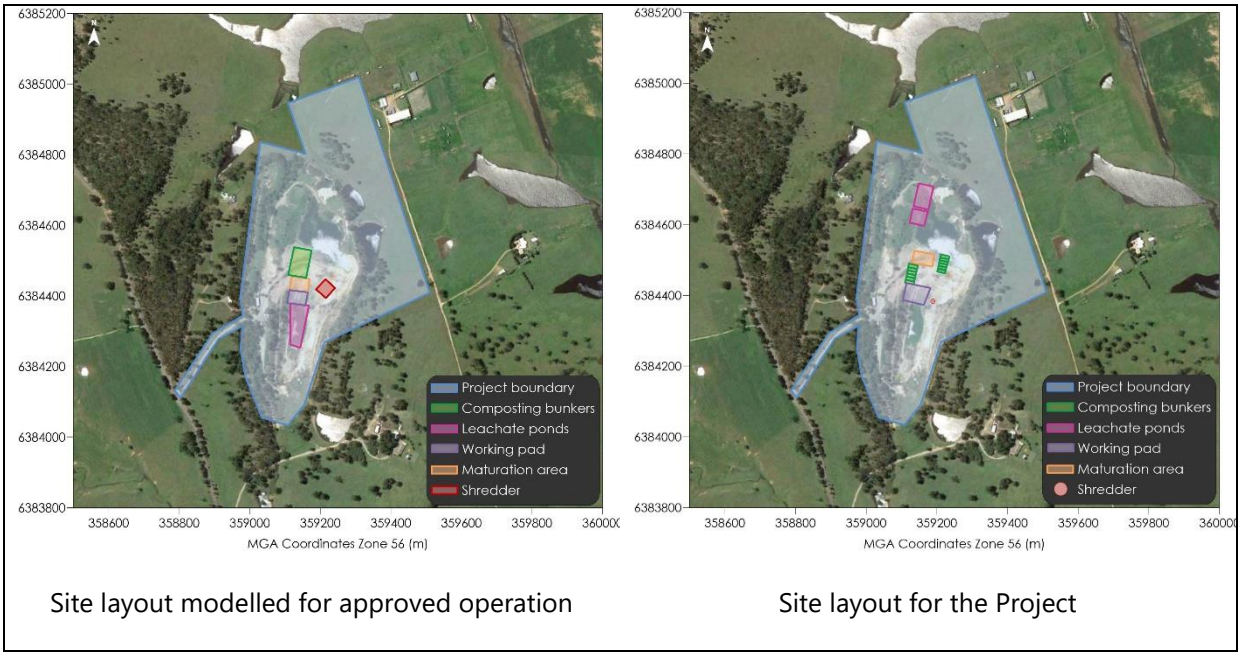

Figure 5-1: Comparison of modelled site layouts – approved operation vs Project

6 DISPERSION MODELLING RESULTS

This section presents the predicted air quality levels which may arise from air emissions generated by the Project. **Table 6-1** presents the discrete dispersion modelling results at each of the assessment locations. The results indicate that odour levels due to the Project will be below the applicable criteria at all assessment locations. The applicable criteria are the same as applied to the approved operations (**Todoroski Air Sciences, 2015**).

The modelling predictions indicate the 2 OU contour would encroach slightly on the AURA boundary.

Table 6-1: 99th percentile nose-response average ground level odour concentrations – Incremental impact

Assessment location ID	Predicted level (OU)	Odour assessment criterion (OU)
R1	3.6	6
R2	4.1	6
R3	3.1	6
R4	3.7	6
R5	0.6	6
R6	0.5	6

The spatial distribution of the dispersion modelling predictions for the Project is presented as an isopleth diagram showing the 99th percentile nose-response ground level odour concentrations in **Figure 6-1**.

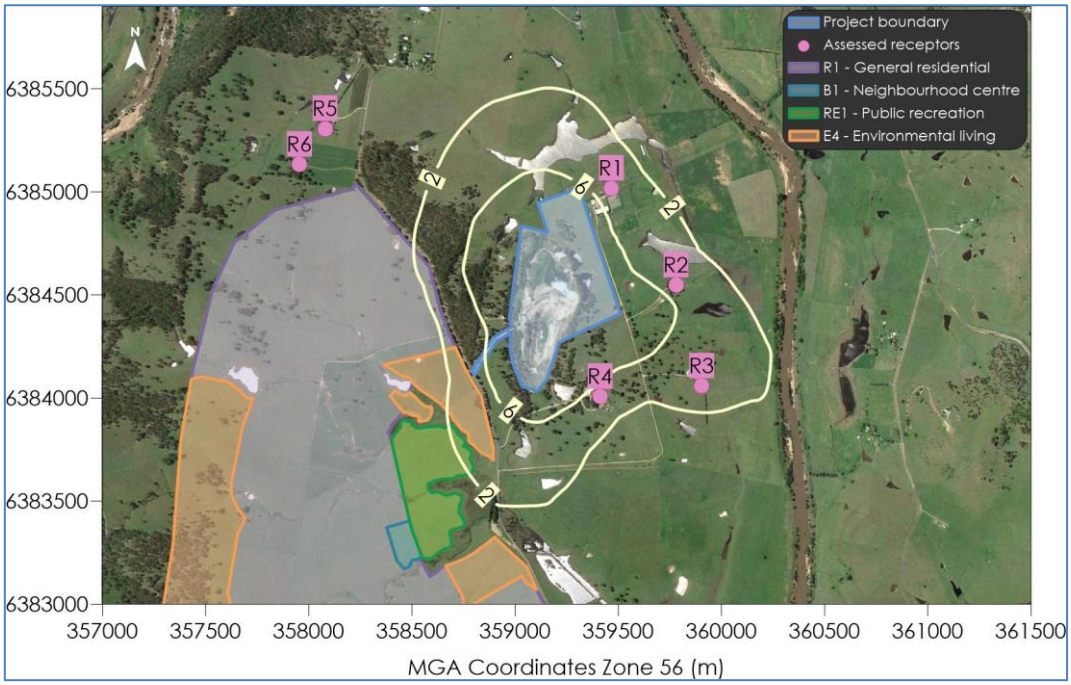

Figure 6-1: Predicted 99th percentile nose-response average ground level odour concentrations – incremental impact

The predicted odour concentrations are overlaid with the predictions for the approved operations (**Todoroski Air Sciences, 2015**) in **Figure 6-2**. Overlaying these contours allows for a direct comparison of the potential change associated with the proposed Project to be clearly seen.

The results show a similar distribution to the previous modelling and indicate that impacts are predicted to shift marginally further east and south of the Project in places. The extent of impact on the AURA area is relatively comparable to the previous modelling for the approved operations, with similar predicted impacts on the E4 (environmental living) and RE1 (public recreation) areas. We the note the revised modelling indicates a slight a reduction in the predicted impacts in the north-western section of the R1 (residential) area of AURA.

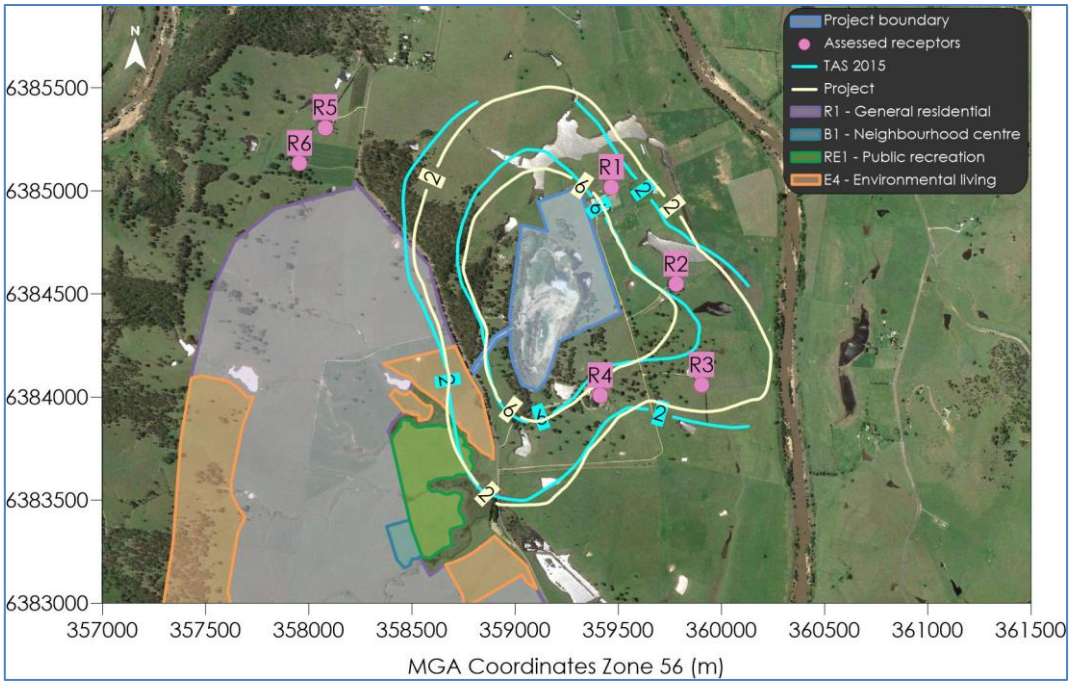

Figure 6-2: Comparison of predicted 99th percentile nose-response average ground level odour concentrations for the Project and approved operations

7 ODOUR MITIGATION AND MANAGEMENT

The Air Quality Management Plan (AQMP), **Todoroski Air Sciences (2018)** *Air Quality and Noise Management Plan Anambah In-Vessel Composting Facility*, incorporates odour mitigation measures to minimise the potential generation of adverse odour emissions. The mitigation measures and the choice of composting technology used for the Project minimise the potential for air quality impacts in the surrounding area.

The air emission controls applied at the site are regularly assessed to ensure they are working effectively and any required modification or adjustments to the air emission control measures would be revised on a regular basis and documented in the AQMP.

It is understood the Project has not received any odour complaints to date. This suggests the current mitigation and management measures are effective. Nevertheless, the site would continue to apply appropriate odour management measures to ensure it minimises the potential occurrence of excessive odour emissions from the site.

8 CONCLUSIONS

This study has examined the potential odour impacts that may arise from the proposed composting modification operations at the Project.

The modelling applies odour emission rates calculated from direct measurements from a full-scale trial of the proposed composting method, supplemented with other data obtained from odour studies on similar processes.

The odour modelling results show that the odour concentrations arising from the proposed composting activity would be below the relevant criterion at the assessed receptor locations.

The assessment outlines the reasonable and feasible mitigation measures that are used to ensure the Project maintains acceptable odour levels.

Overall, the assessment demonstrates that even using conservative assumptions, the Project can operate without causing any significant air quality impact at residential receptors in the surrounding environment.

9 REFERENCES

Bureau of Meteorology (2022)

Climate statistics for Australian locations, Bureau of Meteorology website, accessed March 2022. http://www.bom.gov.au/climate/averages

Katestone Scientific Pty Ltd (1995)

"The evaluation of peak-to-mean ratios for odour assessments" Volume 1 - Main Report, May 1995

Katestone Scientific Pty Ltd (1998)

"Peak-to-Mean Concentration Ratios for Odour Assessments".

NSW DEC (2006)

"Technical framework – Assessment and management of odour from stationary sources in NSW", November 2006

NSW EPA (2017)

"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales", NSW Environment Protection Authority, January 2017.

Todoroski Air Sciences (2015)

"Riverbend Quarry and Compost Facility Air Quality Impact Assessment", prepared for VGT Pty Ltd, July 2015.

Todoroski Air Sciences (2018)

"Air Quality and Noise Management Plan Anambah In-Vessel Composting Facility", prepared for Anderson Environment & Planning by Todoroski Air Sciences, September 2018.

TRC (2011)

"Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia", Prepared for the NSW Office of Environment and Heritage by TRC Environmental Corporation.

Appendix G – AEP Environmental Assessment

ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Ditton Properties Pty. Ltd

Attention: Chris Ditton

Via Email: chris@rbquarry.com

Our Ref: 2573

23 May 2022

Dear Chris

Section 4.55 Application Modifications to DA15-433 Approved Organic Waste Facility at 422 Anambah Road, Anambah, NSW.

As per your request in previous correspondence, Anderson Environment & Planning (AEP) are currently reviewing the original EIS submitted with DA15-433 Approved Organic Waste Facility at 422 Anambah Road, Anambah, NSW, to guide a Statement of Environmental Effects (SEE). The SEE will accompany a Section 4.55 Amendment to Approved Development Application for the requested modification to Consent Condition No. 2, pertaining to the addition of Category 2 wastes (putrescible) including "biosolids and manures" and "animal manure and mixtures of manure and biodegradable animal bedding organics" (as per Table 3 from *Composting and Related Organics Processing Facilities* (DEC 2004)) to the existing 8000 t/a Category 2 waste-type allowance permitted under the original development application.

Briefing & Review of Existing Information

Further impacts to biodiversity resulting from the proposed modification to the existing development have been reviewed in consideration of environmental planning instruments and legislation pursuant to the requirements of the Section 4.55 Amendment to Approved Development Application to DA15-433 as outlined by Maitland City Council (MCC):

- Maitland Local Environment Plan 2011;
- Maitland Development Control Plan 2011;
- Biodiversity Conservation Act 2016 (NSW);
- Fisheries Management Act 1994 (NSW);
- Water Management Act 2000 (NSW);
- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (NSW);
    - Chapter 3 – Koala habitat protection 2020;

- State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW);
    - Division 3 – Coastal environment area; and
- Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth).

AEP conducted undertook a general ecological survey of the Site (February 2022). The species recorded during the survey were mobile species, i.e. Eastern Grey Wallaby, Rabbit, Kookaburra, Noisy Minor, Magpie, Galah, Striped Marsh Frog, Common Eastern Froglet and Eastern Water Dragon. These species are unlikely to be solely dependent on habitat that the Site would afford.

Lantana camara and *Senecio madagascariensis*, were also recorded within the Site, these two (2) species are listed as priority weeds for the Hunter Local Lands Services Region.

No listed flora or fauna were identified on the Subject Site.

The proposed modification does not require any construction or proposed changes to existing infrastructure it is considered that the proposed modification is unlikely to have any significant impact on the local population of the above mobile species and they are unlikely to be solely dependent on habitat that the Subject Site would afford. Management of weeds must continue in accordance with the DA and *Biosecurity Act 2015* to reduce the spread of weeds present within the Site.

A review of the AK Environmental hydrological assessment (2022) has shown that composting facility operated by Riverbend Organics is currently meeting or exceeding all environmental and water quality outcomes underlined by Maitland City Council's Conditions of Consent. Given the above it has been determined that there are no additional biodiversity mitigation measures are required in response to the proposed modification. Continued application of operating procedures outlined in the OEMP and DA Conditions of Consent are considered sufficient.

Should you require any further clarification on this matter, please contact Natalie Black (AEP Senior Environmental Manager/Works Coordinator 0431 249 360) or myself on 0432 218 199.

Regards

Alex McNamara

Ecologist

Appendix H – Operational Environmental Management Plan

AKE Document: 2057-1438
Version: 2.1
Issued: 3 April 2019

AK Environmental PTY LTD

ENVIRONMENTAL CONSULTANTS

Operational Environmental Management Plan (OEMP)

Anambah In-vessel Composting Facility
442 Anambah Road, Anambah NSW 2320

P: 0431 678362
E: info@akenvironmental.com.au

Document Status

Report Type	Operational Environmental Management Plan
Project Location	442 Anambah Road, Anambah NSW 2320
Client	Ditton Properties Pty. Limited
Document Number	2057-1438
Document File Name	20190403 2057-1438 AKE REPORT - Anambah Composting Facility OEMP V2.1
Report Version	2.1
Date of Issue	03/04/2019
Issue Method	PDF issued by electronic mail
Issue Recipients	Anderson Environment and Planning Ditton Properties Pty. Limited
Author	 Dr Andrew Krause Principal Environmental Engineer AK Environmental Pty. Limited

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1. Background

1.1 Introduction

The Anambah In-vessel Composting Facility (AICF) is owned by Ditton Properties Pty. Limited (Ditton Properties) and operated by RB Organics Pty. Limited (RB Organics). In-vessel composting is undertaken using a covered and aerated static pile. The AICF operates under Development Approval DA 15-433 (see Appendix A) issue by Maitland City Council (MCC) for the purpose of composting up to 40,000 t/a of organic green waste to produce a maximum of 24,000 t/a of saleable high-quality compost.

1.2 Description of Site

The AICF is located at Lot 22 DP1069012, which comprises an area of 32.1 ha (Figure 1). The site remains an active quarry with approval for continued operation until 2028. It is proposed that quarrying operations will begin to be wound down after the commencement of composting operations. The excavated pit currently extends across approximately 70% of the site. The pit void is approximately 30 m deep, is 650 m in length from north to south, and 300 m in length from east to west. The AICF is located at the floor of the pit void.

The existing land uses surrounding the site largely comprise rural land uses, with most of the surrounding areas cleared for grazing. Four individual rural residential developments are in near proximity to the east and north east of the AICF lot boundary. Lot 1 DP862654 is situated west of the AICF lot boundary, and it contains the nearest residence to the development. The residence is not considered an amenity receptor because the lot is held under ownership by AICF management. A covenant has been placed over the property deed to ensure Lot 1 DP862654 cannot be sold separately to Lot 22 DP1069012.

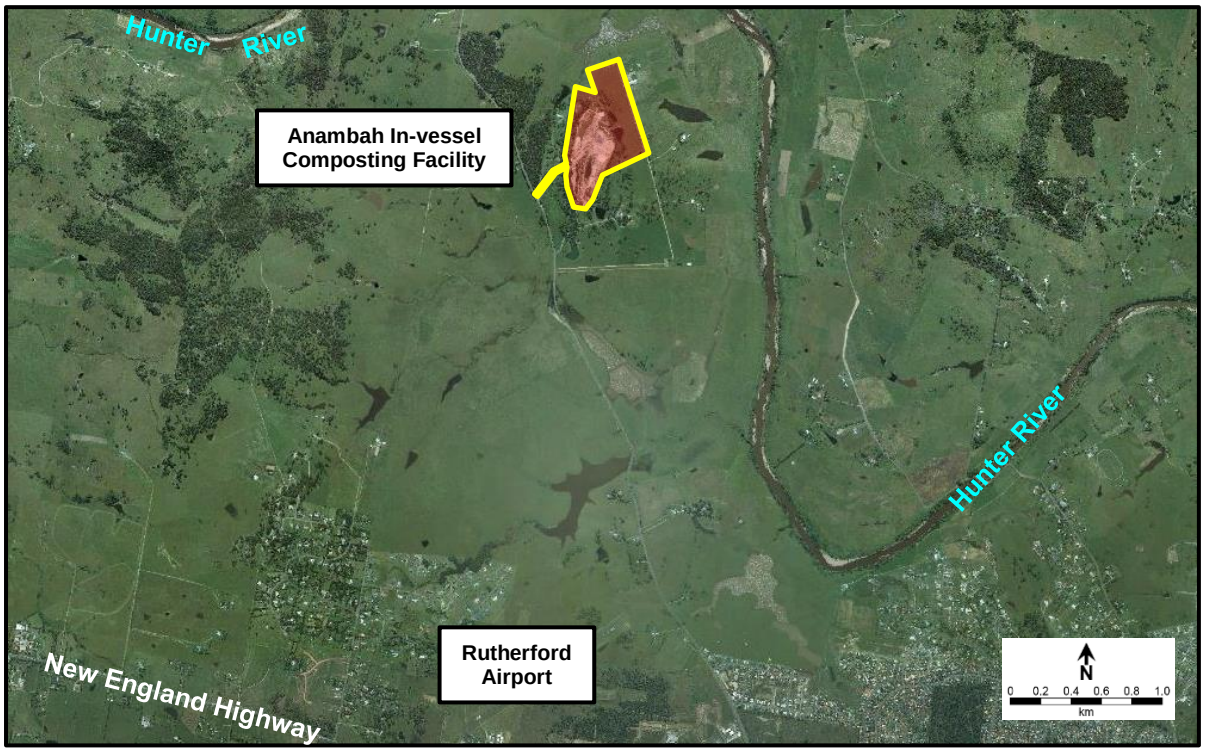

Figure 1 – Site lot boundary and general locality (source: SixMaps)

1.3 Description of Operations and Staging

The in-vessel composting process is outlined in Figure 2. The facility has a maximum waste processing capacity of 40,000 t/a of Category 1 and Category 2 waste organic material. Imported waste organics will be sourced from (i) commercial industry and (ii) self-haul green waste drop-off by the general public. All delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. Self-haul green waste deliveries by the public will be restricted to between 8:30am and 3:30pm to reduce conflict with high-volume commercial traffic periods. No operations of any kind are permitted on Sundays or Public Holidays.

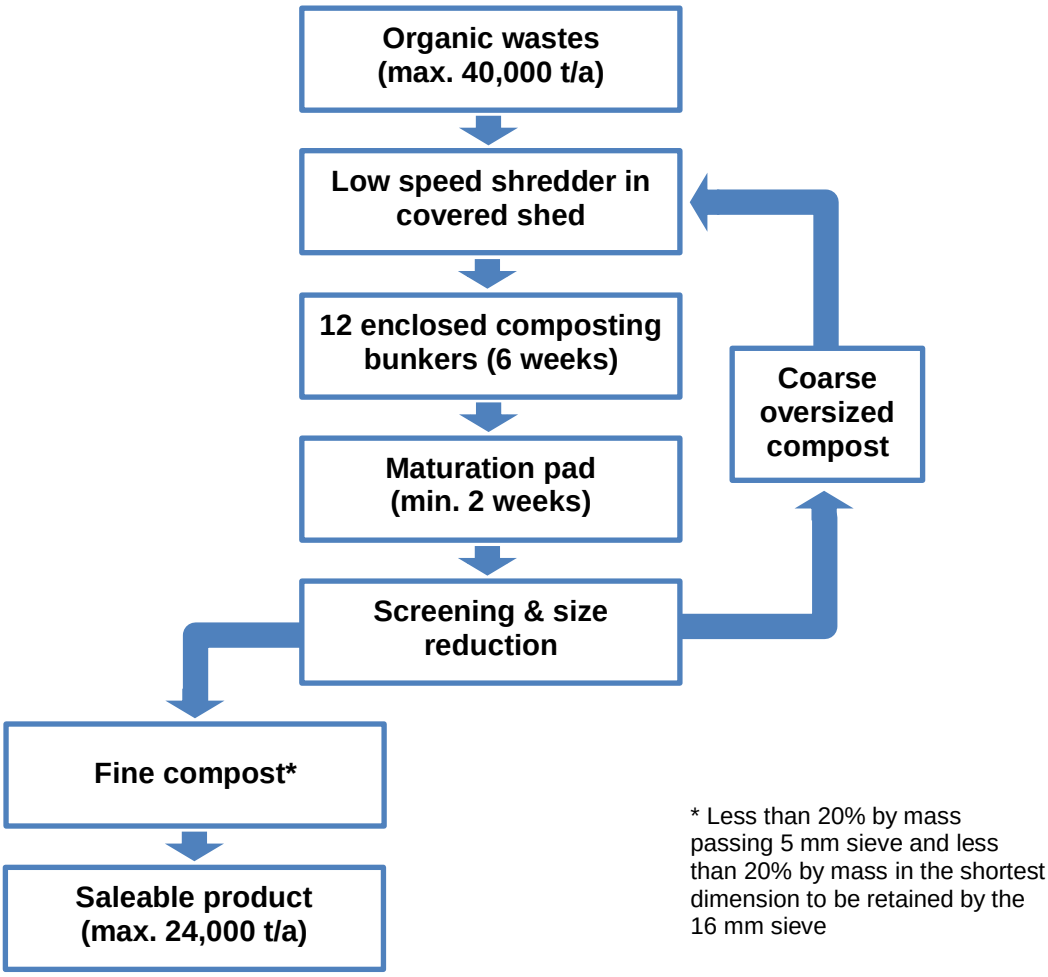

Figure 2 – AICF operational process flow with annual tonnage at full development of Stage 2 (source: Pulver Cooper & Blackley (2015))

1.3.1 Variation of Development Staging

The AICF development application did not envisage any requirement to stage construction. Inability to secure tender opportunities during 2018 has meant a lower than expected availability of input organic waste. This provides an economic driver to stage the development

while awaiting expansion of supply markets. Subsequently, development of the AICF facility will be staged as follows:

- Stage 1 (50% of maximum capacity) - green waste input of up to 20,000 t/a and compost production of up to 12,000 t/a; and
- Stage 2 (maximum capacity) - green waste input of up to 40,000 t/a and compost production of up to 24,000 t/a.

1.3.2 Improved Understanding of Composting Bunker Requirements

During project planning in 2015, Ditton Properties was advised a total of 16 European-designed GORE cover in-vessel composting bunkers with a combined floor area of 6,400 m^2 (individual floor area of 8 m x 50 m = 400 m^2) would be required to achieve the maximum waste processing capacity of 40,000 t/a.

An on-site AICF trial during November 2018 used nearly 200 t of green waste and determined the composting efficiency of the aerated in-vessel static pile bunkers to be significantly higher than under European conditions (due primarily to beneficial warmer climate factors). This is supported by recently obtained process information provided by Cleanaway, which manages a similar GORE cover in-vessel organics processing facility at Moree NSW.

Based on the newly available composting information, a review of capacity calculations was undertaken by Ditton Properties. The now approved 16 bunker composting development could have (theoretically) processed up to 91,000 t/a on a six weeks composting schedule, which is more than twice the maximum input capacity of 40,000 t/a.

It is now estimated that the maximum input capacity can instead be achieved by a total of 12 GORE cover in-vessel composting bunkers with a reduced combined floor area of 2,400 m^2 (individual floor area of 8 m x 25 m = 200 m^2) (see Figure 3). The capacity calculation applies the same six weeks composting schedule. The input of organics by stage are:

- Stage 1 – 330 t per batch with 6 bays equates to 17,200 t/a; and
- Stage 2 – 330 t per batch with 12 bays equates to 34,400 t/a.

It is acknowledged the calculated inputs are marginally lower than the Stage 1 and Stage 2 maximum allowable inputs of 20,000 t/a and 40,000 t/a, respectively. This is to account for potential fluctuations in solid waste density above the 500 kg/m^3 specified by *Australian Standard 4454-2012 - Composts, soil conditioners and mulches*.

The 2,400 m^2 Stage 2 compost bunker footprint represents a significant 62% areal reduction compared to the 6,400 m^2 of the approved 16 bunker design.

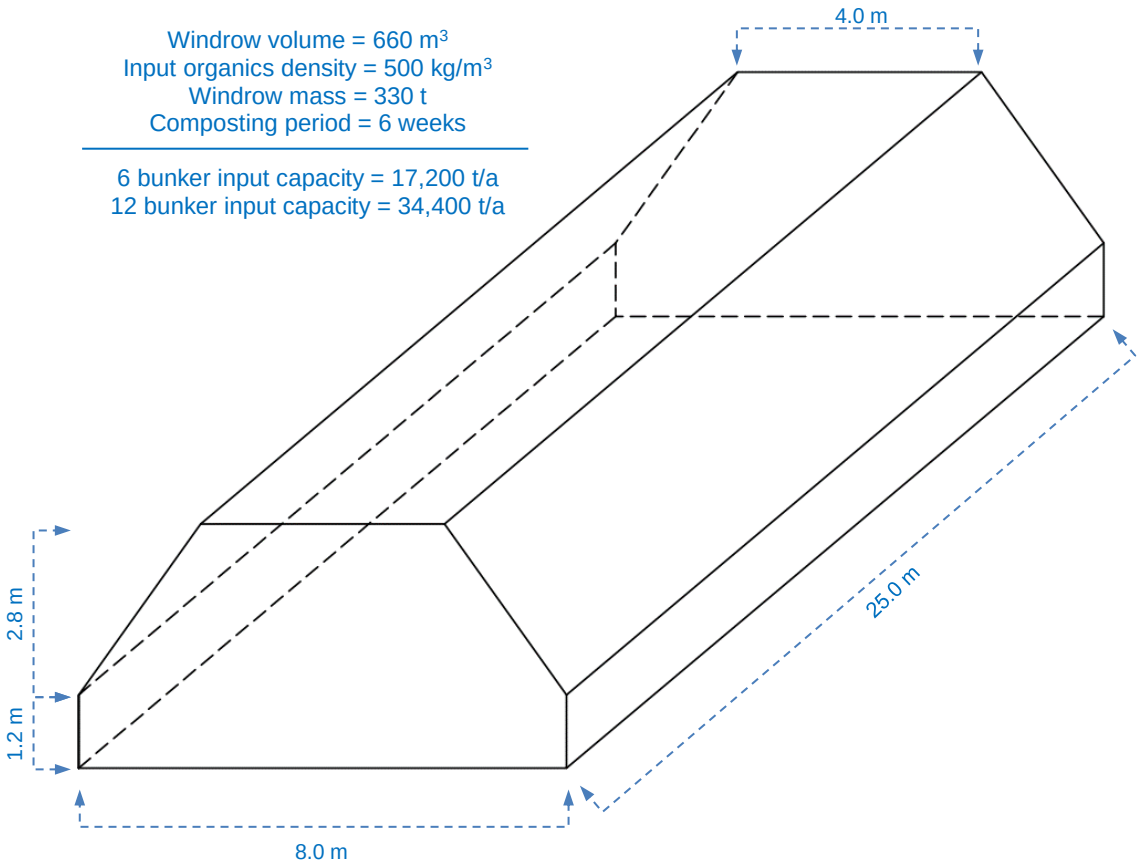

Figure 3 – Composting bunker window dimensions with a 200 m^2 floor area

1.3.3 Works Area Footprint Reduction

To accommodate the approved 16 bunker design and the adjacent working pad, additional excavation of the western embankment foot slope would have been required to create a flat pad of sufficient area. The smaller 12 bunker Stage 2 design has meant these pad expansion works have not been undertaken. As such, the bunker re-design has not resulted in an enlargement of trafficable working areas that might have otherwise increased the source footprint of dust emissions.

1.3.4 Variation of Leachate Management

The approved leachate storage system comprised a 23,000 L (23 m^3) concrete leachate containment sump based on the design of OD Hydrology (2015). However, the sizing process only considered direct *leachate* generation from compost bunkers and neglected to account for generation of *contact stormwater* (stormwater runoff which has contacted any form of organic material). The leachate storage system has been re-designed to be consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). Details are provided in Appendix C. The key variation is a capacity increase of Leachate Dam to 6.5 ML, which equates to a 280-fold volumetric enlargement compared to the approved design.

1.3.5 Environmental Impacts of Development Amendments

Due to the introduction of key staging and developmental footprint amendments described in Sections 1.3.1 to 1.3.4, an explanatory note is provided in Appendix B to detail the relationship between a staged composting operation and relevant environmental management commitments at AICF as detailed in *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015* (Pulver Cooper & Blackley 2015). Because none of the amendments will result in an increase to the scale of the development, the environmental impacts of a staged AICF are considered equal to or less than those permitted under the existing development approval.

1.3.6 AICF Layout

The AICF layout is shown in Figure 4. The development consists of:

- site operations and storage office;
- sealed internal access roads (tar seal or stabilised gravel standard);
- Anambah Road intersection upgrade (entry road widening and overtaking lane addition on Anambah Road);
- site entry and road traffic signage;
- entry road security gate;
- weighbridge with boom gates at entry and exit;
- weighbridge office;
- on-slab shed to house drop-off stockpile, slow speed shredder and workshop;
- concrete composting bunkers each of 200 m^2 floor area (8 m x 25 m) and each with a GORE cover system (Stage 1 with six bunkers and Stage 2 with 12 bunkers);
- floor-inset bunker air injection system and leachate collection drainage system;
- compost maturation/screening/storage area on 1,350 m^2 stabilised gravel pad (30 m x 45 m);
- working pad area;
- leachate containment dam (6.5 ML capacity), high-level alarm system, floating pontoon aerator and leachate return pump;
- surface water and sediment management dams (Sediment Dams 1 and 2, Central Dam, South Dam and Stormwater Storage Dam);
- above ground (bunded 110%) diesel storage tanks (2 x 12,000 L) and re-fuelling area;
- oil and grease separator for stormwater at south-east corner of pad;
- submersible pump (25 L/s) on floating pontoon at Central Dam;
- water tanks (4 x 23,000 L) for roof rainwater collection and top-up transfer from Central Dam pump;
- fire-fighting system (2 x high-flow pressurised hose reels at slow speed shedder shed supplied by water tanks, water tanker with water cannon and diesel pump; fire extinguishers at re-fuelling area); and
- pump out toilets at site office.

In addition to fixed plant, mobile plant will be employed at the AICF to handle solid waste and undertake dust suppression of unsealed trafficable areas.

