NORTHROP

TOGA CENTRAL DEVELOPMENT

Integrated Water Cycle Management Plan

Prepared for Toga Development & Construction

Level 5, 45 Jones Street

Ultimo NSW 2007

Integrated Water Cycle Management Plan

Date	Revision	Issue	Prepared By	Reviewed By
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1. Executive Summary

This Integrated Water Cycle Management Plan has been prepared by Northrop Consulting Engineers to accompany a detailed State Significant Development (SSD) development application (DA) for the mixed-use redevelopment proposal at TOGA Central, located at 2 & 8A Lee Street, Haymarket (the site). The site is legally described as Lot 30 in Deposited Plan 880518 and Lot 13 in Deposited Plan 1062447. The site is also described as 'Site C' within the Western Gateway sub-precinct at the Central Precinct.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the SSD DA (SSD 33258337).

This report concludes that the proposed mixed-use redevelopment is suitable and warrants approval subject to the implementation of the following stormwater measures.

- Site-based Water Sensitive Urban Design (WSUD) in compliance with City of Sydney water quality requirements;
- Site stormwater drainage design in compliance with City of Sydney drainage design requirements;
- Stormwater discharge connection points demonstrating no adverse impacts to downstream systems.

Following the implementation of the above stormwater measures, the remaining impacts are appropriate.

1.1 Associated Reports

This Integrated Water Cycle Management report should be read in conjunction with the following supplementary documents:

- *Plan Showing Boundaries and Selected Detail for Flood Study Purposes at No. 2 Lee Street, Haymarket & Surrounds,* Norton Survey Partners, 8 April 2022;
- *Henry Deane Plaza – Lee Street, Haymarket QL-B Utility Investigation*, Axis Maintenance, 9 August 2021;
- *Flood Risk Assessment Report*, Northrop Consulting Engineers, 2022;
- *Toga Central – New Development Hydraulic and Fire Services,* Norman Disney & Young, 2022;
- *Toga Central Development Application Civil Engineering Package (SY220189 Drawing No. CI-DAD-00-000 to CI-DAD-51-001),* Northrop Consulting Engineers, 2022

Images and limited text in these documents have been reproduced in this report.

2. The Development

2.1 Introduction

This report has been prepared to accompany a SSD DA for the for the mixed-use redevelopment proposal at TOGA Central, located at 2 & 8A Lee Street, Haymarket.

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning and Environment (DPE) for assessment.

The purpose of the SSD DA is to complete the restoration of the heritage-listed building on the site, delivery of new commercial floorspace and public realm improvements that will contribute to the realisation of the
Government's vision for an iconic technology precinct and transport gateway. The application seeks consent for the conservation, refurbishment and adaptive re-use of the Adina Hotel building (also referred to as the former Parcel Post building (fPPb)), construction of a 45-storey tower above and adjacent to the existing building and delivery of significant public domain improvements at street level, lower ground level and within Henry Deane Plaza. Specifically, the SSD DA seeks development consent for:

- Site establishment and removal of landscaping within Henry Deane Plaza.
- Demolition of contemporary additions to the fPPb and public domain elements within Henry Deane Plaza.
- Conservation work and alterations to the fPPb for retail premises, commercial premises, and hotel and motel accommodation. The adaptive reuse of the building will seek to accommodate:
  - Commercial lobby and hotel concierge facilities,
  - Retail tenancies including food and drink tenancies and convenience retail with back of house areas,
  - 4 levels of co-working space,
  - Function and conference area with access to level 6 outdoor rooftop space, and
  - Reinstatement of the original fPPb roof pitch form in a contemporary terracotta materiality.
- Provision of retail floor space including a supermarket tenancy, smaller retail tenancies, and back of house areas below Henry Deane Plaza (at basement level 1 (RL12.10) and lower ground (RL 16)).
- Construction of a 45-storey hotel and commercial office tower above and adjacent to the fPPb. The tower will have a maximum building height of RL 202.28m, and comprise:
  - 10 levels of hotel facilities between level 10 – level 19 of the tower including 204 hotel keys and 2 levels of amenities including a pool, gymnasium and day spa to operate ancillary to the hotel premises. A glazed atrium and hotel arrival is accommodated adjacent to the fPPb, accessible from Lee Street.
  - 22 levels of commercial office space between level 23 – level 44 of the tower accommodated within a connected floor plate with a consolidated side core.
  - Rooftop plant, lift overrun, servicing and BMU.
- Provision of vehicular access into the site via a shared basement, with connection points provided to both Block A (at RL 5) and Block B (at RL5.5) basements. Primary access will be accommodated from the adjacent Atlassian site at 8-10 Lee Street, Haymarket, into 4 basement levels in a split-level arrangement. The basement will accommodate:
  - Car parking for 106 vehicles, 4 car share spaces and 5 loading bays.
  - Hotel, commercial and retail and waste storage areas.
  - Plant, utilities and servicing.

- Provision of end of trip facilities and 165 employee bicycle spaces within the fPPb basement, and an additional 71 visitor bicycle spaces within the public realm.
- Delivery of a revitalised public realm across the site that is coordinated with adjacent development, including an improved public plaza linking Railway Square (Lee Street), and Block B (known as 'Central Place Sydney'). The proposal includes the delivery of a significant area of new publicly accessible open space at street level, lower ground level, and at Henry Deane Plaza, including the following proposed elements:
  - Provision of equitable access within Henry Deane Plaza including stairways, ramp access and a publicly accessible lift.
  - Construction of an elevated pavilion within Henry Deane Plaza at RL21.
  - Landscaping works within Henry Deane Plaza and along Lee Street.
- Utilities and service provision.
- Realignment of lot boundaries.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 17 December 2021 and issued for the SSD DA. Specifically, this report has been prepared to respond to the SEARs requirement issued below.

Item	Description of requirement	Section reference
15. Stormwater and Wastewater	▪ Provide an integrated Water Management Plan for the development that: – Is prepared in consultation with the local council and any other relevant drainage or water authority. – Details the proposed drainage design for the site including any on-site treatment, reuse and detention facilities [1], water quality management measures, and the nominatied discharge points. – Demonstrates compliance with the local council or any other drainage or water authority requirements and avoids adverse impacts on any donwstream properties. ▪ Where drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards, the local council or other drainage or water authority.	Section 5 Section 3 & 5 Section 3 & 5 Section 5.3
23. Infrastructure Requirements and Utilities [2]	▪ In consultation with relevant service providers: – Assess the impacts of the development on existing utility infrastructure and service providers assets surrounding the site. – Identify any infrastructure upgrades required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained – Provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be	Section 4.5 Section 4.5 & 5.4 Section 5.5

	coordinated, funded and delivered to facilitate the development.	

[1] *Documentation of reuse and detention facilities is not included in the scope of this report. Refer to 'Hydraulic Specification Report' by Norman Disney & Young (2022) for SEARS response to this component.*

[2] *Infrastructure requirements and utilities for stormwater only. Refer to reports by other services consultants for all services other than stormwater drainage.*

2.2 The Site

The site is located within the City of Sydney Local Government Area (LGA). The site is situated 1.5km south of the Sydney CBD and 6.9km north-east of the Sydney International Airport within the suburb of Haymarket.

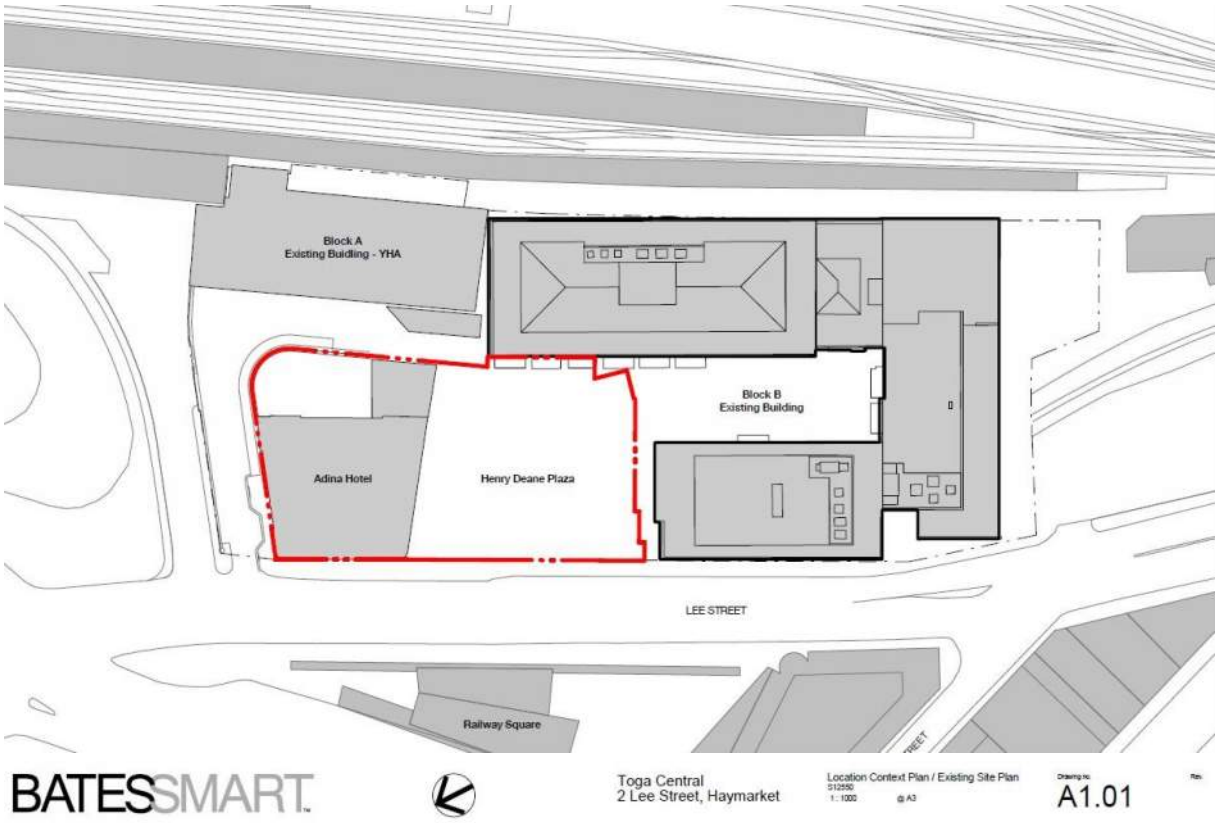
The site is located within the Western Gateway sub-precinct, an area of approximately 1.65ha that is located immediately west of Central Station within Haymarket on the southern fringe of the Sydney CBD. Immediately north of Central Station is Belmore Park, to the west is Haymarket (including the University of Technology, Sydney and Chinatown), to the south and east is rail lines and services and Prince Alfred Park and to the east is Elizabeth Street and Surry Hills.

Central Station is a public landmark, heritage building, and the largest transport interchange in NSW. With regional and suburban train services, connections to light rail, bus networks and to Sydney Airport, the area around Central Station is one of the most-connected destinations in Australia.

The site is located at 2 & 8A Lee Street, Haymarket and is legally described as Lot 30 in Deposited Plan 880518 and Lot 13 in Deposited Plan 1062447. The land that comprises the site under the Proponent's control (either wholly or limited in either height or depth) comprises a total area of approximately 5,450sqm.

The location of the TOGA Central site is illustrated in **Figure 1**.

Figure 1 – Site Identification Plan



Source: Bates Smart

The site currently comprises the following existing development:

- Lot 30 in Deposited Plan 880518 (Adina Hotel building): the north-western lot within the Western Gateway sub-precinct accommodates a heritage-listed building which was originally developed as the Parcels Post Office building. The building has been adaptively re-used and is currently occupied by the Adina Hotel Sydney Central. The eight-storey building provides 98 short-stay visitor apartments and studio rooms with ancillary facilities including a swimming pool and outdoor seating at the rear of the site.
- Lot 13 in Deposited Plan 1062447 (Henry Deane Plaza): the central lot within the Western Gateway subprecinct adjoins Lot 30 to the south. It accommodates 22 specialty food and beverage, convenience retail and commercial service tenancies. The lot also includes publicly accessible space which is used for pop-up events and a pedestrian thoroughfare from Central Station via the Devonshire Street Tunnel. At the entrance to Devonshire Street Tunnel is a large public sculpture and a glazed structure covers the walkway leading into Railway Square. This area forms part of the busy pedestrian connection from Central Station to Railway Square and on to George and Pitt Streets, and pedestrian subways.

The site is listed as an item of local significance under Schedule 5 of the *Sydney Local Environmental Plan 2012* 'Former Parcels Post Office including retaining wall, early lamp post and building interior', Item 855.

The site is also included within the Central Railway Station State heritage listing. This is listed on the State Heritage Register 'Sydney Terminal and Central Railway Station Group', Item SHR 01255, and in Schedule 5 of the *Sydney Local Environmental Plan 2012* 'Central Railway Station group including buildings, station yard, viaducts and building interiors' Item 824.

The site is not however listed independently on the State Heritage Register. There is an array of built forms that constitute Central Station, however the Main Terminal Building (particularly the western

frontage) and associated clocktower constitute key components in the visual setting of the Parcel Post building.

3. Methodology

3.1 Compliance Framework

The *Sydney City Development Control Plan 'DCP' (2012)* (*Chapter 3.7*) as well as Section 3.4.2 of the *Western Gateway Sub-precinct Design Guide (2021)* identifies the following in relation to Water Management. This is the minimum requirements for compliance.

We note that requirements for flooding have been excluded from the scope of this report. Refer to the *Flood Risk Assessment Report* (Northrop, 2022) for compliance framework relating to flooding.

Objectives

- Ensure an integrated approach to water management across the City through the use of water sensitive urban design principles, aiming to reduce the effect of stormwater pollution on receiving waterways
- Encourage sustainable water use practices
- Assist in the management of stormwater to minimise flooding and reduce the effects of stormwater pollution on receiving waterways.
- Ensure that development above the flood planning level as defined in the Sydney LEP 2012 will minimise the impact of stormwater and flooding on other developments and the public domain both during the event and after the event.

Drainage and Stormwater Management

- Stormwater drainage concept plan generally required with DA submissio
- A suitably qualified engineer with experience in drainage design is to assess the site drainage requirements for the proposed development, and prepare the required local drainage management plan in accordance with the provisions of this DCP (stormwater plan will not be provided as part of this submission as per above);
- On-site detention is not required for this site as confirmed by Planning and Technical Department of Sydney Water (refer to Appendix D for Sydney Water correspondence);
- Stormwater flows up to the 5% Annual Exceedance Probability (AEP) event for this site are conveyed by a minor drainage system; and stormwater flows above the 5% annual exceedance probability event are conveyed by a major drainage system.
- Major drainage systems are to be designed so that ensures that public safety is not compromised;
- Minor flows from a development site are not to be discharged to the kerb if direct connection to an existing stormwater pipe is available, unless it can be demonstrated that there is sufficient capacity within the existing gutter and the flow velocity and depth within the gutter will remain below 400mm;
- Where the proposed development is located on a floodplain, high level overflows are permitted for roof drainage systems where the overflow is set above the 1% AEP level;
- Connection to existing stormwater infrastructure are not to reduce the capacity of that infrastructure by more than 10%. The development proposal is to show the level of impact on the existing stormwater infrastructure as a result of the proposed new connection;
- The post development run-off from impermeable surfaces (such as roofs, driveways and paved areas) is to be managed by stormwater source measures that:
    - Contain frequent low-magnitude flows;
    - Maintain the natural balance between run-off and infiltration;
    - Remove some pollutants prior to discharge into receiving waters;
    - Prevent nuisance flows from affecting adjacent properties; and
    - Enable appropriate use of rainwater and stormwater
- Development is to consider and include Water Sensitive Urban Design (WSUD) measures to improve stormwater quality flowing into waterways, and potentially include:

  - Gross pollutant traps
  - Passive irrigation
  - Bio-retention areas
  - Rainwater harvesting
- Where filtration and bio-retention devices are proposed, they are to be designed to capture and provide temporary storage for stormwater;

Stormwater Quality Targets

The following is consistent with City of Sydney DCP.

- Post development mean annual pollutant loads must be reduced by the following amounts:
  - Gross pollutants (90%)
  - Total suspended solids (85%)
  - Total phosphorus (65%)
  - Total nitrogen (45%)
- The stormwater quality assessment is to be prepared by a suitably qualified engineer with experience in water sensitive urban design (WSUD) and include:
  - Modelling of pollutant load standards with an industry standard water quality model;
  - The design of WSUD measures used to achieve the post-development pollutant load standards; and
  - Maintenance schedules (Appendix G) of any proposed WSUD measure that requires maintenance or full replacement including the likely recycling or disposal location of any wastes that may be generated.

When accounting for post-development runoff, include all stormwater runoff as well as any other site water discharged to the stormwater system. If the development includes a basement pump-out system that discharges to the stormwater system, this volume needs to be accounted for. To demonstrate compliance with these targets, proponents will need to submit a WSUD report and MUSIC model.

