MEMO

ARCADIS Design & Consultancy for natural and built assets

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| **Date** | 10/10/2022 |
| **To** | Daniel Blair (Hi-Quality Group) |
| **From** | Melanie Gostelow (Arcadis) |
| **Copy to** | Claire Hodgson (Arcadis), Samantha Oyston (Arcadis) |
| **Subject** | Prestons Waste Treatment Facility – Additional Flooding Assessment |

## 1. Introduction

Arcadis understands that Hi-Quality is in the process of undergoing a State Significant Development application for the Prestons Waste Treatment Facility (SSD application no. 9346594) located at 9-13 Whyalla Place, Prestons NSW (the Site).

The application seeks to permit the receival and treatment of 270,000 tonnes per annum (tpa) of bulk soils, sediments and sludges and liquid waste at the Site. To achieve this, works including an extension to the existing warehouse building and office, internal fit out, construction of weighbridge and weighbridge office, a new driveway, and HVAC system installation will be undertaken at the Site.

Golders Associates (Golders) have previously undertaken a Flooding and Stormwater Management Study of the Site to support the Environmental Impact Assessment based on the Department of Planning and Environment (DPE) Secretary's Environmental Assessment Requirements (SEARs) for the construction and operation of the proposed waste treatment facility.

In response to the exhibition of the SSD application, Liverpool City Council has responded with flood and catchment considerations dated 20 December 2021 (see attachment). To respond to Council's SSD application comments, this memo has been prepared to provide further information on the flood conditions of the Site and the proposed stormwater management strategy.

## 2. Flood Controls

The Golders August 2021 Flooding and Stormwater Management Study provides details of the flood assessment undertaken for the Site and proposed redevelopment. Both Council and Golders have indicated that the Site is located outside the 1% Annual Exceedance Probability (AEP) flood extent which has an elevation of 23.1 metres Australian Height Datum (m AHD) in the vicinity of the Site.

As the Site is located outside of the 1% AEP flood extent, but within the Probable Maximum Flood (PMF) extent, it has been classified on Council's online mapping as a low flood risk area with a flood planning level of the 1% AEP plus 0.5 metre freeboard. Based on previous advice from Council, Golders adopted this flood planning level of 23.6m AHD and noted it as consistent with the existing finished floor level at the Site.

However, Council's SSDA application comments indicate they consider the proposed redevelopment to be a "sensitive and hazardous development" requiring a flood planning level of the PMF event, noted as 24.5m AHD at the Site. Council also states:

- The structure needs to be constructed from flood-compatible building components for areas below the PMF
- An engineer's report is required to certify that the structure can withstand the force of floodwater, including debris and buoyancy up to and including the PMF.

Council's comments align with the "sensitive uses & facilities" land use risk category, and low flood risk category requirements outlined in Council's DCP. However, given that the proposed redevelopment is primarily a change in use, with no significant impact on flood risk, we suggest it is more appropriate to consider the redevelopment against the "Concessional Development" land use risk category.

Council's DCP states the "Concessional Development" includes a change of use, which does not increase flood risk having regard to property damage and personal safety. Council's floor level requirements for low flood risk and concessional development includes:

> *Floor levels to be equal to or greater than the minimum requirements normally applicable to this type of development. Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level is to be as high as practical, and, when undertaking alterations or additions no lower than the existing floor level.*

The proposed redevelopment aims to maintain the existing building floor levels and ensure any building extensions remain above the 1% AEP flood level of 23.1m AHD. Within the building area, storage pits may be located below the building floor level, however these will not be accessible to personnel with appropriate measures in place to prevent falls into these areas.

Site survey information indicates the existing warehouse floor levels range from 23.5 to 23.6m AHD. Any extension to the existing buildings or modifications of the Site fences/exterior walls will be constructed with flood-compatible building components below the PMF level, with an engineer's report to be provided demonstrating they can withstand the forces of floodwater, debris and buoyancy up to and including the PMF level. Any on-site parking will be located above the 1% AEP flood level of 23.1m AHD.

