

30 May 2022

Bryan Garland  
Chief Development Officer  
Johnson Property Group  
27 Patrick Drive  
Cooranbong, NSW, 2265

Dear Bryan,

**Re: Trinity Point – Flood Impact Assessment**

This letter is a flood impact assessment report for the proposed development at Trinity Point, Morisset Park (Lots 101 and 102 DP 1256630). It describes the nature of flooding on the site and evaluates the proposed design against the requirements of the planning controls that currently apply to the site.

The Planning Secretary's Environmental Assessment Requirements issued 24 September 2021 for the proposed development include the following flood-related requirements:

*The EIS must:*

- *Identify and describe any on-site flood impacts and risks associated with the proposed development, having regard to the relevant provisions of the NSW Floodplain Development Manual and other local or State studies and guidance*
- *Assess the impacts of the development, including any changes to flood risk both on-site or off-site, and identify any mitigation and management measures to minimise the impacts of flooding on the proposed development*
- *Consider sea level rise impacts to the development, and identify any mitigation and management measures.*
- *Consider additional matters identified by Biodiversity Conservation Division at Attachment B.*

This letter addresses these requirements by evaluating the proposed design against the flood-related planning controls applicable to the site.

## **1. Executive Summary**

This assessment finds that the proposed development complies with all of the provisions of both the Lake Macquarie Local Environmental Plan (LEP) 2014 and the Lake Macquarie Development Control Plan (DCP) 2014.

The proposed development meets the objectives of the applicable flood-related development controls for the following reasons:

- The design would exclude flood waters up to the Probable Maximum Flood (PMF) in the year 2100 through the use of passive flood-exclusion measures and would provide flood immune evacuation routes, minimising the flood risk to life and property.
- The proposed development has been designed to be located on land above the 2100 still water level of Lake Macquarie and to exclude all flood waters, taking into account projected sea level changes as a result of climate change.
- The buildings are all set back from the foreshore to minimise the impacts of foreshore recession.
- The proposed development would not adversely affect flood behaviour or flood levels on the site or on neighbouring properties, nor would it impact flood levels on properties around the lake foreshore.
- The buildings and evacuation routes would all exclude flood waters up to the PMF in the year 2100. Therefore, the development would be able to be safely occupied and to be efficiently evacuated in the event of a flood, although flood evacuation should not be required.

## 2. Description of Flood Behaviour

### 2.1 Topography

The site survey prepared by ADW Johnson in October 2021 shows that the topography is highest at the southern end of the site (over 8.5 m AHD) and generally slopes downwards to the north and east. The gradient of the slope become gentler towards the north until the topography meets the lake level (0.1 m AHD) (Attachment 1). In the south-western corner of the site the topography slopes down abruptly towards the lake level.

### 2.2 Flood Levels on Site

The Property Flooding Information Summary for the site generated by the Lake Macquarie City Council (LMCC) website on 22 September 2021 is based on the Lake Macquarie Waterway (The Lake) Flood Study – 2012 (Attachment 2). It indicates that the site is subject to flooding from Lake Macquarie. Lake and flood levels are summarised in Table 1.

The summary provides the following information on lake and flood levels:

*Table 1: Estimated flood levels from Lake Macquarie Council's Flood Risk Management Plan*

| Flood Level                  | Current    | Projected – Year 2050 | Projected – Year 2100 |
|------------------------------|------------|-----------------------|-----------------------|
| Lake still water level       | 0.1 m AHD  | 0.5 m AHD             | 1.0 m AHD             |
| 5% AEP                       | 1.23 m AHD | 1.61 m AHD            | 2.1 m AHD             |
| 1% AEP                       | 1.5 m AHD  | 1.86 m AHD            | 2.32 m AHD            |
| Probable Maximum Flood (PMF) | 2.45 m AHD | 2.81 m AHD            | 3.27 m AHD            |

Over the next 80 years Trinity Point is expected to experience inundation along the shoreline due to sea level rise. The still water level of the lake is expected to rise from 0.1 m AHD to 0.5 m AHD by 2050, while by 2100 it will have risen to 1.0 m AHD. This will permanently inundate a few low-lying areas of the peninsula, such as along the north-eastern margin of the site, but the vast majority of the site will remain above the still water level in the year 2100 (Figure 1).

Lake Macquarie Council has advised that due to the expected design life of the proposed development, projected lake and flood levels in 2100 should be considered in the planning and design of the buildings.

A 1% AEP flood in the year 2100 (assuming 0.9 m of sea level rise from 1990) would have a flood level of 2.32 m AHD and would inundate much of the low-lying northern portion of the site (Figure 2). Assuming the current topography of the site, only the buildings of the restaurant '8 at Trinity' and the access road to the restaurant would remain flood free north of the roundabout in the 1% AEP flood in year 2100. The existing carpark would be inundated to depths of up to 1.1 m and the land around the marina offices to depths of up to 1 m by floodwaters rising from the lake. The eastern margin of the site would also be flooded by up to 1.3 m approximately as far south as Celestial Drive.

A PMF in the year 2100 would have a flood level of 3.27 m AHD. This would inundate most of the site from Celestial Drive northwards, with the exception of the top of the access road to the marina (Figure 2). The area of the existing carpark and the marina offices would flood to depths of approximately 2 m. Most of the southern section of the site would remain flood free, as would Trinity Point Road heading south from the roundabout.

The lacustrine flooding will have a slow rate of rise. The 2012 Lake Macquarie Waterway Flood Risk Management Study and Plan (WMAwater) notes that in the critical duration (48 hour) 1% AEP event (present day conditions) the lake barely rises in the first 6 hours, and thereafter rises at approximately 0.07 m/hr to peak at 38 hours. The study also suggests that around the lake residents may be isolated by floodwaters for up to 18 hours.

The 1% AEP event referred to above is a modelled design event. Real flood events, particularly extreme events, could rise more rapidly. However, even if the flood levels were to rise three times more rapidly they would still rise be rising slowly at 0.21 m/hr.



Figure 1: Lake extent in year 2100



Figure 2: Flood extents in year 2100

### 2.3 Hazard

Council's Property Flooding Information Summaries for the two lots indicate that the site is classified as high hazard. This classification considers a range of factors in addition to the size and hydraulic hazard of potential floods, including the flood awareness of the community, the duration of flooding and effective warning time (WMAwater, 2012).

Given the location of the site with regard to the lake, flood waters would have negligible velocity at the site. Therefore, the hydraulic hazard of the flood waters can be determined for various events with depth alone using the flood hazard vulnerability curves developed by Smith et al. (2014) (Figure 3). In a 1% AEP flood under current conditions Lot 101 (the northern part of the site) would be largely subject to H1 and H2 flood waters with H3 flood waters occurring in the west in the at-grade car park and in sections of the access road to the car park (Figure 4). Only the north-eastern corner of Lot 102 would be impacted by flooding, with H1 flood waters.

On the other hand, during a 1% AEP flood in the year 2100 most of Lot 101 would be impacted by H3 and H4 flood waters (Figure 5). The north-eastern corner of Lot 102 would experience flood waters with hydraulic hazard of up to H3. However, this lot would largely remain unaffected by flooding.

### 3. Description of the Proposed Development

The proposed development would cover Lots 101 and 102 DP 1256630 at Trinity Point in the suburb of Morisset Park on the foreshore of Lake Macquarie.

The development would consist of six buildings, of which the northern two (Buildings A and B) would be a hotel with restaurants and the southern four (Buildings C to F) would be residential, containing apartments (Figure 6).

The two hotel buildings would be eight storeys each, with commercial spaces on the lower floors. The ground floor levels of both buildings would be at 3.3 m AHD (Figure 7).

Residential Buildings C, D and E would each be eight storeys and would contain 152 apartments between the three of them. Building F, the southernmost building, would only be six storeys and would contain 28 apartments. The ground floor levels would be 5.9 m AHD for Buildings C and D, 6.4 m AHD for Building E and 8.0 m AHD for Building F (Figure 7).

One level of basement parking (Basement 1) in the north of the site beneath Buildings A, B and C would serve as hotel parking (Figure 8). It would have a floor level grading from -2.1 m AHD in the south to -0.9 m AHD in the north and would contain 251 car spaces, 32 bicycle spaces and 26 motorbike spaces. A second basement level (Basement 2) below Basement 1 with a floor level of -3.9 m AHD would provide an addition 90 car spaces for the hotel buildings. Basement 1 would be accessible via three ramps. The northern two (for vehicular ingress and egress) would access the basement via the porte cochere at the main entrance to Building B and both would have ramp crests of 3.3 m AHD (Figure 7). The southern entrance would provide access from Trinity Point Drive immediately south of the roundabout and would have a ramp crest of 4.0 m AHD.

Another basement in the site's south below buildings C, D, E and F would serve as residential parking (Figure 8). This level would have 270 car spaces, 234 bicycle spaces and 19 motorbike spaces and would have a floor level that varied between 2.6 m below Building C, 1.85 m AHD and 2.3 m AHD below Buildings D and E and 2.9 m AHD below Building F. The residential parking basement would be accessible from Trinity Point Drive via three ramps. The northernmost ramp located just to the south of the roundabout would have a ramp crest of 4.0 m AHD, the ramp just to the south of Celestial Drive would have a ramp crest of 5.7 m AHD and the southernmost ramp would have a crest level of 7.0 m AHD (Figure 7).

There would be an additional at grade car park at the north-western end of the development in the location of the existing marina car park (Figure 6). This car park is above 1.0 m AHD and is accessed via a road from the roundabout on Trinity Point Road.