Detailed design to achieve the above requirements for stormwater drainage design and stormwater quality management shall also be undertaken in accordance with the technical recommendations set out in *Sydney Streets – Technical Specifications Part A4: Stormwater Drainage Design* (City of Sydney, 2019).

Erosion and sediment control

Provide appropriate Erosion and Sedimentation Control measures to control runoff, mitigate soil erosion and trap pollutants before they can reach downslope lands and receiving watercourses. Soil erosion and sediment control measures shall be designed in accordance with the document Managing Urban Stormwater–Soils & Construction Volume 1 (2004) by Landcom (the “Blue Book”).

3.2 Summary of Strategic Context

This report and accompanying DA drawings demonstrate compliance with the City of Sydney *DCP* 2012, *Sydney Streets Technical Specifications* 2019, *Western Gateway Sub-precinct Design Guide (2021)* and Sydney Water requirements as a minimum. To summarise, this includes all provisions for stormwater drainage, water quality treatment and erosion & sediment controls.

4. Assessment and Findings

4.1 Catchment Context

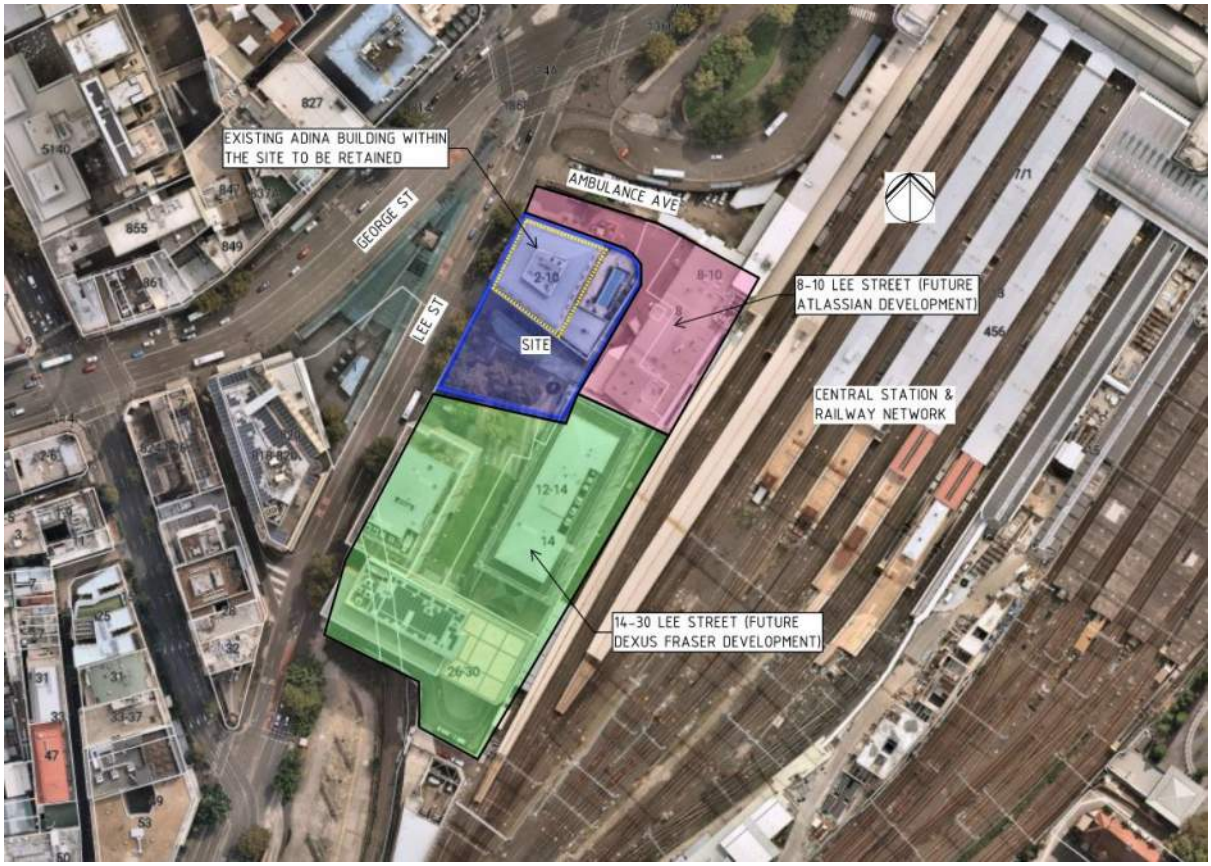
Toga Central falls under Sydney Water's jurisdiction of catchment areas. Per the Sydney Water Interactive Map, it is part of "City Area 30 Catchment" (see *Figure 1*). As well as this, the catchment area is part of City of Sydney Council, meaning drainage design and stormwater management must refer to the relevant Council design control plan as discussed in Section 3.

Figure 1 – Sydney Water Catchment Map (Sydney Water, 2022)

4.2 Existing Environment

Proposed works for Toga Central are situated in the heart of Sydney's CBD, situated next to Central Station. The existing rail line runs behind the southeast edge of the site, with the remainder of the site surrounded by Lee Street, Ambulance Avenue and various buildings. The site is bound by adjoining properties which will undergo future development as part of the Atlassian development to the north (8-10 Lee Street) and Dexus Fraser development to the south (14-30 Lee Street). Refer to Figure 2 for local surrounds.

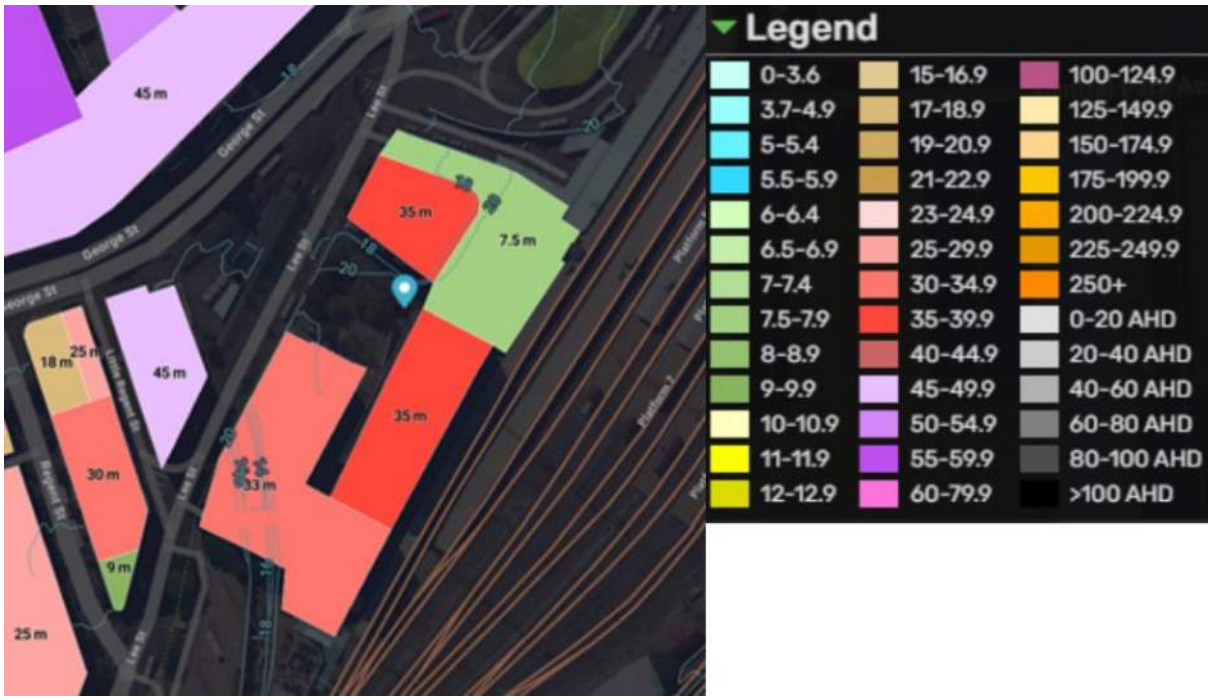
Figure 2 – Existing Surrounds (Nearmaps, 2022)



The terrain is primarily densely populated urban zone, with small areas of greenery towards the north and trees sparsely in-between buildings and sidewalks.

Figure 3 illustrates the elevation of existing buildings above the ground surface.

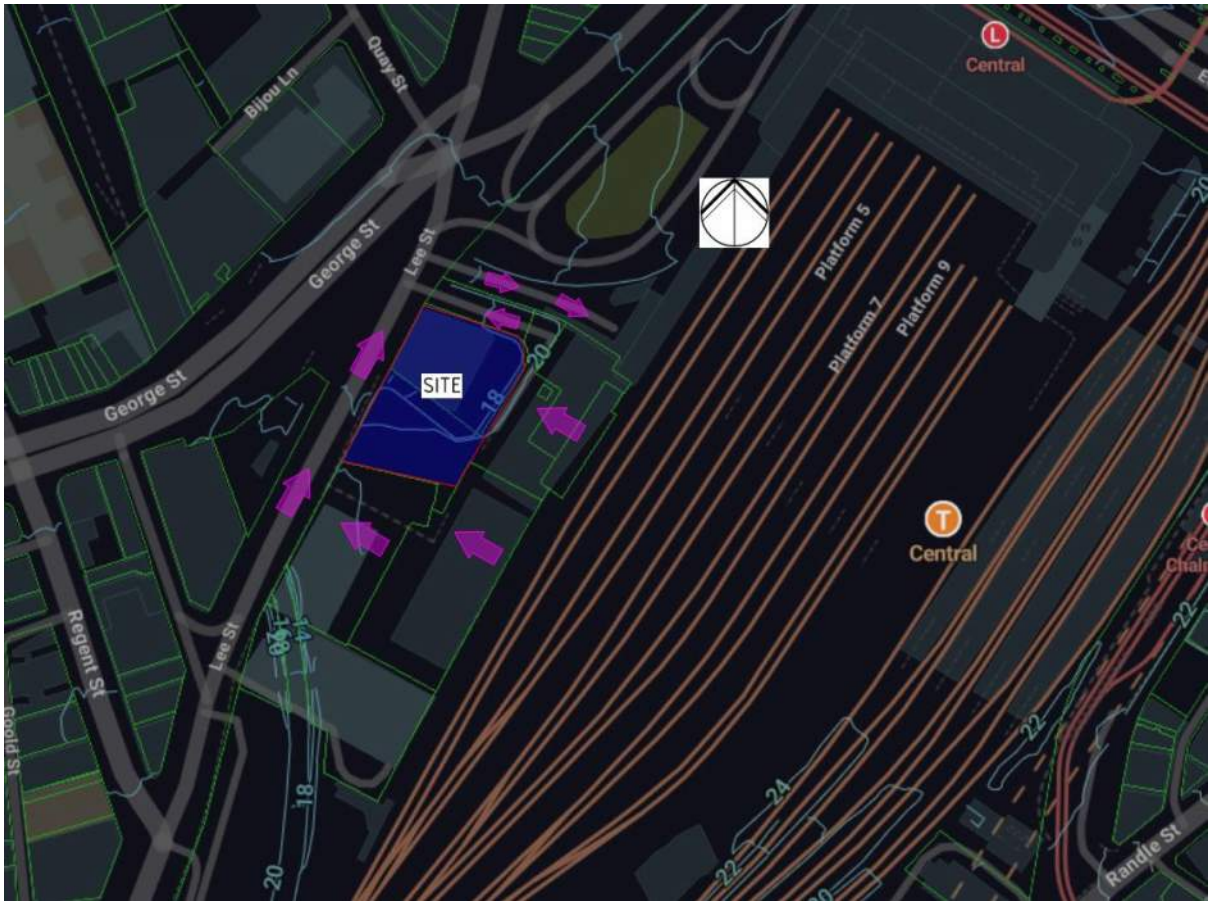
Figure 3 – Existing Surrounding Elevation (Mecone, 2022)



4.3 Topography and Flow Paths

With the site being located in such a dense urban environment, existing topography information is relatively scarce with very little open area apparent due to the number of buildings and industrial areas present near the site. Site survey undertaken by Norton Survey Partners on 8 April 2022 *Plan Showing Boundaries and Selected Detail for Flood Study Purposes at No. 2 Lee Street, Haymarket & Surrounds* (provided in Appendix A) indicates the existing open plaza within the site has a very gentle slope but generally falls in a westerly direction. Surface runoff from this plaza area appear to be captured by a series of grated trench drains prior to the Lee Street pedestrian tunnel entrance, which are then eventually piped into a 1500mm Sydney Water stormwater culvert traversing east-west under the Lee Street tunnel. All other flows from the site are primarily roof run off, with little upstream catchment present due to the site backing onto Central Station. Refer to Figure 4 for overall catchment topography (with overland flow arrows indicating flow path).

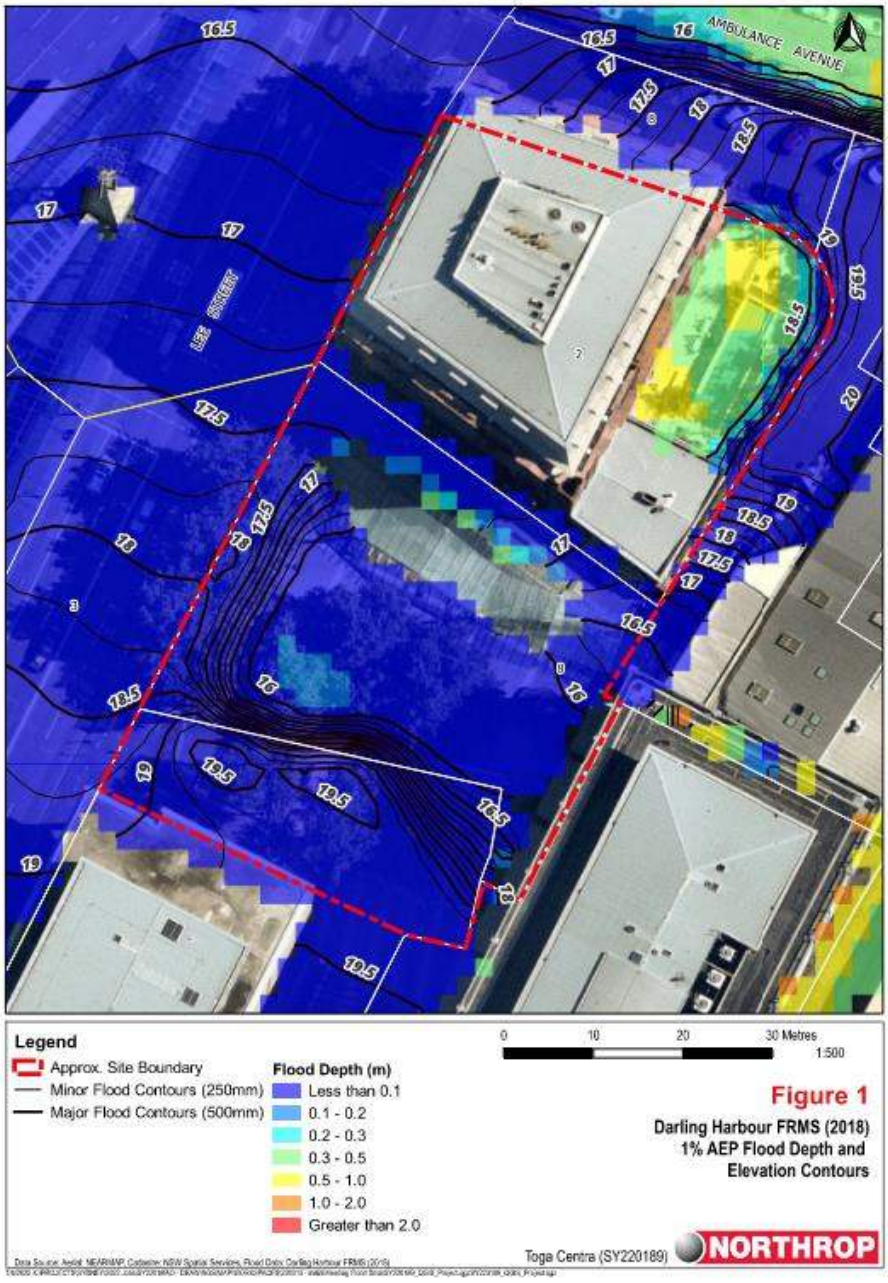
Figure 4 – Existing Topography (Mecone, 2022)



4.4 Flooding

Council has previously undertaken a flood study for the *Darling Harbour Catchment Flood Study* (BMT WBM, 2014) which covers the footprint of the development and identifies the site as flood affected. Figure 5 is an extract from the site-based *Flood Risk Assessment Report* undertaken by Northrop Consulting Engineers (2022) which is not part of the scope of this IWCM, however demonstrates existing 1% AEP flood levels within the vicinity of the site. Refer to the flood report for further information.