The Golders report illustrates the Site is not inundated in the 9-hour 1%, 0.5% and 0.2% AEP flood events. However, access roads in the local area will be inundated. Therefore a shelter-in-place strategy will be adopted for the Site during any flood events. For site personnel, the existing second level office space is located above the PMF level and will provide refuge during a flood event. Flood emergency management will be incorporated into the Fire and Incident Management Plan for the Site.

### 3. PMF Flood Conditions

The Flooding and Stormwater Management Study (Golders, 2021) utilised Council's TUFLOW flood model of the area to undertake a flood assessment of the proposed redevelopment. Flood mapping of the peak flood depth was provided for the 2 hour PMF flood event under existing and post-development conditions.

Arcadis has undertaken additional flood modelling and flood mapping of the PMF event to provide further assessment of the hazard conditions of this extremely rare event. Given that the size of the larger Cabramatta Creek catchment is less than 1,000 square kilometres, the annual exceedance probability of the Probably Maximum Precipitation is estimated to be $10^{-7}$, which equates to a probability of less than once in 10,000,000 years.

Utilising Golders flood model, Arcadis has further refined the building representation of the Site and neighbouring properties based on recently obtained topographic survey (2021) and aerial imagery (2022). The existing and proposed fences/exterior walls of the Site have also been incorporated.

The revised TUFLOW flood model was rerun for the 2 hour PMF flood event to produce additional flood hazard mapping of the Site. The existing and post-development conditions flood mapping has been provided in the attachment as Figures A1 to B2.

During the PMF event an overland flow path forms along Whyalla Place draining to the north. The peak flood depths within the Site are generally 1.00m to 1.25m deep with no significant impact of the proposed redevelopment. Peak flood depths along Whyalla Place are deeper than the Site reaching 1.6m at the northern boundary of the Site.

The flood hazard has been defined based on the Australian Institute of Disaster Resilience general flood hazard classification illustrated below in Figure 1. The flood hazard within the Site is typically H3 being unsafe for vehicles, children and the elderly. Under these conditions the Site is considered a low hazard to adults. The flood hazard increases approaching the western Site boundary with Whyalla Place.

Along Whyalla Place the flood hazard increases to H5 which is considered unsafe for vehicles and all people. A shelter-in-place strategy is appropriate for the Site which can be accommodated by the existing second level office space.

Given that within the Site the depth velocity product is less than 1m$^2$/s, it is considered a low hazard risk to structures. It is recommended that a structural assessment is undertaken to determine the suitability of the existing and proposed fences/exterior walls given the PMF conditions of the Site.

