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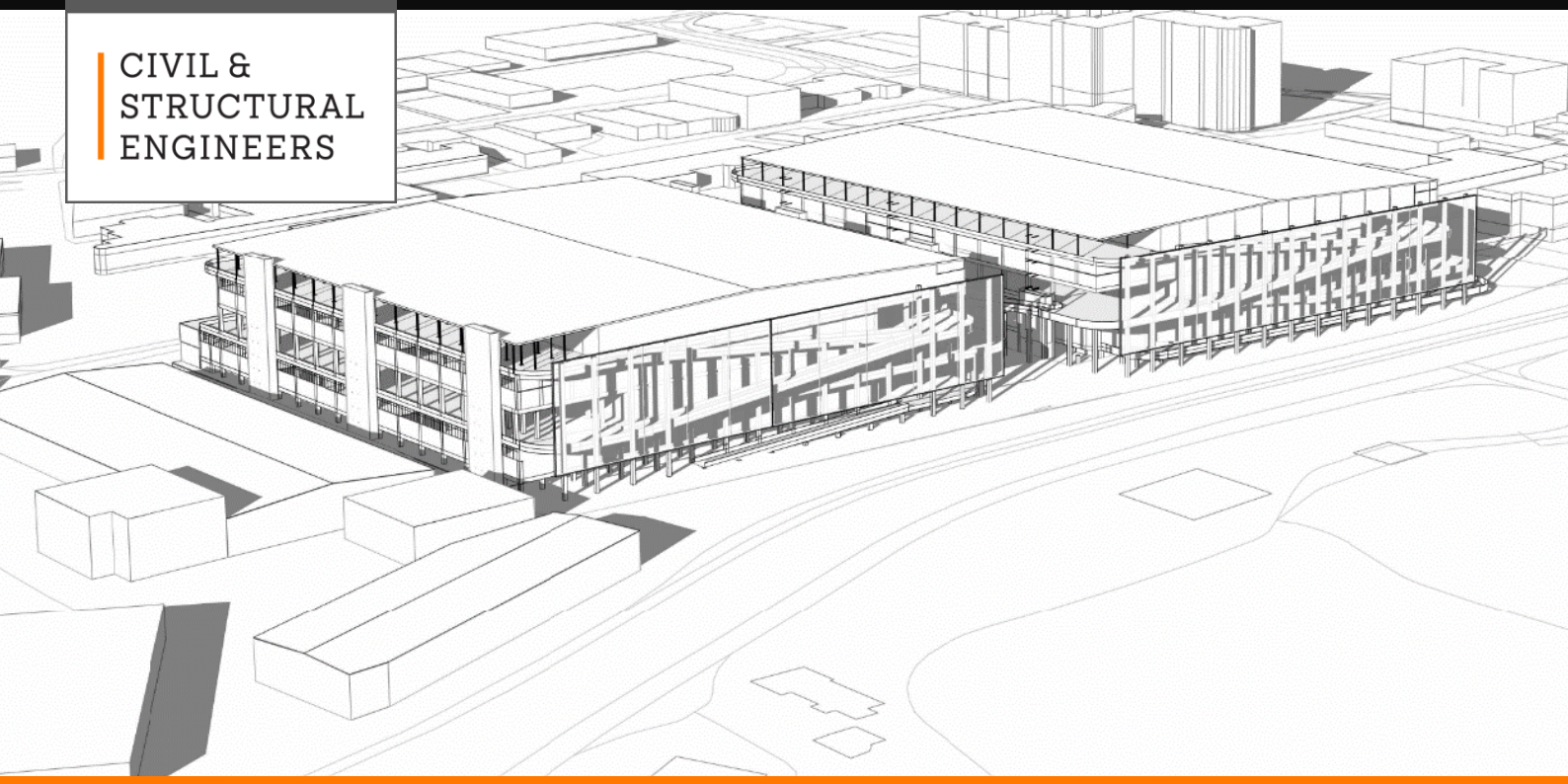

CIVIL ENGINEERING REPORT & WSUD STRATEGY FOR PLANNING PROPOSAL

DEVELOPMENT SITE

LOGOS MASCOT QF1 & QF2
263-273 & 273A COWARD ST & 76-82 KENT RD
MASCOT, NSW

Prepared for:

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1 INTRODUCTION & SCOPE

Costin Roe Consulting Pty Ltd has been commissioned by Perpetual Corporate Trust Limited as the trustee of the LMLP 1 and 2 Trust to prepare this *Civil Engineering Report & WSUD Strategy* to accompany a Planning Proposal to amend the Bayside Local Environmental Plan 2021 to increase the maximum floor space ratio of the site from 1.2:1 to 2:1 (or additional 76,018m2) and permit additional land use activities including Office Premises, Cafe or Restaurant, Recreation Facility (Indoor) and Recreation Facility (Outdoor) under Schedule 1. The amendments to the FSR would enable the redevelopment of the site to deliver critically needed industrial floor space close to Sydney Airport, Port Botany and the Sydney Central Business District (CBD). The additional land use activities are proposed to activate the Coward Street frontage and provide amenity for on-site employees and the locality.

The site is generally rectangular in shape and has a total area of approximately 95,022.6m^2. The site comprises allotments at:

- 263-273 Coward Street
- 273A Coward Street
- 76-82 Kent Road

This report provides a summary of civil engineering characteristics of the development site and technical considerations to confirm that increasing the FSR of the land is feasible and that a strategy exists that could allow future industrial development to occur on the land. The content in this report provides potential solutions and framework which could be integrated into future, more detailed, State Significant Development or Local Council Development Applications and assessments.

This report provides an assessment of the civil engineering characteristics of the development site and technical considerations of the following aspects:

- Earthworks & Geotechnical;
- Roads and Access;
- Water Sensitive Urban Design (WSUD) and Water Cycle Management Strategy (WCMS).

The WCMS comprises several key areas of stormwater and water management which are provided below. These key areas have been established with the aim to reduce impacts from the development on the surrounding environment and neighbouring properties. The water cycle management strategy identifies the management measures required to meet the targets set. The key water cycle management areas assessed in this report are:

- Storm Water Quantity;
- Storm Water Quality;
- Water Supply and Reuse;
- Flooding; and
- Erosion and Sediment Control

A concept design has been prepared by Lacoste + Stevenson Architects and Paddock Studio (on behalf of the Proponent) which has informed the preparation of this engineering analysis.

2 DEVELOPMENT SITE

2.1 Location

The proposed development is located in the suburb of Mascot between Coward Street, Airport Drive and Kent Road, as shown in **Figure 2.1**.

Access to the site is available from the Coward Street and Kent Road frontages on the north and east of the property, respectively. Sydney Kingsford Smith Airport and the Alexandra Canal are notable locality features present in close proximity to the proposed development.

Figure 2.1 Locality Plan (Urbis)

2.2 Existing Site

The proposal applies to land at 263-273 & 273a Coward St & 76-82 Kent Rd, Mascot being Lot 100 & 101/DP12277278, Lot 3/DP230355 and Lot 5/DP1194564. The subject site is located on the northern side of Airport Drive, and south of Coward Street within the Bayside Local Government Area (LGA), and is zoned E4 General Industrial.

The site currently comprises several industrial warehouse facilities with associated vehicle circulation pavements and car parking. Existing warehouse floor levels vary between RL2.60 and RL3.30. The Kent Road cul-de-sac is at around RL3.60, whilst the Coward Street levels generally fall from East (at RL 2.86) to West (at RL1.28). An open stormwater conveyance channel owned by Sydney Water directly borders the southern boundary of the site.

2.3 Indicative Concept Plan

The Proponent is seeking to amend the Bayside Local Environmental Plan 2021 to increase the maximum floor space ratio of the site from 1.2:1 to 2:1 (or additional 76,018m2) and permit additional land use activities including Office Premises, Cafe or Restaurant, Recreation Facility (Indoor) and Recreation Facility (Outdoor) under Schedule 1. The amendments to the FSR would enable the redevelopment of the site to deliver critically needed industrial floor space close to Sydney Airport, Port Botany and the Sydney Central Business District (CBD). The additional land use activities are proposed to activate the Coward Street frontage and provide amenity for on-site employees and the locality.

The proposal is to redevelop the site in stages to accommodate continuation of the existing operations in the Qantas Sydney Distribution Centre (SDC) in accordance with the leaseback arrangements. Following the demolition of the existing site, the proposed new development will comprise:

- Four levels of warehouse or distribution centre tenancies with loading and manoeuvring areas
- Complementary offices, retail and recreational (indoor) uses to activate the Coward Street frontage
- Activation of the Coward Street frontage rooftop to include a recreational facility (outdoor)
- Ancillary car parking in multiple locations across the site.

The Indicative Concept Plans have been shaped by a comprehensive site analysis and opportunities and constraints assessment in order to ensure the appropriate and considered use of land as an employment precinct, and for ecological and landscape values to be preserved and celebrated.

The Concept Floor Plan Layouts are shown in **Figure 2.3-2.7** with Concept perspectives as **Figure 2.8 & Figure 2.9**. Infrastructure works will include bulk earthworks, provision of services, stormwater management and construction of external pavements. Siting of the development lots will be sympathetic to the topography of the land, access and flood planning requirements.

Access to the site is proposed via driveways from Kent Road to the east of the site, and from Coward Street to the north of the site. An Airside access path is also proposed in the south-east corner of the development. The new access points will be constructed to the Council requirements.

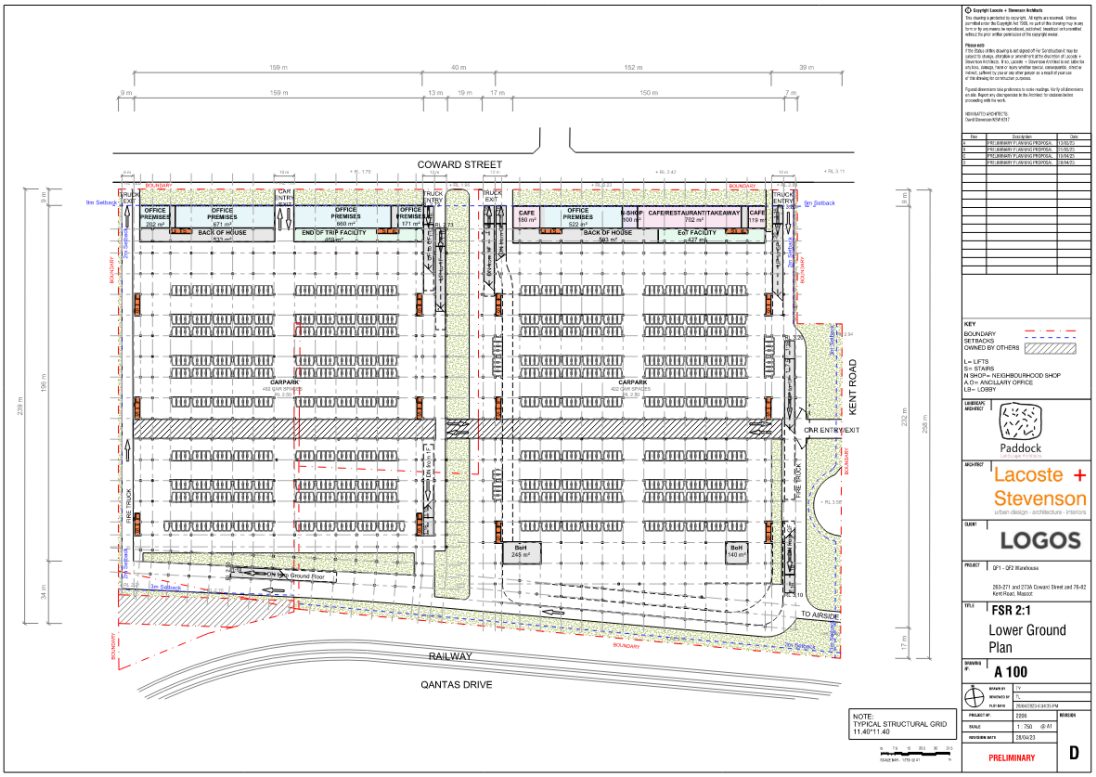

Figure 2.3. Concept Lower Ground Floor Layout (Source: Lacoste & Stevenson)

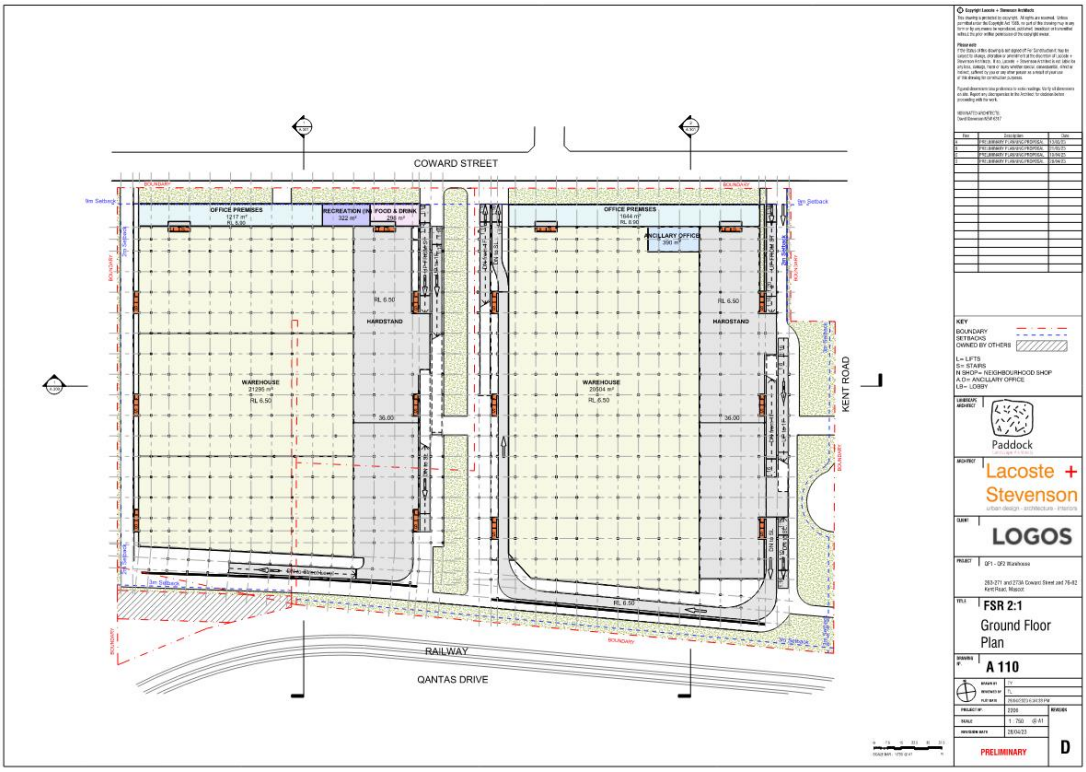

Figure 2.4. Concept Ground Floor Layout (Source: Lacoste & Stevenson)

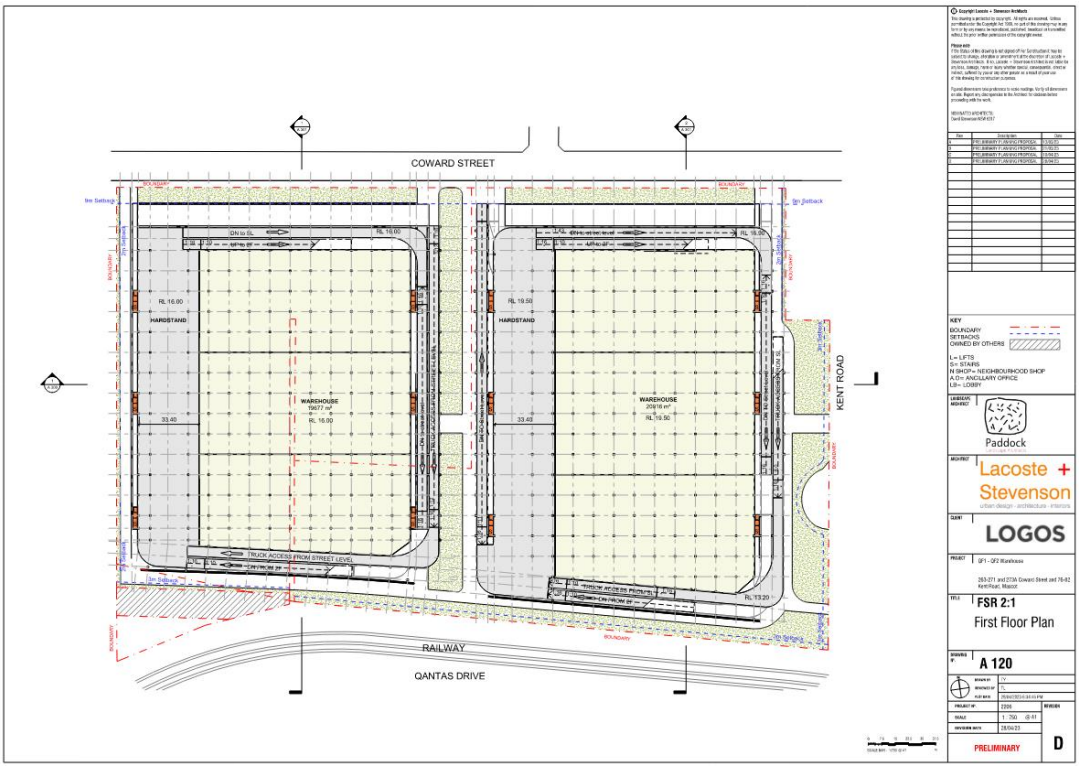

Figure 2.5. Concept First Floor Layout (Source: Lacoste & Stevenson)

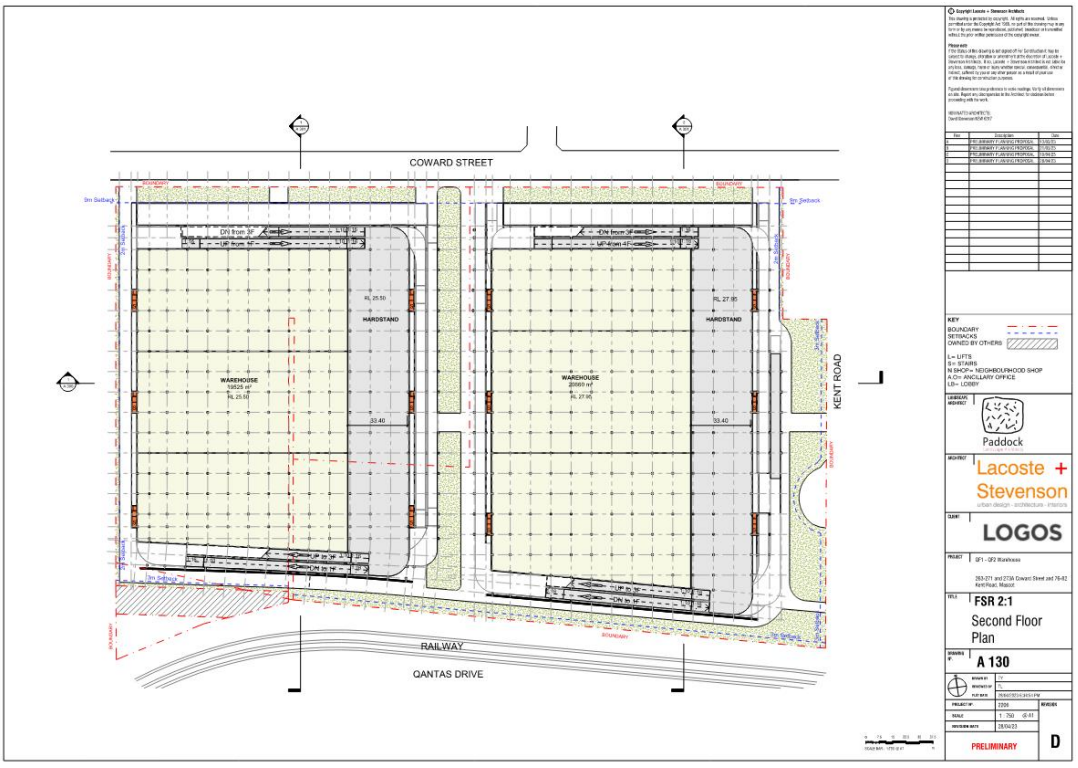

Figure 2.6. Concept Second Floor Layout (Source: Lacoste & Stevenson)

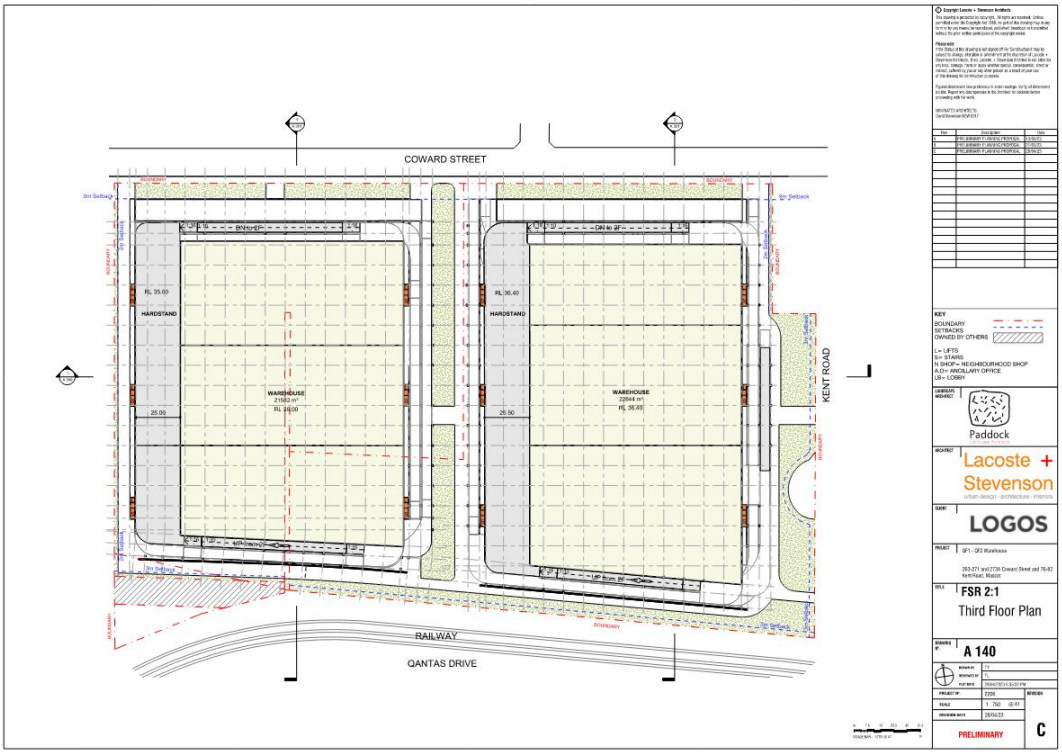

Figure 2.7. Concept Third Floor Layout (Source: Lacoste & Stevenson)

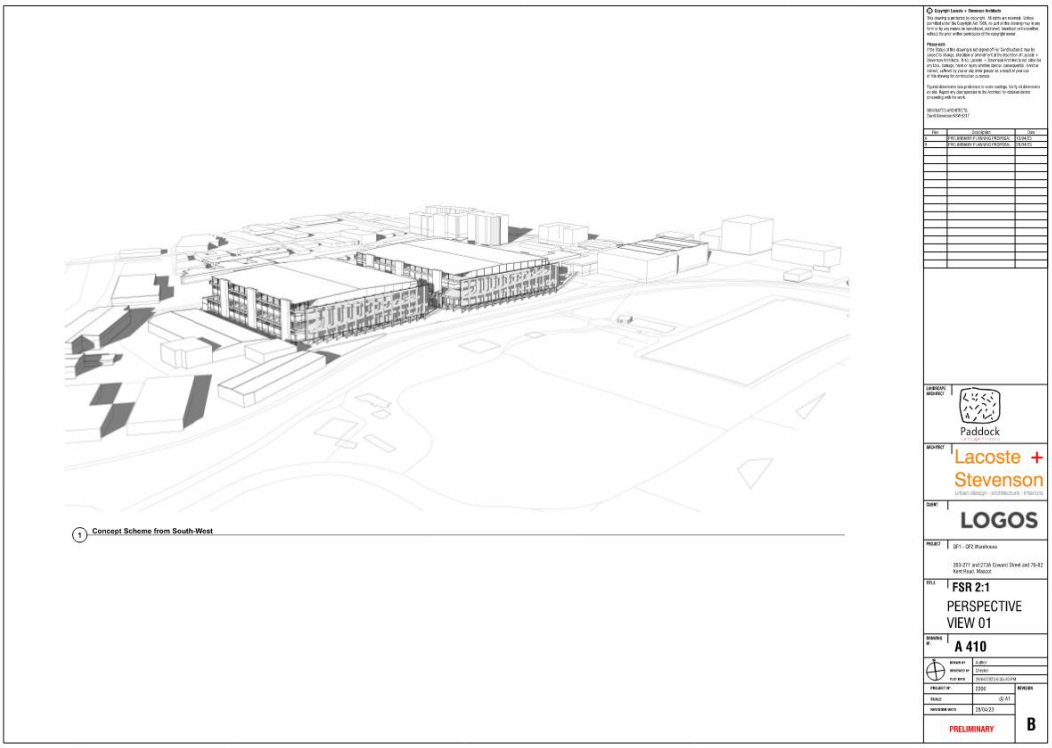

Figure 2.8. Concept Perspectives 1(Source: Lacoste & Stevenson)

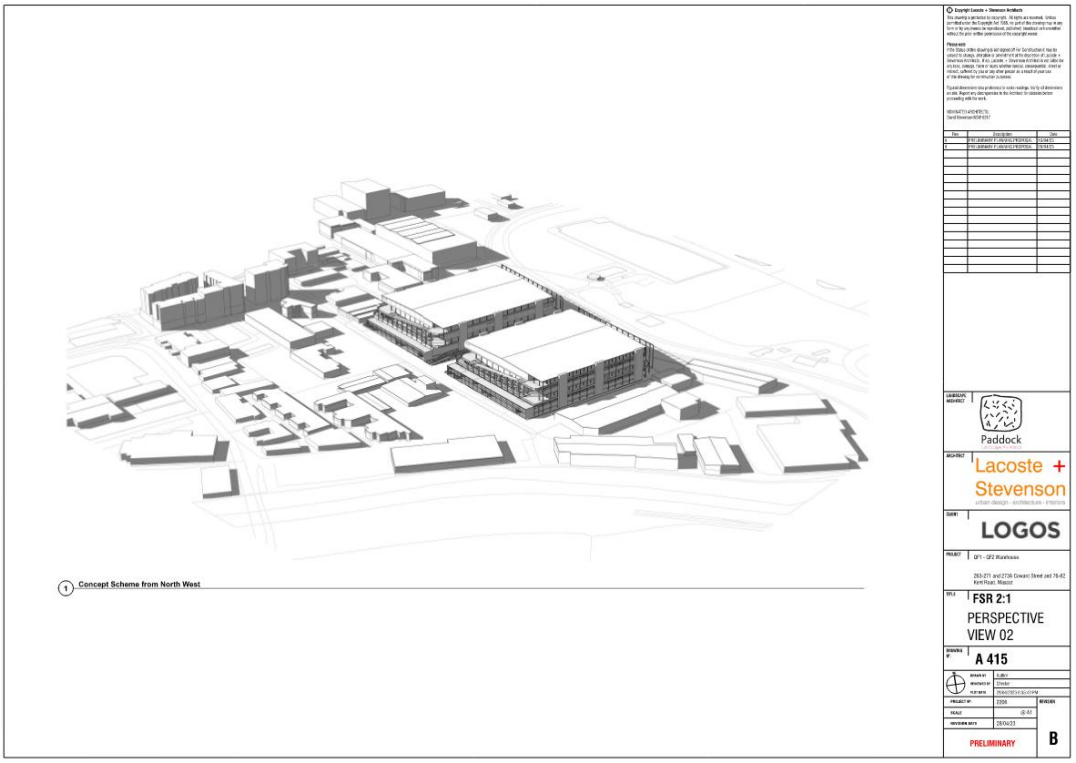

Figure 2.9. Concept Perspectives 2(Source: Lacoste & Stevenson)

3 SITE WORKS

3.1 Soil and Geological Conditions

Assessment relating to soil have been undertaken by **Douglas Partners (DP)** for and adjacent development application (SSD-10154) (geotechnical investigation ref: *85777.15.R.001.Rev0* dated 08/02/2019).

As referenced in the investigation by **DP** the 1:100 000 Geological Series Sydney Geological Map indicates that the site is underlain by Quaternary sediments (Qhd) comprising medium to fine grained marine sands, underlain by alluvial and residual clay soils over Ashfield Shale bedrock.

The **DP** Geotechnical report confirms the subsoil profile as comprising fill, sand, and clay. A summary of the subsoil units is included in **Figure 3**, being an excerpt of Table 2 of the report.

Table 2: Summary of Ground Conditions

Description		Typical Thickness (m)	Typical Level of Top of Layer (RL m)
Filling	Mostly gravelly sand or clayey sand with included building rubble	0.5 to 2	4 to 5
Sand	Loose to medium dense - with clayey or peaty layers	5 to 7	2 to 4
Sand	Medium dense to dense – with some clayey or peaty layers	6 to 8	-2 to -4
Clay	Stiff to very stiff (probably alluvial)	6 to 9	-8 to -9
Silty Clay	Very stiff to hard (probably residual) – includes some ironstone bands	6 to 10	-16 to -18
Bedrock	Laminite or siltstone - initially extremely low strength but mostly medium to high strength within 2-5 metres		-20 to -26

Figure 3. Inferred Subsurface Soil Profile

3.2 Bulk Earthworks

Bulk earthworks on the site will be required to facilitate the development of the site for the proposed multi-storey industrial use. The earthworks will be required to provide a large flat building pad at FFL 2.90m, hardstand area and undercroft car parking area. A high-level earthwork volume estimate assessment has been completed for the site. The estimated volumes are shown on the Costin Roe drawings in **Appendix A**. Earthworks are also required to facilitate access via Coward Street and Kent Road.

A preliminary assessment has been completed to provide an order of magnitude estimate of the earthwork's volumes and considerations for access, drainage and ensure that there is no excess spoil removal from the property. A variance on the quoted levels is noted to allow for minor variations in the quoted levels, at detail and post approval phase, which may result from Earthworks and retaining wall construction will be required for the development to incorporate the architectural layout and drainage requirements of the development, and to facilitate a large flat area for the proposed warehouse buildings.

Soil Erosion and Sediment Control measures, including sedimentation basins are to be placed in accordance with submitted drawings and the *Soil and Water Management Plan* in **Appendix C** of this report.

An earthwork design and volume estimate assessment has been completed for the indicative concept plans. The potential volumes are shown on drawing **Co14509.05-SK300**. It is noted that levels shown on the drawings are conceptual only showing a potential solution and order of magnitude earthworks volumes. The final levels could be subject to variance to account for unknowns in geotechnical conditions and final detail or development application design considerations. The variance allows for adjustments to be made to ensure that excessive export or import is not required in the final design arrangement.

Item	Lower Bound (-15%)	Apparent Volume (m^3)	Upper Bound (+15%)
Cut	-31,110	-36,600	-42,090
Fill	+170	+200	+230
Topsoil Strip (200mm)	-16,150	-19,000	-21,850
Detailed Excavation (1,500m^3/Ha)	-12,110	-14,250	-16,390
Diff. (cut over fill)	**-59,200**	**-69,650**	**-80,100**

Table 3.1. Earthwork Volume Estimates

3.3 Retaining Walls

The civil engineering objective is to minimise retaining walls within the constraints of the masterplan layout, allowable grading to suit industrial development and batters in landscaped areas where possible.

Retaining will be required along the western boundary of the site, adjacent to the access driveway. This wall is noted to be approximately 1.2m high and 40m in length. This is anticipated to comprise a modular masonry block system (Keystone) with reinforced soil backfill or similar.

Retaining will also be required along the eastern site access driveway. This wall is approximately 0.8m high and 50m in length. This is anticipated to comprise a modular masonry block system (Keystone) with no-fines concrete or similar.

Retaining is to be provided for the ramps leading up to and down from Level 1, subject to design by the structural engineer and coordination with the architect.

Location and indicative heights of retaining walls are shown on drawing **Co14509.05-SK400**.

3.4 Embankment Stability

To assist in maintaining embankment stability permanent batters in clay will be no steeper than 3-horizontal to 1-vertical while temporary batters will be no steeper than 2-horizontal to 1-vertical. Steeper batters in shale can be considered subject to geotechnical advice.

Batters within public domain will be limited to 1v:4h.

Permanent batters will also be adequately vegetated or turfed which will assist in maintaining embankment stability.

Stability of batters and reinstatement of vegetation shall be in accordance with the geotechnical advice and the DRAFT *Soil and Water Management Plan* in **Appendix C** of this report.

3.5 Supervision of Earthworks

All geotechnical testing and inspections performed during the filling operations will be undertaken to Level 1 geotechnical control, in accordance with AS3798-2007.

4 WATER CYCLE MANAGEMENT STRATEGY & DRAINAGE METHODOLOGY

4.1 Key Areas and Objectives

Water Cycle Management (WCM) is a holistic approach that addresses competing demands placed on a region's water resources, whilst optimising the social and economic benefits of development in addition to enhancing and protecting the environmental values of receiving waters.