Figure 5 – Existing 1% AEP Flood Map (Northrop, 2022)



4.5 Existing Infrastructure Requirements and Utilities

4.5.1 Existing Stormwater Services

Northrop undertook a 'Dial Before You Dig' investigation into the existing services that are located within the affected site area around TOGA Central to investigate the requirements of Item 23 of SEARS . This involves an analysis of the current Sydney Water stormwater assets, in order to give perspective on the proposed stormwater strategy and implementation. For a full overview of the Sydney Water DBYD plans, refer to Appendix E.

The primary stormwater service of concern is located underneath the existing Henry Deane Plaza tunnel, connecting Lee Street and Central Station, comprising of a 1500mm reinforced circular concrete culvert. This pipe runs directly through the site extent of works, depicted partially in *Figure 6* below.

Figure 6 – Sydney Water DBYD Plans

A survey of underground services was also undertaken by Axis Maintenance on 9 August (Appendix B). The survey indicates that this Sydney Water concrete stormwater culvert is running east-west through the site at almost 1% slope under the Lee Street tunnel, with invert depth ranging between 4.4 to 5.8m. Existing flood and hydraulic capacity of this culvert has been investigated and results of this modelling documented in the *Flood Risk Assessment Report* (Northrop, 2022).

A CCTV investigation was carried out by SureSearch on 19 March 2021 and indicated the culvert currently services several incoming private stormwater pipe connections across the site as well as some pipelines on Lee Street. This is also confirmed by the public stormwater network GIS map provided by Council on 14 March 2022 which demonstrates several Council stormwater pipelines connecting into the culvert on Lee Street and George Street (Appendix C).

CCTV also demonstrated the culvert is in reasonably sound condition and appears to be in good form to accommodate any stormwater connections that may be proposed as part of this development.

Figure 7 – Existing 1500mm Stormwater Culvert CCTV (SureSearch, 2021)

Refer to reports by other services consultants for all existing services other than stormwater drainage.

4.5.2 Surrounding Stormwater Infrastructure

In accompaniment to the existing services running through TOGA Central, the site is surrounded by a public network of pit and pipes utilised by surrounding developments and general stormwater usage, as evident in Council's existing stormwater network map provided in *Figure 8* and Appendix C. Based on investigation of Council's background information, there does not appear to be any known hydraulic capacity issues in the existing local stormwater network.

Figure 8 – Council Stormwater Network

The primary stormwater service being the 1500mm stormwater pipe, captures road flows, piped flows and overland runoff within the local vicinity. The surrounding network can be split into Sydney Water and City of Sydney assets, with the latter consisting primarily of smaller pipes situated around railway square and Pitt Street.

4.5.3 Stormwater Infrastructure Upgrades

It is anticipated that most of the on-site private stormwater infrastructure shall be deactivated and removed as part of the proposed development works. The existing 1500mm stormwater culvert shall be retained and modifications made to allow for connections of proposed site drainage into the culvert system. Based on existing flood modelling results documented in the *Flood Risk Assessment Report* (Northrop, 2022), the culvert has sufficient capacity to accommodate flows generated from the site, particularly since the development is expected to reduce total impervious surfaces across the site (i.e. less site generated runoff). No stormwater upgrades are therefore required for the existing drainage system. However, it is likely that development's excavation works will impact on the zone of influence of the culvert – further consultation with Sydney Water shall be facilitated by the Water Servicing Coordinator for the approval process of works within this zone.

5. Cumulative Impacts/Strategy

5.1 Proposed Catchment Plan

The proposed site is generally to be split into two zones. The northern zone 'Area A' (primarily to the north of the Sydney Water stormwater culvert) is mostly a roofed catchment consisting of a roof terrace for the existing Adina building, the main proposed tower roof and its surrounding roof overhang. The southern zone 'Area B' (primarily to the south of the Sydney Water culvert) consists of the surface runoff catchment in Henry Deane Plaza and some bypass areas along the fronting boundary of the site. Together, these form 5 sub catchments which have been delineated across the site based on proposed site grading and layout. The catchment layout can be found in Figure 9 below.

Figure 9 – Site Catchment Plan

5.2 Proposed Site Stormwater Drainage

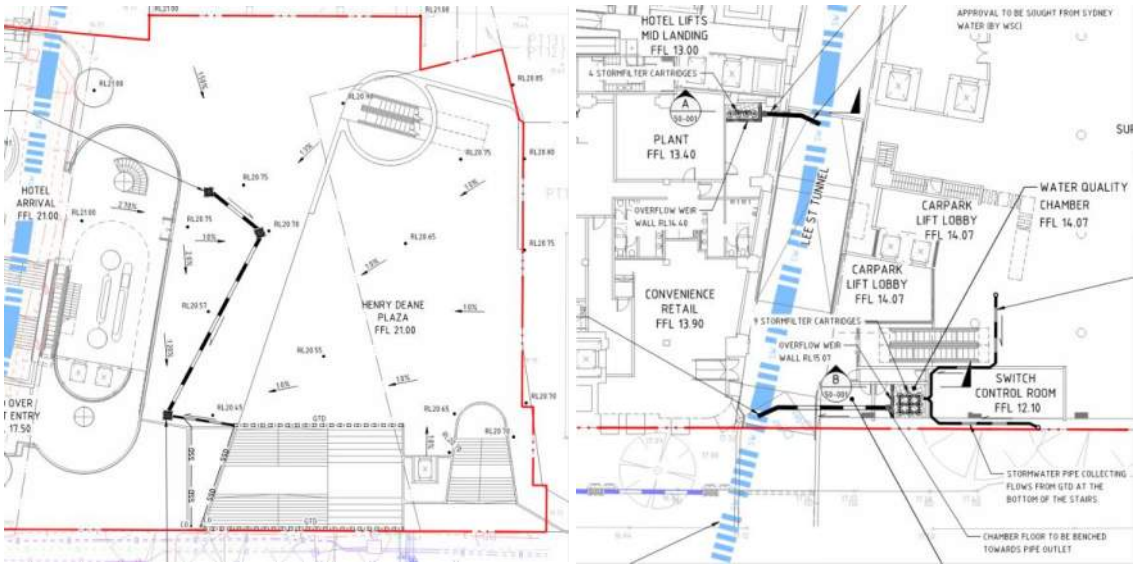
As discussed in Section 5.1, the site is split into 2 main catchment areas, with each area collecting roof flows and surface stormwater runoff respectively. Refer to Figure 10 for snippets of stormwater design and Appendix F for *Toga Central Development Application Civil Engineering Package (SY220189 Drawing No. CI-DAD-00-000 to CI-DAD-51-001),* Northrop Consulting Engineers, 2022.

For Area A, roof flows are to be collected via a roof drainage system (proposed as part of hydraulic design scheme), and conveyed into a rainwater tank located within the building. Water collected in this rainwater tank to be reused for cooling towers, toilet flushing and irrigation. Refer to *Toga Central – New Development Hydraulic and Fire Services* (Norman Disney & Young, 2022) for further information. Water overflowing from this rainwater tank is piped into a water quality chamber located within the building, which is then discharged as a direct connection into the Sydney Water stormwater culvert near the eastern site boundary.

For Area B, the main objective of stormwater management is to contain as much runoff within the site as possible for water quality treatment and guide these overland flows within Henry Deane Plaza. Based on the catchment delineation in Figure 9, the Plaza open space area shall grade in a southwesterly direction towards drainage provisions within the site, which eventually direct these flows into a second

site water quality chamber located on this side of the building, prior to discharging as a second direct connection into the Sydney Water stormwater culvert near the western site boundary. Grated trench drains have also been proposed at the top and bottom of the stairs the reduce bypass and treat as much of the plaza flows as possible.

Figure 10 – Site Stormwater and Grading Plan



5.3 Proposed Stormwater Discharge Connections

WSC and Sydney Water approval is required for both proposed stormwater connection points and is outside the scope of this report, however we note the stormwater design shall adhere to the following general Sydney Water requirements:

- The physical connection to the Sydney Water stormwater main is defined by Sydney Water as Major Works. This would typically require a lintel to be constructed at the connection point and a rocker pipe / stub installed (at the discretion of Sydney Water, subject to site conditions). Pipework upstream of this connection is private;
- Connection entry to be at a 30 deg angle (typically) to the stormwater culvert.

Detailed stormwater plans shall be submitted to Sydney Water at detailed design stage for approval.

5.4 Stormwater Quality

5.4.1 Water Quality Modelling

The main objectives for stormwater quality are adopted from the City of Sydney DCP and are presented in Table 1 below:

Table 1 – Water Quality Targets

Pollutants	% Reduction Post-Development Average Annual Load Reduction
Gross Pollutants (GP)	90
Total Suspended Solids (TSS)	85
Total Phosphorous (TP)	65

Total Nitrogen (TN)	45

5.4.2 Stormwater Quality Management Scheme

The proposed treatment train is designed to treat the stormwater flowing through the proposed stormwater system such that they meet the requirements established in Table 1 above. At minimum, the treatment train consists of a combination of the following:

- 60kL rainwater tank with re-use (for roof catchments);
- Two water quality chambers containing Ocean Protect 690mm Psorb Stormfilter cartridges (or approved equivalent);
- Gross Pollutant Traps (Ocean Protect Ocean Guard pit inserts or approved equivalent).

A stormwater maintenance and operations schedule for the above water quality devices is provided in Appendix E.

5.4.3 Rainwater Tank

A 60kL rainwater tank proposed as part of the treatment train to capture roof drainage from the development and with a reuse strategy for cooling towers, toilet flushing and irrigation. Refer to *Toga Central – New Development Hydraulic and Fire Services* (Norman Disney & Young, 2022) for further information on water supply and reuse hydraulic scheme. Based on advice from Norman Disney & Young, an annual demand reuse rate of 44,195kL was adopted for the rainwater tank in the treatment train modelling assessment.

5.4.4 Stormfilter Cartridges

Ocean Protect Stormfilter 690mm Psorb cartridges (or approved equivalent) are proposed within the two water quality chambers prior to discharge into the Sydney Water stormwater culvert. The Stormfilter system is a passive filtration system, effectively removing pollutants to meet regulatory requirements. The Stormfilter stormwater treatment system uses rechargeable, self-cleaning, media-filled cartridges to absorb and retain pollutants from stormwater runoff including total suspended solids, hydrocarbons, nutrients, soluble heavy metals, and other common pollutants.

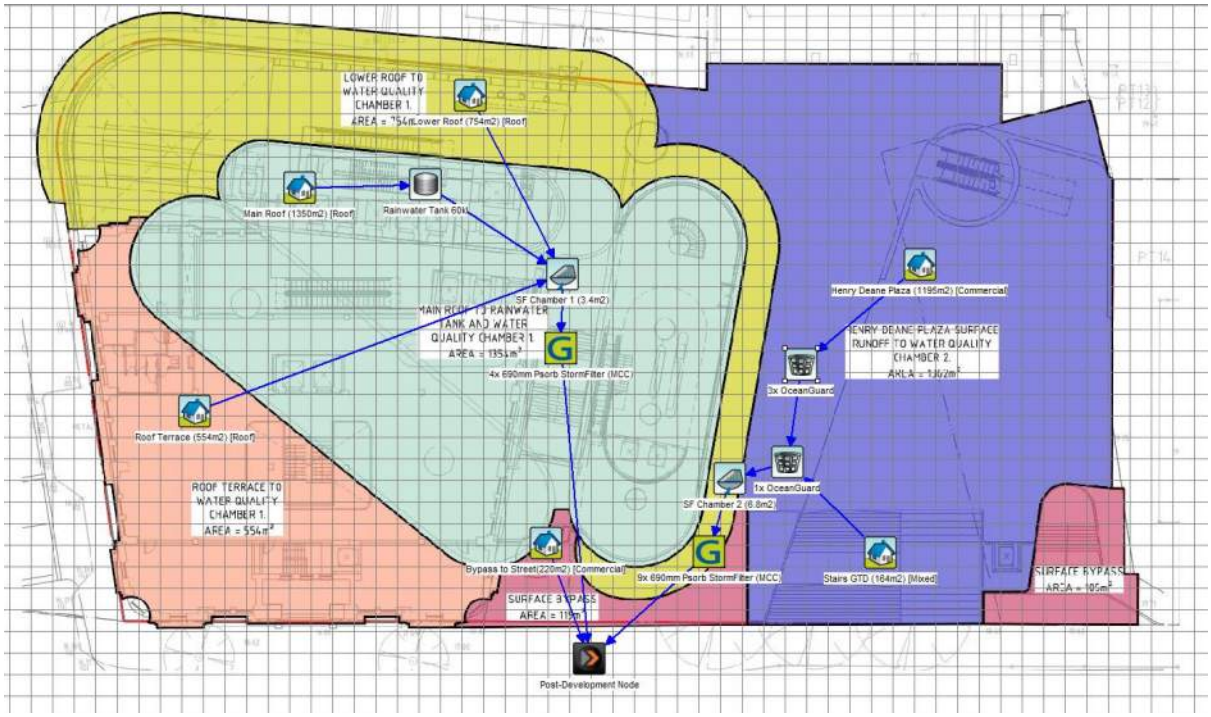
5.4.5 Pit Baskets

Ocean Protect Ocean Guard pit inserts (or approved equivalent) are proposed within the new stormwater pits on the ground level (Henry Dean Plaza) to collect large debris and litter prior to discharge into the water quality chambers.

5.4.6 Model

The water quality modelling software MUSIC v6.3.0 was used to analyse the performance of the treatment train of the overall reference scheme. Figure 11 below shows the MUSIC node and link diagram used to describe the proposed treatment train. The model has been built to assess the adequacy of the stormwater measures proposed and to ensure that the quality of stormwater meets the objectives prior to stormwater runoff leaving the site.

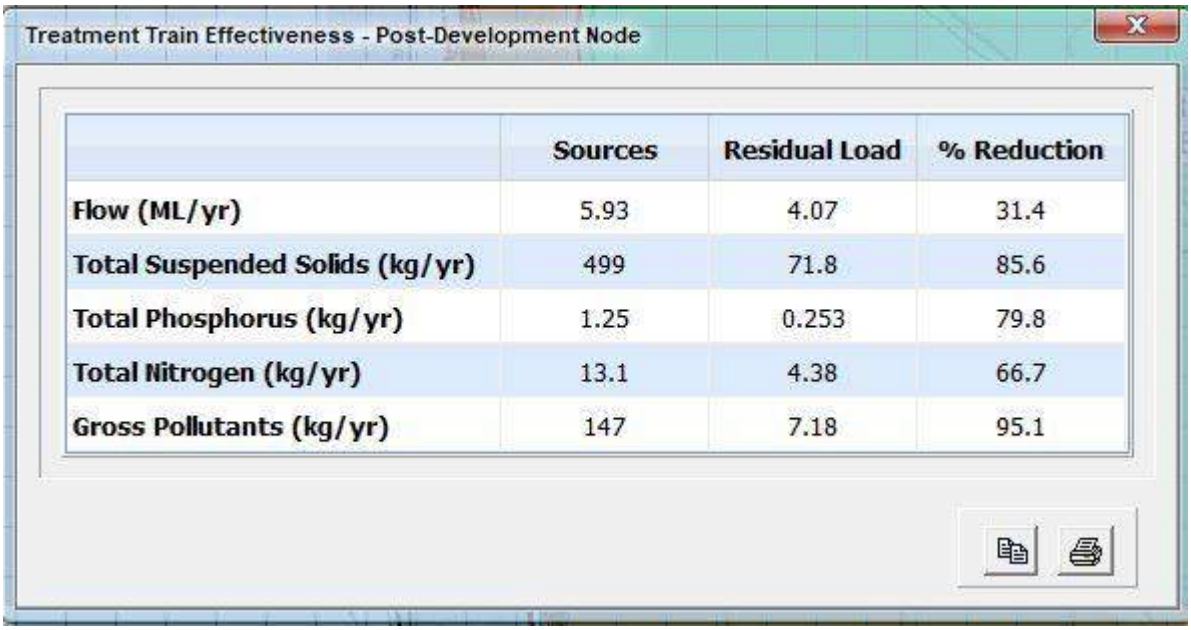
Figure 11 – MUSIC Model



5.4.7 Model Results

The results of the analysis shown in Figure 12 demonstrate the treatment train will achieve the water quality targets across the development in compliance with the requirements of Council policies.

Figure 12 – MUSIC Model Results



	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.93	4.07	31.4
Total Suspended Solids (kg/yr)	499	71.8	85.6
Total Phosphorus (kg/yr)	1.25	0.253	79.8
Total Nitrogen (kg/yr)	13.1	4.38	66.7
Gross Pollutants (kg/yr)	147	7.18	95.1

It is noted that the above treatment train is indicative only, and any deviation in the treatment devices used is generally acceptable as long as the water quality targets are achieved. Proposed WSUD strategy may be susceptible to fluctuations and changes as the architectural design progresses in detailed design stage.