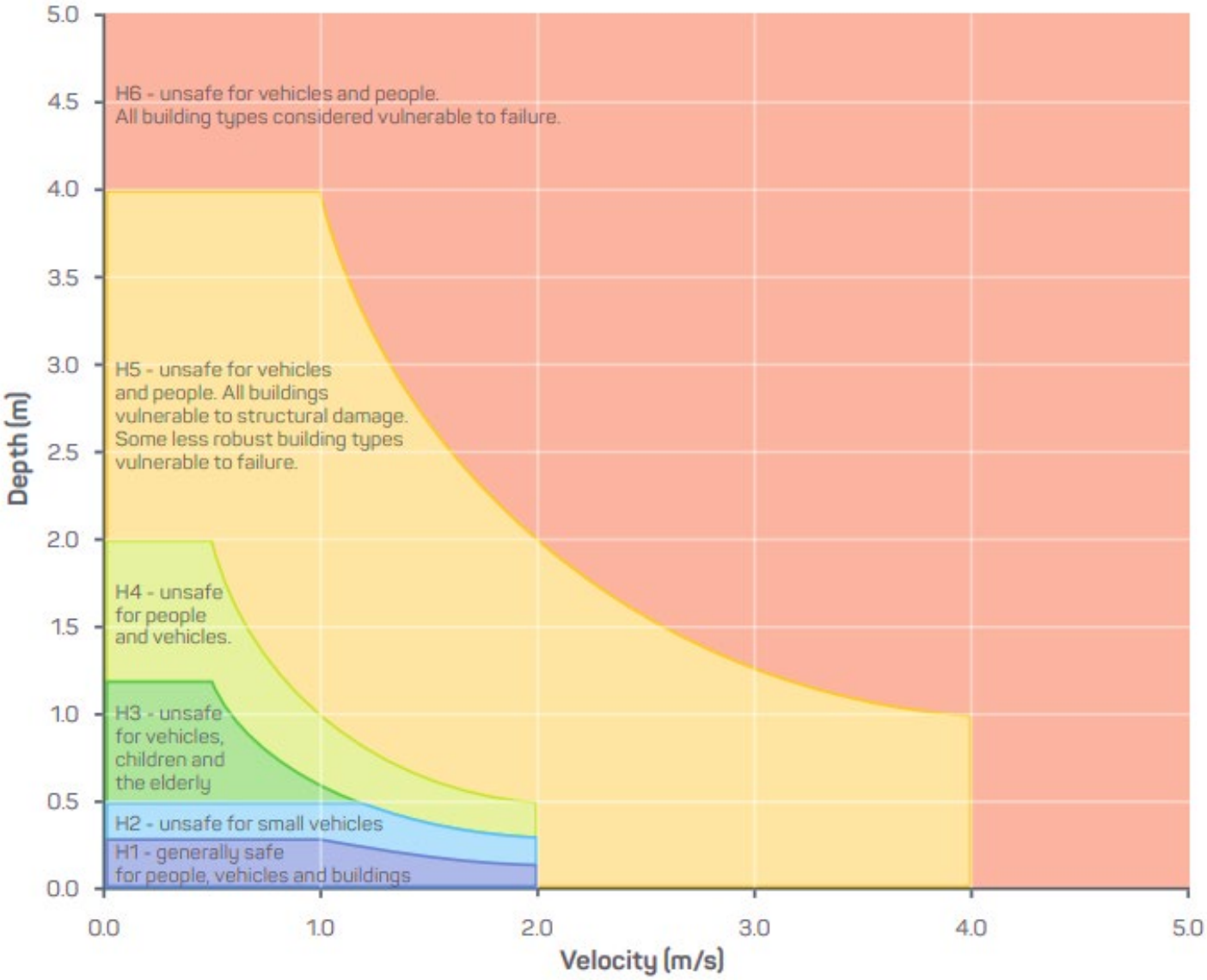


**Figure 1**: General Flood Hazard Categorisation

## 4. Stormwater and Leachate Management System

Council's SSDA application comments refer to wastewater generated from the Site, and stormwater runoff leaving the Site. The proposed stormwater management and leachate management plans for the Site are outlined in the Flooding and Stormwater Management Study (Golders, 2021), Screening Level Health Impact Assessment (Golders, 2021), and the Fire and Incident Management Report (Core Engineering Group, 2021).

The Site proposes to have dedicated and independent stormwater and leachate collection systems, which would include:

- All internal pits and drainage points within building areas will be sealed and/or removed, and replaced by a dedicated leachate collection system.
- All materials will be stored on a sealed and bunded surface to minimise the extent of potential spills.
- All building doorways will be bunded with drive-over bunding provided at the truck entry and exit locations.
- Water from the leachate collection system will be directed to the proposed onsite wastewater treatment plant.

Further information on the proposed leachate collection system is detailed in the Fire and Incident Management Report (Core Engineering Group, 2021).

Surface water runoff from the carpark area is proposed to be drained via the existing site infrastructure to Council's network. Where required the stormwater drainage network may be modified within the Site to ensure the stormwater and leachate collection system remain separated.

Stormwater quality requirements fall under Part 1, Section 6 Water Cycle Management of Council's DCP. However, these requirements apply only to developments that involve additional buildings or hard surface areas. Table 2 of the Flooding and Stormwater Management Study (Golders, 2021) illustrates that the proposed redevelopment replaces existing hard surface areas with building extensions and does not result in a significant increase in impervious areas. Council controls relating to water quality improvements are therefore not considered to be applicable to the proposed redevelopment.