Developing a WCMS at the planning stage of the land development process provides guidance on urban water management issues to be addressed for the estate and development as a whole. This assists urban rezoning and estate infrastructure planning for the industrial development proposed on the land.

This WCMS has been prepared to inform Council and other stakeholders that a solution to achieve the required WSUD and WCM measures can be achieved. The framework and objectives as set out below, can be implemented into the stormwater management strategy for any potential development, subject to future designs and development application assessments. It presents guiding principles for WCM across the precinct which includes establishing water management targets and identifying management measures required for future building developments to meet these targets.

Several WCM measures have been included in the WCMS and engineering design, which are set out in this report and the attached drawings. The key WCM elements and targets which have been adopted in the design are included in **Table 4.1** following.

Table 4.1. WCM Targets

Element	Target	Reference
Water Quantity	To minimise impacts of stormwater runoff from development to public drainage systems, natural watercourses, adjoining and downstream properties	Bayside DCP 2022 & Sydney Water Email (Dated 27 April 2023, Sydney Water Technical Department)
Water Quality	Load-based pollution reduction targets based on an untreated urbanised catchment: Gross Pollutants 90% Total Suspended Solids 85% Total Phosphorus 60% Total Nitrogen 45%	Bayside DCP 2022
Flooding	Buildings set 0.5m above the 1% AEP flood level.	NSW Floodplain Development Manual.
Water Supply	Any development with roofed areas exceeding 2,500 m², a minimum 10,000 litres rainwater tank(s) shall be provided	Bayside DCP 2022

Element	Target	Reference
Construction Stormwater Management & Erosion and Sediment Control	A construction stormwater management plan and appropriate associated erosion and sedimentation control measures must be described in the environmental assessment for all stages of construction to mitigate potential impacts to surrounding properties.	Landcom Blue Book Council DPE

A summary of the how each of the WCM objectives will be achieved are described below. Reference to the relevant sections of the report should be made for further and technical details relating to the WCM measures:

- *Stormwater Quantity Management*

  The intent of this criterion is to reduce the impact of urban development on existing drainage system by limiting post-development discharge within the receiving waters to the pre-development peak, and to ensure no affectation of upstream, downstream or adjacent properties.

  As the site discharges directly into a Sydney Water stormwater asset, they have been consulted to determine the stormwater management requirements for the development. Refer to **Appendix D** for the email correspondence confirming that attenuation of stormwater runoff is not required for the proposed development.

  Refer to **Section 5** of the document for further discussion pertaining to water quantity management.

- *Stormwater Quality Management*

  There is a need to target pollutants that are present in stormwater runoff to minimise the adverse impact these pollutants could have on downstream receiving waters.

  A series of Stormwater quality improvement devices (SQID's) have been incorporated in the design of the development. The proposed management strategy will include the following measures:

  - Primary treatment of external areas will be made via pit basket inserts at all surface inlet pits.
  - Tertiary treatment of stormwater from the northern lot using proprietary filter cartridges within treatment tanks.
  - Some treatment will also be present by provision of rainwater reuse tanks on development sites through reuse and settlement within the tanks.

  Reference to **Section 6** of this document should be made for detailed Stormwater Quality modelling and measures.

- *Flood Management*

  The proposed development considered flooding and large rainfall events in relation to local runoff and overland flow paths.

  Consideration to flood requirements has been made per Council Flood Management Policy.

  The following measures have been incorporated in the design:

  - All buildings are sited 500mm above the 1% AEP flood level.
  - The majority of the existing overland flow path through site from Kent Road is captured in a drainage apron and conveyed in a 2700 x 600 RCBC towards the Sydney Water channel south of the site.
  - The remainder of the overland flow path through the site from Kent Road to Coward Street is routed through the undercroft carpark and maintained.
  - Discharge from the site is sent to the Sydney Water channel running between the lots.
- *Water Demand Reduction/ Rainwater Reuse*

  Rainwater reuse measures will be provided as part of this development design. Rainwater reuse will be required to reduce demand on non-potable uses by 50-70%. The reduction in demand will target non-potable uses such as toilet flushing and irrigation. **Refer Section 6.6**.

- *Stormwater Management During Construction*

  A construction stormwater management plan and associated erosion and sediment control measures is proposed based on *Landcom Blue Book* and Council requirements. The management measures take a staged approach from initial site establishment, construction stages and the period between the completion of the proposed infrastructure works and development of site.

4.2 Existing Drainage System & Overland Flows

The site is currently developed and being used as a multi-purpose warehouse distribution facility, comprising several warehouse buildings with associated circulation/loading hardstands and car parking. An existing council stormwater drainage pipe runs from the east to west from Kent Road before routing south towards the Sydney Water channel. The existing buildings & pavements are proposed to be demolished to make way for the new buildings, as described in **Section 2.2**.

As noted earlier in this report, a Sydney Water stormwater channel runs east to west along the southern boundary the development site. The development site has developed drainage systems that collect rainwater and discharges it into the stormwater channel. The stormwater channel ultimately discharges into the Alexandra Canal.

Refer to **Figure 4.1** for the location of the existing channel.

The site is affected by overland flow from upstream catchments to the east of the site (SWC Cat 1 & SWC Cat Upstream) which drain into the Sydney Water channel. The contributing catchment comprises a combination of commercial and industrial land use with approximately 90% impervious surfaces. For the pre-development condition, the total catchment area contributing to the site flooding is approximately 20Ha, with a larger 45Ha catchment discharging into the upstream portion of the Sydney Water stormwater channel. These catchments are shown below in **Figure 4.2.** Conveyance of these flows has been included in the estate infrastructure stormwater design, with further consideration provided to flood management and response in **Section 7** of this report and **Appendix C**

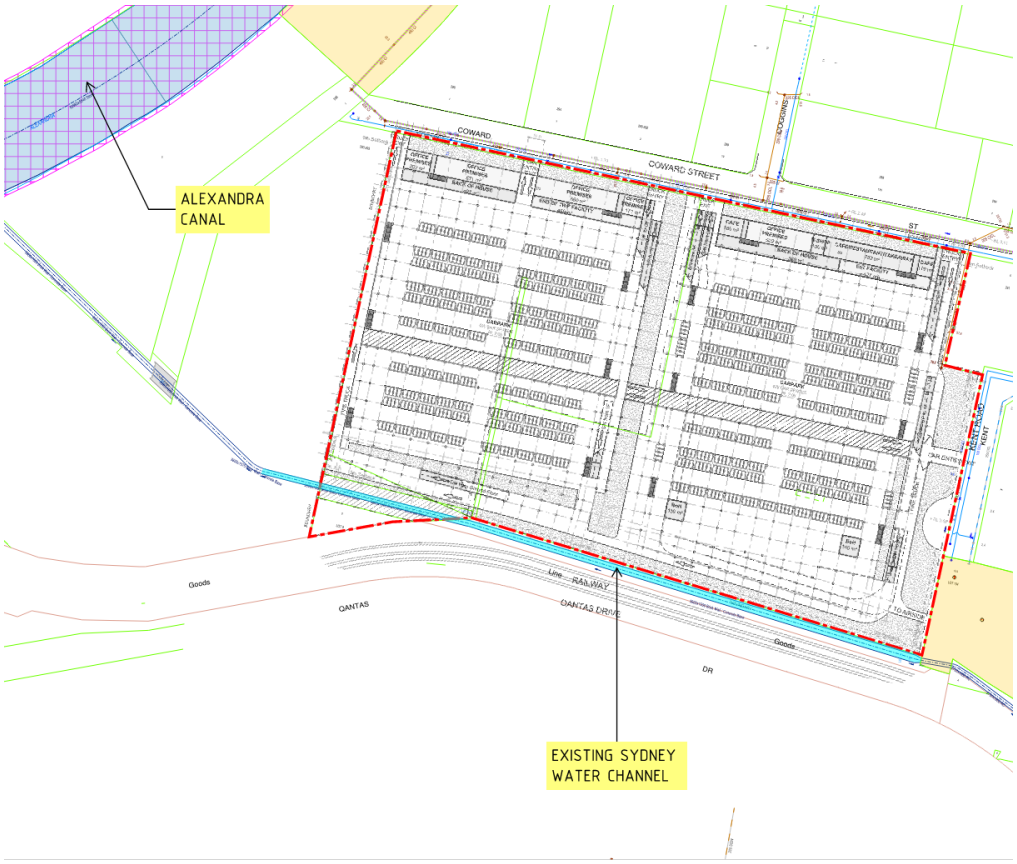

Figure 4.1. Location of Sydney Water Channel (extract from Syd Water DBYD Map)

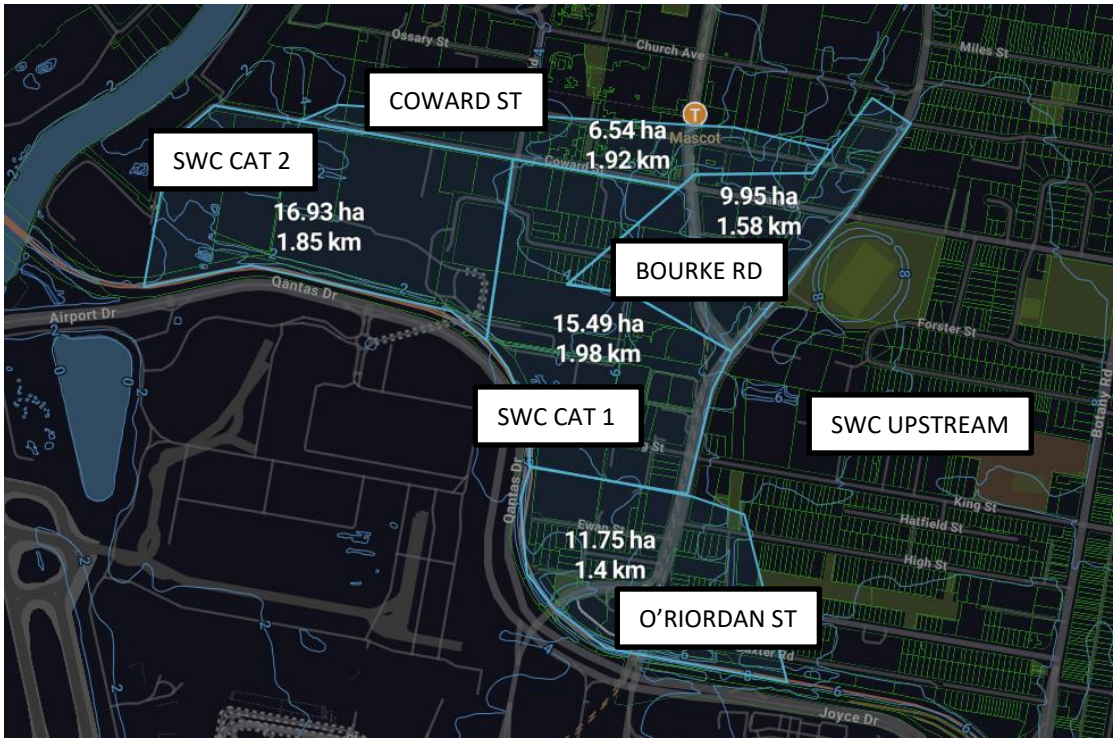

Figure 4.2. Site Catchments and external Contributing Catchment (east)

4.3 Proposed Surface Water Drainage System

As per general engineering practice and the guidelines of Council, the proposed stormwater drainage system for the development will comprise a minor and major system to safely and efficiently convey collected stormwater run-off from the development to the legal point of discharge.

The minor system is to consist of a piped drainage system which has been designed to accommodate the 1 in 20-year ARI storm event (Q20). This results in the piped system being able to convey all stormwater runoff up to and including the Q20 event. The major system will be designed to cater for storms up to and including the 1 in 100-year ARI storm event (Q100). The major system will employ the use of defined overland flow paths, such as roads and open channels, to safely convey excess run-off from the site.

The design of the stormwater system for this site will be based on relevant national design guidelines, Australian Standard Codes of Practice, the standards of BC and accepted engineering practice. Runoff from buildings will generally be designed in accordance with *AS 3500.3 National Plumbing and Drainage Code Part 3 – Stormwater Drainage*. Overall site runoff and stormwater management will generally be designed in accordance with the Institution of Engineers, Australia publication "*Australian Rainfall and Runoff*" (2019 Edition), Volumes 1 and 2 (AR&R).

Water quality and re-use are to be considered in the design to ensure that any increase in the detrimental effects of pollution is mitigated, Council Water Quality Objectives are met and that the demand on potable water resources is reduced.

The legal point of discharge is a point specified by Council where stormwater from a property can be discharged. The legal point of discharge is usually Council's Stormwater infrastructure (where available), the street kerb and channel for smaller developments or downstream receiving waters like an existing stream or gully, lake, pond or waterbody. Legal discharge for this site is via the Sydney Water stormwater channel, Mascot West SWC 63, a 3600x1500 Brick Wall & Concrete Base channel which runs along the southern boundary of the site. The proposed site discharge point shall be via new and existing site connections, where appropriate, to the Sydney Water channel. The connection to the Sydney Water Channel shall be in accordance with Sydney Water's guidelines.

With reference to the drawings in **Appendix A,** the drainage system proposed can be described as follows:

- In-ground piped drainage system designed to the 5% AEP (1 in 20yr ARI);
- Site discharge via the existing Sydney Water channel.
- Primary treatment of stormwater via pit basket inserts in all surface inlet pits;
- Tertiary treatment of stormwater using proprietary filter cartridges in an underground tank;
- Conveyance of overland flow through the site from Kent Road through the undercroft carpark.

4.4 Hydrologic Modelling and Analysis

4.4.1 General Design Principles

The design of the stormwater system for this site will be based on relevant national design guidelines, Australian Standard Codes of Practice, Bayside Council and accepted engineering practice.

Runoff from buildings will generally be designed in accordance with *AS 3500.3 National Plumbing and Drainage Code Part 3 – Stormwater Drainage*.

Overall site runoff and stormwater management will generally be designed in accordance with the Institution of Engineers, Australia publication "Australian Rainfall and Runoff" (1987 Edition), Volumes 1 and 2 (AR&R).

Storm events for the 2 to 100 Year ARI events will be assessed.

4.4.2 Minor/ Major System Design

The piped stormwater drainage (minor) system will be designed to accommodate the 20-year ARI storm event (Q20). Overland flow paths (major) which will convey all stormwater runoff up to and including the Q100 event have also been provided which will limit major property damage and any risk to the public in the event of a piped system failure.

4.4.3 Rainfall Data

Rainfall intensity Frequency Duration (IFD) data used as a basis for DRAINS modelling for the 2 to 100 Year ARI events, will be sourced from The Bureau of Meteorology Online IFD Tool.

4.4.4 Runoff Models

In accordance with the recommendations and standards of Wollondilly Shire Council, the calculation of the runoff from storms of the design ARI will be calculated with the catchment

modelling software DRAINS (noting DRAINS assessments would form part of future detail designs or development approval designs and do not form part of the current documentation scope).

Detailed hydraulic assessment of the internal drainage system will be calculated at detail/ construction certificate stage.

The design parameters for the DRAINS model are to be based on the recommendations as defined by council and parameters for the area and are included in **Table 4.2** as follows.

Table 4.2. DRAINS Parameters

Model	Model for Design and analysis run	Rational method	
	Rational Method Procedure	ARR87	
	Soil Type-Normal	3.0	
	Paved (Impervious) Area Depression Storage	1	mm
	Supplementary Area Depression Storage	1	mm
	Grassed (Pervious) Area Depression Storage	5	mm
AMC	Antecedent Moisture Condition (ARI=1-5 years)	2.5	
AMC	Antecedent Moisture Condition (ARI=10-20 years)	3.0	
AMC	Antecedent Moisture Condition (ARI=50-100 years)	3.5	
	Sag Pit Blocking Factor (Minor Systems)	0	
	On Grade Pit Blocking Factor (Minor Systems)	0	
	Sag Pit Blocking Factor (Major Systems)	0.5	
	On Grade Pit Blocking Factor (Major Systems)	0.2	

4.5 Hydraulics

4.5.1 General Requirements

Hydraulic calculations will be carried out utilising DRAINS modelling software during the detail design stage to ensure that all surface and subsurface drainage systems perform to or exceed the required standard.

4.5.2 Freeboard

The calculated water surface level in open junctions of the piped stormwater system will not exceed a freeboard level of 150mm below the finished ground/ grate level, for the peak runoff from the Minor System runoff.

The calculated water surface for the peak runoff from the Major System runoff will not exceed a freeboard level of 300mm below the finished floor level of the building/ development pads.

4.5.3 Public Safety

For all areas subject to pedestrian traffic, the product (dV) of the depth of flow d (in metres) and the velocity of flow V (in metres per second) will be limited to 0.4, for all storms up to the 100-year ARI.

For other areas, the dV product will be limited to 0.6 for stability of vehicular traffic (whether parked or in motion) for all storms up to the 100-year ARI.

4.5.4 Inlet Pit Spacing

The spacing of inlets throughout the site will be such that the depth of flow, for the Major System design storm runoff, will not exceed the top of the kerb (150mm above gutter invert).

4.5.5 Overland Flow (development lots)

Dedicated flow paths have been designed to convey all storms up to and including the

100-year ARI. These flow paths will convey stormwater from the site to the detention systems prior to discharge.

4.6 External Catchment and Flooding

There external catchments which affect the development site as described in **Section 4.2** and shown in **Figure 4.1**.

A preliminary overland flow assessment and two-dimensional flood model (TUFLOW) has been completed in relation to the overland flow paths in its existing and proposed conditions. The following sections of the report describe the catchment description, flood description and proposed flood management.

5 WATER QUANTITY MANAGEMENT

5.1 Water Quantity Management Objectives

Bayside Council's DCP 2022 and Sydney Water's On-Site Detention (OSD) policy require consideration of stormwater quantity management with the intent of minimising flooding from the increased stormwater run-off due to the development. Water quantity management may be made by providing a stormwater detention system (i.e. on-site detention), to limit the runoff discharged from private property or to provide an assessment which confirms on-site detention is not necessary for the development. Further, that areas within Mascot require confirmation as to OSD requirements from Sydney Water who are the waterway managers for the area.

Consultation with Sydney Water has been undertaken and it has been confirmed that any development at 263-273 Coward Street, Mascot does not require on-site detention. Refer to **Appendix D** for email correspondence with Sydney Water and confirmation of the OSD requirements for the site.

6 STORMWATER QUALITY, REUSE AND MAINTENANCE

6.1 Stormwater Quality Objectives

The future development will need to provide a design which incorporates the principles of Water Sensitive Urban Design (WSUD) and to target pollutants that are present in the stormwater so as to minimise the adverse impact these pollutants could have on receiving waters and to also meet the requirements specified by Council.

Bayside Council has nominated, in Part 7.1.1 of their Bayside DCP 2022, the requirements for stormwater quality to be provided for all new developments with reference to such documents as the *NSW MUSIC Modelling Guidelines and relevant Australian Standards*.

Stormwater treatment objectives for industrial sites in the LGA confirm that the following pollutant reductions should be targeted for this development:

Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	60%
Total Nitrogen	45%

6.2 Proposed Stormwater Treatment System

Developed impervious areas including roof, hardstand, car parking, roads and other extensive impervious areas are required to be treated by the Stormwater Treatment Measures (STM's). The STM's shall be sized according to the whole catchment area of the development. The STM's for the development shall be based on a treatment train approach to ensure that all the objectives above are met.

Components of the treatment train for the development are as follows:

- Primary treatment of external areas will be made via pit basket inserts at all surface inlet pits.
- Tertiary treatment of stormwater using proprietary filter cartridges within proposed stormwater treatment tanks.
- Some treatment will also be present by provision of rainwater reuse tanks on development sites through reuse and settlement within the tanks.

MUSIC modelling will be performed during the Development Approval phase of works to assess the effectiveness of the selected treatment trains and to ensure that the pollutant retention requirements of Council's DCP 2022 have been met. The MUSIC modelling shall demonstrate that the proposed treatment train of STM will provide stormwater treatment which will meet Council's and typical growth centre water quality reduction objective requirements in an effective and economical manner.

6.3 Stormwater Harvesting

Stormwater harvesting refers to the collection of stormwater from the developments internal stormwater drainage system for re-use in non-potable applications. Stormwater from the stormwater drainage system can be classified as either rainwater where the flow is from roof areas, or stormwater where the flow is from all areas of the development.

For the purposes of this development, we refer to a rainwater harvesting system, where benefits of collected stormwater from roof areas over a stormwater harvesting system can be made as rainwater is generally less polluted than stormwater drainage.

Rainwater harvesting is proposed for the development with re-use for non-potable applications. Internal uses include such applications as toilet flushing while external applications will be used for irrigation. The aim is to reduce the non-potable water demand for the development by a minimum of 50% per the indicative outcomes for large storage projects **Table 2.1** of the Stormwater Trust Department of Environment & Conservation NSW document "*Managing Urban Stormwater – Harvesting and Reuse*"

In general terms the rainwater harvesting system will be an in-line tank for the collection and storage of rainwater. At times when the rainwater storage tank is full rainwater can pass through the tank and continue to be discharged via gravity into the stormwater drainage system. Rainwater from the storage tank will be pumped for distribution throughout the development in a dedicated non-potable water reticulation system. This however would be subject to future detail design.

Rainwater tanks will be designed, using MUSIC software to balance the supply and demand, based on the below base water demands and to provide 50% reduction in non-potable water demand. Rainwater tank reuse demands were calculated based on typical water demands of toilets and irrigation of landscaped areas. Water demands for toilets was calculated using 0.1kL/day/ toilet. Water demands for irrigation of landscaped areas was calculated using 0.3kL/year/m^2.

6.4 Maintenance and Monitoring

It is important that each component of the stormwater system and water quality treatment train is properly operated and maintained. In order to achieve the design treatment objectives, a maintenance schedule should form part of any future development approval submissions.

Inspection frequency may vary depending on site specific attributes and rainfall patterns in the area.

7 FLOODING AND OVERLAND FLOW

7.1 Introduction

A review of overland flow and flooding in relation to the proposed development has been completed. The assessment confirms the requirements of Bayside Council's DCP and been met.

Our review and assessment have been based on a review of the detail survey, the proposed development, and flood advice letters provided by Bayside City Council (Ref: FA-2023/168 & FA/2023/169). The basis of the provided flood studies is the *Mascot, Rosebery and Eastlakes Flood Study* (*document ref: 113077:190320*) completed by WMAwater on behalf of the City of Botany Bay in March 2019.

The site is located within the Mascot, Rosebery and Eastlakes (MRE) catchment which is a tributary of the Alexandria Canal and is located directly adjacent to an open concrete-lined Sydney Water stormwater channel that discharges into the canal. The site is affected by an overland flow path that enters the site from Kent Street, and dissipates to Coward Street and to the Sydney Water channel. Therefore, the proposed site is noted as being required to provide flood management measures and offset storage to mitigate off-site flood impacts caused by the development.

An overland flow assessment and two-dimensional flood model (TUFLOW) has been completed in relation to the overland flow paths in its existing and proposed conditions. The following sections of the report describe the catchment description, flood description and proposed flood management.

Detailed technical information pertaining to the TUFLOW modelling and output completed by our office is included in **Appendix C**.

The site has existing formal inground drainage systems, with stormwater being piped into the Sydney Water stormwater channel that runs east to west south of the proposed development.

We have included the following items as part of our review:

- Flood advice letters provided by Bayside City Council (Ref: FA-2023/168 & FA/2023/169)
- WMAwater (2019) – Mascot, Rosebery and Eastlakes Flood Study
- Review of Councils Floodplain Management Policy in relation to the development including review of potential impacts of the development on existing flooding, and potential impacts on the development from flooding.

7.2 Bayside City Council Flood Advice Letters (Ref: FA-2023/168 & FA/2023/169)/ Mascot, Rosebery and Eastlakes Flood Study (113077:190320)

Extracts of flood behaviour of the MRE catchment were obtained from a council flood study prepared by WMAwater in 2019. The study involved a hydrological and hydraulic assessment of the catchment at a regional level.

We provide excerpts associated with the 1% AEP storm event from the Flood Advice Letter in **Figure 7.1** and **Figure 7.2** to provide a localised overview of the flood conditions over the development site. The 1% AEP flood extent for 263 Coward Street (east of development site) is shown on **Figure 7.1** and for 273 Coward Street (west of development site) on **Figure 7.2**.

Figure 7.1 is noted to be an excerpt of the 1% AEP flood extent and **Figure 7.2** is the 1% AEP flood hazard.

Further, excerpts of flooding associated with the 1% AEP storm event from the regional flood study are provided in **Figures 7.3, 7.4, and 7.5** below. **Figure 7.3** is noted to be an excerpt of the 1% AEP Flood Levels; **Figure 7.4** is noted to be an excerpt of the 1% AEP Flood Depths; **Figure 7.5** is noted to be an excerpt of the 1% AEP Flood Velocity.

Discussion on flood behaviour is made in **Section 7.3**.

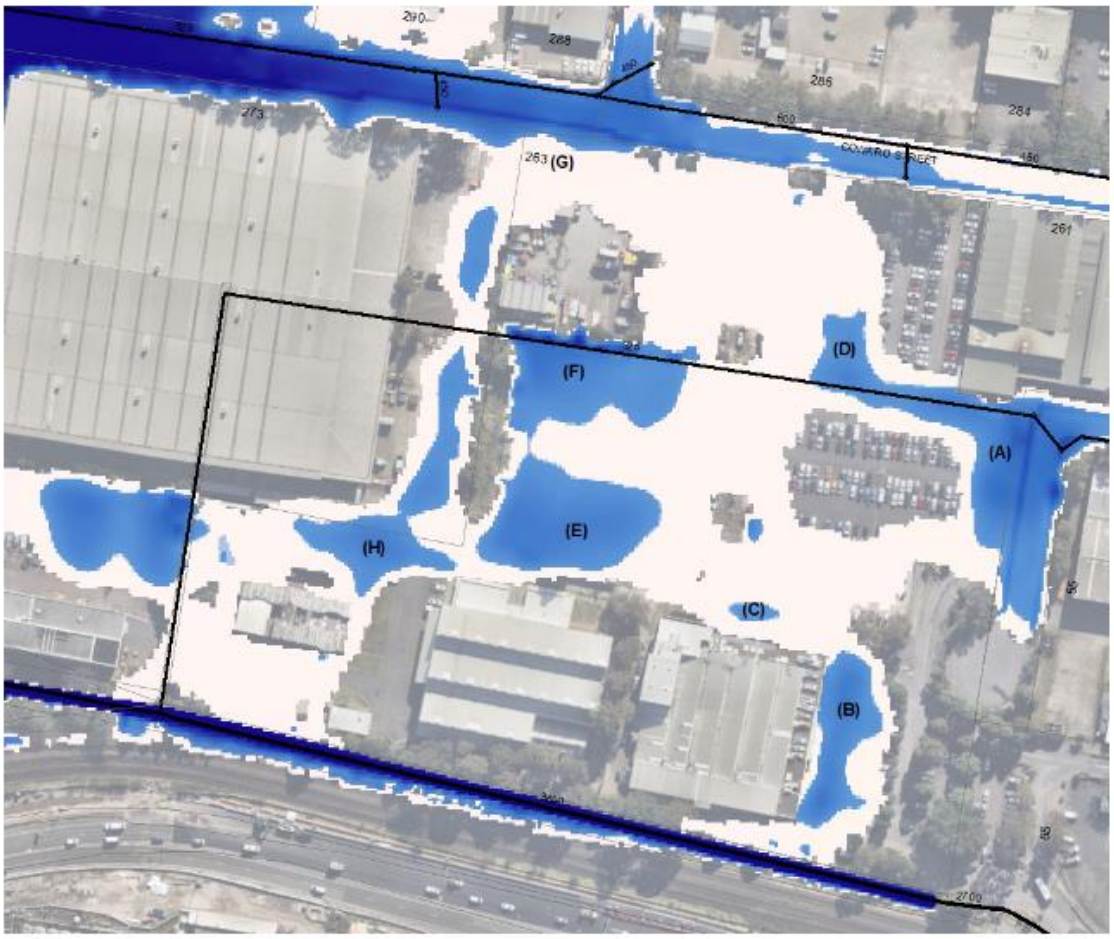

Figure 1: 1% AEP Flood Extent Map (dark blue indicates greater depth of water and pale blue indicates shallower depth, thick black line indicates approximate location of the existing drainage network)

Figure 7.1. Council Flood Letter – 1% AEP Flood Extent for 263 Coward Street

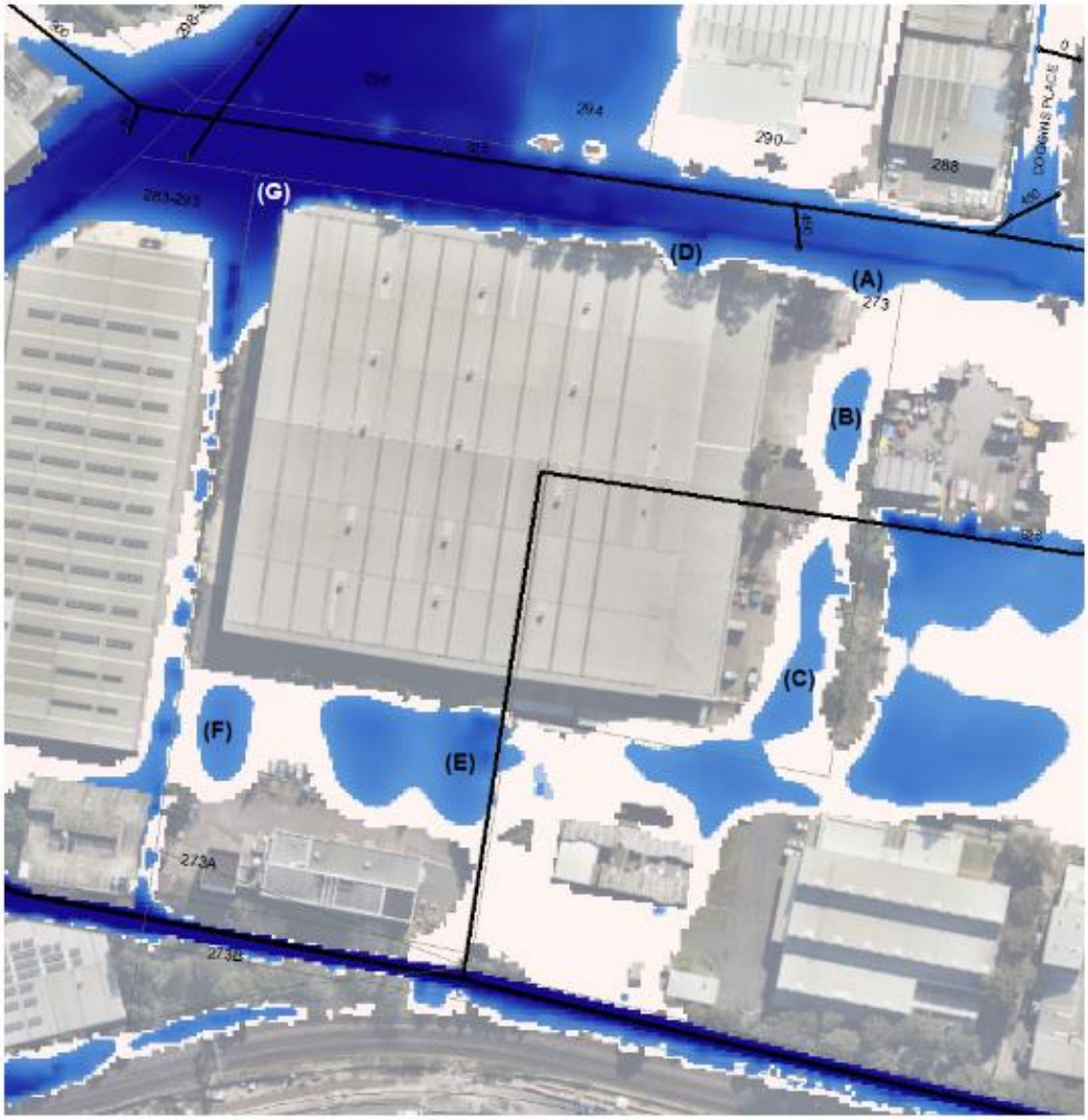

Figure 1: 1% AEP Flood Extent Map (dark blue indicates greater depth of water and pale blue indicates shallower depth, thick black line indicates approximate location of the existing drainage network)