5.5 Infrastructure Staging and Plan

TOGA Central shall oversee the main infrastructure delivery, staging and funding plan to facilitate the proposed development works, in coordination with the adjoining Atlassian and Dexus Fraser developments. For stormwater infrastructure works, coordination with Sydney Water shall also be undertaken by Water Servicing Coordinator for approval once the design is further developed, to ensure connection into the existing 1500mm culvert is appropriate and feasible.

6. Conclusion

Northrop Consulting Engineers has prepared this IWCM plan in response to SEARs Item No. 15 and 23 which was issued for the DA of this proposed mixed-used development Type at 2 & 8A Lee Street, Haymarket. The site is bound by Lee Street to the west, adjoining future Atlassian development (8-10 Lee Street) to the north, and adjoining future Dexus Fraser development (14-30 Lee Street) to the south.

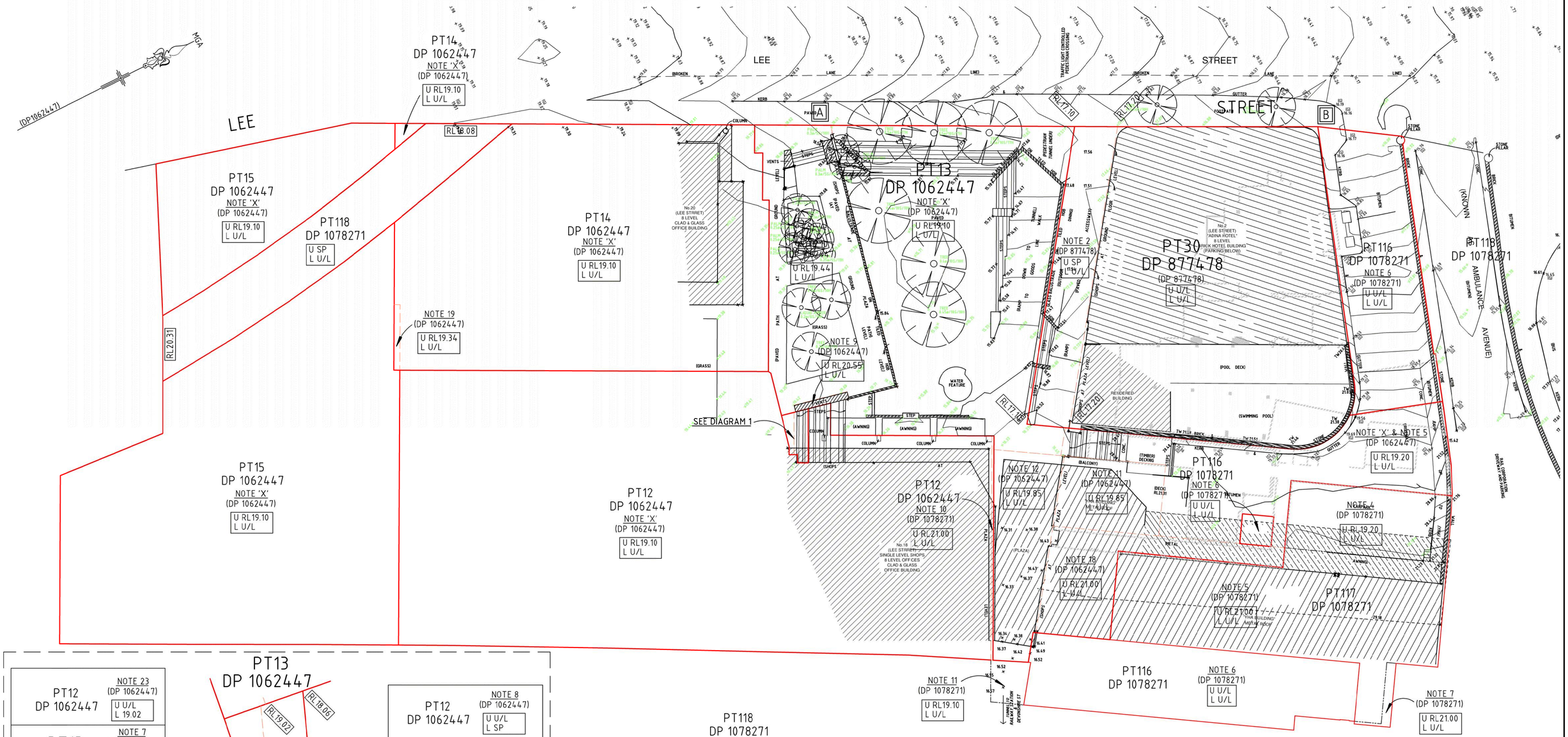
Based on investigations, analyses and preliminary design concepts, it is expected that the proposed development shall achieve the requirements of the SEARs as well as relevant Council, local precinct and authority guidelines, in accordance with all stormwater objectives listed in Section 3 of this report, unless noted otherwise. We note that information on water supply, reuse and wastewater hydraulic scheme is outside of the scope of this report and discussed in *Toga Central – New Development Hydraulic and Fire Services* (Norman Disney & Young, 2022), which together forms the complete ICWM strategy.

We note that the primary outcomes of this stormwater scheme are as follows:

- **Lawful Point of Discharge** – Site stormwater runoff is to be collected, treated and discharged directly into the existing 1500mm Sydney Water stormwater culvert within the site at two separate connection points. Consultation with Water Servicing Coordinator and Sydney Water to be undertaken for discharge connection
- **Stormwater Quantity** – Development is exempt from OSD as per advice from Sydney Water (Appendix D)
- **Stormwater Quality** – The proposed treatment train was modelled using MUSIC modelling software and includes the following treatment devices (or equivalent):
    - 60kL rainwater tank with water reuse;
    - 13x total Ocean Protect Stormfilter 690mm Psorb cartridges;
    - 3x total Ocean Protect Ocean Guard pit baskets.
- **Erosion and Sediment Control** – Construction phase ESCP measures are to be implemented during construction in accordance with the relevant requirements of the State Planning Policy and IECA Best Practice Erosion and Sediment Control.

Appendix A – Site Survey

SELECTED EASEMENTS - GENERALLY BELOW RL19.1 (VIDE DP 880518, DP 1062447 & DP 1078271)



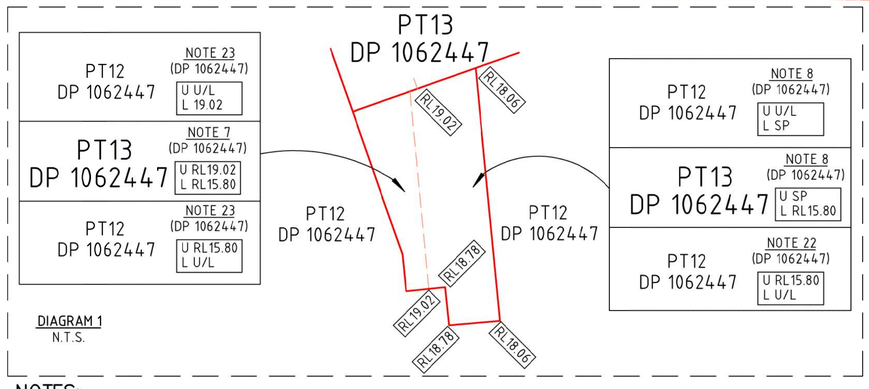


DIAGRAM 1
N.T.S.

NOTES:

1) BOUNDARY INFORMATION COMPILED FROM PLANS AND DOCUMENTS ON PUBLIC RECORD.
   BOUNDARIES HAVE BEEN RE-ESTABLISHED BY SURVEY FROM EXISTING SURVEY INFORMATION SHOWN IN PLANS ON PUBLIC RECORD.
   ALL LOTS ARE LIMITED IN STRATUM BY LEVELS ON AUSTRALIAN HEIGHT DATUM (AHD) AS SHOWN IN THEIR RESPECTIVE DEPOSITED PLANS. REFER TO PLANS BY US REF: 37908-1 & 37908-2 FOR FURTHER BOUNDARY INFORMATION RELATING TO THIS SITE.
2) THE BASE PLANS DP877478, DP1062447, DP1078271 CONTAIN MINOR MISCLOSES.
3) LEVELS SHOWN ON AUSTRALIAN HEIGHT DATUM (AHD) AS PER DP 877478 & DP 1062447. AHD HAS NOT BEEN CONFIRMED ON SITE BY US.
4) FOR THE PURPOSES OF DRAFTING CLARITY, NO EASEMENT INFORMATION HAS BEEN SHOWN ON THIS PLAN. REFER TO PLANS BY US REF: 37908-3 & 37908-4 FOR FURTHER INFORMATION.
5) PLAN TO BE READ IN CONJUNCTION WITH CAD FILE 37908-D1 OF CORRESPONDING ISSUE.
6) SEARCH DATE FOR SUBJECT LOTS: SUB FOLIO 30/877478A, SUBFOLIO 30/877478B & FOLIO 13/1062447 - 01/04/2019.
7) LEVELS SHOWN TO AUSTRALIAN HEIGHT DATUM (AHD) ORIGIN SSM 168140 RL16.115m (SCIMS-26.04.19)
8) (G) DENOTES GUTTER LEVEL, TW DENOTES TOP OF WALL, FL DENOTES FLOOR LEVEL
   0.3Φ/10S/8H DENOTES TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH.
9) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY. IF TREE SPECIES IDENTIFICATION IS IMPORTANT FOR DESIGN OR HERITAGE REASONS THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.
10) VISIBLE AND UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
11) PT12 DENOTES PART OF LOT 12 IN DEPOSITED PLAN 1062447, PT13 DENOTES PART OF LOT 13 IN DEPOSITED PLAN 1062447
    PT14 DENOTES PART OF LOT 14 IN DEPOSITED PLAN 1062447, PT30 DENOTES PART OF LOT 30 IN DEPOSITED PLAN 877478
    PT116 DENOTES PART OF LOT 116 IN DEPOSITED PLAN 1078271, PT117 DENOTES PART OF LOT 117 IN DEPOSITED PLAN 1078271
    PT118 DENOTES PART OF LOT 118 IN DEPOSITED PLAN 1078271
12) THIS PLAN DOES NOT CONSTITUTE A FULL SITE SURVEY AND ONLY SHOWS SELECTED INFORMATION AS REQUESTED FOR PLANNING PURPOSES. IT DOES NOT SHOW ALL STRUCTURES/FEATURES/SERVICES ETC. ON SITE. EG. THE IRREGULAR GLASS AWNING OVER THE PAVED ACCESSWAY HAS NOT BEEN SHOWN.

GENERAL STRATUM NOTES:

NOTE 'X' (DP 1062447)	-STRATUM NOTE 'X' AS SHOWN ON DP 1062447
NOTE 10 (DP 1062447)	-STRATUM NOTE 10 AS SHOWN ON DP 1062447
NOTE 2 (DP 8774.78)	-STRATUM NOTE 2 AS SHOWN ON DP 877478
U RL20.55	-STRATUM LOT LIMITED IN HEIGHT TO RL20.55
L RL15.80	-STRATUM LOT LIMITED IN DEPTH TO RL15.80
U U/L	-STRATUM LOT UNLIMITED IN HEIGHT
L U/L	-STRATUM LOT UNLIMITED IN DEPTH
U SP	-STRATUM LOT LIMITED IN HEIGHT TO REGULAR INCLINED PLANE DEFINED BY THE STATED LEVELS
L SP	-STRATUM LOT LIMITED IN DEPTH TO REGULAR INCLINED PLANE DEFINED BY THE STATED LEVELS
RL19.02	-STATED LEVEL

SCALE BAR 1:300 AT A1
0m 5m 10m 20m 30m 40m 50m

A – DENOTES REFERENCE POINT TO ASSIST IN USE WITH ADDITIONAL PLANS
B – DENOTES REFERENCE POINT TO ASSIST IN USE WITH ADDITIONAL PLANS

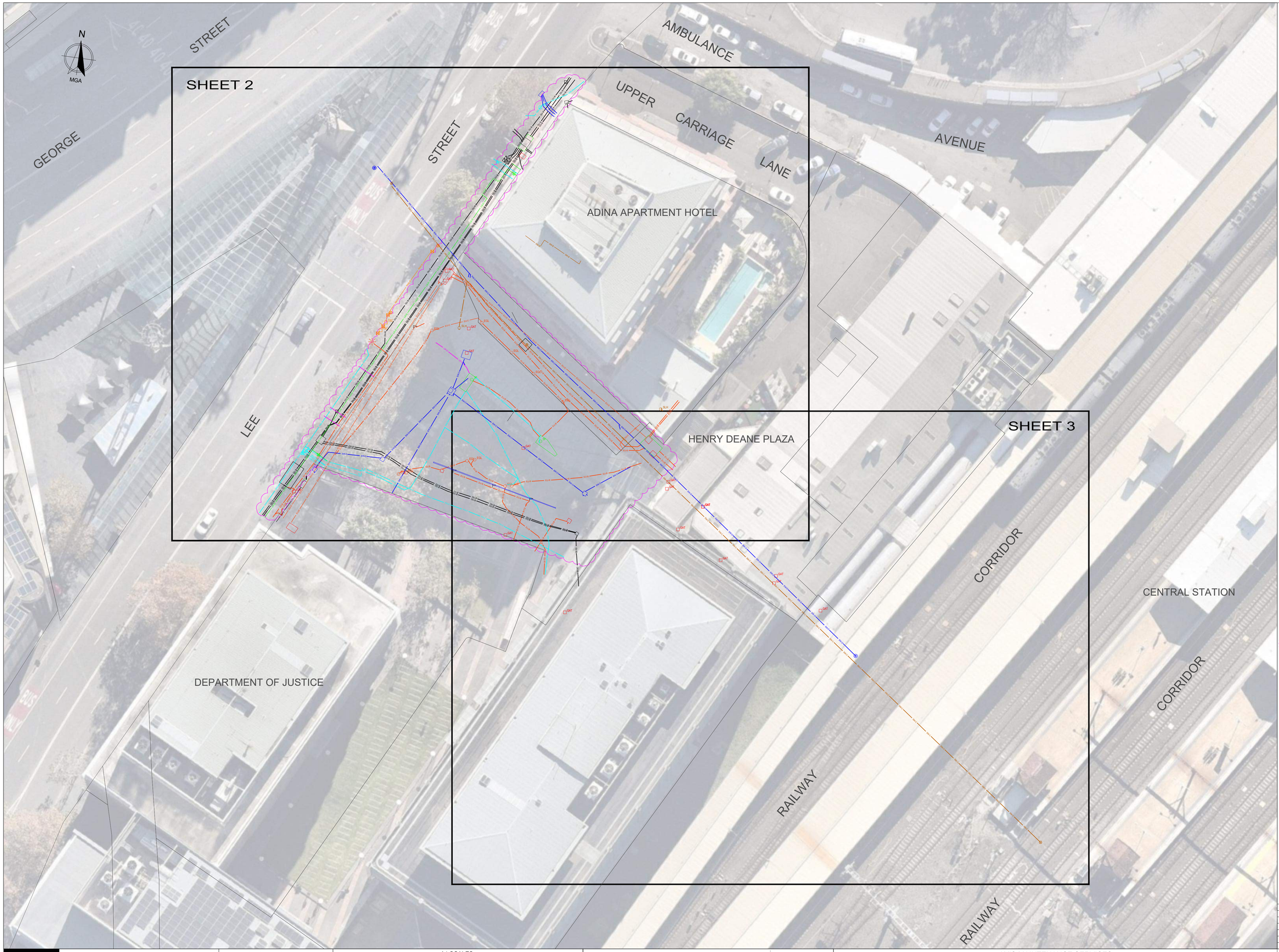
ISSUE	DATE	AMENDMENT

TITLE: PLAN SHOWING BOUNDARIES AND SELECTED DETAIL FOR FLOOD STUDY PURPOSES. AT No. 2 LEE STREET, HAYMARKET & SURROUNDS

LGA: CITY OF SYDNEY		REFERENCE: 37908	
CLIENT : TOGA PROJECT SERVICES PTY LTD		DATE: 08.04.22	SHEET D20
SCALE (AT A1) 1:300	DATUM : AHD (SEE NOTE 1)	SURVEYOR: RW	

Norton Survey Partners
SURVEYORS & LAND TITLE CONSULTANTS
A.C.N. 199 734 968
SUITE 1
670 DARLING STREET
ROZELLE N.S.W. 2039
PH +61 2 9555 2744
FAX +61 2 9555 2766
office@nspartners.com.au

Appendix B – Underground Services Survey



UTILITY ASSETS LEGEND

ELECTRICITY	x	EU-A-B-C-D
TRANSMISSION	x	ET-A-B-C-D
TELECOMMUNICATIONS	x	TN-A-B-C-D
OPTIC FIBRE	x	OU-A-B-C-D
RMS	x	RMS-A-B-C-D
LOW PRESSURE GAS	x	LG-A-B-C-D
HIGH PRESSURE GAS	x	HG-A-B-C-D
WATER MAIN	x	WM-A-B-C-D
FIRE MAIN	x	FH-A-B-C-D
SEWER MAIN	x	SM-A-B-C-D
STORMWATER	x	SW-A-B-C-D
UNKNOWN SERVICE	x	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		

