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Flood Impact Assessment

For Project:

Maitland Heritage

for Eagers Automotive Pty Ltd C/O Centric Architects

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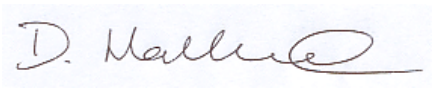

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Contents

1. Introduction

Northrop Consulting Engineers have been engaged by Eagers Automotive Pty Ltd c/o Centric Architects to undertake a Flood Impact Assessment for the proposed additions and alterations of Maitland Heritage located at 19 Bungaree Street, Maitland.

The following documents have been considered throughout this assessment;

- Maitland Development Control Plan 2011, in particular Part B Environmental Guidelines, Section B3 Hunter River Floodplain
- Maitland Local Environmental Plan 2011.
- NSW Government Floodplain Development Manual (NSW Government, 2005)
- Water Management Act 2000 (NSW Government, 2016)

1.1 Locality Description

The proposed development is located at 19 Bungaree Street, Maitland. The subject site is bound by New England Highway the east, Bungaree Street to the west, a lagoon to the south and an intersection consisting of 5 roads to the north. The scope of this project includes Lot 19, 20, 21, 22/DP746311, as noted in the referenced civil drawing package prepared by Northrop Consulting Engineers.

The locality of the subject site can be seen in Figure 1.

Figure 1 – Subject Site Locality (maps.six.nsw.gov.au)

Elevations across the site range from RL 2.84 to the south and RL 15.48 to the north.

1.2 Proposed Development

The development proposal involves:

- Existing workshop, Suzuki showroom, Mitsubishi showroom and parking spaces to be retained;
- Additions to the existing workshop including an increase in floor space and awnings.
- New Kia showroom, Mazda showroom, retaining walls and parking spaces.

The scope of works is shown in the referenced civil drawing package prepared by Northrop Consulting Engineers.

The proposed workshop additions and Kia showroom will retain the same finished floor RL8.29 as the existing workshop. Additionally, many of the existing retaining walls are to be demolished and new retaining walls constructed to suit new works/

1.3 Site Flood Classification and Behaviour

Maitland City Council's development control plan flood mapping, indicates the site is impacted by flooding during the 1% AEP design storm event. The extent of this flooding on the site is shown in Figure 2. The development site is outlined in green.