Figure 7.2. Council Flood Letter – 1% AEP Flood Extent for 273 Coward Street

Figure 7.3. Council Flood Study – 1% AEP Flood Depths

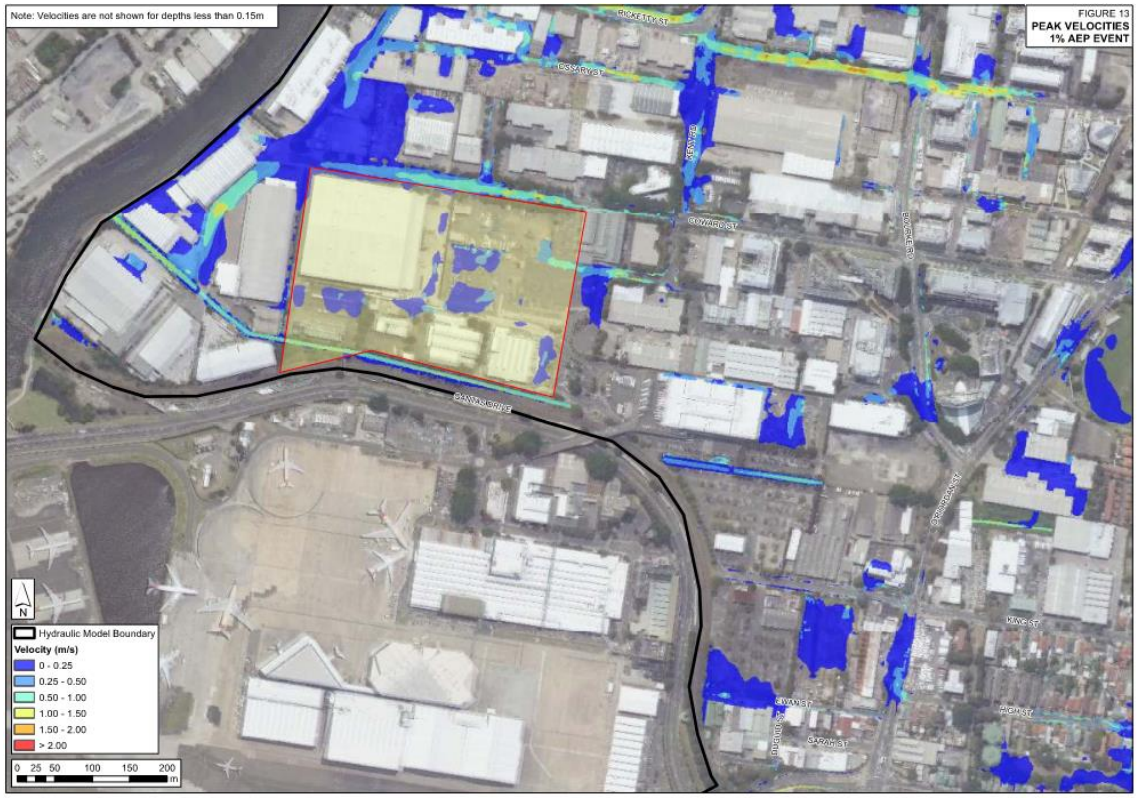

Figure 7.4. Council Flood Study – 1 % AEP Flood Velocity

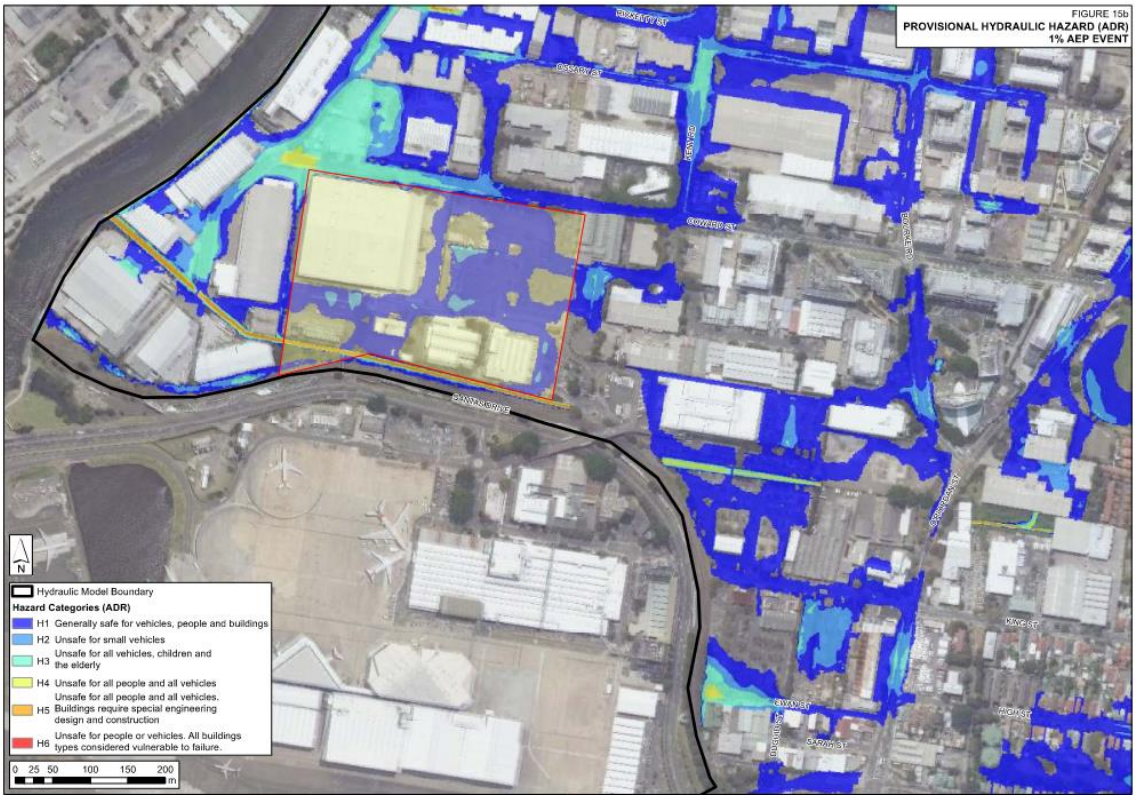

Figure 7.5. Council Flood Study - 1% AEP Flood Hazard

7.3 Existing Overland Flow and Flood Behaviour

Council's flood assessment confirms that the site is affected by overland flow flooding in the local 1% AEP flood event as a result of the overland flow paths from Kent Road towards Coward Street and the Sydney Water stormwater channel. The contributing catchments to the overland flow paths from Kent Road are approximately 12Ha and 10Ha respectively. The Sydney Water channel conveys water from an upstream catchment of approximately 45Ha in size. As seen in **Figure 7.5** the flood water in the overland flow path through the site is of the H1 categorisation, generally safe for people, buildings and vehicles. In isolated areas within the circulation pavements, the flood water reaches H3 categorisation, which is unsafe for small vehicles.

As seen in **Figure 7.3**, flood water around the site is generally within a peak depth range of 0-0.5m, deeper in localised depressions throughout the site which provide a minor quantity of flood storage. **Figure 7.4** shows flood velocity on site to be within the 0-0.5m/s range.

Given the above, the site is shown to be impacted by flooding during the 1% AEP and in more intense storm events. Additional modelling has been conducted to determine the effect of the proposed development on the existing flood behaviour.

7.4 Proposed Overland Flow Management Strategy

Council requires an assessment of the pre and post development overland flow conditions for the 1% AEP and PMF storm event. Further that the overland flow from the upstream catchment is able to be conveyed through the site without affection of upstream, downstream or adjacent properties in the 1% AEP or the PMF. Per **Section 9.5.4** of the Bayside DCP 2022, flood impact on surrounding properties is to be less than or equal to 10mm in the 1% AEP event and 50mm in the PMF event. Additionally, existing flood hazard shall not be increased for any development for all flood events up to the PMF.

A TUFLOW model has been prepared for the assessment as set out in the following sections of the report. The proposed management strategy allows for overland flow paths between Kent Road, Coward Street and the stormwater channel under and around the building footprint, consistent with the existing overland flow path. Flood storage is proposed to be provided in larger storm events through the construction of a flood wall along the western boundary of the site. The flood wall will help store and direct flood waters in less frequent flood events. Reference to drawing **CO14509.05-SK400** should be made for details of the proposed flow path and the flood compensation storage.

7.5 Costin Roe Consulting Modelling

7.5.1 Introduction

A detailed site specific TUFLOW model of the pre and post development conditions has been completed by Costin Roe Consulting. The assessment being completed with consideration to Bayside Council policy and the *NSW Floodplain Risk Management Manual*. Technical parameters and detail included in the TUFLOW model are included as **Appendix C.**

The pre-developed model has been prepared utilising the flood levels and hydrographs as completed by our office, which has been verified against the flood information provided by Bayside Council. Post development modelling has been completed with the introduction of the proposed development.

7.5.2 Pre-Development 1% AEP

Reference to **Figure 7.7** shows the pre-developed 1% AEP output for depth and levels. **Figure 7.8** shows velocity and **Figure 7.9** shows true hazard categorisation.

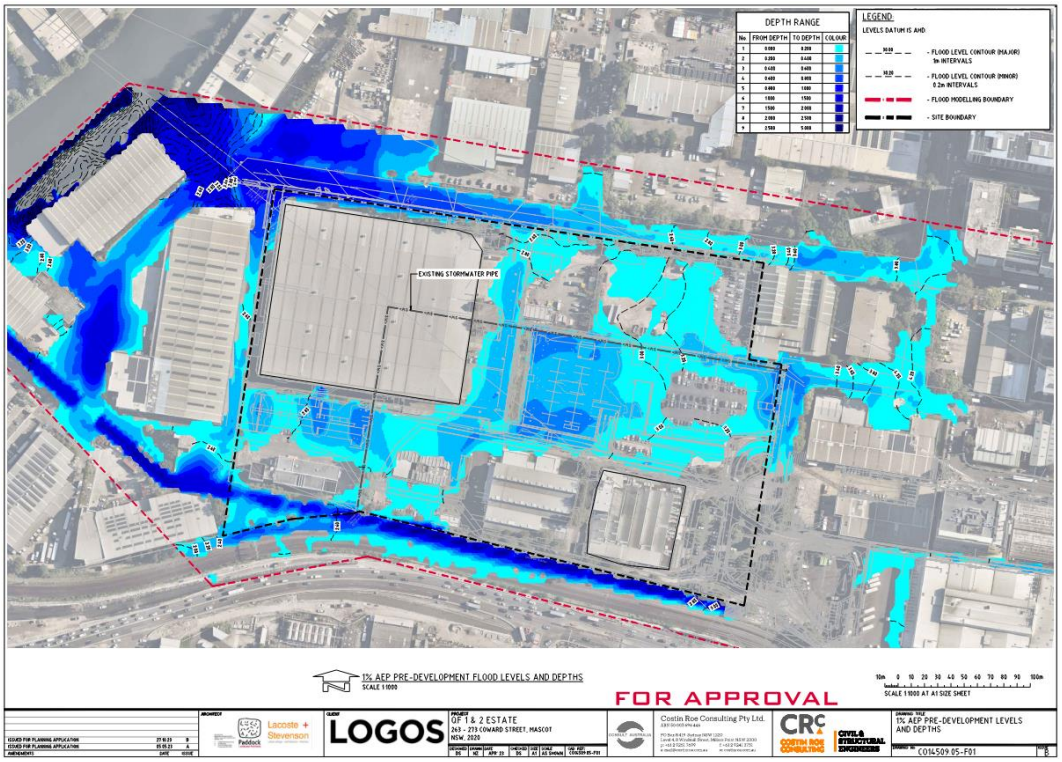

Figure 7.7: 1% AEP Pre-developed Level and Depth Output

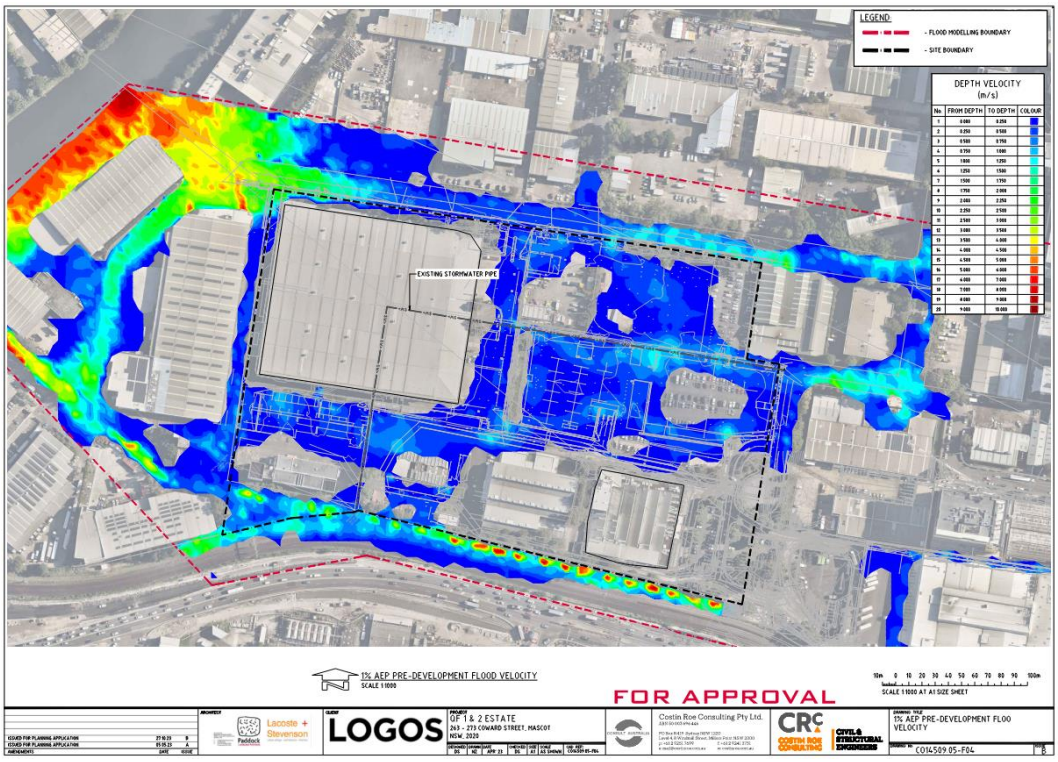

Figure 7.8: 1% AEP Pre-developed Velocity

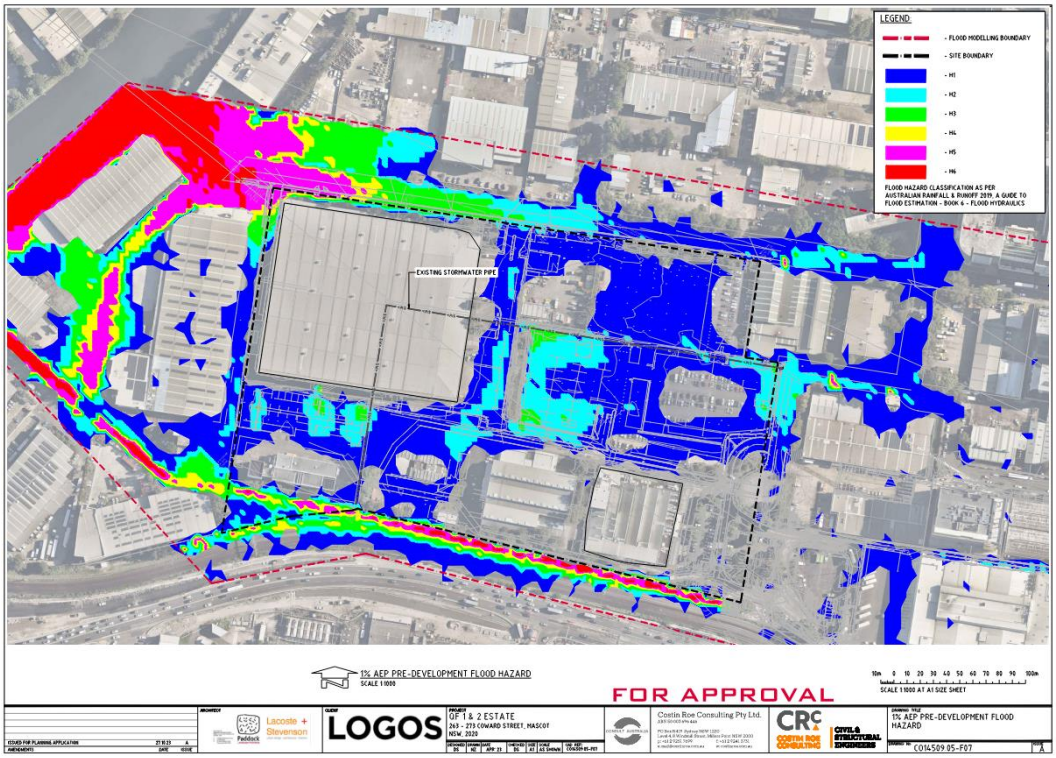

Figure 7.9: 1% AEP Pre-developed Flood Hazard Categorisation

7.5.3 Post-Development 1% AEP

Reference to **Figure 7.10** shows the post-developed 1% AEP output for depth and levels. **Figure 7.11** shows velocity and **Figure 7.12** shows true hazard categorisation.

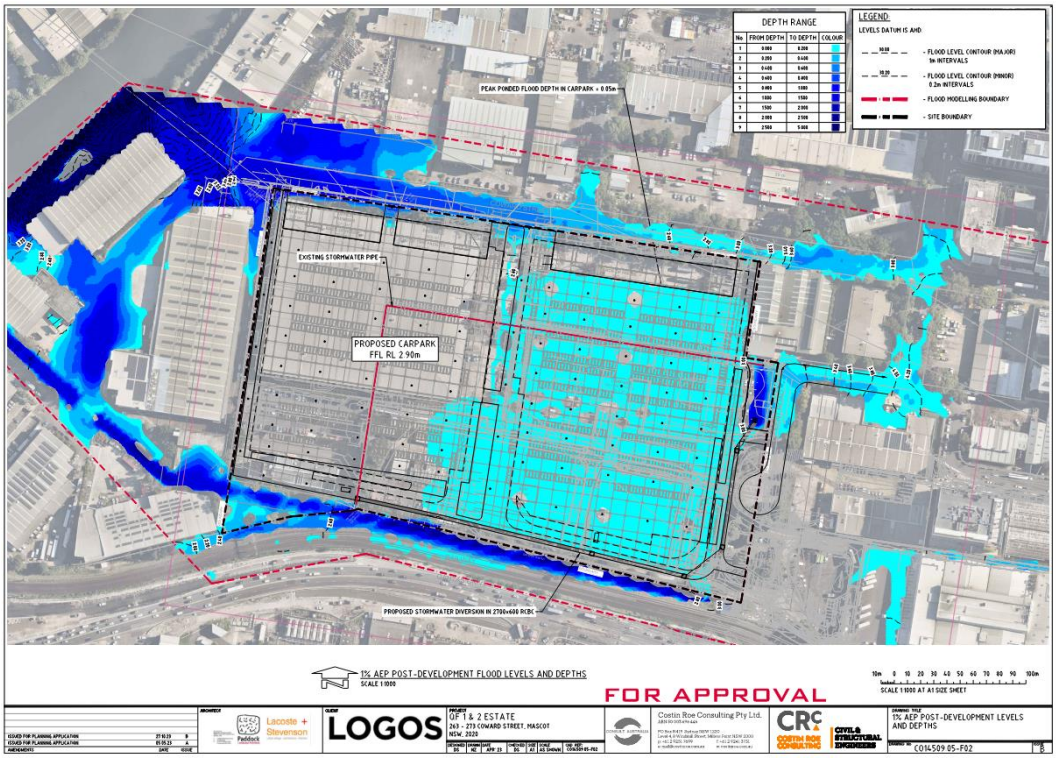

Figure 7.10: 1% AEP Post-developed Level and Depth Output

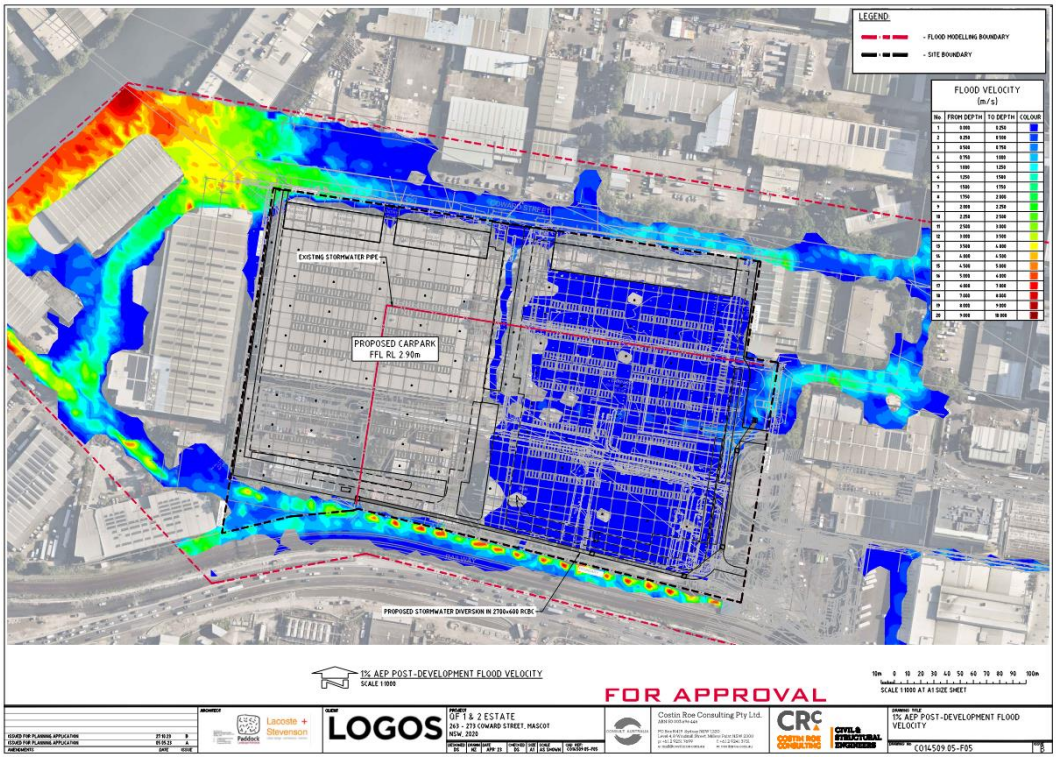

Figure 7.11: 1% AEP Post-developed Velocity

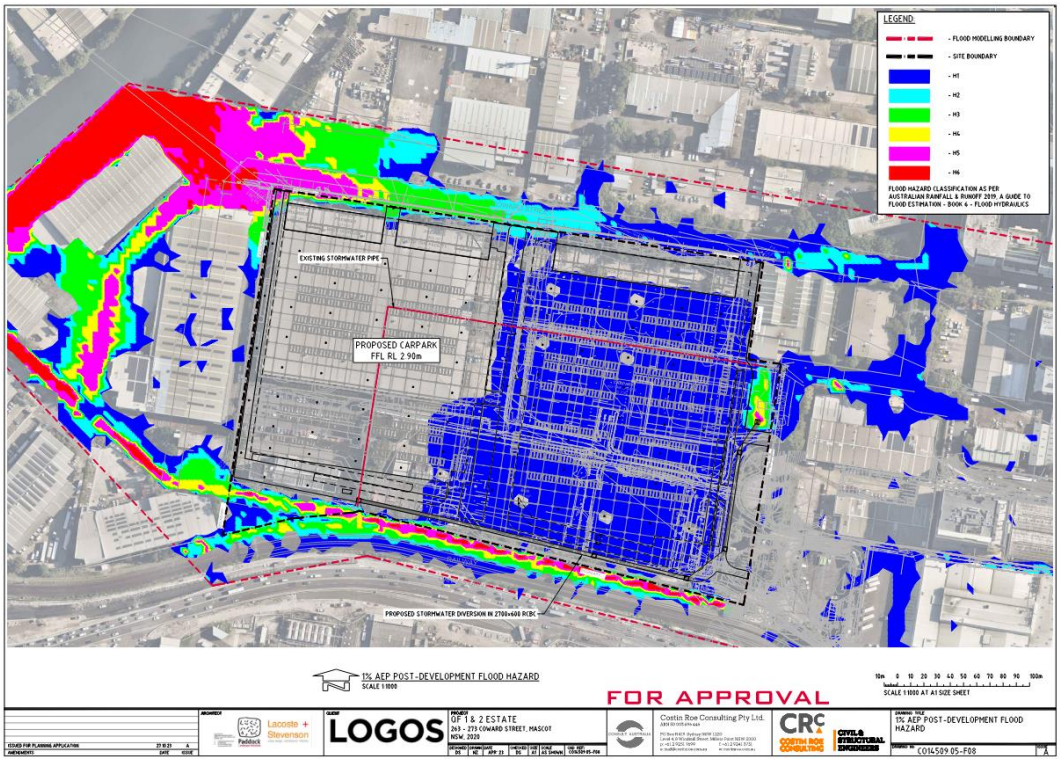

Figure 7.12: 1% AEP Post-developed Flood Hazard Categorisation

7.5.4 1% AEP Comparison

Figure 7.13 shows the 1% AEP flood level afflux (flood level difference) and **Figure 7.14** shows the 1% AEP velocity afflux, associated with the development.

The output for the 1% AEP storm event shows that:

- There is no upstream change to flood levels external to the site for any of the flow paths which enter the site;
- Flows within the site are able to be conveyed to the stormwater channel through the inground culvert and the overland flow path;
- Flood storage is achieved within the carpark;
- Minor afflux is experienced around the site discharge point. We note this is likely a function of the flood modelling software and has no impacts upstream or downstream of the site.

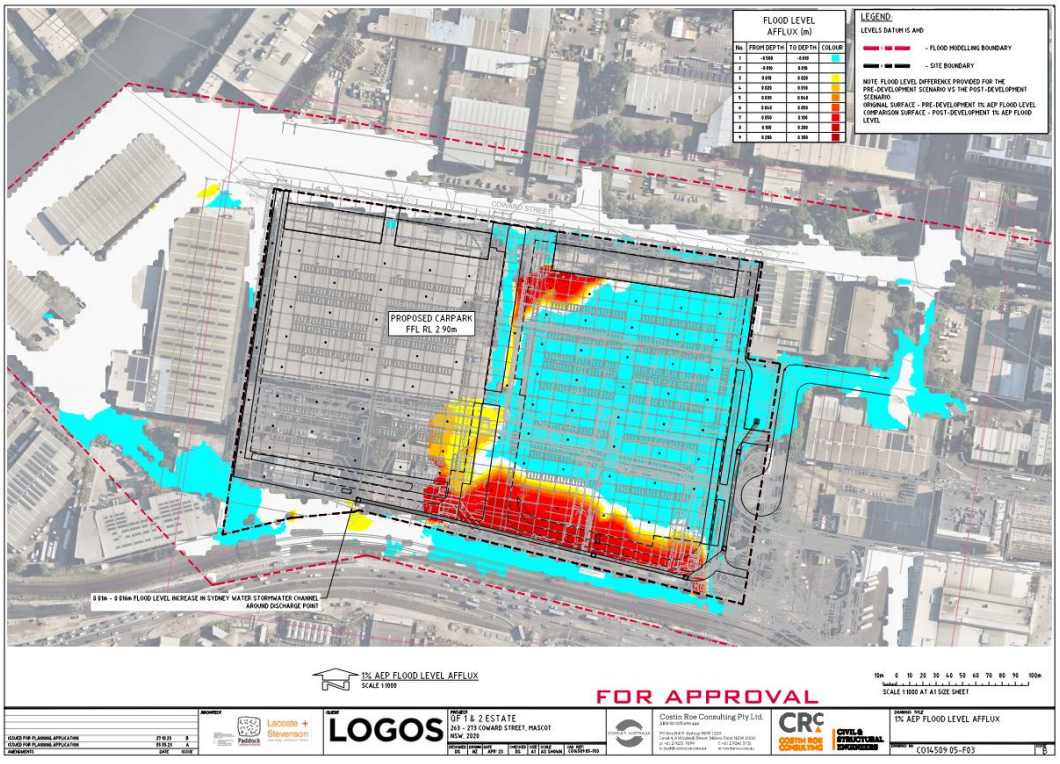

Figure 7.13: 1% AEP Post Developed Flood Level Afflux

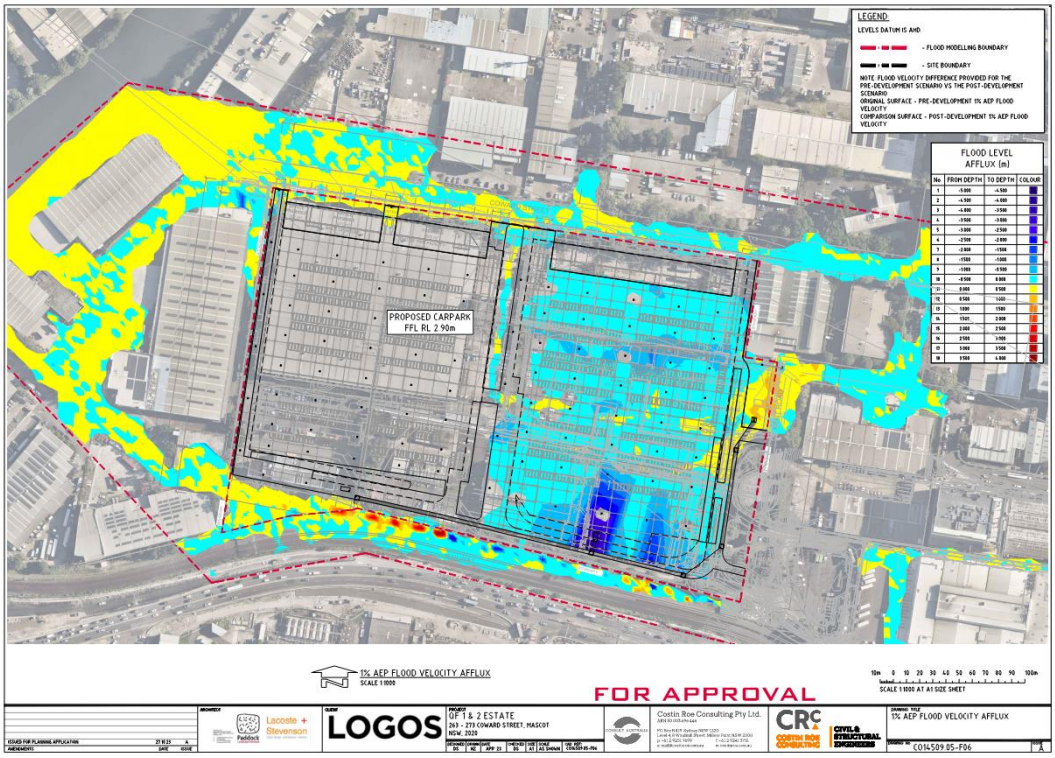

Figure 7.14: 1% AEP Post Developed Flood Velocity Afflux

7.5.5 Pre-Development PMF

Reference to **Figure 7.15** shows the post-developed 1% AEP output for depth and levels. **Figure 7.16** shows velocity and **Figure 7.17** shows true hazard categorisation.