DENOTES DEPTH TO SERVICE	>0.5m
HYDRANT	WH
STOP VALVE	
WATER METER	
FIRE HYDRANT	
WATER TAP	
TELEPHONE PIT	
TELEPHONE TWIN PIT	
TELEPHONE LARGE SUMP	
LIGHT POLE	
POWER AND LIGHT POLE	
POWER POLE	EP
CABLE MARKER	EC
GATIC COVER	GAT
UNIDENTIFIED SERVICE	?
CABLE JUNCTION BOX	EJB
RMS TRAFFIC LIGHT	
RMS SIGNAL PIT	
SEWER LAMP HOLE	SLH
SEWER MANHOLE	
GAS PIPE MARKER	GP
GAS VALVE BOX	
DRAINAGE DOWN PIPE	DP
SMALL DRAINAGE GULLY PIT	
DRAINAGE JUNCTION MANHOLE	
SIGN	
GATE	
END OF TRACE	EOT
TOP OF SERVICE	TOS
DEPTH TO INVERT OF PIPE	IL

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED, SURESEARCH PLANS MUST ABIDE BY THE DBYD REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
3. THIS PLAN SHOULD NOT BE USED FOR EXCAVATION PURPOSES.
4. THIS PLAN HAS BEEN DRAWN TO SCALE, AND ANY REPRODUCTION OF THIS PLAN WILL NEED TO BE DRAWN IN COLOUR AND AT THIS SCALE TO ENSURE THAT ALL RELEVANT NOTES AND ENHANCEMENTS ARE SHOWN. FAILURE TO DO THIS WILL VOID ALL INFORMATION INDICATED FOR THIS JOB.
5. ALL SERVICES HAVE BEEN ELECTRONICALLY TRACED IN THE FIELD AND ARE SHOWN HERE FOR DIAGRAMMATIC PURPOSES ONLY. DEPTHS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED PRIOR TO WORKS.
6. SERVICES SHOWN DIGITISED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT, THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
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9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
10. THE CADASTRAL BOUNDARIES HAVE BEEN DERIVED FROM THE DIGITAL CADASTRAL DATABASE (DCDB). THIS INFORMATION IS SHOWN FOR PLAN CONTEXT ONLY AND IS OF UNKNOWN ACCURACY OR QUALITY.
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12. REFER TO CCTV FOOTAGE FOR FURTHER INFORMATION.
13. LIMIT OF SURVEY HAS BEEN SHOWN AS PER REQUESTED SCOPE. FEATURES OUTSIDE THE LIMIT OF SURVEY HAVE BEEN INCLUDED FOR CLARIFICATION PURPOSES.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.

Line work sample; ---EU-B--- Quality level represented within linework, Underground Electricity (Quality Level 'B').

QL-A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a non-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

QL-B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY
MGA 56 / GDA 94
SS 168140
E 333945.378
N 6249345.594
AHD 16.115

A1 SCALES
0 6 12 18 24 30
SCALE 1:300

CO-ORDINATE SYSTEM:	MGA	HEIGHT DATUM:	AHD

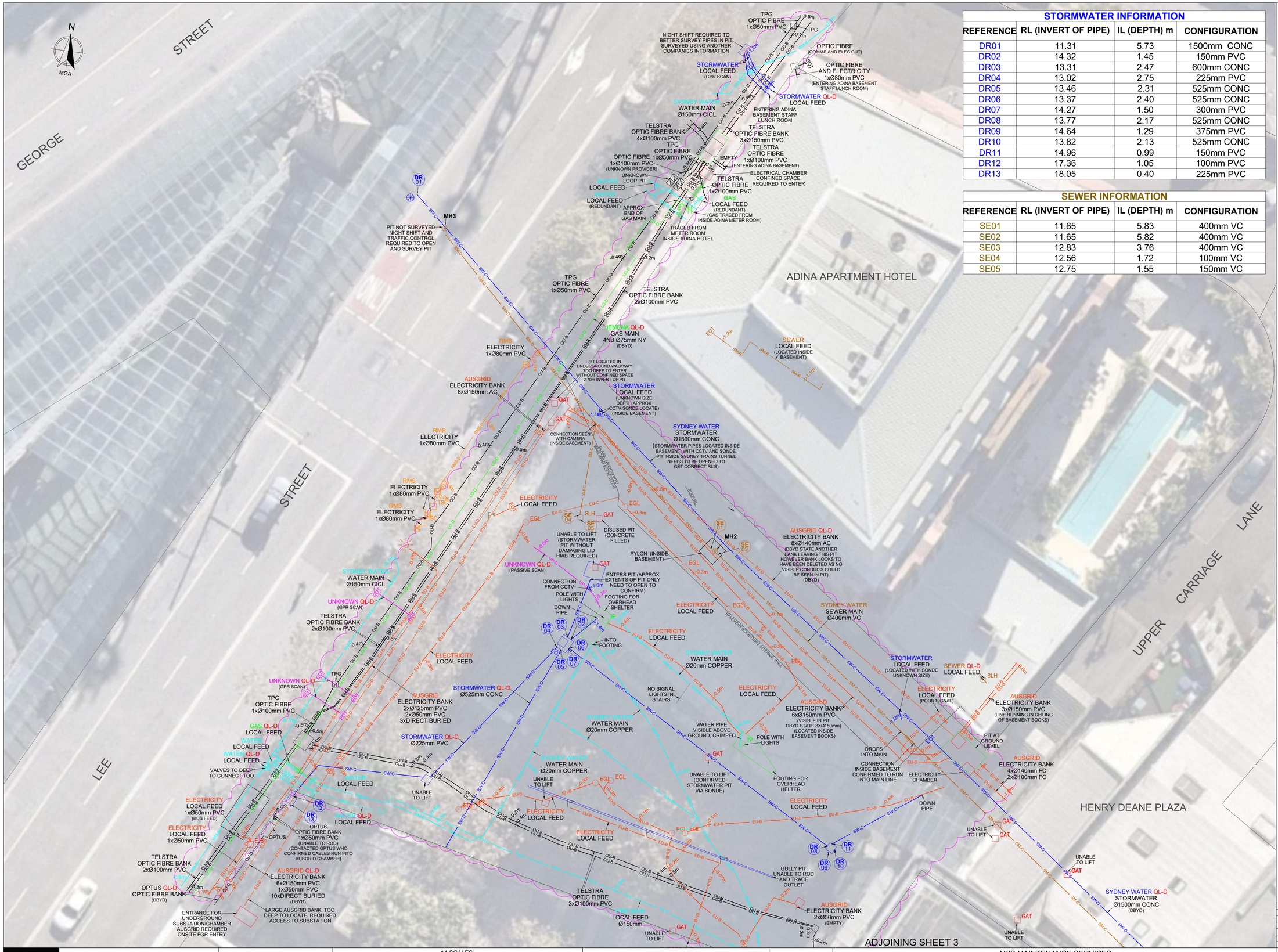
DIAL BEFORE YOU DIG CERTIFIED LOCATOR
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

AXIS MAINTENANCE SERVICES
JOB NO. 78982_V2
HENRY DEANE PLAZA - LEE STREET, HAYMARKET
QL-B UTILITY INVESTIGATION

SURVEYED: NB	DATE: 04-082021	FILE NAME:	78982_Axis Maintenance_Henry Deane Plaza_V2
LOCATED: BC	DATE: 04-08-2021	MODEL NAME:	78982aa
COMPILED: AS	DATE: 09-08-2021		
REVIEWED: DY	DATE: 09-08-2021		
ISSUED BY: MN	DATE: 09-08-2021	SHEET 1 of 3 SHEETS	

A1 Border version: March 2020

SureSearch UNDERGROUND SERVICES
1300 884 520
www.suresearch.com.au



STORMWATER INFORMATION

REFERENCE	RL (INVERT OF PIPE)	IL (DEPTH) m	CONFIGURATION
DR01	11.31	5.73	1500mm CONC
DR02	14.32	1.45	150mm PVC
DR03	13.31	2.47	600mm CONC
DR04	13.02	2.75	225mm PVC
DR05	13.46	2.31	525mm CONC
DR06	13.37	2.40	525mm CONC
DR07	14.27	1.50	300mm PVC
DR08	13.77	2.17	525mm CONC
DR09	14.64	1.29	375mm PVC
DR10	13.82	2.13	525mm CONC
DR11	14.96	0.99	150mm PVC
DR12	17.36	1.05	100mm PVC
DR13	18.05	0.40	225mm PVC

SEWER INFORMATION

REFERENCE	RL (INVERT OF PIPE)	IL (DEPTH) m	CONFIGURATION
SE01	11.65	5.83	400mm VC
SE02	11.65	5.82	400mm VC
SE03	12.83	3.76	400mm VC
SE04	12.56	1.72	100mm VC
SE05	12.75	1.55	150mm VC

UTILITY ASSETS LEGEND

ELECTRICITY	X	EU-A-B-C-D
TRANSMISSION	X	ET-A-B-C-D
TELECOMMUNICATIONS	X	TN-A-B-C-D
OPTIC FIBRE	X	OU-A-B-C-D
RMS	X	RMS-A-B-C-D
LOW PRESSURE GAS	X	LG-A-B-C-D
HIGH PRESSURE GAS	X	HG-A-B-C-D
WATER MAIN	X	WM-A-B-C-D
FIRE MAIN	X	FH-A-B-C-D
SEWER MAIN	X	SM-A-B-C-D
STORMWATER	X	SW-A-B-C-D
UNKNOWN SERVICE	X	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
DENOTES DEPTH TO SERVICE		-0.5m
HYDRANT		WH
STOP VALVE		
WATER METER		WM
FIRE HYDRANT		
WATER TAP		
TELEPHONE PIT		
TELEPHONE TWIN PIT		
TELEPHONE LARGE SUMP		
LIGHT POLE		
POWER AND LIGHT POLE		
POWER POLE		EP
CABLE MARKER		EC
GATIC COVER		GAT
UNIDENTIFIED SERVICE		?
CABLE JUNCTION BOX		EJB
RMS TRAFFIC LIGHT		
RMS SIGNAL PIT		
SEWER LAMP HOLE		SLH
SEWER MANHOLE		
GAS PIPE MARKER		GP
GAS VALVE BOX		
DRAINAGE DOWN PIPE		DP
SMALL DRAINAGE GULLY PIT		
DRAINAGE JUNCTION MANHOLE		
SIGN		
GATE		
END OF TRACE		EOT
TOP OF SERVICE		TOS
DEPTH TO INVERT OF PIPE		IL

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REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY
MGA 56 / GDA 94
SS 168140
E 333945.378
N 6249345.594
AHD 16.115

A1 SCALES
0 3 6 9 12 15
SCALE 1:150

CO-ORDINATE SYSTEM: MGA | HEIGHT DATUM: AHD

DIAL BEFORE YOU DIG CERTIFIED LOCATOR
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DIAL 1100 BEFORE YOU DIG

AXIS MAINTENANCE SERVICES
JOB NO. 78982_V2
HENRY DEANE PLAZA - LEE STREET, HAYMARKET
QL-B UTILITY INVESTIGATION

SURVEYED:	DATE:	FILE NAME:	
NB	04-082021		78982_Axis Maintenance_Henry Deane Plaza_V2
LOCATED:	DATE:	MODEL NAME:	
BC	04-08-2021		78982aa
COMPILED:	DATE:		
AS	09-08-2021		
REVIEWED:	DATE:		
DY	09-08-2021		
ISSUED BY:	DATE:		
MN	09-08-2021		

SHEET 2 of 3 SHEETS

A1 Border version: March 2020

STORMWATER INFORMATION

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DR03	13.31	2.47	600mm CONC
DR04	13.02	2.75	225mm PVC
DR05	13.46	2.31	525mm CONC
DR06	13.37	2.40	525mm CONC
DR07	14.27	1.50	300mm PVC
DR08	13.77	2.17	525mm CONC
DR09	14.64	1.29	375mm PVC
DR10	13.82	2.13	525mm CONC
DR11	14.96	0.99	150mm PVC
DR12	17.36	1.05	100mm PVC
DR13	18.05	0.40	225mm PVC

SEWER INFORMATION

REFERENCE	RL (INVERT OF PIPE)	IL (DEPTH) m	CONFIGURATION
SE01	11.65	5.83	400mm VC
SE02	11.65	5.82	400mm VC
SE03	12.83	3.76	400mm VC
SE04	12.56	1.72	100mm VC
SE05	12.75	1.55	150mm VC

UTILITY ASSETS LEGEND

ELECTRICITY	X	EU-A-B-C-D
TRANSMISSION	X	ET-A-B-C-D
TELECOMMUNICATIONS	X	TN-A-B-C-D
OPTIC FIBRE	X	OU-A-B-C-D
RMS	X	RMS-A-B-C-D
LOW PRESSURE GAS	X	LG-A-B-C-D
HIGH PRESSURE GAS	X	HG-A-B-C-D
WATER MAIN	X	WM-A-B-C-D
FIRE MAIN	X	FH-A-B-C-D
SEWER MAIN	X	SM-A-B-C-D
STORMWATER	X	SW-A-B-C-D
UNKNOWN SERVICE	X	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
DENOTES DEPTH TO SERVICE		-0.5m
HYDRANT		WH
STOP VALVE		
WATER METER		
FIRE HYDRANT		
WATER TAP		
TELEPHONE PIT		
TELEPHONE TWIN PIT		
TELEPHONE LARGE SUMP		
LIGHT POLE		
POWER AND LIGHT POLE		
POWER POLE		EP
CABLE MARKER		EC
GATIC COVER		GAT
UNIDENTIFIED SERVICE		?
CABLE JUNCTION BOX		EJB
RMS TRAFFIC LIGHT		
RMS SIGNAL PIT		
SEWER LAMP HOLE		SLH
SEWER MANHOLE		
GAS PIPE MARKER		GP
GAS VALVE BOX		
DRAINAGE DOWN PIPE		DP
SMALL DRAINAGE GULLY PIT		
DRAINAGE JUNCTION MANHOLE		
SIGN		
GATE		
END OF TRACE		EOT
TOP OF SERVICE		TOS
DEPTH TO INVERT OF PIPE		IL

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED, SURESEARCH PLANS MUST ABIDE BY THE DBYD REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
3. THIS PLAN SHOULD NOT BE USED FOR EXCAVATION PURPOSES.
4. THIS PLAN HAS BEEN DRAWN TO SCALE, AND ANY REPRODUCTION OF THIS PLAN WILL NEED TO BE DRAWN IN COLOUR AND AT THIS SCALE TO ENSURE THAT ALL RELEVANT NOTES AND ENHANCEMENTS ARE SHOWN. FAILURE TO DO THIS WILL VOID ALL INFORMATION INDICATED FOR THIS JOB.
5. ALL SERVICES HAVE BEEN ELECTRONICALLY TRACED IN THE FIELD AND ARE SHOWN HERE FOR DIAGRAMMATIC PURPOSES ONLY. DEPTHS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED PRIOR TO WORKS.
6. SERVICES SHOWN DIGITISED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT, THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
8. ELECTRICITY IS HIGH VOLTAGE UNLESS OTHERWISE STATED, TO CONFIRM VOLTAGES ALONG THE LINE WOULD REQUIRE OBTAINING CONFIGURATION/SCHEMATIC PLANS. NOT ALL ELECTRICITY CABLES ARE ENCLOSED IN CONDUITS OR MARKED WITH INDICATORS OF THEIR PRESENCE.
9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
10. THE CADASTRAL BOUNDARIES HAVE BEEN DERIVED FROM THE DIGITAL CADASTRAL DATABASE (DCDB). THIS INFORMATION IS SHOWN FOR PLAN CONTEXT ONLY AND IS OF UNKNOWN ACCURACY OR QUALITY.
11. THIS IS A RE-INVESTIGATION BY SURESEARCH. AMENDMENTS ARE HIGHLIGHTED VIA REVIEW CLOUDS, EXTENSION OF SCOPE.
12. REFER TO CCTV FOOTAGE FOR FURTHER INFORMATION.
13. LIMIT OF SURVEY HAS BEEN SHOWN AS PER REQUESTED SCOPE. FEATURES OUTSIDE THE LIMIT OF SURVEY HAVE BEEN INCLUDED FOR CLARIFICATION PURPOSES.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS
Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.
Line work sample; ---EU-B--- Quality level represented within linework, Underground Electricity (Quality Level 'B').