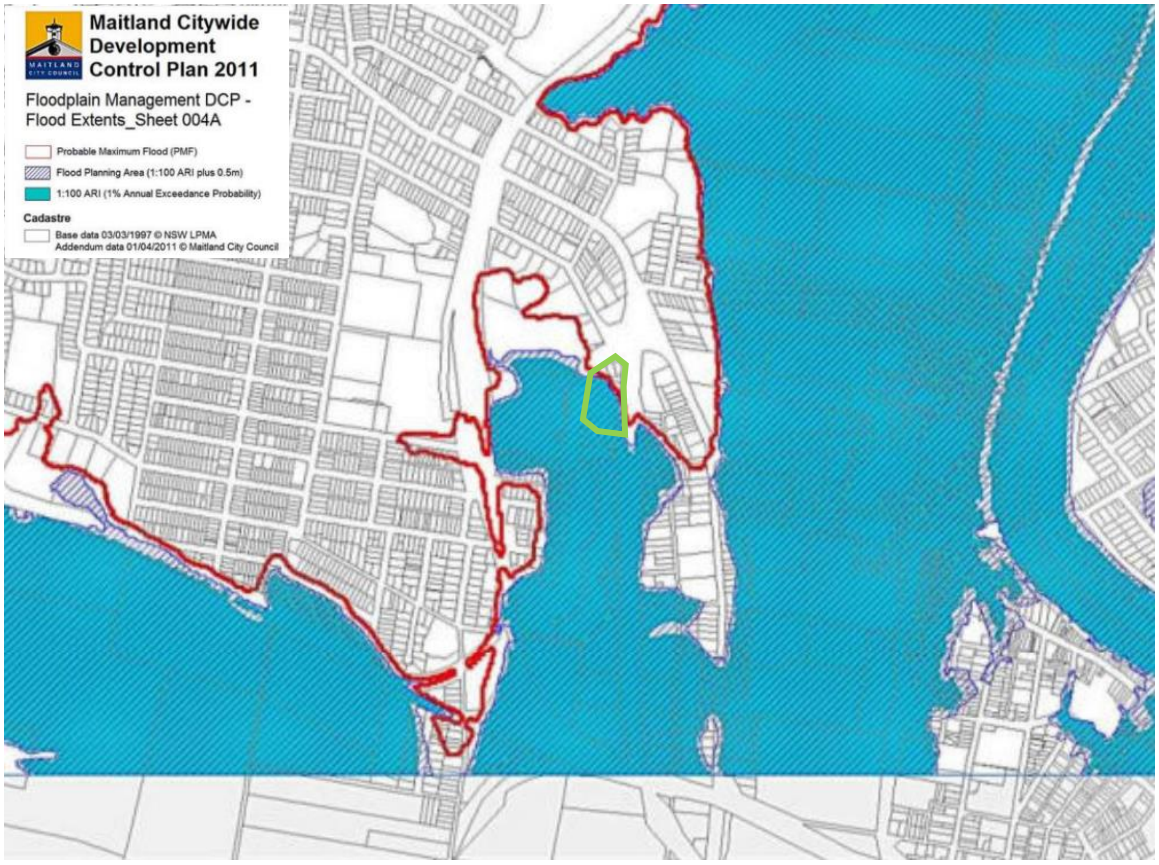


Figure 2 – Flood Extents (Maitland Citywide Development Control Plan 2011, Floodplain Management DCP-Flood Extents_Sheet 004A)

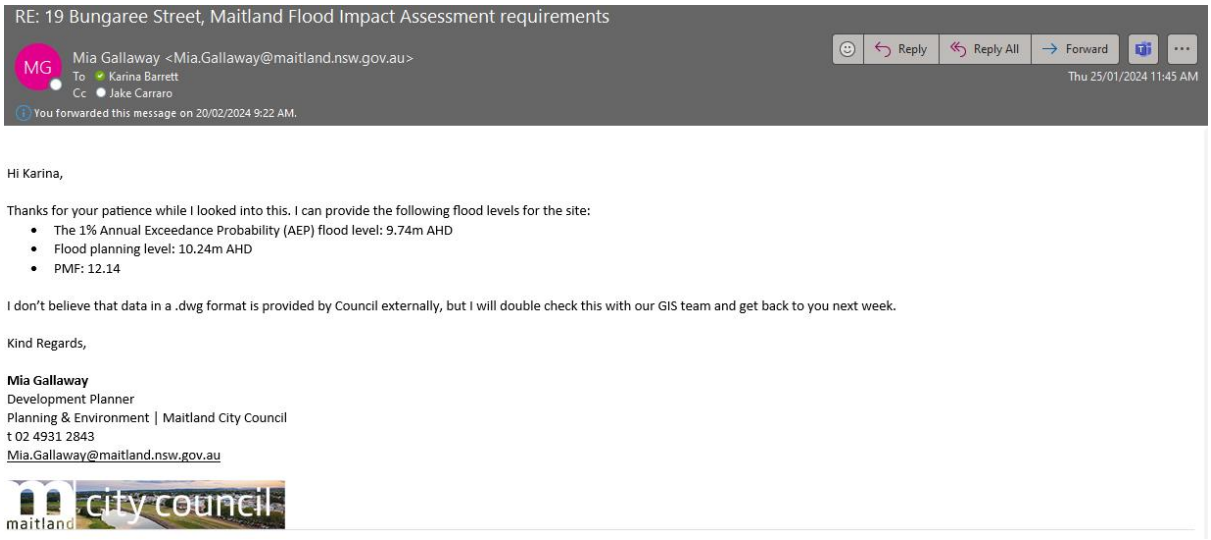
The majority of the works area is within the 1% flood extents, whilst a small portion of the works to the north are within the flood planning area.