Off site, Trinity Point Drive remains above 4.0 m AHD from the roundabout near the porte cochere southwards.

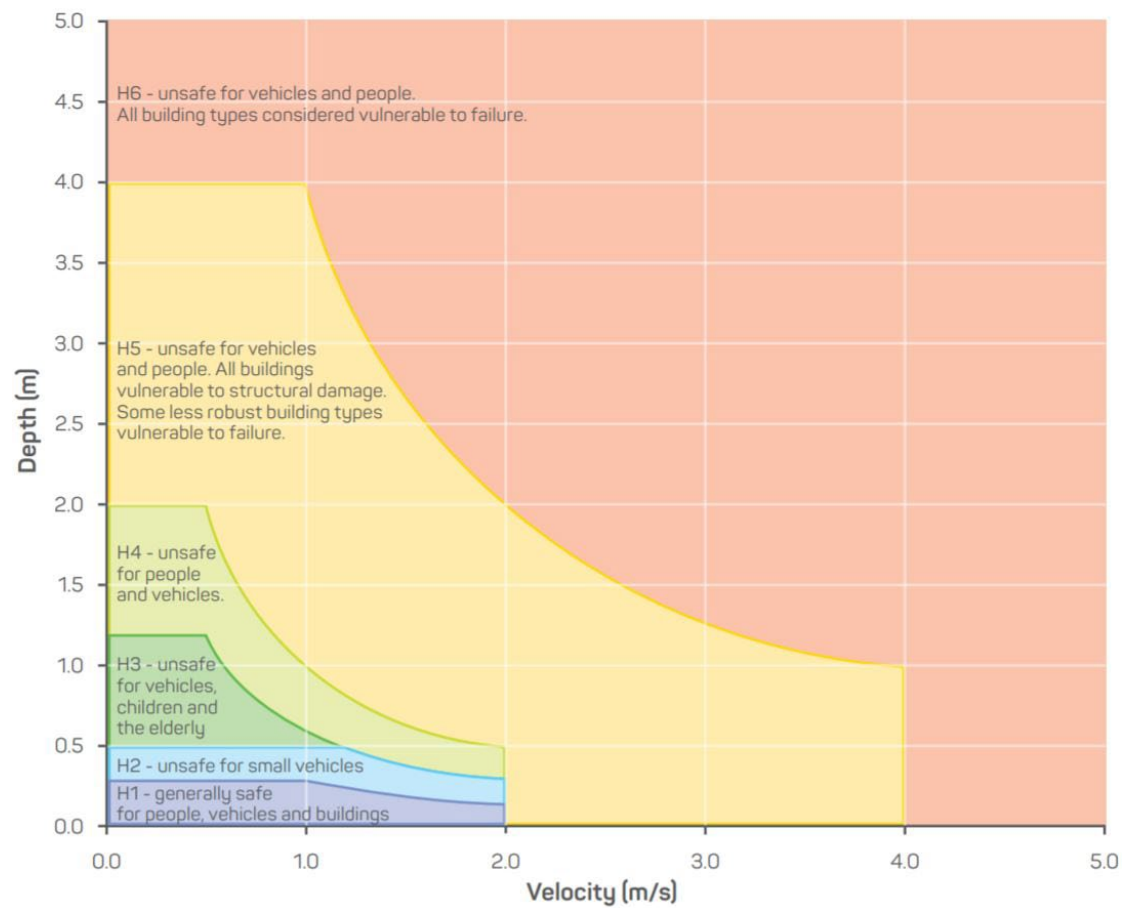


Figure 3: Flood hazard vulnerability curves (Smith et al., 2014)



Figure 4: Hydraulic hazard in 1% AEP flood under current conditions



Figure 5: Hydraulic hazard in 1% AEP flood in the year 2100



Figure 6: Site plan

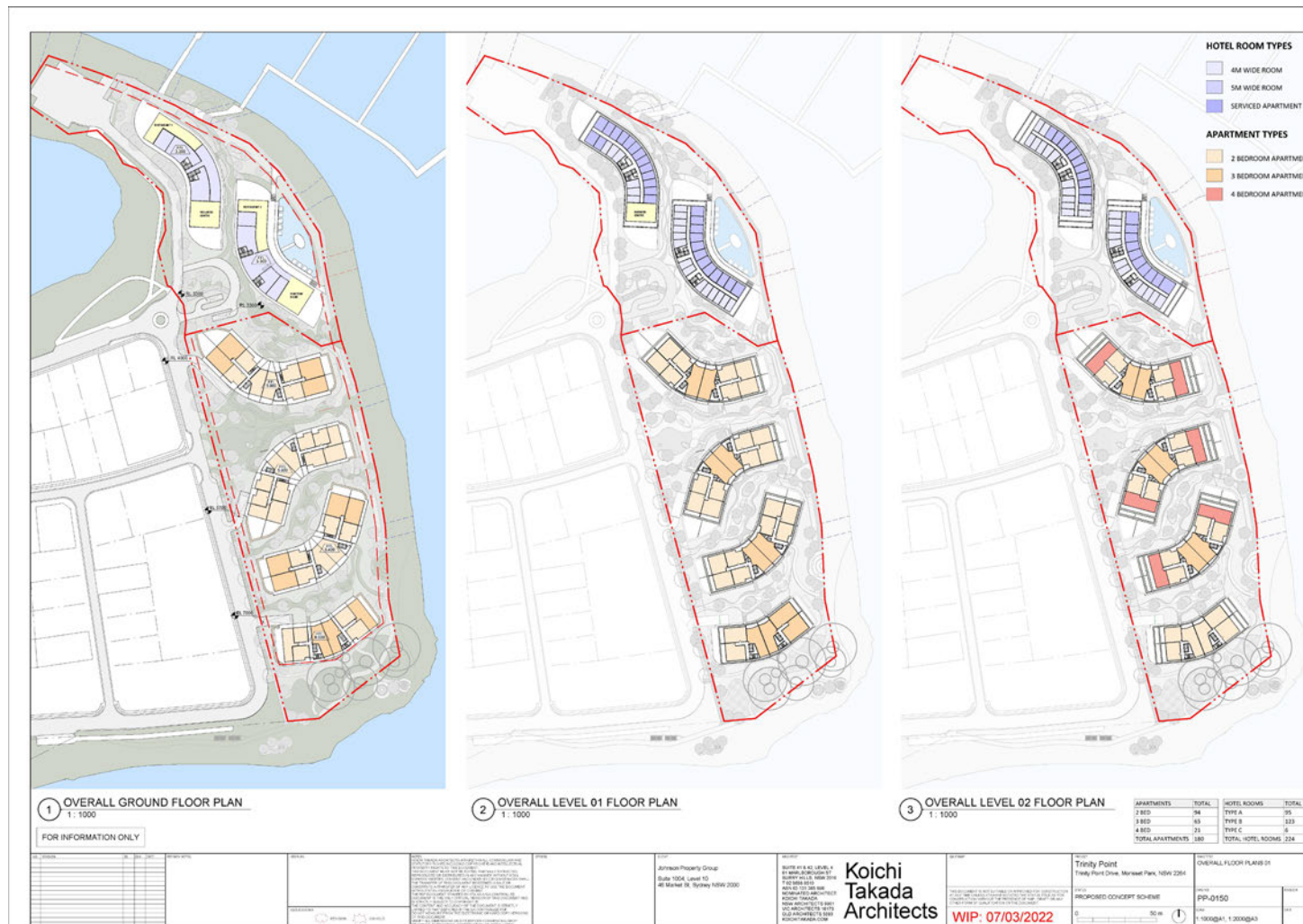


Figure 7: Floor plans for ground floor, Level 1 and Level 2



Figure 8: Basement levels

## 4. Planning Controls

This section discusses the planning controls that currently apply to this site under:

- 1) Lake Macquarie Local Environmental Plan (LEP) 2014
- 2) Lake Macquarie Development Control Plan (DCP) 2014

### 4.1 Lake Macquarie Local Environmental Plan 2014

The Land Zoning Map in Section 2.2 of the LEP (Figure 9) indicates that the site is zoned as SP3 (Tourist).

The LEP addresses flooding in *Section 5.21: Flood planning*. Clause 1 is as follows:

- (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,*
  - (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,*
  - (c) *to avoid adverse or cumulative impacts on flood behaviour and the environment,*
  - (d) *to enable the safe occupation and efficient evacuation of people in the event of a flood.*

*Table 2* sets out how the clauses 2 and 3 of *Section 5.21* are addressed by the proposed development.