QL-A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a non-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

QL-B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION
a	24-05-21	

ORIGIN OF SURVEY
MGA 56 / GDA 94
SS 168140
E 333945.378
N 6249345.594
AHD 16.115

A1 SCALES
0 3 6 9 12 15
SCALE 1:150
CO-ORDINATE SYSTEM: MGA
HEIGHT DATUM: AHD

DIAL BEFORE YOU DIG CERTIFIED LOCATOR
www.dialbeforeyoudig.au
DIAL 1100 BEFORE YOU DIG

AXIS MAINTENANCE SERVICES
JOB NO. 78982_V2
HENRY DEANE PLAZA - LEE STREET, HAYMARKET
QL-B UTILITY INVESTIGATION

SURVEYED:	DATE:	
NB	04-08-2021	
LOCATED:	DATE:	
BC	04-08-2021	
COMPILED:	DATE:	
AS	09-08-2021	
REVIEWED:	DATE:	
DY	09-08-2021	
ISSUED BY:	DATE:	
MN	09-08-2021	

FILE NAME: 78982_Axis Maintenance_Henry Deane Plaza_V2
MODEL NAME: 78982aa

SHEET 3 of 3 SHEETS

SureSearch UNDERGROUND SERVICES
SureSearch UNDERGROUND SERVICES
1300 884 520
www.suresearch.com.au

A1 Border version: March 2020

Appendix C – Council Stormwater Network

2 Lee Street, Haymarket

CITY OF SYDNEY

Legend

Assets

Drainage Pits

- City Of Sydney
- Sydney Water

Drainage Pipes

- City Of Sydney unkown diameter
- City Of Sydney <=375mm
- City Of Sydney <=375mm
- City Of Sydney <=375mm
- City Of Sydney <=375mm
- City Of Sydney >375mm - 600mm
- City Of Sydney >375mm - 600mm
- City Of Sydney >375mm - 600mm
- Private <=375mm
- Sydney Water <375mm
- Sydney Water <375mm
- Sydney Water <375mm
- Sydney Water >375mm - 600mm
- Sydney Water >600mm - 900mm
- Sydney Water >900mm
- Sydney Water >900mm

0 10 20 m

Notes 14/03/2022

Stormwater

Appendix D – Sydney Water Correspondence

Wing Wu

From: Stormwater <Stormwater@sydneywater.com.au>
Sent: Monday, 14 March 2022 9:55 AM
To: Wing Wu
Subject: RE: [External] 2 Lee Street Haymarket - OSD requirements

Attention: Wing Wu

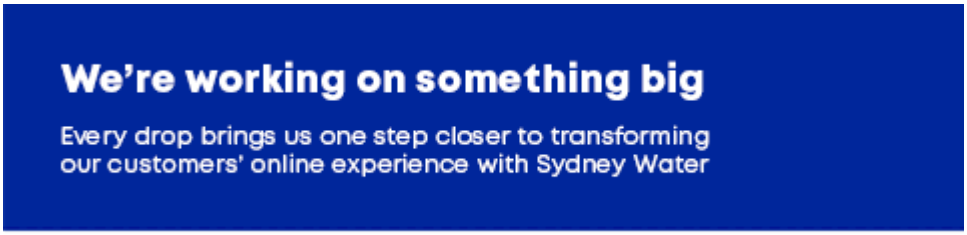
On Site Detention is not required for any development at 2 Lee Street, Haymarket.

Best Regards

Planning and Technical
City Growth and Development
Business Development

Level 13, 1 Smith Street
Parramatta NSW 2150

Sydney WATER



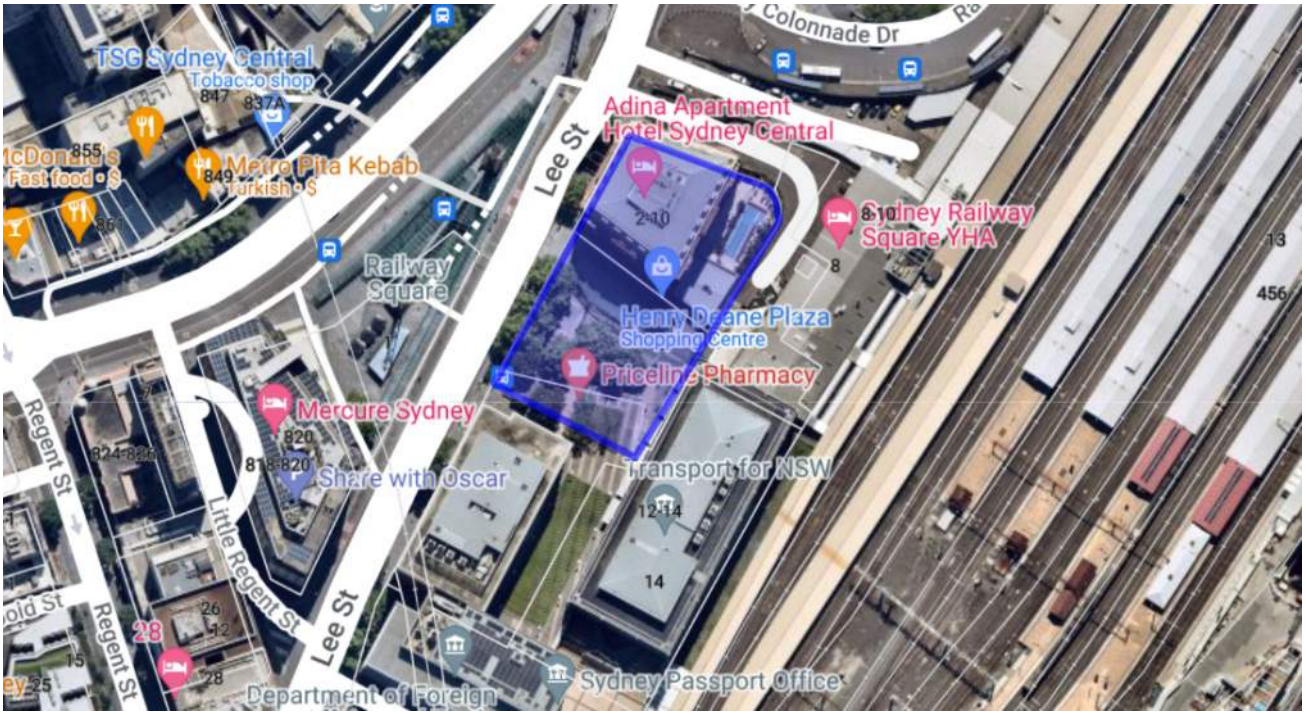
Sydney Water respectfully acknowledges the traditional custodians of the land and waters on which we work, live and learn. We pay respect to Elders past and present.
Read more about our commitment to reconciliation.

From: Wing Wu <wingwu@northrop.com.au>
Sent: Monday, 7 March 2022 4:48 PM
To: Stormwater <Stormwater@sydneywater.com.au>
Subject: [External] 2 Lee Street Haymarket - OSD requirements

Hi,

I'm currently working on a development at 2 Lee Street, Haymarket within City of Sydney Council LGA (see image below)

The existing site area is approximately 4000sq.m and impervious.
I would like to confirm whether the development would be exempt from OSD and PSD requirements prior to connection to the public stormwater system?



Wing Wu
Civil Engineer

Northrop Consulting Engineers Pty Ltd
T 02 9241 4188
D 02 9156 3076
E wingwu@northrop.com.au
L11, 345 George Street Sydney NSW 2000
www.northrop.com.au

NORTHROP

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Carbon Neutral Certification for 2020-2021
Climate Active NETWORK MEMBER

Appendix E – Sydney Water DBYD

A3

DBYD Address:
20 Lee Street
Haymarket NSW 2000

DBYD Job No: 31510605

DBYD Sequence No: 208820356

Scale: 1:1500

Date of Production: 04/03/2022

N

0m 9m 18m 27m 36m

A3

BIJOU LANE

PITT ST

GEORGE ST

BROADWAY

REGENT ST

LEE ST

CARLTON

DWYER ST

KENSINGTON ST

GOULD ST

TURLEY PL

LITTLE REGENT ST

O'CONNOR ST

OUTRAM ST

PEDESTRIAN OVERPASS FOOTBRIDGE

Railway

Relined

Interception sealed under WO 25323A

WATER-RECYCLED-SEWER
Central Park Water
1300 803 803

NTRAL PARK AVE

DBYD Address:
20 Lee Street
Haymarket NSW 2000

DBYD Job No: 31510605

DBYD Sequence No: 208820356

Scale: 1:1500

Date of Production: 04/03/2022

Plan 2 of 3

N

0m 9m 18m 27m 36m

A3

HAY ST STORMWATER CHANNEL

DBYD Address:
20 Lee Street
Haymarket NSW 2000

DBYD Job No: 31510605

DBYD Sequence No: 208820356

Scale: 1:1500

Date of Production: 04/03/2022

Plan 3 of 3

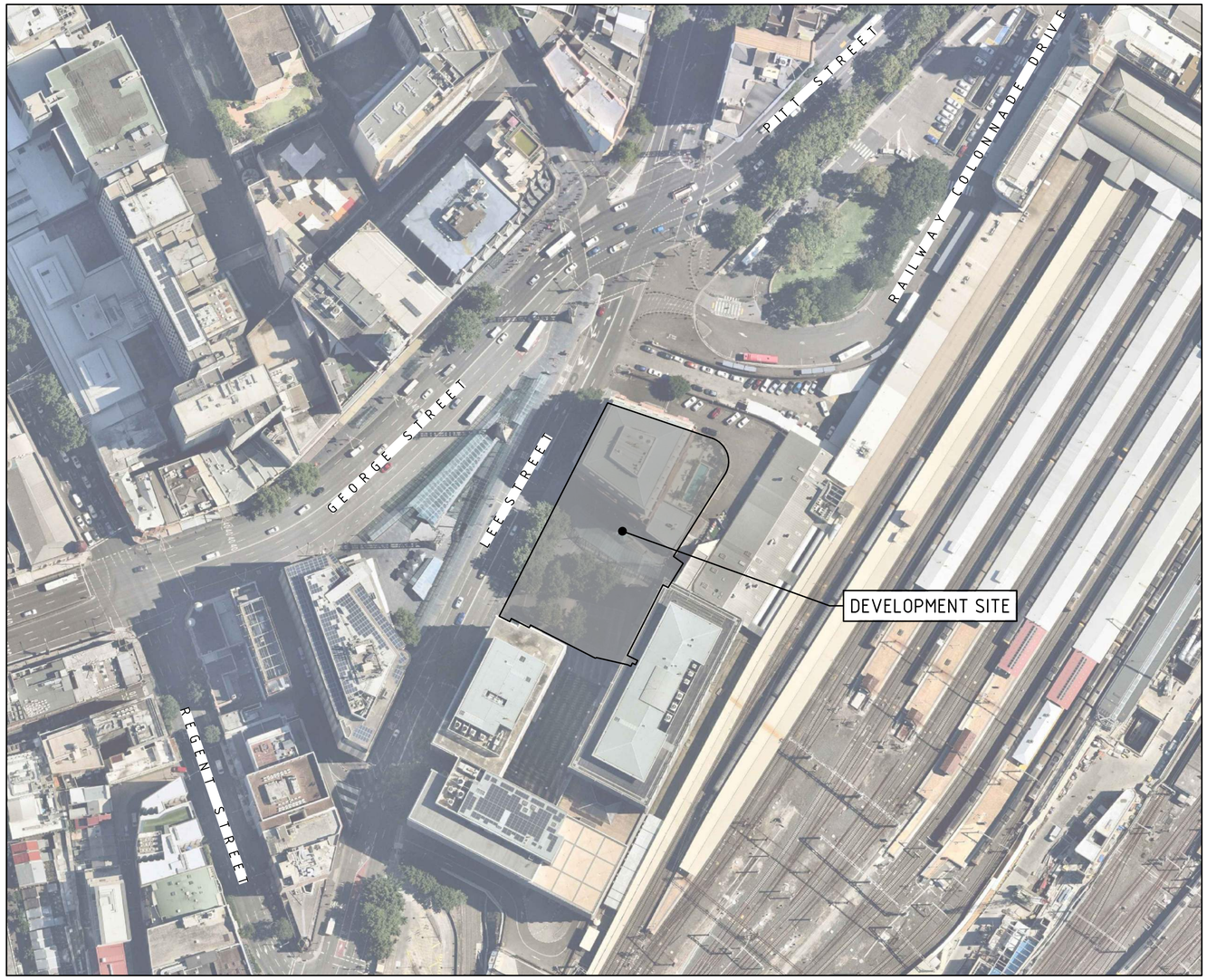
N

0m 9m 18m 27m 36m

Appendix F – Northrop Civil Drawings

TOGA CENTRAL, 2 LEE STREET, HAYMARKET

DEVELOPMENT APPLICATION
CIVIL ENGINEERING PACKAGE



LOCALITY PLAN

SOURCE : NEARMAP.COM.AU (©2022)

CIVIL DRAWING SCHEDULE

DWG No.	DRAWING TITLE
CI-DAD-00-000	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
CI-DAD-13-B04-001	SEDIMENT AND SOIL EROSION CONTROL PLAN - BASEMENT LEVEL 4
CI-DAD-14-001	BULK EARTHWORKS PLAN
CI-DAD-15-B01-001	SITEWORKS AND STORMWATER MANAGEMENT PLAN - BASEMENT LEVEL 1
CI-DAD-15-GF0-002	SITEWORKS AND STORMWATER MANAGEMENT PLAN - LOWER GROUND LEVEL
CI-DAD-15-GF1-003	SITEWORKS AND STORMWATER MANAGEMENT PLAN - GROUND LEVEL
CI-DAD-18-001	WSUD CATCHMENT PLAN
CI-DAD-50-001	STORMWATERS DETAILS
CI-DAD-51-001	SEDIMENT AND SOIL EROSION CONTROL DETAILS

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

CLIENT: TOGA ESTABLISHED 1963
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: BATESSMART.

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THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:1000 @ A1 (0 10 20 30 40 50m)

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-00-000
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ASHBEA SUYO
Date: 15.04.2020 2:24 PM
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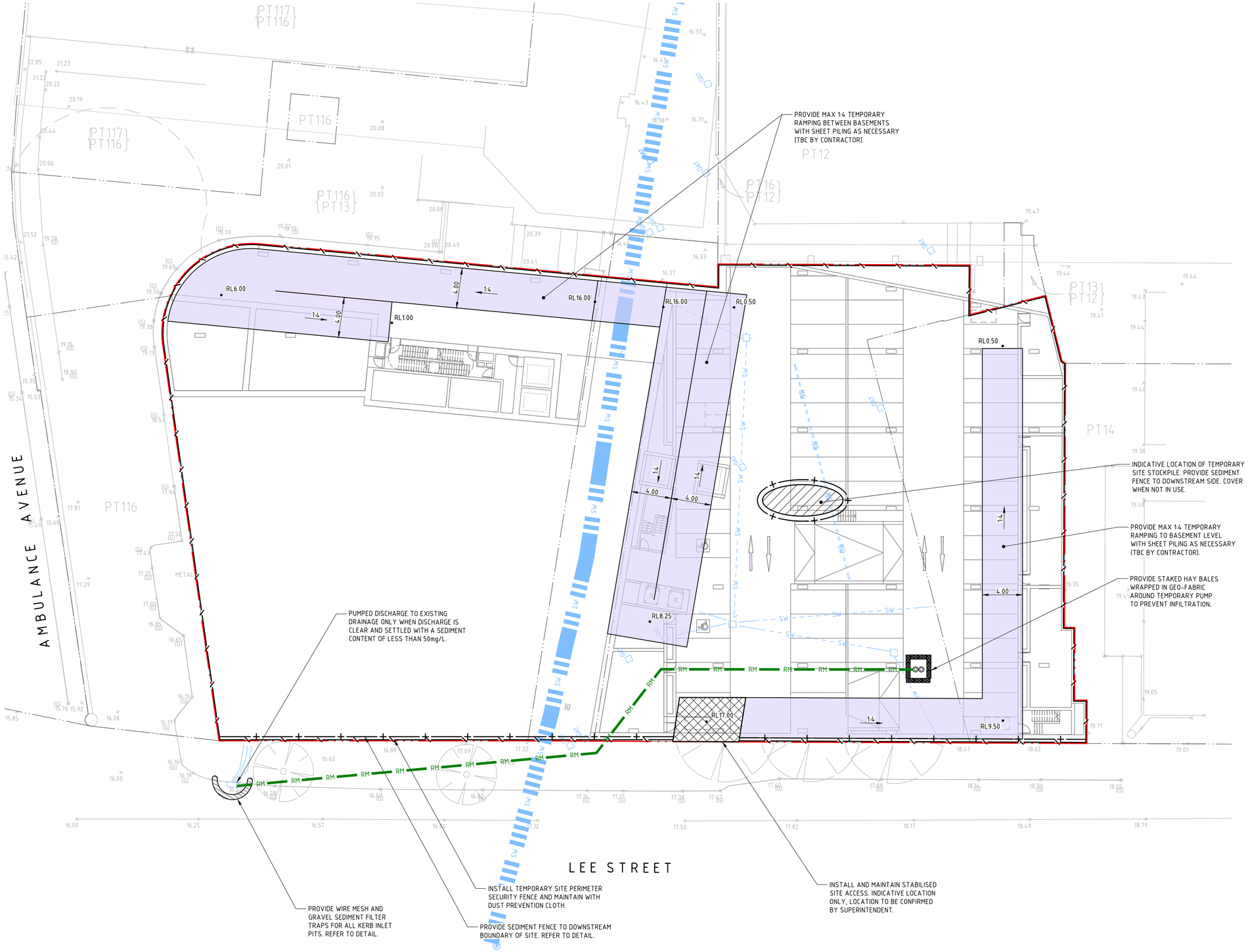

LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- SEDIMENT FENCE
- SECURITY FENCE
- WIRE MESH AND GRAVEL SEDIMENT FILTER
- STABILISED SITE ACCESS
- STOCKPILE
- 1:4 RAMP
- RM RM — RISING MAIN

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.
3. CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
4. CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'
5. ALL PITS OPEN TO ATMOSPHERE TO BE PROTECTED IN ACCORDANCE WITH THE 'BLUE BOOK'

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

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ARCHITECT: BATESSMART.