## 5. Summary

In response to Liverpool City Council comments on the proposed redevelopment of the Site, this memo provides additional information on the flood conditions of the Site and the proposed stormwater management strategy.

The site is located beyond the 9-hour 1%, 0.5% and 0.2% AEP flood extents however it is inundated during the extremely rare PMF flood event. During the 2 hour PMF event, the flood conditions within the Site are generally considered to be unsafe for vehicles, children and the elderly, and low hazard to adults and structures. The proposed redevelopment does not significantly impact flood behaviour within or immediately surrounding the Site.

Whilst the Liverpool DCP is not applicable to the State Significant Development application, it has been considered. Given that the proposed redevelopment is a change of use and includes building extensions, we consider it appropriate to consider it against the "Concessional Development" land use risk category of the DCP.

The proposed redevelopment will aim to:

- maintain the existing building floor levels, and ensure any building extensions remain above the 1% AEP flood level of 23.1m AHD.
- Any extension to the existing buildings or modifications of the Site fences/exterior walls will be constructed with flood-compatible building components below the PMF level, with an

engineer's report to be provided demonstrating they can withstand the forces of floodwater, debris and buoyancy up to and including the PMF level.
- Any on-site parking will be located above the 1% AEP flood level of 23.1m AHD.

With regards to general stormwater management, within the building areas, a dedicated leachate collection system will collect and treat any runoff. Given that the proposed redevelopment is not significantly increasing the imperviousness of the Site, additional water quality treatment for areas outside the building footprint is not proposed.

## 1. Attachments

1) Liverpool City Council – Flood and Catchment Considerations
2) Liverpool City Council – Flood Certificate
3) PMF Flood Mapping

LIVERPOOL CITY COUNCIL

Our Ref: SSD1-24/2020/A
Contact: Kevin Kim
Ph: 8711 7896
Date: 20 December 2021

Department of Planning and Environment
Industry Assessments
Locked Bag 5022
**PARRAMATTA NSW 2124**

By email: emma.barnet@planning.nsw.gov.au

Attention: Emma Barnet

**Re: EXHIBITION OF STATE SIGNIFICANT DEVELOPMENT APPLICATION SSD-9346594**

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|---|---|
| **PROPOSAL:** | **LOT 103 DP 866530** |
| **ADDRESS:** | **9 WHYALLA PLACE, PRESTONS NSW 2170** |

Thank you for the opportunity to comment on the proposed State Significant Development (SSD) for the construction and operation of a Waste Treatment Facility at 9 Whyalla Place, Prestons NSW 2170.

Council has reviewed the documentation on the NSW Department of Planning, Industry and Environment's website with respect to this application, particularly with regards to the applicant's response to submissions, and request that the following matters are considered in the assessment and determination of the SSD.

## FLOOD AND CATCHMENT CONSIDERATIONS

1. The proposed development site is located within the Maxwells Creek catchment. The site is not affected by flooding under 1% Annual Exceedance Probability (AEP) event. However, it is affected by the Probable Maximum Flood (PMF) event.

   As per NSW Government updated flood-prone land package (commenced on 14 July 2021) and Council's Development Control Plan, the proposed waste treatment facility is considered as sensitive and hazardous development. The flood planning level for a sensitive and hazardous development is the Probable Maximum Flood (PMF) level, which is 24.5m AHD. However, the submitted design drawings indicate that the ground floor level of the proposed waste treatment facility is 23.2m AHD, which is much lower than the required level.

   Therefore, the following matters relating to flooding shall be satisfactorily addressed by the applicant in any Application for the development:

   - All floor levels shall be no lower than the Probable Maximum Flood (i.e., 24.5m Australian Height Datum).
   - The structure shall be constructed from flood compatible building components below the Probable Maximum Flood (i.e., 24.5m Australian Height Datum).