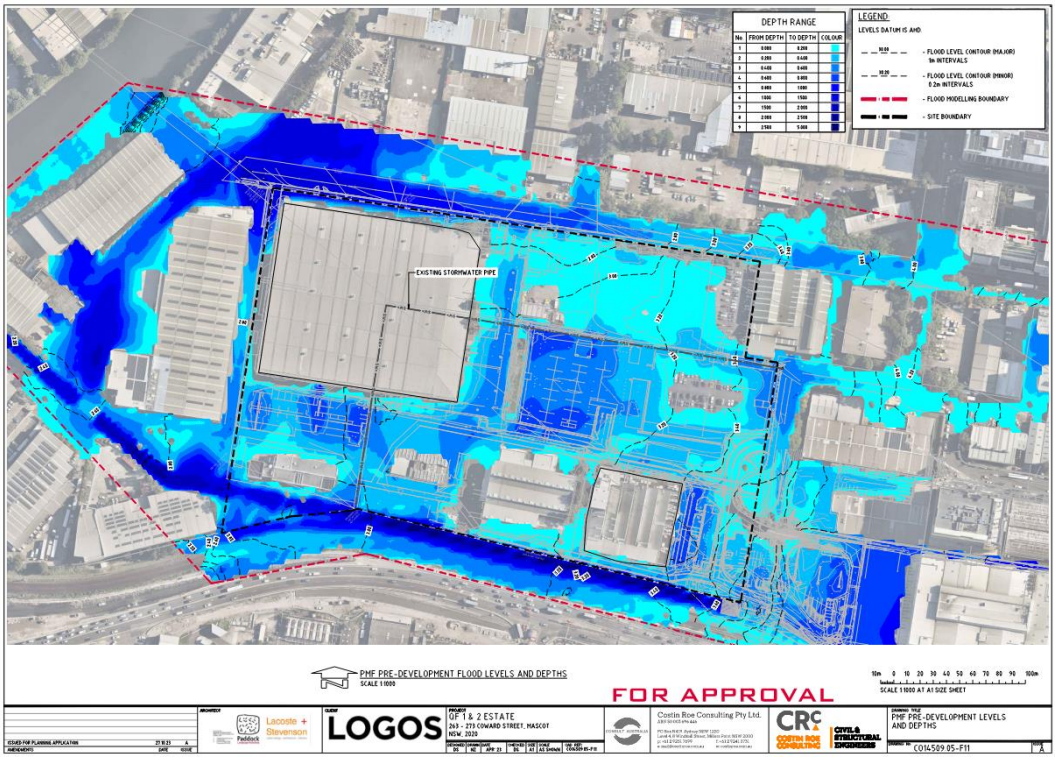

Figure 7.15: PMF Pre-developed Level and Depth Output

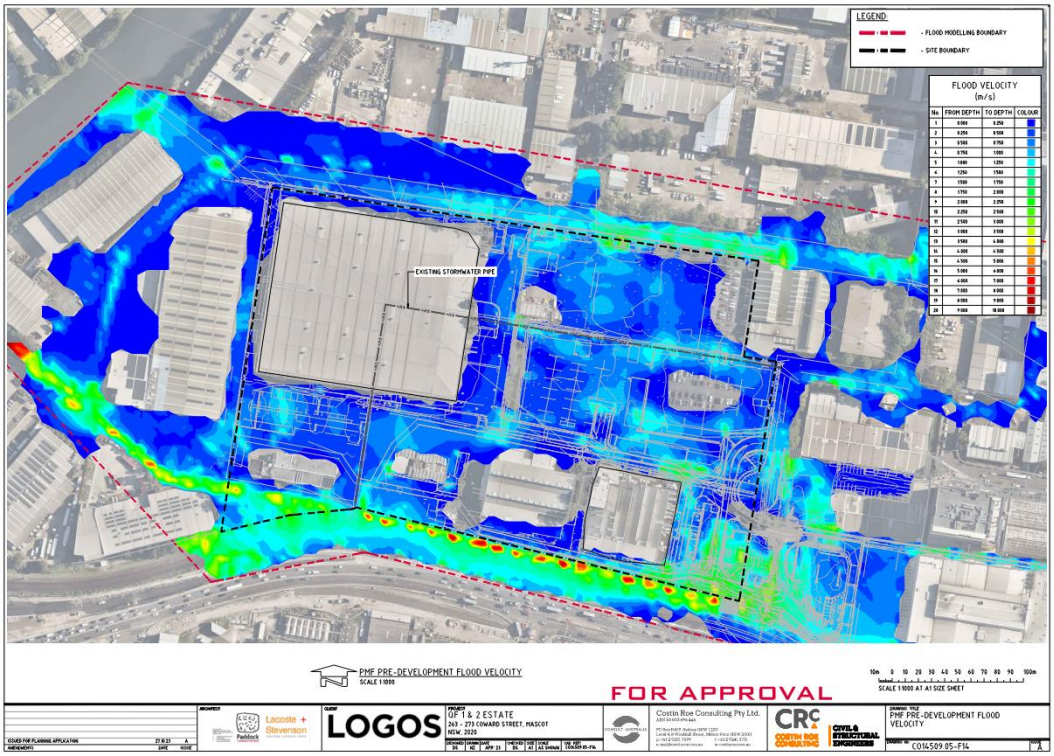

Figure 7.16: PMF Pre-developed Velocity

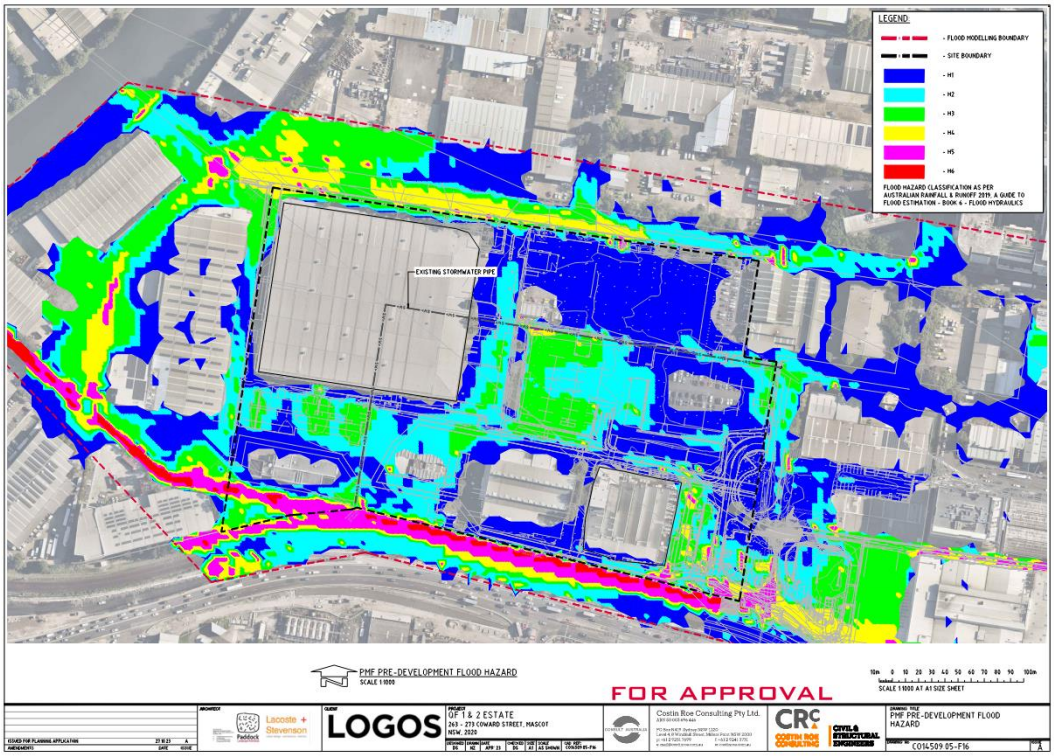

Figure 7.17: PMF Pre-developed Flood Hazard Categorisation

7.5.6 Post-Development PMF

Reference to **Figure 7.18** shows the post-developed 1% AEP output for depth and levels. **Figure 7.19** shows velocity and **Figure 7.20** shows true hazard categorisation.

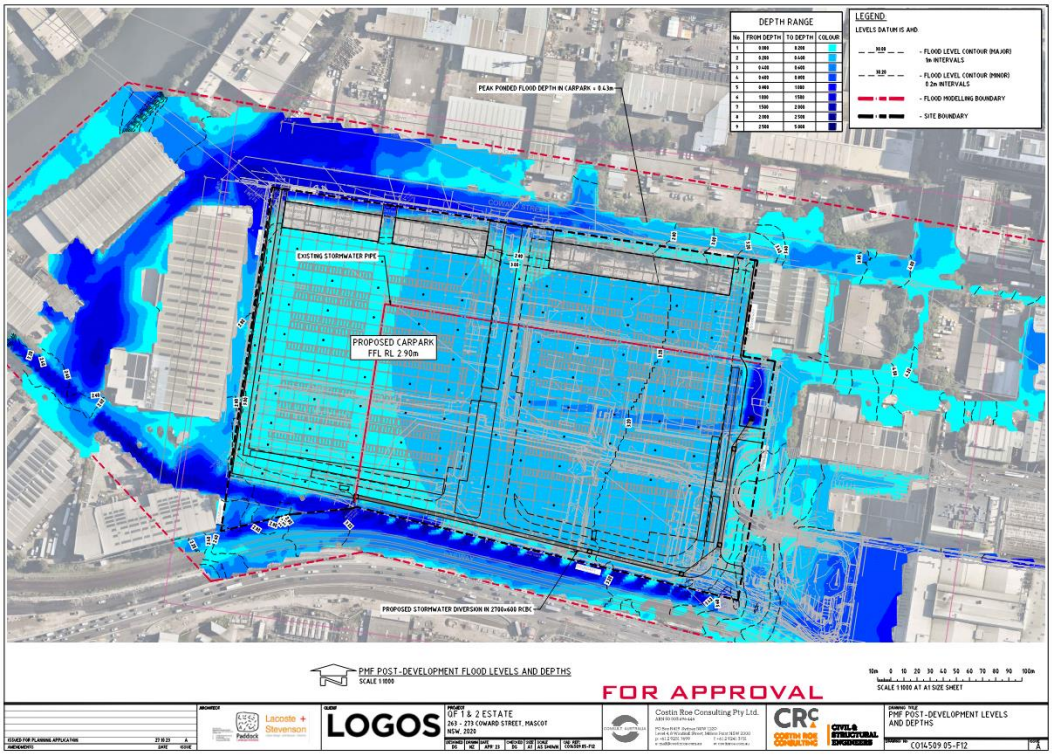

Figure 7.18: PMF Post-developed Level and Depth Output

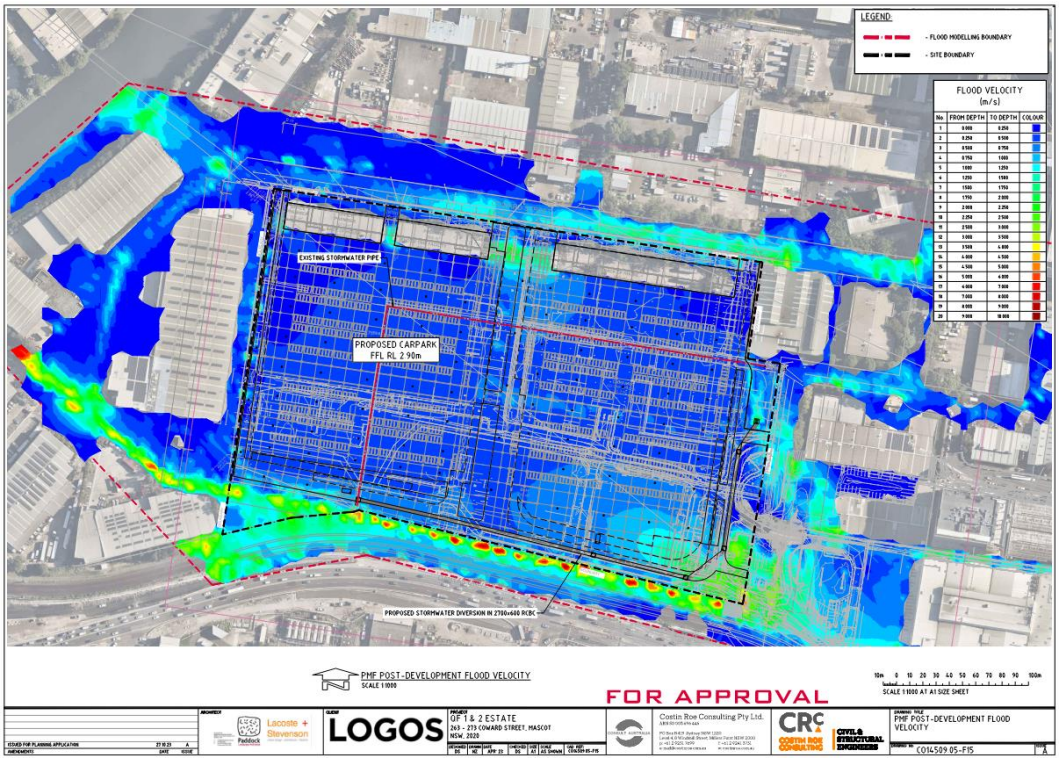

Figure 7.19: PMF Post-developed Velocity

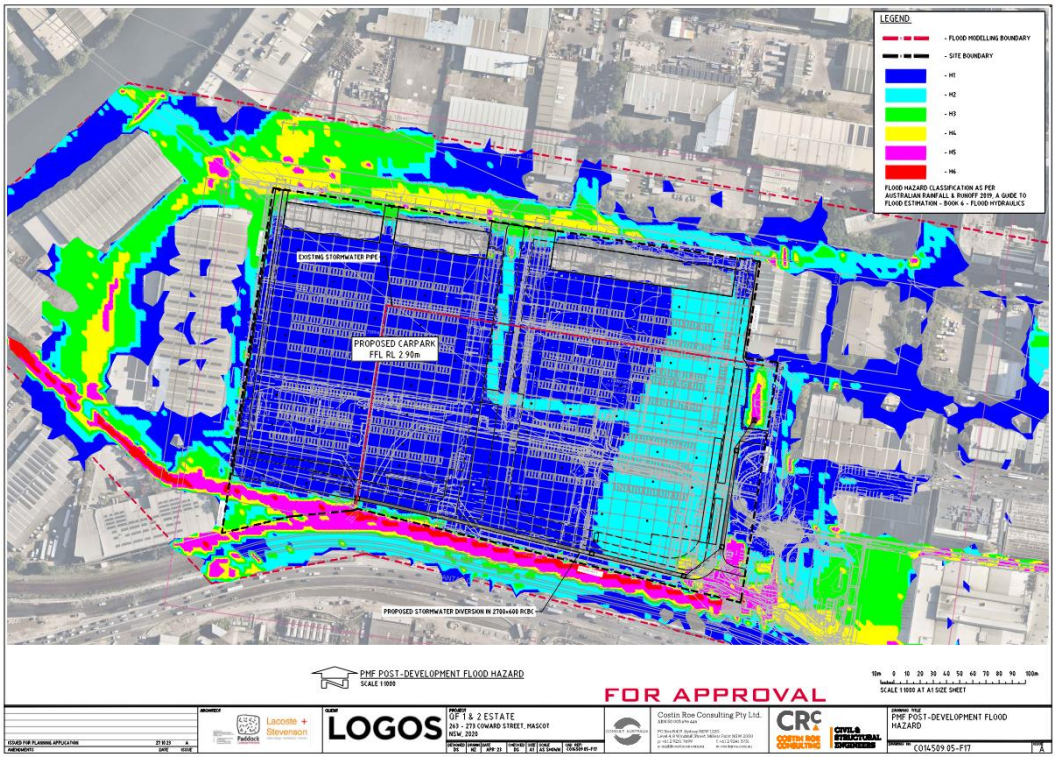

Figure 7.20: PMF Post-developed Flood Hazard Categorisation

7.5.7 Climate Change Consideration

As required by the Bayside Council DCP 2022, additional flood modelling has been completed to simulate the effects of climate change on flood conditions. Flood conditions for the 0.2% AEP and 0.5% AEP storm events have been modelled. Refer to flood plans in **Appendix I2**.

7.6 Floodplain Management Considerations

7.6.1 Flood Planning Level

The introduction of a Flood Planning Level (FPL) is an important flood risk management measure. FPLs are derived from a combination of a designated flood event, which can either be a historic flood or a design flood of a certain recurrence interval, plus a nominated freeboard depth.

The *NSW Floodplain Development Manual, 2023* recommends that the FPL generally be based on the 100-year ARI event. It suggests that, whilst this event can be varied, it should only be done in exceptional circumstances. It is considered appropriate to adopt the 1% AEP event for the proposed industrial development.

The freeboard component of an FPL is the difference between the flood level that the level is based upon and the FPL itself. Freeboard is designed to provide reasonable certainty that the reduced risk exposure provided by the chosen FPL is warranted, taking into account factors such as:

- Uncertainties in the estimate of flood levels;
- Differences in water levels across the floodplain;
- Wave action resulting from wind and vehicular/marine traffic during the flood event;
- Changes in rainfall patterns due to climate change;
- The cumulative effect of subsequent infill development on existing zoned land.

The *Floodplain Development Manual* recommends a freeboard of 0.5m for most new industrial developments and it is considered appropriate that this recommended freeboard be for adopted for the proposed development.

The FPL defined in the *Floodplain Development Manual* is noted to be consistent with that of Bayside Council.

7.6.2 Hydraulic and Hazard Categorisation

Floodwaters can vary significantly, both in time and place across the floodplain. They can flow fast and deep at some locations and slow and shallow at other locations. This can result in large variations to the personal danger and physical property damage resulting from the flood.

The Floodplain Development Manual recognises three hydraulic categories of flood prone land, these being floodway, flood storage and flood fringe. These are then further separated into two hazard categories, high hazard and low hazard.

Floodways

Floodways are those areas where a significant volume of water flows during floods and are often aligned with natural channels. They are areas that, even if only partially blocked, would cause a significant redistribution of flood flow, which could adversely affect other areas. They can also be areas with deeper and higher velocity flow.

Flood Storage

Flood storage areas are the parts of the floodplain that provide temporary storage for floodwaters during the passage of a flood. If a reduction in the flood storage area is experienced due to the filling of land or construction of a levee bank, it can result in adverse effects on the flood levels and peak flow rates in other areas.

Flood Fringe

Flood fringe areas are the remaining area of land affected by flooding. The development of flood fringe land does not generally have any major impact on the pattern of flood flows and/or levels.

The preparation of a flood study is almost always required in the determination of hydraulic categories. This is so that peak depths, velocities and the extent of flooding can be determined across the catchment.

Hazard Categories

Flood hazard categories are broken down into high and low hazard for each hydraulic category. High hazard areas are defined as those where there is a possible danger to personal safety and the potential for significant structural damage. Able-bodied adults would have difficulty in wading to safety. With low hazard areas, should it be necessary, a truck could evacuate people and their possessions, and able-bodied adults would have little difficulty in wading to safety.

Flood hazard criteria within the site has been defined as H1 in relation to the overland flow path on site.

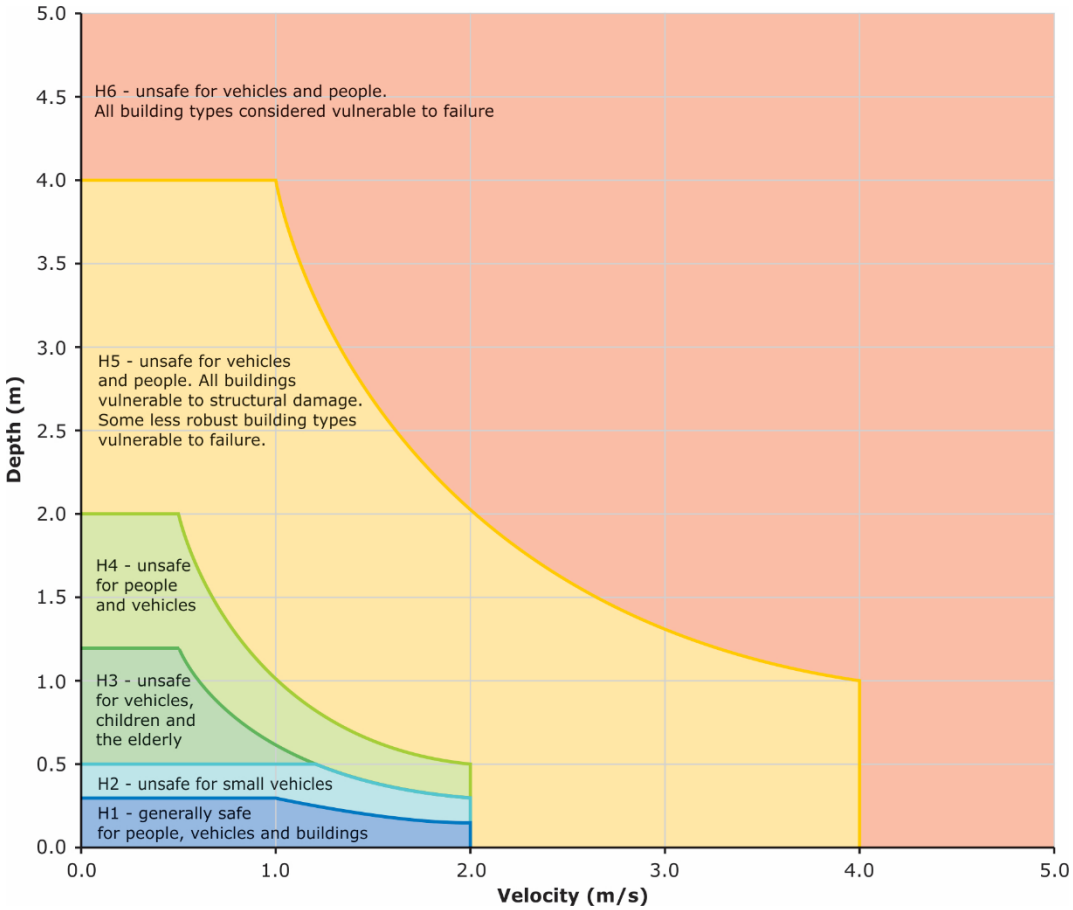

Figure 6.7.9. Combined Flood Hazard Curves (Smith et al., 2014)

Table 6.7.3. Combined Hazard Curves - Vulnerability Thresholds (Smith et al., 2014)

Hazard Vulnerability Classification	Description
H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles. children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Table 6.7.4. Combined Hazard Curves - Vulnerability Thresholds Classification Limits (Smith et al., 2014)

Hazard Vulnerability Classification	Classification Limit (D and V in combination)	Limiting Still Water Depth (D)	Limiting Velocity (V)
H1	D*V ≤ 0.3	0.3	2.0
H2	D*V ≤ 0.6	0.5	2.0
H3	D*V ≤ 0.6	1.2	2.0
H4	D*V ≤ 1.0	2.0	2.0
H5	D*V ≤ 4.0	4.0	4.0
H6	D*V > 4.0	-	-

Figure 7.14. Adopted Hazard Criteria and Provisional Flood Hazard Chart (Australian Rainfall and Runoff 2019)

7.6.3 Flood Damages

Damage caused by floods is generally categorised as either tangible or intangible. Tangible damages are financial in nature and can be readily measured in monetary terms. They include direct damages such as damage or loss caused by floodwaters wetting goods and property, and indirect damages such as lost wages incurred during clean-up periods after the flood event. Intangible damage includes emotional stress and even mental and physical illness caused by the flood. It is difficult, if not impossible to quantify intangible damages in financial terms.

From a flood planning perspective, it is important to consider the following direct damage categories:

- Contents Damage – refers to damage to the contents of buildings, including carpets and furniture etc.;
- Structural Damage – refers to damage to the structural fabric of buildings, such as foundations, walls floors, windows, and built-in fittings; and
- External Damage – includes damage to all items external to buildings, including cars, landscaping etc.

As there is no way to prevent a flood from occurring, and it is unrealistic to exclude all development within flood-prone areas, the intent of establishing a FPL is to minimise the risk of direct damage when a flood occurs. By minimising the direct damage, there is a carry-on effect, whereby other associated indirect tangible damages and intangible damages are also minimised.

7.6.4 Emergency Response Planning

Flood planning refers to the preparation of a formal community-based plan of action to deal with the threat, onset and aftermath of flooding. It involves planning for an event equal to, or greater than the event used to derive the FPL.

The plan of action should include an on-site response plan that addresses what measures should be undertaken once the threat of a flood is determined to be imminent. A flood evacuation strategy should also be included so that all persons within the precinct are familiar with the processes required if a flood occurs.

7.7 Confirmation of Floodplain Management Requirements & Development Strategy

Council's *Floodplain Management Policy* provides relevant policy requirements relating to development in and around identified flood affected development sites.

The intent of the document is to ensure that new developments do not experience undue flood risk and that existing development is not adversely flood affected through increased damage or hazard as a result of new development.

The flood planning level (FPL) for business/ industrial to be at or above the 1% AEP (1 in 100-year ARI) flood level plus 0.5m freeboard as noted in **Section 7.4.1**. We note the lowest proposed habitable building level is RL 6.80m AHD.

The PMF or extreme event provides an upper limit of flooding and associated consequences for the problem being investigated. It is used for emergency response planning purposes to address the safety of people.

Provision of overland flow paths from Kent Road to Coward Street and the Sydney Water stormwater channel have been included in the design. This allows for unimpeded conveyance of overland flows without adverse impact to properties upstream, downstream or adjacent to the site. The arrangement of the overland flow path is depicted on drawing **Co14509.05-SK400** in **Appendix A**. The design of the levels along the flow route have been completed to ensure the existing overland flow path and conveyance route is not impeded, and adequate capacity is maintained for the overland flow path. Most of the overland flow is proposed to be intercepted in a drainage apron and conveyed through a 2700x600 box culvert running around the perimeter of the lower ground carpark, where it will discharge into the Sydney Water channel at the existing connection point. A small portion of the overland flow path will be conveyed through the carpark through the carparking aisle to Coward Street. The above ground flow path is expected to have a maximum velocity of 0.6m/s and maintains the H1 hazard categorisation in the 1% AEP flood event. This is confirmed in our TUFLOW modelling.

Overall flood risk for the development and from the development is considered low to negligible. The FFL of the warehouse is proposed to be constructed at the council's specified flood planning level and the existing overland flow path between King Street and the stormwater channel is maintained. Therefore, the development meets current council flood policy.

7.8 Flood Assessment Conclusion

A review of available flood study extracts has been made to determine flood behaviour in relation to the proposal.

Review of the available information, including Councils adopted flood study, shows the site is classified as a low flood hazard site during the 1% AEP Flood Event. The site is affected by overland flow paths that conveys runoff from Kent Road to an existing Sydney Water stormwater channel and to Coward Street.

The proposed building FFL is set at the flood planning level specified by Bayside Council. Safe refuge is available on the site for users during an extreme flood event via the suspended hardstand areas above.

The existing overland flow path between Kent Road to Coward Street & the Sydney Water stormwater channel has been maintained and provisions for a H1 hazard categorisation in the carpark.

Based on the assessment and management strategy proposed, the development meets current council flood policy and shows acceptable impacts in relation to flooding and flood safety.

8 CONSTRUCTION SOIL AND WATER MANAGEMENT

8.1 Soil and Water Management General

Without any mitigation measures and during typical construction activities, site runoff would be expected to convey a significant sediment load. A *Soil and Water Management Plan* (SWMP) and *Erosion and Sediment Control Plan* (ESCP), or equivalent, would be implemented for the construction of the Proposal. The SWMP and ESCPs would be developed in accordance with the principles and requirements of *Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book')(Landcom, 2004)* with a staged approach.

In accordance with the principles included in the Blue Book, a number of controls have been incorporated into a preliminary Staged ESCP (refer to accompanying Drawings in **Appendix A**) and draft SWMP in **Appendix B**. The Staged ESCP considers initial site establishment, requirements during construction of roads and infrastructure and estate earthworks, completion of estate works and the period between this and development of individual lots.

Section 1 provides a summary of the expected construction works as part of the future development of the site. While all construction activities have the potential to impact on water quality, the key activities are:

- Erosion and sediment control installation.
- Grading of existing earthworks to suit building layout, drainage layout and pavements.
- Stormwater and drainage works.
- Service installation works.
- Building construction works.

The sections below outline the proposed controls for management of erosion and sedimentation during construction of the Proposal. The staged approach would need to consider initial site establishment, construction of the estate and the period between completed of the estate infrastructure works and development of individual lots in the estate.

8.2 Typical Management Measures

Sediment Basins

Sediment basins have been sized (based on 5 day 85th percentile rainfall) and located to ensure sediment concentrations in site runoff are within acceptable limits. Preliminary basin sizes have been calculated in accordance with the Blue Book and are based on 'Type C' soils. These soils are fine grained and require a relatively long residence time to allow settling.

Sediment basins for 'Type C' soils are typically wet basins which are pumped out following a rainfall event when suspended solids concentrations of less than 50 mg/L have been achieved.

Sediment Fences

Sediment fences are located around the perimeter of the site to ensure no untreated runoff leaves the site. They have also been located around the existing drainage channels to minimise sediment migration into waterways and sediment basins.

Stabilised Site Access

For the proposal, stabilised site access is proposed at one location at the entry to the works area. This will limit the risk of sediment being transported onto surrounding public roads.

8.3 Other Management Measures

Other management measures that will be employed are expected to include:

- Minimising the extent of disturbed areas across the site at any one time.
- Progressive stabilisation of disturbed areas or previously completed earthworks to suit the proposal once trimming works are complete.
- Regular monitoring and implementation of remedial works to maintain the efficiency of all controls.

It is noted that the controls included in the preliminary ESCP are expected to be reviewed and updated as the design, staging and construction methodology is further developed for the Proposal.

9 CONCLUSION

This Civil Engineering Report has been prepared to support a planning a planning proposal to amend the Bayside LEP to increase the maximum FSR of the site from 1.2:1 to 2:1 and permit additional land use activities under Schedule 1.

A set of recommended stormwater management objectives has been included in this report, based on industry best practice, Bayside Council and other relevant stakeholder policies.

A potential civil engineering strategy for the site has been included to guide any potential development when considering the constraints of the existing landform and indicative concept plans.

The hydrological assessment proves local post development flows from the site will be less than pre-development flows and demonstrates that the site discharge will not adversely affect any land, drainage system or watercourse as a result of the development.

During the future construction phase, a Sediment and Erosion Control Plan would be in place to ensure the downstream drainage system and receiving waters are protected from sediment laden runoff.

During the operational phase of the development, a treatment train incorporating the use of a primary and tertiary water quality treatment systems will be required to mitigate increased stormwater pollutant loads generated by the development.

It is recommended the management objectives in this report are used as part of precinct DCP's, and form the basis for future detailed or development application designs.

10 REFERENCES

- Bayside Council (2022). Bayside Council Development Control Plan 2022
- NSW Government (2005). *Floodplain Development Manual.*
- Managing Urban Stormwater: Harvesting and Reuse – 2006 (NSW DEC);
- Managing Urban Stormwater: Source Control – 1998 (NSW EPA);
- Managing Urban Stormwater: Treatment Techniques – 1997 (NSW EPA);
- Landcom (2004). *Managing Urban Stormwater – Soils and Construction* – 4th Edition.
- Water Sensitive Urban Design – "Technical Guidelines for Western Sydney" by URS Australia Pty Ltd, May 2004

Appendix A

DRAWINGS BY COSTIN ROE CONSULTING

QF1 & 2 ESTATE

263 - 273 COWARD STREET, MASCOT, NSW

CIVIL DRAWINGS FOR PLANNING APPLICATION

DRAWING LIST

DRAWING NO.	DRAWING TITLE
C014509.05-SK100	DRAWING LIST AND GENERAL NOTES
C014509.05-SK200	EROSION & SEDIMENT CONTROL PLAN
C014509.05-SK250	EROSION & SEDIMENT CONTROL DETAILS - SHEET 1
C014509.05-SK251	EROSION & SEDIMENT CONTROL DETAILS - SHEET 2
C014509.05-SK300	BULK EARTHWORKS KEY PLAN
C014509.05-SK310	BULK EARTHWORKS CUT/FILL PLAN
C014509.05-SK350	BULK EARTHWORKS SECTIONS - SHEET 1
C014509.05-SK351	BULK EARTHWORKS SECTIONS - SHEET 2
C014509.05-SK400	STORMWATER DRAINAGE PLAN
C014509.05-SK450	STORMWATER DRAINAGE DETAILS - SHEET 1
C014509.05-SK451	STORMWATER DRAINAGE DETAILS - SHEET 2
C014509.05-SK452	STORMWATER DRAINAGE DETAILS - SHEET 3

GENERAL NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE.
   ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
   ENGINEER'S DRAWINGS ISSUED IN ANY ELECTRONIC FORMAT MUST NOT BE USED FOR DIMENSIONAL SETOUT.
   REFER TO THE ARCHITECT'S DRAWINGS FOR ALL DIMENSIONAL SETOUT INFORMATION.
4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
5. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
6. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.

ELECTRONIC INFORMATION NOTES:

1. THE ISSUED DRAWINGS IN HARD COPY OR PDF FORMAT TAKE PRECEDENCE OVER ANY ELECTRONICALLY ISSUED INFORMATION, LAYOUTS OR DESIGN MODELS.
2. THE CONTRACTOR'S DIRECT AMENDMENT OR MANIPULATION OF THE DATA OR INFORMATION THAT MIGHT BE CONTAINED WITHIN AN ENGINEER-SUPPLIED DIGITAL TERRAIN MODEL AND ITS SUBSEQUENT USE TO UNDERTAKE THE WORKS WILL BE SOLELY AT THE DISCRETION OF AND THE RISK OF THE CONTRACTOR.
3. THE CONTRACTOR IS REQUIRED TO HIGHLIGHT ANY DISCREPANCIES BETWEEN THE DIGITAL TERRAIN MODEL AND INFORMATION PROVIDED IN THE CONTRACT AND/OR DRAWINGS AND IS REQUIRED TO SEEK CLARIFICATION FROM THE SUPERINTENDENT.
4. THE ENGINEER WILL NOT BE LIABLE OR RESPONSIBLE FOR THE POSSIBLE ON-GOING NEED TO UPDATE THE DIGITAL TERRAIN MODEL, SHOULD THERE BE ANY AMENDMENTS OR CHANGES TO THE DRAWINGS OR CONTRACT INITIATED BY THE CONTRACTOR.

EXISTING SERVICES NOTES:

1. DURING THE EXECUTION OF WORKS, THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF EXISTING SERVICES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE EXISTING SERVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY, AT NO COST TO THE PRINCIPAL.
2. WHERE IT IS NECESSARY TO REMOVE, DIVERT OR CUT INTO ANY EXISTING SERVICE, THE CONTRACTOR SHALL GIVE AT LEAST THREE (3) DAYS NOTICE OF ITS REQUIREMENTS TO THE SUPERINTENDENT, WHO WILL ADVISE WHAT ARRANGEMENTS SHOULD BE MADE FOR THE ALTERATION OF SUCH EXISTING WORKS.
3. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA. THE ACCURACY IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCING WORK. ALL CLEARANCES AND APPROVALS SHALL ALSO BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF WORK.
4. ALL NEW AND EXHUMED SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENTS WITHIN THE SITE SHALL BE BACKFILLED WITH DGB20 MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD DENSITY RATIO. SUBJECT TO PRIOR APPROVAL FROM RELEVANT AUTHORITY.
5. ON COMPLETION OF SERVICES INSTALLATION. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
6. CARE TO BE TAKEN WHEN EXCAVATING NEAR UTILITY SERVICES. NO MECHANICAL EXCAVATION TO BE UNDERTAKEN OVER SERVICES. LIAISE WITH RELEVANT AUTHORITY.
7. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT. ALL TO REGULATORY AUTHORITY STANDARDS AND APPROVAL.
8. THE CONTRACTOR IS TO MAINTAIN EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE ROADS AT ALL TIMES. MAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT ALL TIMES.
9. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL OF THE PROGRAM FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
10. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
11. INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO THE ADJACENT RESIDENCES. CONTRACTOR TO GAIN APPROVAL OF THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
12. THE CONTRACTOR SHALL UNDERTAKE A DIAL BEFORE YOU DIG (DBYD 1100) SERVICES SEARCH BEFORE THE COMMENCEMENT OF ANY WORKS.