The flood levels provided by Council are as follows;

Design Flood Levels	
Frequency	Flood Level
PMF (Probable Maximum Flood)	12.14
1% AEP	9.74

The Flood Planning Level is defined as 1% AEP + 500mm freeboard.

These flood levels were obtained from council via the correspondence seen below in Figure 3.



RE: 19 Bungaree Street, Maitland Flood Impact Assessment requirements

MG Mia Gallaway <Mia.Gallaway@maitland.nsw.gov.au>
To Karina Barrett
Cc Jake Carraro
You forwarded this message on 20/02/2024 9:22 AM.

Reply | Reply All | Forward
Thu 25/01/2024 11:45 AM

Hi Karina,

Thanks for your patience while I looked into this. I can provide the following flood levels for the site:

- The 1% Annual Exceedance Probability (AEP) flood level: 9.74m AHD
- Flood planning level: 10.24m AHD
- PMF: 12.14

I don't believe that data in a .dwg format is provided by Council externally, but I will double check this with our GIS team and get back to you next week.

Kind Regards,

Mia Gallaway
Development Planner
Planning & Environment | Maitland City Council
t 02 4931 2843
Mia.Gallaway@maitland.nsw.gov.au

maitland city council

Figure 3 – Correspondence between a Development Planner of Maitland City Council and Northrop.

2. Assessment Criteria

The site is subject to flood management according to Maitland City Council, Part B Environmental Guidelines, Chapter B3 - Hunter River Floodplain. The development is below the flood planning level and therefore must comply with Development Controls listed in section 2.1 and 2.3 of this part of the DCP. This report will demonstrate our interpretation of compliance with the development controls listed in section 2.1 and 2.3.

The key components that are to be managed for the proposed development include;

- No increase to the flood hazard or flood damage or adversely increase flood affectation on other properties.
- Flood Egress and Access; and
- Structural components and appropriate building materials.

2.1 Flood Hazard, Flood Damage, Flood Affectation

The floor levels of the majority of the development will be below the 1% AEP storm event. This development is an light industrial/commercial development with no habitable floor spaces. Therefore, the floor levels are permitted to be below the 1% AEP event.

The existing lowest finished floor level RL8.29 of the current workshop and existing reception flood level RL6.78 are to be retained. Although this is below the minimum floor level by 3.46m, it is considered to be acceptable based on the type of building use and project feasibility requirements to retain the existing workshop structure and partial existing reception.

Proposed services are to be appropriately managed within areas below the Flood Planning Level. The proposed substation is to be located to the north-west of the site outside the flood affected area.

The site is bounded by two roads and a lagoon as seen in Section 1 of the report, and will not have any adverse effects on surrounding properties.

The development will alter the topography of the site, changing the flood storage volume. The change in flood storage volume will be managed by including compensatory earthworks within the development to remove any adverse effects from flooding due to the new development. 3D surface elevation modelling of the existing and proposed development surfaces has been undertaken using CAD software to analyse the change in topography of the site.

The two models were analysed within the disturbed areas of the site to calculate the volume of water being stored between the surface levels and the 1% AEP flood level with the results as below;

Existing surface to 1% AEP flood level = 4890m^3

Proposed design surface to 1% AEP flood level = 3870m^3

Required excavation of compensatory earthworks = 1020m^3

The compensatory earthworks to be excavated are identified on the civil engineering plans to the south of the site. It is proposed to excavate material from the edge of the existing lagoon to meet a 1:3 batter from the existing retaining wall to the south of the development. With this included in the design, there is no net importation of fill to the site, therefore complying with Council's DCP requirements.

The disturbed area below the 1% AEP flood level can be seen hatched blue in Figure 4 below. The area hatched orange is where compensatory earthworks are to be performed in order to match the pre-development flood storage volumes on the site.