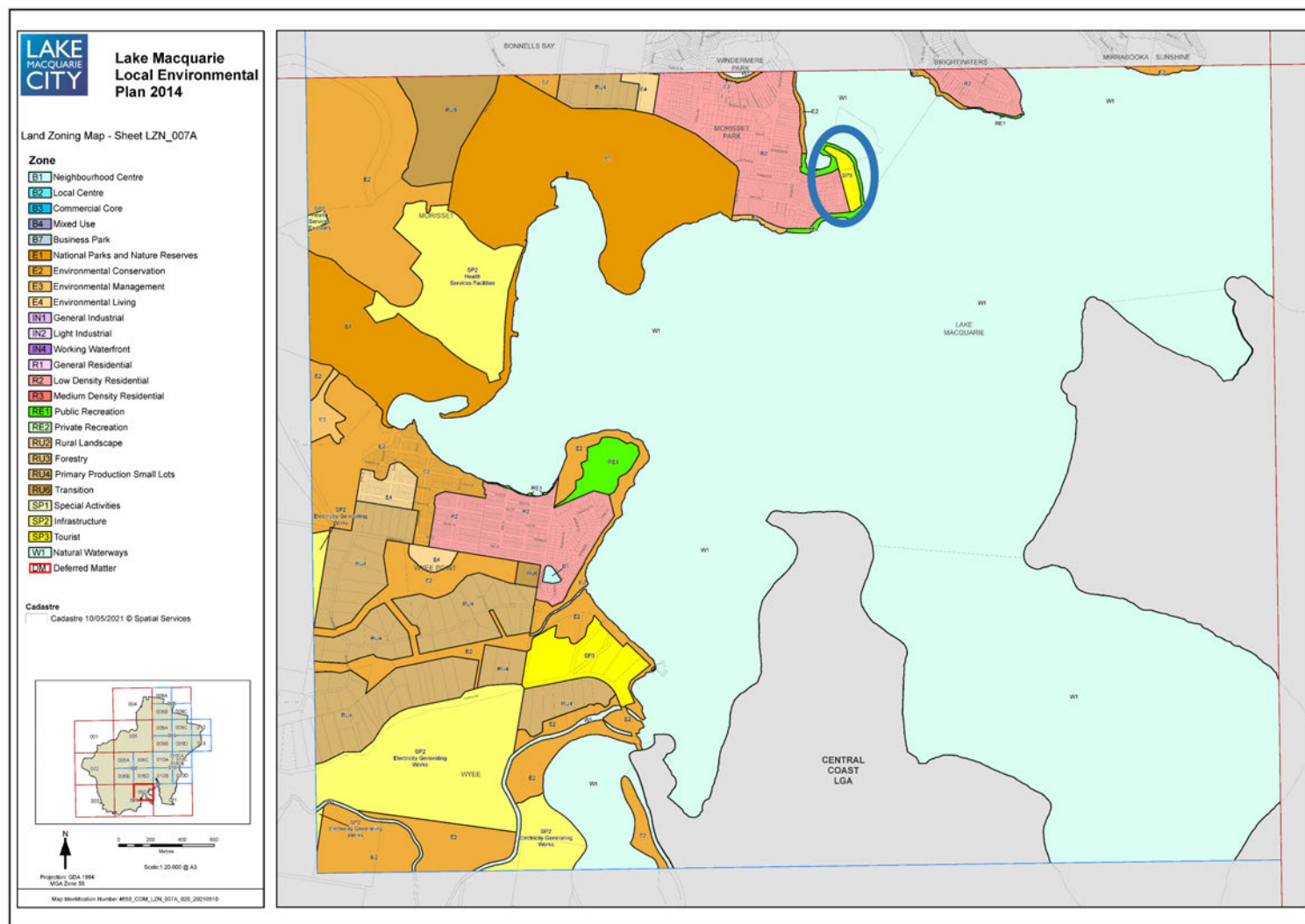


Figure 9: Land Zoning Map with site location marked (from Section 2.2 of Lake Macquarie LEP 201

Table 2: How section 5.21 of Lake Macquarie LEP 2014 is addressed by the proposed development.

| Clause                                                                                                                                                                                                    | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>(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—</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>(a) is compatible with the flood function and behaviour on the land, and</i>                                                                                                                           | <p>All proposed buildings would be on land that is above 1.0 m AHD, the still water level in 2100 taking into account projected sea level rise. Therefore, the buildings would not be constructed on land that will be permanently inundated by sea level rise by 2100.</p> <p>Most of the residential buildings (Buildings D – F) would be constructed on land above the flood level of the 1% AEP event in year 2100 (2.32 m AHD) and would therefore only be impacted by floods of greater magnitude than this event. The eastern margin of Building C would be built on land that will flood in a 1% AEP event in 2100. However, the ground floor level (3.3 m AHD) would be above the 1% AEP flood level in that year (2.32 m AHD)</p> <p>In a 1% AEP event in 2100 the land that the hotel buildings (Buildings A and B) would be constructed on would flood to depths of up to approximately 1.3 m. However, the proposed development demonstrates that it is compatible with the nature of flooding on the land through compliance with the specific requirements from the Lake Macquarie DCP 2014, as outlined in Section 3.2 of this report.</p> |
| <i>(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, and</i>                            | <p>Flooding will not impact Trinity Point Drive from just to the west of the roundabout, southwards to the southern margin of the site in events up to and including the PMF in 2100. Nor will flooding impact the southern section of the road that provides access to the at grade car park. Therefore, flooding on site will not cross Trinity Point Drive and increase flood affectation on the neighbouring properties to the west of the site.</p> <p>Where the development is below the level of the 2100 1% AEP flood level, the scale of the development compared to the size of Lake Macquarie is such that it will not affect flood levels in the lake and therefore will not affect flood levels on properties around the lake foreshore.</p>                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>(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, and</i>    | <p>All habitable floor levels will be above the 2100 PMF level (3.27m AHD). All basement areas will have access ramp crests above this level and therefore would exclude flood waters in events up to and including the PMF. Accordingly, evacuation in the event of a flood should not be required and the proposed development will not exceed the capacity of existing evacuation routes in the event of a flood.</p> <p>However, a vehicular evacuation route is available from the basement levels of the development onto Trinity</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Clause                                                                                                                                                                                         | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|                                                                                                                                                                                                | <p>Point Drive and to evacuation centres in Morisset (Figure 10). The external evacuation route does not drop below the 2100 PMF flood level (3.27 m AHD) (Figure 11).</p> <p>Pedestrian evacuation from the basement levels to floor levels above the PMF flood level in 2100 would be available in all of the buildings via stairs.</p> <p>As the basement levels are protected from flood waters in all floods up to and including the PMF in 2100, pedestrian evacuation off site would be possible from all buildings via stairs to the basement levels and then ramps up to Trinity Point Drive.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>(d) incorporates appropriate measures to manage risk to life in the event of a flood, and</i>                                                                                               | <p>The development is protected from flooding by passive measures to above the PMF flood level for the year 2100. Evacuation from the site should not be required in the event of a flood, but a flood-free vehicular evacuation route has been identified (Figure 10).</p> <p>The development is to have a Flood Emergency Response Flood Plan prepared for the site to ensure flood risk is managed appropriately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>(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 or watercourses.</i> | <p>The development is located as far from the shoreline as possible to avoid detrimental environmental impacts on the shoreline of the lake.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—</i>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>(a) the impact of the development on projected changes to flood behaviour as a result of climate change,</i>                                                                                | <p>The proposed development includes measures to mitigate the impact of sea level rise and subsequent increases in flood levels on site. All six buildings and the northern at grade car park are planned on land above 1.0 m AHD, which is the lake still water level for the site identified by Council in its Property Flooding Information Summary. The development would therefore be above the lake still water level for the duration of its design life, taking sea level rise into account.</p> <p>Flooding will not impact Trinity Point Drive from just to the west of the roundabout, southwards to the southern margin of the site in events up to and including the PMF in 2100. Nor will flooding impact the southern section of the road that provides access to the at grade car park. Therefore, flooding on site will not impact flood behaviour so that flood waters cross Trinity Point Drive and impact neighbouring properties, taking into consideration sea level rise due to climate change.</p> <p>Where the development is below the level of the 2100 1% AEP flood level, the scale of the development</p> |

| Clause                                                                                                                                                                 | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                        | <p>compared to the size of Lake Macquarie is such that it will not affect flood levels in the lake and therefore will not affect flood levels on properties around the lake foreshore.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><i>(b) the intended design and scale of buildings resulting from the development,</i></p>                                                                           | <p>The development would consist of six buildings, of which the northern two (Buildings A and B) would be a hotel with restaurants and the southern four (Buildings C to F) would be residential (Figure 7). The two hotel buildings would be eight storeys each, with commercial spaces on the lower floors. The ground floor levels of both buildings would be 3.3 m AHD.</p> <p>Residential Buildings C to E would each be eight storeys and would contain 152 apartments between the three of them. Building F, the southernmost building, would only be six storeys and would contain 28 apartments. The ground floor levels would be 5.9 m AHD for Buildings C and D, 6.4 m AHD for Building E and 8.0 m AHD for Building F.</p> <p>Basement car parking levels would provide 341 car spaces for the hotel, 270 car spaces for the residential buildings, 45 motorbike spaces and 266 bicycle spaces. The lowest ramp leading into the basement levels would have a crest height of 3.3 m AHD.</p> <p>All buildings and basements would be protected from flooding up to the PMF level in year 2100.</p> |
| <p><i>(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,</i></p>         | <p>The development is protected from flooding up to the 2100 PMF by passive measures, including ramp crests and ground floor levels. Evacuation from the site should not be required in the event of a flood, but a flood-free vehicular evacuation route has been identified (Figure 10).</p> <p>The development is to have a Flood Emergency Response Flood Plan prepared for the site to ensure flood risk is managed appropriately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><i>(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.</i></p> | <p>It will not be possible to modify, relocate or remove this building as a response measure. The site is not subject to coastal erosion and the buildings have been designed to exclude all floods, up to and including the PMF in 2100.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