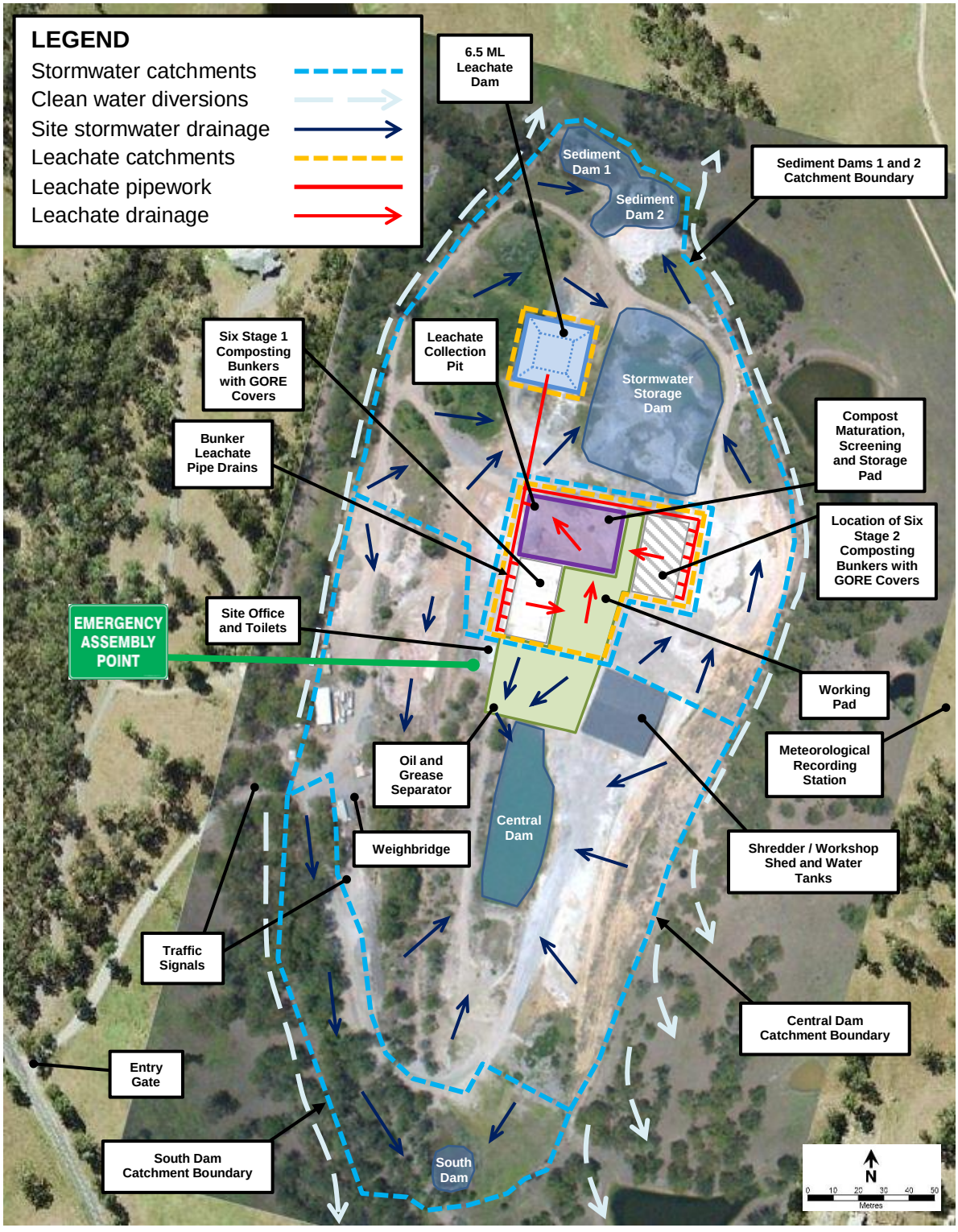

Figure 4 – AICF operational layout and catchment areas

1.4 OEMP Context

Notice of determination of Development Approval DA 15-433 was originally issued by MCC on 11 October 2016. Ditton Properties subsequently applied to vary the permissible waste types and an amended approval was issued 12 July 2017 (see Appendix A). The requirement for this Operational Environmental Management Plan (OEMP) is contained in development consent condition 31, which states:

"The proponent shall prepare and implement an Operational Environmental Management Plan for the project taking include consideration [sic] *EPA requirements. This plan must:*

- *a) be prepared in consultation with Council and the EPA by a suitably qualified and experienced expert;*
- *b) be submitted to and approved by Council prior to commencement of operations;*
- *c) describe in detail the management measures that would be implemented to address:*
  - *relevant matters referred to in Section 4 and Appendix B of the EPA'S Environmental Guidelines for Composting & Related Organics Processing Facilities; and*
  - *conditions of consent;*
- *d) include a copy of:*
  - *management plans and monitoring programs required in this approval;*
  - *a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2[1];*
- *e) describe the procedures that would be implemented to:*
  - *keep the local community and relevant agencies informed about the operation and environmental performance of the composting facility;*
  - *receive, handle, respond to, and record complaints;*
  - *resolve any disputes that may arise during the course of the composting facility;*
- *f) respond to emergencies; describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of this composting facility;*
- *g) details of an Annual Environment Management Report being an annual audit of operations outlining but not limited to:*
  - *summary of any monitoring of odour, dust, noise runoff, etc. in the past year;*
  - *an analysis of monitoring results against relevant:*
    - *impact assessment criteria;*
    - *monitoring from previous years;*
    - *predictions in the EIS;*
  - *performance measures;*
  - *complaints and any handling of complaints;*
  - *any actions to ensure compliance of relevant criteria within the EIS."*

The development of this OEMP has been undertaken in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004).

Operational commitments to environmental management at AICF are detailed in *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015* (Pulver Cooper & Blackley 2015) which accompanied the Development Application for the AICF. Pulver Cooper & Blackley (2015) contains the

[1] Has been superseded by *HB 90.3-2000 (R2016) The Construction Industry - Guide to ISO 9001:2000*

following relevant specialist studies undertaken to assess potential environmental impacts of ongoing AICF operations:

- OD Hydrology (2015) *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment* (doc ref: 44001-rpt01d.docx);
- OD Hydrology (2016) *Responses to request for additional information (Composting Facility, Anambah Road, Anambah, NSW* (doc ref: 44001-ltr01b.docx);
- VGT (2015) *Soil and Water Management Plan - Riverbend Quarry Via Gosforth* (doc ref: 1084_RB_SWMP_R4);
- Todoroski Air Sciences (2015) *Riverbend Quarry and Compost Facility - Air Quality Impact Assessment*;
- Todoroski Air Sciences (2018) *Air Quality and Noise Management Plan Anambah Quarry and Composting Facility*;
- Global Acoustics (2015) *Composting at Gosforth Quarry - Noise Impact Assessment February 2015*;
- Fire Engineering Design (2018) *Fire Safety Engineering Report – Proposed Composting Facility 442 Anambah Road Anambah 2320* (doc ref: 20128046MWRR001A.docx);
- Intersect Traffic (2015) *Traffic Impact Assessment - Composting Facility, Riverbend Quarry – Amended July 2015*; and
- Anderson Environment and Planning (2015) *Ecological Assessment Report for Proposed Composting Facility at Anambah Road, Gosforth NSW.*

Development Approval DA 15-433 consent contains General Terms of Approval from Department of Primary Industries (Water) which requires preparation of a Soil and Water Management Plan (SWMP) and an Erosion and Sediment Control Plan (ESCP). The AK Environmental (2017) document *Soil and Water Management Plan - In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW* satisfies the requirements of DPI-Water (including an ESCP) and is relied upon in this OEMP.

1.5 OEMP Objectives

The objectives of the OEMP are to:

- apply best practice environmental management to the site;
- implement Pulver Cooper & Blackley (2015) and the conditions of consent for the project;
- comply with environmental legislation and Environment Protection Licence (EPL) 12510;
- ensure that environmental risks associated with the ongoing operation of the site are properly managed;
- define details of who, what, where and when environmental management and mitigation measures are to be implemented;
- maintain an up-to-date Pollution Incident Response Management Plan (PIRMP) which is integrated with the OEMP;
- demonstrate due diligence; and
- demonstrate an active environmental improvement program.

1.6 Site Environmental Policy

AICF management is committed to protecting the health and safety of the community, its employees and the environment. The following environmental policy applies to operation of the AICF.

1.6.1 Policy Scope

This policy applies across the AICF operations, including contractors/sub-contractors and visitors to the workplace/worksite. AICF will continually improve environmental performance, prevent environmental harm associated with activities, develop employee environmental awareness, report on environmental performance and minimise waste.

1.6.2 Policy Rules

Overall policy rules are as follows:

- wherever practicable, AICF employees will reduce the volume of waste generated and reuse and recycle;
- whenever possible new products and supplies should be reusable and/or recyclable;
- where possible, purchase products responsibly, for example, purchase local products to reduce transport emissions and support the local community;
- when it is safe to do, prevent work activities causing environmental damage by following preventative procedures;
- in the event of an incident/accident, follow the emergency procedures, making sure that the appropriate equipment is available for clean-up and that a quick response is applied to eliminate or reduce any damage; and
- be aware of environmental issues and safeguards, including erosion and sediment control, weed invasion, threatened vegetation and fauna, air quality, noise, and waste.

1.6.3 Policy Responsibilities

The AICF Onsite Manager must:

- implement and review this policy;
- consult with workers about this policy;
- provide resources, information, training and supervision for workers to allow them to adhere to the requirements of the site OEMP and any applicable legislation, and have the knowledge and resources to follow the procedures and understand their roles and responsibilities;
- comply with statutory requirements, codes, standards and guidelines;
- implement and comply with the site OEMP;
- make sure all equipment is serviced as per manufacturers requirements and not showing visible emissions;
- make sure noise and air pollution are kept to the appropriate levels;
- provide areas for chemical storage;
- make sure all incidents are appropriately investigated and reported and, if required, appropriate disciplinary action carried out; and
- undertake site environmental inspections using the Weekly Environmental Inspection Checklist and monitor liquid and solid waste details.

Workers must:

- comply with this OEMP and follow environmental procedures;
- not act in a manner that places the environment at risk;
- use, store and dispose of chemicals as per the Safety Data Sheet (SDS);
- remove waste from the workplace / worksite and place in designated storage areas;
- minimise the damage to flora and fauna;
- wash machinery in designated area;
- make sure correct measures are in place for sediment control;
- report any incidents or complaints to the AICF Onsite Manager;
- participate in consultation and training in relation to environmental management; and
- advise AICF Onsite Manager of any potential breaches of plans or statements, and sightings of threatened flora and fauna, archaeological or heritage items.

2. Environmental Management

2.1 Environmental Management Structure and Responsibility

Management of environmental issues is regarded as the responsibility of all AICF employees and contractors. The AICF organisational structure is shown in Figure 5, with specific accountabilities outlined in the following sections.

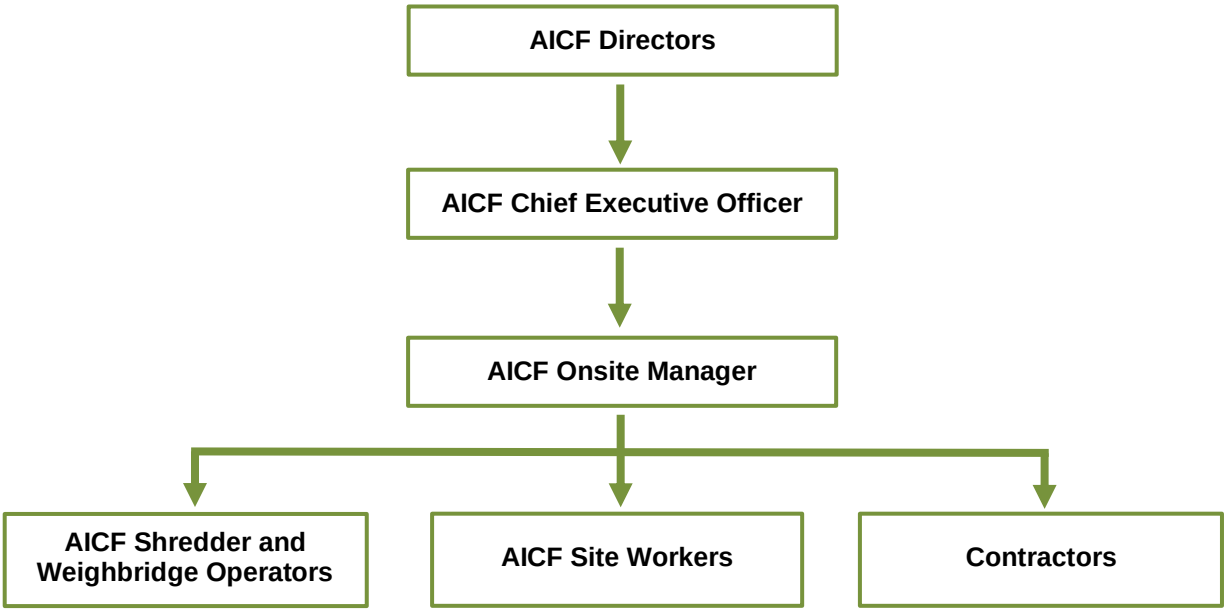

Figure 5 – Management structure diagram

2.1.1 AICF Directors

The AICF Director's responsibilities are:

- acquire and keep up-to-date knowledge of environmental matters relevant to the business;
- gain an understanding of the nature of the operation of the business or undertaking and general environmental issues associated with those operations;
- ensure that there is available for use by those engaged in the business, appropriate resources and processes to eliminate or minimise risks to the environment and non-compliance with licences during the conduct of the business or undertaking;
- ensure that people engaged in the business have appropriate processes for receiving and considering information regarding environmental incidents, hazards and risks, and respond in a timely way to that information;
- ensure that those engaged in the business have in place and implement processes for complying with any duty or obligation of the business under NSW legislation, including complying with licence conditions and notices served; and
- verify the provision and use of the resources and processes set out above.

2.1.2 AICF Chief Executive Officer

The AICF Chief Executive Officer is responsible for:

- promoting and maintaining good environmental management, and ensuring that this OEMP is effectively implemented;
- supporting the AICF Onsite Manager and holding them accountable for their specific responsibilities;
- ensuring regular environmental risk assessments are undertaken to identify risks; and
- ensuring immediate remedial actions are undertaken to minimise the impact from any environmental events should they occur.

2.1.3 AICF Onsite Manager

The AICF Onsite Manager is responsible for inducting all staff and contractors undertaking work at the AICF.

The AICF Onsite Manager is responsible for directing site activities in accordance with this OEMP, and for taking all practical measures to ensure the site is operating with acceptable risks to the environment. The AICF Onsite Manager is responsible for undertaking assessments of site operating conditions to identify any non-compliance or environmentally risky conditions. If the AICF Onsite Manager does not have the necessary authority to fix a problem, they are responsible for reporting the matter promptly and recommending remedial action to the AICF Chief Executive Officer.

2.1.4 AICF Staff

All staff are required to attend site inductions and follow this OEMP. Workers are responsible for advising the AICF Onsite Manager of any potential environmental issues.

2.1.5 Contractors

All contractors engaged to perform work for AICF management are required, as part of their contract/engagement, to comply with this OEMP and to comply with directions from the AICF staff. Failure to comply will be considered a breach of the contract and sufficient grounds for termination of the contract.

2.2 Approval and Licensing Requirements

2.2.1 Development Approval Conditions

Development Approval DA 15-433 was originally issued 11 October 2016. Ditton Properties subsequently applied to vary the permissible waste types and an amended approval was issued 12 July 2017 (see Appendix A).

The amended Development Approval contains consent conditions which relate to the operational phase of the AICF. Specific reference is made to consent condition 31d, which states *"a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2"*. As noted in Section 1.4, this standard has been superseded by *HB 90.3-2000 (R2016) The Construction Industry - Guide to ISO 9001:2000*. Documentation in accordance with the handbook requirements is provided in Appendix C to satisfy consent condition 31d.

2.2.2 Environment Protection Licence

In accordance with the Protection of the Environment Operations Act 1997 (POEO Act), the existing quarry operates under environment protection licence (EPL) no. 12510 (referred to as EPL12510). A copy of EPL12510 is provided in Appendix C. EPL12510 will be varied to accommodate the new scheduled activities of *composting* and *waste storage*. It is noted the site was previously subject to land-filling operations by a previous owner, but this scheduled activity component was removed from EPL12510 in 2011 under NSW Environment Protection Authority (EPA) notice 1095549.

Under POEO Act and the Regulations made under POEO Act, AICF's obligations are stated in the licence as follows:

- *"ensure persons associated with you* [Ditton Properties Pty. Limited as the licensee] *comply with this licence, as set out in section 64 of the POEO Act;*
- *control the pollution of waters and the pollution of air; and*
- *report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the POEO Act."*

All holders of an EPL are required under the *Protection of the Environment Legislation Amendment Act 2011* (POELA Act) and the requirement under Part 5.7A of the POEO Act to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP). The site-specific PIRMP shown in Appendix E has been prepared to describe the processes required to make preparations for, and respond to, a pollution incident at the AICF.

2.3 Reporting Requirements

It is the responsibility of the AICF Onsite Manager to document an Annual Environmental Management Report (AEMR), which details the environmental performance of the facility.

2.3.1 Reporting Year

The AEMR reporting year will be 24 March to 23 March the following year, which coincides with the anniversary date of EPL12510.

2.3.2 Scope and Purpose

The AEMR will be a summary of the environmental performance of the AICF for the reporting year. The AEMR will:

- describe the activities that were carried out in the previous year, and the activities that are proposed to be carried out over the next year;
- include a summary of the monitoring results and complaints records including a comparison of these results against the:
    - conditions, approvals/licenses, limits and performance objectives;
    - requirements of this OEMP;
    - monitoring results of previous years; and
    - relevant predictions made in assessment documentation.
- identify any non-conformance over the previous year and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data from the commencement of this OEMP;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies;

- identify measures that could be implemented to improve the environmental performance of the AICF if required; and
- identify suggested changes to the OEMP when it is next reviewed.

2.3.3 Timing

The AEMR will be submitted by 1 June (or nearest working day) each year and shall report on the previous operating year (24 March to 23 March the following year).

2.4 Environmental Training

All employees are required to undergo environmental awareness training and training about their responsibilities under this OEMP, which includes the site's PIRMP. The training ensures that all AICF employees, contractors and subcontractors understand their obligation to exercise due diligence for environmental management.

Environmental training includes:

- a site induction for staff;
- a site induction for contractors and sub-contractors;
- familiarisation with the requirements of the OEMP;
- environmental emergency response training;
- familiarisation with site environmental controls;
- familiarisation with management procedures for those activities with risk of causing environmental harm; and
- targeted environmental training for specific personnel working with equipment which may cause environmental harm.

A record of all site inductions will be maintained by the AICF Onsite Manager. Details of the induction and personnel are to be recorded on the Site Induction Register (Appendix F).

A record of all environmental training will be maintained by the AICF Onsite Manager. Specific details of training undertaken by all personnel are to be recorded on the Environmental Training Register (Appendix F).

2.5 Emergency Contacts and Response

The site PIRMP is provided in Appendix E of this OEMP. The PIRMP contains:

- the procedures to be followed regarding notification in the event of a pollution incident;
- a detailed description of the action that will be taken immediately after a pollution incident to minimise and control any pollution; and
- the emergency contacts details of any notified authorities or persons, and the procedures that will be followed regarding coordinating with such authorities or persons.

Chemicals and fuels kept and/or used onsite are listed in the PIRMP, and safety data sheets (SDS) are provided in Appendix G of this OEMP. Safe use of chemicals/fuels and spill-handling procedures are in accordance with SDS documentation.

3. Implementation

3.1 Risk Assessment

A risk assessment has been undertaken for development of the PIRMP to determine the following:

- identification of hazard events;
- identification of potential exacerbating circumstances;
- documentation of preventative measures and monitoring; and
- assessment of the residual risk (likelihood and consequence).

The risk register is shown in Table 3 of the PIRMP (see Appendix E of this OEMP). The risk assigned to each potential pollution incident event is the residual risk when all preventative actions/measures are considered.

The PIRMP sets out the criteria used to undertake the risk assessment, including the definition of likelihood, consequence and the resultant risk rating.

4. Operating Procedures

4.1 Weekly Environmental Inspection Checklist

4.1.1 Objective

To provide a checklist of weekly inspection activities relating to environmental management.

4.1.2 Procedures

Who:	AICF Onsite Manager, AICF Staff	
Where:	Whole of site	
When:	Weekly	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake inspections and complete the Weekly Environmental Inspection Checklist every week.		AICF Onsite Manager
The AICF Onsite Manager shall undertake and/or coordinate remedial action if required as a result of completing the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall record on the Weekly Environmental Inspection Checklist if a non-compliance has triggered the need for a Non-compliance and Corrective Action Report.		AICF Onsite Manager
If required, a Non-compliance and Corrective Action Report shall be prepared.		AICF Onsite Manager
Staff will be responsible for undertaking any remedial action as directed by the AICF Onsite Manager.		Staff
The AICF Onsite Manager shall inspect and sign-off on the Weekly Environmental Inspection Checklist when remedial action work has been adequately completed.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that the Weekly Environmental Inspection Checklist is appropriately filed (hard copy or electronic copy), that records are kept on site for a minimum of four (4) years and records are made available to EPA upon request.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Non-compliance and Corrective Action Report (see Appendix F)	
References:	-	

4.2 Liquid Waste Management System

4.2.1 Objectives

Liquid waste at the AICF comprises leachate generated by processing of organic wastes and raw sewage from onsite toilet facilities.

Leachate is produced directly by organics undergoing in-vessel composting. In accordance with NSW DEC (2004), *contact stormwater* must also be managed in the same manner as leachate. *Contact stormwater* at the AICF is any rainfall runoff which could come into contact with organics. This includes runoff which contacts the northern portion of the working pad and the compost maturation/screening/storage pad. No handling of organics will occur south of the Stage 1 bunkers, hence the southern portion of the working pad is excluded from the leachate catchment area shown in Figure 2.

The leachate management system has been designed, and will be operated, and maintained consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004), and has the following objectives:

- Working surfaces - ensure storage areas, active composting surfaces, and associated access roads are constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles;
- Leachate barrier system - prevent the pollution by leachate of subsoil, groundwater and surface water bodies over the period that raw organics or products remain on the premises, beyond the closure of the facility, and until the premises has ceased to pose potential environmental threats;
- Leachate collection system - ensure that leachate is collected efficiently at the composting and related processing facility for further management, thereby avoiding water pollution and/or odour problems; and
- Leachate storage system - ensure that leachate is stored efficiently at the composting facility for further management, thereby avoiding water pollution and/or odour problems.

The raw sewage management system comprises proprietary toilets with sewage containment tanks. Raw sewage will be disposed off-site with no on-site treatment permissible.

4.2.2 Design Considerations

The trafficable working surface is constructed from compacted clay and shaped and bunded to permit drainage of *contact stormwater* from the northern portion of the pad to the leachate collection pit (see drainage directions in Figure 2). To ensure leachate and stormwater are separated, a 1.0m high compacted clay bund is constructed where necessary around the perimeter of the leachate catchment (includes working pad and maturation/screening/storage pad). Note, the bund does not extend across the working pad as it has been formed with an inflection to ensure the southern portion of the working pad slopes south. No handling of organics is permitted at the southern portion of the working pad (south of the Stage 1 composting bunkers) and runoff generated there is considered stormwater which is directed to Central Dam via a stormwater inlet pit fitted with an oil and grease separator.

Design details of the leachate barrier/collection/storage systems and NATA accredited geotechnical verification of clay liner materials and finished earthworks are provided in Appendix C.

The leachate barrier system comprises:

- concrete pad of minimum 400 mm thickness underlying the composting bunkers;
- concrete pad of minimum 200 mm thickness underlying the drop-off stockpile and slow speed shredder/workshop shed; and
- a liner consisting of minimum 600 mm thickness of recompacted clay with an in-situ permeability (K) of less than $1x10^{-7}$ ms^{-1} underlying the working pad and compost maturation/ screening/storage area.

The leachate collection system comprises:

- all solid waste management procedures are undertaken on purpose-built pads or concrete surfaces;
- composting bunkers have floor-inset collection drains and floor slope is to the back wall, preventing leachate breaching the open entry side;
- stormwater pit at north west corner of the compost maturation/screening/storage pad; and
- leachate drainage is transferred via underground pipes which discharge directly to the leachate dam.

The leachate storage system comprises:

- 6.5 ML Leachate Dam;
- floating pontoon aerator and return pump;
- high-level alarm system with warning activation at 85% capacity, which equates to:
  - 1.0 ML of remaining storage capacity (which is equivalent to the *contact stormwater* generated by the AICF in response to a 250 mm rainfall event); and
  - freeboard depth of 1.0 m.
- critical high-level alarm notification at 95%; and
- a leachate storage dam liner consisting of minimum 900 mm thickness of recompacted clay with an in-situ permeability (K) of less than $1x10^{-9}$ ms^{-1}.

4.2.3 Procedures

Who:	AICF Onsite Manager	
Where:	Leachate management system - working surfaces, leachate barrier system, leachate collection system and leachate storage system Raw sewage at toilet facilities	
When:	Weekly, immediately following rainfall events >20mm in 24 hours, prior to re-stocking of any individual composting bunker	
Actions:		**Person(s) Responsible**

The AICF Onsite Manager shall undertake inspections (weekly and immediately following rainfall events >20mm in 24 hours) of the leachate management system which includes:
• working surfaces;
• leachate barrier system:
  ○ composting bunkers;
  ○ drop-off stockpile and low speed shredder shed area;
  ○ working pad; and
  ○ compost maturation/screening/storage area.
• leachate collection system; and
• leachate storage system (includes Leachate Dam, floating pontoon aerator, return pump and return pipework).
Record of the inspection shall be maintained on the Weekly Environmental Inspection Checklist in accordance with Section 4.1.
		AICF Onsite Manager

Observations to be made at working surfaces are: • cracking/leakage potential or changes from previous inspections; and • all-weather vehicular access to any part of the processing site is maintained.	AICF Onsite Manager
Observations to be made at the leachate barrier system are: • cracking/leakage potential of concrete at composting bunkers; • cracking/leakage potential of concrete at drop-off stockpile and low speed shredder shed floor; and • cracking/leakage potential of clay liner at screening and storage pad area.	AICF Onsite Manager
Observations to be made at the leachate collection system are: • clay liner cracking/leakage potential at Leachate Dam; • testing the integrity of each closable valve at each composting bunker; • check for blockages in the collection pits/drains and leakages in pipework; and • inspect the fabric integrity and placement of the GORE Covers to ensure that covered bunkers direct 100% of rainfall to the site surface water management system.	AICF Onsite Manager
Observations to be made at the leachate storage system are: • testing the operation of the leachate return pump; • ensure the floating pontoon aerator is operational to prevent formation of odour generating anaerobic conditions; and • ensure high-level alarm system at Leachate Dam is operational and set to activate at 85% and 95% capacities.	AICF Onsite Manager
Following notification by the high-level alarm system that Leachate Dam has reached 85% capacity, the AICF Onsite Manager shall assess the weather forecast (http://www.bom.gov.au/places/nsw/rutherford/) to determine the likelihood of rainfall exceeding 250 mm and to option the availability of stand-by water tankers to drawdown Leachate Dam.	AICF Onsite Manager
Following notification by the high-level alarm system that Leachate Dam has reached 95% capacity, the AICF Onsite Manager shall engage a water tanker contractor to drawdown Leachate Dam to maintain storage under 95% capacity.	AICF Onsite Manager
The AICF Onsite Manager shall undertake weekly inspections of the toilet facilities to confirm the integrity and the remaining capacity of the sewage containment tanks. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any faulty sewage containment tank to restore its operability.	AICF Onsite Manager
AICF Onsite Manager shall ensure the sewage containment tanks are emptied by a licensed waste collection contractor when they are nearing capacity. A receipt from a licensed waste management facility must accompany each record of removal off-site.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report
References:	NSW DEC (2004)

4.3 Solid Waste Management

4.3.1 Objectives

To ensure solid wastes are managed to:

- record quantities of solid waste delivered to site for composting;
- promote optimal composting conditions of solid waste;
- minimise the quantity of contaminated solid waste delivered to site;
- record quantities of contaminated solid waste disposed to landfill; and
- minimise and clean up inadvertent spillage from vehicles of solid waste whilst trafficking the site and leaving the site.

4.3.2 Material Considerations

Compostable materials are categorised by NSW DEC (2004) as shown in Table 1. After three years of processing only Category 1 materials, Category 2 organics will be introduced into the facility. Category 2 organics will be restricted to natural or processed vegetable material. The facility will continue to process Category 1 organics. It is not intended that the facility will compost Category 3 organics.

Restrictions on the type of solid waste permitted to be processed at the AICF are detailed in Development Approval DA 15-433 and EPL12510 (see Table 2). The maximum quantity of 'Food Waste' permitted for receipt is 8,000 t/a.

Contaminated solid wastes are deemed to be any wastes inadvertently received which do not comply with the compostable material specifications of the AICF.

Table 1 – Categorisation of organics (DEC 2004)

Potential to have environmental impact	Organics category	Types of organics permitted in categories[1] (Categories with larger numbers may contain types from classes with smaller numbers.)	
		Type	**Examples of organics**
Lowest potential environmental impact	**Category 1**	**Garden and landscaping organics**	Grass[2]; leaves; plants; loppings; branches; tree trunks and stumps.
		Untreated timber	Sawdust; shavings; timber offcuts; crates; pallets; wood packaging.
		Natural organic fibrous organics	Peat; seed hulls/husks; straw; bagasse and other natural organic fibrous organics.
		Processed fibrous organics	Paper; cardboard; paper-processing sludge; non-synthetic textiles.
Greater potential environmental impact than Category 1, less potential impact than Category 3.	**Category 2**	**Other natural or processed vegetable organics**	Vegetables; fruit and seeds and processing sludges and wastes; winery, brewery and distillery wastes; food organics excluding organics in Category 3.
		Biosolids[3] and manures	Sewage biosolids, animal manure and mixtures of manure and biodegradable animal bedding organics.
Greatest potential environmental impact	**Category 3**	**Meat, fish and fatty foods**	Carcasses and parts of carcasses; blood; bone; fish; fatty processing or food.
		Fatty and oily sludges and organics of animal and vegetable origin	Dewatered grease trap; fatty and oily sludges of animal and vegetable origin.
		Mixed residual waste containing putrescible organics	Wastes containing putrescible organics, including household domestic waste that is set aside for kerbside collection or delivered by the householder directly to a processing facility, and waste from commerce and industry.

Notes:

1. These categories are used only to facilitate reference to these groupings of waste and organics (with different potential environmental impacts) in these guidelines and in environment protection licences: they are **not** used in waste legislation.
2. Particular care should be taken when grass clippings are present in the feedstock. It is well known that careful process management is required to mitigate odour and leachate problems when processing grass clippings (e.g. Buckner 2002). High moisture content, high nitrogen levels, abundance of readily available organic matter and poor structure and tendency to mat mean that grass can easily become anaerobic and odorous.
3. Conditions applying to processing and use can be found in *Environmental Guidelines: Use and Disposal of Biosolids Products* (EPA 1997).

Table 2 – Received waste restrictions in accordance with Development Approval DA 15-433 and EPL12510

Waste	Description	Activity	Other Limits
Garden Waste	As defined in Schedule 1 of the POEO Act as in force from time to time.	Composting Waste Storage	No more than 40,000 tonnes per annum in total, with no more than 8,000 tonnes being derived from Food Waste.
Woodwaste	As defined in Schedule 1 of the POEO Act as in force from time to time.		
Natural Organic Fiborous Materials	As defined in Schedule 1 of the POEO Act as in force from time to time.		
General Solid Waste non-putrescible	Paper and Cardboard		
Food Waste	Vegetables, Fruit and Winery, Brewery and Distillery Waste		

4.3.3 Procedures

Who:	AICF Onsite Manager, Staff
Where:	Entry gate, drop-off stockpile, low speed shredder shed and composting bunkers
When:	As required

Actions:	**Person(s) Responsible**
The AICF Onsite Manager shall ensure signage is installed to advise commercial operators and private vehicle drivers of the type of organics accepted at the AICF. The types of organics not accepted at the AICF will also be displayed.	AICF Onsite Manager
The AICF Onsite Manager shall ensure signage is installed to advise commercial operators and private vehicle drivers that they can be fined for any litter on public roads resulting from improper transport upon exiting the site.	AICF Onsite Manager
AICF entry gate staff are to ensure that vehicle loads entering the site are covered.	Staff
Upon entry to the site, AICF entry gate staff are to inspect incoming commercial and private vehicle loads to identify contaminated solid waste. The owner of any load containing incompatible waste will be instructed to not unload, re-cover the load and to leave the premises immediately.	Staff
Upon entry to the site, the AICF Onsite Manager shall undertake random inspections of Council waste collection vehicles. The driver of any load containing incompatible waste will be instructed to not unload, re-cover the load and to leave the premises immediately.	AICF Onsite Manager
After each drop-off of solid waste by all vehicles, AICF staff are to inspect the drop-off stockpile for contaminated solid waste. Contaminated solid waste is to be removed and placed immediately in the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
General refuse will be placed in small bins located around the facility by all staff members on a daily basis. All staff are responsible for ensuring small bins are emptied into the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
AICF Onsite Manager shall ensure the main skip bin located in the drop-off stockpile and slow speed shredder shed is collected by a licensed waste collection contractor when it is nearing capacity.	AICF Onsite Manager
AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shed to minimise noise, dust and fugitive emissions.	AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows in the composting bunkers, and immediate placement of the GORE cover system over all newly formed windrows.	AICF Onsite Manager, Staff
Staff shall ensure the overloading of excavators and front end loaders is prevented to avoid spillage of organic material. If spillage occurs, the organic material is to be cleaned up daily.	Staff
The quantity of each category of organics received at the premises shall be recorded, together with its source, in accordance with the conditions specified in EPL12510.	AICF Onsite Manager
The quantity of contaminated solid waste and general refuse removed from the site shall be reported in the AEMR in accordance with Section 2.3. A receipt from a licensed waste management facility must accompany each record of removal off-site.	AICF Onsite Manager

The quantity of composted organics dispatched from the premises shall be recorded in accordance with the conditions specified in EPL12510.		AICF Onsite Manager
Records:	Contaminated Solid Waste Removal Record (see Appendix F) Annual Environmental Management Report EPL12510	
References:	NSW DEC (2004)	

4.4 Soil Management

4.4.1 Objectives

To effectively manage the soil resource on the site to:

- minimise soil loss through erosion; and
- prevent soil structural decline.