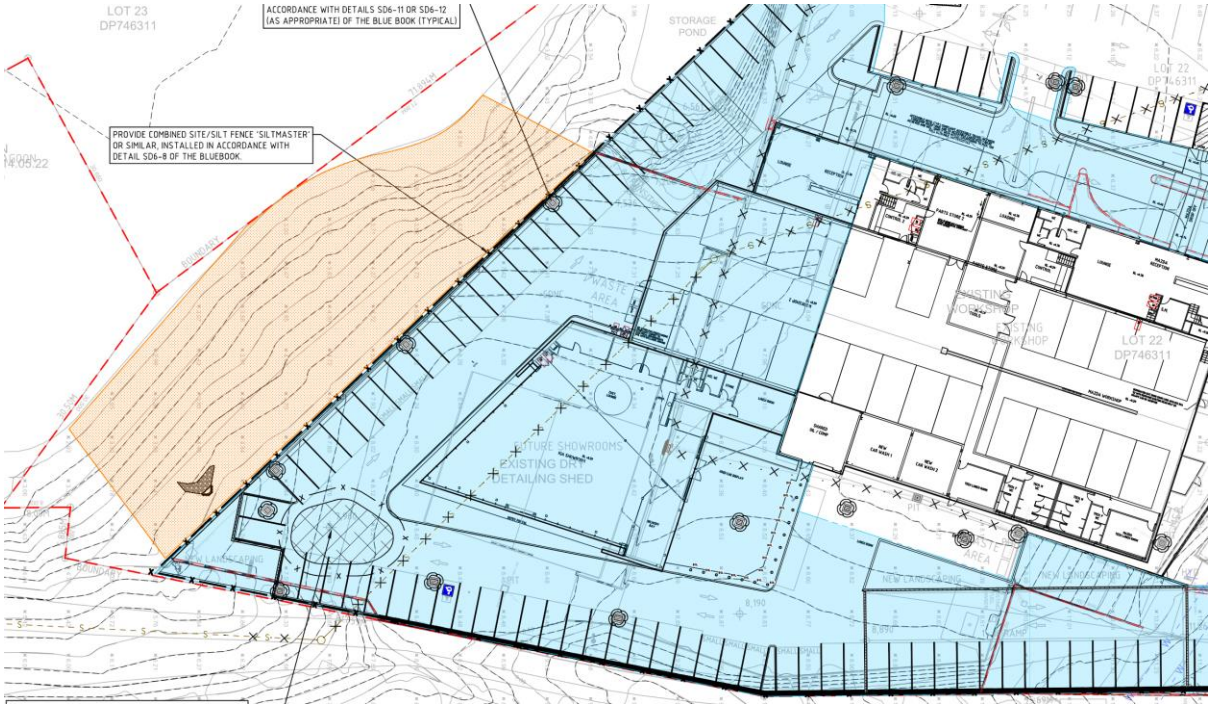


Figure 4 – Disturbed areas and flood compensatory earthworks area

2.2 Flood Egress and Access

Inundation of the site during storm events is identified on the southern portion of the site. The flood mapping indicates the northern portion of the site remains flood free for the 1% AEP storm and PMF. Pedestrian refuge and egress is available at the northern end of the site however vehicle egress is obstructed during the 1% AEP and PMF storm event

Emergency vehicle road access to the site is from the northern end of Bungaree Street during a flood event. Access from the south of the site will not be possible.

2.3 Structural Components and Appropriate Building Materials

The structural components of the proposed design will be required to resist forces from flood waters on the structure. Flood depths are obtained from correspondence with Maitland City Council Development Planner. Figure 6 is an extract from this correspondence, detailing the flood levels for the site.

From Figure 6, the flood depth is estimated to be 3.46m, which impacts on the Workshop Extension, Reception Extension and Kia Showroom, additional parking spaces and retaining walls. The construction type proposed for these structures uses reinforced concrete footings founded on rock with steel columns and walls supporting the roof. This structural system has the inherent capacity to resist the applied flood forces.