SITE LOCATION PLAN
NTS

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design · architecture · interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.03-SK100

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
DRAWING LIST AND GENERAL NOTES

DRAWING No C014509.05-SK100

ISSUE A

CLEAN WATER PUMP OUT
TO EXISTING KERB INLET PIT

KERB INLET CONTROL
REFER TO DETAIL ON SK250

COWARD STREET

STABILISED CONSTRUCTION ENTRY
REFER TO DETAIL ON SK250
TYPICAL

SILT FENCE ONLY

DIVERSION SWALE
REFER TO DETAIL ON SK250

SEDIMENT BASIN (TYPE C):

CATCHMENT AREA	= 9.5Ha
DISTURBED AREA	= 9.5Ha
BASIN SURFACE AREA	= 2870m^2
REQUIRED SETTLING ZONE	= 1722m^3
REQUIRED STORAGE ZONE	= 24m^3
REQUIRED BASIN VOLUME	= 1746m^3
PROVIDED BASIN VOLUME	= 17521m^3

REFER TO BLUE BOOK SD 6-3.

NOMINAL STOCKPILE LOCATION
T.B.C. ON SITE
REFER TO DETAIL ON SK250

KENT ROAD

SILT FENCE ONLY

QANTAS DRIVE

EROSION CONTROL NOTES:

ALL CONTROL WORK INCLUDING DIVERSION BANKS AND CATCH DRAINS, V-DRAINS AND SILT FENCES SHALL BE COMPLETED DIRECTLY FOLLOWING THE COMPLETION OF THE EARTHWORKS.

1. SILT FENCES AND SILT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
2. HAY BALE BARRIERS AND GEOFABRIC FENCES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS, IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL.
3. ALL TEMPORARY EARTH BERMS, DIVERSION AND SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
4. CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
6. ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING, TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
7. ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
8. ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
9. ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
10. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
11. AFTER REVEGETATION OF THE SITE IS COMPLETE AND THE SITE IS STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SILT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
12. ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
13. ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
14. ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES APPROVED IN THE EROSION AND SEDIMENTATION CONTROL PLAN.
15. ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES.
16. THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES, SHALL BE FREE OF POLLUTANTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
17. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.

LEGEND:

PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS.
TYPICAL (N.S.O.P.)

- DENOTES DIVERSION DRAIN
- DENOTES CLEAN WATER PUMP OUT
- DENOTES SILT FENCE WITH CATCH DRAIN
- DENOTES SILT FENCE ONLY
- DENOTES CONSTRUCTION ENTRY
- DENOTES OVERLAND FLOW PATH
- DENOTES PIT CONTROL

SEDIMENTATION BASIN NOTE:

FOR SEDIMENT & EROSION CONTROL DETAILS REFER TO DRAWING CO14509.05-SK250 & SK251.

SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER-THE BLUE BOOK'.
CAPACITY BASED UPON 5 DAY RAINFALL DEPTH AT 85th PERCENTILE INTENSITY (32.2mm).

APPROXIMATE AREA OF DISTURBED SITE = 9.5Ha

SEDIMENTATION BASINS TO COLLECT RUN-OFF IN EXTREME RAINFALL EVENTS. COLLECTED RUN-OFF TO BE ASSESSED BY A QUALIFIED LABORATORY FOR DOUSING RATES OF ALUM OR GYPSUM TO ENSURE COAGULATION OF SEDIMENTS PRIOR TO WATER BEING DISCHARGED TO COUNCIL STORMWATER SYSTEM.

EACH BASIN IS TO HAVE A MARKER PLACED AS PER THE DETAIL TO INDICATE WHEN SEDIMENT IS TO BE REMOVED. REMOVED SEDIMENT IS TO BE CLASSED AND DEWATERED PRIOR TO REMOVAL FROM SITE.

ALLOWANCE TO BE MADE DURING BENCHING OF SITE TO ENSURE RUN-OFF IS DIRECTED TO SEDIMENTATION BASINS.

NOTES:
1. ASSUME TYPE C SOIL (SAND/SILTY SAND)
SOIL TYPE TO BE ASSESSED BY A GEOTECHNICAL ENGINEER

RUSLE CALCULATION:

TOTAL CATCHMENT AREA = 9.5 Ha
DISTURBED CATCHMENT AREA = 9.5 Ha

A = R x K x LS x P x C

1. 2-yr, 6-hr ARI (S) = 11.4;
2. RAINFALL EROSIVITY FACTOR (R)
R = 164.74(1.1177)^S S$^{0.6444}$ = 2810;
3. SOIL ERODIBILITY FACTOR (K) = 0.030;
4. LENGTH/GRADIENT FACTOR (LS) = 0.18;
5. EROSION CONTROL PRACTICE FACTOR (P) = 1.3;
6. COVER FACTOR (C) = 1.0

SOIL LOSS (A) = 15m^3/ha/yr
= 142.5m^3/yr

EROSION & SEDIMENT CONTROL PLAN
SCALE 1:750

6m 0 15 30 45 60 75m
SCALE 1:750 AT A1 SIZE SHEET

FOR APPROVAL

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AMENDMENTS	DATE	ISSUE

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

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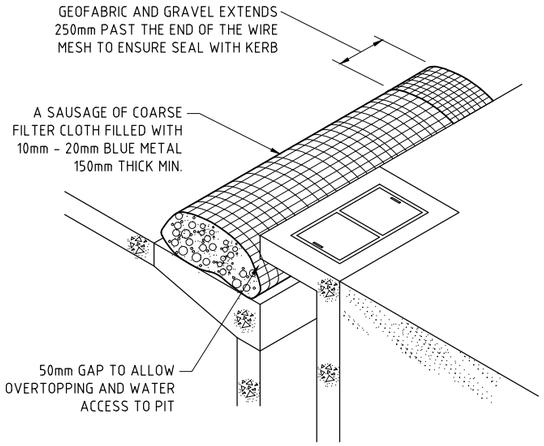
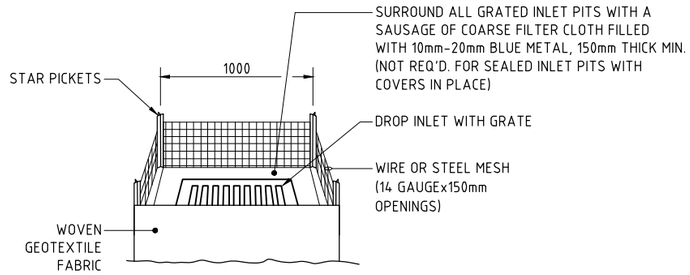
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
EROSION & SEDIMENT CONTROL PLAN

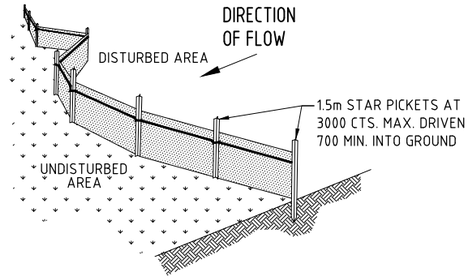
DRAWING No CO14509.05-SK200
ISSUE A



KERB INLET CONTROL
N.T.S

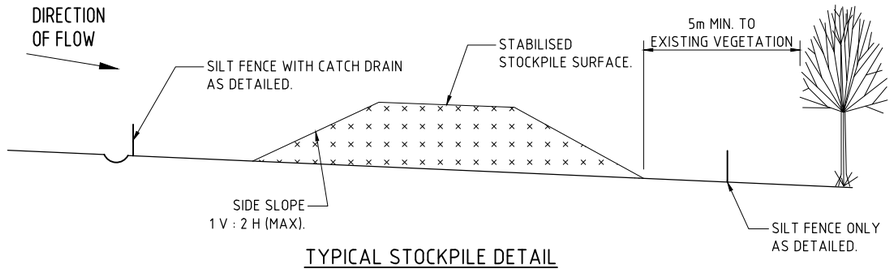


GRATED INLET PIT FILTER DETAIL
N.T.S



TYPICAL SILT FENCE DETAIL
N.T.S
NOTE: PROVIDE 1m RETURNS AT 30m INTERVALS. TYPICAL

NOTE :
ADOPT ABOVE DETAILS AROUND ALL PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.

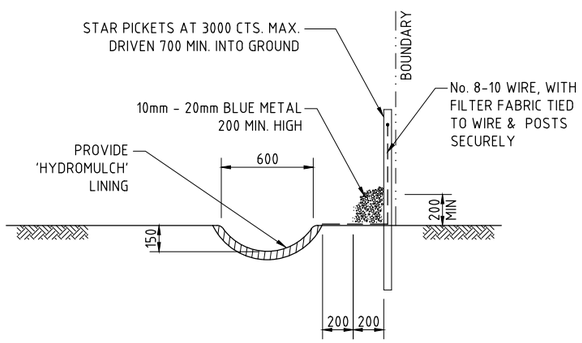


TYPICAL STOCKPILE DETAIL
N.T.S

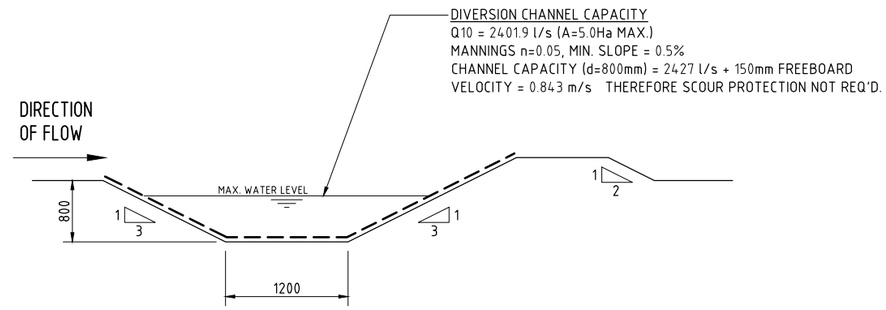
SECTION 1:20 1 - : STABILISED CONSTRUCTION ENTRANCE 'TRUCK SHAKER'

STOCKPILE NOTES

1. PLACE ALL STOCKPILES IN LOCATIONS MORE THAN 5m FROM EXISTING VEGETATION, ROADS & HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT ELONGATED MOUNDS. SIDE SLOPE TO BE 1 V: 2 H MAX.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE USING WOOD CHIP MULCH - 16 TONNE/Ha.
5. CONSTRUCT SILT FENCE WITH CATCH DRAIN ON UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES & SILT FENCE ONLY 1 TO 2m DOWNSLOPE AS SHOWN.



TYPICAL OPEN DRAIN & SILT FENCE
SCALE 1:20



DIVERSION DRAIN SECTION
SCALE 1:20

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT A1 SIZE SHEET

FOR APPROVAL

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urban design - architecture - interiors

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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.03-SK250

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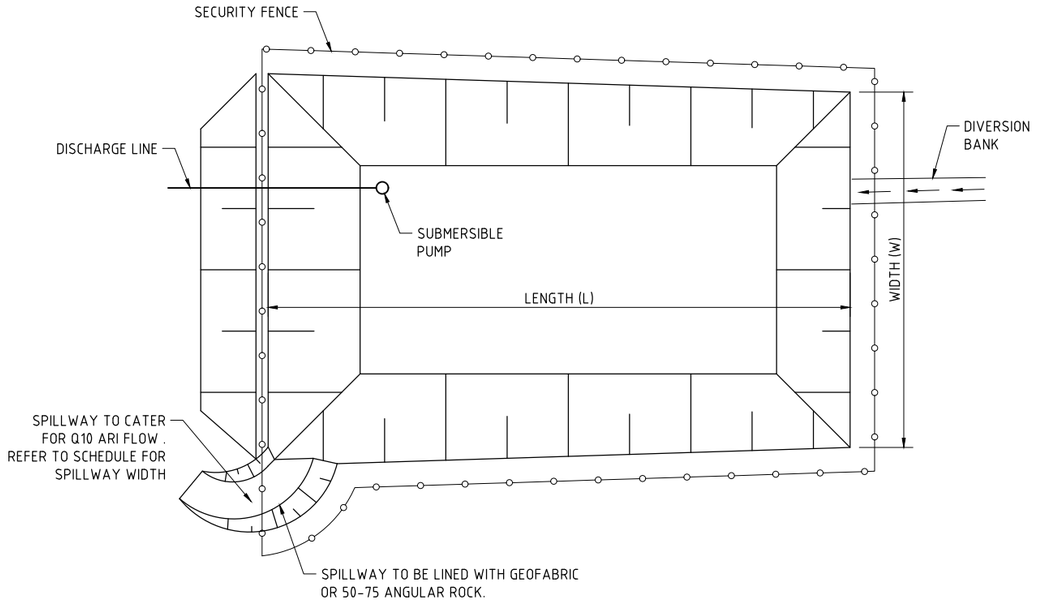
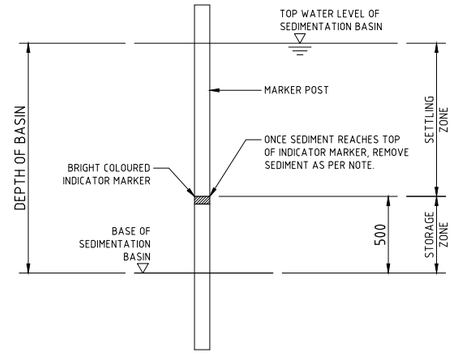
DRAWING TITLE
EROSION & SEDIMENT CONTROL DETAILS
SHEET 1

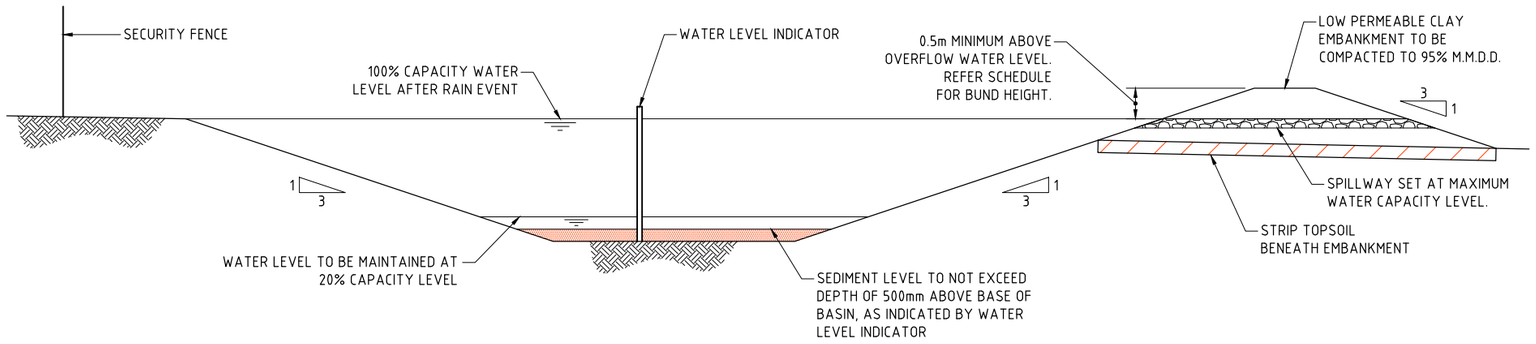
DRAWING No C014509.05-SK250
ISSUE A



TYPICAL SEDIMENT CONTROL POND PLAN
SCALE 1:250



SEDIMENT STORAGE MARKER
SCALE 1:20



TYPICAL SEDIMENT CONTROL BASIN SECTION
SCALE 1:50

2m 0 5 10 15 20 25m
SCALE 1:250 AT A1 SIZE SHEET

500mm 0 1 2 3 4 5m
SCALE 1:50 AT A1 SIZE SHEET

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	05.05.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Lacoste + Stevenson
urban design - architecture - interiors
Paddock Landscape Architects

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.03-SK251

CONSULT AUSTRALIA

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COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
EROSION & SEDIMENT CONTROL DETAILS SHEET 2

DRAWING No C014509.05-SK251
ISSUE A

SITE PREPARATION NOTES:

1. ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL ENGINEER.
2. EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS REF: SY074560.001.4 18/06/2021.
3. STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS DIRECTED. TOPSOIL BLENDING IS NOT ACCEPTABLE. ANY BLENDING PROPOSAL IS TO BE REFERRED TO THE ENGINEER.
4. COMPLETE CUT TO FILL EARTHWORKS TO ACHIEVE THE REQUIRED LEVELS AS INDICATED ON THE DRAWINGS WITHIN A TOLERANCE OF +0mm/-10mm THROUGH BUILDING PADS/PAVEMENTS AND +0mm/-20mm ELSEWHERE.
5. PREPARE STEEP BATTERS TO RECEIVE FILL BY CONSTRUCTING BENCHING TO FACILITATE FILL PLACEMENT AND COMPACTION. WHERE EXPOSED ROCK (WEATHERED SHALE OR SANDSTONE) IS ENCOUNTERED AT CUT SUBGRADE LEVEL, THE EARTHWORKS CONTRACTOR IS TO ALLOW TO RIP THE SURFACE TO A NOMINAL 0.3-0.4m DEPTH AND RECOMPACT (PER THE ENGINEERING SPEC) AS REQUIRED.
6. AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHED BATTERS) AND AREAS IN CUT SHALL BE PROOF ROLLED TO IDENTIFY ANY SOFT HEAVING MATERIAL. SOFT MATERIAL SHALL BE BOXED OUT AND REMOVED PRIOR TO FILL PLACEMENT. PROOF ROLLING TO BE INSPECTED BY A GEOTECHNICAL ENGINEER OR THE EARTHWORKS DESIGNER.
7. SITE WON FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
8. IMPORTED FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
9. ALL ENGINEERED FILL PARTICLES SHALL BE ABLE TO BE INCORPORATED WITHIN A SINGLE LAYER. FURTHER, LESS THAN 30% OF PARTICLES SHALL BE RETAINED ON THE 37.5 mm SIEVE. ENGINEERED FILL SHALL BE ABLE TO BE TESTED IN ACCORDANCE WITH THE STANDARD COMPACTION METHOD (AS1289.5.4.1) OR HILF TEST METHOD (AS1289.5.7.1). THESE METHODS REQUIRE LESS THAN 20% RETAINED ON THE 37.5 mm SIEVE. WHERE BETWEEN 20% AND 30% OF PARTICLES ARE RETAINED ON THE 37.5 mm SIEVE THE ABOVE TEST METHODS SHALL STILL BE ADOPTED AND TEST REPORTS ANNOTATED APPROPRIATELY. THESE REQUIREMENTS SHOULD BE MET BY THE MATERIAL AFTER PLACEMENT AND COMPACTION.
10. ALL THE EARTHWORKS UNDERTAKEN AND THE SUBGRADE CONDITION IN THE CUT AREAS (IN THE STATED PERIOD) ARE DOCUMENTED IN THE REPORTS AND HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
11. PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
12. EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
13. MATCH EXISTING LEVELS AT BATTER INTERFACE.
14. CONTRACTOR TO MATCH EXISTING LEVELS AT THE INTERFACE OF EARTHWORKS AND EXISTING SURFACE AT BATTER LOCATIONS OR WHERE NO RETAINING WALLS ARE PRESENT. ANY DISCREPANCY BETWEEN DESIGN AND EXISTING LEVELS TO BE REFERRED TO THE ENGINEER FOR DIRECTION OR ADJUSTMENTS TO DESIGN LEVELS.
15. DURING EARTHWORKS THE CONTRACTOR IS TO ENSURE ALL AREAS ARE FREE DRAINING & WILL NOT RETAIN WATER DURING RAINFALL. PROVIDE TEMPORARY MEASURES AS REQUIRED TO ENSURE FREE FLOWING RUNOFF THROUGH MANAGED DRAINAGE PATHS, DIVERSION DRAINS OR OTHER SUITABLE DISPOSAL METHOD AS AGREED DURING THE WORKS. REFER ANY CONCERNS TO THE ENGINEER. REFER TO EROSION AND SEDIMENT CONTROL DRAWINGS AND NOTES.

EARTHWORK ESTIMATES

SITE AREA = 9.5 Ha

CUT = ~55,600m³
FILL = + 200 m³

ALLOWANCES
DETAILED EXCAVATION = -14,250 m³
1,500 m³/Ha OVER 9.5 Ha)

DIFFERENCE = -69,650 m³ (i.e. CUT OVER FILL)

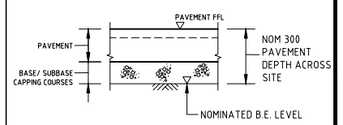
NOTE:
VOLUMES BASED ON 200 mm TOPSOIL STRIP / SLAB DEMOLITION OVER THE NOMINATED AREA. EARTHWORKS VOLUMES ARE APPROXIMATE ONLY.
NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES.
DETAILED EXCAVATION ALLOWANCE IS APPROXIMATE ONLY AND ACCOUNTS FOR STORMWATER/SERVICES TRENCHING AND FOUNDATIONS. THE DETAILED EXCAVATION VOLUMES ARE TO BE CONFIRMED BY THE CONTRACTOR. REFER ANY CONCERNS TO ENGINEER.

LEGEND:

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY LANDPARTNERS REFSY074560.001.4 DATED 18/06/2021.

- 50.00 – EXISTING CONTOUR (0.50m INTERVAL)
- 50.00 – B.E.L. CONTOUR (MAJOR 1.0m)
- 50.25 – B.E.L. CONTOUR (MINOR 0.25m)
- +50.00 – B.E.L. SPOT LEVEL



NOMINATED B.E.L. DETAIL
NTS

BULK EARTHWORKS PLAN
SCALE 1:750

6m 0 15 30 45 60 75m
SCALE 1:750 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT: Lacoste + Stevenson urban design · architecture · interiors; Paddock Landscape Architects

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.03-SK300

CONSULT AUSTRALIA

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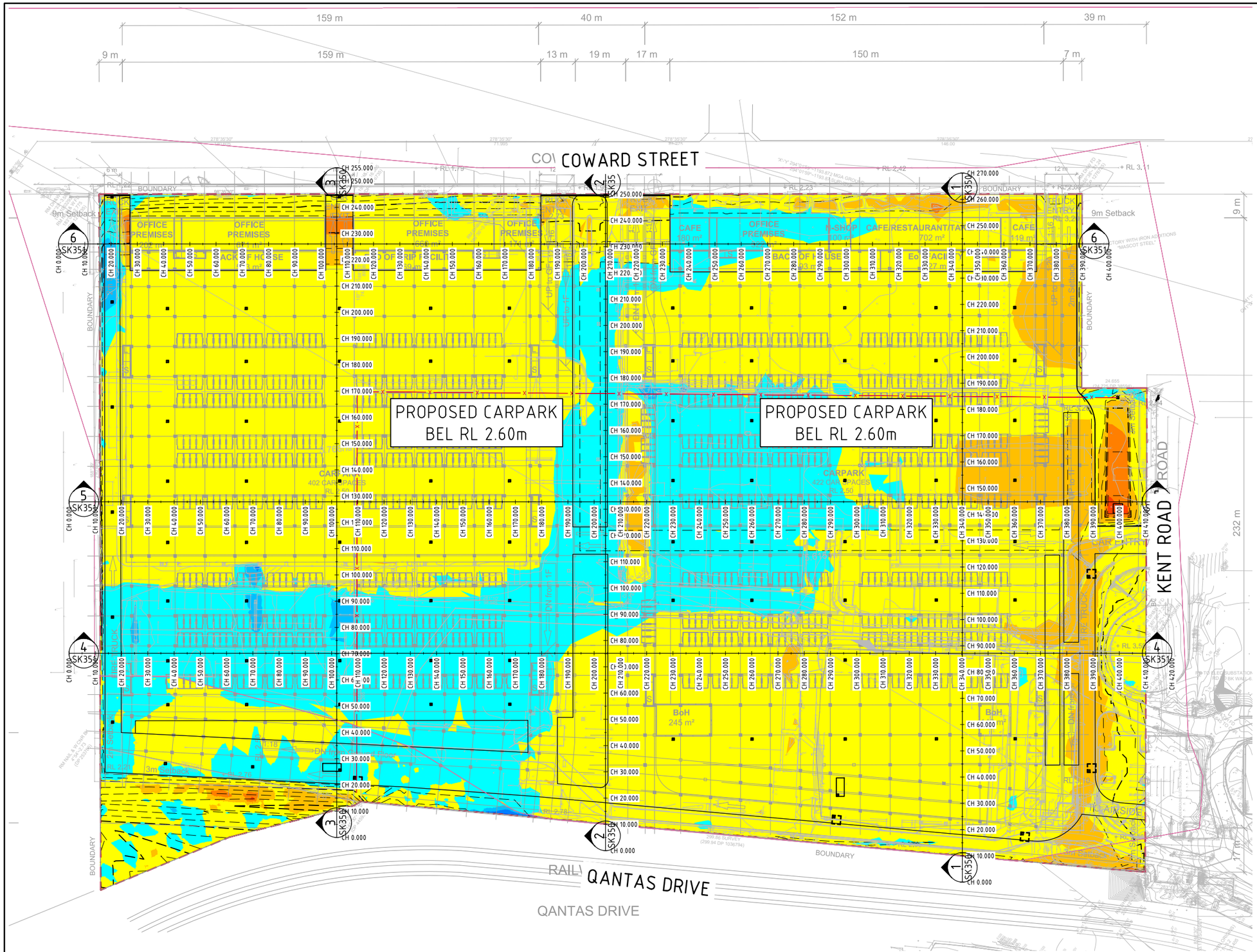
DRAWING TITLE: BULK EARTHWORKS PLAN

DRAWING No: C014509.05-SK300 ISSUE: A



DEPTH RANGE				
	No.	FROM DEPTH	TO DEPTH	COLOUR	DEPTH RANGE VOLUME
CUT	1	-2.000	-1.500		3m³
	2	-1.500	-1.000		88m³
	3	-1.000	-0.500		1060m³
	4	-0.500	0.000		23511m³
FILL	5	0.000	0.500		3782m³
	6	0.500	1.000		60m³
	7	1.000	1.500		5m³
	8	1.500	2.000		0m³

EARTHWORKS CUT/FILL PLAN

SCALE 1:750

FOR APPROVAL

6m 0 15 30 45 60 75m

SCALE 1:750 AT A1 SIZE SHEET

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT: Lacoste + Stevenson urban design - architecture - interiors; Paddock Landscape Architects

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.03-SK310

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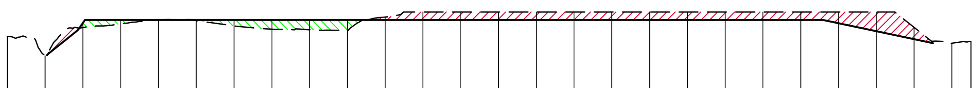
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: EARTHWORKS CUT/FILL PLAN

DRAWING No: C014509.05-SK310

ISSUE: A

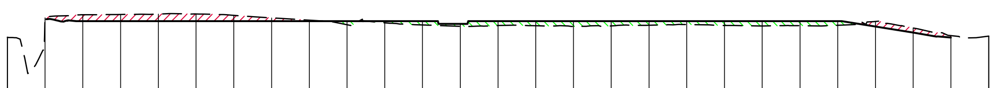


DATUM -1.00

CUT/FILL DEPTH			0.245	0.198	-0.003	0.025	0.308	0.478	0.513	0.565	-0.160	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.430	-0.599	-1.017	-0.624		
BULK EARTHWORKS LEVEL			2.452	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.431	2.013	1.594		
EXISTING SURFACE LEVEL	1.73	0.719	2.207	2.402	2.603	2.575	2.292	2.122	2.087	2.035	2.760	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	3.030	2.218	1.379	1.48
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	255.000

SECTION 3

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

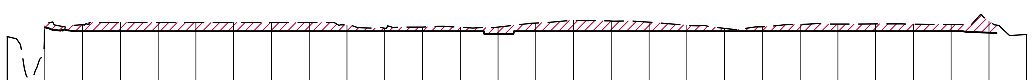


DATUM -2.00

CUT/FILL DEPTH			-0.337	-0.347	-0.371	-0.375	-0.300	-0.171	-0.050	0.188	0.091	0.198	0.124	0.233	0.243	0.281	0.252	0.214	0.179	0.227	0.260	0.241	0.218	-0.269	-0.247		
BULK EARTHWORKS LEVEL			2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.450	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.313	1.993		
EXISTING SURFACE LEVEL	1.75	2.774	2.937	2.947	2.971	2.975	2.900	2.771	2.650	2.412	2.509	2.402	2.326	2.367	2.357	2.319	2.348	2.386	2.421	2.373	2.340	2.359	2.382	2.582	2.239	1.834	1.81
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000

SECTION 2

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DATUM -1.00

CUT/FILL DEPTH			-0.341	-0.450	-0.450	-0.450	-0.450	-0.450	-0.450	-0.334	-0.156	-0.219	-0.206	-0.370	-0.429	-0.567	-0.537	-0.478	-0.310	-0.150	-0.230	-0.360	-0.381	-0.382	-0.374	-0.354	-0.621	
BULK EARTHWORKS LEVEL			2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.450	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.517	
EXISTING SURFACE LEVEL	2.31	2.886	2.941	3.050	3.050	3.050	3.050	3.050	3.050	2.934	2.756	2.819	2.806	2.820	3.029	3.167	3.137	3.078	2.910	2.750	2.830	2.960	2.981	2.982	2.974	2.954	3.139	2.43
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000

SECTION 1

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

LEGEND:

- DENOTES BULK EARTHWORKS PROFILE
- DENOTES EXISTING PROFILE
- DENOTES AREA IN CUT
- DENOTES AREA IN FILL

2m 0 5 10 15 20m
SCALE 1:200 AT A1 SIZE SHEET

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

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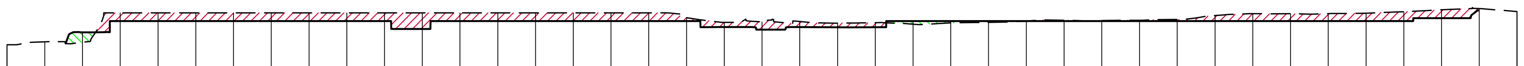
DRAWING TITLE
BULK EARTHWORKS SECTIONS
SHEET 1

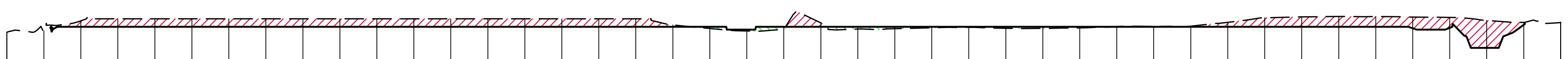
DRAWING No C014509.05-SK350
ISSUE A



DATUM 0.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	1.35		
10.000	1.506		
20.000	1.482	2.007	0.525
30.000	3.030	2.600	-0.430
40.000	3.030	2.600	-0.430
50.000	3.030	2.600	-0.430
60.000	3.030	2.600	-0.430
70.000	3.030	2.600	-0.430
80.000	3.030	2.600	-0.430
90.000	3.030	2.600	-0.430
100.000	3.030	2.600	-0.430
110.000	3.030	2.180	-0.850
120.000	3.030	2.600	-0.430
130.000	3.030	2.600	-0.430
140.000	3.030	2.600	-0.430
150.000	3.030	2.600	-0.430
160.000	3.030	2.600	-0.430
170.000	3.030	2.600	-0.430
180.000	2.773	2.600	-0.173
190.000	2.526	2.281	-0.245
200.000	2.558	2.150	-0.408
210.000	2.572	2.280	-0.293
220.000	2.490	2.270	-0.220
230.000	2.513	2.274	-0.239
240.000	2.436	2.600	0.164
250.000	2.500	2.600	0.100
260.000	2.528	2.600	0.072
270.000	2.604	2.600	-0.004
280.000	2.639	2.600	-0.039
290.000	2.619	2.600	-0.019
300.000	2.642	2.600	-0.042
310.000	2.678	2.600	-0.078
320.000	2.887	2.600	-0.287
330.000	2.983	2.600	-0.383
340.000	2.987	2.600	-0.387
350.000	2.987	2.600	-0.387
360.000	3.009	2.600	-0.409
370.000	3.089	2.600	-0.489
380.000	3.189	2.753	-0.436
390.000	3.249		
400.000	3.10		

SECTION 6
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DATUM 0.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	2.31		
10.000	2.386		
20.000	2.925	2.600	-0.325
30.000	3.030	2.600	-0.430
40.000	3.030	2.600	-0.430
50.000	3.030	2.600	-0.430
60.000	3.030	2.600	-0.430
70.000	3.030	2.600	-0.430
80.000	3.030	2.600	-0.430
90.000	3.030	2.600	-0.430
100.000	3.030	2.600	-0.430
110.000	3.030	2.600	-0.430
120.000	3.030	2.600	-0.430
130.000	3.030	2.600	-0.430
140.000	3.030	2.600	-0.430
150.000	3.030	2.600	-0.430
160.000	3.030	2.600	-0.430
170.000	3.030	2.600	-0.430
180.000	2.705	2.600	-0.105
190.000	2.506	2.600	0.094
200.000	2.377	2.450	0.073
210.000	2.469	2.600	0.131
220.000	2.813	2.600	-0.213
230.000	2.478	2.600	0.122
240.000	2.498	2.600	0.102
250.000	2.544	2.600	0.056
260.000	2.572	2.600	0.028
270.000	2.523	2.600	0.077
280.000	2.515	2.600	0.085
290.000	2.542	2.600	0.058
300.000	2.608	2.600	-0.008
310.000	2.618	2.600	-0.018
320.000	2.635	2.600	-0.035
330.000	2.841	2.600	-0.241
340.000	3.088	2.600	-0.488
350.000	3.137	2.600	-0.537
360.000	3.152	2.600	-0.552
370.000	3.149	2.600	-0.549
380.000	3.123	2.522	-0.600
390.000	3.105	2.545	-0.560
400.000	2.943	1.465	-1.478
410.000	2.835	2.711	-0.124
420.000	2.83		