- An engineer's report shall be required to certify that the structure can withstand the forces of floodwater including debris and buoyancy up to and including the Probable Maximum Flood (i.e., 24.5m Australian Height Datum).
- Wastewater generated from the site including petroleum and other hazardous chemicals shall not be discharged into downstream site or Council's stormwater system. Appropriate pollution control measures shall be provided to collect, treat and dispose hazardous pollutants from the site.
- On-site water quality treatment facilities shall be provided to ensure that stormwater runoffs leaving the site comply with Council's water quality standards. The treatment facilities shall capture all gross pollutants and liquid contaminants from the stormwater before discharging it to downstream or Council stormwater system. Water quality treatment works shall be designed using MUSIC modelling software and the water quality treatment system performance shall be verified using Council's MUSIC link.

## TRAFFIC PLANNING CONSIDERATION

2. **Traffic Generation Potential**

Approximately 29,385 trucks are expected to use the facility per annum, which is equivalent to 565 trucks per week or 81 trucks per day.

It is expected that 48 and 62 vehicle movements will be generated during the AM and PM road network peak hours.

All the vehicles generated from the subject site will use the intersection of Whyalla Road/Jedda Road. It is noted that there is an existing access to the intersection, opposite to Whyalla Road, which is not modelled in SIDRA. In addition, the SIDRA model is to use the intersection gap acceptance value for heavy vehicle instead of default value for a light vehicle.

Consideration is to be given to provide intersection treatments at the Jedda Road/Whyalla Road intersection to improve road safety, particularly for truck movements.

3. **Car Parking Provision**

A total of 40 on-site car parking spaces are proposed, which includes 1 accessible parking space. No visitor parking is provided on the site. The car parking provision is less than the required 50 spaces according to Liverpool Council DCP.

Therefore, an Operational Traffic Management Plan (OPTM) should be prepared by an accredited practitioner and submitted to Council's Traffic and Transport Section for review as part of the development consent conditions. The OPTM is to include measures to manage traffic and parking impacts of the proposed day to day use and ensure safe vehicle movements on the subject site as well as surrounding roads.

**ANNEXURE TO SECTION 10.7(5)**
**CERTIFICATE**

LIVERPOOL CITY COUNCIL

Issue Date: 13/07/2022

Issue No: 2029178

File No: 2022/0175

Premises at Lot 103 DP 866530
Wyalla Place Prestons

Further to the advice contained in the Section 10.7(2) Certificate and on the basis of the latest information available to the Council:

1. the maximum calculated level of the probable maximum flood (PMF) in the vicinity of your property in metres AHD is **24.6.**

2. the maximum calculated level of the 1% annual exceedance probability flood (previously referred to as the 1 in 100 year) in the vicinity of your property in metres AHD is **23.1.**

3. the maximum calculated level of the 2% annual exceedance probability flood (previously referred to as the 1 in 50 year) in the vicinity of your property in metres AHD is **23.1.**