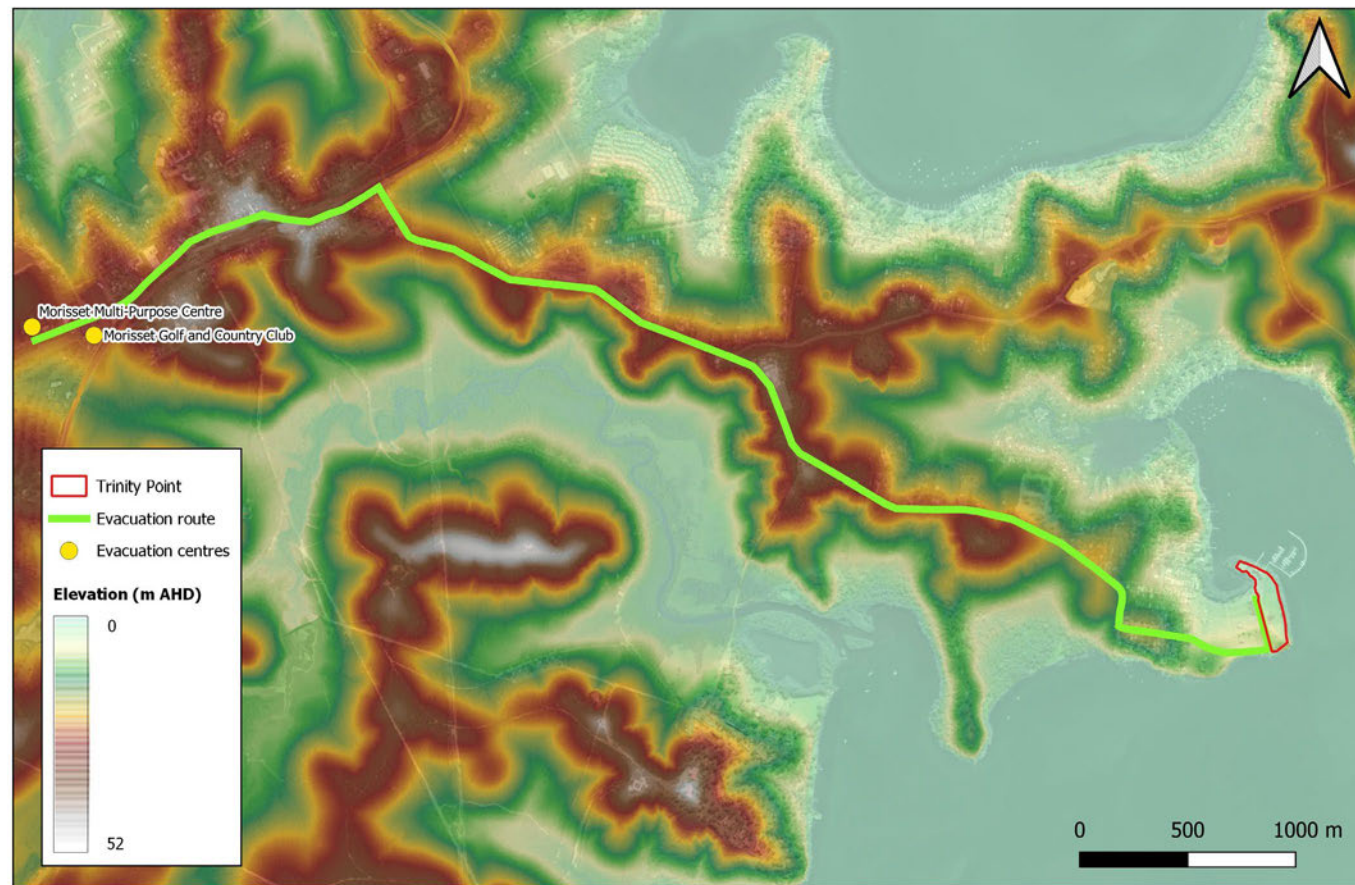


Figure 10: External evacuation route west to evacuation centres in Morisset

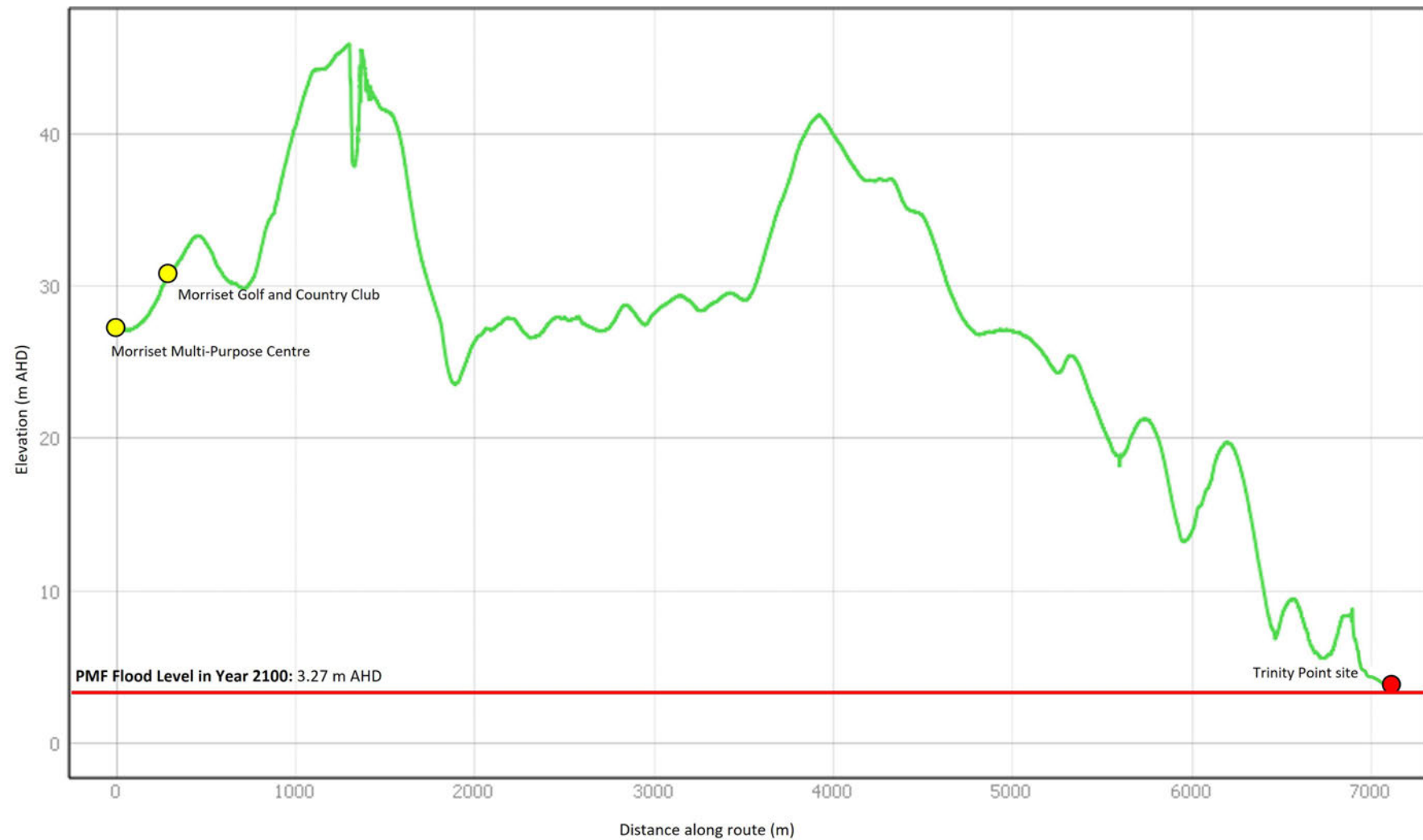


Figure 11: Longitudinal profile of external evacuation route (west to east)

## 4.2 Lake Macquarie Development Control Plan 2014

The Flood Controls Maps in the Lake Macquarie Development Control Plan 2014 (the DCP) indicates that the site at Trinity Point is comprised of lots affected by lake flooding controls (Figure 12). The DCP addresses flooding in lots affected by lake flooding in areas zoned as tourist in Part 6 Section 2.10. This section sets out the following objectives:

### **Objectives**

- a. To ensure that development is sited and designed to minimise potentially adverse impacts of flooding on the proposed development, or on other properties.*
- b. To ensure that measures are implemented to reduce the impact of flooding and flood liability on owners and occupiers of flood prone property. Such measures must also reduce private and public losses resulting from flooding, and manage risks to property and life from flood events.*
- c. To ensure that development adequately considers and responds to sea level rise projections, and the predicted effects on inundation, flooding, coastal and foreshore recession, and on groundwater levels.*
- d. To ensure that development on land vulnerable to sea level rise is situated and designed to minimise the risk from future inundation, flooding, coastal and foreshore recession, and from rises in groundwater levels during the expected life of the development.*
- e. To ensure that development is designed to enable future adaptation if projections are realised, or that measures are implemented to mitigate any adverse impacts of climate change or sea level rise.*
- f. To encourage innovative responses to sea level rise impacts.*

The DCP also sets out the following controls:

### **Controls**

- 1. Development must implement measures to mitigate the adverse effects of projected sea level rise and increases in flood levels on the development.*
- 2. Development should be designed and situated to reduce the risk from the effects of sea level rise. For example, structures should be located on the highest part of the lot and/or located as far back from the foreshore or coastline as possible, while still meeting other controls and objectives of the DCP.*
- 3. Development should not be located in areas predicted to be permanently inundated during the life of the asset. The assumed asset life is 100 years for residential care facilities and seniors housing, hospitals, mixed use development and for medium and high density housing, and 50 years for other developments.*
- 4. Notwithstanding the provisions for Cut and Fill in section 2.4, special consideration may be given to increased fill allowances in areas affected by sea level rise provided that:*
  - i. Additional fill does not adversely affect stormwater management, drainage, or the flow of water from roads, natural or constructed watercourses, foreshore areas or adjoining properties; and*
  - ii. The filled area maintains functional connections to adjoining footpaths, roads, neighbouring blocks and other local features.*