The flood information reviewed identifies the building will be inundated during the 1% AEP design storm. As such, conventional building materials above ground level are considered not appropriate for the development and building materials that are easily cleaned, resistant to mould and withstand the flood forces to be used.

2.4 Maitland Local Environmental Plan requirements

The following identifies the requirements s5.21 of the Maitland Local Environmental Plan 2011 (LEP) and outlines how this development addresses each requirement.

(1) The objectives of this clause are as follows –

a. To minimise the flood risk to life and property associated with the use of land,

The proposed development has a safe area for on-site refuge with emergency vehicle access to the site not obstructed by flood waters. The site currently has buildings (mechanics workshop and reception) within the 1% AEP flood area with the property owner is aware of the risk associated with property damage and further development within this area.

b. To allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,

Information regarding changes to flooding on the site as a result of climate change was not available. Considering the existing site development within the 1% AEP flood area, and PMF area, we do not anticipate a considerable change to the flood function and behaviour on this site based on climate change.

c. To avoid adverse or cumulative impacts on flood behaviour and the environment,

The proposed development site falls towards the lagoon to the south of the site. The site is within the flood storage area however is not within a floodway. Compensatory earthworks are proposed for the development such that the flood function and behaviour will not adversely be affected by the proposed development.

d. To enable the safe occupation and efficient evacuation of people in the event of a flood.

The proposed development does not comprise of any habitable buildings. It is also considered non-essential services. As such, should a flood warning be issued, the site can be evacuated with on-site refuge available at the northern end of the site, or evacuation of the site early prior to flood waters blocking the vehicle egress.

(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development-

a. Is compatible with the flood function and behaviour on the land,

Refer to response 1(c) above.

b. Will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties,

The proposed development site is boundary by state and council roads to the north-east and north-west, and a lagoon to the south. Overland flow paths across the site have been maintained to allow stormwater drainage to the lagoon (flood impacted area). The proposed development also matches existing levels along the boundaries of the site. As such, it is not anticipated to adversely affect other properties.

c. Will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood,

Refer to response 1(d) above.

d. Incorporates appropriate measures to manage risk to life in the event of a flood,

A flood management plan should be prepared to identify safe evacuation of on-site refuge procedures with employees on site to be familiar with the procedures.

e. Will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks of watercourses

The site is within the flood storage area however is not with the floodway and as such will not affect the floodway. The proposed design is to consider the impacts of flooding and propose material more suitable for use within flood zones to lessen the impact of erosion or reduces stability.

(3) In deciding whether to grant development consent on land to which clause applies, the consent authority must consider the following matters –

a. The impact of the development on projected changes to flood behaviour as a result of climate change,

Refer to response 1(b) above.

b. The intended design and scale of building resulting from the development;

The proposed building within the flood impacted areas of the site are non-habitable and non-essential services. It is unlikely for visitors to access the site during severe rainfall events, and staff and workers on the site are to be made aware of procedures during flood events.

c. Whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,

Refer to response 2(d) above.

d. The potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

The proposed development consists of permanent structures however are non-habitable and non-essential services.

3 Conclusion

A Flood Impact Assessment has been undertaken for the proposed additions and alterations of Mazda Maitland Heritage Motor Group located at 19 Bungaree Street, Maitland.

The Assessment concludes that the proposed development can appropriately manage the flood risks to life associated with the subject site and that no significant impacts are expected to the flood behaviour within any adjacent properties. There is however risk to property within the flood zone. The proposed development is considered to adequately manage the flood risk by maintaining the existing flood egress and access and ensuring the structural components and building materials used are appropriate for the flood behaviour on the site.

We commend our findings to council for their review. Should you have any queries regarding this correspondence, please feel free to contact Northrop Consulting Engineers on (02) 4365 1668.