4.4.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	Monthly	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake monthly inspections of the general site, grass swales and dam embankments. Record of the inspection shall be maintained on Weekly Environmental Inspection Checklist for that week.		AICF Onsite Manager
The AICF Onsite Manager shall identify any areas of exposed soil that may be prone to erosion and include remedial action on Weekly Environmental Checklist. Particular attention will be made to the grass swale drains and all dam embankments		AICF Onsite Manager
Staff shall advise the AICF Onsite Manager if they observe any areas where active erosion is present.		Staff
The AICF Onsite Manager shall ensure that all directional and advisory traffic signage is in place during the weekly inspection. All traffic movement and parking shall be restricted to sealed roads or gravelled areas and designated pad areas.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F)	
References:	-	

4.5 Surface Water Management

4.5.1 Objectives

To provide an integrated surface water management system that:

- maximises the harvesting and reuse of site water to reduce potable demand;
- limits peak site discharge from the developed site to less than existing levels;
- uses best management practices to manage the quality of the surface water leaving the site so that it is consistent with adjacent catchment runoff; and
- prevents the potential for surface water pollution.

4.5.2 Design Considerations

In accordance with NSW DEC (2004) the AICF *"should be designed to contain one or more catch basins capable of collecting all surface water generated from the design of a 1-in-10 year, 24-hour-period storm event without overflowing"*. The capacities of existing sediment dams (estimated previously by VGT (2015)) and their upslope catchment areas are shown in Table 3. Stormwater Storage Dam is formed in a large excavation remaining in the post-quarry landform. The dam surface is 9,000 m^2 (90 m x 100 m). There is a 100 mm diameter overflow pipe 7.0 m above floor level. Below the pipe inlet elevation the storage capacity is 63 ML.

Figure 6 – Inlet of 100 mm diameter overflow pipe at Stormwater Storage Dam which directs flow to Sediment Dam 1 and 2

At the site location (lat -32.65, long 151.50), the 24 hour rainfall depth with a 1 in 10 yr recurrence is 151 mm (Bureau of Meteorology 2018). Assuming a conservative site-wide runoff coefficient of 0.7 (70%), the minimum stormwater requirement has been determined for

each dam in accordance with NSW DEC (2004) (see Figure 4 for catchment boundaries). As shown in Table 3, all dams have sufficient capacity.

Table 3 – Sediment dam volumes, respective catchment areas and required capacity volumes in accordance with NSW DEC (2014) (after VGT (2015))

Dam	Catchment Area (ha)	Storage volume requirement (ML)	Actual storage volume (ML)
Sediment Dam 1 and 2	1.0	1.1	2.6
Central Dam	6.1	6.4	7.1[A]
Stormwater Storage Dam	4.8	5.1	63

[A]VGT (2015) reported the capacity as 3.5 ML with 1.0 m of freeboard. Based on the 3,600 m^2 surface area, this equates to an additional 3.6 ML, providing a total storage volume of 7.1 ML.

Note, South Dam was not considered for this assessment as the 2.2 ha drainage catchment contains no facility infrastructure and the area consists primarily of forested vegetation.

4.5.3 Procedures

Who:	AICF Onsite Manager, Staff
Where:	Sediment dams, internal drains and undisturbed area diversions
When:	Monthly and immediately following rainfall depth >20mm in 24 hours

Actions:	**Person(s) Responsible**
The AICF Onsite Manager shall establish when rainfall depth has exceeded 20 mm during the past 24 hours by confirmation via the onsite meteorological recording station.	AICF Onsite Manager
Each month and when rainfall depth has exceeded 20 mm during the past 24 hours, the AICF Onsite Manager shall undertake inspections of the site sediment dams. Visual inspection will be undertaken of: • accumulated sediment depth; • internal embankment condition; • downstream embankment condition; and • discharge location condition. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any damage to sediment dams or to restore their stability and operability. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
To ensure tree roots do not cause piping issues, the AICF Onsite Manager shall organise maintenance actions to be undertaken to remove any tree seedlings on, or immediately downstream of, dam embankments. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall undertake monthly inspections of the internal drains, headwalls and undisturbed area diversions. Visual inspection will be undertaken of condition and ability to maintain design function. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to repair any damage to internal drains, headwalls and undisturbed area diversions to restore their operability. Record of the	AICF Onsite Manager

inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	
If sediment dam storage is to be discharged offsite via pump, the AICF Onsite Manager shall organise pH monitoring of sediment dams and ensure any pH control actions (e.g. mixing with gypsum) are undertaken prior to discharge. Water quality monitoring requirements and concentration limits are presented in Section 5.1 of this OEMP.	AICF Onsite Manager
The AICF Onsite Manager shall undertake monthly inspections of the depth level indicators in all sediment dams to ensure they are intact and marker levels are clearly visible. Marker levels must allow the current sediment storage volume and the current settling volume void to be determined. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager shall organise maintenance actions to be undertaken to restore sediment capacity in any sediment dam should sediment accumulation exceed 10% of the storage capacity shown in Table 3. Sediments removed from the dams shall be used as beneficial material for site rehabilitation purposes. Record of the actions shall be maintained in the Weekly Environmental Inspection Checklist for that week.	AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure that all fuel, oils and chemicals used on site are stored in the approved and bunded lockable chemical shed.	AICF Onsite Manager, Staff
In the event of a fuel or chemical spill, all efforts will be made by all workers to contain and clean up the spill, but ONLY where safe to do so. Personal protective equipment is kept at the site office.	AICF Onsite Manager, Staff
A fuel or chemical spill or other chemical handling incident will be reported as an incident by the worker(s) involved and the AICF Onsite Manager shall complete a Pollution Incident Reporting Form.	AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure the oil and grease trap on the working pad is inspected monthly to ensure operability. When servicing is required, a licensed contractor is to be engaged to clean out the oil and grease trap.	AICF Onsite Manager
The quantity of oil and grease removed from the site shall be reported in the AEMR in accordance with Section 2.3. A receipt from a licensed waste management facility must accompany each record of off-site removal.	AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure that all solid wastes are stored in designated areas. No solid waste is to be placed in or near any waterway or drain. Any spilled waste will be removed immediately from areas within five metres of likely concentrated or high velocity flows, especially waterways and access roads.	AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure re-fuelling of mobile plant occurs only at the designated area adjacent to the diesel storage tanks.	AICF Onsite Manager, Staff
Surface water management inspection information shall be reported in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Pollution Incident Reporting Form (see Appendix D of Appendix E) Annual Environmental Management Report
References:	AK Environmental (2017)

4.6 Groundwater Management

4.6.1 Objective

To manage the site to prevent measurable changes to groundwater quality conditions down gradient of the facility.

4.6.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Leachate management system, sediment dams, general site	
When:	Monthly	
Actions:		**Person(s) Responsible**

The AICF Onsite Manager shall undertake inspections (weekly and immediately following rainfall events >20mm in 24 hours) of the leachate management system to identify any damage which may cause uncontrolled release of leachate that might otherwise infiltrate the ground surface and contact groundwater. Components of the leachate management system include:
• working surfaces;
• leachate barrier system:
  ○ composting bunkers;
  ○ drop-off stockpile and low speed shredder shed area; and
  ○ compost maturation/screening/storage area.
• leachate collection system; and
• leachate storage system, including Leachate Dam and return pipework.
Record of the inspection shall be maintained on the Weekly Environmental Checklist.
		AICF Onsite Manager

The AICF Onsite Manager shall undertake monthly inspections of the sediment dams to identify any damage which may cause uncontrolled release of stored water that might otherwise infiltrate the ground surface and contact groundwater. Record of the inspection shall be maintained in the Weekly Environmental Inspection Checklist for that week.		AICF Onsite Manager
The AICF Onsite Manager and workers shall ensure that all fuel, oils and chemicals used on site are stored in the approved and bunded lockable chemical shed.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure re-fuelling of mobile plant occurs only at the designated area adjacent to the diesel storage tanks.		AICF Onsite Manager, Staff
In the event of a fuel or chemical spill, all efforts will be made by all AICF Staff to contain and clean up the spill, but ONLY where safe to do so. Personal protective equipment is kept at the site office.		AICF Onsite Manager, Staff
A fuel or chemical spill or other chemical handling incident will be reported as an incident by the worker(s) involved and the AICF Onsite Manager shall complete the Pollution Incident Reporting Form.		AICF Onsite Manager, Staff
Staff shall ensure that all solid wastes are stored in the designated solids stockpile areas. Inspection of the solids stockpile area shall be undertaken weekly in accordance with Section 4.3.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Pollution Incident Reporting Form (see Appendix D of Appendix E)	
References:	-	

4.7 Dust Management

4.7.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for dust generation and impacts on local air quality.

4.7.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager and staff shall remain constantly vigilant of dust plumes generated by onsite activities and disturbed surfaces. Record of the occurrence of noticeable dust plumes, and any contributing meteorological conditions or activities, shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of potential dust generation and to also inspect the operability of dust monitoring stations. Record of the inspection shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager
AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shredder shed to minimise dust emissions.		AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure when loading and unloading material, the drop height of the material is minimised as far as is practical, for example the front end loader should tip the bucket only when it is close to the ground, the bed of the truck or the material pile being added to, or trucks should “block dump” loads partially onto existing piles		AICF Onsite Manager, Staff
AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows and immediate placement of the GORE Cover system over all newly formed windrows.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff are responsible for continually employing dust control measures as required. Appropriate dust control measures shall include: • strategic watering (at least daily on exposed areas and stockpiles, or more frequently as required to ensure moisture content of material handling is sufficient to minimise dust generation); • sweeping and/or cleaning of hard surfaces; and • not undertaking potential dust generating activities in adverse conditions (adverse conditions defined as when there has been no rain in the past 72 hours, with temperatures above 38 degrees Celsius and wind speeds above 8 m/s blowing towards the sensitive receivers).		AICF Onsite Manager, Staff
Landscaping shall be watered and maintained until well established to provide barriers to wind and dust movement.		AICF Onsite Manager, Staff
Dusty material stockpiles shall be located as far away from sensitive receivers as possible.		AICF Onsite Manager, Staff

The AICF Onsite Manager shall ensure that all drivers adhere to posted speed limits (maximum site speed limit of 30 km/hr).	AICF Onsite Manager
Staff shall ensure the watering of gravelled areas provides sufficient moisture to minimise dust generation by traffic, but not so much as to cause mud/dirt track out to occur.	AICF Onsite Manager, Staff
General traffic movement will be restricted to sealed and/or gravelled areas.	AICF Onsite Manager, Staff
Staff shall ensure the overloading of the excavators is prevented to avoid spillage.	Staff
AICF entry gate staff are to ensure that vehicle loads entering and leaving the site are covered to prevent unnecessary dust emissions from vehicle movements.	Staff
Any dust complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of dust complaints, their causes and corrective actions shall be provided in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report
References:	Todoroski Air Sciences (2015) Todoroski Air Sciences (2018)

4.8 Odour Management

4.8.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for odour generation impacts on local air quality.

4.8.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Composting windrow bunkers, solid waste handling, leachate management system	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of potential odour generation. Record of the inspection shall be maintained in the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure waste material drop-off and shredding is conducted only in the shed to minimise fugitive emissions.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections of the aerator systems at the composting bunkers and the leachate storage system to prevent formation of odour generating anaerobic conditions.		AICF Onsite Manager
The AICF Onsite Manager and staff shall ensure controlled and efficient placement of windrows and immediate placement of the GORE cover system over all newly formed windrows, and continual aeration of concrete composting bunkers.		AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure no stockpiling of raw materials for more than 24 hours under normal operating conditions.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall arrange removal within 48 hours of any stockpiled solids that are generating a strong odour that is noticeable at the site boundary in a downwind direction.		AICF Onsite Manager
The AICF Onsite Manager shall arrange immediate removal of any spill which has the potential to generated fugitive odour.		AICF Onsite Manager
Any odour complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of odour complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Todoroski Air Sciences (2015) Todoroski Air Sciences (2018)	

4.9 Noise Management

4.9.1 Objective

To ensure that operations are undertaken in a manner that minimises the potential for noise generating activities to impact on the local amenity.

4.9.2 Procedures

Who:	AICF Manager, AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
All staff are to ensure delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. No operations of any kind are permitted on Sundays or Public Holidays.		AICF Onsite Manager, Staff
The AICF Manager shall ensure that training is provided to all staff relating to: • specific operational noise mitigation measures; • relevant licence and approval conditions; • permissible hours of work; • location of nearest sensitive receptors; and • designated loading/unloading areas and procedures.		AICF Manager
To limit the use of tonal reversing alarms/beepers, the AICF Onsite Manager and staff shall ensure: • all vehicles must enter and exit the site in a forward direction; and • parking and loading/unloading are planned activities.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall undertake weekly inspections to ensure that mobile plant is fitted with appropriate silencers where available, acoustic shielding is maintained around all stationary noise sources and that all plant and equipment is maintained in good working order. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
Staff are to immediately report to AICF Onsite Manager any deficiencies identified in mobile plant which could lead to excessive noise generation.		Staff
The AICF Onsite Manager shall organise prompt servicing of any plant which has been identified as producing excessive noise generation.		AICF Onsite Manager
Site signage shall be used to reinforce the need to minimise noise and for vehicles to adhere to a maximum speed limit when trafficking the access road.		AICF Onsite Manager
Staff shall ensure truck engines are switched off when not in use for extended periods.		Staff
Any noise complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of noise complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Global Acoustics (2015) Todoroski Air Sciences (2018)	

4.10 Traffic Management

4.10.1 Objectives

To manage traffic movement on site to:

- reduce heavy vehicle/light vehicle conflict points;
- reduce vehicle/pedestrian interaction;
- limit the speed of vehicles; and
- to minimise the potential for dust generation.

4.10.2 Procedures

Who:	AICF Onsite Manager	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any traffic movement or parking issues. Record of the inspection shall be maintained on Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall ensure: • all directional and advisory traffic signage is in place (including: stop sign at exit to Anambah Road; internal speed limit of 30 km/hr); • general traffic movement is restricted to defined sealed and/or gravelled/pad areas; • all vehicles must enter and exit the site in a forward direction; and • unloading and loading of solid waste only at the approved locations within the site.		AICF Onsite Manager
The AICF induction for staff shall include details of internal speed limits and traffic movement areas.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure that all drivers adhere to posted speed limits.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that all drivers are advised by appropriate signage that pedestrian access is only permitted when a vehicle has been parked at the loading/unloading area, and then only for the purpose of loading/unloading of solid waste. Staff are to remain vigilant at all times of pedestrian activity.		AICF Onsite Manager, Staff
Parking will be only in defined parking areas that are sealed or gravelled.		AICF Onsite Manager
Any traffic complaints received shall be recorded on the Complaints Register in accordance with Section 4.14.3. A summary of traffic complaints, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Complaints Register (see Appendix F) Annual Environmental Management Report	
References:	Intersect Traffic (2015)	

4.11 Flora and Fauna Management

4.11.1 Objectives

To manage weeds on site to:

- maintain and protect identified habitat;
- control existing weeds present on the site by containing the distribution of weeds present on the site; and
- minimise the potential for the importation of noxious weeds.

4.11.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any areas of noxious weed growth. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall direct workers to apply targeted herbicide to noxious weeds within one week of their identification.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure traffic movement is restricted to defined sealed and/or gravelled/pad areas.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that inspections of Sediment Dams 1 and 2 and South Dam are kept to the minimum frequency as required by this OEMP to limit disturbance sedentary species and mobile species that may utilise these areas in times when suitable conditions occur.		AICF Onsite Manager
The AICF Onsite Manager shall ensure drainage system utilised by the previous quarry operations would be protected and maintained.		AICF Onsite Manager
The AICF Onsite Manager shall ensure the surrounding areas of Lower Hunter Spotted Gum Ironbark Forest EEC vegetation, which provide suitable habitat resources for both sedentary species and mobile species, would be protected and maintained.		AICF Onsite Manager
The AICF Onsite Manager shall ensure appropriate erosion and sedimentation controls would be employed during any construction or reparation activity to limit movement of sediment and contaminants into the Sediment Dams 1 and 2 and South Dam.		
Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation.		AICF Onsite Manager, Staff
Imported solid waste is a potential seed bank of noxious weeks. The AICF Onsite Manager shall ensure that no solid wastes are spread or reused on site.		AICF Onsite Manager
A summary of identified noxious weed species shall be provided in the AEMR.		AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report	
References:	Anderson Environment and Planning (2015) Anderson Environment and Planning (2017)	

4.12 Fire Management

4.12.1 Objectives

To manage fire prevention on site and to ensure fire-fighting provisions are maintained.

4.12.2 Design considerations

In accordance with Fire Engineering Design (2018), a fire hydrant system is not required for the AICF.

The primary fire-fighting system will instead consist of two pressurised high-flow fire hose reels located at the slow speed shredder shed. The reels will be supplied via the four 23,000 L water tanks. These tanks will capture rainwater roof runoff from the slow speed shredder shed, and also receive top-up water as required from Central Dam.

Mobile plant will each be fitted with mobile fire extinguishers.

4.12.3 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Fire-fighting equipment, General site	
When:	Weekly and as required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall undertake weekly inspections of the site to identify if there are any processes which are non-compliant in that they might raise risk levels associated with onsite fire generation potential. Record of the inspection shall be maintained on the Weekly Environmental Checklist.		AICF Onsite Manager
The AICF Onsite Manager shall record on the Weekly Environmental Inspection Checklist if a non-compliance has triggered the need for a Non-compliance and Corrective Action Report.		AICF Onsite Manager
The AICF Onsite Manager shall ensure water supply tanks, fire hose reels and fire extinguishers are maintained in accordance with *AS 1851–2012 Routine service of fire protection systems and equipment*.		AICF Onsite Manager
The AICF Onsite Manager shall ensure all staff are trained in the correct operation of fire hose reels and extinguishers.		AICF Onsite Manager, Staff
The AICF Onsite Manager shall ensure all green waste feedstock would be unloaded inside the slow speed shredder shed, and shredded and loaded to the in-vessel composter within 24 hours.		AICF Onsite Manager
The AICF Onsite Manager shall ensure internal temperatures of the composting pile would be monitored and maintained through regulating the pile profile, moisture content, and air supply.		AICF Onsite Manager
The AICF Onsite Manager shall ensure existing water stores would be maintained on the site, and a water cart would be always maintained with a full tank and in-service pump and fire hose.		AICF Onsite Manager
The AICF Onsite Manager shall ensure smoking areas would be designated within the facility that are remote from combustion sources and that have a dedicated receptacle for extinguishing and receiving butts.		AICF Onsite Manager

The AICF Onsite Manager shall ensure site security will be maintained to minimise the risk of arson from trespassers.	AICF Onsite Manager
The AICF Onsite Manager shall ensure signage is maintained to inform visitors that flammable liquids are not permitted on the site.	AICF Onsite Manager
Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation. All fuels or flammable solvents for operational use should be stored in an appropriately ventilated and secure store.	AICF Onsite Manager, Staff
The AICF Onsite Manager and staff shall ensure quantities of combustible contaminants that have been separated from the received organics will be placed immediately in the main skip bin located in the drop-off stockpile and slow speed shredder shed.	AICF Onsite Manager, Staff
Fire management inspection information shall be reported in the AEMR.	AICF Onsite Manager
Records:	Weekly Environmental Inspection Checklist (see Appendix F) Annual Environmental Management Report
References:	Anderson Environment and Planning (2015)

4.13 Indigenous Australian Heritage

4.13.1 Objectives

To raise awareness of indigenous Australian heritage and ensure protection of Aboriginal items uncovered at site.

4.13.2 Procedures

Who:	Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that during site inductions all employees understand their obligation to exercise due diligence for management of indigenous Australian heritage.		AICF Onsite Manager
All staff are to cease work immediately should any items of potential indigenous Australian heritage significance be discovered during site preparation, construction, demolition or demobilisation.		Staff
Following the cessation of work, the staff member who has uncovered the potential item of indigenous Australian heritage significance must inform the AICF Onsite Manager.		Staff
Upon notification of an uncovered potential item of indigenous Australian heritage significance, the AICF Onsite Manager must notify the Aboriginal Heritage Information Management System (AHIMS) Registrar at the Office of Environment and Heritage (Phone: (02) 9585 6345).		AICF Onsite Manager
Following notification of an uncovered potential item of indigenous Australian heritage significance, the AICF Onsite Manager must ensure works do not recommence until the Office of Environment and Heritage has advised on appropriate management measures.		AICF Onsite Manager
If skeletal remains are identified, the AICF Onsite Manager must ensure both the NSW Police (Phone: 000) and OEH (Phone: (02) 9585 6345) would be immediately informed.		AICF Onsite Manager
A summary of identified items of indigenous Australian heritage significance shall be provided in the AEMR.		AICF Onsite Manager
Records:	Annual Environmental Management Report	
References:	-	

4.14 Complaints Management

4.14.1 Objectives

To ensure any complaint received is recorded and kept correctly, investigated, and options for avoiding recurrence are considered.

4.14.2 Dispute Resolution

AICF will strive to maintain good relations with all external stakeholder groups through effective communication, and to avoid disputes arising through consultation with relevant external stakeholders and through addressing any concerns in a timely manner. Should any disputes arise that cannot be resolved through direct consultation, the dispute resolution processes discussed below will be implemented.

If a neighbouring landowner considers that the operations of the AICF are exceeding the impact assessment criteria, then the landowner may ask, in writing, for an independent review of the impacts of AICF on their land.

If the AICF Chief Executive Officer is satisfied that an independent review is warranted, then within one month of the Secretary's decision, AICF must:

- commission a suitably qualified, experienced and independent person, whose appointment has been approved by the AICF Chief Executive Officer, to:
    - consult with the landowner to determine his / her concerns.
    - conduct monitoring to determine whether the development is complying with the relevant criteria set out in this OEMP.
    - if the AICF is not complying with these criteria then identify measures that could be implemented to ensure compliance with the relevant criteria.
    - provide copies of the independent review to the AICF Chief Executive Officer and the land owner.

4.14.3 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that the public is aware of Council's contact for complaints (telephone number (02) 4932 6998), and that it is operational during operating hours.		AICF Onsite Manager
Any complaint received by any staff member at AICF shall be reported immediately to the AICF Onsite Manager.		AICF Onsite Manager, Staff

All details of any complaint and subsequent investigation will be recorded on the Complaints Register by the AICF Onsite Manager. Details shall include: • the date and time of the complaint; • the means by which the complaint was made (in person, telephone, mail or email); • any personal details of the complainant that were provided, or if no details were provided, a note to that effect; • the nature of the complaint; • any actions taken in relation to the complaint, including timeframes for implementing the action; and • if no action was undertaken in relation to the complaint, the reasons why no action was taken.	AICF Onsite Manager
The AICF Onsite Manager will ensure that the record of a complaint will be kept for at least four (4) years after the complaint was made, and that the records are available to any authorised officer of the EPA who asks to see them.	AICF Onsite Manager
The AICF Onsite Manager shall be responsible for follow-up investigation for all complaints received and for assessing options for avoiding recurrence.	AICF Onsite Manager
Where required, the AICF Onsite Manager shall provide acknowledgement and feedback to community members following closure of a compliant raised by a community member.	AICF Onsite Manager
A summary of complaints, their causes and corrective actions shall be provided in the AEMR.	AICF Onsite Manager
Records:	Complaints Register (see Appendix F) Annual Environmental Management Report
References:	-

4.15 Environmental Incident Management

4.15.1 Objective

To ensure that all incidents with the potential to impact adversely on the environment are investigated and documented, and that options for avoiding recurrence are implemented.

4.15.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	General site	
When:	As required	
Actions:		**Person(s) Responsible**
All incidents that may result in an adverse impact on the environment must be reported by workers immediately (once safe and practicable to do so) to the AICF Onsite Manager. AICF Onsite Manager contacts details: • mobile phone – 0439 989 993 • office phone - (02) 4932 6998		AICF Onsite Manager, Staff
In the event of a 'Pollution Incident', AICF Onsite Manager shall follow procedures detailed in the site's Pollution Incident Response Management Plan (see Appendix E).		AICF Onsite Manager
Each 'Pollution Incident' shall be recorded in the Pollution Incident Reporting Form, which is located in Appendix D of the Pollution Incident Response Management Plan (see Appendix E of this OEMP).		AICF Onsite Manager
Periodic testing of this operating procedure shall be coordinated by the AICF Onsite Manager (e.g. mock environmental incidents).		AICF Onsite Manager
A summary of environmental incidents, their causes and corrective actions shall be provided in the AEMR.		AICF Onsite Manager
Records:	Pollution Incident Reporting Form (see Appendix D of Appendix E) Annual Environmental Management Report	
References:	Pollution Incident Response Management Plan (see Appendix E).	

4.16 Staff Training

4.16.1 Objective

To ensure all current and new staff are trained in the appropriate OEMP procedures, are aware of and comply with the requirements of the OEMP, and are aware of their responsibilities with respect to environmental management.

4.16.2 Procedures

Who:	AICF Onsite Manager, Staff	
Where:	Site	
When:	As required	
Actions:		**Person(s) Responsible**
The AICF Onsite Manager shall ensure that all site staff have received the appropriate operator training.		AICF Onsite Manager
The AICF Onsite Manager shall ensure that all site staff have received training in the following: • a site induction; • familiarisation with the requirements of the OEMP; • environmental emergency response training; • familiarisation with site environmental controls; • familiarisation with management procedures for those activities with risk of causing environmental harm; and • targeted environmental training for specific personnel working with equipment which may cause environmental harm.		AICF Onsite Manager, Staff
All staff who complete training shall sign off on the Environmental Training Register.		AICF Onsite Manager, Staff
Records of training shall be maintained by the AICF Onsite Manager.		AICF Onsite Manager
Records:	Environmental Training Register (see Appendix F)	
References:	-	

5. Monitoring

5.1 Surface Water Quality Monitoring

All surface water sampling locations are shown in Figure H-1 of Appendix H.

In accordance with EPL12510, surface waters will be monitored quarterly at location SW1 ('Point 1') and SW6 ('Point 2'). The analytes required to be monitored quarterly are listed in Table 4.

Offsite discharge from sediment dams may occur following extreme rainfall conditions. In preparation for offsite discharge, surface water monitoring of all boundary sediment dams (see SW1, SW2 and SW3 in Figure H-1 of Appendix H) will be undertaken. Note, Leachate Dam has a 6.5 ML capacity and is not permitted to overflow, and hence no discharge monitoring is required.

In accordance with EPL12510, 'special frequency' monitoring will occur at SW1 ('Point 1') on each day that offsite surface water discharge occurs from Sediment Dam 1 and 2. The analytes required to be monitored at 'special frequency' are the same listed in Table 4 for quarterly monitoring.

Onsite reuse of stormwater runoff captured in on-site dams will be undertaken for dust suppression purposes. Water is preferentially sourced from the Stormwater Storage Dam ahead of water from the sediment dams (Sediment Dam 1 and 2, Central Dam or South Dam). Prior to pumping from any on-site dam, surface waters will be monitored for pH to ensure the level is within EPL12510 limits of 6.5 to 8.0 pH units.

Laboratory testing of surface waters will be undertaken only by facilities accredited to assess the nominated analytes by the National Association of Testing Authorities (NATA). Sampling shall be carried out in accordance with AS/NZS 5667.1:1998 (R2016), and samples will be handled under acceptable chain-of-custody protocols. In-field testing of a limited number of analytes (e.g. pH) will be performed with hand-held meters which are maintained and calibrated to manufacturer's specifications.

Table 4 – Water quality limits for surface water quality monitoring based on EPL12510 requirements

Parameter	Units	EPL limit
pH	pH units	6.5 – 8.5
Total suspended solids	mg/L	50
Oil and grease	mg/L	10
Ammonia	mg/L	0.9

5.2 Groundwater Quality and Level Monitoring

All groundwater sampling locations are shown in Figure H-1 Appendix H.

In accordance with EPL12510, groundwater will be monitored quarterly at locations GW4 ('Point 4') and GW5 ('Point 5'). All of the analytes listed in Table 5 are required to be monitored during regular quarterly groundwater sampling. Standing water level in GW4 and GW5 will monitored continuously by installed loggers.

The potential for offsite discharge of surface water (dirty water) from sediment dams is discussed in Section 5.1. In accordance with EPL12510, on each day that offsite surface water discharge occurs from Sediment Dam 1 and 2 or South Dam, monitoring will occur at GW4 ('Point 4') and GW5 ('Point 5'). Only 'special frequency' analytes are required to be monitored for groundwater during such events (see Table 5).

Laboratory testing of groundwater will be undertaken only by facilities accredited to assess the nominated analytes by the National Association of Testing Authorities (NATA). Sampling shall be carried out in accordance with AS/NZS 5667.1:1998 (R2016), and samples will be handled under acceptable chain-of-custody protocols. In-field testing of a limited number of analytes (e.g. pH) will be performed with hand-held meters which are maintained and calibrated to manufacturer's specifications.

Table 5 – Water quality limits for groundwater monitoring and nominated special frequency analytes in accordance with EPL12510

Parameter	Units	NEPM[A]	Special frequency monitoring
Alkalinity	mg $CaCO_3$/L	-	Yes
Aluminium	mg/L	0.1	-
Ammonia	mg/L	0.9	Yes
Arsenic	mg/L	0.05	-
Barium	mg/L	-	-
Benzene	µg/L	300	-
BOD	mg/L	-	-
Cadmium	mg/L	0.0002	-
Calcium	mg/L	-	-
Chloride	mg/L	-	-
Chlorinated volatile compounds	µg/L	-	-
Chromium (total)	mg/L	0.01	-
Cobalt	mg/L	-	-
Electrical Conductivity	µS/cm	-	-
Copper	mg/L	0.002	-
Dissolved oxygen	mg/L	-	-
Ethyl benzene	µg/L	-	-
Fluoride	mg/L	-	-
Iron	mg/L	1.0	-
Lead	mg/L	0.001	-
Magnesium	mg/L	-	-
Manganese	mg/L	-	-
Mercury	mg/L	0.0001	-
Nitrate	mg/L	-	-
OC pesticides	µg/L	0.01	-
OP pesticides	µg/L	-	-
PCBs	µg/L	3	-
pH	pH units	6.5	Yes
Phosphate	mg/L	-	-
Polycyclic aromatic hydrocarbons	µg/L	-	-
Potassium	mg/L	-	-
Sodium	mg/L	-	-
Standing water level	mbgl	-	Continuous
Sulfate	mg/L	-	-
Toluene	µg/L	-	-
Total dissolved solids	mg/L	-	Yes
Total organic carbon	mg/L	-	-
TPH	mg/L	-	-
Total Phenolics	mg/L	-	-
Total suspended particles (solids)	mg/L	50	-
Zinc	mg/L	0.05	-

5.3 Solid Waste Monitoring

The handled solid waste streams will be monitored in accordance with Section 0. These include:

- quantity and source of solid waste received;
- quantity of fine compost despatched; and
- quantity of contaminated waste and general refuse disposed of at a licensed waste management facility.

5.4 Dust Deposition Monitoring

Deposited dust is assessed as insoluble solids as defined by *Standards Australia AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method*.

Dust monitoring will occur at the three nearest sensitive receptors, each of which located east of the AICF (Figure 7). The frequency of monitoring is monthly.

In accordance with Approved Methods for the *Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA 2017), where dust deposition levels are within the impact assessment criteria of 4g/m²/month, then all other dust criteria are assumed to be met.

Figure 7 – Site lot boundary and dust and noise monitoring locations (after Todoroski Air Sciences 2018)

5.5 Odour Monitoring

Odour monitoring will be conducted in accordance with Standards Australia *AS/NZS 4323.3:2001 Stationary source emissions Part 3: Determination of odour concentration by dynamic olfactometry*.

Odour monitoring will be conducted during the proving phase period that includes the commissioning and the initial period of composting for the AICF. Sampling will be undertaken at the solid waste handling and composting areas of the site.

The odour monitoring results will be used to verify the assumptions in the air quality modelling. Additional odour monitoring will be required if operation of the facility requires an additional proving phase period.

In the event of an odour complaint from a neighbouring sensitive receptor, targeted monitoring will be conducted.

5.6 Noise Monitoring

Noise monitoring is conducted using a sound level meter that meets the specifications of a precision (Class 1) or general-purpose (Class 2) sound level meter as stated in Standards Australia *AS IEC 61672.1-2004: Electroacoustics – Sound level meters specifications*.

The equipment should have a current laboratory calibration certificate or label, and also be calibrated in the field.

Attended noise monitoring is proposed to be carried out at each of the six nearest sensitive receivers shown in Figure 7.

Attended noise monitoring will be conducted monthly during the first 12 months of operation and following this monitoring would occur quarterly. Additional noise monitoring will be conducted when new or additional composting equipment is commissioned or following a noise-related complaint being received.

5.7 Meteorological monitoring

The onsite meteorological monitoring station will, as a minimum, continuously record the parameters listed in Table 6.

The weather station is to be sited in accordance with AM-2 of *Guide for measurement of horizontal wind for air quality applications* (AS 2923-1987 or AS/NZS 3580.14-2014), and AM-4 of *Meteorological monitoring guidance for regulatory modelling applications EPA 454/R-99-005* (USEPA (2000)).