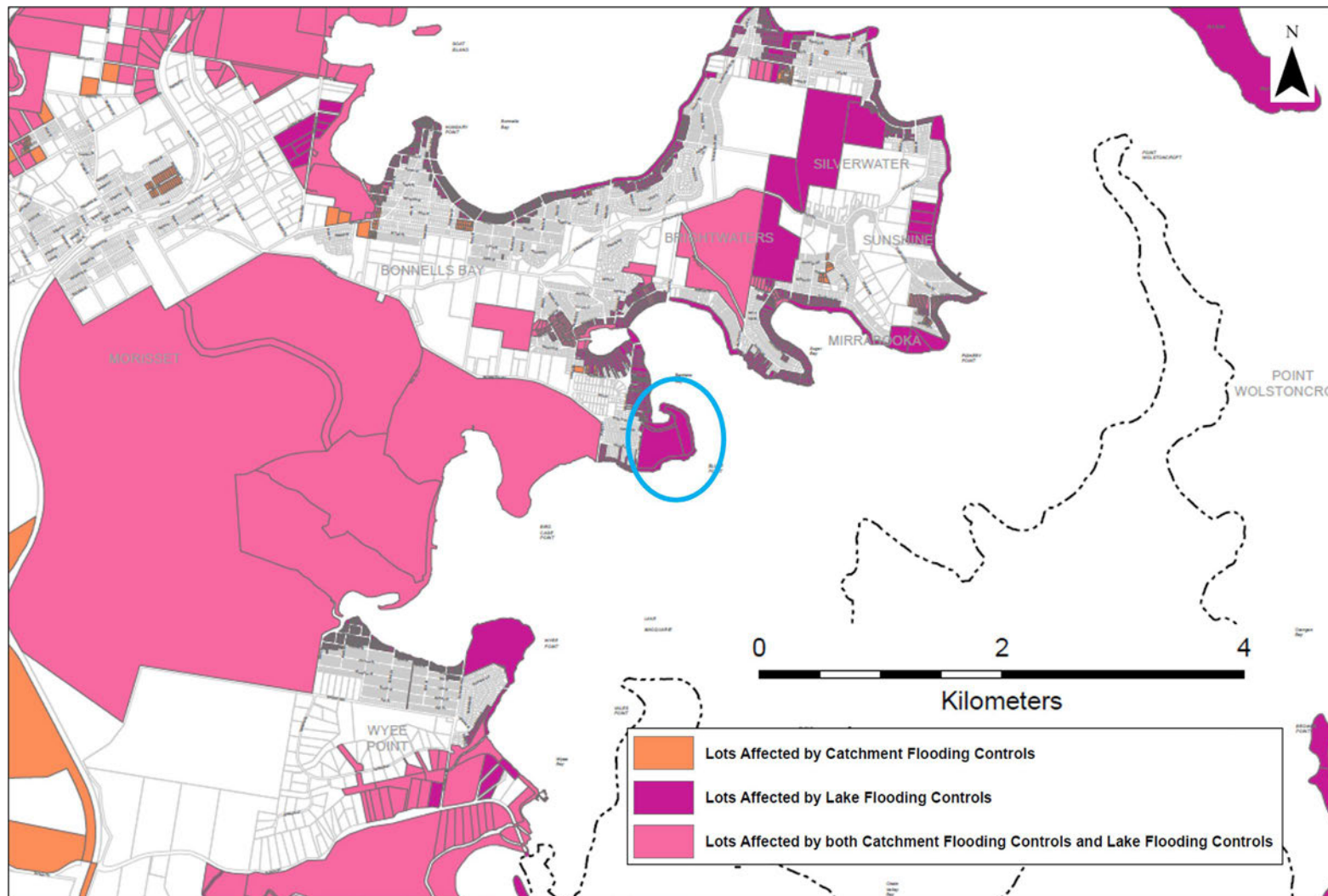


Figure 12: Map of Flood Controls Lots from Lake Macquarie DCP 2014

5. *Development identified within Table 4 should comply with the floor height provisions. Where the development proposed is not contained within Table 4, or an alternative to the provisions contained within Table 4 is proposed, a Flood Safety Audit and Management Plan must be submitted with the application, which is to include:*
  - i. *Current 100 year ARI flood levels and velocity, as well as at 2050 and 2100;*
  - ii. *Analysis of potential and likely risk of flooding, and/or potential threat to life and/or property now, and at 2050 and 2100;*
  - iii. *Analysis of the potential effects of permanent inundation, foreshore recession and rising groundwater,*
  - iv. *Where flood-proof materials are proposed, evidence of the flood-proof characteristics of those materials must be provided;*
  - v. *Where an innovative or adaptable building design is proposed, it meets the principles and performance criteria set out in the Development Guidelines for Resilient Housing for Lake Macquarie, and*
  - vi. *Any other alternative adaptive measure must be justified.*
6. *The assessing officer may determine that the development proposal is of a minor nature, and that there is no need for a Flood Safety Audit and Management Plan. In these circumstances, the assessing officer must be satisfied that the proposed development adequately addresses projected sea level rise and increases in flood levels.*

Table 3: Floor height requirements for land affected by Lake Flooding and Tidal Inundation requirements. **Table 4** from the DCP.

| Development Type<br>(including extensions)                                                         | Minimum Floor Height<br>Requirements                                                                                                                                                                                                                                                   | Actual Minimum Floor<br>Level for Land to which<br>the Lake Flood Study<br>Applies |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Medium and High density<br/>residential development</b>                                         |                                                                                                                                                                                                                                                                                        |                                                                                    |
| Habitable rooms                                                                                    | 1 in 100 year probable flood level for 2100<br>+ 500mm freeboard                                                                                                                                                                                                                       | 2.82 m AHD                                                                         |
| Non-habitable rooms<br>and garages                                                                 | 1 in 20 year probable flood level for 2100                                                                                                                                                                                                                                             | 2.10 m AHD                                                                         |
| Carports, boat sheds,<br>garden sheds, and<br>other ancillary<br>structures (excluding<br>garages) | No requirement                                                                                                                                                                                                                                                                         |                                                                                    |
| Basement car parking                                                                               | Constructed to preclude entry of<br>floodwater at levels up to the 1 in 100 year<br>probable flood level for 2100 + 500mm<br>freeboard. Additional requirement for<br>basement levels to implement a failsafe<br>means of evacuation, and a pump-out<br>system to remove flood waters. | 2.82 m AHD                                                                         |
| Unsealed electrical<br>installations                                                               | 1 in 100 year probable flood level for 2100<br>+ 500mm freeboard                                                                                                                                                                                                                       | 2.82 m AHD                                                                         |

|                                   |                                                                                                                                                                                                                                                                      |            |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Mixed Use development</b>      |                                                                                                                                                                                                                                                                      |            |
| Internal floor height             | 1 in 100 year probable flood level for 2100 + 500mm freeboard                                                                                                                                                                                                        | 2.82 m AHD |
| Basement car parking              | Constructed to preclude entry of floodwater at levels up to the 1 in 100 year probable flood level for 2100 + 500mm freeboard. Additional requirement for basement levels to implement a failsafe means of evacuation, and a pump-out system to remove flood waters. | 2.82 m AHD |
| Unsealed electrical installations | 1 in 100 year probable flood level for 2100 + 500mm freeboard                                                                                                                                                                                                        | 2.82 m AHD |

Communication with LMCC has established that the commercial hotel buildings and residential apartment buildings would have a design life of 100 years and therefore would need to comply with the minimum floor levels applicable to mixed use development.

#### ***Control 1***

As required by Control 1, the proposed development includes measures to mitigate the impact of sea level rise and subsequent increases in flood levels on site. All six buildings and the northern at grade car park are planned on land above 1.0 m AHD, which is the lake still water level for the site identified by Council in its Property Flooding Information Summary. The development would therefore be above the lake still water level for the duration of its design life, taking sea level rise into account.

In addition, the ground floor levels of all six buildings, the lowest of which would be 3.3 m AHD, would be located above the 2.82 m AHD Flood Planning Level (FPL) of 1% AEP flood level for the year 2100 plus freeboard (2.32 m AHD + 0.5 m freeboard). Further, the lowest ramp crest to the basement levels is at 3.3 m AHD, which is also above the FPL. Therefore, the proposed development would satisfy control 1.

#### ***Control 2***

Control 2 indicates that the development should be designed to reduce the flood risk posed by the effects of sea level rise. The proposed development would be above the still water level projected for the year 2100 (1.0 m AHD). Further, all floor and basement levels would be protected from the ingress of flood waters up to and exceeding the FPL (i.e. 2.82 m AHD) and, in fact, would prevent the 2100 PMF flooding from entering the buildings. In addition, all residential buildings are planned to be constructed at the southern end of the site, where the topography is highest. The hotel buildings are planned to be located on the ridge, the highest point possible, in the northern part of the site. The proposed development is therefore designed to reduce the flood risks posed by sea level rise and would satisfy control 2.

#### ***Control 3***

As the residential buildings would be medium/high density residential development and the hotel buildings would be mixed use development, control 3 indicates that the asset life of all buildings would be 100 years. This control therefore requires that none of the buildings be constructed within areas that will be permanently inundated within the next 100 years. All the proposed buildings are located on land above the still water level for the year 2100 (1.0 m AHD) and would thus satisfy control 3.