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SCALE 1:200@ A1 — 0 2 4 6 8 10m

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
SEDIMENT AND SOIL EROSION CONTROL PLAN - BASEMENT LEVEL 4

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-13-B04-001
REVISION: 01
DRAWING SHEET SIZE = A1

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- BEXX.XX — BULK EARTHWORKS PAD LEVEL
- BULK PAD EXTENT

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. BULK EARTHWORK SECTIONS ARE FOR INFORMATION PURPOSES ONLY.
4. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
5. REFER STRUCTURAL ENGINEERS DRAWINGS AND DETAILS FOR BUILDING SLAB DETAILS.
6. REFER TO STRUCTURAL PLANS FOR BULK EXCAVATION LEVELS TO PAD FOOTINGS.

VERIFIER:
JOB MANAGER: W.WU
DESIGNED: W.WU
DRAWN: A.SUYO

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

CLIENT: TOGA — ESTABLISHED 1963

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Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
BULK EARTHWORKS PLAN

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-14-001
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ASHBEA SUYO
Date: 16.04.2020 2:24 PM
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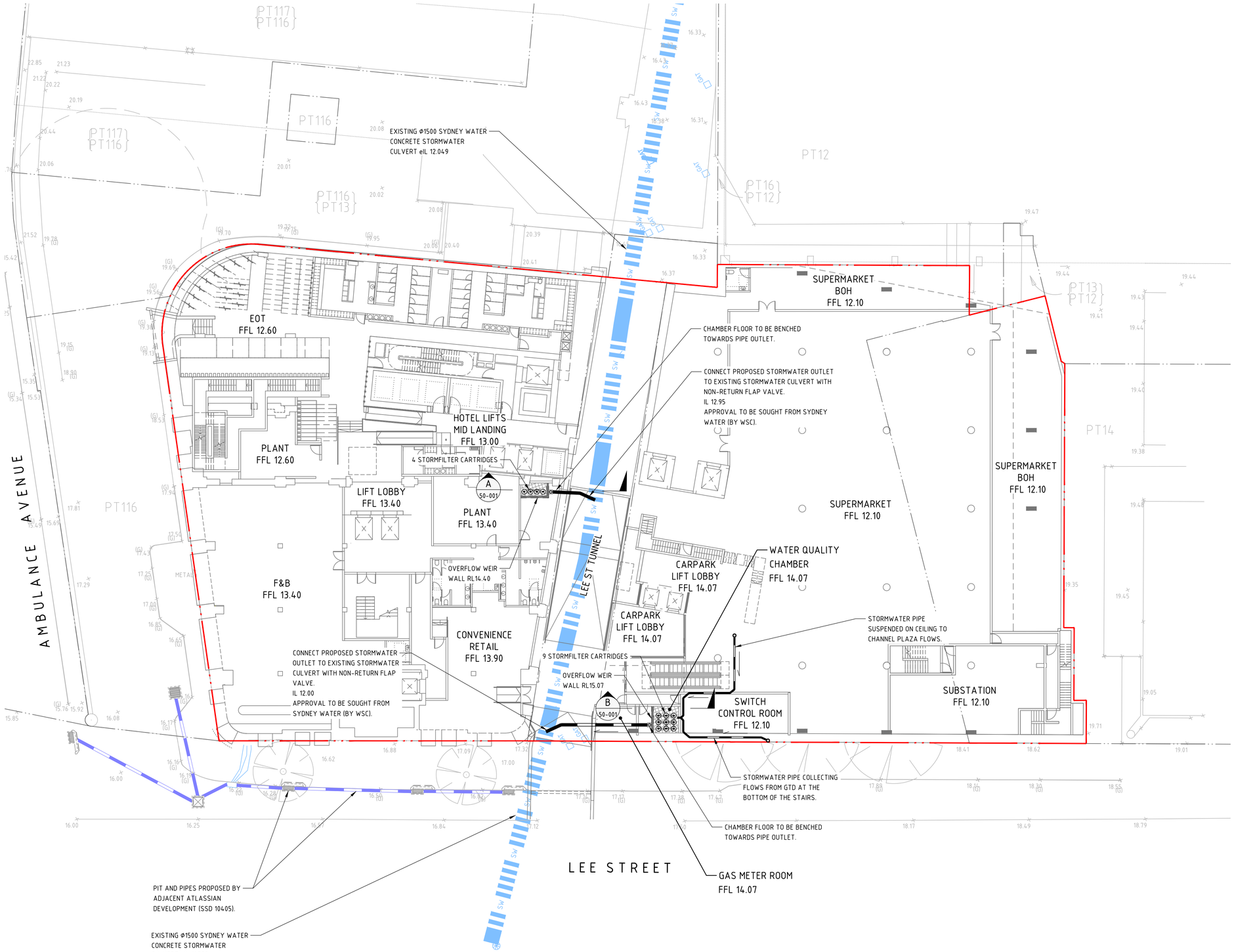

LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED STORMWATER PIT
- PROPOSED STORMWATER PIPE
- FUTURE DRAINAGE STRUCTURE
- FUTURE STORMWATER PIPE
- WQC — RAINWATER HARVESTING TANK / WATER QUALITY CHAMBER
- SW — EXISTING STORMWATER

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. REFER HYDRAULIC ENGINEERS / ARCHITECTS DRAWINGS FOR DOWNPIPE LOCATIONS AND SIZING.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
SITEWORKS AND STORMWATER MANAGEMENT PLAN - BASEMENT LEVEL 1

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-15-B01-001
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By : ASHBEA SUYO
Date :18.04.2020 2:24 PM
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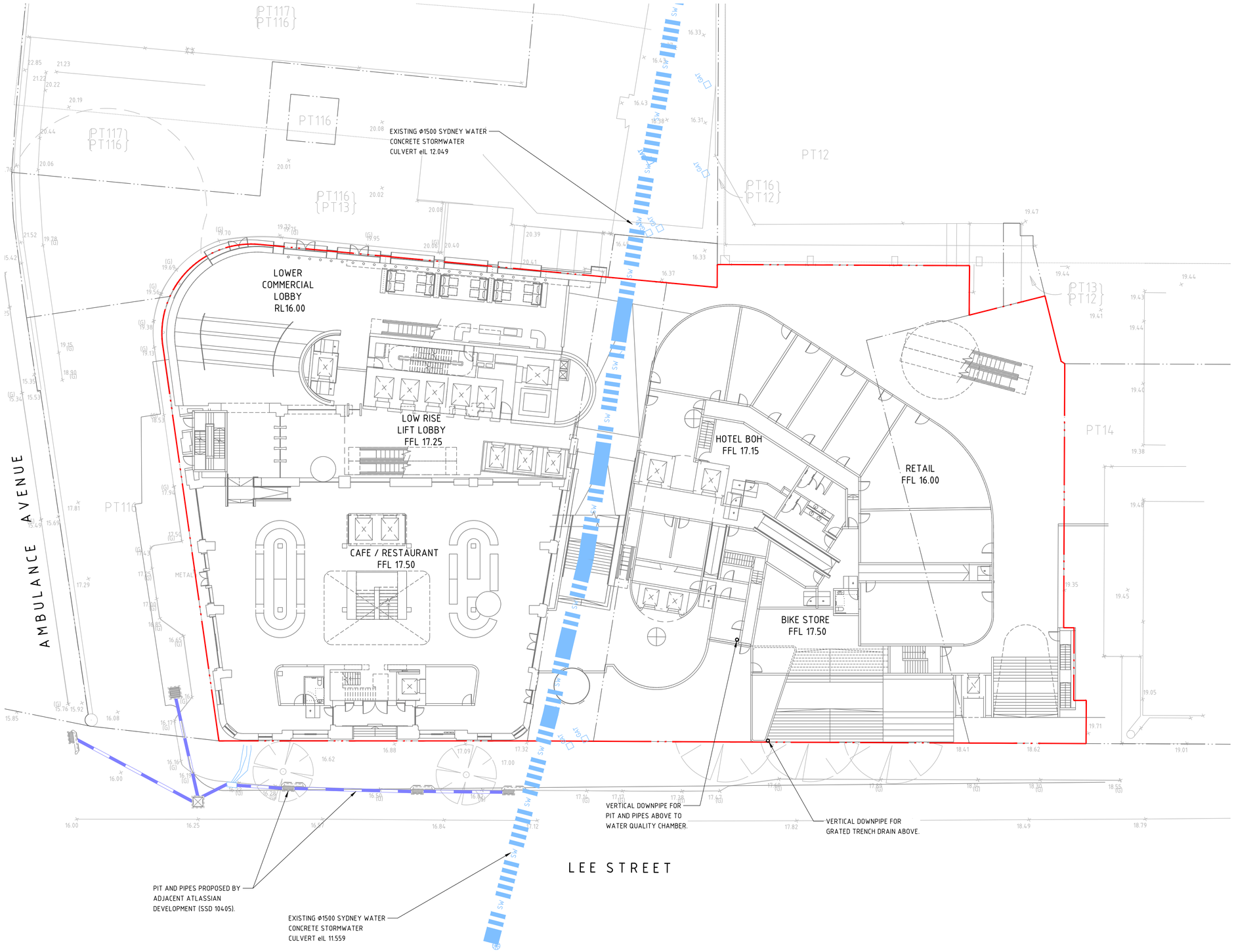

LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- FUTURE DRAINAGE STRUCTURE
- FUTURE STORMWATER PIPE
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. REFER HYDRAULIC ENGINEERS / ARCHITECTS DRAWINGS FOR DOWNPIPE LOCATIONS AND SIZING.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

CLIENT: TOGA
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ARCHITECT: BATESSMART.

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SCALE 1:200@A1 — 0 2 4 6 8 10m

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Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
SITEWORKS AND STORMWATER MANAGEMENT PLAN - LOWER GROUND LEVEL

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-15-GF0-002
REVISION: 01
DRAWING SHEET SIZE = A1

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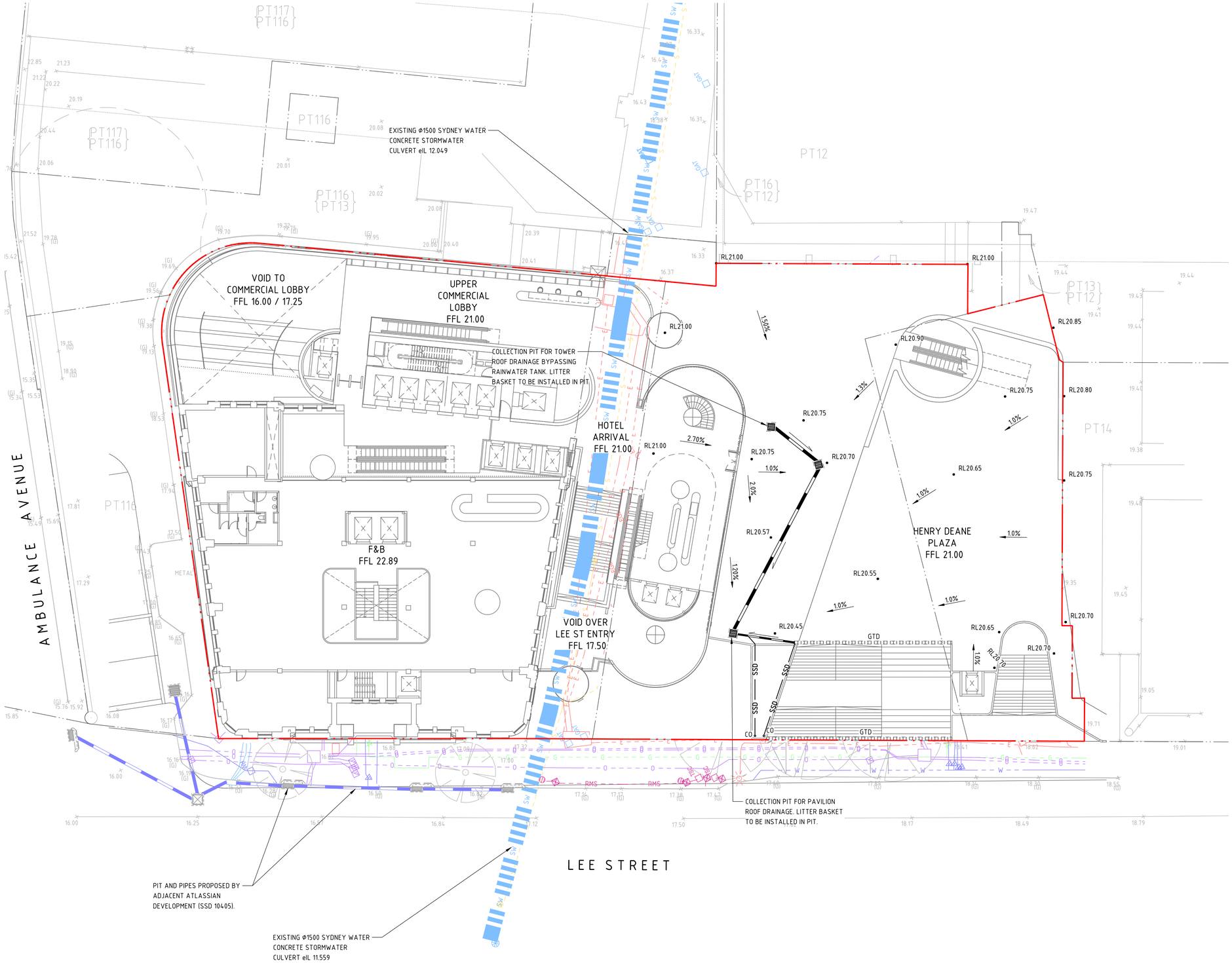

LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED DRAINAGE STRUCTURE
- PROPOSED STORMWATER PIPE
- FUTURE DRAINAGE STRUCTURE
- FUTURE STORMWATER PIPE
- • RL20.85 — PROPOSED SPOT HEIGHT
- SSD — SSD — SUBSOIL DRAINAGE LINE
- • CO — SUBSOIL DRAINAGE CLEAROUT
- GTD — GRATED TRENCH DRAIN
- 1.0% — DIRECTION OF GRADE
- SW — EXISTING STORMWATER
- E — EXISTING ELECTRICITY
- G — EXISTING GAS
- COMS — EXISTING TELECOMUNICATIONS
- O — EXISTING OPTUS
- W — EXISTING WATER
- FH — EXISTING FIRE HYDRANT
- S — EXISTING SEWER
- RMS — EXISTING RMS
- U — EXISTING UNKNOWN SERVICE

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. REFER HYDRAULIC ENGINEERS / ARCHITECTS DRAWINGS FOR DOWNPIPE LOCATIONS AND SIZING.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.

VERIFIER:
JOB MANAGER: W.WU
DESIGNED: W.WU
DRAWN: A.SUYO

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

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ARCHITECT: BATESSMART.