Table 6 – Meteorological monitoring parameters (Todoroski 2018)

Parameter	Units of measure	Sample frequency	Averaging period	Method
Wind speed at 10 m	m/s	Continuous	15 minutes	AM-2 & AM-4
Wind direction at 10 m	degrees	Continuous	15 minutes	AM-2 & AM-4
Sigma Theta at 10 m	degrees	Continuous	15 minutes	AM-2 & AM-4
Temperature at 2 m	Celsius	Continuous	15 minutes	AM-4
Temperature at 10 m	Celsius	Continuous	15 minutes	AM-4
Solar radiation	W/m²	Continuous	15 minutes	AM-4
Rainfall	mm	Continuous	1 hour	AM-4

5.8 Traffic Monitoring

Traffic will be monitored via complaints in accordance with Section 4.10.2.

6. OEMP Review

6.1 Revision of Operating Procedures

This OEMP shall remain a ‘live’ document for the duration of AICF operations.

At any time, AICF can engage a suitably qualified and practising professional to adapt the OEMP to the outcomes of any incident report or modifications to the conditions of approval.

6.2 Document Control

The following will be classed as 'major’ revisions:

- changes to processes;
- additional procedures or improvement actions;
- changes made in response to an incident; and
- changes requested by the EPA.

Major revisions shall be identified by the whole number in the version number (i.e. 1.0, 2.0, 3.0….). When the changes address formal requests made by EPA, Council shall consult with EPA for approval.

The following will be classed as 'minor' revisions:

- minor typing and grammar corrections;
- changes to position titles and telephone contact numbers;
- updates to recording forms to suit operations; and
- changes/additions to Appendices.

Minor revisions shall be identified after the decimal point in the version number (ie. 1.1, 1.2, 1.3....).

7. References

AK Environmental (2017). *Soil and Water Management Plan - In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW*, November 2017.

DIPNR (2004). *Guideline for the Preparation of Environmental Management Plans,* Department of Infrastructure, Planning and Natural Resources, Sydney NSW.

Intersect Traffic (2015). *Traffic Impact Assessment - Composting Facility, Riverbend Quarry – Amended July 2015.*

Fire Engineering Design (2018). *Fire Safety Engineering Report – Proposed Composting Facility 442 Anambah Road Anambah 2320* (doc ref: 20128046MWRR001A.docx);

NSW EPA (2017). *Modelling and Assessment of Air Pollutants in New South Wales.* January 2017.

NSW DEC (2004). *Environmental guidelines: composting and related organics processing facilities*. Sydney: Dept. of Environment and Conservation. http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf

NSW Landcom (2004). *Managing Urban Stormwater: Soils and Construction, Volume 1*, March 2004.

OD Hydrology (2015). *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater* Assessment, doc ref: 44001-rpt01d.docx.

OD Hydrology (2016). *Responses to request for additional information (Composting Facility, Anambah Road, Anambah,* NSW, doc ref: 44001-ltr01b.docx.

Pulver Cooper & Blackley (2015). *Environmental Impact Statement: In-Vessel Composting Facility - 442 Anambah Road, Anambah NSW 2320, September 2015*. Prepared for: Ditton Properties Pty. Ltd.

Todoroski Air Sciences (2015). *Riverbend Quarry and Compost Facility - Air Quality Impact Assessment.*

Todoroski Air Sciences (2018). *Air Quality and Noise Management Plan - Anambah In-vessel Composting Facility*, 17 September 2018*.*

US EPA (2000). *Meteorological monitoring guidance for regulatory modelling applications EPA 454/R-99-005*, US EPA, Research Triangle Park, North Carolina 27711, 2000.

VGT (2015). *Soil and Water Management Plan – Riverbend Quarry Via Gosforth*, doc ref: 1084_RB_SWMP_R4.

Appendix A. Development Approval DA 15-433

ENVIRONMENTAL PLANNING AND
ASSESSMENT ACT, 1979 (As Amended)

maitland
city council

NOTICE OF DETERMINATION

DEVELOPMENT APPLICATION
(AMENDED)

To the Applicant:

Pulver Cooper and Blackley
PO Box 729
NEWCASTLE NSW 2300

LAND:

442 ANAMBAH ROAD,ANAMBAH
LOT 22 DP1069012

DEVELOPMENT:

S96 (2) Modification to Amend Condition No.2 (Waste Definitions)

The application submitted on 13 April 2017 to modify **Development Application No. DA-15-433** pursuant to Section 96(2) of the Environmental Planning and Assessment Act, 1979, (as amended) has been modified in the manner and to the extent indicated in the Amended Schedule of Conditions as attached.

Those conditions which have been modified, existing conditions which have been deleted and new conditions which have been added are identified within the shaded boxes contained within the schedule.

Amended Consent Issued: 12 July 2017

Original Consent Endorsement Date: 11 October 2016

PER GENERAL MANAGER

This notice should be retained and read in conjunction with the original Notice of Determination issued on 11 October 2016 and Previous Section 96 Amendments dated 30 March, 2017. Please note the date of consent remains the original endorsement date, and that the consent lapses 5 years from this original endorsement date unless the conditions of consent specify a reduced period. Any reference in the Environmental Planning and Assessment Act, 1979 or any other Act to a development consent shall, in the case of this matter, be a reference to the original development consent as modified herein.

Right of Appeal:
If you are dissatisfied with this decision, section 96(6) of the Environmental Planning and Assessment Act, 1979 gives you the right to appeal to the Land and Environment Court.

Schedule of Conditions DA 15-433

(As amended by Section 96(2) dated 12 July, 2017)

Reason for Condition(s)

The following condition(s) have been applied to the development, subject of this consent, to ensure that the development meets the requirements of the NSW Environmental Planning and Assessment Act 1979, the NSW Environmental Planning and Assessment Regulation 2000, and the various policies and development controls of Maitland City Council and other government agencies relevant to the development being undertaken.

APPROVED PLANS AND DOCUMENTATION

1. The development shall be carried out in accordance with the stamped approved plans and documentation as detailed in the following schedule and any amendments arising through conditions to this consent or as shown in red colour on the plans:

Plan Ref No.	Sheet No.	Revn No.	Revision Date	Prepared by: (consultant)
1084_EIS_CDA_C003_V2_F3.cdr Contour Map with Aerial	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C004_V2_F4cdr Traffic Flow	1 of 1	V2	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility	1 of 1	V4	01/07/2015	VGT Pty Ltd
1084_EIS_CDA_C005_V2_F5.cdr Proposed Compost Facility Hunter Water Stamped Plan	1 of 1	A	16/02/2016	VGT Pty Ltd
1084_EIS_CDA_C006_V2_F6.cdr Processing Area	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C007_V2_F7.cdr Proposed Shed	1 of 1	V2	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C008_V2_F8.cdr Proposed slow speed shredder shed	1 of 1	V3	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C015_V2_F91.cdr Detailed plan of proposed slow speed shredder shed	1 of 1	V0	02/07/2015	VGT Pty Ltd
1084_EIS_CDA_C009_V2_F10.cdr Compost Pad Windrows	1 of 1	V3	01/07/2015	VGT Pty Ltd
Documents	Sheet No	Revn No.	Revision Date	Prepared by: (consultant
Environmental Impact Statement In Vessel Composting Facility	-	-	July 2015	PCB Pty Ltd
Response to Submissions Report			April 2016	PCB Pty Ltd

LIMITS ON APPROVAL

2. The applicant shall ensure that this approved Composting facility does not:

(I) Process more than 40,000 tonnes per annum of the following materials:

a) Garden Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

b) Wood Waste as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997*;

c) Natural Organic Fibrous Materials as defined by Schedule 1 of the *Protection of the Environment Operations Act 1997;*

d) General Solid Waste non putrescible –paper and cardboard;

e) Process more than 8,000 tonnes derived from food waste - vegetables, fruit, brewery and distillery waste; and

(ii) No more than 24,000 tonnes of final produce per annum of fine compost.

Any increase or type of waste to be processed at this facility requires approval from Council and variation to the EPA licence.

Condition Amended 12 July 2017

SURRENDER OF CONSENT

3. DA 95- 163 for quarrying shall be surrendered to Council on full operation of Scenario 1 being 40,000 tonnes of waste being processed at the site or five (5) years from commencement of composting operations whichever occurs first.

CONTRIBUTIONS AND FEES

4. Pursuant to Section 80A(1) of the Environmental Planning and Assessment Act 1979, and the Maitland S94A Levy Contributions Plan 2006, a contribution of $17,000 shall be paid to the Council. The above amount may be adjusted at the time of the actual payment, in accordance with the provisions of the Maitland City Council S94A Levy Contributions Plan 2006.

Payment of the above amount shall apply to Development Applications as follows:

- *Building work only - prior to issue of the Construction Certificate.*
- *Subdivision and building work - prior to the issue of the Construction Certificate, or*
- *Subdivision Certificate, whichever occurs first.*
- *Where no construction certificate is required - prior to issue of an Occupation Certificate.*

The above "contribution" condition has been applied to ensure that:

i) Where the proposed development results in an increased demand for public amenities and services, payment towards the cost of providing these facilities/services is made in accordance with Council's adopted contributions plan prepared in accordance with the provisions of section 94A of the Environmental Planning and Assessment Act, 1979.

ii) Council's administration expenses are met with respect to the processing of the application.

WASTE SCREENING AND ACCEPTANCE

5. The Applicant must:

a) implement auditable procedures to:
   i) ensure that the site does not accept wastes that are prohibited; and
   ii) screen incoming waste loads; and

b) ensure that:
   i) all waste that are controlled under a tracking system have the appropriate documentation prior to acceptance at the site; and

ii) staff receive adequate training in order to be able to recognise and handle any hazardous or other prohibited waste.

CERTIFICATES

6. The applicant shall submit to Council a "Notice of Commencement" form at least two (2) days prior to the commencement of construction works.

7. Prior to the commencement of works an application for a Construction Certificate shall be submitted to, and be approved by, the Accredited Certifier.

8. Prior to the issue of an Occupation Certificate all conditions of development consent shall be complied with.

9. Prior to commencement of any composting operations from the site an Occupation Certificate shall be issued by the Principal Certifying Authority.

VEGETATION & LANDSCAPING

10. The recommendations of the Ecological Assessment Report prepared by Anderson Environment and Planning dated February 2015 shall be adhered to for this composting facility as follows:

    a. Ensuring protection of the northern and southern dams is considered important for general biodiversity. These areas offer suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur. Maintaining the existing drainage system regimes utilised by quarry operations would suffice;

    b. Ensuring protection of the surrounding areas of Lower Hunter Spotted Gum Ironbark Forest EEC vegetation. These areas provide suitable habitat resources for both sedentary species and for mobile species that may utilize these areas in times when suitable conditions occur (tree flowering). Appropriate demarcation of no go areas should be applied during any construction activity;

    c. Appropriate erosion and sedimentation controls should be employed during any construction to limit movement of soils, and in particular into the above identified dam areas to maintain water quality;

    d. Consideration should be given to weed control within the wider site to address negative impacts associated with on going weed colonisation.

11. A Construction Certificate shall not be issued over any part of the site requiring a Controlled Activity Approval under the *Water Management Act 2000* until a copy of the approval has been provided to Council.

12. The development is to comply with the General Terms of Approval issued by NSW Department of Primary Industries – Water, File No. ERM 2013/0073 dated 14 July 2016 and included as an attachment to this schedule.

REHABILITATION PLAN

13. Prior to the Issue of the Construction Certificate, the proponent shall prepare and implement an updated Rehabilitation Plan for the site taking into consideration both the composting and quarrying operations on site and be submitted to Council for approval. This plan must be:

a. Be prepared in consultation with EPA, Department of Primary Industries (Water) and Council by a suitably qualified and experienced expert;
b. Define the objectives and criteria for rehabilitation;
c. Describe the measures and timing that would be implemented to achieve the specified objectives and criteria for rehabilitation;
d. Describe the performance of these measures would be monitored over time.

BUSHFIRE

14. The following bushfire mitigation measures shall be implemented and details provide to the certifying authority prior to issue of a construction certificate:

- A minimum 20m Asset Protection Zone shall be created around any buildings and combustible material stock-piles on site and shall be maintained as fuel free area as detailed in Appendix 2 of Planning for Bushfire Protection 2006;
- Construct any buildings to comply with Level 3 specifications in AS3959 -Construction of Buildings in Bushfire Prone Areas;
- Provision of suitable on site fire access trails to connect with access road off Anambah Road that satisfy Planning for Bushfire Protection 2006;
- Provision of appropriate water storage tanks, fire fighting pump with 25mm hose (fitted with a suitable spray nozzle),hose reels of suitable length and so that it can circulate any proposed building or stockpiles on site and the water tanker shall remain full at all times; and
- Preparation of an evacuation plan prior to composting operations commencing on site.

VISUAL AMENITY

15. Any buildings or structure on site shall be of non reflective and colours of materials and finishes shall blend with the surrounding rural locality and details provided to the certifying authority prior to the issue of a construction certificate

LIGHTING

16. All external lighting associated with the development shall be mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadways. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.

HOURS OF OPERATION

17. The hours of operation of the composting facility shall be confined to within the following times:

Monday to Friday	7.00am to 5.00pm
Saturday	7.00am to 5.00pm

No operations permitted on Sunday and Public Holidays

NOISE

18. Concurrent quarrying and composting operations shall only be undertaken during neutral (i.e. no wind) weather conditions

19. Prior to any composting operations commencing on site the proponent must prepare a Noise Management Plan that includes, but is not limited to:

a) Key performance indicators;
b) Monitoring method;
c) Location, frequency and duration of monitoring;
d) Record keeping
e) Complaint handling system;
f) Response mechanisms; and
g) Compliance reporting.

A copy of this Plan shall be submitted to and approved by Council prior to any composting commencing on site.

ODOUR

20. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for the composting facility in accordance with the EPA licence for any odour event shall be submitted to and approved by Council.

DUST MANAGEMENT

21. During construction and operations, the proponent shall ensure that:

a) All vehicles on site do not exceed a speed limit of 30 kilometres per hour;
b) All loaded vehicles entering or leaving the site and around the site have their loads covered; and
c) All loaded vehicles leaving the site are cleaned of dirt, sand and other materials before they leave the site, to avoid tracking these materials on public roads.

22. Prior to any composting operations commencing on site details of a complaint handling system to be implemented for this composting facility in accordance with the EPA licence for any dust event shall be submitted to and approved by Council.

SOIL, WATER AND LEACHATE

Leachate Management and Collection System

23. No waste is permitted to be disposed of or received at the site until the applicant has constructed the leachate management and collection system to the satisfaction of the EPA and details provided to Council.

Stormwater Management

24. Prior to issue of the Construction Certificate a stormwater management system incorporating the requirements of the Stormwater Management scheme plan shall be submitted to Council for approval and be in accordance with any EPA requirements.

25. Prior to operation of the development all stormwater drainage works and associated infrastructure facilities, shall be provided in accordance with this consent and any EPA licensing requirements.

26. Discharge of any stormwater from the subject site shall meet the water quality requirements of the Soil and Water Management Plan and any state authority licensing requirements.

BUNDING

27. The Applicant shall store all chemicals, fuels and oils used on-site in appropriately bunded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's Storing and Handling Liquids: Environmental Protection – Participants Handbook.

ROAD WORKS

28. Road construction of all intersection works, together with all necessary stormwater drainage and ancillary infrastructure facilities, shall be provided in accordance with Councils Manual of Engineering Standards and the following:

- An access intersection type treatment shall be provided within Anambah Road at the junction of the existing site access in accordance with SD031 and Councils Manual of Engineering Standards. Provide swept paths demonstrating that the maximum design vehicle does not cross the Anambah Road centreline.
- No entry features or signage shall be located within the road reserve. (i.e. removal of the concrete pillars is required)
- Truck turning signs W5-22, W5-205 and W8-207 shall be installed in accordance with RMS Traffic Control Plan 195 and maintained and replaced at no cost to council on each approach direction along Anambah Road

CIVIL WORKS – CERTIFICATION

29. Prior to commencement of works within Anambah Road:

- an engineering design, in accordance with Council's Manual Of Engineering Standards, shall be submitted to Council for approval;
- consent under the Roads Act for the approved works, shall be issued by Council;
- all relevant Council fees shall be paid;
- a traffic control plan in accordance with the RTA publication "Traffic Control at Worksites" shall be submitted to, and be approved by, Council.

30. Prior to operation of the development, all works associated with the Roads Act Approval shall be carried out to the satisfaction of the roads authority in accordance with this consent and Council's Manual of Engineering Standards.

OPERATIONAL EVIRONMENTAL MANAGEMENT PLAN

31. The proponent shall prepare and implement an Operational Environmental Management Plan for the project taking include consideration EPA requirements. This plan must:
    a. be prepared in consultation with Council and the EPA by a suitably qualified and experienced expert;
    b. be submitted to and approved by Council prior to commencement of operations;
    c. describe in detail the management measures that would be implemented to address: relevant matters referred to in Section 4 and Appendix B of the EPA'S *Environmental Guidelines for Compostihg & Related Organics Processing Facilities*; and conditions of consent;
    d. include a copy of:
        - management plans and monitoring programs required in this approval;
        - a quality assurance program for the design and installation of the leachate management system has been developed in accordance with Australian Standards AS 3905.2;
    e. describe the procedures that would be implemented to:
        - keep the local community and relevant agencies informed about the operation and environmental performance of the composting facility;
        - receive, handle, respond to, and record complaints;
        - resolve any disputes that may arise during the course of the composting facility;
    f. respond to emergencies; describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of this composting facility;.
    g. details of an Annual Environment Management Report being an annual audit of operations outlining but not limited to:
        - summary of any monitoring of odour, dust, noise runoff, etc. in the past year;
        - an analysis of monitoring results against relevant:
            - impact assessment criteria;
            - monitoring from previous years;
            - predictions in the EIS;
        - performance measures;
        - complaints and any handling of complaints;
        - any actions to ensure compliance of relevant criteria within the EIS.

GREENHOUSE GAS

32. The proponent must ensure that all composting is undertaken in accordance with *Australian Standard AS 4454-2003: Composts, Soil Condltioners and Mulches,* Appendix N Best practice guidelines for Composting Systems, or other practices approved by the EPA.

EROSION CONTROLS

33. An erosion and sediment plan must be submitted to and approved by the certifying authority prior to issue of any construction certificate including:

    a) being consistent with the requirements of the latest version of Managing Urban Stormwater: Soils and Construction (Landcom);
    b) identify the activities on site that could cause soil erosion and generate sediment;
    c) describe what measures would be implemented to:
        - minimise soil erosion and the transport of sediment to downstream waters, including location, function and capacity of any erosion and sediment control structures; and
        - maintain these structures over time.

BUILDING CONSTRUCTION

34. All building work shall be carried out in accordance with the provisions of the Building Code of Australia.

35. All excavations and backfilling shall be executed safely, in accordance with appropriate professional standards and shall be properly guarded and protected to prevent the works from being dangerous to life or property.

36. Unless otherwise approved by Council in writing, all general building work shall be carried out between the hours of:

    a. 7.00am to 6.00pm Monday to Friday

    b. 7.00am to 1.00pm Saturday

    No work shall be performed on Sunday's or Public Holidays.

SERVICES & EQUIPMENT

37. Upon completion of the building BUT prior to its occupation, a Final Fire Safety Certificate with respect to each critical and essential fire safety measure installed in the building shall be submitted to Council. Such certificates shall be prepared in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation, 2000.

38. A copy of the Fire Safety Schedule and Fire Safety Certificate shall be prominently displayed in the building in accordance with Division 4 of Part 9 of the Environmental Planning and Assessment Regulation 2000.

39. A Fire Safety Statement in respect of each required essential and/or critical fire safety measure installed within the building shall be submitted to Council and the NSW Fire Commissioner annually (or at a more frequent interval for supplementary statements).

    Statements shall be prepared and issued in accordance with Division 5 of Part 9 of the Environmental Planning and Assessment Regulation, 2000. Note that monetary penalties may apply for failure to lodge a fire safety statement within the prescribed timeframe.

    Statements to the NSW Fire Commissioner are to be submitted electronically to afss@fire.nsw.gov.au.

    Standard forms and further information for lodging Fire Safety Statements may be downloaded from Councils website.

SITE CONSIDERATIONS

40. All excavated and/or filled areas are to be retained or battered and suitably drained so as to prevent any subsidence of the area and constructed so as to deny any flow of water into or around the building or neighbouring buildings or onto neighbouring land.

    Where a retaining wall is planned for this purpose and such wall requires consent (refer to State Environmental Planning Policy -Exempt and Complying Development Codes, 2008) plans and specifications of the wall shall be approved by Council and/or an accredited certifier.

    Note: The submission of a separate Development Application is not required for a retaining wall associated with this approval and indicated on the approved plans.

41. Rubbish generated from the development is to be suitably contained on site at all times. No rubbish shall be stockpiled in a manner which facilitates the rubbish to be blown off site.

42. Approved toilet facilities are to be provided, at or in the vicinity of the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. The provision of toilet facilities in accordance with this Clause must be completed before any other work is commenced.

43. The site is to be cleared of all building refuse and spoil immediately after completion of the building/structure.

44. Suitable and adequate measures are to be applied to restrict public access to the site and building works, materials and equipment.

OPERATION OF PLANT AND EQUIPMENT

45. The proponent shall ensure that all plant and equipment used on site is:
    a) maintained in a proper and efficient condition; and
    b) operated in a proper and efficient manner.

SECURITY FENCING

46. The proponent shall
    a) install and maintain a perimeter stock fence and security gates on site; and
    b) ensure that the security gates on site are locked whenever the site is unattended.

    Suitable fencing shall be installed prior to any composting operations commencing on site.

CONSOLIDATION OF LOTS

47. Prior to any composting operations commencing on site Lot 22 DP 1069012 shall be consolidated with Lot 1 DP 862654 and details of registration with Land Title office shall be provided to Council.

ENVIRONMENTAL PROTECTION AUTHORITY

48. The proposed development is to comply with the General Terms of Approval issued by NSW EPA Notice No. 1536955 dated 21 January 2016 and included as an attachment to this schedule

ADVICES

A. The development is located within an area of recognised bushfire risk. It is recommended that relevant publications be obtained from NSW Rural Fire Service to minimise the bushfire risk to property. Further information is also available on their website www.rfs.nsw.gov.au.

B. You are advised that in regard to potential soil erosion from the construction site, such pollution of the environment is an offence under the Protection of the Environment & Operations (POEO) Act and may incur infringement fines.

Attachment A- Department of Primary Industries (Water) General Terms of Approval

General Terms of Approval

for work requiring a controlled activity approval under s91 of the *Water Management Act 2000*

Number	Condition	File No: ERM2013/0073
Site Address:	Lot 22 Anambah Road, Gosforth	
DA Number:	DA15-433	
LGA:	Maitland City Council	
Plans, standards and guidelines		
1	These General Terms of Approval (GTA) only apply to the activities described in the plans and associated documentation relating to DA15-433 and provided by Council: (i) Environmental Impact Statement, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, September 2015, prepared by Pulver Cooper and Blackley Pty Ltd. (ii) Response to submissions report, DA15-433, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by Pulver Cooper and Blackley Pty Ltd. (iii) Hydrological impact assessment, Response to request for additional information, In-vessel composting facility, 442 Anambah Rd, Anambah, April 2016, prepared by OD Hydrology (iv) Surface water and groundwater assessment, Composting facility, September 2015, prepared by OD Hydrology Pty Ltd. (v) Soil and water management plan, Riverbend Quarry, January 2015, prepared by VGT Pty Ltd. (vi) Rehabilitation Plan, Northern Section, Gosforth quarries, May 2015, prepared by Advitech Pty Ltd. Any amendments or modifications to the proposed activities may render these GTA invalid. If the proposed activities are amended or modified DPI Water (formerly the NSW Office of Water) must be notified to determine if any variations to these GTA will be required.	
2	Prior to the commencement of any controlled activity (works) on waterfront land, the consent holder must obtain a Controlled Activity Approval (CAA) under the Water Management Act from DPI Water. Waterfront land for the purposes of this DA is land and material in or within 40 metres of the top of the bank or shore of the river identified.	
3	The consent holder must prepare or commission the preparation of: (i) Updated Rehabilitation Plan (ii) Vegetation Management Plan (iii) Works Schedule (iv) Erosion and Sediment Control Plan (v) Soil and Water Management Plan	
4	All plans must be prepared by a suitably qualified person and submitted to the DPI Water for approval prior to any controlled activity commencing. Plans must be prepared in accordance with DPI Water's guidelines located at www.water nsw.gov.au/ Water-Licensing/Approvals.	
5	The consent holder must (i) carry out any controlled activity in accordance with approved plans and (ii) construct and/or implement any controlled activity by or under the direct supervision of a suitably qualified professional and (iii) when required, provide a certificate of completion to DPI Water.	
Rehabilitation and maintenance		

6	The consent holder must carry out a maintenance period of two (2) years after practical completion of all controlled activities, rehabilitation and vegetation management in accordance with a plan approved by the DPI Water
7	The consent holder must reinstate waterfront land affected by the carrying out of any controlled activity in accordance with a plan or design approved by the DPI Water
Reporting requirements	
8	The consent holder must use a suitably qualified person to monitor the progress, completion performance of works rehabilitation and maintenance and report to DPI Water as required.
Bridge, causeway, culverts, and crossing	
9	The consent holder must ensure that the construction of any bridge, causeway culvert or crossing does not result in erosion, obstruction of flow, destabilisation or damage to the bed or banks of the river or waterfront land, other than in accordance with a plan approved by DPI Water.
Disposal	
10	The consent holder must ensure that no materials or cleared vegetation that may (i) obstruct flow (ii) wash into the water body, or (iii) cause damage to river banks, are left on waterfront land other than in accordance with a plan approved by DPI Water.
Drainage and Stormwater	
11	The consent holder is to ensure that all drainage works (i) capture and convey runoffs, discharges and flood flows to low flow water level in accordance with a plan approved by DPI Water, and (ii) do not obstruct the flow of water other than in accordance with a plan approved by DPI Water
12	The consent holder must stabilise drain discharge points to prevent erosion in accordance with a plan approved by DPI Water.
Erosion control	
13	The consent holder must establish all erosion and sediment control works and water diversion structures in accordance with a plan approved by DPI Water. These works and structures must be inspected and maintained throughout the working period and must not be removed until the site has been fully stabilised.
Excavation	
14	The consent holder must ensure that no excavation is undertaken on waterfront land other than in accordance with a plan approved by DPI Water
15	The consent holder must ensure that any excavation does not result in (i) diversion of any river (ii) bed or bank instability or (iii) damage to native vegetation within the area where a controlled activity has been authorised, other than in accordance with a plan approved by DPI Water.
Maintaining river	
16	The consent holder must establish a riparian corridor along any waterfront land on the project site in accordance with a plan approved by DPI Water
Groundwater	
17	The consent holder must ensure that any excavation below ground level is appropriately licensed and does not result in the need for dewatering, other than in accordance with a licence issued by DPI Water.
END OF CONDITIONS	

Attachment B – EPA General Terms of Approval

Environmental Planning and Assessment Act 1979

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

The EPA varies GTA conditions as follows:

Current GTA condition

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below any waste received at the premises is subject of those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	*Garden Waste*	*As defined in Schedule 1 of the POEO Act as in force from time to time.*	*Composting* *Waste Storage*	*no more than 40,000 tonnes per annum.*

The EPA's assessment of the proposal has been undertaken on the basis of the facility processing wastes as listed above and does not include provisions for the acceptance of food waste. In the event food waste or other waste types are proposed to be accepted and processed at the facility, additional assessment of environmental impacts will be required to be undertaken prior to the processing of that waste.

Modified Condition now states

Waste

The licensee must not cause, permit or allow any waste to be received at the premises, except the waste expressly referred to in the column titled "waste" and meeting the definition, if any in the column titled "Description" in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste to that waste contained in the column titles "Other Limits" in the table below.

Code	*Waste*	*Description*	*Activity*	*Other Limits*
N/A	Garden Waste	As defined in Schedule 1 of the POEO Act as in force from time to time.	Composting Waste Storage	No more than 40,000 tonnes per annum in total, with no more than 8,000 tonnes being derived from Food Waste.
	Woodwaste	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	Natural Organic Fiborous Materials	As defined in Schedule 1 of the POEO Act as in force from time to time.		
	General Solid Waste non-putrescible	Paper and Cardboard		
	Food Waste	Vegetables, Fruit and Winery, Brewery and Distillery Waste		

Part 4 Modification Application - EPA Comments

Notice No. - 1551783

Current GTA condition

Odour

No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

The Proponent shall ensure the development does not cause or permit the emission of any offensive odour (as defined by the POEO Act).

The Proponent shall develop an odour management plan which outlines the process of how odour complaints will be investigated and managed.

The facility shall be run in a proper and efficient manner consistent with the processes described within the Environmental Impact Statement. This includes, but is not limited to:

- *regular turning of material in a controlled and efficient manner within concrete bays*
- *immediate covering of all newly formed and turned windrows.*
- *aeration of on-site leachate storage*
- *maintain an odour complaint logbook and in the event of a complain conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken.*
- *avoid or minimise handling of material during poor air dispersion conditions.*

Modified Condition now states

1. No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the *Protection of the Environment Operations Act* 1997. Note: Section 129 of the *Protection of the Environment Operations Act* 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

2. The facility shall be run in a proper and efficient manner. This includes, but is not limited to.
   - All waste processing, including waste receipt and shredding, must be undertaken within an enclosed building;
   - Regular turning of material in a controlled and efficient manner within covered concrete bays;
   - Covered concrete bays must have aeration;
   - Aeration of on-site leachate storage;
   - Maintain an odour complaint logbook. In the event of a complaint, conduct an immediate investigation of any odour sources, take appropriate action to eliminate any identified excessive odour, and document the outcomes of the investigation and the actions taken; and
   - Avoid or minimise handling of material during poor dispersion conditions.

Current GTA condition

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- *Key performance indicator(s);*
- *Monitoring method(s);*
- *Location, frequency and duration of monitoring;*
- *Record keeping;*

- *Response mechanisms; and*
- *Compliance reporting.*

The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Modified Condition now states

Air Quality Management Plan

The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- Key performance indicator(s);
- Monitoring method(s);
- Location, frequency and duration of monitoring;
- Record keeping, including complaints records;
- Response mechanisms; and
- Compliance reporting.

The air quality management plan must be implemented prior to the commencement of works to redevelop the facility.

Additional Condition

For the life of the composting operations, the Proponent shall ensure that there is a meteorological station in the vicinity of the premises that complies with the requirements in the EPA document *'Approved Methods for Sampling of Air Pollutants in New South Wales'*.

Condition Amended 12 July 2017

Appendix B. Impacts of Operational and Staging Amendments to AICF Development

Key AICF staging and development footprint amendments which differ to the proposed development are described in Sections 1.3.1 to 1.3.4 of the OEMP. These amendments have been introduced in response to:

- market-driven organics sourcing limitations;
- improved composting understanding; and
- an incomplete leachate management design.

Discussion is provided here regarding the limiting of relevant environmental impacts of the amended development to equal or less than those permitted under Development Approval DA 15-433.

Liquid waste

The footprint of the bunkers will be reduced and the generation of the contact stormwater (as leachate) will be subsequently reduced due to the smaller area open to incident rainfall when the maximum of two GORE covers are removed at any time.

The capacity of the leachate containment dam has been increased from 23 m^3 to 680 m^3 and is now consistent with the principles and requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). For conservative environmental protection purposes, a more rigorous dam sizing approach was applied than required by the guidelines.

Within design constraints, leachate has been demonstrated to be a recyclable resource for compost moisture conditioning. The reduced leachate generation rate and the over-sized leachate containment dam provides a higher degree of environmental protection over the approved 16 composting bunker scenario.

Groundwater

The scale of the development will not increase, and there will be a reduction in the generation of liquid waste.

The leachate containment dam will be constructed with a clay liner which is consistent with requirements of *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). Specifically, the liner will be:

- constructed to minimum 900 mm compacted thickness;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring underlying layers to avoid lamination of layers.

The existing groundwater monitoring location GW4 (‘Point 4’) will be monitored quarterly, and also daily during every overflow event from any sediment dam or the leachate containment dam in accordance EPL12510. Due to the low permeability of fractured geology underlying the leachate containment dam (Coffey Partners International 1992), it is inappropriate to locate a new groundwater monitoring bore immediately adjacent to the leachate containment dam because the alignment of fractures is unknown, and unfavourable alignment could deliver percolating water to a down gradient location. The existing GW4 (‘Point 4’) borehole is approximately 60 m down gradient of the leachate containment dam and is therefore considered to be a more suitable location for groundwater monitoring which targets the potential for leachate percolation to underlying groundwater.

Surface water

The scale of the development will not increase. The leachate containment dam has been over-sized for environmental protection purposes and the generation of leachate has been reduced by the smaller bunker footprint. Surface water impacts will at worst remain unchanged.

Odour

The scale of the development will not increase. The 2,400 m^2 Stage 2 compost bunker footprint represents a significant 62% areal reduction compared to the 6,400 m^2 of the approved 16 bunker design. The reduction in the odour emission footprint will result in a lessening of odour impacts.

Dust

The scale and footprint of the development will not increase, and dust impacts will remain unchanged at full development of Stage 2. A halving of haulage and material handling requirements will result in a lessening of dust impacts during Stage 1.

Noise

The scale and footprint of the development will not increase, and noise impacts will remain unchanged at full development of Stage 2. A halving of haulage and material handling requirements will result in a lessening of noise impacts during Stage 1.

Contaminated solid waste

The scale of the development will not increase, and the organic materials to be processed remain unchanged from those specified in Development Approval DA 15-433 and EPL12510. As such, contaminated solid waste production will remain unchanged at full development of Stage 2. A halving of organics input will result in a lessening of contaminated solid waste quantities requiring offsite disposal during Stage 1.

Traffic

The scale and footprint of the development will not increase, and traffic impacts will remain unchanged at full development of Stage 2. A halving of haulage requirements will result in a lessening of traffic impacts during Stage 1.