#### ***Control 4***

No fill is proposed in areas permanently affected by sea level rise through to 2100.

#### ***Control 5***

*The proposed development is high density residential development and mixed use development, which are both identified in*

Table 3 (Table 4 of Part 6 Section 2.10 of the DCP). As no non-habitable rooms, garages, carports, boat sheds, garden sheds or ancillary structures have been included in the design for the proposed development, the minimum floor levels that apply to the residential development are the same as those that apply to the commercial development:

- All habitable floor levels should be above the 1% AEP flood level for year 2100 (2.32 m AHD) plus 0.5 m freeboard (2.82 m AHD). All habitable floors are on the ground floor or the floors above and the ground floor levels range from 3.3 – 8.0 m AHD. Therefore, all habitable floor levels are above the FPL of 2.82 m AHD. In fact, all habitable levels are also above the flood level of the PMF in the year 2100 (3.27 m AHD).
- The basement car parking would need to exclude flood waters up to the FPL (1% AEP flood level in 2100 plus 0.5 m freeboard), which is 2.82 m AHD. The lowest ramps for the driveways entering the basement levels are the northernmost ramps off the porte cochere, which both have ramp crests of 3.3 m AHD. This is above the FPL and the flood level of the PMF in 2100 (3.27 m AHD). Further, the lowest ground floor above the basement levels has a floor level of 3.3 m AHD, which is also above the FPL and the PMF flood level in 2100. Therefore, the basement levels are protected at all potential points of ingress from flood waters up to both the FPL and the PMF flood level using passive flood barriers. The proposed development therefore complies with the minimum floor level for residential basement car parking.
- In the event of a flood, all occupants of the basement levels would be able to evacuate vertically via stairs to the ground floor and above levels, all of which are above the flood level of the 2100 PMF. Residents and hotel guests would be able to shelter in their homes and rooms.

In addition, all building occupants would be able to evacuate onto Trinity Point Drive by foot or by vehicle via routes that are above the flood level of the PMF in 2100 (3.27 m AHD) and therefore provide failsafe evacuation onto Trinity Point Drive. From the roundabout southwards Trinity Point Drive is above 4.0 m AHD and therefore above the PMF flood level for year 2100.

From Trinity Point Drive vehicular evacuation to Morisset is possible via the route identified in Figure 10. The two evacuation centres nominated in the Lake Macquarie City Flood Emergency Sub Plan (June 2013) that are closest to the proposed development are:

- Morisset Golf and Country Club, Dora Street, Morisset
- Morisset Multi-Purpose Centre, 143 Dora Street, Morisset

The evacuation route to these two centres does not dip below the PMF flood level for the year 2100 (Figure 11). Therefore, occupants of the buildings have a failsafe vehicular evacuation route to evacuation centres in Morisset, in addition to failsafe pedestrian evacuation routes to areas above the 2100 PMF flood level both on site (vertical evacuation to upper levels) and off site (Trinity Point Drive).

- A pump-out system will not be required to pump flood waters out of the basement levels as they cannot enter the basement even in a PMF in 2100.
- All unsealed electrical installations will need to be above the FPL (2.82 m AHD). Only the basement levels are below this level and these are protected by passive measures from the ingress of flood waters in all events up to and including the PMF.

#### *Control 6*

As the applicable development meets the minimum requirements in control 5, control 6 does not apply to the proposed development.

## 5. Conclusion

This letter has set out the flood management considerations for the SSD at Trinity Point (Lots 101 and 102 DP 1256630) based on the current LEP and DCP applicable to the site.

The proposed development complies with all of the provisions of both the LEP and the DCP.

Yours faithfully

For Molino Stewart Pty Ltd



Steven Molino BSc BE MIEAust CPeng NPER 3 (civil, environmental) 1053737  
Principal

<https://molinostewart.sharepoint.com/sites/Jobs1301-1400/Shared Documents/1332 Trinity Point Flood Assessment/Reports/Final/1332 Trinity Point Flood Impact Assessment Final.docx>

## References

- Lake Macquarie City Council (2013). Lake Macquarie City Flood Emergency Sub Plan.
- Lake Macquarie City Council (2014). Lake Macquarie Development Control Plan 2014.
- Lake Macquarie City Council (2014). Lake Macquarie Local Environmental Plan 2014.
- Smith, G., Davey, E. and Cox, R. (2014) *Flood hazard*, Technical report 2014/07, Water Research Laboratory, University of New South Wales, Sydney.
- WMAwater (2012). Lake Macquarie Waterway Flood Risk Management Study and Plan.

## **Attachment 1 | Site Survey**

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

## **Attachment 2 | Property Flood Information Summaries**



## Property Flooding Information Summary for Lot 101 DP 1256630, 81 Trinity Point Drive, Morisset Park

**Summary generated:** 12:52PM on 21/01/2022

The following information is provided from the records of the Council pursuant to the *Local Government Act 1993*, in response to your request for details of the possible effects on the specified property (Lot) from flooding, tidal inundation, and predicted sea level rises. For detailed, survey-verified flood information you can apply for a [Flood Certificate or Flood / Tidal Inundation certificate](#) (charges apply).

The **Lake Macquarie waterway (The Lake) Flood Study - 2012** indicates the following flood information for Lot 101 DP 1256630.

### Source of flooding

Lake Waterway

## Current Lake Level (Baseline 1990)

### Lake still water level

0.1m AHD (metres Australian Height Datum)

### 5% probable flood level

1.23m AHD (metres Australian Height Datum)

### 1% probable flood level

1.5m AHD (metres Australian Height Datum)

### Probable Maximum Flood (PMF)

2.45m AHD (metres Australian Height Datum)

### Flood Planning Level

2.36m AHD (metres Australian Height Datum)

## Current Lake Level + 0.4 metres SLR (Sea Level Rise)

### Predicted Lake still water level

0.5m AHD (metres Australian Height Datum)

### 5% probable flood level

1.61m AHD (metres Australian Height Datum)

### 1% probable flood level

1.86m AHD (metres Australian Height Datum)

### Probable Maximum Flood (PMF)

2.81m AHD (metres Australian Height Datum)

### Flood Planning Level

2.36m AHD (metres Australian Height Datum)

## Current Lake Level + 0.9 metres SLR (Sea Level Rise)

**Predicted Lake still water level**

1.0m AHD (metres Australian Height Datum)

**5% probable flood level**

2.1m AHD (metres Australian Height Datum)

**1% probable flood level**

2.32m AHD (metres Australian Height Datum)

**Probable Maximum Flood (PMF)**

3.27m AHD (metres Australian Height Datum)

## Please note

All levels are shown in metres on the Australian Height Datum (m AHD).

All ground levels are measured by LIDAR. Council recommends that you confirm ground levels with a registered surveyor.

Floor levels are based on physical survey levels held in Council records. Council recommends that you confirm existing floor levels with a registered surveyor.

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## Lot information

**Lot details**

Lot 101 DP 1256630

**Minimum Ground Level**

0.55m AHD (metres Australian Height Datum)

**Maximum Ground Level**

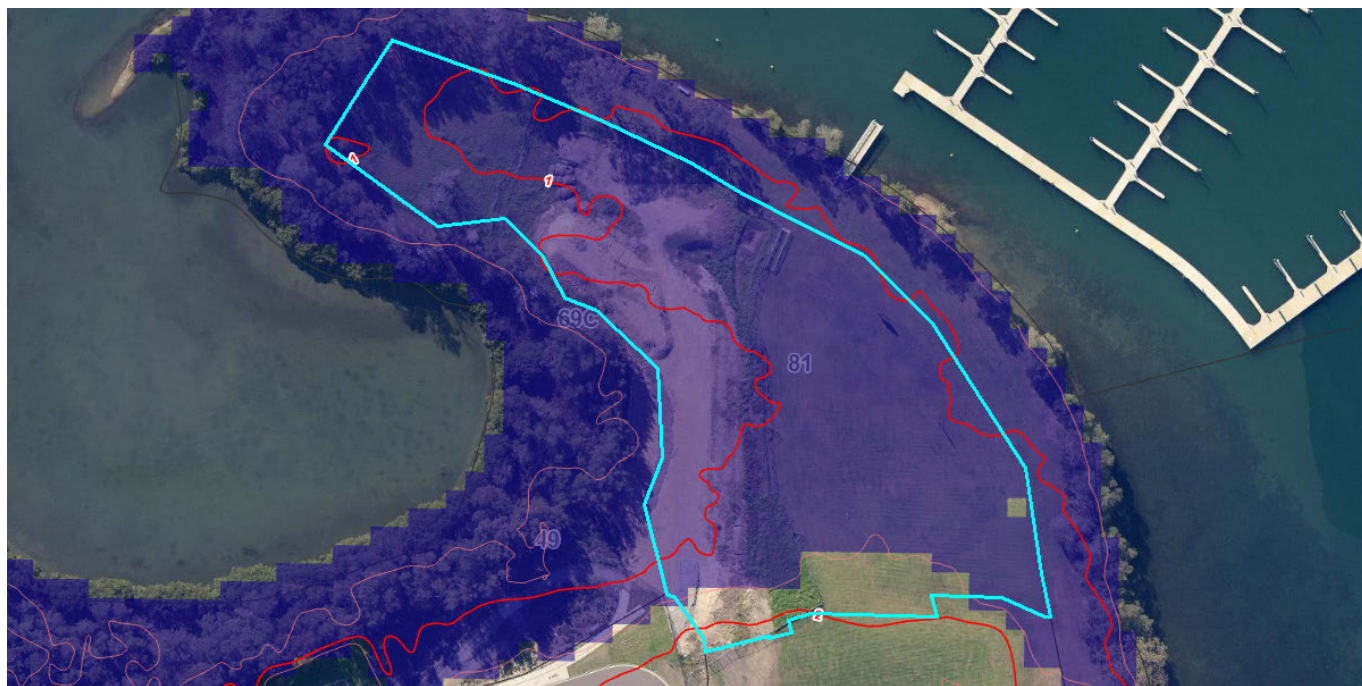
2.18m AHD (metres Australian Height Datum)

**Flood Hazard Classification**

High

If you believe the information shown is incorrect, please [contact us](#).