SECTION 5
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	2.28		
10.000	2.319		
20.000	2.284	2.600	0.316
30.000	2.236	2.600	0.364
40.000	2.452	2.600	0.148
50.000	2.545	2.600	0.055
60.000	2.378	2.600	0.222
70.000	2.151	2.600	0.449
80.000	2.264	2.600	0.336
90.000	2.303	2.600	0.297
100.000	2.140	2.600	0.460
110.000	2.330	2.600	0.270
120.000	2.387	2.600	0.213
130.000	2.456	2.600	0.144
140.000	2.500	2.600	0.100
150.000	2.480	2.600	0.120
160.000	2.503	2.600	0.097
170.000	2.424	2.600	0.176
180.000	2.282	2.600	0.318
190.000	2.698	2.600	-0.098
200.000	2.737	2.600	-0.137
210.000	2.711	2.600	-0.111
220.000	2.795	2.600	-0.195
230.000	2.797	2.600	-0.197
240.000	2.817	2.600	-0.217
250.000	2.837	2.600	-0.237
260.000	2.858	2.600	-0.258
270.000	2.887	2.600	-0.287
280.000	2.870	2.600	-0.270
290.000	3.050	2.600	-0.450
300.000	3.050	2.600	-0.450
310.000	3.050	2.600	-0.450
320.000	3.050	2.600	-0.450
330.000	2.869	2.600	-0.269
340.000	2.987	2.600	-0.387
350.000	2.949	2.600	-0.349
360.000	2.839	2.600	-0.239
370.000	2.923	2.600	-0.323
380.000	3.168	2.600	-0.568
390.000	3.239	2.600	-0.639
400.000	3.402	3.330	-0.072
410.000	3.441	3.332	-0.109
420.000	3.40		

SECTION 4
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

LEGEND:

- DENOTES BULK EARTHWORKS PROFILE
- DENOTES EXISTING PROFILE
- DENOTES AREA IN CUT
- DENOTES AREA IN FILL

2m 0 5 10 15 20m
SCALE 1:200 AT A1 SIZE SHEET

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
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ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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DRAWING TITLE: BULK EARTHWORKS SECTIONS SHEET 2

DRAWING No: C014509.05-SK351

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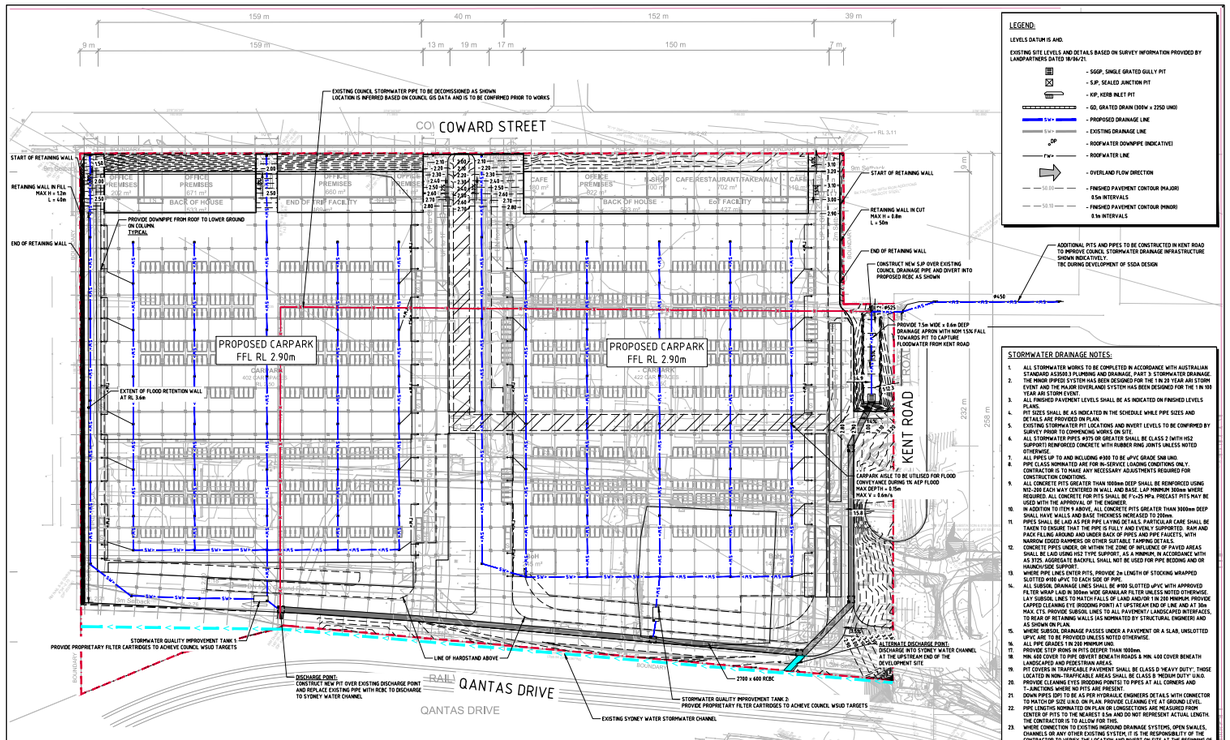

STORMWATER DRAINAGE PLAN
SCALE 1:750

LEGEND:

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY LANDPARTNERS DATED 18/04/21.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- SW- PROPOSED DRAINAGE LINE
- SW- EXISTING DRAINAGE LINE
- DP ROOFWATER DOWNPIPE (INDICATIVE)
- RWL ROOFWATER LINE
- OVERLAND FLOW DIRECTION
- 50.00 FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

STORMWATER DRAINAGE NOTES:

1. ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE
2. THE MINOR (PIPED) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 20 YEAR ARI STORM EVENT AND THE MAJOR OVERLAND SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 100 YEAR ARI STORM EVENT
3. ALL FINISHED PAVEMENT LEVELS SHALL BE AS INDICATED ON FINISHED LEVELS PLANS.
4. PIT SIZES SHALL BE AS INDICATED IN THE SCHEDULE WHILE PIPE SIZES AND DETAILS ARE PROVIDED ON PLAN.
5. EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY SURVEY PRIOR TO COMMENCING WORKS ON SITE.
6. ALL STORMWATER PIPES #375 OR GREATER SHALL BE CLASS 2 (WITH HS2 SUPPORT) REINFORCED CONCRETE WITH RUBBER RING JOINTS UNLESS NOTED OTHERWISE.
7. ALL PIPES UP TO AND INCLUDING #300 TO BE uPVC GRADE SN8 UNO.
8. PIPE CLASS NOMINATED ARE FOR IN-SERVICE LOADING CONDITIONS ONLY. CONTRACTOR IS TO MAKE ANY NECESSARY ADJUSTMENTS REQUIRED FOR CONSTRUCTION CONDITIONS.
9. ALL CONCRETE PITS GREATER THAN 1000mm DEEP SHALL BE REINFORCED USING N12-200 EACH WAY CENTERED IN WALL AND BASE. LAP MINIMUM 500mm WHERE REQUIRED. CONCRETE SHALL BE MINIMUM f'c=25 MPa. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
10. IN ADDITION TO ITEM 9 ABOVE, ALL CONCRETE PITS GREATER THAN 3000mm DEEP SHALL HAVE WALLS AND BASE THICKNESS INCREASED TO 200mm.
11. PIPES SHALL BE LAID AS PER PIPE LAYING DETAILS. PARTICULAR CARE SHALL BE TAKEN TO ENSURE THAT THE PIPE IS FULLY AND EVENLY SUPPORTED. RAM AND PACK FILLING AROUND AND UNDER BACK OF PIPES AND PIPE FAUCETS, WITH NARROW EDGED RAMMERS OR OTHER SUITABLE TAMPING DETAILS.
12. CONCRETE PIPES UNDER, OR WITHIN THE ZONE OF INFLUENCE OF PAVED AREAS SHALL BE LAID USING HS2 TYPE SUPPORT, AS A MINIMUM, IN ACCORDANCE WITH AS 3725. AGGREGATE BACKFILL SHALL NOT BE USED FOR PIPE BEDDING AND OR HAUNCHING OF PIPES.
13. WHERE PIPES ARE LAID WITH PITS, PROVIDE 3m LENGTH OF STOCKING WRAPPED SLOTTED #100 uPVC TO EACH SIDE OF PIPE.
14. ALL SUBSOIL DRAINAGE LINES SHALL BE #100 SLOTTED uPVC WITH APPROVED FILTER WRAP LAID IN 300mm WIDE GRANULAR FILTER UNLESS NOTED OTHERWISE. LAY SUBSOIL LINES TO MATCH FALLS OF LAND AND/OR 1 IN 200 MINIMUM. PROVIDE CAPPED CLEANING EYE (RODDING POINT) AT UPSTREAM END OF LINE AND AT 30m MAX. CTS. PROVIDE SUBSOIL LINES TO ALL PAVEMENT, LANDSCAPED INTERFACES, TO REAR OF RETAINING WALLS (AS NOMINATED BY STRUCTURAL ENGINEER) AND AS SHOWN ON PLAN.
15. WHERE SUBSOIL DRAINAGE PASSES UNDER A PAVEMENT OR A SLAB, UNSLOTTED uPVC ARE TO BE PROVIDED UNLESS NOTED OTHERWISE.
16. ALL PIPE GRADES 1 IN 200 MINIMUM UNO.
17. ALL PITS TO BE BENCHED WHERE DEEPER THAN 1000mm.
18. MIN. 600 COVER TO PIPE INVERT BENEATH ROADS & MIN. 450 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
19. PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D 'HEAVY DUTY'. THOSE LOCATED IN NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' U.N.O.
20. PROVIDE CLEANING EYES BRIDGING POINTS TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
21. DOWN PIPES (DP) TO BE AS PER HYDRAULIC ENGINEERS DETAILS WITH CONNECTOR TO MATCH DP SIZE U.N.O. ON PLAN. PROVIDE CLEANING EYE AT GROUND LEVEL.
22. PIPE LENGTHS NOMINATED ON PLAN OR LONGSECTIONS ARE MEASURED FROM CENTER OF PITS TO THE NEAREST 0.5m AND DO NOT REPRESENT ACTUAL LENGTH. THE CONTRACTOR IS TO ALLOW FOR THIS.
23. WHERE CONNECTING TO EXISTING COUNCIL DRAINAGE SYSTEMS, OPEN SWALES, CHANNELS OR ANY OTHER EXISTING SYSTEM, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND INVERT ON SITE AT THE BEGINNING OF THE CONSTRUCTION PERIOD. REFER ANY VARIANCE FROM DOCUMENTATION OR SURVEYS TO THE ENGINEER FOR CLARIFICATION.

6m 0 15 30 45 60 75m
SCALE 1:750 AT A1 SIZE SHEET

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CLIENT: LOGOS

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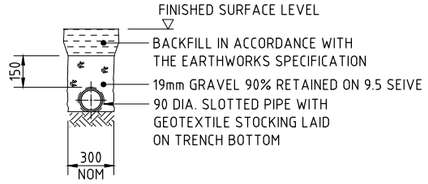
DRAWING TITLE: STORMWATER DRAINAGE PLAN

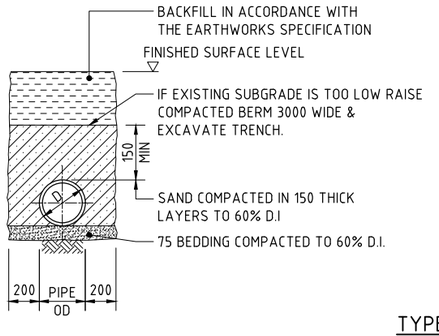
DRAWING No: CO14509.05-SK400 ISSUE: B



SUPPORT TO AGRICULTURAL DRAIN

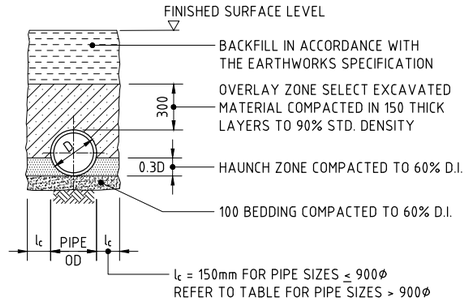
SCALE 1:20

SIDE ZONE MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
9.5	100 TO 50
2.6	100 TO 30
0.60	50 TO 15
0.075	25 TO 0



SUPPORT TO uPVC PIPES

SCALE 1:20

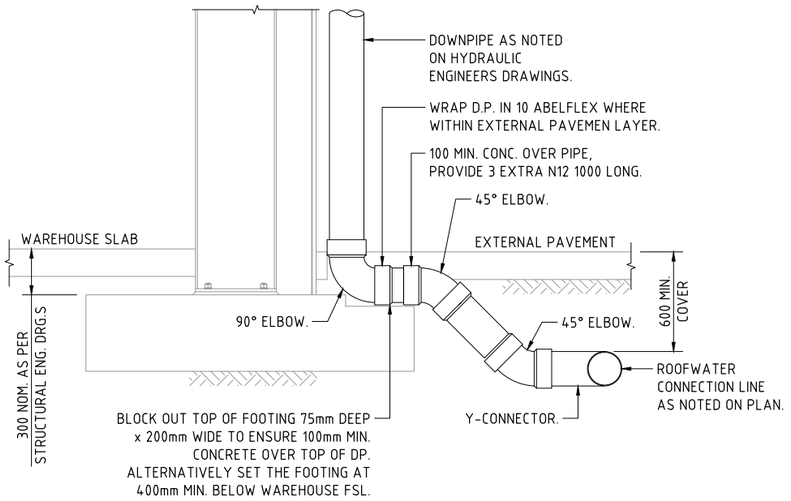


TYPE H1 SUPPORT TO CONCRETE PIPES AT LANDSCAPED AREAS

SCALE 1:20

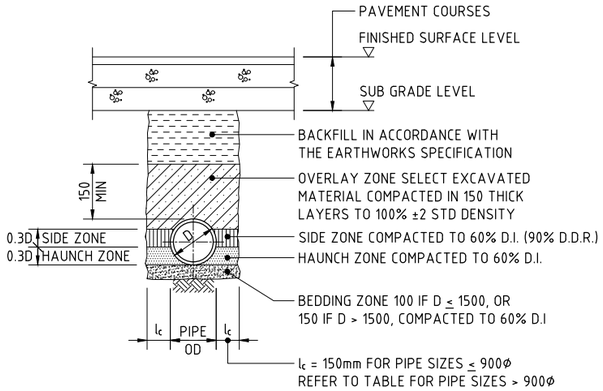
BEDDING & HAUNCH MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	20 TO 0

SIDE ZONE WIDTH	
PIPE SIZE (mm)	l_c (mm)
≤ 900ø	150
1050ø	175
1200ø	200
1350ø	225
1500ø	250
1650ø	275
1800ø	300
ENGINEER TO SPECIFY TRENCH WIDTHS FOR PIPE SIZES GREATER THAN 1800ø	



DOWNPIPE TURN-UP DETAIL A

(AT FOOTING LOCATION)
SCALE 1:20

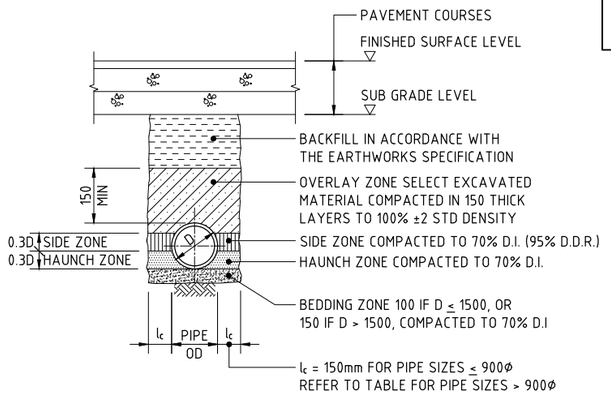


TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT

SCALE 1:20
D ≤ 1350, MAX FILL = 4.0m
D > 1350, MAX FILL = 3.0m

BEDDING & HAUNCH MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

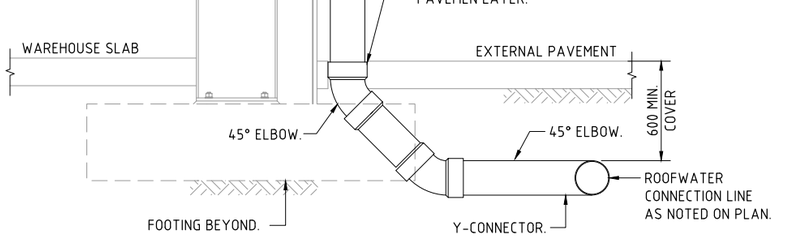
SIDE ZONE WIDTH	
PIPE SIZE (mm)	l_c (mm)
≤ 900ø	150
1050ø	175
1200ø	200
1350ø	225
1500ø	250
1650ø	275
1800ø	300
ENGINEER TO SPECIFY TRENCH WIDTHS FOR PIPE SIZES GREATER THAN 1800ø	



TYPE HS3 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT

SCALE 1:20
D ≤ 1050, MAX FILL = 6.0m
D > 1050, MAX FILL = 4.8m

SIDE ZONE MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
9.5	100 TO 50
2.6	100 TO 30
0.60	50 TO 15
0.075	25 TO 0
SELECT FILL MATERIAL IN ACCORDANCE WITH TABLE 1 AS 3725	



DOWNPIPE TURN-UP DETAIL B

(CLEAR OF FOOTING)
SCALE 1:20

200mm 0 500 1000 1500 2000mm

SCALE 1:20 AT A1 SIZE SHEET

FOR APPROVAL

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AMENDMENTS	DATE	ISSUE

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

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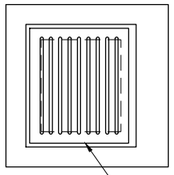
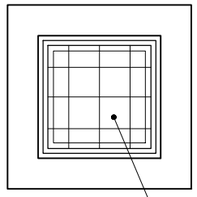
DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 1

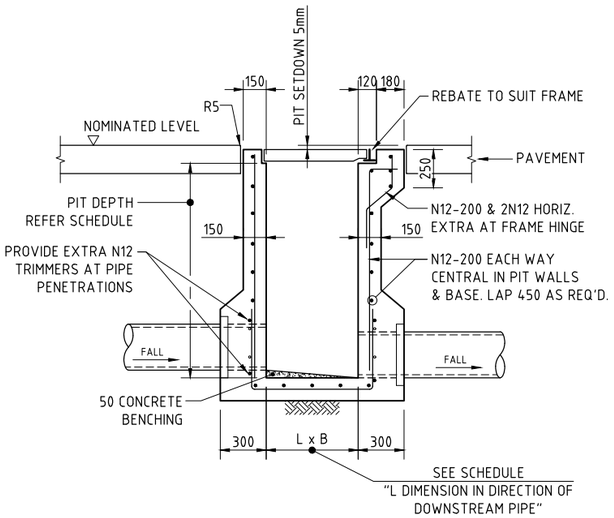
DRAWING No: C014509.05-SK450 ISSUE: A



PLAN
SCALE 1:20

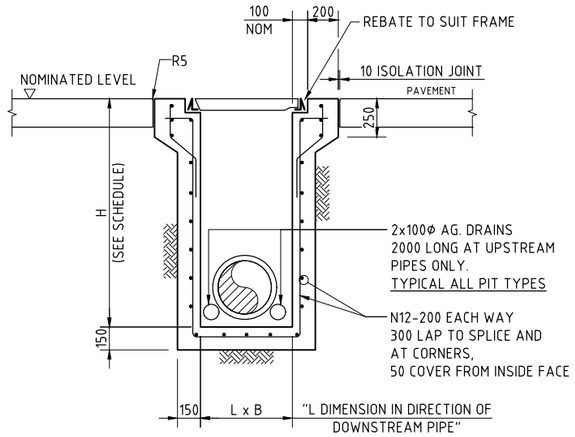


PLAN
SCALE 1:20



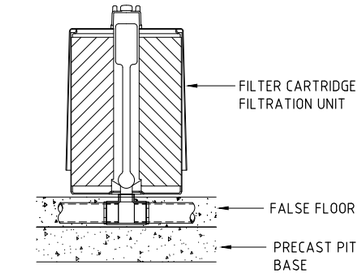
SECTION
SCALE 1:20

SINGLE GRATED GULLY PIT - SGGP

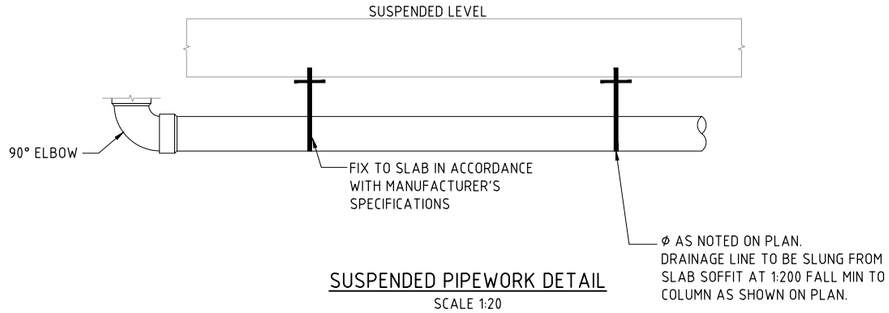


SECTION
SCALE 1:20

SEALED JUNCTION PIT - SJP

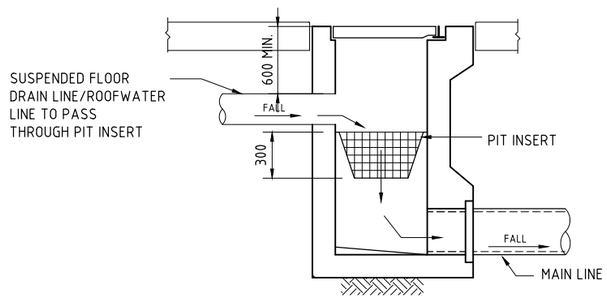


FILTER CARTRIDGE DETAIL

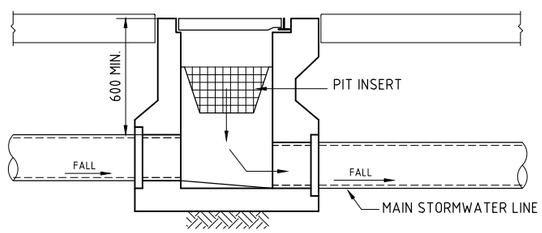


SUSPENDED PIPEWORK DETAIL
SCALE 1:20

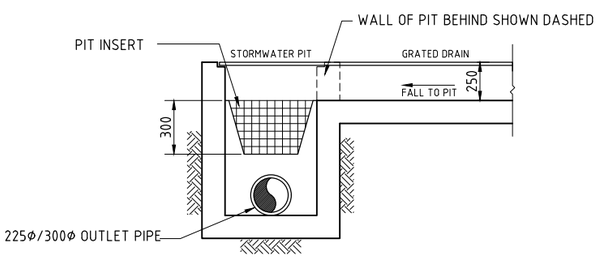
NOTES:
SUSPENDED DRAINAGE GRATES ARE AS SPECIFIED.
PRODUCT NOT TO DIFFER UNLESS CONFIRMED BY ENGINEER.



FLOOR DRAIN/STORMWATER PIT WITH PIT INSERT CONFIGURATION
SCALE 1:20



STORMWATER PIT WITH PIT INSERT CONFIGURATION
SCALE 1:20



GRATED DRAIN/STORMWATER PIT WITH PIT INSERT CONFIGURATION
SCALE 1:20

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT A1 SIZE SHEET

FOR APPROVAL

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ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

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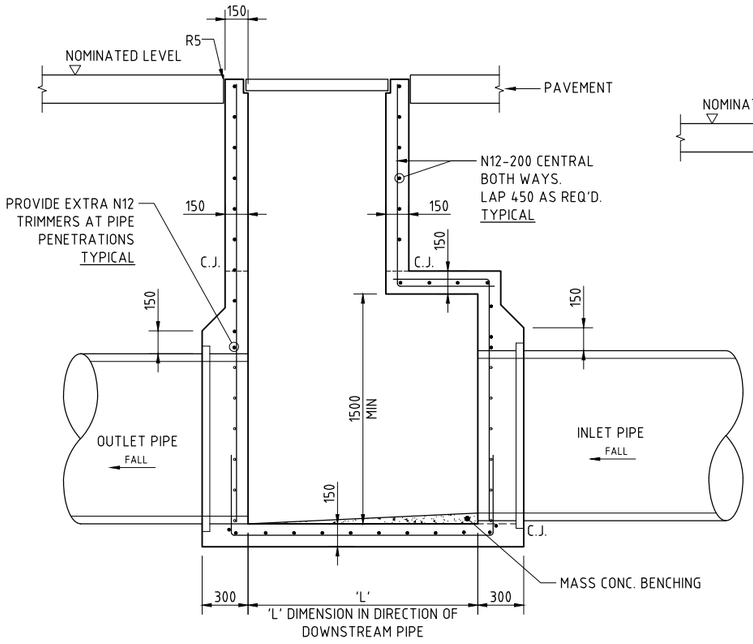
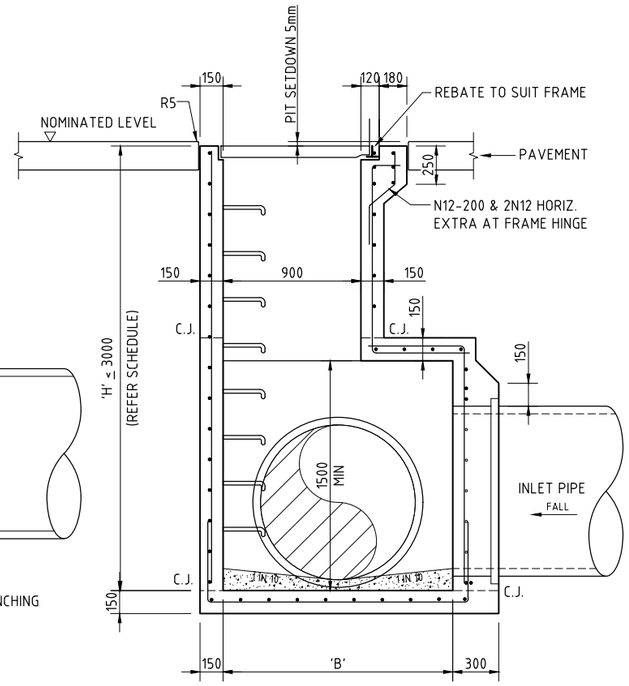
DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 2

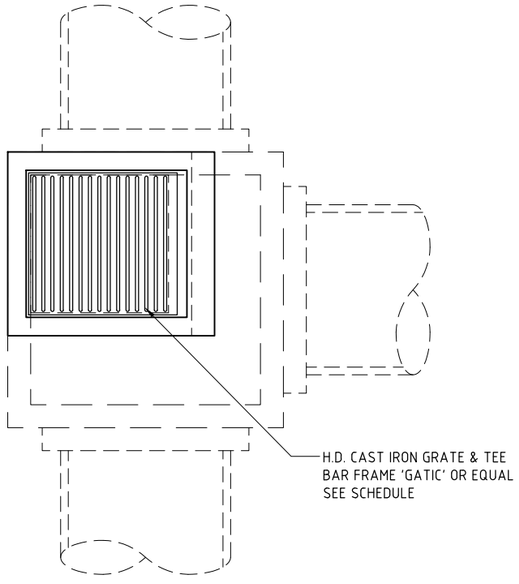
DRAWING No: C014509.05-SK451 ISSUE: A



LONG SECTION
SCALE 1:20



CROSS SECTION
SCALE 1:20



PLAN
SCALE 1:20

TAPERED SINGLE GRATED GULLY PIT - SGGP

SUBSOIL NOT SHOWN
FOR CLARITY

FOR APPROVAL

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT A1 SIZE SHEET

ISSUE	DATE	AMENDMENTS
A	05.05.23	ISSUED FOR PLANNING APPLICATION

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

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DRAWING TITLE
STORMWATER DRAINAGE DETAILS
SHEET 3

DRAWING No C014509.05-SK452
ISSUE A

Appendix B

DRAFT SOIL AND WATER MANAGEMENT PLAN

B.1 Introduction

An erosion and sediment control plan (ESCP) is shown on drawing **Co14509.05-SK200** with details on **SK250 & SK251**. These are conceptual plans only providing sufficient detail to clearly show that the works can proceed without undue pollution to receiving waters. A detailed plan will be prepared once consent is given and before works start.

The Staged ESCP considers initial site establishment, requirements during construction of roads and infrastructure and estate earthworks, completion of estate works and the period between this and development of individual lots.

B.2 General Conditions

1. The ESCP will be read in conjunction with the engineering plans, and any other plans or written instructions that may be issued in relation to development at the subject site.
2. Contractors will ensure that all soil and water management works are undertaken as instructed in this specification and constructed following the guidelines stated in *Managing Urban Stormwater, Soils and Construction (1998) "The Blue Book"* and Council specifications.
3. All subcontractors will be informed of their responsibilities in minimising the potential for soil erosion and pollution to down slope areas.

B.3 Land Disturbance

1. Where practicable, the soil erosion hazard on the site will be kept as low as possible and as recommended in Table C.1.

Table C.1 Limitations to access

Land Use	Limitation	Comments
Construction areas	Limited to 5 (preferably 2) metres from the edge of any essential construction activity as shown on the engineering plans.	All site workers will clearly recognise these areas that, where appropriate, are identified with barrier fencing (upslope) and sediment fencing (downslope), or similar materials.
Access areas	Limited to a maximum width of 5 metres	The site manager will determine and mark the location of these zones onsite. They can vary in position so as to best conserve existing vegetation and protect downstream areas while being considerate of the needs of efficient works activities. All site workers will clearly recognise these boundaries.

Remaining lands	Entry prohibited except for essential management works	

B.4 Erosion Control Conditions

1. Clearly visible barrier fencing shall be installed as shown on the plan and elsewhere at the discretion of the site superintendent to ensure traffic control and prohibit unnecessary site disturbance. Vehicular access to the site shall be limited to only those essential for construction work and they shall enter the site only through the stabilised access points.
2. Soil materials will be replaced in the same order they are removed from the ground. It is particularly important that all subsoils are buried and topsoils remain on the surface at the completion of works.
3. Where practicable, schedule the construction program so that the time from starting land disturbance to stabilisation has a duration of less than six months.
4. Notwithstanding this, schedule works so that the duration from the conclusion of land shaping to completion of final stabilisation is less than 20 working days.
5. Land recently established with grass species will be watered regularly until an effective cover has properly established and plants are growing vigorously. Further application of seed might be necessary later in areas of inadequate vegetation establishment.
6. Where practical, foot and vehicular traffic will be kept away from all recently established areas
7. Earth batters shall be constructed in accordance with the Geotechnical Engineers Report or with as law a gradient as practical but not steeper than:
    - 2H:1V where slope length is less than 7 metres
    - 2.5H:1V where slope length is between 7 and 10 metres
    - 3H:1V where slope length is between 10 and 12 metres
    - 4H:1V where slope length is between 12 and 18 metres
    - 5H:1V where slope length is between 18 and 27 metres
    - 6H:1V where slope length is greater than 27 metres
8. All earthworks, including waterways/drains/spillways and their outlets, will be constructed to be stable in at least the design storm event.
9. During windy weather, large, unprotected areas will be kept moist (not wet) by sprinkling with water to keep dust under control. In the event water is not available in sufficient quantities, soil binders and/or dust retardants will be used or the surface will be left in a cloddy state that resists removal by wind.

B.5 Pollution Control Conditions

1. Stockpiles will not be located within 5 metres of hazard areas, including likely areas of high velocity flows such as waterways, paved areas and driveways. Silt/ sediment fences and appropriate stabilisation of stockpiles are to be provided as detailed on the drawings.

2. Sediment fences will:

   a) Be installed where shown on the drawings, and elsewhere at the discretion of the site superintendent to contain the coarser sediment fraction (including aggregated fines) as near as possible to their source.

   b) Have a catchment area not exceeding 720 square meters, a storage depth (including both settling and settled zones) of at least 0.6 meters, and internal dimensions that provide maximum surface area for settling, and

   c) Provide a return of 1 metre upslope at intervals along the fence where catchment area exceeds 720 square meters, to limit discharge reaching each section to 10 litres/second in a maximum 20-year t_c discharge.

3. Sediment removed from any trapping device will be disposed in locations where further erosion and consequent pollution to down slope lands and waterways will not occur.

4. Water will be prevented from directly entering the permanent drainage system unless it is relatively sediment free (i.e. the catchment area has been permanently landscaped and/or likely sediment has been treated in an approved device). Nevertheless, stormwater inlets will be protected.

5. Temporary soil and water management structures will be removed only after the lands they are protecting are stabilised.

B.6 Waste Management Conditions

Acceptable bind will be provided for any concrete and mortar slurries, paints, acid washings, lightweight waste materials and litter. Clearance service will be provided at least weekly.