References

Coffey Partners International Pty Ltd (1992). *Quarry Assessment Gosforth*.

Appendix C. Leachate Management System

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BRIEFING NOTE

Project	Anambah In-vessel Composting Facility
Subject	Leachate management system
Client	Ditton Properties Pty. Limited
Document Number	2059-1445
Document Status	FINAL for Environment Protection Licence Application v3.0
Date	03/04/2019

1. Background

Composting facilities in NSW are required to design and construct a leachate management system in compliance with *Environmental guidelines: composting and related organics processing facilities* (NSW DEC 2004). AK Environmental Pty. Limited has been engaged by Ditton Properties Pty. Limited (Ditton Properties) to design the Anambah In-vessel Composting Facility's (AICF) leachate barrier and containment systems, and to document the geotechnical compliance of constructed clay liner earthworks.

This Briefing Note forms part of the Operational Environmental Management Plan (OEMP) for the AICF.

2. Site Layout and Staging

A site layout is shown in Figure A-1 of Appendix A.

Development of the AICF facility will be staged as follows:

- Stage 1 (50% of maximum capacity) - green waste input of up to 20,000 t/a and compost production of up to 12,000 t/a; and
- Stage 2 (maximum capacity) - green waste input of up to 40,000 t/a and compost production of up to 24,000 t/a.

Stage 1 of the AICF development comprises six composting bunkers. When Stage 2 is constructed, the number of bunkers will double to 12 in total.

3. Compost Bunkers

The geometry of a windrow within each composting bunker is shown in Figure 1. Each of the composting bunkers has a concrete floor area of 200 m^2 (25 m x 8 m) and is fitted with a GORE cover to shed rainfall away from the composting windrow. Stage 1 consists of six bunkers and Stage 2 consists of 12 bunkers. Each bunker has a floor-inset air injection channel, which also acts as a collection drain for any direct *leachate* generated by the composting process.

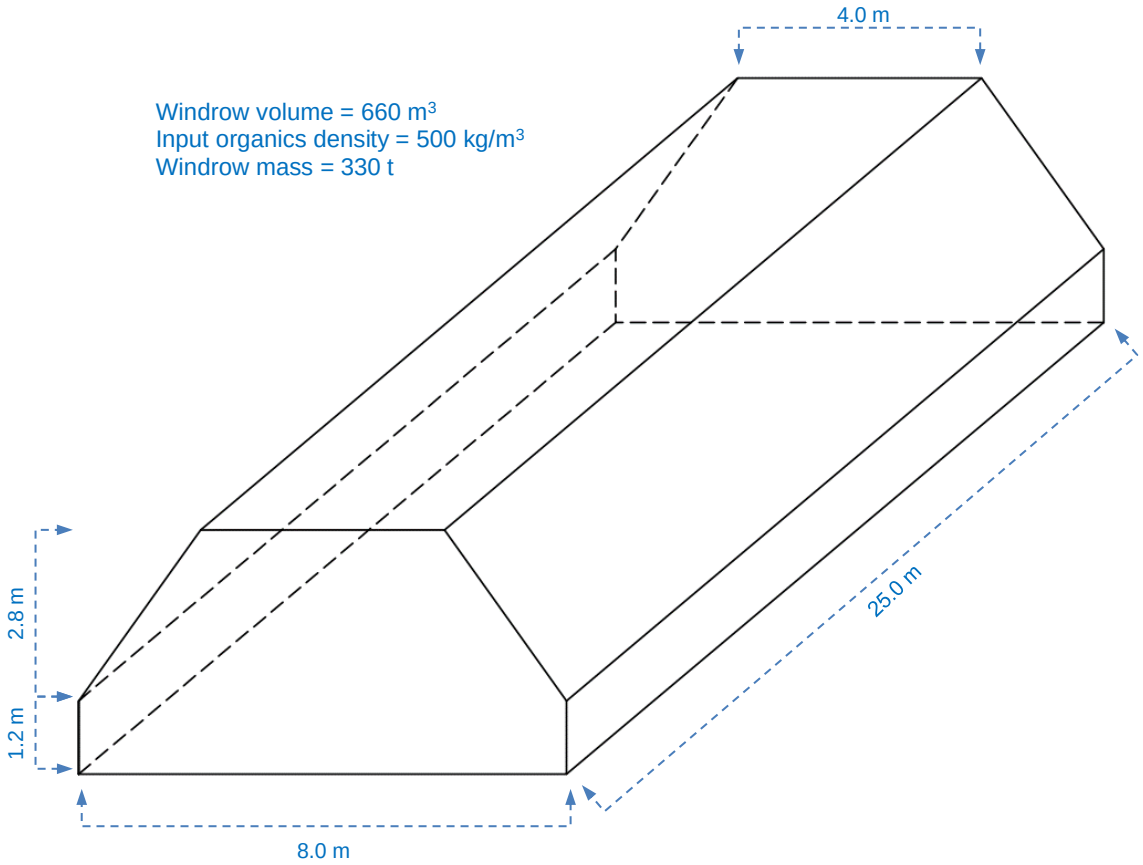


Figure 1 – Composting bunker windrow dimensions

4. Leachate Generation Areas

The composting process directly generates *leachate*. Stormwater runoff which has contacted any form of organic material is considered *contact stormwater*. Dilution by rainfall means that *contact stormwater* has significantly lower pollutant loads than direct compost *leachate*. Nonetheless, it is a requirement of NSW DEC (2004) that *contact stormwater* be managed in the same manner as *leachate* and must be considered for sizing of Leachate Dam.

As shown in Figure A-1 of Appendix A, there are two leachate generation catchments at the site. Note, the catchment boundaries apply to Stage 2, which includes the eastern bunkers. During Stage 1 this area will remain an extension of the working pad area with stormwater directed north to Stormwater Storage Dam.

The smaller leachate catchment consists only of the 1,600 m^2 area (40 m x 40 m square at top of bank) within Leachate Dam's 'turkey's nest' perimeter. All incident rainfall runoff

becomes additional dam storage and effectively contributes to *leachate* generation. External stormwater drainage is prevented from entry by the elevated top of bank structure.

The larger leachate catchment encompasses the composting bunkers (Stage 1 – 1,200 m^2; Stage 2 – 2,400 m^2), the compost maturation/screening/storage pad (1,350 m^2) and the northern portion of the working pad (2,000 m^2). Note, earthworks have ensured that portion of the working pad which is south of the Stage 1 bunkers also slopes south and directs any generated stormwater to Central Dam.

Stormwater generated at the uncovered compost maturation/screening/storage pad is *contact stormwater* due to the storage of compost in windrows.

Because loading/unloading of bunkers by front end loader may result in limited quantities of organic material spillage (spillage to be minimised and removed daily if occurs – see Section 4.3.3 of the OEMP for management actions), stormwater flowing on the northern portion of the working pad is deemed to be *contact stormwater*. The site layout configuration dictates that *clean stormwater* emanating from bunker GORE covers is directed to the northern portion of the working pad. This originally clean water then becomes *contact stormwater* and must also be considered for sizing of Leachate Dam.

All *contact stormwater* is ultimately directed to the leachate collection pit at the north west corner of the compost maturation/screening/storage pad, from which it is piped underground to Leachate Dam.

5. Design Requirements for the Protection of Waters

5.1 Working Surfaces

Compost storage areas, active composting surfaces, and associated access roads are required to be constructed to prevent the pollution by leachate of subsoil, groundwater and surface water bodies and to allow all-weather vehicular access to any part of the processing site that needs to be reached by vehicles.

No requirements exist in NSW DEC (2004) for achieving measurable geotechnical properties of working surfaces. Instead, the AICF's OEMP sets out inspection procedures which target the integrity of working surfaces (cracking/leakage potential, maintenance of all-weather access) and requires that maintenance actions be undertaken when working surfaces are found to be compromised.

To provide all-weather vehicular access, the AICF working pad and the compost maturation/screening/storage pad will both be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm. The stabilising component is a cement additive, which is mechanically blended through the clay-gravel component in a pugmill to achieve a uniformly mixed product.

5.2 Leachate Barrier System

To prevent the pollution by leachate of subsoil, groundwater and surface water bodies, material processing and storage areas of the AICF must have a leachate barrier system that forms a secure hydrological barrier between groundwater, soil and substrata and the composting and storage of organics.

Acceptable leachate barrier options are defined by NSW DEC (2004) as either:

1. *"a clay or modified soil liner consisting of at least 600 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-7}ms^{-1}$. Such liners should be placed in successive layers up to 300 mm uncompacted thickness. Each underlying layer should be scoured to prevent excessive permeability due to the lamination.*
2. *a natural geological barrier that is proven by competent geotechnical investigations to provide a secure barrier between the groundwater, soil and substrata and the composting organics, equivalent to the 600 mm recompacted clay in Option 1.*
3. *a concrete or asphalt cement pad of a thickness of at least 100 mm, designed to withstand the loads from all machines, vehicles and equipment that are required to operate the facility."*

The AICF site is underlain by geology which permits seepage (Coffey Partners International 1992), making the sediment dams a source of recharge to groundwater (OH Hydrology 2016). On this basis, the option of a natural geological barrier does not exist to protect leachate migration into groundwater.

Compost maturation/screening/storage pad and working pad

The AICF compost maturation/screening/storage pad and working pad will be:

- constructed with a minimum 600 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness;
- constructed by surface scouring underlying layers to avoid lamination of layers; and
- be capped with a stabilised clay-gravel road base to a minimum depth of 200 mm.

Samples of three potential clay liner materials were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Each sample exhibited a permeability rate significantly lower than $10^{-7}ms^{-1}$ at ~95% compaction, and hence any of the three materials is suitable as a liner for the screening and compost storage pad in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the compost maturation/screening/storage pad and working pad, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

Composting bunkers

The floor of the composting bunkers is reinforced concrete, which has a minimum thickness exceeding 400 mm (see Figure C-1 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

Shredder/workshop shed

The floor of the shredder/workshop shed is reinforced concrete, which has a minimum thickness exceeding 200 mm (see Figure C-2 of Appendix C). The concrete thickness exceeds the 100 mm requirement of NSW DEC (2004). The concrete compressive strength is 25 MPa, which is suitable for AICF mobile plant traffic.

5.3 Leachate Collection System

To ensure that leachate is collected efficiently, thereby avoiding water pollution and/or odour problems, the following design requirements have been implemented in satisfaction of NSW DEC (2004):

- all solid waste management procedures are undertaken on purpose-built pads (see Sections 3 and 4 for details);
- composting bunkers have floor-inset collection drains and floor slope is to the back wall (west), preventing *leachate* breaching the open entry side (east);
- stormwater pit at north west corner of the compost maturation/screening/storage pad to capture *contact stormwater*; and
- *leachate* and *contact stormwater* are transferred via underground pipes which discharge directly to Leachate Dam (see Figure A-1 of Appendix A).

5.4 Leachate Storage System

Amendment of Approved Design

The approved leachate storage system comprises a 23,000 L (23 m^3) concrete leachate containment sump based on the design of OD Hydrology (2015). The sizing process only considered direct *leachate* generation from compost bunkers and neglected to account for generation of *contact stormwater*. A more rigorous design approach is presented here which conforms to requirements set out in NSW DEC (2004). The re-designed AICF leachate storage system ensures leachate is stored efficiently for further management, thereby minimising potential water pollution and/or odour generation.

Leachate Dam Capacity Sizing Guideline

Leachate Dam receives direct rainfall, *leachate* from composting bunkers and *contact stormwater* originating from composting bunkers, the compost maturation/screening/storage pad and the northern portion of the working pad. NSW DEC (2004) states that storage capacity control of open leachate dams must adhere to a two-fold requirement. The first is it *"must be capable of at least accepting the runoff or leachate generated by any 1-in-10-yr, 24-hr-period storm event"*, and the second is that it must operate *"without overflowing".*

At the location of the AICF (lat - 32.65, long 151.50), the 24 hr rainfall depth with a 1 in 10 yr recurrence is 151 mm (Bureau of Meteorology 2018). An open leachate dam sized by the design storm requirement which holds no storage at the commencement of this storm event will contain all generated stormwater/leachate. If a leachate dam holds any storage at the commencement of this storm event, or the storm event exceeds the design storm requirement, then stormwater/leachate would overflow from the dam.

To satisfy the additional 'no overflow' requirement, AK Environmental understands a management plan must be in place to intervene before overtopping occurs. Management actions may include drawing down leachate dam storage by pumping to tankers for offsite disposal.

Adopted Leachate Dam Sizing Approach

AK Environmental opines the combination of 'design storm sizing' and 'no spill' requirements will lead to environmental compliance uncertainty and safety concerns for the facility operator due to the following reasons:

- the frequency of leachate overflows is dependent on rainfall conditions which occur prior to large storm events, and these remain unknown because no attempt to understand rainfall sequences is accounted for by the design storm sizing approach; and
- the requirement to involve external contractors (e.g. tanker operators) during adverse weather characterised by high rainfall poses potential for high-risk working conditions for such contractors and also those staff who would be required to assist.

To address these concerns, it is instead proposed that sizing of the AICF Leachate Dam utilise a time-series modelling approach which incorporates the climatic history at the site, including all rainfall events experienced during recent decades.

For completeness, and to satisfy requirements of NSW DEC (2004), a comparison will also be made to the *1-in-10-yr, 24-hr-period* design storm capture requirement.

Water Balance Model

Leachate Dam capacity sizing is based on a time-series of inputs (*leachate* and rainfall-derived *contact stormwater*) and outputs (*leachate* reuse for composting pile moisture control and dam surface evaporation). This approach is considered more rigorous than applying design storm criteria as it employs meteorological understanding, and ultimately provides for a higher degree of environmental protection.

Separate water balance models were required for the Stage 1 and Stage 2 processing scenarios. Stage 2 requires twice the number of bunkers and twice the quantity of recycled leachate for moisture control of composting.

The water balance model parameters are outlined as follows and differences are noted between Stage 1 and Stage 2 process parameterisation:

- simulation period of 38 full calendar years (1 January 1980 to 31 December 2017) which significantly exceeds the nominal 10 year recurrence interval in NSW DEC (2004);
- daily totals of rainfall and Morton's evaporation over shallow lakes (Morton 1983) derived from QLD DSITI (2018) data drill for the site location with latitude -32.65 degrees and longitude 151.50 degrees (see monthly averages in Figure D-1 of Appendix D);
- assumed nominal 2,000 L/day and 4,000 L/day leachate generated by Stage 1 and Stage 2 covered composting bunkers, respectively (based on experience of GORE system engineer that leachate generation is negligible under Australian conditions [G. Hemm pers. comm. 27 August 2018]);
- total *contact stormwater* catchment area of 4,550 m^2 at Stage 1 with 6 bunkers (or 5,750 m^2 at Stage 2 with 12 bunkers) consisting of:
    - 1,200 m^2 of Stage 1 bunkers (or 2,400 m^2 of Stage 2 bunkers)
    - 1,350 m^2 at the uncovered compost maturation/screening/storage pad
    - 2,000 m^2 at the northern portion of the working pad
- Leachate Dam parameters (see Figure 2):
    - square floor (20 m x 20 m)
    - internal 35° batter slope
    - assume no infiltration loss through clay liner
    - open water evaporation assumed equal to depth of Morton's evaporation over shallow lakes
    - nominal initial starting leachate volume of 0.2 ML

- runoff coefficients
    - bunker GORE covers – 1.0 or 100%
    - compost maturation/screening/storage pad - 0.7 or 70% (estimate based on Wilson *et al.* (2014) who found an average of 68% of rainfall incident on a saturated compost windrow will eventually become runoff)
    - internal Leachate Dam batters - 1.0 or 100% (includes open water surface)
    - northern portion of the working pad - 0.9 or 90% applicable to hardstand surface
- average leachate reuse rate of 15,700 L/day for moisture control of in-bunker composting during Stage 1 and 31,400 L/day during Stage 2, based on:
    - 6 active composting bunkers during Stage 1 and 12 active composting bunkers during Stage 2
    - composting batch period of 6 weeks
    - composting windrows as per Figure 1 which equates to a solid waste batch mass of 330 tonnes[1] (mean solid waste density 500 kg/m^3)
    - average batch moisture addition requirement of one third of mass (110 m^3)

It is noted open-water evaporation from the Leachate Pond is assumed equal to 100% of the Morton's shallow lake evaporation rate. This is considered a conservative approach (leading to a larger Leachate Dam volume requirement) because evaporation from the surface of ponds is known to be higher than for small lakes due to highest evaporation rates occurring near waterbody edges (Morton 1983).

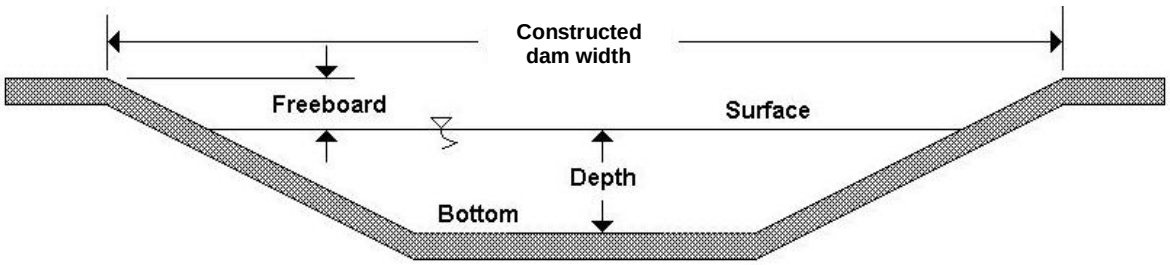


Figure 2 – Leachate Dam cross-section schematic

Leachate Dam Volume Estimates

Time series' of Leachate Dam holding volumes for Stage 1 and Stage 2 developments are shown in Figures D-2 and D-3 in Appendix D, respectively. To contain all inflows during the 38 years modelling period, a Leachate Dam capacity of 4,110 m^3 (4.1 ML) is required during Stage 1 and 2,910 m^3 (2.9 ML) is required during Stage 2. Capacity requirement is larger for the Stage 1 development scenario (6 composting bunkers) due to the increase of leachate reuse in Stage 2 (increased water demand for moisture conditioning of organics across 12 composting bunkers) exceeding the increase in *contact stormwater* generation afforded by the bunkers.

[1] Stage 1 – 6 weeks batch period and 330 t per batch with 6 bunkers equates to 17,200 t/a.
Stage 2 – 6 weeks batch period and 330 t per batch with 12 bunkers equates to 34,400 t/a.
These throughputs are marginally lower than the Stage 1 and Stage 2 maximum allowable capacities of 20,000 t/a and 40,000 t/a, respectively, to account for potential fluctuations in solid waste density.
Use of the lower throughputs in the water balance model is conservative due to lowering of demand for reuse of leachate for batch moisture addition. This in turn leads to a larger leachate dam volume requirement.

Applying the same runoff coefficients used in the water balance model to the 1 in 10 yr 24 hr design storm with a total rainfall depth of 151 mm determines that Leachate Dam capacity requirements for Stages 1 and 2 are 600 m^3 (0.60 ML) and 780 m^3 (0.78 ML), respectively.

The Leachate Dam capacity estimates derived by the water balance method are significantly larger than those calculated using the NSW DEC (2004) design storm method. This demonstrates the elevated environmental risk of the latter method because it offers no insight to a facility manager regarding the potential magnitude of any spill event, and may instead lead to implementation of unsafe management actions by staff and contractors. Furthermore, the design storm method predicts a larger Leachate Dam is required for the Stage 2 development based primarily on the larger *contact stormwater* catchment footprint. The water balance estimates a larger capacity requirement for Stage 1 development, which clearly demonstrates that reuse of leachate at AICF for moisture conditioning of bunkers (twice the volume used for Stage 2) is more influential on Leachate Dam sizing that catchment area.

It is also noted the simulation period included five storm events which exceeded the 151 mm design 24 hr rainfall depth advocated by NSW DEC (2004) (see Figure D-4 in Appendix D). A Leachate Dam volume of 4.1 ML was modelled to contain all leachate generated during the 38 yr period. This capacity is adopted as the minimum requirement for the AICF Leachate Dam.

Constructed Leachate Dam Capacity

Due to the post-quarry landform at the site, the location of Leachate Dam (see Figure A-1 of Appendix A) would require in-filling to reduce the capacity of the existing void. Ditton Properties has instead decided to enlarge Leachate Dam to 6.5 ML to match the void extent. The dam will be shaped as an inverted truncated square pyramid with 20 m floor edges, 40 m sides at top of bank and 7.0 m depth to floor. At nearly an order-of-magnitude larger than the design storm requirement and 70% more capacity than the water balance-based requirement, it is evident this storage provides an extremely high degree of environmental protection to local groundwater and surface waters.

At 4.1 ML storage capacity, Leachate Dam still has 2.4 ML of remaining storage (equates to 1.7 m of available freeboard). This in-built safety factor against overtopping negates the need for a spillway. To add an additional level of environmental protection, management actions are provided in Section 4.2.3 of the OEMP to option the availability of stand-by water tankers to drawdown Leachate Dam if the storage level exceeds 85% capacity. At this level 1.0 m of freeboard remains and a further 250 mm of rainfall, and subsequent runoff, is required to fill Leachate Dam.

Leachate Dam Monitoring Equipment

A high-level alarm system will be fitted to alert the AICF Onsite Manager when stored volume reaches 85% capacity.

Leachate Dam Clay Liner

To prevent leachate pollution by infiltration, Leachate Dam must have a liner that forms a secure hydrological barrier between groundwater, soil and substrata.

An acceptable leachate barrier option as defined by NSW DEC (2004) is a *"clay or modified soil liner consisting of at least 900 mm of recompacted clay with an in-situ permeability (K) of less than $10^{-9}ms^{-1}$. Successive layers should be of compatible material, and each underlying layer should be scoured to prevent excessive permeability due to the lamination. The sides should generally have a slope not exceeding a gradient of one vertical to three horizontal, in*

order to allow suitable compaction of the barrier and to facilitate subsequent testing." The AICF Leachate Dam clay liner will be:

- constructed with a minimum 900 mm thick compacted clay liner;
- laid down in layers, each not exceeding 300 mm in uncompacted thickness; and
- constructed by surface scouring underlying layers to avoid lamination of layers.

As discussed in Section 4.2, three potential clay liner material samples were supplied to the NATA accredited QualTest Laboratory for *falling head for a remoulded specimen* test in accordance with AS 1289.6.7.2-2001 (R2013). Only the 'black' material sample achieved a permeability rate lower than $10^{-9}ms^{-1}$ at ~95% compaction, and hence it is a suitable liner for Leachate Dam in accordance with NSW DEC (2004) requirements (certificate of analysis documentation is provided in Appendix B).

During earthworks construction of the Leachate Dam clay liner, QualTest Laboratory will undertake in-situ field density testing by nuclear density gauge in accordance with AS 1289.5.8.1 to ensure earthworks construction of the clay liner satisfies relative compaction requirements. These data will permit inference that the constructed clay liner conforms to an acceptable leachate barrier in accordance with NSW DEC (2004) requirements.

6. Summary

The AICF working surfaces, leachate barrier system, leachate collection system and leachate storage system have each been designed to comply with NSW DEC (2004).

Geotechnical testing of potential clay liners has identified suitable materials for use in construction. In-situ geotechnical testing of clay liner compaction will be required to verify construction in accordance with NSW DEC (2004) requirements.

Author Dr Andrew Krause
Principal Environmental Engineer
AK Environmental Pty. Limited

References

Bureau of Meteorology (2018), 2016 Rainfall IFD Data System - accessed 6 September 2018, <http://www.bom.gov.au/water/designRainfalls/revised-ifd>.

Coffey Partners International (1992), *Quarry Assessment – Gosforth*.

OD Hydrology (2015), *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment,* doc ref: 44001-rpt01d.docx.

OD Hydrology (2016), *Responses to request for additional information (Composting Facility, Anambah Road, Anambah,* NSW, doc ref: 44001-ltr01b.docx.

Morton, F.I. (1983), *Operational estimates of lake evaporation*, Journal of Hydrology, vol. 66, pp. 77-100.

NSW DEC (2004), *Environmental guidelines: composting and related organics processing facilities*. Sydney: Dept. of Environment and Conservation, <http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf>.

QLD DSITI (2018), The Long Paddock – SILO Climate Data, The State of Queensland (Department of Science, Information Technology and Innovation), accessed 6 September 2018, <https://www.longpaddock.qld.gov.au/silo/>.

Wilson, B.G., Haralampides, K. and Levesque, S. (2004), *Stormwater runoff from open windrow composting facilities*, Journal of Environmental Engineering and Science, 2004, 3 (6), 537-540, 10.1139/s04-024.

Appendix A – Site Layout

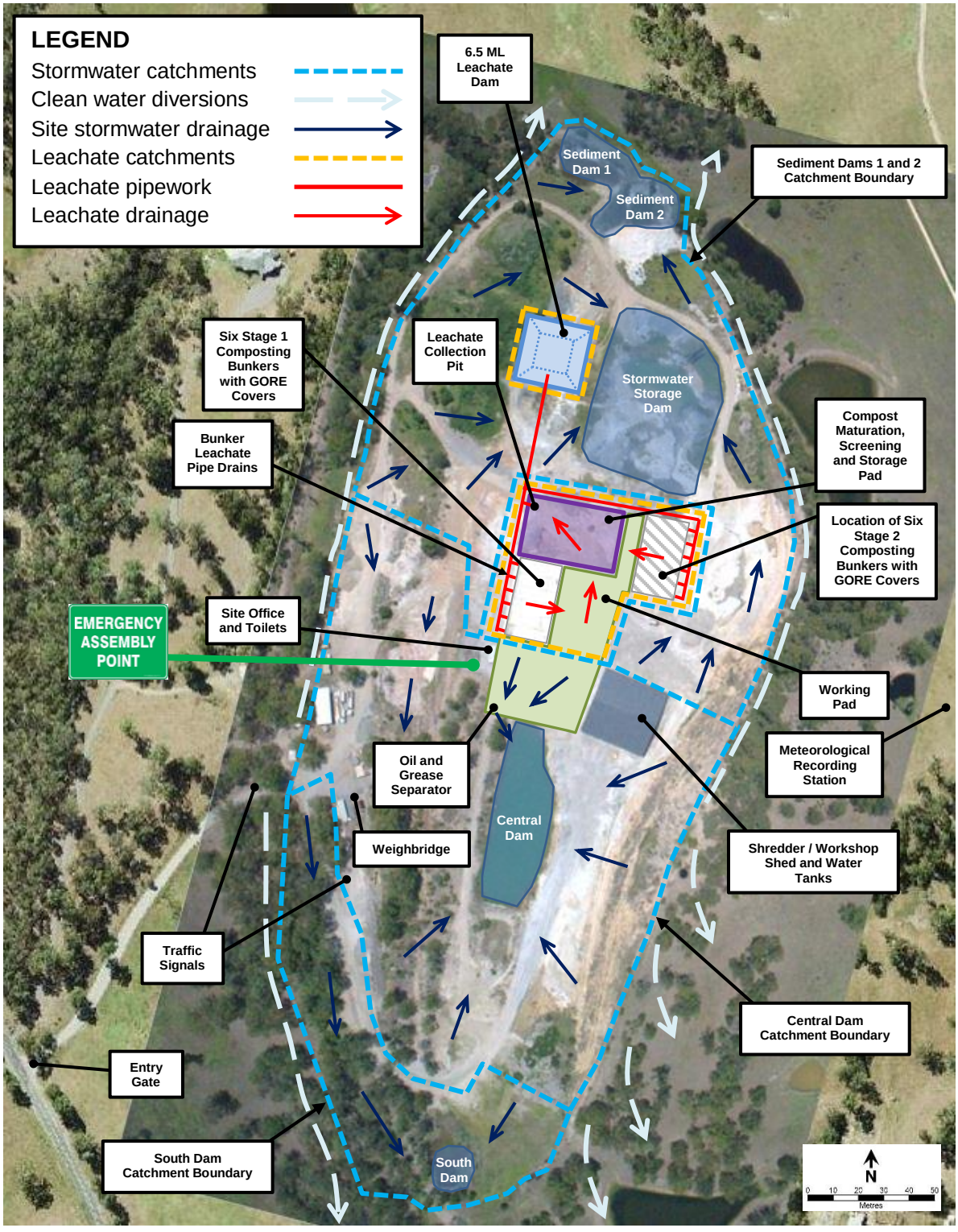


Figure A-1: AICF operational layout and catchment areas

Appendix B – Laboratory Datasheets

Qualtest LABORATORY (NSW) PTY LTD
8 Ironbark Close Warabrook NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S01
Issue Number: 1
This report replaces all previous issues

Client: Riverbend Quarry Pty Ltd
863 Anambah Road
Gosforth, NSW 2320
Principal:
Project Number: NEW17P-0179
Project: Various Assesments and Testing
Lot Number: -
TRN: -

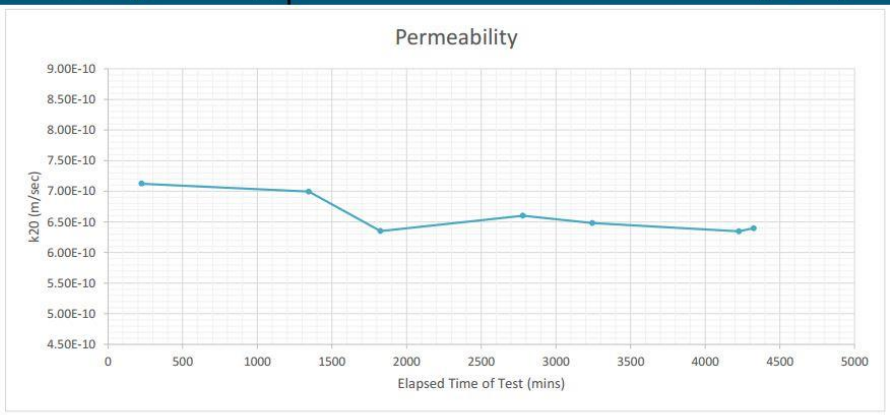
NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing
{This document may not be reproduced except in full.}

Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Black			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S01			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.56	Moulding Dry Density	t/m³	1.47
Optimum Moisture Content	%	24	Laboratory Moisture Ratio	%	101.5
Compactive Effort		Standard	Laboratory Density Ratio	%	94.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	23.8	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	24.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.83	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.4 x 10 $^{-10}$**	(m/sec)	



Comments:

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ABN: 98 153 268 896

Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S02
Issue Number: 1
This report replaces all previous issues

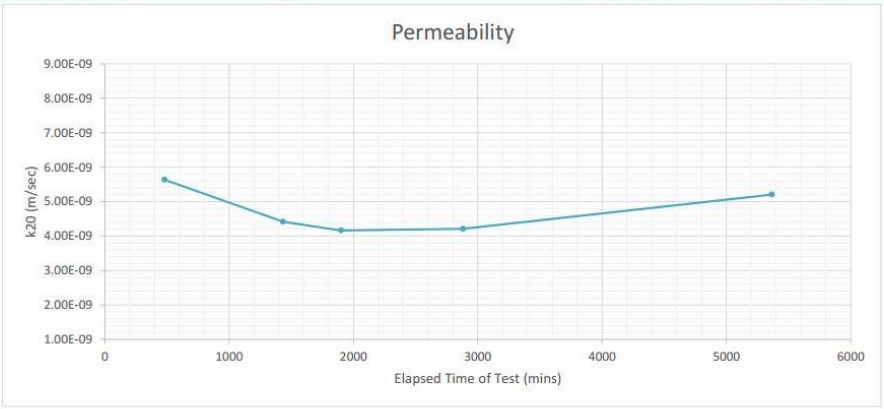
NATA WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory:	Brent Cullen
Title:	Senior Geotechnician
Date of Issue:	17/09/2018
NATA Accredited Laboratory Number:	18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Brown			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S02			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.73	Moulding Dry Density	t/m³	1.64
Optimum Moisture Content	%	16.4	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	94.5
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	13.7	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	16.4	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.91	Material Retained on Sieve	%	12
Permeability	$K_{(20)}$=		**4.7 x 10 $^{-9}$**		(m/sec)



Comments:

Qualtest
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ABN: 98 153 268 896

Permeability Report - Falling Head

Report Number: PFH:NEW18W-2952-S03
Issue Number: 1
This report replaces all previous issues

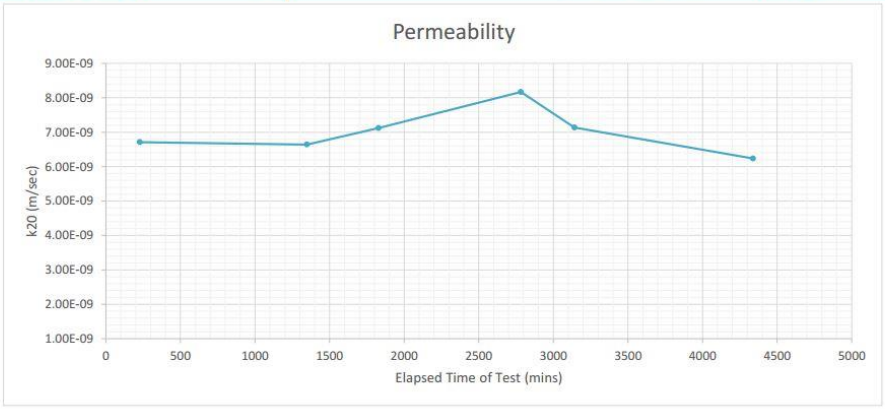
NATA
WORLD RECOGNISED ACCREDITATION

Client:	Riverbend Quarry Pty Ltd 863 Anambah Road Gosforth, NSW 2320
Principal:	-
Project Number:	NEW17P-0179
Project:	Various Assesments and Testing
Lot Number:	-
TRN:	-