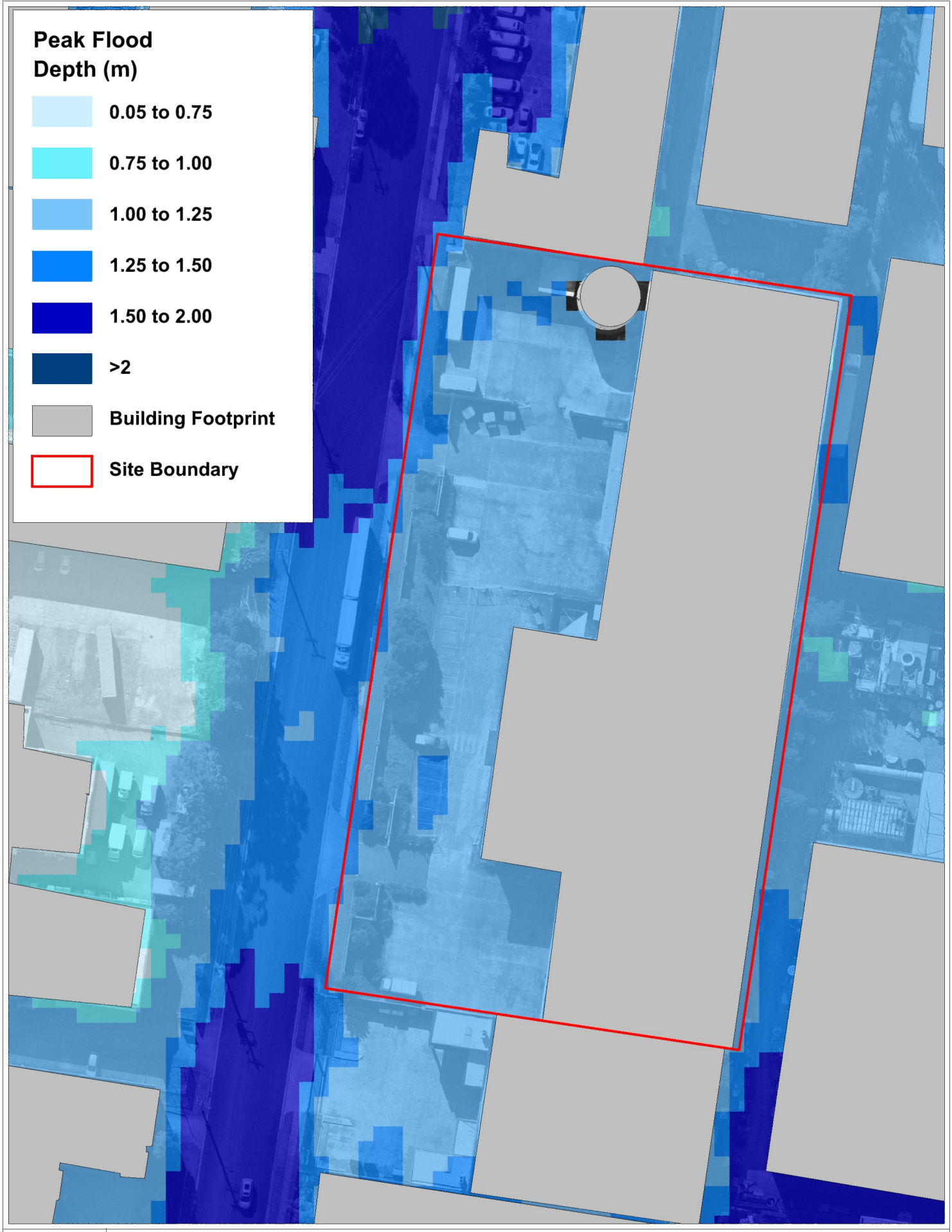
4. the maximum calculated level of the 5% annual exceedance probability flood (previously referred to as the 1 in 20 year) in the vicinity of your property in metres AHD is **23.0.**

The Council does not possess accurate information on the natural surface levels of individual allotments or on constructed building levels, and these should be established by private survey to ascertain their relationship to the above flood levels.

Flood levels are obtained from **Cabramatta Creek Flood Study and Basin Strategy Review - September 2011**

Name of Assessor: **W. Siripala**

Signature:

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|---|---|---|
| Figure: **A-1** | Title: | **Existing Conditions**<br>**2 hour Probable Maximum Flood Event - Peak Flood Depths** |
| Rev: **A** | N | 0 12.5 25m<br>Approx. Scale |
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| Figure: **A-2** | Title: | **Existing Conditions**<br>**2 hour Probable Maximum Flood Event - Flood Hazard** |
| Rev: **A** | N | 0 12.5 25m<br>Approx. Scale |
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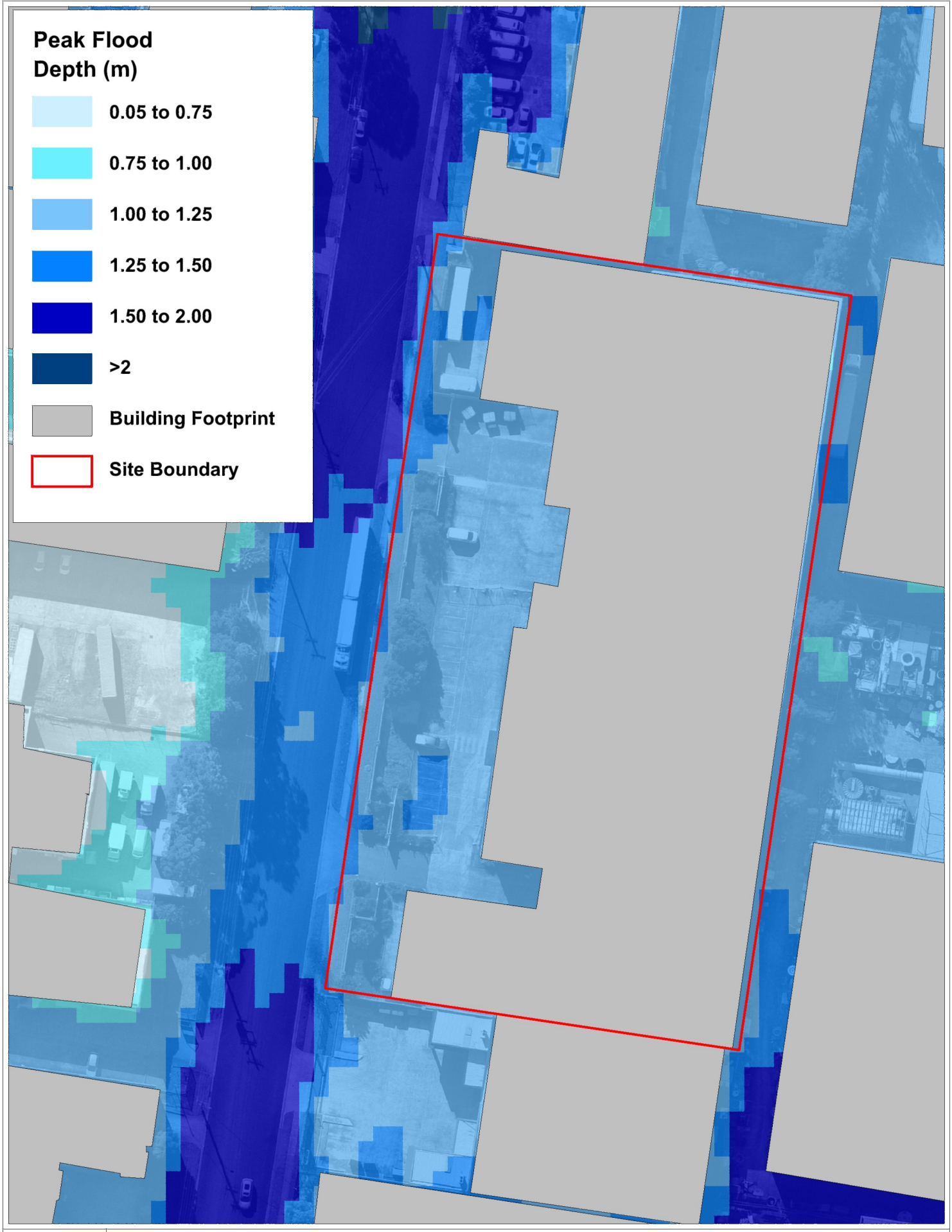


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| Figure: **B-1** | Title: | **Developed Conditions**<br>**2 hour Probable Maximum Flood Event - Peak Flood Depths** |
| Rev: **A** | N | 0 12.5 25m<br>Approx. Scale |
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| Figure: **B-2** | Title: | **Developed Conditions**<br>**2 hour Probable Maximum Flood Event - Flood Hazard** |
| Rev: **A** | N | 0 12.5 25m<br>Approx. Scale |
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