## Map



## Legend

-  Red lines: contours
-  Cyan line: subject parcel boundary
-  Purple: 1% AEP (1 in 100 year) flood extent

## Definitions

### Australian Height Datum (AHD)

Australian Height Datum refers to the elevation relative to a reference point. In Australia this reference point approximates mean sea level, which is taken as 0.00 metres AHD (Australian Height Datum). Flood levels, ground levels, floor levels, and flood planning levels are shown in metres on AHD (Australian Height Datum).

### Commercial Floor

A building used as a business office or for other commercial or business purposes. (Source: 2004 Standards Australia Glossary of Building Terms).

### Flood Certificate or Flood / Tidal Inundation Certificate

A Flood Certificate (catchment flooding) or Flood/Tidal Inundation Certificate (Lake Macquarie waterway flooding) provides flood and tidal risk/sea level rise information for a parcel of land. It is provided by Council at a fee and includes Council's Flood Planning Level and other development restriction requirements, as well as detailed field survey results showing relative levels of the existing land and floor levels of any buildings on the land.

### Flood Control Lot (Flood Prone Land)

Land identified by Council as being subject to flood related development controls (Codes SEPP 2008).

### Flood Hazard Classification



## Property Flooding Information Summary for Lot 102 DP 1256630, 85 Trinity Point Drive, Morisset Park

**Summary generated:** 12:55PM on 21/01/2022

The following information is provided from the records of the Council pursuant to the *Local Government Act 1993*, in response to your request for details of the possible effects on the specified property (Lot) from flooding, tidal inundation, and predicted sea level rises. For detailed, survey-verified flood information you can apply for a [Flood Certificate or Flood / Tidal Inundation certificate](#) (charges apply).

The **Lake Macquarie waterway (The Lake) Flood Study - 2012** indicates the following flood information for Lot 102 DP 1256630.

### Source of flooding

Lake Waterway

## Current Lake Level (Baseline 1990)

### Lake still water level

0.1m AHD (metres Australian Height Datum)

### 5% probable flood level

1.23m AHD (metres Australian Height Datum)

### 1% probable flood level

1.5m AHD (metres Australian Height Datum)

### Probable Maximum Flood (PMF)

2.45m AHD (metres Australian Height Datum)

### Flood Planning Level

2.36m AHD (metres Australian Height Datum)

## Current Lake Level + 0.4 metres SLR (Sea Level Rise)

### Predicted Lake still water level

0.5m AHD (metres Australian Height Datum)

### 5% probable flood level

1.61m AHD (metres Australian Height Datum)

### 1% probable flood level

1.86m AHD (metres Australian Height Datum)

### Probable Maximum Flood (PMF)

2.81m AHD (metres Australian Height Datum)

### Flood Planning Level

2.36m AHD (metres Australian Height Datum)

## Current Lake Level + 0.9 metres SLR (Sea Level Rise)

**Predicted Lake still water level**

1.0m AHD (metres Australian Height Datum)

**5% probable flood level**

2.1m AHD (metres Australian Height Datum)

**1% probable flood level**

2.32m AHD (metres Australian Height Datum)

**Probable Maximum Flood (PMF)**

3.27m AHD (metres Australian Height Datum)

## Please note

All levels are shown in metres on the Australian Height Datum (m AHD).

All ground levels are measured by LIDAR. Council recommends that you confirm ground levels with a registered surveyor.

Floor levels are based on physical survey levels held in Council records. Council recommends that you confirm existing floor levels with a registered surveyor.

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## Lot information

**Lot details**

Lot 102 DP 1256630

**Minimum Ground Level**

1.34m AHD (metres Australian Height Datum)

**Maximum Ground Level**

9.84m AHD (metres Australian Height Datum)

**Flood Hazard Classification**

High

If you believe the information shown is incorrect, please [contact us](#).

## Map



## Legend



Red lines: contours



Cyan line: subject parcel boundary



Purple: 1% AEP (1 in 100 year) flood extent

## Definitions

### Australian Height Datum (AHD)

Australian Height Datum refers to the elevation relative to a reference point. In Australia this reference point approximates mean sea level, which is taken as 0.00 metres AHD (Australian Height Datum). Flood levels, ground levels, floor levels, and flood planning levels are shown in metres on AHD (Australian Height Datum).

### Commercial Floor

A building used as a business office or for other commercial or business purposes. (Source: 2004 Standards Australia Glossary of Building Terms).

### Flood Certificate or Flood / Tidal Inundation Certificate

A Flood Certificate (catchment flooding) or Flood/Tidal Inundation Certificate (Lake Macquarie waterway flooding) provides flood and tidal risk/sea level rise information for a parcel of land. It is provided by Council at a fee and includes Council's Flood Planning Level and other development restriction requirements, as well as detailed field survey results showing relative levels of the existing land and floor levels of any buildings on the land.

### Flood Control Lot (Flood Prone Land)

Land identified by Council as being subject to flood related development controls (Codes SEPP 2008).

### Flood Hazard Classification

Flood Hazard Classification is related to Flood Control lots defined in the NSW Codes SEPP (State Environmental Planning Policy) 2008. A "High" hazard refers to Flood Control lots that are within a high hazard area as identified in the Council's flood study or floodplain risk management study carried out in accordance with the Floodplain Development Manual. The hazard extent layers determine the extent of the hazard area within the Flood Control lot.

You will need to lodge a Development Application to develop this site. Development on this Lot is not eligible for consideration under the State Environmental Planning Policy (Exempt and Complying Development) 2008 <http://www.onegov.nsw.gov.au/new/agencies/ehc>.

This Lot, or part of the Lot, is expected to be affected by the current estimated 1% AEP lake flood of 1.5 metres AHD. This Lot is expected to be affected by more frequent flooding in the future due to rising sea and lake levels.

If land on the Lot is below 1.0 metres AHD it is expected to be affected by tidal inundation in the future due to rising sea and lake levels.

To help manage current and future flood risks (and tidal inundation), flood-related development controls apply, such as floor height requirements for new buildings. See the Lake Macquarie Development Control Plan (DCP) <https://www.lakemac.com.au/Development/Planning-controls/Local-Planning-Controls#section-4> for a full explanation of conditions for development on Lots affected by lake flooding.

Council's flood information estimates the extent and depth of flooding over the land and is not necessarily an indication of the risk to buildings, which depends on other factors such as floor height, construction methods, and construction materials.

Special Note for Strata Plans and Strata Lots/Units:

- The "Flood Hazard Classification" for a strata lot is the same as the classification for the real property lot (parent property base lot – BL) that the strata is on. This is a direction from the NSW Department of Planning as the CODES SEPP applies to land and strata lots are not technically land but merely spaces defined by structures.
- Flood Planning Areas are allocated for strata lots the same way as Flood Control Lots. If any part of the real property lot is affected by the Flood Planning Area, then all the strata lots will be affected. Council recommends that you engage a registered surveyor to ascertain floor levels for individual strata lots and units.

#### **Flood Level 1%**

The 1% flood level is one that has a 1% chance of occurring in any year, or has the long term average chance of occurring once every 100 years. The term "100-year flood" is really a statistical probability designation stating there is a 1-in-100 chance that a flood this size will happen during any year. Another interpretation could be the "1-in-100 chance flood".

The 1 in 100 year flood does not mean that if a location floods one year, it will definitely not flood for the next 99 years. Nor, if it has not flooded for 99 years, will it necessarily flood this year. Some parts of Australia have received more than one 1% flood in one decade. Lake Macquarie waterway (the Lake) has not experienced a 1% flood since written records began 150 years ago.

The 1% flood is a serious but infrequent event, and is used widely as the risk threshold for flood planning.

#### **Flood Level 5%**

The 5% flood level is one that has a 5% chance of occurring in any year, or has the long term average chance of occurring once every 20 years. This is a statistical probability, and does not mean that if a location floods one year, it will definitely not flood for the next 19 years.

The 5% flood is less serious but more frequent than the 1 in 100 year flood.

#### **Flood Planning Level (FPL)**

The Flood Planning Level (FPL) is the risk threshold set for new buildings in flood-affected areas, and is usually applied as a minimum floor level. There are different Flood Planning Levels for various types of development, e.g. habitable floors, commercial floors, non-habitable floors, industrial floors, unit floors, medium density floors, sensitive use floors.

If there is more than one source of flooding that affects the lot (e.g. Lake or Catchment flooding) Council makes an assessment on a case-by-case basis to determine which Flood Planning Level applies. In general, the highest level applies.

The Flood Planning Level shown in this particular Information Summary is relative to single residential (habitable) buildings or commercial buildings.

### **Floor levels**

Floors of buildings as levelled by a surveyor on the date as shown. Floors are levelled and recorded as metres on the Australian Height Datum (m AHD).

### **Freeboard**

Freeboard is included in the Flood Planning Level to allow a safety margin for unpredictable factors such as waves, localised hydraulic effects, blockages, flood debris, and uncertainties in the computer flood modelling. A freeboard of 500mm (millimetres) is typically applied to the 1% flood level for residential / commercial developments.