Approved Signatory: Brent Cullen
Title: Senior Geotechnician
Date of Issue: 17/09/2018
NATA Accredited Laboratory Number: 18686

Test Procedure:
AS1289.6.7.2 / AS1289.5.1.1 / AS1289.2.1.1

Sample Details					
Material		Sandy Clay			
Client Reference		Grey			
Laboratory Reference		NEW18W-2952			
Sample Number		NEW18W-2952-S03			
Specimen Details & Results					
Maximum Dry Density	t/m³	1.76	Moulding Dry Density	t/m³	1.67
Optimum Moisture Content	%	15.3	Laboratory Moisture Ratio	%	100.0
Compactive Effort		Standard	Laboratory Density Ratio	%	95.0
Method of Compaction		Rammer	Surcharge Applied	Kg	5.5
Field Moisture Content	%	15.4	Head Pressure Applied	kPa	3.0
Moulding Moisture Content	%	15.3	Sieve Size	mm	19
Moulding Wet Density	t/m³	1.93	Material Retained on Sieve	%	0
Permeability	$K_{(20)}$=		**6.7 x 10 $^{-9}$**		(m/sec)



Comments:

Appendix C – Concrete Floor Structures

Figure C-1: In-situ concrete floor depth of composting bunkers

Figure C-2: In-situ concrete floor depth of shredder shed

Appendix D – Water Balance Modelling Results

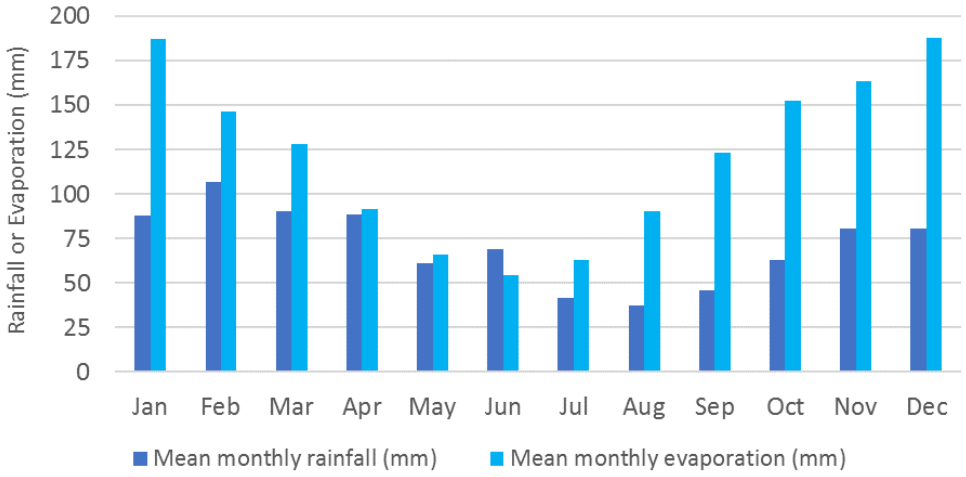


Figure D-1: Average monthly rainfall and evaporation for 1980 to 2017

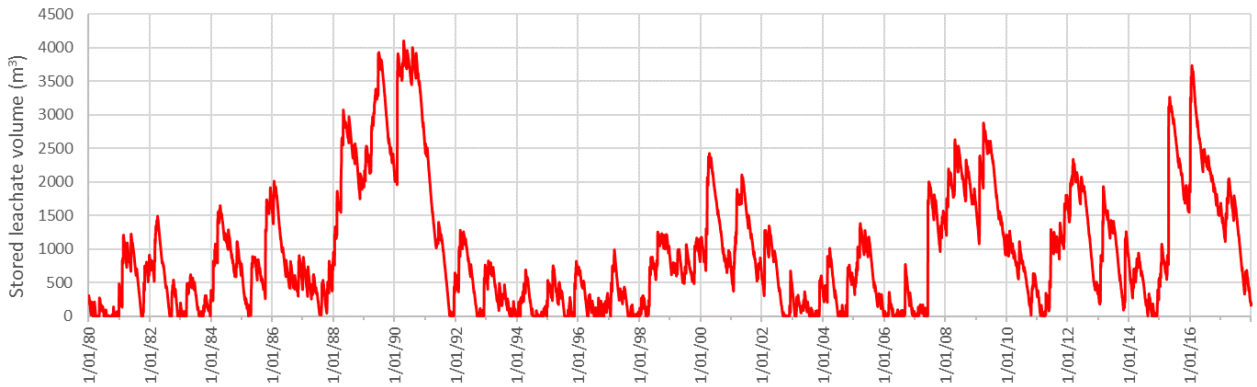


Figure D-2: Stage 1 - time series of leachate pond stored volume for modelled period 1980 to 2017

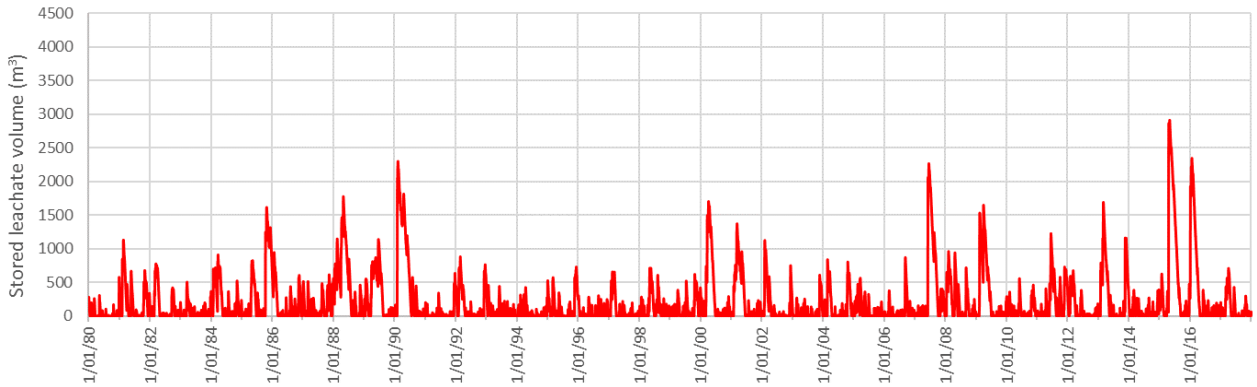


Figure D-3: Stage 2 - time series of leachate pond stored volume for modelled period 1980 to 2017

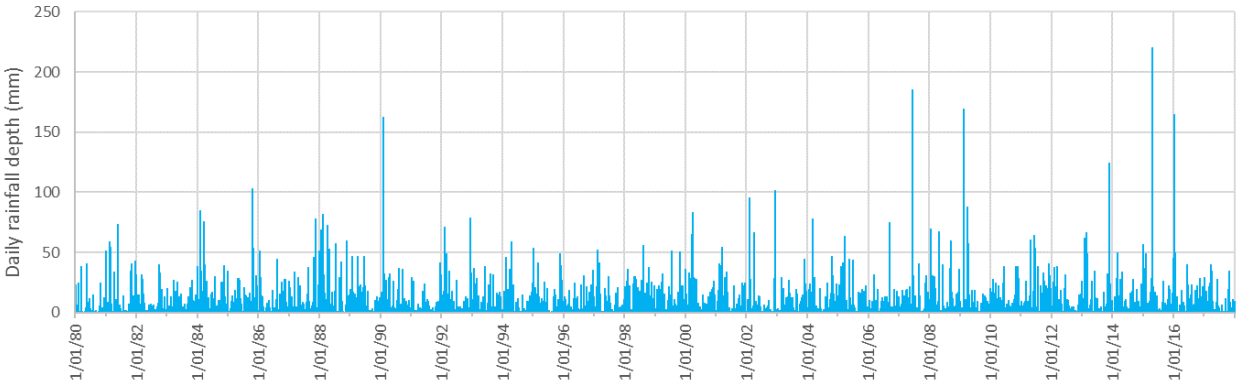


Figure D-4: Time series of daily rainfall depth for 1980 to 2017

Appendix D. Environment Protection Licence

Environment Protection Licence

Licence - 12510

Licence Details	
Number:	12510
Anniversary Date:	23-March

Licensee

DITTON PROPERTIES PTY LIMITED

863 ANAMBAH ROAD

GOSFORTH NSW 2320

Premises

DITTON PROPERTIES PTY LIMITED

442 ANAMBAH ROAD

GOSFORTH NSW 2320

Scheduled Activity

Extractive Activities

Fee Based Activity	Scale
Land-based extractive activity	> 50000-100000 T extracted, processed or stored

Region

Waste & Resources - Waste Management

59-61 Goulburn Street
SYDNEY NSW 2000

Phone: (02) 9995 5000

Fax: (02) 9995 5999

PO Box A290 SYDNEY SOUTH

NSW 1232

Environment Protection Licence

Licence - 12510

Environment Protection Licence

Licence - 12510

Environment Protection Licence

Licence - 12510

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 12510

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

DITTON PROPERTIES PTY LIMITED
863 ANAMBAH ROAD
GOSFORTH NSW 2320

subject to the conditions which follow.

Environment Protection Licence

Licence - 12510

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Extractive Activities	Land-based extractive activity	> 50000 - 100000 T extracted, processed or stored

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
DITTON PROPERTIES PTY LIMITED
442 ANAMBAH ROAD
GOSFORTH
NSW 2320
LOT 22 DP 1069012

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

Environment Protection Licence

Licence - 12510

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Dischrage Point - Surface Waste Monitoring	Dischrage Point - Surface Waste Monitoring	Depicted as "discharge Point" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd
4	Groundwater Quality Monitoring - North Bore - downstream	Groundwater Quality Monitoring - North Bore - downstream	Depicted as "Groundwater bore" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd
5	Groundwater Quality Monitoring - Southern Bore - Upstream	Groundwater Quality Monitoring - Southern Bore - Upstream	Depicted as "groundwater bore" on plan of "Detail and contour survey plan of Gosfortyh Quarries Pty Ltd - June 2008 - ref no 37559" by Asquith & deWitt Pty Ltd

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

Environment Protection Licence

Licence - 12510

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Ammonia	milligrams per litre				0.9
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005	As specified in each particular resource recovery exemption	NA
NA	Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA

L4 Noise limits

L4.1 A maximum $L_{A(eq\ 15\ minute)}$ noise emission level of 35dB(A) is to be achieved at the nearest affected receiver

to the residential receiver at location (to be announced), and an $L_{A(eq15\ minute)}$ noise emission criterion of level of 39dB(A) is to be achieved at the residential receiver at location (to be announced).

L5 Hours of operation

L5.1 Hours of operation are to be confined to 7:00am to 5:00pm Monday to Saturday inclusive. No operations or deliveries are to be undertaken on Sundays or Public Holidays.

L6 Potentially offensive odour

L6.1 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O2.2 **Maintenance of sedimentation system and leachate holding ponds**

The sedimentation and leachate pond(s)/basin(s) must be maintained to ensure that their design capacity is available for the storage of stormwater and leachate respectively in the event of rainfall.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from

the premises.

O3.2 Mobile water plant for dust suppression must be operational and functioning to prevent dust during hours of operation.

O4 Emergency response

O4.1 The licensee must maintain, and implement as necessary, a current emergency response plan for the premises. The licensee must keep the emergency response plan on the premises at all times. The emergency response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. If a current emergency response plan does not exist at the date on which this condition is attached to the licence, the licensee must develop an emergency response plan within three months of that date.

O5 Waste management

O5.1 The licensee must prevent the tracking of waste and mud by vehicles outside the premises.

O5.2 **Maintenance of capping over landfilled waste**

The Licencee must ensure that the cap over the landfilled waste is maintained to prevent erosion and water infiltration through that cap.

Note: The clay capping over waste fill area is depicted as *Waste Fill area 2700m²* in enclosed map of *Detail and Contour survey plan of Gosforth Quarries Pty Ltd Lot 22 DP 1069012 June 2008 Survey* by Anambah Road, Gosforth by Asquith deWitt Pty Ltd;

O6 Other operating conditions

O6.1 **Management of surface waters**

Surface water drainage must be diverted away from any area where waste has been landfilled.

O6.2 Surface water run-off from all disturbed areas at the premises which may liberate suspended solids when stormwater runs over these areas must be diverted into sedimentation basins.

O6.3 Any leachate storage pond must be designed to prevent stormwater running into it.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must

be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Ammonia	milligrams per litre	Special Frequency 1	Grab sample
Oil and Grease	milligrams per litre	Special Frequency 1	Grab sample
pH	pH	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample

POINT 4,5

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams of calcium carbonate per litre	Special Frequency 1	Grab sample
Aluminium	milligrams per litre	Quarterly	Grab sample
Ammonia	milligrams per litre	Special Frequency 1	Grab sample
Arsenic	milligrams per litre	Quarterly	Grab sample
Barium	milligrams per litre	Quarterly	Grab sample
Benzene	milligrams per litre	Quarterly	Grab sample
Biochemical oxygen demand	milligrams per litre	Quarterly	Grab sample
Cadmium	milligrams per litre	Quarterly	Grab sample
Calcium	milligrams per litre	Quarterly	Grab sample

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Chloride	milligrams per litre	Quarterly	Grab sample
Chlorinated volatile compounds	milligrams per litre	Quarterly	Grab sample
Chromium (total)	milligrams per litre	Quarterly	Grab sample
Cobalt	milligrams per litre	Quarterly	Grab sample
Conductivity	siemens	Quarterly	Grab sample
Copper	milligrams per litre	Quarterly	Grab sample
Dissolved Oxygen	milligrams per litre	Quarterly	Grab sample
Ethyl benzene	milligrams per litre	Quarterly	Grab sample
Fluoride	milligrams per litre	Quarterly	Grab sample
Iron	milligrams per litre	Quarterly	Grab sample
Lead	milligrams per litre	Quarterly	Grab sample
Magnesium	milligrams per litre	Quarterly	Grab sample
Manganese	milligrams per litre	Quarterly	Grab sample
Mercury	milligrams per litre	Quarterly	Grab sample
Nitrate	milligrams per litre	Quarterly	Grab sample
Organochlorine pesticides	milligrams per litre	Quarterly	Grab sample
Organophosphate pesticides	milligrams per litre	Quarterly	Grab sample
PCBs	milligrams per litre	Quarterly	Grab sample
pH	pH	Special Frequency 1	Grab sample
Phosphate	milligrams per litre	Quarterly	Grab sample
Polycyclic aromatic hydrocarbons	milligrams per litre	Quarterly	Grab sample
Potassium	milligrams per litre	Quarterly	Grab sample
Sodium	milligrams per litre	Quarterly	Grab sample
Standing Water Level	metres	Continuous	Continuously
Sulfate	milligrams per litre	Quarterly	Grab sample
Toluene	milligrams per litre	Quarterly	Grab sample
Total dissolved solids	milligrams per litre	Special Frequency 1	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample
Total Phenolics	milligrams per litre	Quarterly	Grab sample
Total suspended particles	milligrams per litre	Quarterly	Grab sample
TPH	milligrams per litre	Quarterly	Grab sample
Zinc	milligrams per litre	Quarterly	Grab sample

Note: For the purposes of this licence “special frequency 1” refers to;
a) sampling each quarter; and
b) sampling daily during discharge periods.

M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
a) a Statement of Compliance; and
b) a Monitoring and Complaints Summary.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

R4.1 **Assessment of Surface Water leachate and Groundwater Monitoring**

The licensee must assess all water monitoring data collected in relation to the premises and compare this data against:
a) Identified concentrations / units of uncontaminated water on the premises; and/or
b) ANZECC Trigger Values; and/or
c) Limits in this licence.

R4.2 The Assessment Report must be;
a) forwarded to the EPA within 90 days of the end of each annual licence reporting period; and
b) identify trends in water quality; and
c) be reported in tabular and graphical form.

7 General Conditions

G1 Copy of licence kept at the premises or plant

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G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Mitchell Bennett

Environment Protection Authority

(By Delegation)

Date of this edition: 23-March-2007

End Notes

1	Licence varied by notice 1075886, issued on 30-May-2008, which came into effect on 30-May-2008.
2	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
3	Licence varied by notice 1095549, issued on 01-Mar-2011, which came into effect on 01-Mar-2011.
4	Licence transferred through application 1500784 approved on 09-Aug-2011 , which came into effect on 10-Aug-2011
5	Licence format updated on 10-Aug-2011
6	Licence varied by notice 1502199 issued on 31-Oct-2011
7	Licence varied by notice 1529270 issued on 17-Apr-2015

Appendix E. Pollution Incident Response Management Plan

AKE Document: 2057-1441
Version: 2.1
Issued: 3 April 2019

AK Environmental PTY LTD

ENVIRONMENTAL ENGINEERING & CONSULTING

Pollution Incident Response Management Plan (PIRMP)

Anambah In-vessel Composting Facility
442 Anambah Road, Anambah NSW 2320

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Document Control

Report Type	Pollution Incident Response Management Plan (PIRMP)
Project Location	442 Anambah Road, Anambah NSW 2320
AKE Document Number	2057-1441
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Next Testing Date	1 November 2019
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Version	Date	Action	Responsible Person
1.0	25 September 2018	Prepared	Andrew Krause
1.0	25 September 2018	Approved	Chris Ditton
2.0	29 January 2019	Prepared	Andrew Krause
2.0	29 January 2019	Approved	Chris Ditton
2.1	3 April 2019	Prepared	Andrew Krause
2.1	3 April 2019	Approved	Chris Ditton

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1. Context of the PIRMP

1.1 Purpose

This Pollution Incident Response Management Plan (PIRMP) has been prepared to describe the processes required to make preparations for, and respond to, a pollution incident at the Anambah In-vessel Composting Facility (AICF).

1.2 Legislative Requirements

Ditton Properties Pty, Limited (Ditton Properties) owns the AICF and RB Organics Pty. Limited operates the AICF. Ditton Properties holds environment protection licence (EPL) 12510 (EPL12510) issued by the Environment Protection Authority (EPA). All holders of an EPL are required under the *Protection of the Environment Legislation Amendment Act 2011* (POELA Act) and the requirement under Part 5.7A of the *Protection of the Environment and Operations Act 1997* (POEO Act) to prepare, keep, test and implement a PIRMP.

This PIRMP has been prepared in response to these requirements.

1.3 Objectives

The objectives of a PIRMP are set out in the *EPA Guidelines: Preparation of pollution incident response management plans, March 2012*. The objectives of the PIRMP are to:

- ensure comprehensive and timely communication about a pollution incident to staff at the premises, the Environment Protection Authority (EPA), other relevant authorities specified in the POEO Act (such as local councils, Ministry of Health, SafeWork NSW, and Fire and Rescue NSW) and people outside the facility who may be affected by the impacts of the pollution incident;
- minimise and control the risk of a pollution incident at the facility by requiring identification of risks and the development of planned actions to minimise and manage those risks; and
- ensure that the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability.

1.4 Definition of a Pollution Incident

NSW EPA defines a pollution incident as:

> *"an incident or set of circumstances during, or as a consequence of, which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise."*

1.5 Duty to Notify

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

> *"(a) harm to the environment is material if:*
> *(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
> *(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and*
>
> *(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment."*

The requirement to notify a pollution incident equally applies where the harm is caused only within the premises where the pollution incident occurs, and also where the harm is caused external to the premises.

It is also a requirement to report incidents **immediately** (ie. promptly without delay) to EPA, Ministry of Health, Fire and Rescue NSW, SafeWork NSW and local councils.

1.6 Scope of PIRMP

The scope of the AICF PIRMP is as follows:

- description and likelihood of hazards;
- pre-emptive actions to be taken;
- inventory of pollutants;
- safety equipment;
- contact details;
- communicating with neighbours and the local community;
- minimising harm to persons on the premises;
- maps showing the location of scheme components;
- actions to be taken during or immediately after a pollution incident; and
- staff training.

In summary, the PIRMP is required to include the following:

- the procedures to be followed regarding notification in the event of a pollution incident;
- a detailed description of the action that will be taken immediately after a pollution incident to minimise and control any pollution;
- the procedures that will be followed regarding coordinating with any notified authorities or persons; and
- any other matter required by the regulations.

2. The Premises

2.1 Site Location

The AICF is located at 442 Anambah Road, Anambah (Figure 1). The operations are undertaken at Lot 22 DP1069012. The Hunter River is approximately 1 km to the east of the site.

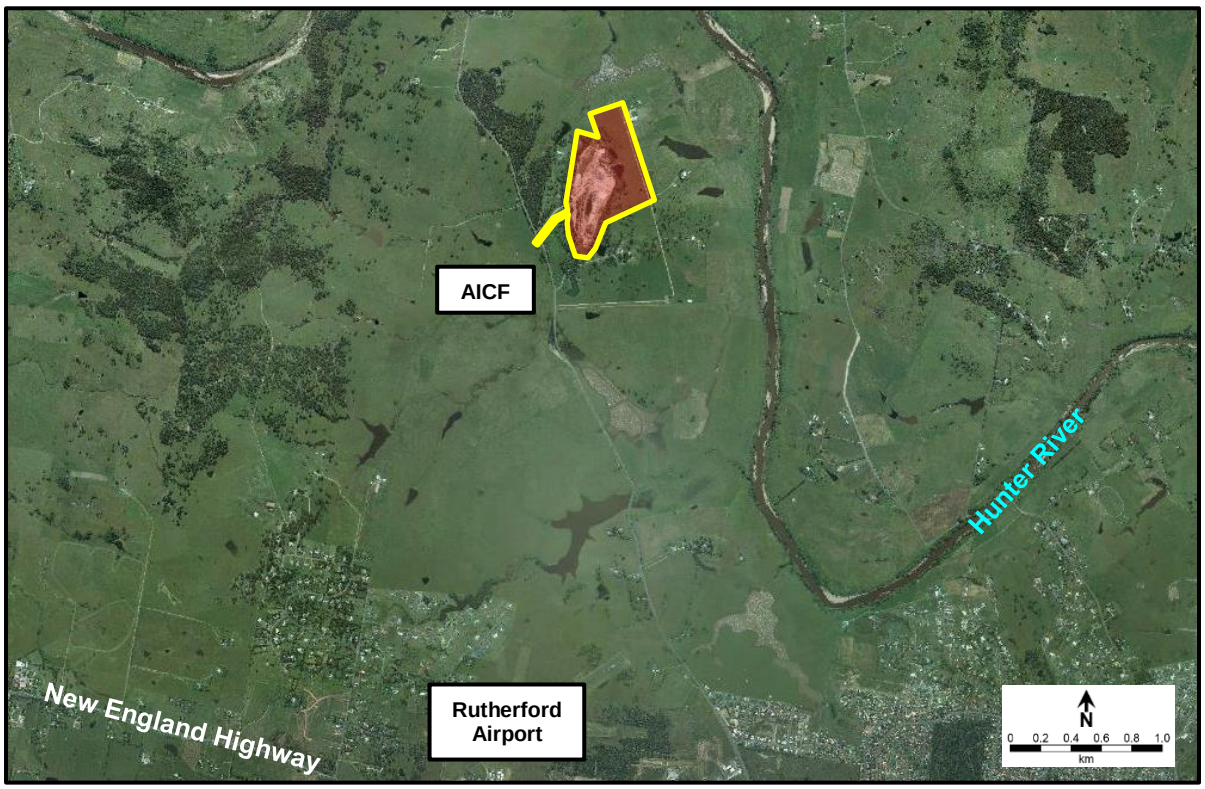


Figure 1 – Site lot boundary and general locality (image source: SixMaps)

2.2 Site Characteristics

The AICF is cited near sensitive receptors (Figure 2) which require implementation of considered environmental management. The sensitive receptors are:

- adjacent neighbouring residences (note the residence located immediately west of the composting operations area is now within the consolidated site lot and is not considered to be sensitive); and
- the Hunter River.

The 32 ha site is accessed via Anambah Road to the west. The land surface slopes have been highly modified by previous quarrying operations. As shown in Figure 3, the northern portion of the site drains to Sediment Dams 1 and 2, the central portion drains to Central Dam, and the small southern portion drains to Sediment Dam 3.

The offsite surface water overflow locations are at the northern embankment of Sediment Dams 1 and 2, and the southern embankment of Sediment Dam 3 (see Figure 3). According to the *Greta 1:25,000 Topographic Map (9132-1S)* (Land and Property Information 2016), the waterway flow path to the Hunter River is approximately 2.5 km in length. Overflows to the

north enter a very large farm dam approximately 300 m to the north. There is no defined waterway connection between the dam and the Hunter River, however, anecdotal evidence indicates overtopping events to the Hunter River occur periodically.

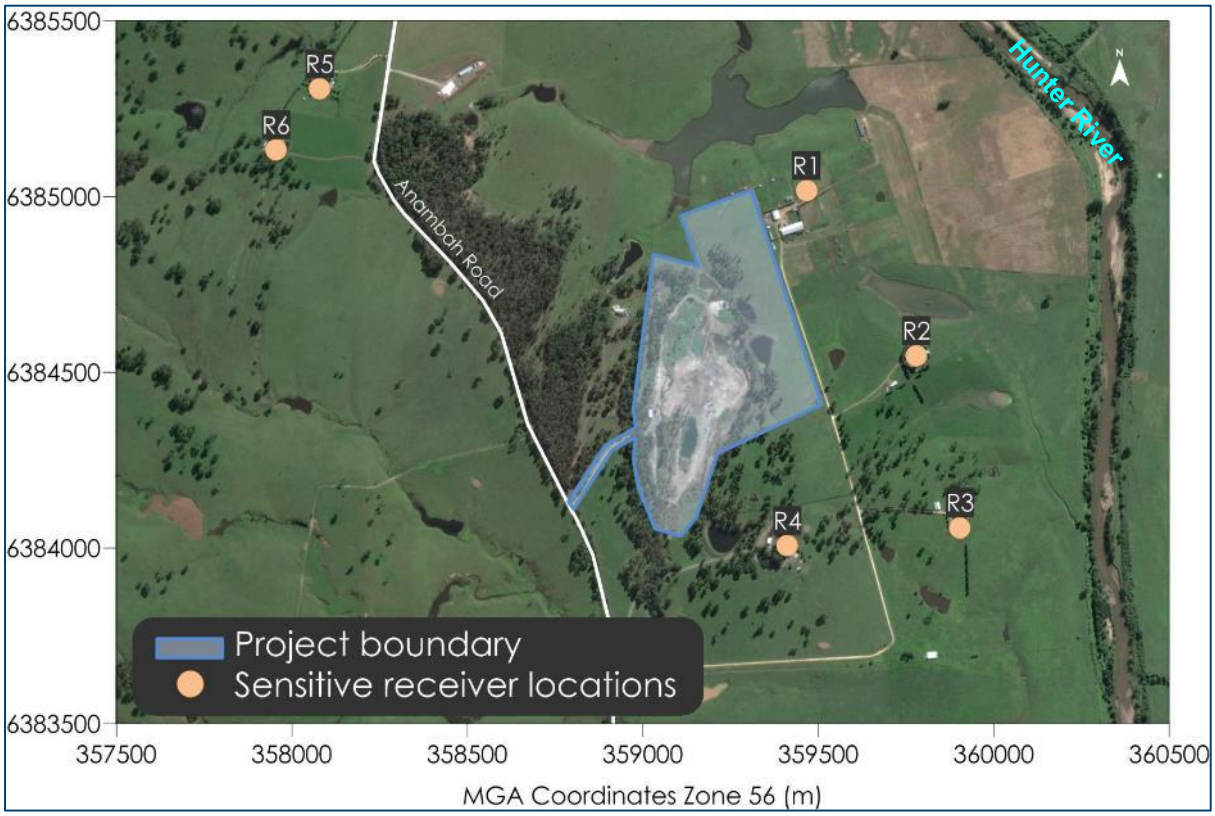


Figure 2 – Site lot boundary and sensitive neighbouring receptors (Todoroski 2018)

2.3 Site Supervision

The AICF Onsite Manager performs the day to day management responsibilities at the facility. All delivery, dispatch, and operations are restricted to between 7:00am to 5:00pm Monday to Saturday. AICF staff are present during these operating times. No operations of any kind are permitted on Sundays or Public Holidays. A lockable security gate at the entry road prevents the entry of traffic outside of operating times.

Vehicles movements are controlled by signage.

2.4 Site Development

Notice of determination of Development Approval DA 15-433 was issued by Maitland City Council (Council) on 12 July 2017. A condition of consent is that:

> *"DA 95-163 for quarrying shall be surrendered to Council on …. 40,000 tonnes of waste being processed at the site or five (5) years from commencement of composting operations whichever occurs first."*

This PIRMP applies to operation the AICF only. A separate PIRMP is already in place for the quarrying operation. It is expected that both PIRMP documents would be remain applicable until quarrying operations cease.

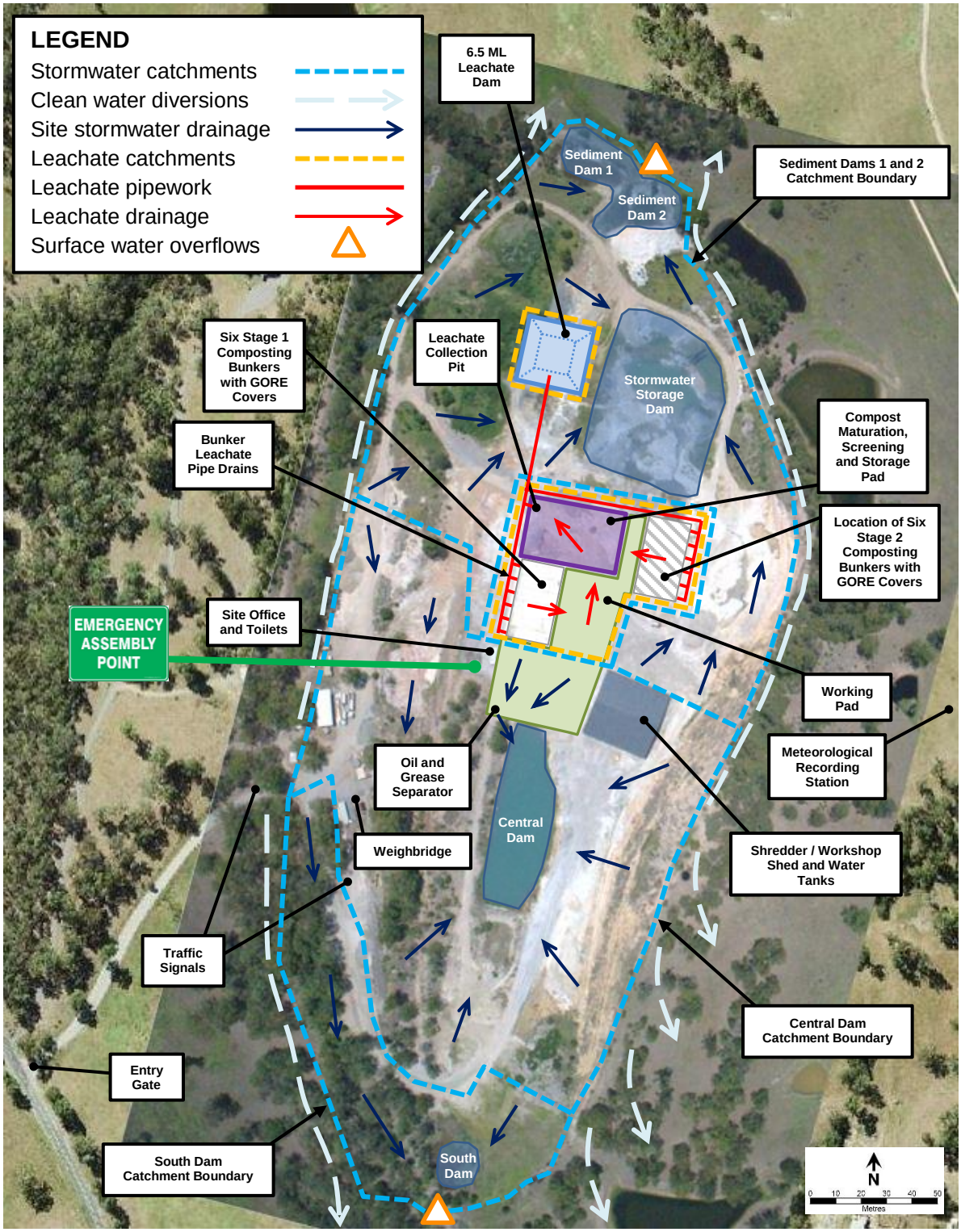


Figure 3 – AICF operational layout, catchment areas and offsite surface water discharge locations

2.4.1 AICF Site Description

The AICF layout is shown in Figure 3. The development consists of:

- site operations and storage office;
- sealed internal access roads (tar seal or stabilised gravel standard);
- Anambah Road intersection upgrade (entry road widening and overtaking lane addition on Anambah Road);
- site entry and road traffic signage;
- entry road security gate;
- weighbridge with boom gates at entry and exit;
- weighbridge office;
- on-slab shed to house drop-off stockpile, slow speed shredder and workshop;
- concrete composting bunkers each of 200 m^2 floor area (8 m x 25 m) and each with a GORE cover system (Stage 1 with six bunkers and Stage 2 with 12 bunkers);
- floor-inset bunker air injection system and leachate collection drainage system;
- compost maturation, screening and storage area on 1,350 m^2 stabilised gravel pad (30 m x 45 m);
- Leachate Dam (6.5 ML capacity), high-level alarm system, floating pontoon aerator and leachate return pump;
- surface water sediment management dams (Sediment Dams 1 and 2, Central Dam and South Dam) and Stormwater Storage Dam;
- above ground (bunded 110%) diesel storage tanks (2 x 12,000 L) and re-fuelling area;
- oil and grease separator for stormwater at south-east corner of pad;
- submersible pump (25 L/s) on floating pontoon at Central Dam;
- water tanks (4 x 23,000 L) for roof rainwater collection and top-up transfer from Central Dam pump;
- fire-fighting system (2 x high-flow pressurised hose reels at slow speed shedder shed supplied by water tanks, water tanker with water cannon and diesel pump; fire extinguishers at re-fuelling area); and
- pump out toilets at site office.