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SCALE 1:200@ A1 — 0 2 4 6 8 10m

NORTHROP
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Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
SITEWORKS AND STORMWATER MANAGEMENT PLAN - GROUND LEVEL

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-15-GF1-003
REVISION: 01
DRAWING SHEET SIZE = A1

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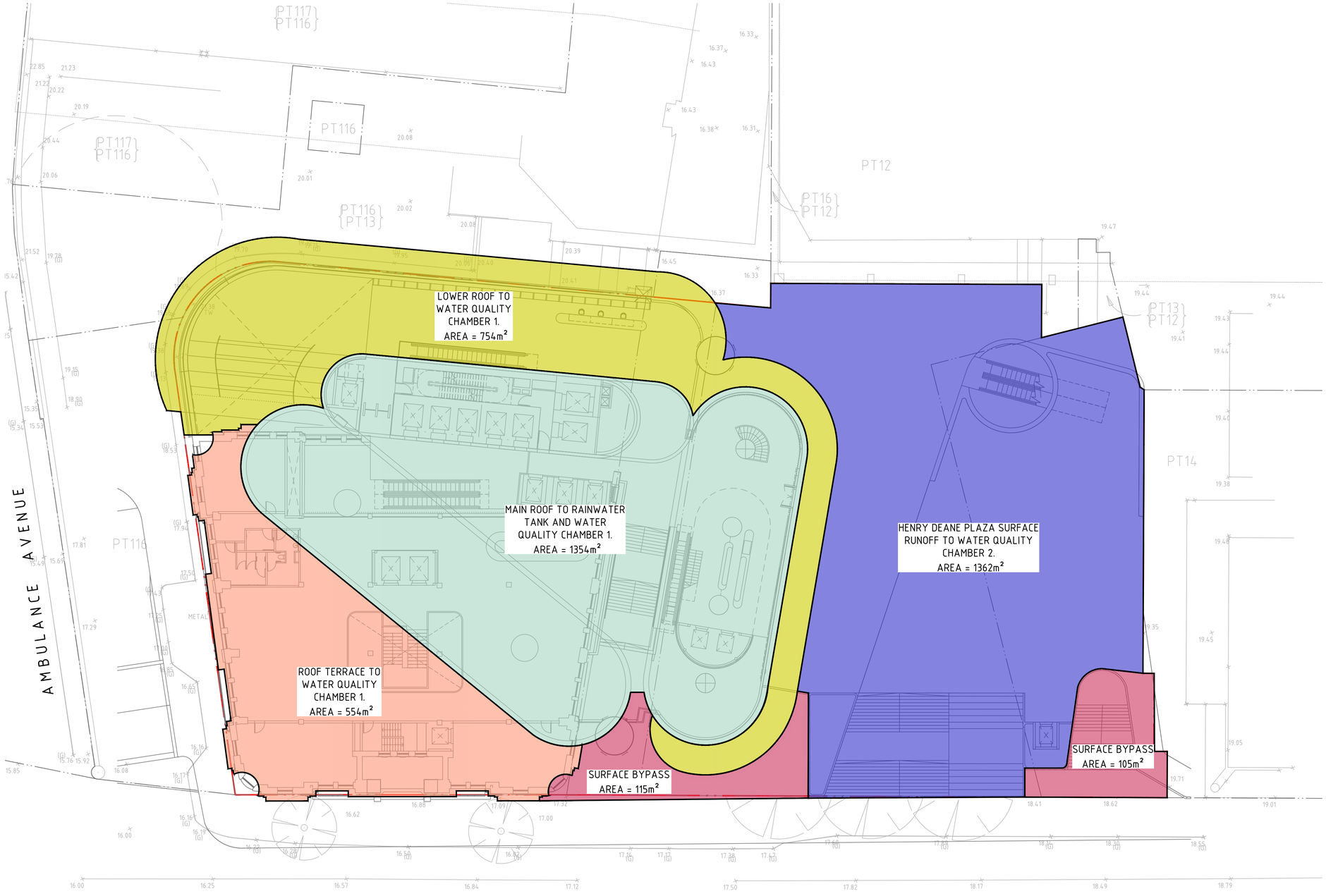
Plotted By : ASHBEA SUYO
Date : 16.04.2020 2:24 PM



LEGEND

- SITE BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- HENRY DEANE PLAZA CATCHMENT
- MAIN ROOF CATCHMENT
- ROOF TERRACE CATCHMENT
- LOWER ROOF CATCHMENT
- BYPASS CATCHMENT

VERIFIER:
JOB MANAGER: W.WU
DESIGNED: W.WU
DRAWN: A.SUYO

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

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PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
WSUD CATCHMENT PLAN

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-18-001
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ASHBEA SUYO
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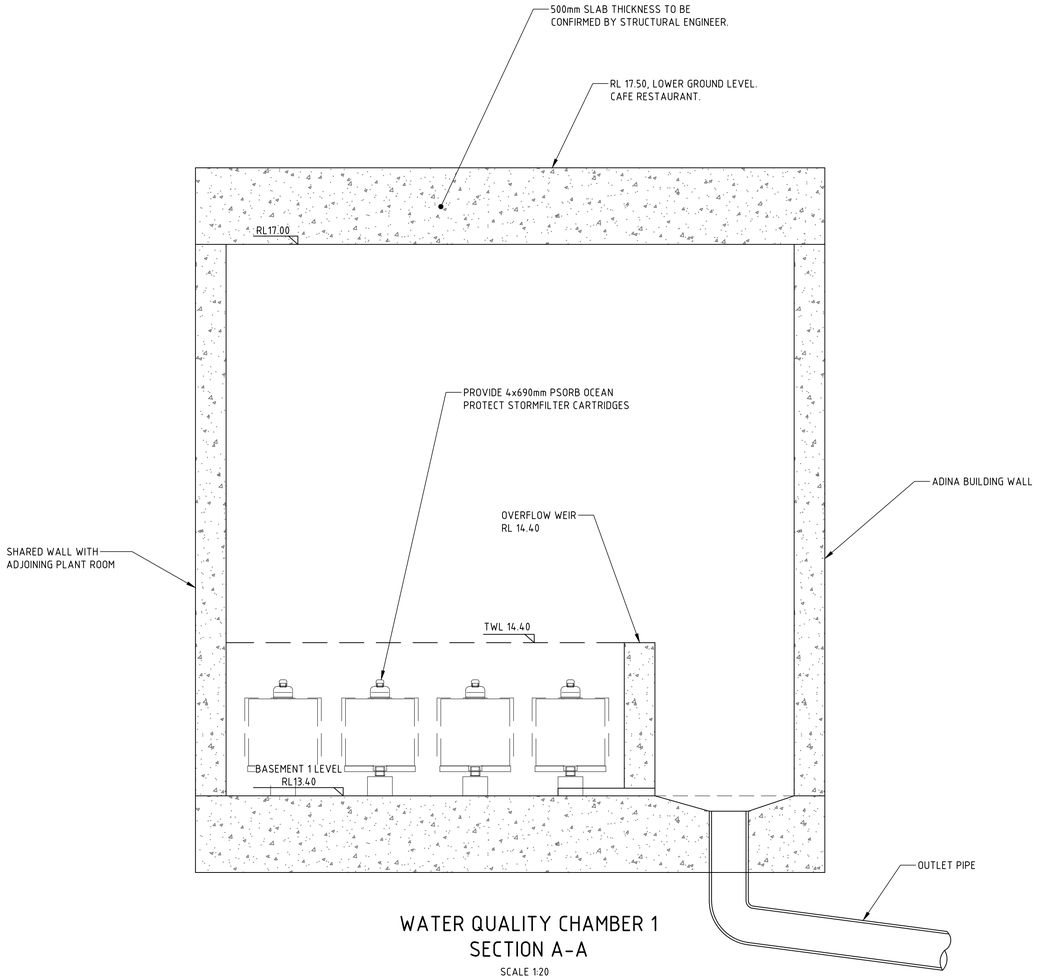
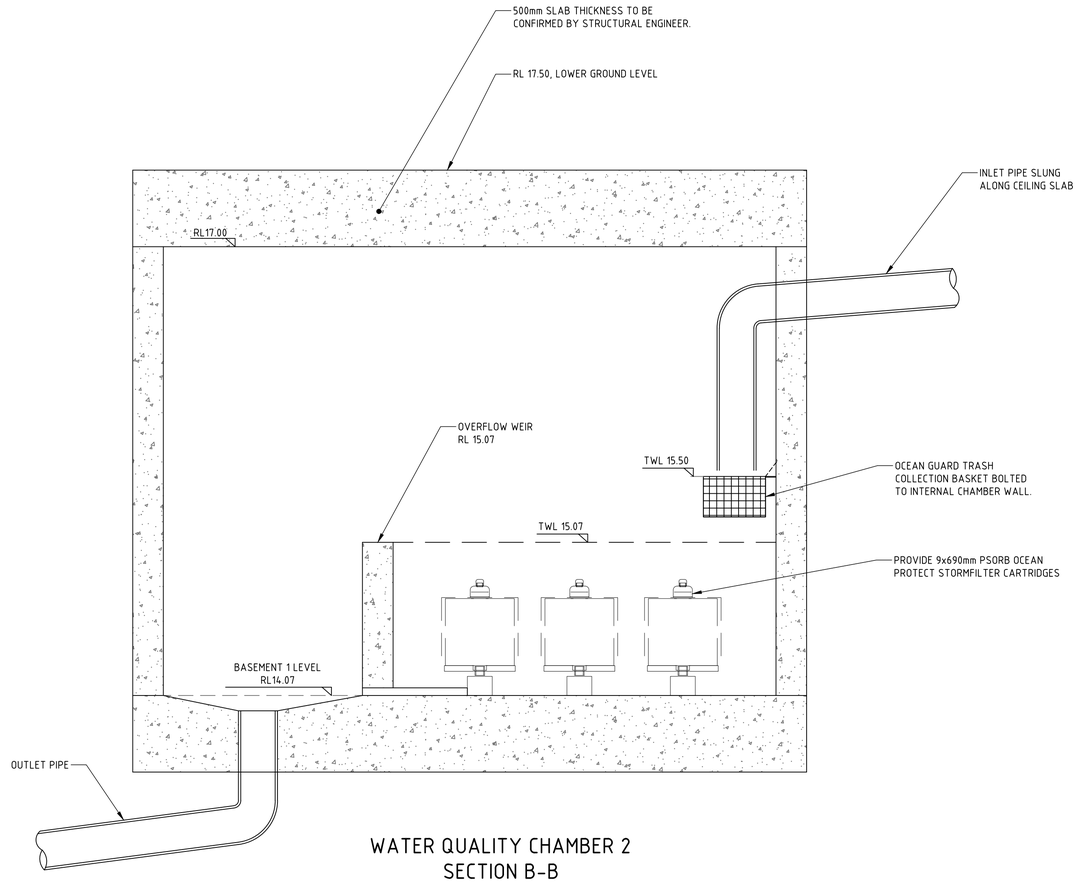
Date: 18.04.2020 2:24 PM



WATER QUALITY CHAMBER 1
SECTION A-A
SCALE 1:20



WATER QUALITY CHAMBER 2
SECTION B-B
SCALE 1:20

NOT FOR CONSTRUCTION

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

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SCALE 1:20@A1
0.0 0.2 0.4 0.6 0.8 1.0m

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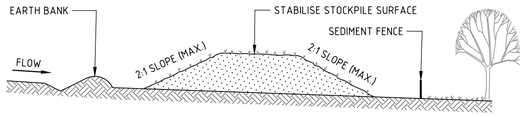
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
DEVELOPMENT APPLICATION
STORMWATERS DETAILS

JOB NUMBER 220189
DRAWING NUMBER CI-DAD-50-001
REVISION 01
DRAWING SHEET SIZE = A1

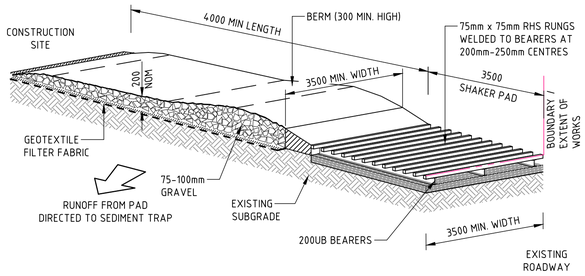
Plotted By : ASHBEA SUYO
Date : 16.04.2020 2:24 PM
Found : I:\2022 jobs\220189 - toga central\4-drawings\C-Civil\220189-cad\01-DA\220189-CI-DAD-50-001.dwg



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

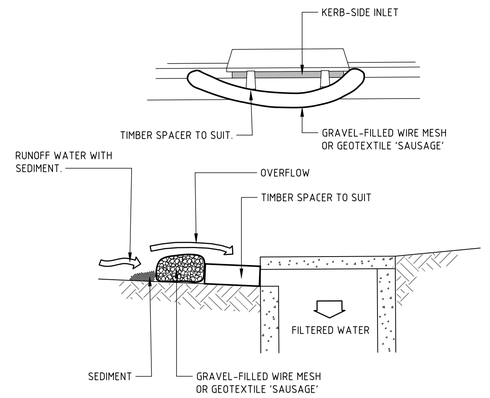
STOCKPILE



CONSTRUCTION NOTES

1. THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY,
   - THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT,
2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
3. INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD. TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
4. INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.

STABILISED SITE ACCESS

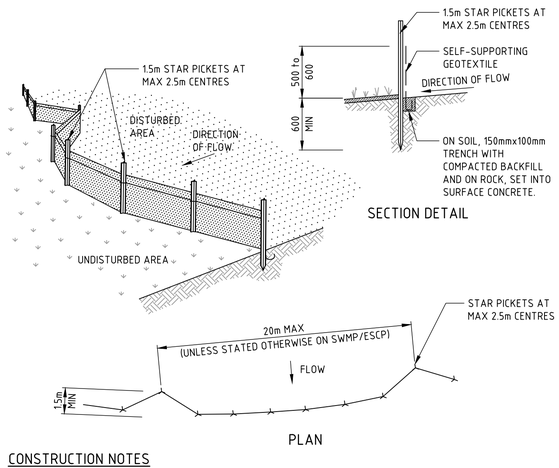


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

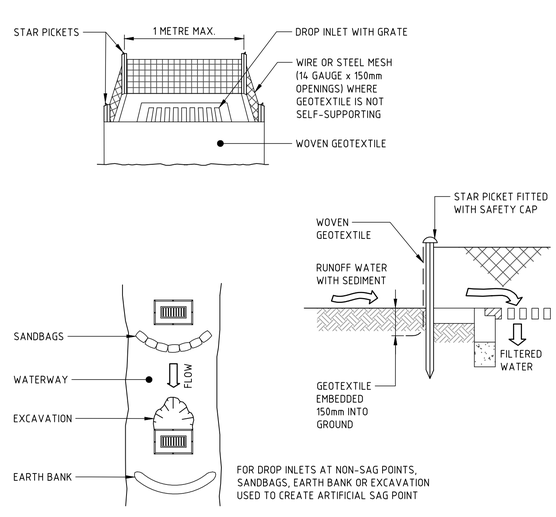
WIRE MESH AND GRAVEL SEDIMENT FILTER



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS

NOT FOR CONSTRUCTION

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	UM		WW	01.07.22

CLIENT: TOGA ESTABLISHED 1963

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ARCHITECT: BATESSMART.

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NOT TO SCALE

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PROJECT: TOGA CENTRAL
2 LEE STREET, HAYMARKET

DRAWING TITLE: CIVIL ENGINEERING PACKAGE DEVELOPMENT APPLICATION
SEDIMENT AND SOIL EROSION CONTROL DETAILS

JOB NUMBER: 220189
DRAWING NUMBER: CI-DAD-51-001
REVISION: 01
DRAWING SHEET SIZE = A1

Found : I:\2022\jobs\220189 - toga central\sd-drawings\C-Civil\220189-cad01-DA\220189-CI-DAD-51-001.dwg
Plotted By : ASHBEA SUYO
Date : 18.04.2020 2:24 PM

Appendix G – Stormwater Operations and Maintenance Schedule

Site Address: 2 & 8A Lee Street, Haymarket NSW

Site Area: 5,450 m^2

Site Access: Direct access to the site will be by …....

Inspected by: ……

Date of Inspection: ……...

Next Inspection: ……

Item(s) to be Inspected	Frequency	Performed by	Maintenance Procedure	Inspected?	Maintenance Needed?	Initial By
Rainwater Tank						
First flush Device	6 Monthly	Owner/ Maintenance Contractor	Inspect first flush device to ensure correct operation. Remove accumulated litter and debris. If device is not functioning properly repair or replace.			
Internal Inspection	6 Monthly	Owner/ Maintenance Contractor	Check for evidence of access by animals, birds or insect including the presence of mosquito larvae. If present, identify access point and close. If evidence of algae growth, find and close points of light entry.			
Tank and Lids	6 Monthly	Owner/ Maintenance Contractor	Check structural integrity of tank including roof and access covers. Any dilapidation including holes or gaps are to be noted and repaired.			
Depth of Sediment within Tank	Every 2 Years	Owner/ Maintenance Contractor	De-sludge tank(s) by engaging professional cleaner			
Proprietary Water Quality Treatments						
Stormfilter Cartridges (Ocean Protect or approved equivalent) [1]	Refer Manufacturer's Manual	Maintenance/ Specialised Contractor	Refer to manufacturer's operation and maintenance manual.			

Item(s) to be Inspected	Frequency	Performed by	Maintenance Procedure	Inspected?	Maintenance Needed?	Initial By
Ocean Guard Pit Insert (Ocean Protect or approved equivalent)	Refer Manufacturer's Manual	Maintenance/ Specialised Contractor	Refer to manufacturer's operation and maintenance manual.			

[1] *Maintenance operations for the water quality treatment device shall be undertaken outside of typical public operating hours and agreed with owners prior to comments of works, to minimize disturbance to site pedestrian traffic. Manufacturer to implement adequate on-site pedestrian traffic management controls to ensure site remains accessible while works are carried out.*