### **Ground levels**

All ground levels are measured by LIDAR and are recorded as metres on the Australian Height Datum (m AHD)

### **Habitable Floor**

A room used for normal domestic activities including a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. (Source: 2015 Building Code of Australia Vol 2).

### **Industrial Floor**

A building in which a handicraft or process for the production, assembly, alteration, repair, packing, finishing, or cleaning of goods or produce is carried on for trade, sale, or gain. (Source: Building Code of Australia Class 8 and 2004 Standards Australia Glossary of Building Terms).

### **LIDAR**

Light detection and ranging (LIDAR) is a remote sensing technology that uses laser pulses to generate data about the physical layout of terrain and landscape features including the elevation of buildings, trees, and other objects on the ground.

LIDAR data is typically accurate to an elevation of plus or minus 0.15m (metres).

### **Minimum and Maximum Levels**

Flood levels on a sloping lot may vary due to the difference between the highest and lowest parts of the land. If your lot has a slope, two predicted flood levels may be shown corresponding to the high and low parts of that lot. Where the lot is flat, only one flood level is shown.

### **Minimum Ground Level**

Ground level at the lowest point on the lot.

### **Maximum Ground Level**

Ground level at the highest point on the lot.

### **Non-habitable Floor**

A domestic building or area of a building such as garage, workshop, storeroom, laundry, water closet, bathroom, corridor, hallway, clothes drying room, lobby, pantry, and other spaces of a specialised nature occupied neither frequently nor for extended periods. (Source: 2015 Building Code of Australia Vol 2).

### **Probable Maximum Flood (PMF)**

The Probable Maximum Flood is the largest flood that could feasibly occur. However, it is an extremely rare event. Despite this, some floods in Australia have approached the PMF (Probable Maximum Flood). Council provides the PMF level on this Property Flooding Information Summary, if it is available, to indicate the full extent of risk, even if the chance is very small.

Some essential services (such as hospitals) and retirement housing, are required to locate above the PMF (Probable Maximum Flood) to avoid any risk from flooding.

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- Floor levels, where shown, are determined from the information available to Council at the date of issue. These levels are indicative only and to confirm them, you would need to engage a registered surveyor at your own cost, or apply to Council for a Flood Certificate or Flood/Tidal Inundation Certificate. A fee applies to this service.
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### 6. *Assignment*

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### 7. *Entire agreement*

These terms and conditions, constitute the entire agreement between you and Council in relation to your use of this website, and supersede all previous agreements in respect of your use of this website.

### 8. *Laws of NSW to apply*

These terms and conditions are governed by the laws of the State of New South Wales, Australia, and any disputes concerning these terms and conditions will be subject to the non-exclusive jurisdiction of the Courts of that State.

### **Attachment 3 | Compliance Table**

Table 4. Compliance table identifying flood-related issues and where they are addressed in this report

| Issue Addressed                                                                                                                                                                                                                                                    | Section of report addressing issue                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p align="center"><b>DEPARTMENT OF PLANNING AND ENVIRONMENT</b></p> <p align="center"><b>Pre-lodgement advice email (29 March 2022)</b></p>                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                             |
| Identify and describe any on-site flood impacts and risks associated with the proposed development                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Section 2.2</li> <li>• Section 2.3</li> <li>• Section 4</li> </ul>                                                                                                                                                                                                                                                                 |
| Identify changes to flood risk both on-site or off-site including sea level rise and identify any mitigation and management measures to minimise the impacts of flooding on the proposed development                                                               | <ul style="list-style-type: none"> <li>• Section 2.2</li> <li>• Section 2.3</li> <li>• Section 4</li> <li>• The project will have all habitable floor levels above the 2100 PMF level</li> <li>• The basement will be protected from water ingress above the 2100 PMF level</li> <li>• There will be flood free access from the site to Morisset in the 2100 PMF</li> </ul> |
| <p align="center"><b>MINISTERIAL DIRECTION 4.3 Flood Prone Land</b></p>                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                             |
| 4. A planning proposal must include provisions that give effect to and are consistent with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005 (including the Guideline on Development Controls on Low Flood Risk Areas). | This report has been prepared to be consistent with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005                                                                                                                                                                                                                            |
| 5. A planning proposal must not rezone land within the flood planning areas from Special Use, Special Purpose, Recreation, Rural or Environmental Protection Zones to a Residential, Business, Industrial, Special Use or Special Purpose Zone.                    | No such rezoning is proposed. See Section 4.1                                                                                                                                                                                                                                                                                                                               |
| 6. A planning proposal must not contain provisions that apply to the flood planning areas which:                                                                                                                                                                   | The site is not a floodway. See Section 2.3                                                                                                                                                                                                                                                                                                                                 |
| a) permit development in floodway areas                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                             |
| b) permit development that will result in significant flood impacts to other properties                                                                                                                                                                            | No flood impacts on other properties. See Table 2 - Clause 2(b) and Clause 3(a)                                                                                                                                                                                                                                                                                             |
| c) permit a significant increase in the development of that land                                                                                                                                                                                                   | No significant increase of development is proposed in the flood planning area. See Section 3                                                                                                                                                                                                                                                                                |
| d) are likely to result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services, or                                                                                                              | No increases in government flood mitigation spending would be required. See Table 2 - Clause 2(b) and Clause 3(a), Section 4.2 - Control 5                                                                                                                                                                                                                                  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| e) permit development to be carried out without development consent except for the purposes of agriculture (not including dams, drainage canals, levees, buildings or structures in floodways or high hazard areas), roads or exempt development.                                                                                                                                                                                                                                                | The planning proposal does not permit development to be carried out without development consent                                                                                                                                                                                                             |
| 7. A planning proposal must not impose flood related development controls above the residential flood planning level for residential development on land, unless a relevant planning authority provides adequate justification for those controls to the satisfaction of the Director-General (or an officer of the Department nominated by the Director-General).                                                                                                                               | The planning proposal does not impose additional flood-related development controls for residential development<br><br>Section 4.2 - Control 5                                                                                                                                                              |
| 8. For the purposes of a planning proposal, a relevant planning authority must not determine a flood planning level that is inconsistent with the Floodplain Development Manual 2005 (including the Guideline on Development Controls on Low Flood Risk Areas) unless a relevant planning authority provides adequate justification for the proposed departure from that Manual to the satisfaction of the Director-General (or an officer of the Department nominated by the Director-General). | This report has been prepared to be consistent with the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005                                                                                                                                                            |
| <b>NSW STATE EMERGENCY SERVICE</b><br><b>Pre-lodgement advice letter (28 April 2022)</b>                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                             |
| Zoning should not enable development that will result in an increase in risk to life, health or property of people living on the floodplain                                                                                                                                                                                                                                                                                                                                                      | As all habitable floors, basement levels and the flood evacuation route are above the 2100 PMF, none of these risks will increase now or in the future. See Table 2 - Clause 2(b) and Clause 3(a)                                                                                                           |
| Risk assessment should consider the full range of flooding, including events up to the Probable Maximum Flood (PMF) and not focus only on the 1% AEP flood                                                                                                                                                                                                                                                                                                                                       | The development has been designed to be unaffected by floods in the 2100 PMF. See Section 2, Section 4.2 - Control 5                                                                                                                                                                                        |
| Risk assessment should have regard to flood warning and evacuation demand on existing and future access/egress routes. Consideration should also be given to the impacts of localised flooding on evacuation routes                                                                                                                                                                                                                                                                              | Flood evacuation should not be necessary because the development is protected from the PMF but there is an evacuation route from the site which is flood free in the PMF. The route runs along a ridge so should not be highly susceptible to localised flooding. See Table 2 - Clause 2(c) and Clause 2(d) |
| In the context of future development, self-evacuation of the community should be achievable in a manner which is consistent with the NSW SES's principles for evacuation                                                                                                                                                                                                                                                                                                                         | Flood evacuation should not be necessary but the route is flood free in a PMF in the year 2100. Table 2 - Clause 2(c), Section 4.2 - Control 5                                                                                                                                                              |
| Future development must not conflict with the NSW SES's flood response and evacuation strategy for the existing community                                                                                                                                                                                                                                                                                                                                                                        | Flood evacuation should not be necessary but the route is flood free in a PMF in the year 2100. Table 2 - Clause 2(c), Section 4.2 - Control 5                                                                                                                                                              |
| Evacuation must not require people to drive or walk                                                                                                                                                                                                                                                                                                                                                                                                                                              | Flood evacuation should not be necessary but the route is flood free in a                                                                                                                                                                                                                                   |

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| through flood water                                                                                                                                                                                  | PMF in the year 2100. Table 2 - Clause 2(c), Section 4.2 - Control 5                                                                                     |
| Development strategies relying on deliberate isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation                              | Flood evacuation should not be necessary but the route is flood free in a PMF in the year 2100. Table 2 - Clause 2(c), Section 4.2 - Control 5           |
| Development strategies relying on an assumption that mass rescue may be possible where evacuation either fails or is not implemented are not acceptable to the NSW SES                               | Rescue would never be necessary because the site will be accessible in a PMF with climate change in 2100. Table 2 - Clause 2(c), Section 4.2 - Control 5 |
| The NSW SES is opposed to the imposition of development consent conditions requiring private flood evacuation plans rather than the application of sound land use planning and flood risk management | Flood evacuation should not be necessary but the route is flood free in a PMF in the year 2100. See Section 4                                            |