In addition to fixed plant, mobile plant will be employed at the AICF to handle solid waste and undertake dust suppression of unsealed trafficable areas.

2.4.2 AICF Site OEMP

Prior to the issuing of an occupation certificate for the AICF, an Operational Environmental Management Plan (OEMP) will be developed and submitted to Council.

3. Operational Risk Management

To inform the site risk assessment presented in Section 0, the following Section 0 describes AICF operational procedures and design aspects which impact the management of risk at the facility.

3.1 Liquid Waste Management

In accordance with *Environmental guidelines: composting and related organics processing facilities* (DEC 2004), leachate is all waters which contact compostable organic materials.

Protection of groundwater and surface water is afforded by a leachate management system has been designed, and will be operated, and maintained consistent with the principles and requirements of DEC (2004), and has the following components:

- working surfaces;
- leachate barrier system;
- leachate collection system; and
- leachate storage system.

The raw sewage management system comprises proprietary toilets with sewage containment tanks. Raw sewage will be disposed off-site with no on-site treatment permissible.

Sections 4.2.1 and 4.2.2 of the site OEMP detail the objectives and design considerations which have been applied to management of liquid waste at the AICF. Operational procedures and responsibilities are detailed in Section 4.2.3 of the site OEMP.

3.2 Solid Waste Management

Compostable materials are categorised by DEC (2004). During the first three years of compost processing, the AICF will receive only Category 1 materials, with Category 2 material accepted thereafter. The maximum quantity of 'Food Waste' permitted for receipt is 8,000 tonnes annually. It is not intended that the facility will compost Category 3 organics, and receipt of other contaminated solids will not be permitted. Further details regarding the AICF solid waste specifications and management objectives are provided in Sections 4.3.1 and 4.3.2 of the site OEMP.

Operational procedures and responsibilities for the management of solid waste are detailed in Section 4.2.3 of the site OEMP.

3.3 Surface Water Management

Stormwater runoff generated within the AICF sub-catchment areas shown in Figure 3 will be directed to onsite sediment dams for treatment. The dams are designed to limit the volumetric quantity of downstream surface water releases, and to manage the quality of surface water leaving the site.

Sections 4.5.1 and 4.5.2 of the site OEMP detail the objectives and design considerations which have been applied to management of leachate at the AICF. Operational procedures and responsibilities are detailed in Section 4.5.3 of the site OEMP.

3.4 Pollutants and Chemicals

Compost leachate and raw sewage from the onsite toilets are the liquid waste pollutants generated by the AICF which are potentially hazardous to public health and the environment. Liquid waste management of pollutants is detailed in Section 3.1.

The chemicals and fuels listed in Table 1 are stored/used at the site. Diesel fuels are maintained in secured and bunded locations. For those chemicals/fuels which have safety data sheets (SDS), these are kept on site and updated as required (see Appendix F of the OEMP). Safe use of chemicals and spill-handling procedures are in accordance with SDS documentation.

Table 1 – Treatment chemicals and fuels

Chemical/Fuel	Typical quantity	Stored?	Safety Data Sheet Kept at site?
Diesel	24,000 L max	Above ground tanks at refuelling area (110% bunded)	Yes
Oil (Engine/Hydraulic)	50 L	Off-site (plant maintenance vehicle)	Yes
Grease	20 L	Off-site (plant maintenance vehicle)	Yes
Hand soap	20 L	Site office	No

3.5 Groundwater Management

In accordance with findings in *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater Assessment* (OD Hydrology 2015), groundwater levels are not expected rise to ground surface levels, and hence direct mixing of groundwater and surface water will not occur. Hence, vertical downward infiltration of surface waters is the only potential pathway for pollution of underlying groundwater.

Sections 3.1 to 3.4 cover the management of liquid waste, solid waste, surface water and pollutants and chemicals, and these are all considered relevant to the protection of groundwater. Furthermore, Sections 4.6.1 and 4.6.2 of the site OEMP detail the objectives and operational procedures which have been applied to management of groundwater at the AICF.

3.6 Air Quality Management

Air quality pollutant types associated with organic composting are dust and odour.

Sections 4.7.1 and 4.7.2 of the site OEMP detail the objectives and design considerations which have been applied to management of dust emissions at the AICF. Operational procedures and responsibilities are detailed in Section 4.7.3 of the site OEMP.

Sections 4.8.1 and 4.8.2 of the site OEMP detail the objectives and design considerations which have been applied to management of odour at the AICF. Operational procedures and responsibilities are detailed in Section 4.8.3 of the site OEMP.

3.7 Environmental Monitoring

An on-site meteorological station will continuously monitor weather conditions.

Surface water quality and groundwater quality will be monitored quarterly in accordance with EPL12510. Groundwater levels will be continuously monitored.

In accordance with EPL12510, surface water quality and groundwater quality will be monitored on each day that offsite discharges of surface water occur.

Dust monitoring will occur at the three nearest sensitive receptors, each of which located east of the AICF. The frequency of monitoring is monthly.

Attended noise monitoring will be conducted monthly during the first 12 months of operation, after which monitoring would occur quarterly. Additional noise monitoring will be conducted when new or additional composting equipment is commissioned or following a noise-related complaint being received.

Odour monitoring will be enacted in response to an odour complaint from a neighbouring sensitive receptor.

3.8 Fire Management

Management actions which control the potential for fires are:

- maintain machinery in good working order to reduce potential for ignition;
- compost stockpiles are turned regularly until removal from site;
- regular testing of fire hydrants and fire extinguishers; and
- regular site patrols.

3.9 Vandalism

A stock fence is erected at the site boundary and the entry road access is security gated.

AICF staff are present 7:00am to 5:00pm Monday to Saturday.

Staff are required to remain vigilant to any suspicious behaviour. It is a requirement for staff as soon as they become aware of instances of malicious damage or anti-social behaviour, that Police are notified.

3.10 Safety equipment and PPE

Safety equipment and personal protective equipment (PPE) are provided to workers to minimise the risk to human health and the environment. The purpose of this safety equipment and PPE is to contain, control or prevent contact with potential pollutants.

The following safety equipment is maintained at the premises:

- fire hydrants and high-pressure hoses;
- fire extinguishers and fire blankets; and
- PPE for undertaking of works concerning untreated sewage. Shovels and hand equipment are also available to limit contact with waste material.

The types of PPE kept at site are shown in Table 2, and the locations of firefighting and PPE components are shown in Figure 4.

Table 2 – Personal protective equipment and storage locations

Equipment	Purpose	Location
Safety helmets	Head protection in shredder shed	Site operations/storage office
Prickle proof gloves	Material waste handling	Site operations/storage office
Hi-vis vests	Visible identification	Site operations/storage office
Dust masks	Breathing protection	Site operations/storage office

3.1 Site Inductions

All AICF staff and contractors conducting work at the AICF are to be inducted to the site by the AICF Onsite Manager. This induction must cover the purpose, requirements and responsibilities detailed in this PIRMP.

All work carried out will be managed under AICF's Integrated Risk Management system and prior to completing any task a risk assessment, standard operating procedure and/or safe work method statement will be completed and adhered to.

3.2 Evacuation Procedure

In the event of an emergency, AICF staff will notify all workers and visitors currently onsite via verbal communication. All staff and visitors are to go to the emergency assembly point, which is located near the site office as shown in Figure 4.

3.3 Training

Training is provided to all AICF staff conducting work at the AICF. The nature of the training is determined by the level of risk and likelihood of incidents and is further the position the employee holds. Training is provided with the principle objective of statutory compliance and knowledge and application of procedures and plans. Additional training is provided to supplement knowledge and skills as well as providing breadth knowledge. Training is provided in the form of:

- formal training courses/certificates;
- toolbox talks; and
- internal training on PIRMP and incident response.

All staff should receive sufficient training to enable them to carry out their assigned duties in a competent and safe manner. All staff must be:

- capable of using the fire-fighting equipment;
- capable of identifying potential pollution incidents; and
- familiar with the requirements and procedures contained within this PIRMP.

The staff training register for each position is shown in Appendix A.

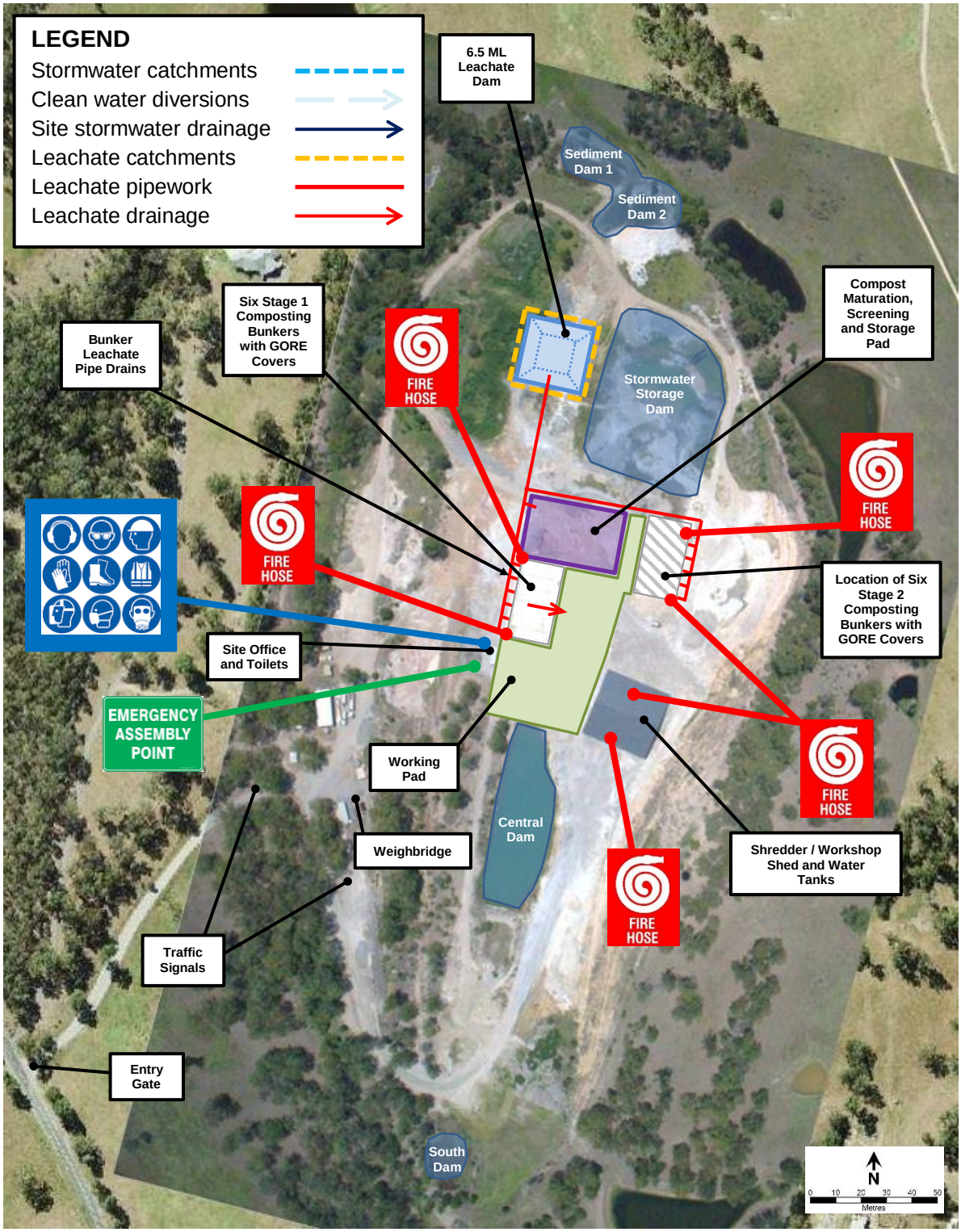


Figure 4 – Site locations of firefighting components, PPE storage and emergency assembly point

4. Risk Assessment

A risk assessment has been undertaken to determine the following:

- identification of hazard events;
- identification of potential exacerbating circumstances;
- documentation of preventative measures and monitoring; and
- assessment of the residual risk (likelihood and consequence).

4.1 Structure of Risk Assessment

The criteria used to undertake the risk assessment is set out in AICF's Risk Analysis Audit Tables (see Appendix B), including definitions of likelihood, consequence and the resultant risk matrix.

4.2 AICF Risk Assessment

The risk register is shown in Table 4. The risk assigned to each potential pollution incident event is the *residual risk* when all preventative actions/measures are considered.

Table 3 – AICF risk matrix

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Failure of sediment dam system	Structural embankment failure (Sediment Dam 1+2 and South Dam)	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance, including remove tree seedlings
	Structural embankment failure (Central Dam)	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance, including remove tree seedlings
Failure of leachate barrier system	Structural failure of underlying infiltration control surface	Cracking of concrete pad underlying composting bunkers	Possible	Moderate	**HIGH**	Regular pad integrity inspections for cracking/leakage potential
		Cracking of concrete pad underlying shredder shed	Possible	Moderate	**HIGH**	Regular pad integrity inspections for cracking/leakage potential
		Weathering of clay liner under screening and maturation area	Possible	Moderate	**HIGH**	Regular liner integrity inspections Routine maintenance

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Failure of leachate collection system	Structural failure of composting bunker leachate conveyance network	Collapse of floor drain or underground pipework	Unlikely	Moderate	**MEDIUM**	Regular integrity inspections
		Inoperable control value	Possible	Moderate	**HIGH**	Regular testing of valve integrity
	Structural failure of the GORE covers	Degradation by weathering and handling	Possible	Minor	**MEDIUM**	Regular integrity inspections
Failure of leachate storage system	Structural embankment failure of leachate dam	Downstream toe scour by overtopping	Rare	Major	**MEDIUM**	Regular embankment integrity inspections
		Internal wave-induced erosion	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
		Seepage/piping embankment weakening	Unlikely	Major	**MEDIUM**	Regular embankment integrity inspections Routine maintenance
	Overtopping of leachate dam	Discharge permissible above design storm rainfall Extreme rainfall conditions	Rare	Major	**MEDIUM**	Storage constructed with additional 70% capacity over historical water balance requirement High-level alarm system Overflow directed into stormwater sump for containment onsite
Fire	Self-combustion of compost stockpiles	Incomplete waste stockpile handling Excessive period of stockpiling	Possible	Major	**HIGH**	Continuous composting pile temperature monitoring fitted with high temperature alarm control Water cart always maintained with a full tank and in-service pump and fire hose cannon

Risk	Causes	Contributing Factor(s)	Likelihood	Consequence	Risk Rating	Controls
Generation of offensive odour beyond site boundary	Failure of solids management processing	Incomplete aeration of compost stockpiles leading to anaerobic conditions	Possible	Moderate	**MEDIUM**	Regular scheduled inspections Regular aeration of composting pile by aeration pump fitted with alarm control GORE covers over composting piles Regular turning of composting piles
		Incorrect stockpiling of solid wastes	Possible	Minor	**MEDIUM**	Regular scheduled inspections Stockpiling limited to 24 hours under normal operating conditions Removal of offensive odour generating stockpiles within 48 hours
	Failure of leachate management system	Incomplete aeration of leachate leading to anaerobic conditions	Possible	Moderate	**MEDIUM**	Regular scheduled inspections Continuous aeration of leachate storage by aeration pump fitted with alarm control
Generation of visible dust plumes crossing site boundary	Failure of solids handling processing	Incorrect handling procedures	Possible	Minor	**MEDIUM**	Regular scheduled inspections Material drop-off and shredding conducted only in the shredder shed Minimisation of drop height for loading/unloading Efficient pile turning procedures Strategic watering Restriction of activities in adverse conditions
		Incomplete covering of loads	Possible	Insignificant	**LOW**	Signage at entry/exit
	Traffic movements generating dust from unsealed and disturbed surfaces	Incomplete moisture management	Possible	Minor	**MEDIUM**	Regular scheduled inspections Strategic watering
		Traffic movements on restricted and disturbed surfaces	Likely	Insignificant	**MEDIUM**	Signage at entry and within site

5. Actions in Response to Pollution Incident

A Pollution Incident Decision Flow Chart is shown in Appendix C. The flow chart is to be used in the event of a pollution incident to ensure all notifications and actions are correctly identified and subsequently enacted.

5.1 Timing of Notification Response

The notification of the relevant authority when material harm to the environment or human health is caused or threatened must be **immediate**, meaning **promptly without delay**. Notwithstanding the requirement for immediacy of the response, priority may still need to be given beforehand to actions which prevent, limit, or make good harm to the environment.

5.2 Responsibilities and Contact Details

When a pollution incident causes or threatens material harm to the environment or human health, it is the direct responsibility of the AICF Onsite Manager to contact the regulatory authorities listed in Table 4.

For 'notifiable incidents' under the Work Health & Safety Act (2011) NSW, the AICF Supervisor should immediately contact the Integrated Risk Management Team who will manage the notification to SafeWork NSW.

Table 4 – External Emergency Contact Details

Organisation	Details	Contact Info	Phone
Emergency Services	Police, Fire & Rescue, Ambulance, HAZMAT	Emergency Only	000
NSW EPA	NSW EPA Pollution Line	24 hours	131 555
NSW Health	Public Health Unit - Newcastle Office (note: After Hours diverts to John Hunter Hospital - ask for Public Health Officer on call)	Public Health Officer	(02) 4924 6477
Fire & Rescue NSW	Pollution Incident Notification	24 hours	1300 729 579
	Rutherford Fire Station	24 hours	(02) 4932 8223
	Fire & Rescue NSW Zone Office Metropolitan North Zone 3	Business hours 8:30am - 4:30pm	(02) 4932 6411
SafeWork NSW		24 hours	13 10 50

Emergency contact details of all responsible AICF staff are provided in Table 5.

Table 5 – ACIF Emergency Contact Details

Position	Name	Phone
AICF Directors	Chris Ditton	0407 252 009
	Denise Ditton	0438 326 998
AICF Chief Executive Officer	TBC	TBC
AICF Onsite Manager	Terry Ditton	0439 989 289

5.3 Relevant Information to be Notified

Section 150 of the POEO Act defines the information which needs to be reported in the event of a pollution incident. The relevant information is:

> *"(1) The relevant information about a pollution incident required under section 148 consists of the following:*
> *a) the time, date, nature, duration and location of the incident,*
> *b) the location of the place where pollution is occurring or is likely to occur,*
> *c) the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known,*
> *d) the circumstances in which the incident occurred (including the cause of the incident, if known),*
> *e) the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known,*
> *f) other information prescribed by the regulations."*

The AICF Onsite Manager is responsible for supply of this information immediately after the pollution incident is known. If some information is not known to the AICF Onsite Manager at the time the pollution incident is notified, is the responsibility of the AICF Onsite Manager to provide the remainder of information immediately after it becomes known.

A Pollution Incident Reporting Form is provided in Appendix D.

5.4 On-site Harm Minimisation Actions

5.4.1 Pollution containment actions

All site personnel with relevant training must make every effort to contain the pollution incident on-site, without putting themselves or others at risk of harm.

In the case of a fire and where safe, trained personnel must attempt to extinguish or contain the fire immediately.

In the event of a chemical spill that is not contained by bunding, the chemical spill kits must be used by trained personnel to restrict the spread of the chemical.

Where a breach of the stormwater sediment management system has occurred, on-site earthworks machinery should be used to contain surface water discharge as far as practicable.

5.4.2 Staff and visitor notification

In the event of a pollution incident, all ACIF staff are to be contacted as soon as is practical via mobile phone (numbers listed in Table 5).

If visitors are present at site, the AICF Onsite Manager is responsible for notifying visitors of a pollution incident.

All staff and visitors are to be mustered by AICF staff to the Emergency Assembly Point shown in Figure 4, from which they can be safely evacuated from site as required.

5.4.3 Neighbouring properties notification

In the event of notification of a pollution incident, EPA will determine whether neighbouring properties should be notified. EPA has the formal powers to direct Ditton Properties to make notifications to the neighbouring properties. The six (6) neighbouring properties shown in Figure 2 must be notified by ‘door knocking’ when direction is received from EPA.

6. Continuous Improvement Process

6.1 Evaluation

This PIRMP is required to be reviewed, tested and updated at least once every 12 months. Following the occurrence of a pollution incident, this PIRMP is to be updated within one month. The review will consist of the following:

- review of the risk assessments for the ACIF against current operations and control measures;
- identification of any additional or emerging issues or trends; and
- determination of priorities in procedural improvements and asset upgrades.

6.2 PIRMP Update

The result of the evaluation will be documented and the PIRMP updated. To ensure clarity regarding the most recent version of the PIRMP, a Document Control is provided at the commencement of this document, and the current version and month of issue are recorded on each page at the bottom left hand corner. The next review date is shown in the Document Control. Each reviewed copy will be kept in AICF's record keeping system.

6.3 Publication of this PIRMP

A copy of this plan will be issued to relevant AICF personnel. At a minimum, copies will be held at the following locations:

- AICF's record keeping system; and
- AICF site office.

If the licensee has a website, under the *Protection of the Environment (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012*, only certain parts of the PIRMP need to be made available either on the website. These parts are outlined in the POEO Act under section 153C(a) and clause 98C(1)(h) and (i) or (2)(b) and (c).

If the licensee does not have a website, then they must provide a copy of the plan to any person who makes a written request. As defined above, only certain parts of the PIRMP need to be made available.

7. References

DEC (2004). *Environmental guidelines: composting and related organics processing facilities*. Sydney: NSW Department of Environment and Conservation. http://www.environment.nsw.gov.au/resources/composting_guidelines.pdf

OD Hydrology (2015), *Composting Facility Anambah Road, Anambah, NSW - Surface Water and Groundwater* Assessment, doc ref: 44001-rpt01d.docx.

Todoroski Air Sciences (2018). *Air Quality and Noise Management Plan - Anambah In-vessel Composting Facility*, 17 September 2018.

Appendix A. Staff Training Register

Staff Training Register

Date	Staff Member	Description of Training

Appendix B. Risk Analysis Audit Tables

Risk Matrix

		Consequence				
		Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Likelihood	**Almost Certain**	MEDIUM	HIGH	HIGH	EXTREME	EXTREME
	Likely	MEDIUM	MEDIUM	HIGH	HIGH	EXTREME
	Possible	LOW	MEDIUM	MEDIUM	HIGH	HIGH
	Unlikely	LOW	LOW	MEDIUM	MEDIUM	HIGH
	Rare	LOW	LOW	MEDIUM	MEDIUM	HIGH

Risk Levels

EXTREME	The proposed or identified task or process activity cannot proceed. Steps must be taken to lower the risk level to as low as reasonably practicable using a hierarchy of risk controls.
HIGH	The proposed or identified activity can only proceed, provided that: (i) the risk level has been reduced to as low as reasonably practicable using a hierarchy of risk controls; (ii) the risk assessment has been reviewed and approved by the AICF Onsite Manager; (iii) a Safe Working Procedure or Safe Work Method has been prepared; and (iv) the AICF Onsite Manager must review and document the effectiveness of the implemented risk controls.
MEDIUM	The proposed or identifies task or process can proceed, provided that: (i) the risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls; (ii) the risk assessment has been reviewed and approved by the AICF Onsite Manager; and (iii) a Safe Working Procedure or Safe Work Method has been prepared.
LOW	Managed by documented routine procedures which must include application of the hierarchy of risk controls.

Likelihood Table

Likelihood	Health/Safety	Event Frequency	Industry History
Almost certain	Expected to occur in most circumstances involving normal operations	More than once per year	Expected to occur, occurs regularly in the industry
Likely	Could happen at any time	Once per year	Will probably occur, has occurred many times in the industry
Possible	Could happen sometimes	Once every 10 years	Might occur, has occurred several times in the industry
Unlikely	Could happen, but very rarely	Once every 50 years	Not likely to occur, has occurred once or twice in the industry
Rare	Could happen but probably never will	Less than once every 50 years	May only occur in exceptional circumstances, unheard of in the industry

Consequence Table

Consequence	People	Environmental	Legal
Insignificant	Minor injury, no first aid required	Minimal environmental impact; isolated and immediately reversible	Isolated non-compliance or breach; minimal failure of internal controls
Minor	Minor injury; first aid required	Minor environmental impact; isolated and reversible or localised and immediately reversible	Contained non-compliance or action with short term significance; some impact on normal operations
Moderate	Injury or illness requiring medical attention	Moderate environmental impact; localised and reversible or isolated and irreversible	Significant claim or breach involving statutory authority or investigation; prosecution possible
Major	Significant injury or long term illness; hospitalisation	Significant environmental impact; regional and reversible or localised and irreversible	Major breach with litigation/ fines and long-term significance; critical failure of internal controls
Catastrophic	Fatality; permanent disability, illness or disease	Catastrophic environmental impact; national and reversible or regional and irreversible	Extensive litigation/fines with possible class action; indictable offences

Appendix C. Pollution Incident Response Flow Chart

Pollution identified

Notify ACIF Site Manager immediately

Is it a notifiable 'pollution incident' with risk of material harm to environment and/or human health?

No

Is the pollution fully contained within the site boundary?

No

Follow general management protocols as per the OEMP

Yes

Follow OEMP procedures to make the polluted environment safe

Yes

Is the pollution fully contained within the site boundary?

No

Contact Fire & Rescue NSW immediately on

Call 1300 729 579

Yes

Does an immediate threat to human health or property exist which requires an emergency response?

Yes

Call Emergency Services immediately

Call 000

No

Is an emergency evacuation required?

No

Commence emergency evacuation procedures

Commence actions to make polluted environment safe

Immediately notify these authorities:

Maitland City Council
Call (02) 4934 9700

EPA Pollution Line
Call 131 555

NSW Health
Call (02) 4924 6477

SafeWork NSW
Call 13 10 50

Fire & Rescue NSW
Call 1300 729 579

Ask EPA if notification of neighbours is required?

Yes

Contact all neighbours by 'door knock'

Provide regular updates to notified authorities (and neighbours if notified)

No

Complete Pollution Incident Response Form

Review and update PIRMP within 30 days of pollution incident

Appendix D. Pollution Incident Reporting Form

Pollution Incident Reporting Form

Where details are unknown at the time of the notification write 'unknown' in the relevant box.

Information	Details known at time of notification
Name of person completing form:	
Date / time form completed:	**Date:** **Time:**
Premises details:	**Anambah In-vessel Composting Facility** **442 Anambah Road, Anambah NSW 2320**
Date / time of incident:	**Date:** **Time:**
Specific location of incident:	
Pollutant: **(e.g. Leachate, Odour, Pond Waters …. etc.)**	**Date:** **Volume:**
Pollutant emitted to: **(e.g. Stormwater, Land, Air, Groundwater … etc.)**	
Spatial extent of pollution: **(e.g. area of impacted soil, length of waterway … etc.)**	
Cause: **(e.g. structural failure, mechanical failure, human error … etc.)**	
Weather conditions:	**Rainfall depth (prior 24 hrs) (mm):** **Temperature (deg C):** **Wind direction (from):** **Wind strength (m/s):**

Immediate actions taken in response:	
Forecast / future needs / concerns / considerations:	

Appendix F. Forms

Site Induction Register

Date of Induction	Inductee Name	Inductee's Company	Inductee Signature	Name of Person Performing Induction	Signature of Person Performing Induction

Weekly Environmental Inspection Checklist

Week commencing: _____ Completed by: _____ Signature: _____

When?: W = weekly, M = monthly, R = when rainfall depth has exceeded 20 mm during the past 24 hours

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Liquid waste	**Working surfaces**	**W**			
	Leachate barrier system	**W**			
	Leachate collection system	**W**			
	Leachate storage and return system	**W**			
	Toilet sewage tanks	**W**			
Solid waste	**Information signage**	**M**			
	Skip bins	**W**			

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Soil	Grassed swales	M			
	Sediment dam embankments	M			
	General site	W			
Surface water	Sediment dams	M,R			
	Site drainage features	M			
	Oil / grease traps	M			
Dust	Monitoring stations	M			
	Generation areas	W			

Risk Type	Component	When?	Condition	Required Actions (if any)	Action by?
Odour	Generation areas	W			
	Bunker aeration system	W			
Noise	Mobile plant silencers	W			
	Stationary shields	W			
Traffic	Movement or parking issues	W			
Flora	Invasive species	W			
Fire	Fire-fighting equipment	W			
	Composting temperature compliance	W			

Non-compliance and Corrective Action Report

Type of Non-compliance	
☐ Site Establishment	☐ Work Health and Safety
☐ Works outlined in contract	☐ Environmental Management
☐ Supplier	☐ Quality Management
☐ Customer complaint	☐ Other:

Description of non-compliance

Outline the evidence obtained for non-compliance

Proposed corrective action

Responsible Person	Completion Date

Sign off - corrective or preventative action is complete and dealt with by responsible person	
Name:	
Date:	
Signature:	

Complaints Register

Date: _____ Complaint no. _____

Time: _____

Complainant Details (If Provided):

_____

_____

How was complaint lodged:

_____

_____

Nature and details of complaint:

_____

_____

_____

_____

Cause:

_____

_____

_____

Corrective action (If none, state why):

_____

_____

Follow up contact required?

_____

_____

Weather conditions:
Wind speed _____ Wind Direction _____
Rainfall past 24 hours (mm) _____

Signature: _____ Name: _____

Contaminated Solid Waste Removal Record

Date	Estimated Quantity of Solid Waste (m^3)	Removed By?	Disposal Facility Name and Receipt Number

Appendix G. Safety Data Sheets (SDS)

SAFETY DATA SHEET

SHELL DIESEL

Infosafe No.: LQ4CF
ISSUED Date : 18/07/2016
ISSUED by: VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD)

1. IDENTIFICATION

GHS Product Identifier
SHELL DIESEL

Company Name
VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD) (ABN 46 004 610 459)

Address
Level 16, 720 Bourke Street Docklands
Victoria 3008 Australia

Telephone/Fax Number
Tel: +61 (0)3 8823 4444
Fax: +61 (0)3 8823 4800

Emergency phone number
1800 651 818 (Australia) / Poisons Information Centre:13 11 26 (Australia)

Recommended use of the chemical and restrictions on use
Fuel for on-road diesel-powered engines, in marine diesel engines, boilers, gas turbines and other combustion equipment. This product is intended for use in closed systems only.

Other Names

Name	Product Code
DIESOLINE B5	
DIESOLINE	
SHELL DIESEL EXTRA	
SHELL DIESEL EXTRA B5	
SHELL V POWER DIESEL B5	
SHELL ALPINE DIESEL EXTRA	
AUTOMOTIVE DIESEL FUEL	
SHELL V POWER ALPINE DIESEL	
SHELL EROMANGA DIESEL	
SHELL MARINE DIESEL	
SHELL DIESOLINE 10	
SHELL V POWER DIESEL	
SHELL MARINE GAS OIL	

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Aspiration Hazard: Category 1

Carcinogenicity: Category 2

Flammable Liquids: Category 4

Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2

Signal Word (s)

DANGER

Hazard Statement (s)

AUH066 Repeated exposure may cause skin dryness or cracking.

H227 Combustible liquid.

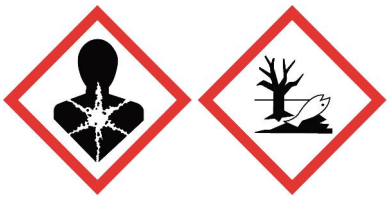
H304 May be fatal if swallowed and enters airways.

H351 Suspected of causing cancer.

H411 Toxic to aquatic life with long lasting effects.

Pictogram (s)

Health hazard,Environment



Precautionary statement – Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

Precautionary statement – Response

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P331 Do NOT induce vomiting.

P370+P378 In case of fire: Use foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only for extinction.

P391 Collect spillage.

Precautionary statement – Storage

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Name	CAS	Proportion
Fuels, diesel	68334- 30- 5	95- 100 %
Fatty acids, vegetable oil, methyl esters	68990- 52- 3	0- 5 %

Preparation Description
Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v. May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present.

4. FIRST-AID MEASURES

Inhalation
If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.

Ingestion
Do NOT induce vomiting. Wash out mouth and lips with water. Where vomiting occurs naturally have affected person place head below hip level in order to reduce risk of aspiration. Seek immediate medical attention.

Skin
Remove all contaminated clothing immediately. Wash affected area thoroughly with soap and water. Wash contaminated clothing before reuse or discard. Seek medical attention.

Eye contact
If in eyes, hold eyelids apart and flush the eyes continuously with running water. Remove contact lenses. Continue flushing for several minutes until all contaminants are washed out completely. If symptoms develop and/or persist seek medical attention.

First Aid Facilities
Eyewash and normal washroom facilities.

Advice to Doctor
Treat symptomatically.

Other Information
For advice in an emergency, contact a Poisons Information Centre or a doctor at once. (131 126)

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media
Do not use water in a jet.

Hazards from Combustion Products
Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide, oxides of sulphur and oxides of nitrogen.

Specific Hazards Arising From The Chemical
This product will burn if exposed to fire.

Decomposition Temperature
Not available

Precautions in connection with Fire
Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. Water spray may be used to cool down heat-exposed containers. Fight fire from safe location. This product should be prevented from entering drains and watercourses.