B.7 Site Inspection and Maintenance

1. A self-auditing program will be established based on a Check Sheet. A site inspection using the Check Sheet will be made by the site manager:

   - At least weekly.
   - Immediately before site closure.
   - Immediately following rainfall events in excess of 5mm in any 24-hour period.

The self-audit will include:

- Recording the condition of every sediment control device
- Recording maintenance requirements (if any) for each sediment control device
- Recording the volumes of sediment removed from sediment retention systems, where applicable
- Recording the site where sediment is disposed
- Forwarding a signed duplicate of the completed Check Sheet to the project manager/developer for their information

2. In addition, a suitably qualified person will be required to oversee the installation and maintenance of all soil and water management works on the site. The person shall be required to provide a short monthly written report. The responsible person will ensure that:
    - The plan is being implemented correctly
    - Repairs are undertaken as required
    - Essential modifications are made to the plan if and when necessary

The report shall carry a certificate that works have been carried out in accordance with the plan.

3. Waste bins will be emptied as necessary. Disposal of waste will be in a manner approved by the Site Superintendent.
4. Proper drainage will be maintained. To this end drains (including inlet and outlet works) will be checked to ensure that they are operating as intended, especially that,
    - No low points exist that can overtop in a large storm event
    - Areas of erosion are repaired (e.g. lined with a suitable material) and/or velocity of flow is reduced appropriately through construction of small check dams of installing additional diversion upslope.
    - Blockages are cleared (these might occur because of sediment pollution, sand/soil/spoil being deposited in or too close to them, breached by vehicle wheels, etc.).
5. Sand/soil/spoil materials placed closer than 2 meters from hazard areas will be removed. Such hazard areas include and areas of high velocity water flows (e.g. waterways and gutters), paved areas and driveways.
6. Recently stabilised lands will be checked to ensure that erosion hazard has been effectively reduced. Any repairs will be initiated as appropriate.
7. Excessive vegetation growth will be controlled through mowing or slashing.
8. All sediment detention systems will be kept in good, working condition. In particular, attention will be given to:
    a) Recent works to ensure they have not resulted in diversion of sediment laden water away from them
    b) Degradable products to ensure they are replaced as required, and
    c) Sediment removal, to ensure the design capacity or less remains in the settling zone.
9. Any pollutants removed from sediment basins or litter traps will be disposed of in areas where further pollution to down slope lands and waterways should not occur.
10. Additional erosion and/or sediment control works will be constructed as necessary to ensure the desired protection is given to down slope lands and waterways, i.e. make ongoing changes to the plan where it proves inadequate in practice or is subjected to changes in conditions at the work site or elsewhere in the catchment.
11. Erosion and sediment control measures will be maintained in a functioning condition until all earthwork activities are completed and the site stabilised
12. Litter, debris and sediment will be removed from the gross pollutant traps and trash racks as required.

EROSION AND SEDIMENT CONTROL
WEEKLY SITE INSPECTION SHEET

LOCATION .....
INSPECTION OFFICER ..... **DATE** .....
SIGNATURE .....

Legend: ☐ OK ☐ Not OK N/A Not applicable

Item	Consideration	Assessment
1	Public roadways clear of sediment.	.....
2	Entry/exit pads clear of excessive sediment deposition.	.....
3	Entry/exit pads have adequate void spacing to trap sediment.	.....
4	The construction site is clear of litter and unconfined rubbish.	.....
5	Adequate stockpiles of emergency ESC materials exist on site.	.....
6	Site dust is being adequately controlled.	.....
7	Appropriate drainage and sediment controls have been installed prior to new areas being cleared or disturbed.	.....
8	Up-slope "clean" water is being appropriately diverted around/through the site.	.....
9	Drainage lines are free of soil scour and sediment deposition.	.....
10	No areas of exposed soil are in need of erosion control.	.....
11	Earth batters are free of "rill" erosion.	.....
12	Erosion control mulch is not being displaced by wind or water.	.....
13	Long-term soil stockpiles are protected from wind, rain and stormwater flow with appropriate drainage and erosion controls.	.....
14	Sediment fences are free from damage.	.....
15	Sediment-laden stormwater is not simply flowing "around" the sediment fences or other sediment traps.	.....
16	Sediment controls placed up-slope/around stormwater inlets are appropriate for the type of inlet structure.	.....
17	All sediment traps are free of excessive sediment deposition.	.....
18	The settled sediment layer within a sediment basin is clearly visible through the supernatant prior to discharge such water.	.....
19	All reasonable and practicable measures are being taken to control sediment runoff from the site.	.....
20	All soil surfaces are being appropriately prepared (i.e. pH, nutrients, roughness and density) prior to revegetation.	.....
21	Stabilised surfaces have a minimum 70% soil coverage.	.....
22	The site is adequately prepared for imminent storms.	.....
23	All ESC measures are in proper working order.	.....

Appendix C

FLOOD ASSESSMENT

C.1. INTRODUCTION

C.1.1. Introduction

This Appendix is provided to confirm technical parameters adopted in the Overland Flow Assessment, as summarised in **Section 4** of this report, for the proposed industrial estate development. The Study Area has been identified by Bayside Council as being affected by overland flow from external catchments on the north and west of the property.

The scope and primary objectives of the overland flow assessment, are as follows:

- Determine the design flows generated by the contributing external catchments for the 20%, 5%, 1%, 0.2%, 0.5% AEP & PMF storms; Hydrology would be based on RAFTS modelling.
- Assess the pre-development overland flow path through the development site for the 1% AEP storm event;
- Assess the post-development levels on the effect of overland flow through the development site for the listed range of storms including 1% AEP storm event so that potential impacts on the development can be assessed and mitigated;
- Confirm that there is no adverse impact to upstream, downstream and adjacent properties as a result of the development; and
- Confirm flood planning levels applicable to the development.

Appendix C provides technical detail to the summary and conclusions discussed in **Section 4** of this report.

I.1.2. Survey/DTM

Survey is required to define the physical attributes of the floodplain topography including the channel cross sections and the associated floodplain levels.

The pre-development scenario survey has been compiled based on a detail site survey for areas within the site, and for areas external to the site where detail survey is not available, digital terrain information has been obtained through government sources in the form of ALS survey. The on-ground survey information was completed in and around the study area to properly define the existing overland flow path cross section and features.

For assessment of the post-development scenario, the proposed development levels and drainage system (where appropriate) were then added to the pre-developed survey surface to create a post developed surface to use in the TUFLOW model and scenario modelling. This DTM was imported to the TUFLOW model to simulate land filling and proposed compensation areas in and around the flood affected land.

The surveys and design surfaces were used as the basis for the digital terrain model (DTM) used in the hydraulic modelling of the pre and post development scenario respectively.

I.1.3. Previous Studies

WMAWater, on behalf of the City of Botany Bay, have undertaken a regional flood study of the Mascot, Rosebery & Eastlakes (MRE) catchment, of which King Street is a component – Mascot, Rosebery & Eastlakes Flood Study (March 2019).

The site is noted to be east of the Alexandria Canal. The site is noted to be a contributing catchment of Botany Bay.

The site is located within the Industrial Zone and an overview of the study area is shown in Figure C1.1. The area shown on the western portion of the site as being affected by overland flow from Kent Road and Coward Street.

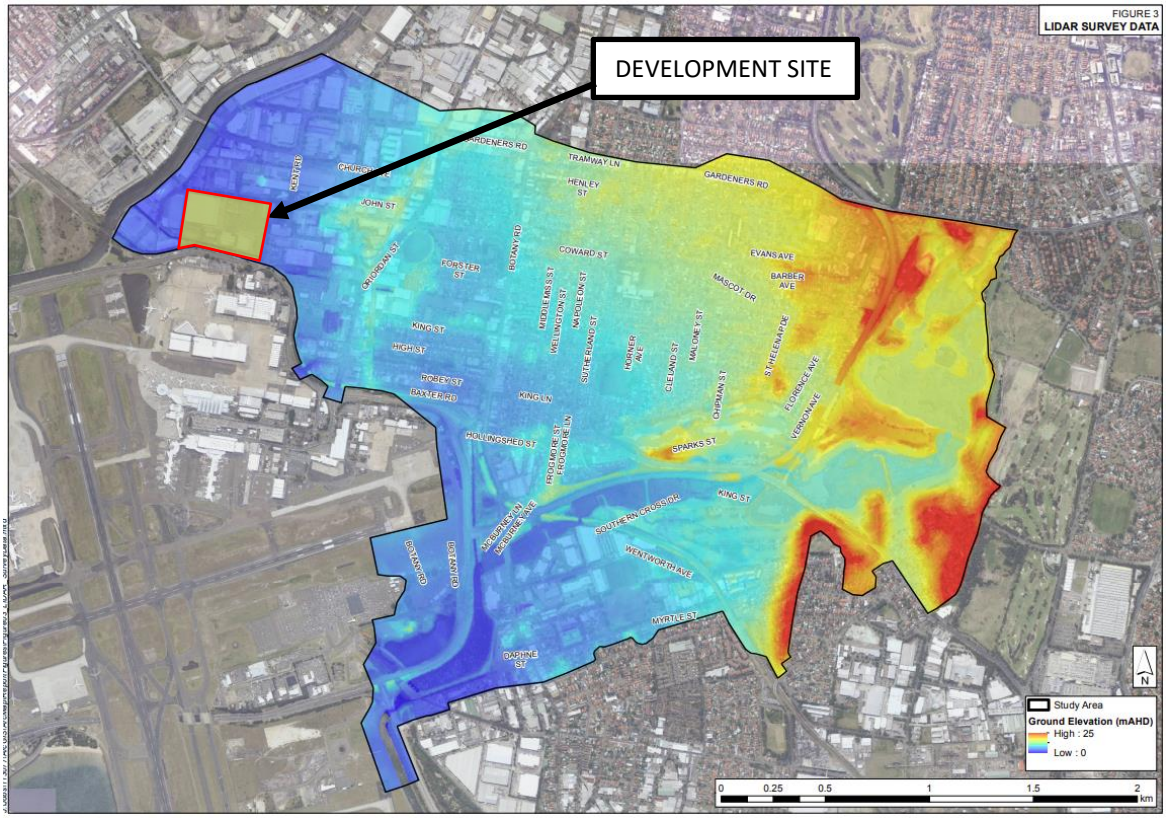

Figure C1.1. Excerpt of Figure 3 of WMAWater 2019 Study

C.2. CATCHMENT INVESTIGATION & HYDROLOGY

C.2.1. Contributing Catchment Definition

The contributing catchment comprises a combination of commercial and industrial land use with approximately 90% impervious surfaces. For the pre-development condition, the total catchment area contributing to the site flooding is approximately 44Ha, with a larger 45Ha catchment discharging into the upstream portion of the Sydney Water stormwater channel. These catchments are shown below in Figure C2.1.

Figure C2.1. Overland Flow Contributing Catchment.

C.2.2. Hydrological Assessment of Existing Catchment

Flood hydrographs were assessed using a RAFTS model based on the contributing catchment. Rainfall intensities and temporal patterns were derived from the Bureau of Meteorology online IFD tool and Australian Rainfall and Runoff. Inflow hydrographs for the 1% AEP event are shown in **Figures C2.2** to **C2.7**. It was determined that the critical storm duration which produces peak flows for the contributing catchments is the 60-minute storm event.

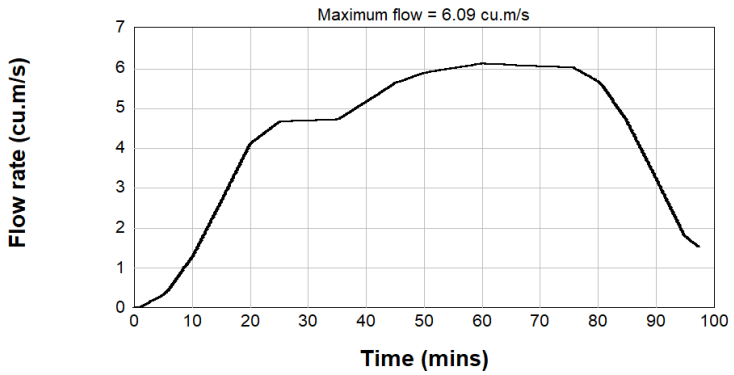

Figure C2.2. 1% AEP Inflow Hydrograph – SWC UPSTREAM.

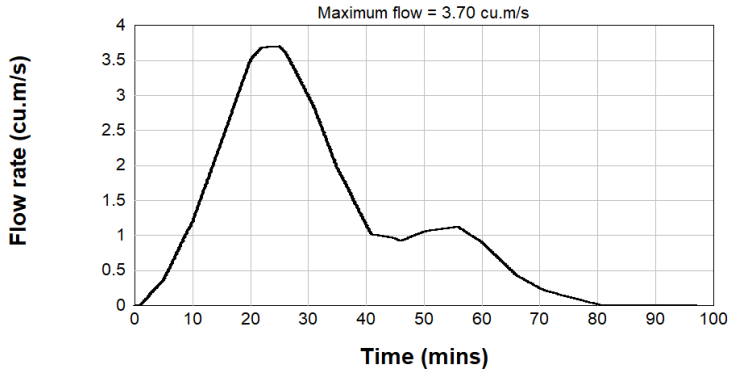

Figure I2.3. 1% AEP Inflow Hydrograph – BOURKE RD.

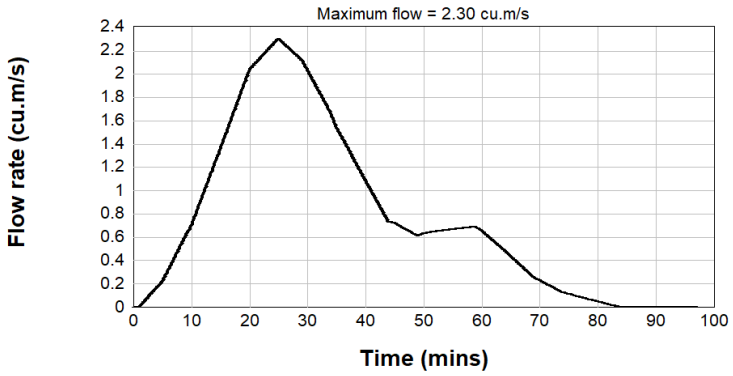

Figure I2.4. 1% AEP Inflow Hydrograph – COWARD ST.

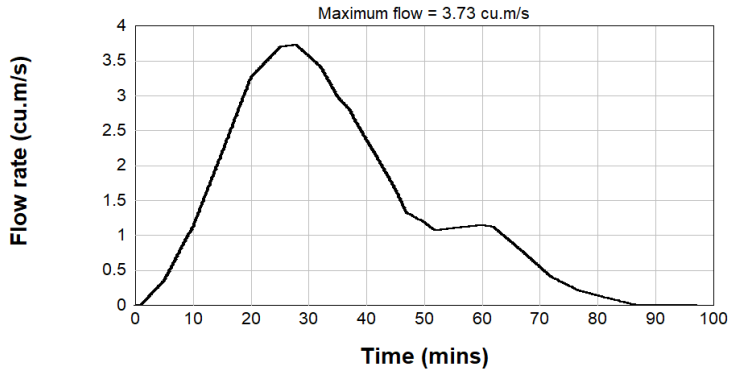

Figure I2.5. 1% AEP Inflow Hydrograph – O'RIORDAN ST.

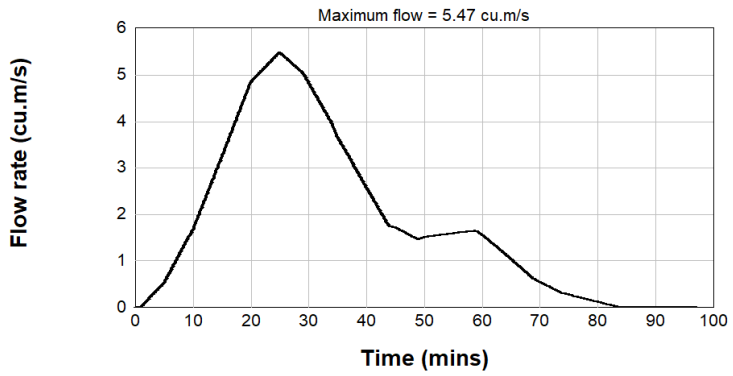

Figure I2.6. 1% AEP Inflow Hydrograph – SWC CAT 1.

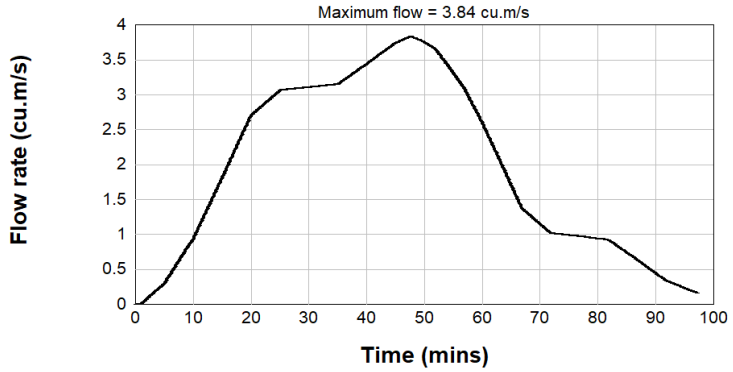

Figure I2.7. 1% AEP Inflow Hydrograph – SWC CAT 2.

I.3. HYDRODYNAMIC MODEL DEVELOPMENT

I.3.1. Extent and Topography

The model extent is shown in **Figure C3.1** of this appendix. The model begins approximately 500m upstream of the development and extends to the Alexandria Canal, approximately 100m downstream of the development site.

Inflow Boundaries

Design inflow hydrographs for the model catchments have been included at locations upstream of the development site. Hydrographs have been input into the model boundary or directly into the pit and pipe network where appropriate. Flows are based on hydrology as discussed in **Section C.2.2** of this Appendix.

The upstream boundary was located sufficiently upstream of the development to ensure the extent of predicted impacts from the development would be covered and any modelling iterations would be resolved clear of the development affectation zone.

Downstream Water Level Boundaries

The downstream water levels in Qantas Drive have been based on a normal outflow and design gradient of 1%. The tailwater level in the Alexandria Canal have been set at an assumed tailwater level based on the MRE flood study per the below table.

AEP (%)	Downstream Boundary Level (m)
20	1.9
5	2
1	2.4

0.5	2.5
0.2	2.55
PMF	4.0

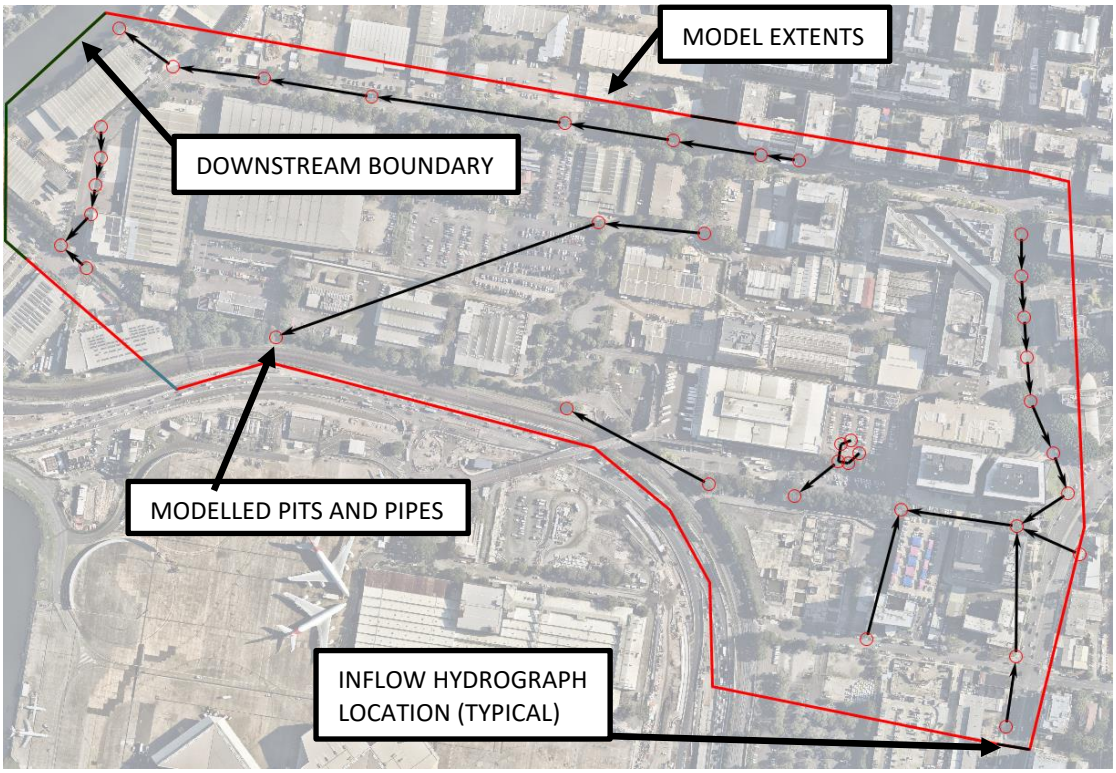

Figure C3.1: Model Extent and Model Boundary Locations

C.3.3. Channel and Floodplain Roughness

Roughness values adopted in the model are contained in **Table C2** below. These are generally consistent with previous studies completed within the Council area and have been adopted in this overland flow study.

Table C2. Adopted TUFLOW Element Roughness Values

Model Element	Description	Roughness Parameter Value
1	Pipes	0.015
2	Concrete Lined Channel	0.015
3	Roads and Footpaths	0.022
4	Building	(blockout)

C.3.4. Model Validation

Model validation has been completed by comparing results of the TUFLOW modelling against the results contained in the Bayside Council study from 2019. Model parameters were adjusted as required to achieve acceptable agreement between the model output. The process for the validation was as follows:

- Establish hydrology, peak flows and hydrograph for modelled events;
- Establish TUFLOW Model using defined parameters;
- Compare results of TUFLOW modelling with the Bayside Council Figures including flood depths, flood levels, flood extents and hydraulics. The comparison is made at the peak of the predicted parameters;
- Adjust roughness factors to align TUFLOW flood extent to align with the Bayside Council Results.

Hydrology and peak flows were established as described in **Section C.2.2** of this report.

A number of trial models and iterations of the TUFLOW model were performed. Adjustment of roughness parameters were used to align the flood levels with those compiled in the council figures.

The comparison of the flood level results shows good alignment of those produced in the TUFLOW model when compared with those of the council figures. The predicted flood extent is consistent between the two models for the flood event modelled.

Given the differences in modelling techniques, parameters, predicted model accuracy (+/-0.2m) and model components these differences are considered acceptable for the base model and for continuation of post-developed scenario modelling.

C.3.5. Proposed Overland Flow Management Strategy

Flows from within the development sites have been only considered in the sizing of the stormwater system and erosion control for the development sites. The proposed buildings will be set at the 1% AEP level plus 0.5m freeboard per council policy.

Bayside Council require that overland flows from the upstream catchment to be conveyed through the site. Council also requires proof that the proposed development does not increase the flood risk to the surrounding properties. Further, the TUFLOW modelling and assessment confirms there is negligible impact on upstream, downstream and/ or adjoining sites as a result of the proposed developments.

C.4. MODEL OUTPUT

Model output for pre and post development conditions for the Catchment flooding events on site as discussed in earlier sections have been included in the following Figures.

We note the below figures represent predicted values at the peak of each event. The figures represent predicted values at the peak of the 1% AEP.

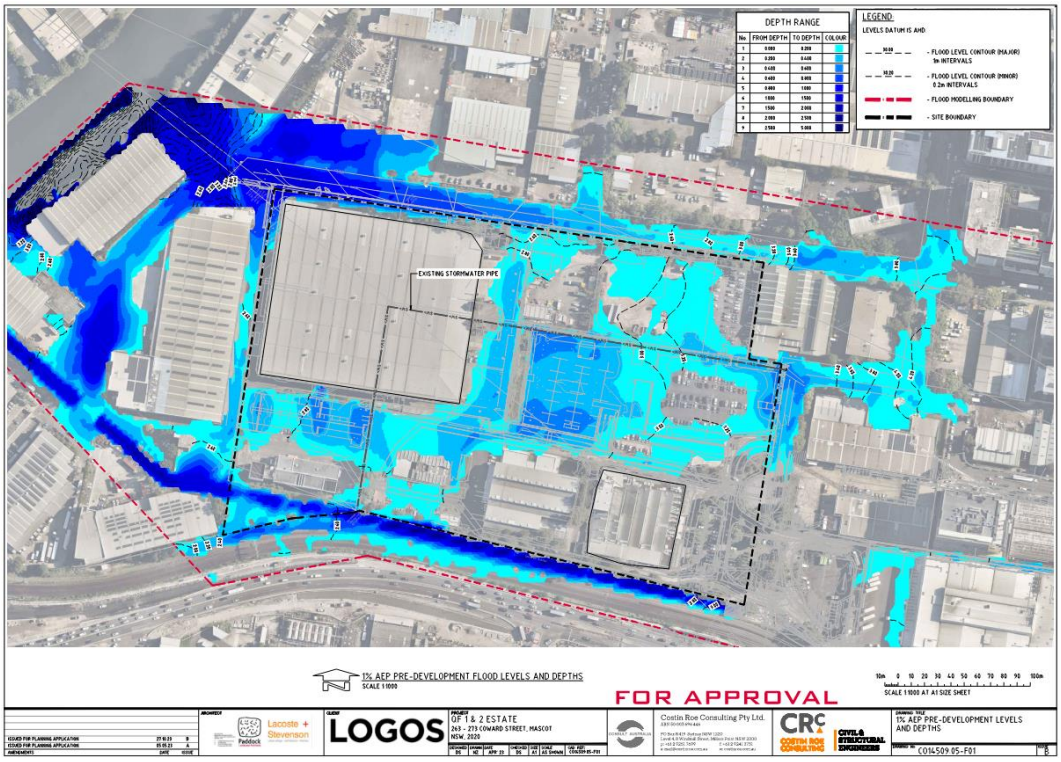

Figure C4.1: 1% AEP Flood Depths – Pre-Development

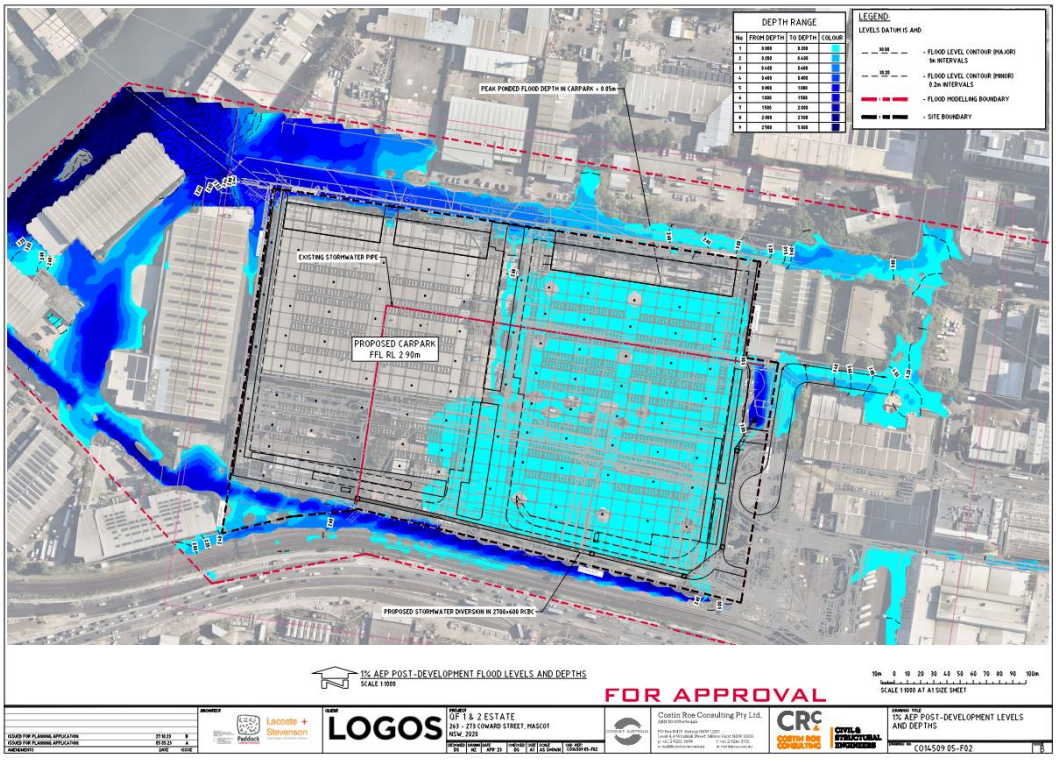

Figure C4.2: 1% AEP Flood Depths – Post Development

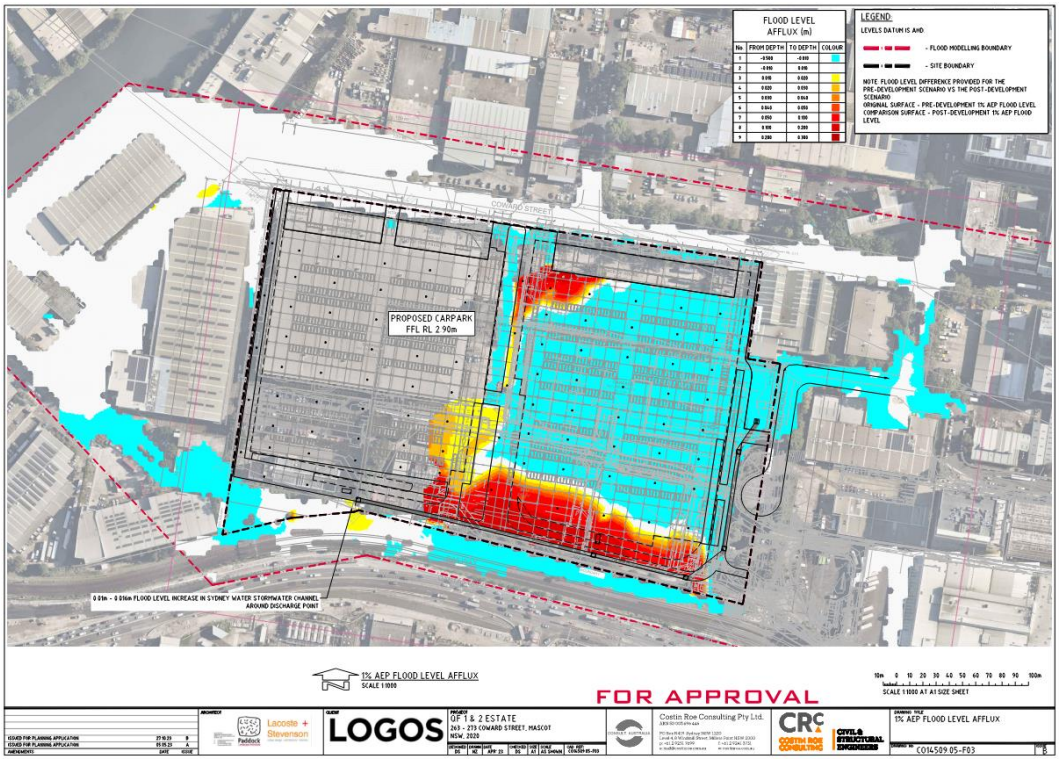

Figure C4.3: 1% AEP Flood Afflux Plan

C.5. FLOOD ASSESSMENT DISCUSSION

This Appendix to the Civil Engineering Report for 263-273 Coward Street, Mascot, NSW, has been prepared to assess the effect of flooding on the proposed development, and also to confirm no affectation on upstream downstream or adjoining properties. Further the assessment was also completed to ensure that sufficient flood conveyance is available, post development, during the 1% AEP and PMF flood event.

A TUFLOW hydrodynamic flood model has been completed and the pre and post development flood events assessed for the 1% AEP rainfall event.

This Appendix confirms the technical input and detailed output completed as part of the assessment. **Appendix C** is to be read in conjunction with **Section 4** of this report.

Appendix C2

FLOOD ASSESSMENT FIGURES

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

1% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	B
ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT

Paddock Landscape Architects

Lacoste + Stevenson urban design · architecture · interiors

CLIENT

LOGOS

PROJECT

QF 1 & 2 ESTATE

263 - 273 COWARD STREET, MASCOT

NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F01

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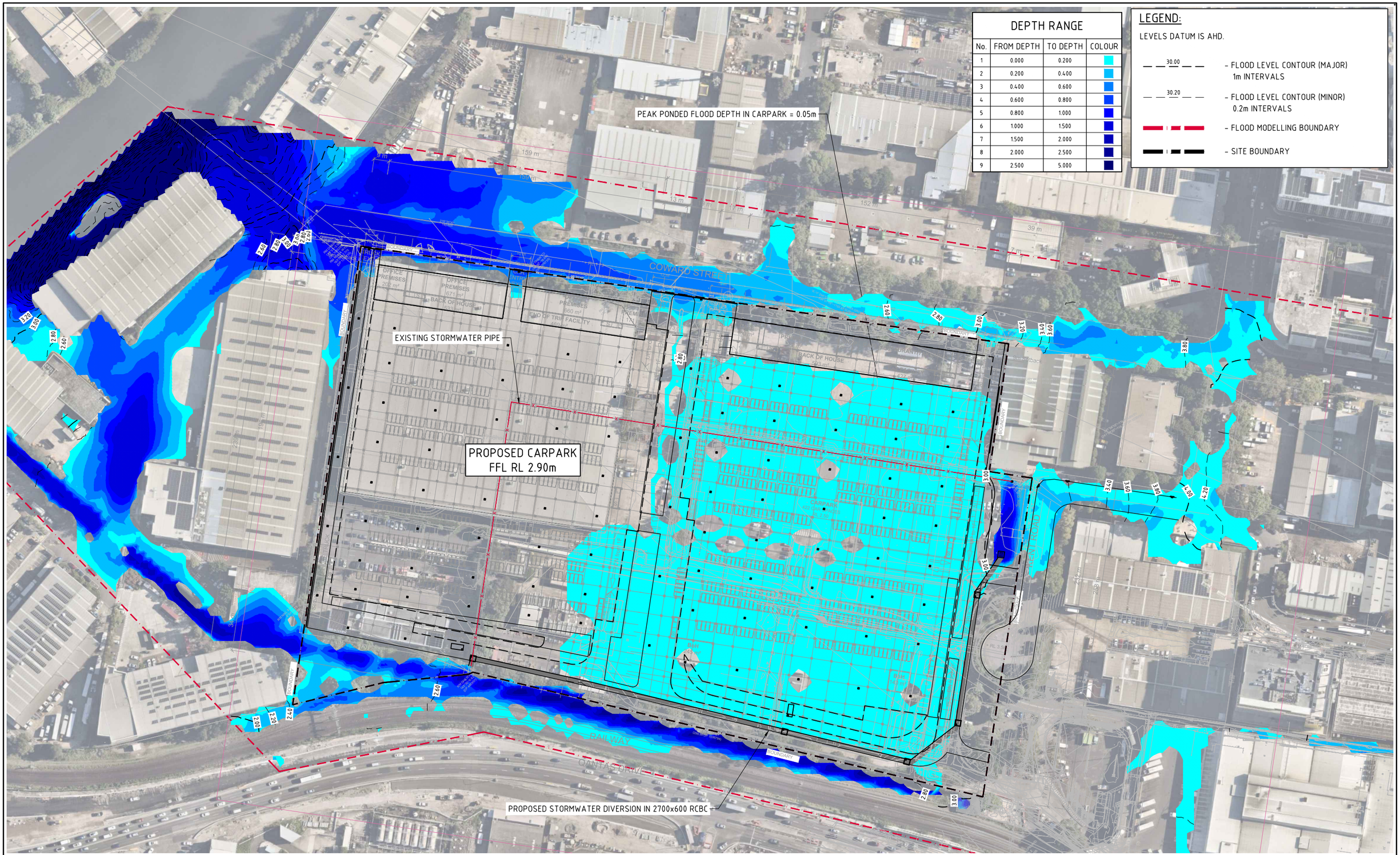
COSTIN ROE CONSULTING — CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE

1% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014509.05-F01

ISSUE B



DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

1% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

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ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
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DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F02

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DRAWING TITLE: 1% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F02 ISSUE: B

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.500	-0.010	
2	-0.010	0.010	
3	0.010	0.020	
4	0.020	0.030	
5	0.030	0.040	
6	0.040	0.050	
7	0.050	0.100	
8	0.100	0.200	
9	0.200	0.300	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

NOTE: FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPMENT SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT 1% AEP FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT 1% AEP FLOOD LEVEL

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET

RAILWAY

QANTAS DRIVE

0.01m - 0.016m FLOOD LEVEL INCREASE IN SYDNEY WATER STORMWATER CHANNEL AROUND DISCHARGE POINT

1% AEP FLOOD LEVEL AFFLUX
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
1% AEP FLOOD LEVEL AFFLUX

DRAWING No C014509.05-F03
ISSUE B

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

DEPTH VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

1% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

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NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F04

CONSULT AUSTRALIA

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COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
1% AEP PRE-DEVELOPMENT FLOO VELOCITY

DRAWING No C014509.05-F04
ISSUE B

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET

RAILWAY

QANTAS DRIVE

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

1% AEP POST-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	B
ISSUED FOR PLANNING APPLICATION	05.05.23	A

ARCHITECT
Lacoste + Stevenson
Paddock Landscape Architects

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F05

CONSULT AUSTRALIA

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DRAWING TITLE
1% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F05

ISSUE B

LEGEND:

LEVELS DATUM IS AHD.

– FLOOD MODELLING BOUNDARY

– SITE BOUNDARY

NOTE: FLOOD VELOCITY DIFFERENCE PROVIDED FOR THE PRE-DEVELOPMENT SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE – PRE-DEVELOPMENT 1% AEP FLOOD VELOCITY
COMPARISON SURFACE – POST-DEVELOPMENT 1% AEP FLOOD VELOCITY

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-5.000	-4.500	
2	-4.500	-4.000	
3	-4.000	-3.500	
4	-3.500	-3.000	
5	-3.000	-2.500	
6	-2.500	-2.000	
7	-2.000	-1.500	
8	-1.500	-1.000	
9	-1.000	-0.500	
10	-0.500	0.000	
11	0.000	0.500	
12	0.500	1.000	
13	1.000	1.500	
14	1.500	2.000	
15	2.000	2.500	
16	2.500	3.000	
17	3.000	3.500	
18	3.500	4.000	

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET
QANTAS DRIVE
RAILWAY
BOUNDARY

1% AEP FLOOD VELOCITY AFFLUX

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F06

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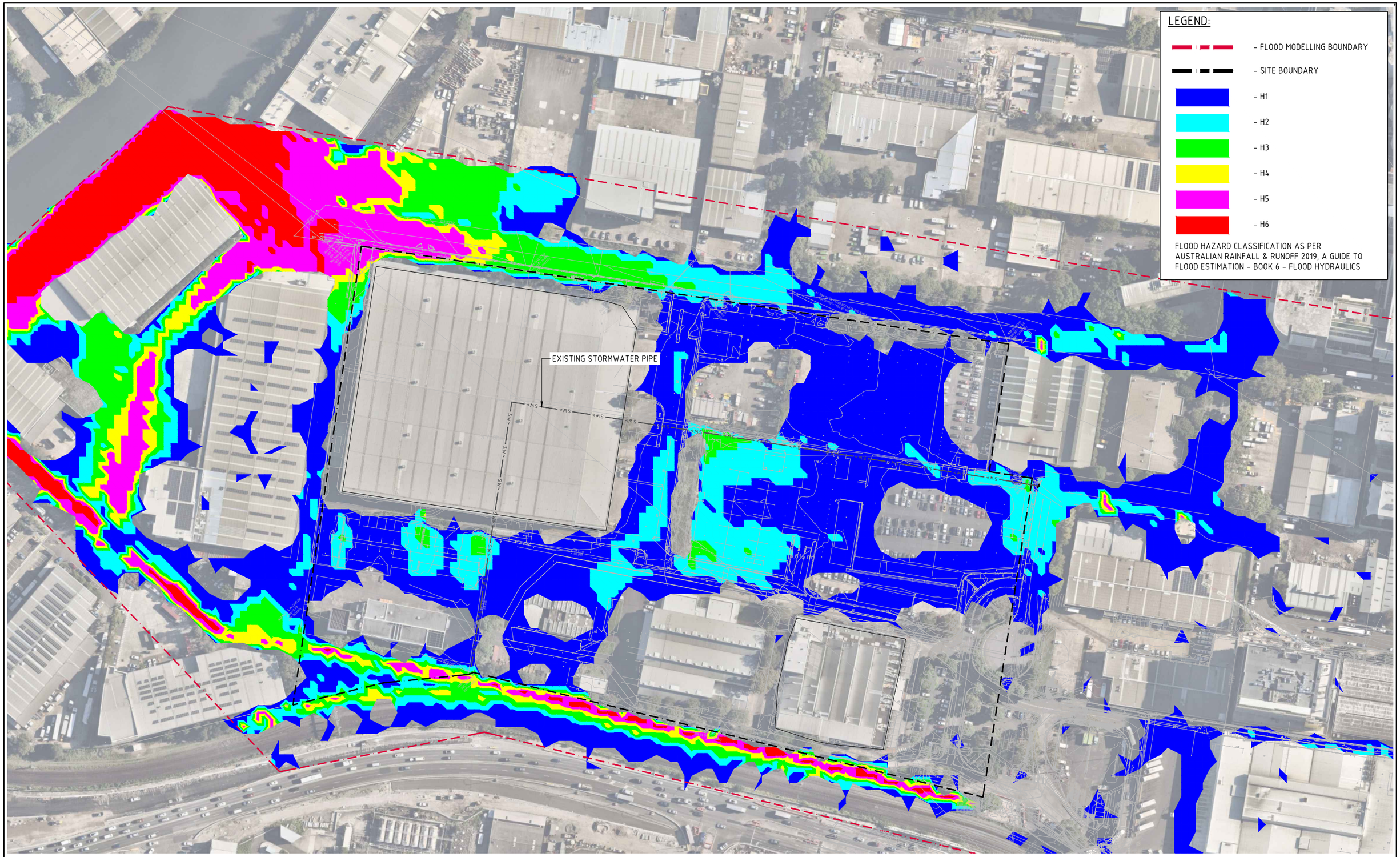
DRAWING TITLE
1% AEP FLOOD VELOCITY AFFLUX

DRAWING No C014509.05-F06

ISSUE A



1% AEP PRE-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F07

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
1% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F07
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

1% AEP POST-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F08

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DRAWING TITLE: 1% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No: C014509.05-F08

ISSUE: A

DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

PMF PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F11

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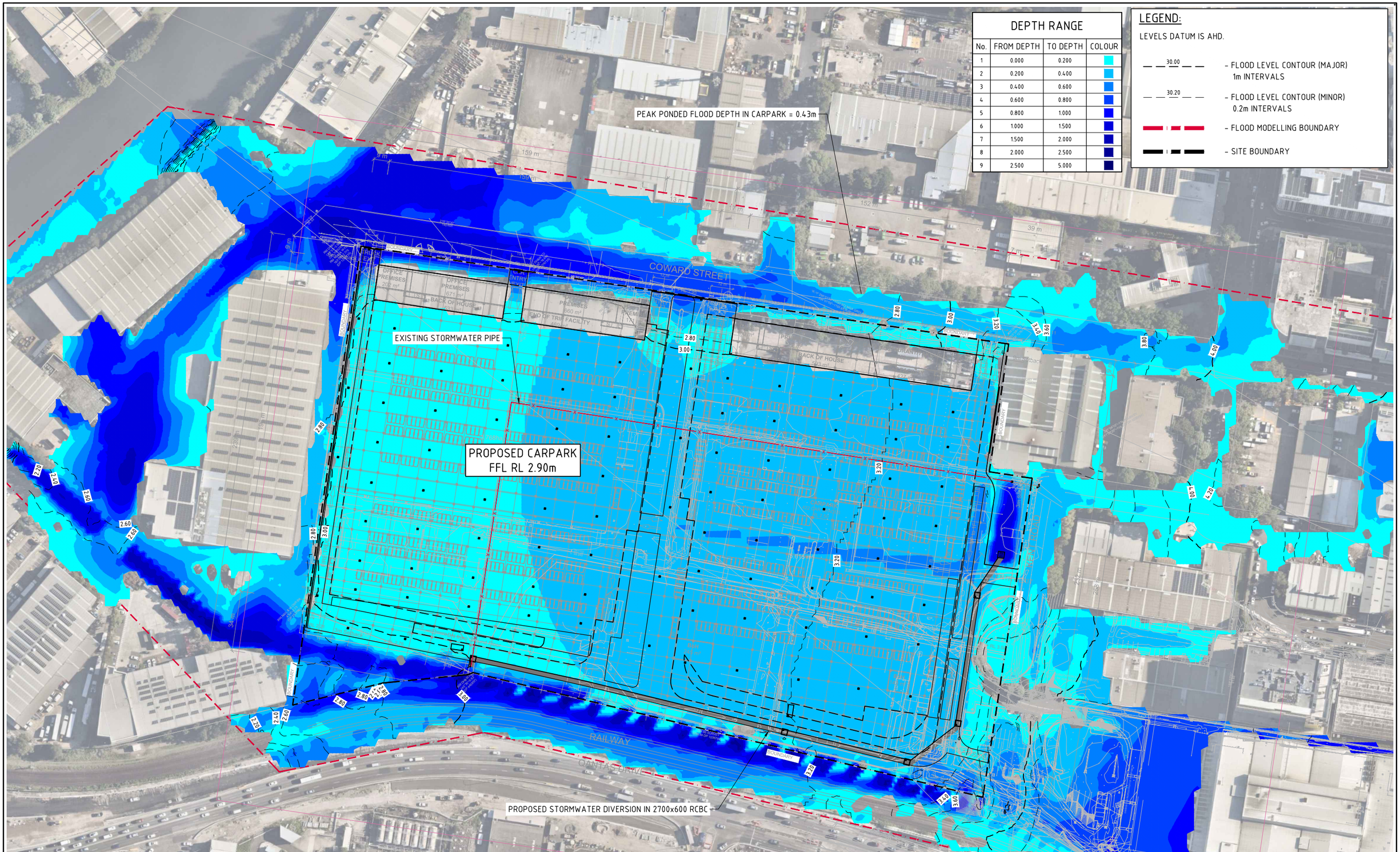
DRAWING TITLE: PMF PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F11 ISSUE: A



DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

PMF POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F12

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DRAWING TITLE: PMF POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F12 ISSUE: A

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-1.500	-0.050	
2	-0.050	0.050	
3	0.050	0.060	
4	0.060	0.070	
5	0.070	0.080	
6	0.080	0.090	
7	0.090	0.100	
8	0.100	0.200	
9	0.200	0.300	
10	0.300	0.400	
11	0.400	0.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

NOTE: FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPMENT SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT PMF FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT PMF FLOOD LEVEL

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET

RAILWAY

QANTAS DRIVE

PMF FLOOD LEVEL AFFLUX

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F13

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DRAWING TITLE
PMF FLOOD LEVEL AFFLUX

DRAWING No C014509.05-F13

ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

PMF PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Lacoste + Stevenson
Paddock Landscape Architects

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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DRAWING TITLE
PMF PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F14
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

BOUNDARY

RAILWAY

QANTAS DRIVE

PMF POST-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Lacoste + Stevenson urban design - architecture - interiors; Paddock Landscape Architects

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F15

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DRAWING TITLE: PMF POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C014509.05-F15

ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PMF PRE-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Lacoste + Stevenson
urban design - architecture - interiors
Paddock Landscape Architects

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F16

CONSULT AUSTRALIA

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DRAWING TITLE
PMF PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F16
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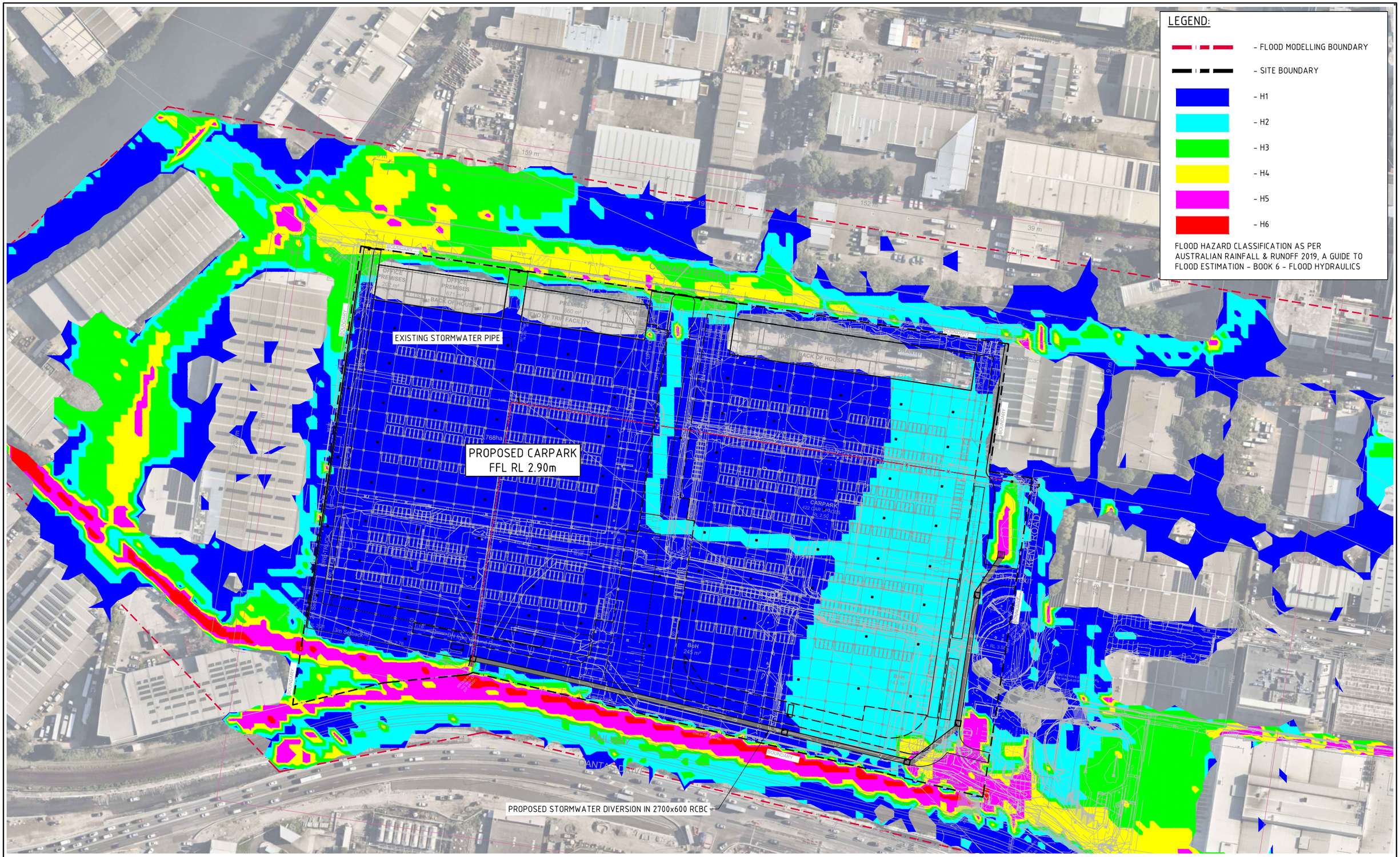

PMF POST-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F17

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DRAWING TITLE
PMF POST-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F17
ISSUE A

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

0.2% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F21

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DRAWING TITLE: 0.2% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F21 ISSUE: A

DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

QANTAS DRIVE

RAILWAY

BOUNDARY

0.2% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT

Lacoste + Stevenson
urban design - architecture - interiors

Paddock Landscape Architects

CLIENT

LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F22

CONSULT AUSTRALIA

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COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.2% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014509.05-F22

ISSUE A

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.500	-0.010	
2	-0.010	0.010	
3	0.010	0.020	
4	0.020	0.030	
5	0.030	0.040	
6	0.040	0.050	
7	0.050	0.100	
8	0.100	0.200	
9	0.200	0.300	
10	0.300	0.400	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

NOTE: FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPMENT SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT 0.2% AEP FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT 0.2% AEP FLOOD LEVEL

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET

RAILWAY

BOUNDARY

0.2% AEP FLOOD LEVEL AFFLUX

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F23

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DRAWING TITLE
0.2% AEP FLOOD LEVEL AFFLUX

DRAWING No C014509.05-F23

ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design · architecture · interiors

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LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F24

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CRC COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F24
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

QANTAS DRIVE

0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Lacoste + Stevenson urban design - architecture - interiors; Paddock Landscape Architects

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F25

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DRAWING TITLE: 0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C014509.05-F25

ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

0.2% AEP PRE-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F26

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DRAWING TITLE: 0.2% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No: C014509.05-F26

ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

0.2% AEP POST-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F27

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DRAWING TITLE
0.2% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F27

ISSUE A

DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

0.5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT

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Lacoste + Stevenson urban design - architecture - interiors

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PROJECT

QF 1 & 2 ESTATE

263 - 273 COWARD STREET, MASCOT

NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F31

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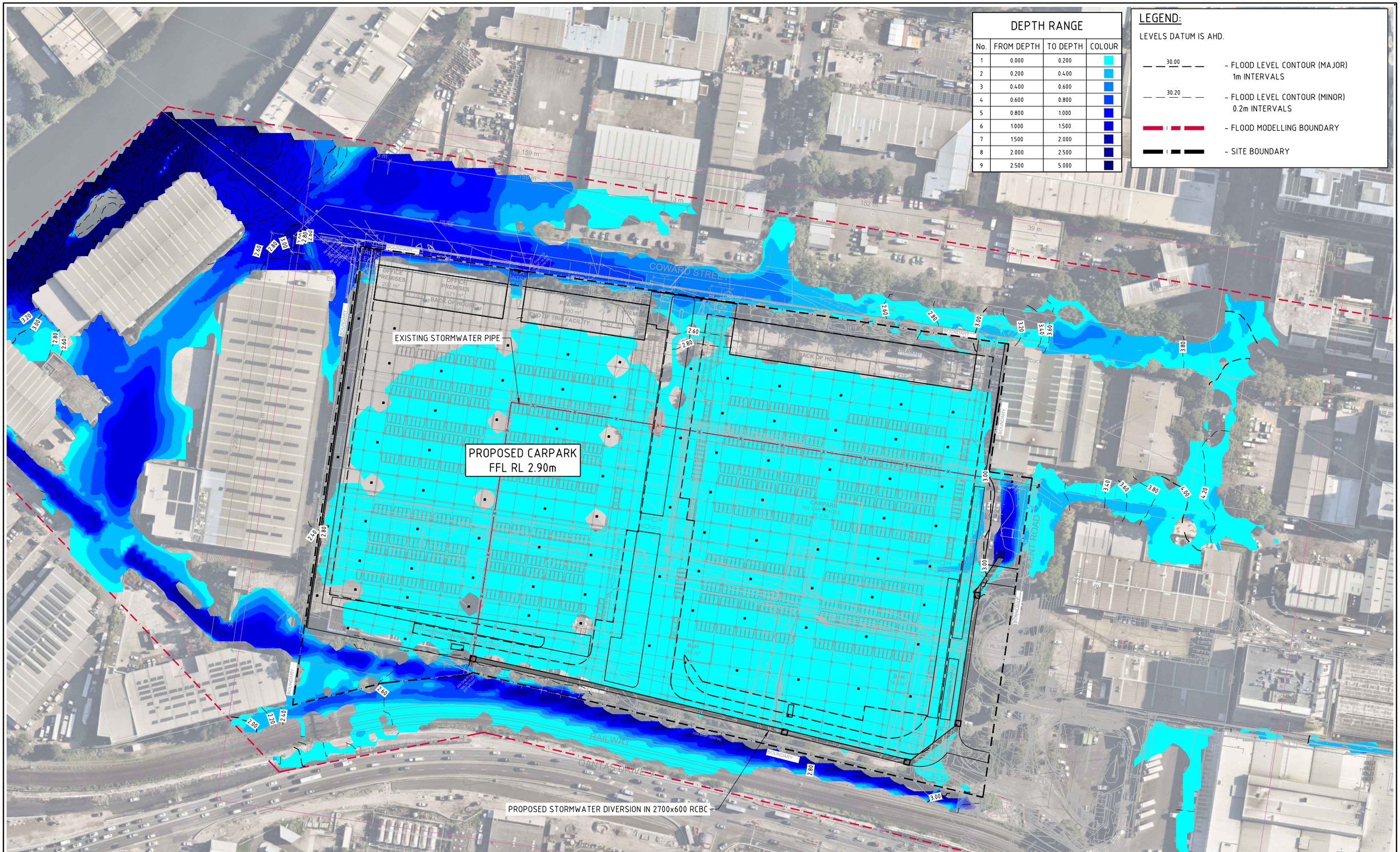
DRAWING TITLE

0.5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014509.05-F31

ISSUE A



0.5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F32

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DRAWING TITLE: 0.5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F32 ISSUE: A

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.500	-0.010	
2	-0.010	0.010	
3	0.010	0.020	
4	0.020	0.030	
5	0.030	0.040	
6	0.040	0.050	
7	0.050	0.100	
8	0.100	0.200	
9	0.200	0.300	
10	0.300	0.400	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

NOTE: FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPMENT SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT 0.5% AEP FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT 0.5% AEP FLOOD LEVEL

PROPOSED CARPARK
FFL RL 2.90m

COWARD STREET

RAILWAY

QANTAS DRIVE

0.5% AEP FLOOD LEVEL AFFLUX
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
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Lacoste + Stevenson urban design - architecture - interiors

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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F33

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP FLOOD LEVEL AFFLUX

DRAWING No C014509.05-F33
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
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Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F34

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F34
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

QANTAS DRIVE

0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
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urban design - architecture - interiors
Paddock Landscape Architects

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F35

CONSULT AUSTRALIA

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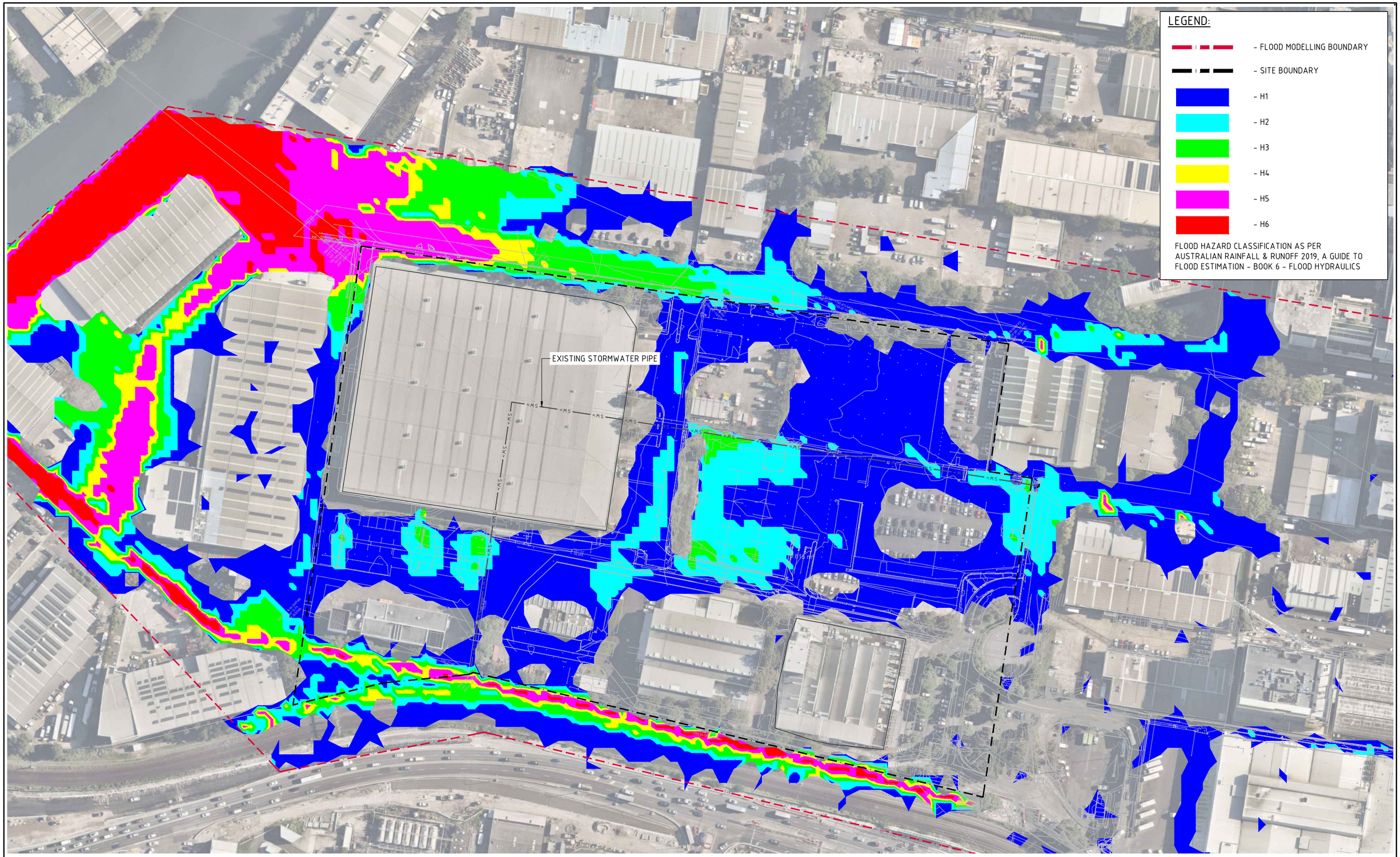
DRAWING TITLE
0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F35
ISSUE A



0.5% AEP PRE-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F36

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COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F36
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

0.5% AEP POST-DEVELOPMENT FLOOD HAZARD
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F37

CONSULT AUSTRALIA

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F37
ISSUE A

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT

Paddock Landscape Architects

Lacoste + Stevenson urban design - architecture - interiors

CLIENT

LOGOS

PROJECT

QF 1 & 2 ESTATE

263 - 273 COWARD STREET, MASCOT

NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F41

CONSULT AUSTRALIA

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DRAWING TITLE

5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014509.05-F41

ISSUE A

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

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PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F42

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DRAWING TITLE: 5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F42 ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

<MS

5% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design · architecture · interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F43

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DRAWING TITLE
5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F43
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

QANTAS DRIVE

BOUNDARY

5% AEP POST-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT

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PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F44

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DRAWING TITLE
5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F44

ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

5% AEP PRE-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F45

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DRAWING TITLE: 5% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No: C014509.05-F45

ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

GARRETT DRIVE

5% AEP POST-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F46

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DRAWING TITLE: 5% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No: C014509.05-F46

ISSUE: A

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

20% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

ISSUED FOR PLANNING APPLICATION	27.10.23	A
AMENDMENTS	DATE	ISSUE

ARCHITECT

Paddock Landscape Architects

Lacoste + Stevenson urban design - architecture - interiors

CLIENT

LOGOS

PROJECT

QF 1 & 2 ESTATE

263 - 273 COWARD STREET, MASCOT

NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F51

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DRAWING TITLE

20% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014509.05-F51

ISSUE A

DEPTH RANGE			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

PROPOSED CARPARK FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

QANTAS DRIVE

RAILWAY

BOUNDARY

20% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design · architecture · interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F52

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: 20% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014509.05-F52

ISSUE: A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

EXISTING STORMWATER PIPE

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

20% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design · architecture · interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F53

CONSULT AUSTRALIA

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
20% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F53
ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

QANTAS DRIVE

BOUNDARY

20% AEP POST-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
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Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F54

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DRAWING TITLE
20% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014509.05-F54

ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

20% AEP PRE-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT
Paddock Landscape Architects
Lacoste + Stevenson urban design - architecture - interiors

CLIENT
LOGOS

PROJECT
QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F55

CONSULT AUSTRALIA

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DRAWING TITLE
20% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No C014509.05-F55

ISSUE A

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

EXISTING STORMWATER PIPE

PROPOSED CARPARK
FFL RL 2.90m

PROPOSED STORMWATER DIVERSION IN 2700x600 RCBC

COWARD STREET

RAILWAY

20% AEP POST-DEVELOPMENT FLOOD HAZARD

SCALE 1:1000

10m 0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 AT A1 SIZE SHEET

FOR APPROVAL

AMENDMENTS	DATE	ISSUE
ISSUED FOR PLANNING APPLICATION	27.10.23	A

ARCHITECT: Paddock Landscape Architects; Lacoste + Stevenson urban design - architecture - interiors

CLIENT: LOGOS

PROJECT: QF 1 & 2 ESTATE
263 - 273 COWARD STREET, MASCOT
NSW, 2020

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
DS	NZ	APR' 23	DS	A1	AS SHOWN	C014509.05-F56

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DRAWING TITLE: 20% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No: C014509.05-F56

ISSUE: A

Appendix D

SYDNEY WATER OSD CONSULTATION

Daniel,

On Site Detention is not required for any development downstream of Kent Road, if the development make direct stormwater connection to Sydney Water's stormwater pipe/channel.

As your property 263 - 273 Coward Street Mascot is located on the downstream side of the Kent Road, On Site Detention is not required if you make direct stormwater connection to Sydney Water's stormwater channel.

If you are discharging stormwater into any of the Council stormwater assets or kerb and gutter, then you need to liaise with Council regarding their On Site Detention requirements.

Water quality objectives are as per Council's determination, and you need to liaise with Council regarding this matter. In the event if the Council did not make any decision in relation to Water Quality objectives, then following requirements would apply if you discharged stormwater directly into Sydney Water's stormwater system:

Discharged Stormwater Quality Targets

Stormwater run-off from the site should be of appropriate quality before discharge into a Sydney Water asset or system. Developments must demonstrate stormwater quality improvement measures that meet the following specified stormwater pollutant reductions:

Pollutant	Pollutant load reduction objective (%)
Gross Pollutants (>5mm)	90
Total Suspended Solids	85
Total Phosphorus	65
Total Nitrogen	45

You may use our tool, through the website below, to determine whether your development is Deemed to Comply. In some cases though, we may request an eWater MUSIC model before approving your connection.

https://stormwater.flowmatters.com.au/_/#/

Best Regards

Planning and Technical
Business Development
Sydney Water, Level 13, 1 Smith Street, Parramatta NSW 2150

Sydney WATER

Sydney Water acknowledges the traditional custodians of the waters and land on which we work, live and learn.