Other Information
Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures
Wear appropriate personal protective equipment and clothing to prevent exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert absorbent, non combustible material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national

regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid inhalation of vapours and mists, and skin or eye contact. Use only in a well ventilated area. Keep containers sealed when not in use. Prevent the build up of mists or vapours in the work atmosphere. Do not use near ignition sources. Do not pressurise, cut, heat or weld containers as they may contain hazardous residues. Maintain high standards of personal hygiene by washing hands prior to eating, drinking, smoking or using toilet facilities. Avoid exposure. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Keep containers closed when not in use, securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Take precautions against static electricity discharges. Use proper grounding procedures. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS1940 - The storage and handling of flammable and combustible liquids.

Storage Regulations

Classified as a Class C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS1940.

Recommended Materials

For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Materials

Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene.; However, some may be suitable for glove materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values

No exposure standards have been established for the mixture. However, over-exposure to some chemicals may result in enhancement of pre-existing adverse medical conditions and/or allergic reactions and should be kept to the least possible levels.

Biological Limit Values

No biological limits allocated.

Appropriate Engineering Controls

This substance is hazardous and should be used with a local exhaust ventilation system, drawing vapours away from workers' breathing zone. A flame-proof exhaust ventilation system is required. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn. Refer to relevant regulations for further information concerning ventilation requirements.

Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 60079.10.1:2009 Explosive atmospheres - Classification of areas - Explosive gas atmospheres, for further information concerning ventilation requirements.

Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Eye Protection

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

Hand Protection

Wear gloves of impervious material such as nitrile gloves (Breakthrough time of > 240 minutes), neoprene, PVC gloves. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.
Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

Body Protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Other Information

No exposure standards have been established for this material, however, the TWA exposure standards for refined mineral oil mist is 5 mg/m³. As with all chemicals, exposure should be kept to the lowest possible levels.
TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.
Source: Safe Work Australia

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Liquid

Appearance
Colourless to straw liquid.

Colour
Colourless to straw

Odour
May contain a reodorant

Decomposition Temperature
Not available

Melting Point
Not available

Freezing Point
Not available

Boiling Point
170 - 390 °C

Solubility in Water
Not available

Specific Gravity
0.82 - 0.85 gm/cm at 15°C

pH
Not available

Vapour Pressure
< 1 hPa at 20 °C

Vapour Density (Air=1)
Not available

Evaporation Rate
Not available

Odour Threshold
Not available

Viscosity
Not available

Partition Coefficient: n-octanol/water
3 - 6

Density
Typical 0.84 g/cm³ at 15 °C

Flash Point
Typical 63 °C (ASTM D-93 / PMCC)

Flammability
Combustible

Auto-Ignition Temperature
> 220 °C

Flammable Limits - Lower
1 %(V)

Flammable Limits - Upper
6 %(V)

Kinematic Viscosity
2 - 4.5 mm^2/s at 40 °C

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions of storage and handling.

Reactivity and Stability
Reacts with incompatible materials.

Conditions to Avoid
Avoid heat, sparks, open flames and other ignition sources.

Incompatible materials
Strong oxidising agents.

Hazardous Decomposition Products
Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide and oxides of nitrogen.

Possibility of hazardous reactions
Not available

Hazardous Polymerization
Not available

11. TOXICOLOGICAL INFORMATION

Toxicology Information
The available toxicity data for material given below.

Acute Toxicity - Oral
LD50:(Rat): >2000 mg/kg

Acute Toxicity - Inhalation
LD50:(Rat): >5 mg/l / 4 h

Acute Toxicity - Dermal
LD50:(Rabbit): >2000 mg/kg

Ingestion
May be fatal if swallowed and enters airways. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause severe pulmonary injury that may lead to death. May cause irritation to the mouth, throat, esophagus and stomach with symptoms of nausea, abdominal discomfort, vomiting and diarrhoea.

Inhalation
Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.

Skin
Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.

Eye
May be irritating to eyes. The symptoms may include redness, itching and tearing.

Respiratory sensitisation
Not expected to be a respiratory sensitiser.

Skin Sensitisation
Not expected to be a skin sensitiser.

Germ cell mutagenicity
Not considered to be a mutagenic hazard.

Carcinogenicity
Suspected of causing cancer. Classified as a suspected human carcinogen.

Reproductive Toxicity
Not considered to be toxic to reproduction.

STOT-single exposure
Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure
Not expected to cause toxicity to a specific target organ.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Other Information
Repeated Dose Toxicity: Kidney: Caused kidney effects in male rats which are not considered relevant to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic life with long lasting effects.

Persistence and degradability
Major constituents are expected to be inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.

Mobility
Floats on water. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.

Bioaccumulative Potential
Contains constituents with the potential to bioaccumulate.

Other Adverse Effects
Films formed on water may affect oxygen transfer and damage organisms.

Environmental Protection
Do not discharge this material into waterways, drains and sewers.

Acute Toxicity - Other Organisms
LL/EL/IL50:(Aquatic organisms): 1-10 mg/l

13. DISPOSAL CONSIDERATIONS

Disposal considerations
Dispose of waste according to applicable local and national regulations. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes including emptied containers are controlled wastes and should be disposed of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

Transport Information
Road and Rail Transport (ADG Code):
Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)
This product meet the requirement of special provision AU01.

Note: Special Provision AU01:
Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in:

packagings that do not incorporate a receptacle exceeding 500 kg(L); or
IBCs

This product is not classified as Dangerous Goods UN number 1202.

Note: Special Provision AU02:
GAS OIL or DIESEL OIL or HEATING OIL, LIGHT or PETROLEUM DISTILLATE is not subject to this Code if it does not meet the criteria of Chapter 2.3 for assignment to Class 3; i.e. if the flash point is more than 60 oC and the substance is not offered for transport at a temperature above its flash point. Such substances will normally be C1 combustible liquids which are not classified as dangerous goods for transport purposes. However, the presence of a C1 combustible liquid in one or more compartments of a tank vehicle or portable tank transporting other refined petroleum products must be considered when determining the application of UN Number 1270 in accordance with 3.2.5.4 and 5.3.1.3.3.

Marine Transport (IMO/IMDG):
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.
Class/Division: 9
UN No: 3082
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CONTAINS: FUEL, DIESEL)(MARINE POLLUTANT)
Packing Group: III
EMS : F-A, S-F
Special Provisions: 274, 335, 969

Air Transport (ICAO/IATA):
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.
Class/Division:
UN No: 3082
Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (Contains: Fuel, diesel)
Packing Group: III
Packaging Instructions (passenger & cargo): 964
Packaging Instructions (cargo only): 964
Hazard Label: Miscellaneous
Special Provisions: A97, A158, A197

U.N. Number
None Allocated

UN proper shipping name
None Allocated

Transport hazard class(es)
None Allocated

IMDG Marine pollutant
Yes

Transport in Bulk
Not available

Special Precautions for User
Not available

Other Information
This product is classified as Oils under MARPOL Annex I. MARPOL Annex I rules apply for bulk shipments by sea.

15. REGULATORY INFORMATION

Regulatory information
Classified as Hazardous according to the Globally Harmonised System of classification and labelling of chemicals (GHS) including Work, Health and Safety regulations, Australia.

SUSMP Schedule: Not scheduled. When packed in containers having capacity of greater than 20 litres.

SAFETY DATA SHEET

Castrol RX Super 15W-40

Section 1. Identification

GHS product identifier Castrol RX Super 15W-40

Product code 450407-AU22

SDS no. 450407

Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/ mixture Engine Oils.
For specific application advice see appropriate Technical Data Sheet or consult our company representative.

Manufacturer

Supplier

Castrol Australia Pty Ltd
Level 17, 717 Bourke Street
Docklands, Victoria 3008
ABN 87 008 459 407
www.castrol.com.au

Tel: +61 (03) 9268 4111
Fax: +61 (03) 9268 3321

EMERGENCY TELEPHONE NUMBER +61 2801 44558 (or 1800 14 14 74 within Australia)

OTHER PRODUCT INFORMATION Technical Advice Helpline Number: 1300 557 998

Section 2. Hazard(s) identification

Classification of the substance or mixture Not classified.

GHS label elements

Signal word No signal word.

Hazard statements No known significant effects or critical hazards.

Precautionary statements

General P103 - Read label before use.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

Prevention Not applicable.

Response Not applicable.

Storage Not applicable.

Disposal Not applicable.

Supplemental label elements Not applicable.

Other hazards which do not result in classification Defatting to the skin.
USED ENGINE OILS
Used engine oil may contain hazardous components which have the potential to cause skin cancer.
See Toxicological Information, section 11 of this Safety Data Sheet.

Section 3. Composition and ingredient information

Substance/mixture Mixture

Highly refined base oil (IP 346 DMSO extract < 3%). Proprietary performance additives.

Ingredient name	% (w/w)	CAS number
Base oil - unspecified	≥75 - ≤90	Varies - See Key to abbreviations
Distillates (petroleum), solvent-dewaxed heavy paraffinic	≤5	64742-65-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Skin contact Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects.

Specific treatments No specific treatment.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet.

Specific hazards arising from the chemical In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products Combustion products may include the following:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Not suitable

Prolonged exposure to elevated temperature

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Base oil - unspecified	**Safe Work Australia (Australia).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 5/1995 Form: Mist
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Safe Work Australia (Australia).** TWA: 5 mg/m³ 8 hours. Issued/Revised: 5/1995 Form: Mist

Section 8. Exposure controls and personal protection

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety glasses with side shields.

Skin protection

Hand protection

Wear protective gloves if prolonged or repeated contact is likely. Wear chemical resistant gloves. Recommended: Nitrile gloves. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Skin protection

Use of protective clothing is good industrial practice.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Refer to standards:

Respiratory protection:AS/NZS 1715 and AS/NZS 1716
Gloves:AS/NZS 2161.1
Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Amber.
Odour	Mild
Odour threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	Not available.
Flash point	Open cup: 210°C (410°F) [Cleveland.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	<1000 kg/m³ (<1 g/cm³) at 15°C
Solubility	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Kinematic: 125 mm^2/s (125 cSt) at 40°C Kinematic: 15.7 to 16.3 mm^2/s (15.7 to 16.3 cSt) at 100°C

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame).
Incompatible materials	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Aspiration hazard

Name	Result
Distillates (petroleum), solvent-dewaxed heavy paraffinic	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure	Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact	No known significant effects or critical hazards.
Inhalation	Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure.

Section 11. Toxicological information

Skin contact Defatting to the skin. May cause skin dryness and irritation.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Inhalation No specific data.

Skin contact Adverse symptoms may include the following:
irritation
dryness
cracking

Ingestion No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

General USED ENGINE OILS
Combustion products resulting from the operation of internal combustion engines contaminate engine oils during use. Used engine oil may contain hazardous components which have the potential to cause skin cancer. Frequent or prolonged contact with all types and makes of used engine oil must therefore be avoided and a high standard of personal hygiene maintained.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Section 12. Ecological information

Persistence and degradability

Expected to be biodegradable.

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Special Precautions for Landfill or Incineration

No additional special precautions identified.

Section 14. Transport information

	ADG	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

Special precautions for user

Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not regulated.

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International lists

National inventory

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Australia inventory (AICS)

All components are listed or exempted.

Canada inventory

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

Japan inventory (ENCS)

All components are listed or exempted.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

Section 15. Regulatory information

Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.
United States inventory (TSCA 8b)	All components are listed or exempted.

Section 16. Any other relevant information

History

Date of printing	17/08/2017
Date of issue/Date of revision	17/08/2017
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Version	2.01
Prepared by	Product Stewardship

Key to abbreviations

ADG = Australian Dangerous Goods
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
NOHSC = National Occupational Health and Safety Commission
STEL = Short term exposure limit
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations
TWA = Time weighted average
VOC = Volatile Organic Compound
SADT = Self-Accelerating Decomposition Temperature
Varies = may contain one or more of the following 101316-69-2, 101316-70-5, 101316-71-6, 101316-72-7, 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64741-97-5, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-64-9, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1, 74869-22-0, 90669-74-2

Procedure used to derive the classification

Classification	Justification
Not classified.	

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions

Section 16. Any other relevant information

that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

Revision: 17/11/16

SAFETY DATA SHEET

1. Product and Company Identification

Company Name:	Sierra (Aust) Pty Ltd 17 Delta Street, Geebung QLD 4034 sierra@optusnet.com.au	Ph	(07) 3216 5099
Emergency Contact:	Sierra **(07) 3216 5099**	Poisons Information Centre **13 11 26**	

Product Name: **Hydraulic Oils 68**
Product Code: 4883, 4884, 4886
Intended Use: Hydrailic Fluid, lubricant
Chemical Nature: Liquid

2. Hazards Identification

Not classified as Hazardous according to Safe Work Australia and GHS

GHS Signal Word: None

GHS Label Elements: None

No Hazard Statements have been provided.

Precautionary Statements General:

P101 If medical advice is needed, have product container or label at hand
P102 Keep out of reach of children
P103 Read label before use

3. Composition / Information on Ingredients

Substance / Mixture: Mixture

Chemical Name	Cas Number	% In Product
Distillates hydrotreated heavy paraffinic; Baseoil - unspecified	64742-54-7	>80%

4. First aid Measures

Inhalation
Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Skin contact
Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Eye contact
Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion
First aid is normally not required. Seek medical attention if discomfort occurs.

5. Fire Fighting Measures

Suitable extinguishing equipment
In case of fire use dry chemical, foam or carbon dioxide fire extinguisher. DO NOT use water.

Specific hazards arising from the chemical
Combustion products may contain carbon monoxide and carbon dioxide and smoke. Closed containers may explode when exposed to extreme heat. Containers close to fire should be removed if safe to do so. Use water spray to cool fire exposed containers.

Special protective equipment and precautions for firefighters
Wear Safe Work Australia approved self-contained breathing apparatus and full protective clothing.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
No action should be taken which might involve personal risk or without suitable training. Use Safe Work Australia approved respiratory protection, chemical resistant gloves, protective clothing and safety boots.
Evacuate all non-essential personnel from affected area. Do not breathe vapours. Ensure adequate ventilation. Extinguish all sources of ignition. Avoid sparks and open flames. No smoking.

Environmental precautions
In the event of a major spill, prevent spillage from entering drains or water courses, basements or confined spaces. Dyke far ahead of liquid spill for later recovery and disposal.

Methods and materials for Containment and cleaning up
Stop leak if safe to do so and absorb spill with sand, earth, vermiculite or some other absorbent material.
Collect the spilled material and place into a suitable container for disposal according to local regulations, preferably using a licensed waste disposal contractor.

7. Handling and Storage

Precautions for safe handling
Use appropriate personal protective equipment – see Section 8. Use safe work processes to avoid eye or skin contact and inhalation of vapours. Use only in well ventilated areas.
Do not store in contact with food, beverages or tobacco products. Eating drinking or smoking in areas where this product is stored or processed should be prohibited. Always wash thoroughly after handling. Wash contaminated clothing and other protective equipment before storage or reuse. Provide eyewash fountains and safety showers in close proximity to points of use.

Conditions for safe storage
Store in accordance with local regulations in a cool, dry and well ventilated area. Store in original container tightly closed and away from incompatible materials (see Section 10). Check regularly for leaks and physical damage. Opened containers should be carefully resealed and stored in an upright position. Empty containers may contain residues and be dangerous. Store and use only in equipment designed for use with this type of product. Use appropriate bunding or containment to prevent environmental contamination.

8. Exposure Controls and Personal Protection

Exposure control measures
Mineral Oil Mist TWA 5mg/m^3 Safe Work Australia

Engineering controls
Engineering controls should be in place as a primary source of protection over the use of Personal Protective Equipment. Ensure adequate ventilation of the working area or provide exhaust ventilation to keep the relevant airborne concentrations below acceptable levels.

Individual protection measures
Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.
Eye and face protection: If contact is likely, safety glasses with side shields are recommended.
Skin protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The

types of gloves to be considered for this material include chemical resistant, nitrile or viton.
Long sleeve and long pants will provide protection.
Respiratory protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. A particulate type respirator should be considered for this material. No special requirements under ordinary conditions of use and with adequate ventilation.
For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.
Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

9. Physical and Chemical Properties

Appearance: *Form*	Viscous liquid
Colour	Clear, pale straw
Odour	Mild oil
Odour Threshold	Not determined
pH-Value	Not applicable
Melting point/Melting range	Not applicable
Initial Boiling Point/Boiling Range	> 280 ℃
Flash Point	> 210 ℃ (ASTM D-93)
Flammability	Combustible Liquid Class 2
Auto-ignition Temperature	>320 ℃
Decomposition Temperature	No information available
Explosion Limits: *Lower*	1 Vol % (typical)
Upper	10 Vol % (typical)
Vapour Pressure at 20 ℃	< 0.5 Pa
Relative Density at 15 ℃	0.86-0.92
Vapour Density	>1
Evaporation Rate	Not applicable
Solubility in Water	Negligible
Viscosity at 40 ℃	~68 cSt
Viscosity at 100 ℃	~8.8 cSt

10. Stability and Reactivity

Reactivity: Will not occur.

Chemical stability: Stable at ambient temperature and under normal conditions of use.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Excessive heat. High energy sources of ignition.

Incompatible materials: Strong oxidisers.

Hazardous decomposition products: Material does not decompose at ambient temperatures.

11. Toxicological Information

Acute Toxicity: LD50/LC50 values relevant	
Oral LD 50	Not available
Dermal LD50	Not available
Inhalation LC50	Not available
Acute Health Effects	
Inhalation	No adverse health effects expected
Skin	No irritating effect
Eye	No irritating effect
Ingestion	No adverse health effects expected
Skin Corrosion / Irritation	Based on classification principles, the classification criteria are not met
Serious Eye Damage / Irritation	Based on classification principles, the classification criteria are not met

Respiratory or Skin Sensitisation	Based on classification principles, the classification criteria are not met
Germ Cell Mutagenicity	Based on classification principles, the classification criteria are not met
Carcinogenicity	Mineral oils, highly-refined are classified by IARC as Group 3 – not classifiable as to its carcinogenicity to humans
Reproductive Toxicity	Based on classification principles, the classification criteria are not met
Specific Target Organ Toxicity (STOT) -	
Single Exposure	Based on classification principles, the classification criteria are not met
Repeated Exposure	Based on classification principles, the classification criteria are not met
Aspiration Hazard	Based on classification principles, the classification criteria are not met
Chronic Health Effects	No information available
Existing Conditions Aggravated by Exposure	No information available

12. Ecological Information

Ecotoxicity: Expected to be harmful to aquatic organisms.

Persistence and degradability: Base Oil component is expected to be inherently biodegradable.
Additive components show moderate biodegradation.

Bioaccumulative Potential: Limited potential for bioaccumulation.

Mobility in soil: Low solubility and miscibility. Floats on water. Expected to migrate from water to land.

13 Disposal Considerations

Disposal method and Containers
Dispose according to applicable local and state government regulations.
Empty containers may contain residue and can be dangerous. Packaging should be recycled and disposal via incineration or landfill should only be considered when recycling not possible. Do not pressurize, cut, weld, braze, solder, drill grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death.

Special precautions for incineration or landfill
Consult your state Land Waste Management Authority for more information. Product may be suitable for burning in an enclosed controlled burner for fuel value or disposal by incineration at very high temperatures.

14. Transport Information

	Australian Dangerous Goods (ADG)	**International Maritime Dangerous Goods (IMDG)**	**International Air Transport Association (IATA)**
UN Number	Not regulated	Not regulated	Not regulated
UN Proper Shipping Name	n/a	n/a	n/a
Dangerous Goods Class	n/a	n/a	n/a
Packing Group	n/a	n/a	n/a

15. Regulatory Information

Standard for the Uniform Scheduling of Drugs and Poisons (SUSMP) – Poison Schedule
Not scheduled
Australian Inventory of Chemical Substances (AICS)
All components are listed or exempt

16. Other Information

This SDS contains only safety related information. For other information see product literature.

Every endeavor has been made to ensure that the information contained in this publication is reliable and offered in good faith. It is meant to describe the safety requirements of our products and should not be construed as guaranteeing specific properties. Customers are encouraged to conduct their own tests as end user suitability of the product for particular uses is beyond our control. The information is not intended as an inducement to bargain and no warranty expressed or implied is made as to its accuracy, reliability or completeness. Sierra (Aust) Pty Ltd accepts no liability for loss, injury or damage arising from reliance upon the information contained in this data sheet except in conjunction with the proper use of the product to which it refers. Due care should be taken that the use and disposal of this product is in compliance with appropriate Federal, State and Local Government regulations.

SAFETY DATA SHEET
Multi-Purpose Grease
According to Regulation (EC) No 1907/2006, Annex II, as amended.Commission Regulation (EU) No 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Multi-Purpose Grease

Product number MPG, EMPG50T, ZE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Lubricant.

Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier

ELECTROLUBE. A division of HK WENTWORTH LTD
ASHBY PARK, COALFIELD WAY,
ASHBY DE LA ZOUCH, LEICESTERSHIRE LE65 1JR
UNITED KINGDOM
+44 (0)1530 419600
+44 (0)1530 416640
info@hkw.co.uk

1.4. Emergency telephone number

Emergency telephone +44 1865 407333

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Not Classified

Environmental hazards Not Classified

2.2. Label elements

Hazard statements NC Not Classified

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Composition comments None of the ingredients are required to be listed.

SECTION 4: First aid measures

4.1. Description of first aid measures

Multi-Purpose Grease

General information	Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.
Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Ingestion	Rinse mouth thoroughly with water. Remove any dentures. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Skin contact	Remove affected person from source of contamination. Rinse immediately with plenty of water.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

4.2. Most important symptoms and effects, both acute and delayed

General information	See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	May cause temporary eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.
Specific treatments	No special treatment required.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Containers can burst violently or explode when heated, due to excessive pressure build-up.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

5.3. Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak.

Multi-Purpose Grease

Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage.

6.2. Environmental precautions

Environmental precautions	Avoid discharge to the aquatic environment. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Reuse or recycle products wherever possible. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

Reference to other sections	For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid the formation of mists.
Advice on general occupational hygiene	Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store away from incompatible materials (see Section 10). Store in accordance with local regulations.
Storage class	Unspecified storage.

7.3. Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

Multi-Purpose Grease

8.1. Control parameters

8.2. Exposure controls

Protective equipment

Appropriate engineering controls	Provide adequate ventilation. Good general ventilation should be adequate to control worker exposure to airborne contaminants.
Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. The following protection should be worn: Chemical splash goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.
Other skin and body protection	Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.
Hygiene measures	Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke.
Respiratory protection	Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Provide adequate ventilation. Large Spillages: If ventilation is inadequate, suitable respiratory protection must be worn.
Environmental exposure controls	Not regarded as dangerous for the environment.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Grease.
Colour	Light brown.
Odour	Oil-like.
pH	Not available.
Melting point	Not available.
Initial boiling point and range	Not available.
Flash point	230°C/446°F COC (Cleveland open cup).
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.

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Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Bulk density	Not available.
Solubility(ies)	Not available.
Partition coefficient	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not considered to be explosive.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity See the other subsections of this section for further details.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions No potentially hazardous reactions known.

10.4. Conditions to avoid

Conditions to avoid There are no known conditions that are likely to result in a hazardous situation.

10.5. Incompatible materials

Materials to avoid No specific material or group of materials is likely to react with the product to produce a hazardous situation.

10.6. Hazardous decomposition products

Hazardous decomposition products Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects Not regarded as a health hazard under current legislation.

Acute toxicity - oral

Notes (oral LD_{50}) Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD_{50}) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

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Notes (inhalation LC_{50})	Based on available data the classification criteria are not met.

Skin corrosion/irritation

Animal data	Based on available data the classification criteria are not met.

Serious eye damage/irritation

Serious eye damage/irritation	Based on available data the classification criteria are not met.

Respiratory sensitisation

Respiratory sensitisation	Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation	Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro	Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity	Based on available data the classification criteria are not met.
IARC carcinogenicity	None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility	Based on available data the classification criteria are not met.
Reproductive toxicity - development	Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard	Based on available data the classification criteria are not met.

General information	No specific health hazards known. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Fumes from the stomach contents may be inhaled, resulting in the same symptoms as inhalation.
Skin contact	Prolonged contact may cause dryness of the skin.
Eye contact	May cause temporary eye irritation.
Route of entry	Ingestion Inhalation Skin and/or eye contact
Target organs	No specific target organs known.

SECTION 12: Ecological Information

Ecotoxicity	Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Toxicity	Based on available data the classification criteria are not met.

Multi-Purpose Grease

12.2. Persistence and degradability

Persistence and degradability The degradability of the product is not known.

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not available.

12.4. Mobility in soil

Mobility No data available.

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

Disposal methods Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste packaging should be collected for reuse or recycling. Incineration or landfill should only be considered when recycling is not feasible. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of the local water authority.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

Transport labels
No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

Multi-Purpose Grease

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations Health and Safety at Work etc. Act 1974 (as amended).
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
EH40/2005 Workplace exposure limits.

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Commission Regulation (EU) No 2015/830 of 28 May 2015.
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

None of the ingredients are listed or exempt.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.
IMDG: International Maritime Dangerous Goods.
CAS: Chemical Abstracts Service.
ATE: Acute Toxicity Estimate.
LC_{50}: Lethal Concentration to 50 % of a test population.
LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).
EC_{50}: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: Very Persistent and Very Bioaccumulative.

Training advice Read and follow manufacturer's recommendations. Only trained personnel should use this material.

Issued by Bethan Massey

Revision date 18/01/2017

Revision 0

SDS number 845

Multi-Purpose Grease

SUSMP Schedule: S5. When packed in containers having capacity of less than 20 litres.

Poisons Schedule
S5

16. OTHER INFORMATION

Date of preparation or last revision of SDS
SDS Reviewed: July 2016
Supersedes: April 2015

References
- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

- Standard for the Uniform Scheduling of Medicines and Poisons.

- Australian Code for the Transport of Dangerous Goods by Road & Rail.

- Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

- Workplace exposure standards for airborne contaminants, Safe work Australia.

- American Conference of Industrial Hygienists (ACGIH).

- Globally Harmonised System of classification and labelling of chemicals.

END OF SDS

Appendix H. Water Monitoring Locations

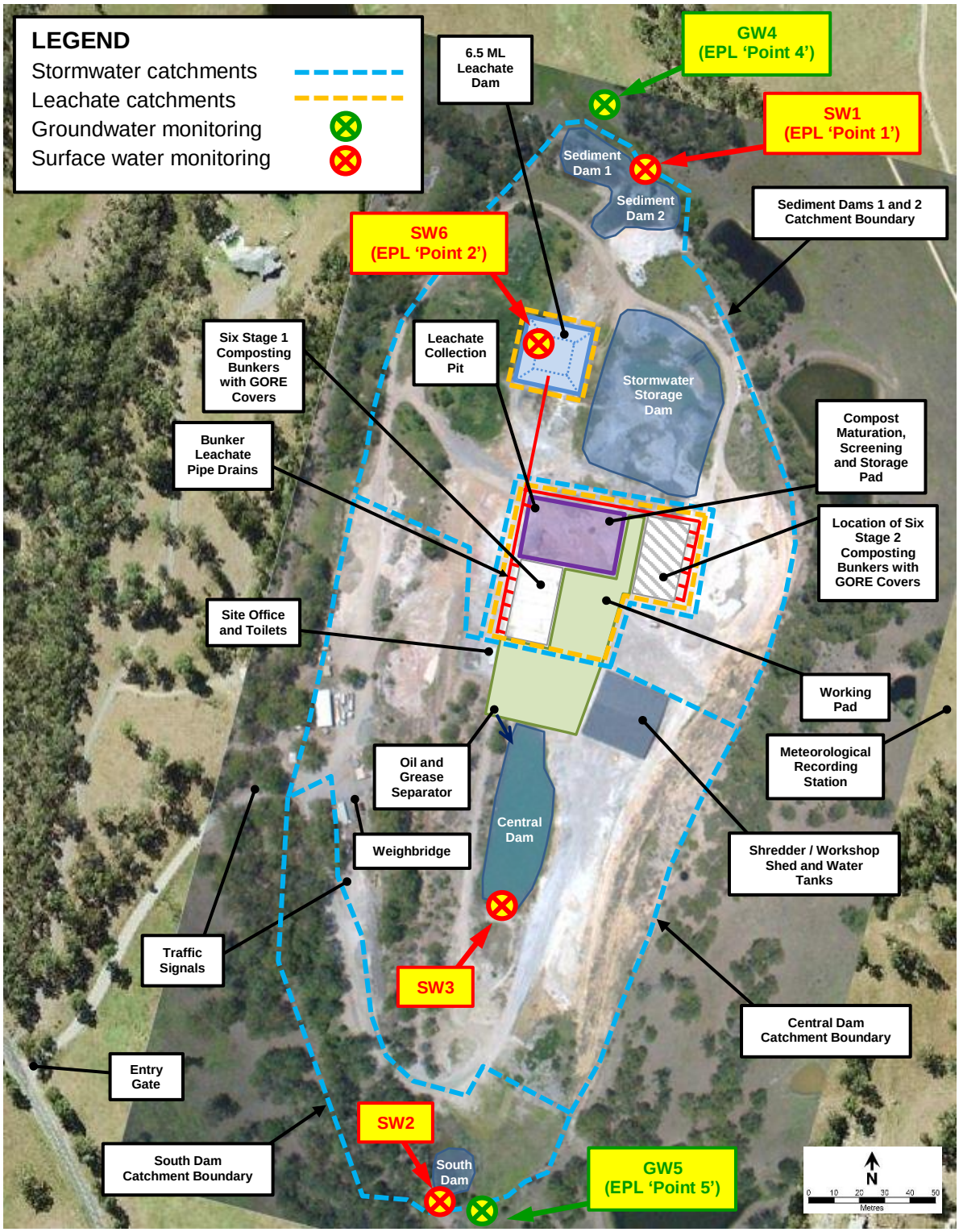
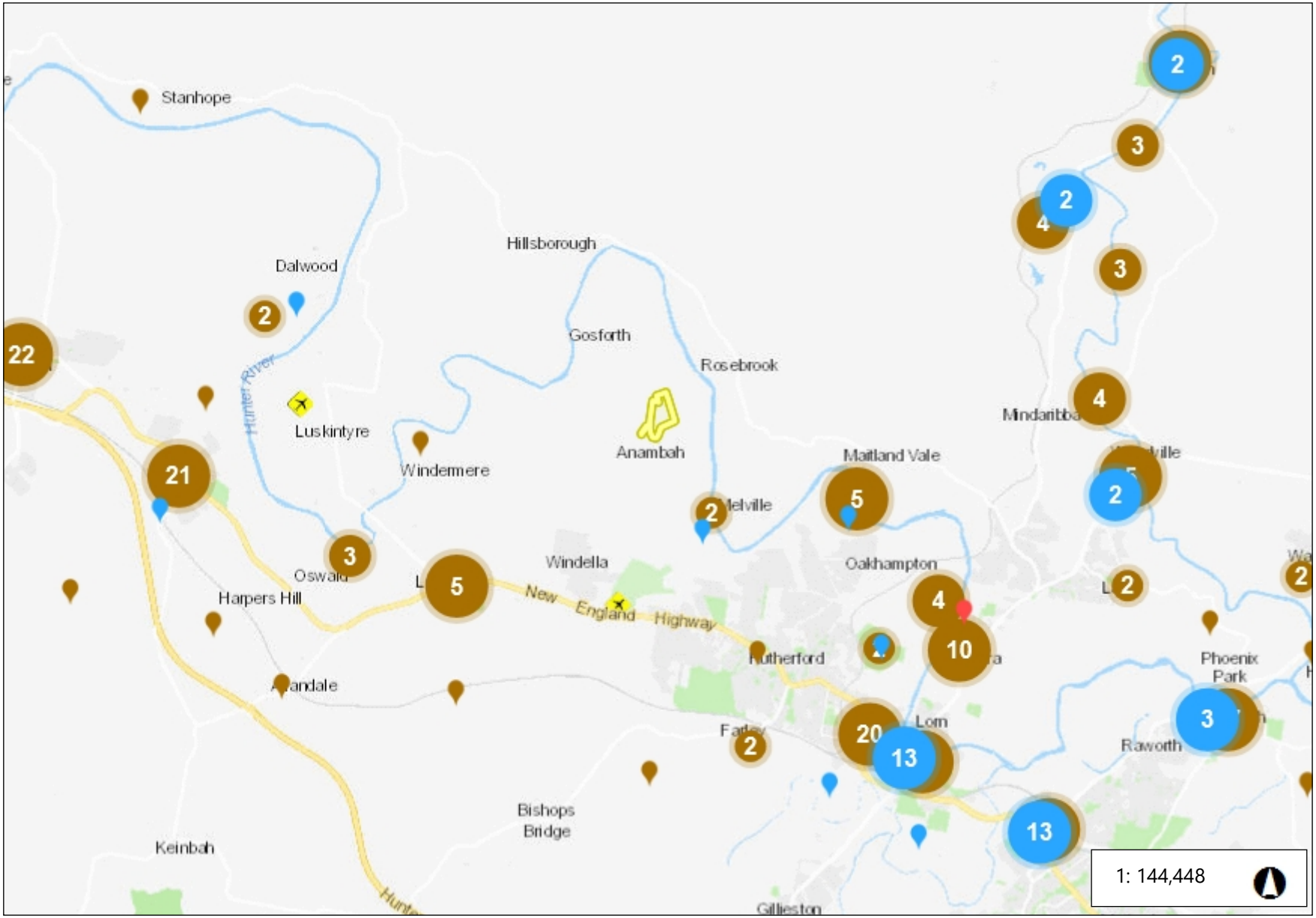


Figure H-1 – Water Monitoring Location Plan

Appendix I – Heritage Assessment

Heritage NSW

Title



Legend

- World Heritage Areas NSW
- SEPP
- World Heritage Site
- Local Environmental Plan
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

1: 144,448

7,337.9 0 3,668.97 7,337.9 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the Heritage Management System and is for reference only. Information that appears on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Notes