

Integrated Stormwater Management Report

Prepared for Tiberius (Holroyd) Pty Ltd (ABN 61 061 131 959) atf the Holroyd Unit Trust (ABN 42 891 308 354)

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Project Number SSD-70283710: 1 Crescent Street, Holroyd
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1. Glossary and Abbreviations

Reference	Description
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
BCA	Building Code of Australia
Council	Cumberland City Council
DCP	Development Control Plan Cumberland Development Control Plan 2021 (CDCP 2021)
EIS	Environmental Impact Statement
LEP	Local Environmental Plan Cumberland Local Environmental Plan 2021(CLEP 2021)
OSD	On-site Detention
PSD	Permissible Site Discharge
SEARs	Secretary's Environmental Assessment Requirements
SSDA	State Significant Development Application
SSR	Site Storage Requirements
UPRCT	Upper Parramatta River Catchment Trust
WSUD	Water-Sensitive Urban Design
OG	OceanGuard by Ocean Protect
JF	Jellyfish Filter by OceanProtect

2. Executive Summary

BG&E have prepared this report on behalf of Tiberius (Holroyd) Pty Ltd in association with a State Significant Development Application (**SSDA**) for a proposed mixed-use development at 1 Crescent Street, Holroyd (**the site**).

The report responds to matters raised by the Department of Planning, Housing and Infrastructure (**DPHI**), Cumberland City Council, other State government authorities /agencies, utility service providers and the community during public exhibition of SSD-70283710.

It is understood that this report will be utilised in the SSDA (State Significant Development Application) submission and will also inform the basis of the subsequent stages of design works to ensure continuity through the project. As outlined in this report, the following essential items have been identified:

- An OSD is required to reduce discharge from the site to the PSD as required by the Council and UPRCT.
- OSD volume has been designed per the SSR guideless set out by Council & UPRCT.
- WSUD infrastructure has been designed to achieve targets required by the Council and UPRCT.

This report concludes that the proposed development is suitable and warrants approval subject to implementing the following mitigation measures:

- A detention tank is required for this development. OSD tank with multiple tanks with a combined volume of 1375 m³ has been designed to meet UPRCT Site Storage Requirements
- Each tank has been installed with two orifices to limit the total flow from the Site at the 20% event to 102.7 L/s and 332.2L/s in the 1% AEP event.
- Water-sensitive urban Design is needed as part of the site's development. This has been achieved using proprietary products. The Site needs 38 OceanGuard from Ocean Protect, 1 JF3250-28-5, and two small bio-retention basins for the untreated area (a total of 30 m²). These will be finalised and rationalised during detailed design based on final area calculations.

The development proposal aims to minimise excavation and manage contaminated soil effectively by constructing buildings on fill material. As per the contamination assessment by Douglas Partners and the bulk excavation plan by BG&E, contaminated soil will be reused on-site under designated park areas, while uncontaminated soil can be utilised across the site to reduce the need for additional fill. Spoil from pile drilling, including any contaminated material, will be disposed of according to relevant legislation and guided by geotechnical advice from the October 2024 report by Douglas Partners. This strategy ensures compliance and minimises soil removal.

The contractor must implement erosion and sediment controls during construction to prevent sediment deposition in downstream drainage areas. As outlined in the DA plans, measures include sediment fencing, filter socks around kerb inlet pits, and controls around stockpile locations. Stabilised access points and potential washdown taps will help limit contaminant transfer. Two sediment basins are proposed: the first during stage a to manage minimal excavation runoff and the second for overall site runoff, accounting for additional soil loss. Due to its slope and proximity to roads and natural waterways, Sediment fencing will be installed site-wide to protect ecological values.

To meet planning requirements, Crescent Street will be widened to add an extra lane entering Woodville Road. This involves demolishing and relocating the existing kerb, gutter, footpath, and verge by up to 3.5 meters. The road surface will also be milled and re-sheeted. The high-voltage (HV) electrical cable located approximately 800mm below the road surface will not be impacted, as the work will only involve the asphalt layer, which is about 40mm thick. The planned road widening activities have no expected impact on the HV cable.

Following the implementation of the above mitigation measures, the proposed mixed-use precinct development at 1 Crescent Street, Holroyd, will be acceptable in terms of Civil and Stormwater.

Relevant Documentation

The following documentation has been used as a reference in the preparation of this report and the stormwater concept plans:

- Architectural Plans provided by Woods Bagot dated September 2025
- Survey Plan provided by Project Surveyors dated July 2025
- Landscaping Plan provided by Arcadia dated September 2025

3. Introduction

This report has been prepared on behalf of Tiberius (Holroyd) Pty Ltd in association with a State Significant Development Application (**SSDA**) for a proposed mixed-use development at 1 Crescent Street, Holroyd (**the site**).

The report responds to matters raised by the Department of Planning, Housing and Infrastructure (**DPHI**), Cumberland City Council, other State government authorities /agencies, utility service providers and the community during public exhibition of SSD-70283710.

The report also assesses the proposed amendments to the original proposal, including changes to the following:

- Stage A – Mixed-use podium, Buildings 1 to 3 and supporting infrastructure
- Stage B – Buildings 4 and 5 and supporting infrastructure
- Stage C – Buildings 6 and 7 and supporting infrastructure

The proposed changes extend beyond minor refinements, which can be accommodated via a Submissions Report. As a result, a combined Submissions and Amendment Report has been prepared and consent sought from DPHI and from Cumberland City Council to amend the SSDA as per section 37 of the *Environmental Planning and Assessment Regulation 2021* (**the Regulation**).

Table 1 below identifies the relevant matters raised by Cumberland City Council and sets out the Applicant's response to the submissions

No.	Issue Raised	Applicant Response	Reference to a report or drawing
1.	"Stormwater Management The buildings (building 4, 5, and the parking area under the central block (phase 2) are proposed over the existing drainage easement and stormwater pipe/conduit that runs across the subject site. The encroachments into the drainage easement and construction over the existing stormwater pipeline is not supported. The structure must be clear of the Council's drainage infrastructure. The sub-catchment area for each OSD system associated with the OSD system should be delineated on the plan, and the area should be shown in m²."	There are two issues raised within the issue. 1. Construction over Easement The structural team has endorsed the construction over the easement by ensuring the building sits on foundation piles that are found below the easement, ensuring the culvert is not loaded. 2. OSD Catchment The OSD tanks have been redesigned to capture each stage independently. This has been documented in the civil package attached in Appendix (a)	1. Section 5.6 of this report 2. Refer to Section 5.6 and Section of this report for OSD design and details
2.	"Stormwater Management The OSD design calculation summary sheet for each of the OSD systems should also be provided. The provision of OSD storage for each catchment must be based on the sub-catchment area. The information provided is incomplete. The cross-sectional details of the OSD tanks including the levels and storage volume have not been provided."	The site has undergone a significant redesign; the OSD tanks have been redesigned to be built corresponding to each stage separately.	2. Refer to Section 5.6 and Section of this report for OSD design and details, and civil drawings by BG&E.
3.	"Stormwater Management Based on the available information, the available OSD storage volume appears to be insufficient. Particularly the available OSD storage volume from the OSD tank 2 appears to be 345m², noting that average depth of 0.7m only based on the slab invert levels which varies from 12.3m to 12.55m. The average depth of 1m and storage volume of 410m³ could not be comprehend."	All tanks have been redesigned to be in line with the staging plan of the site. Cross-sections are provided to highlight the water depth and the volume required for each stage.	Refer to the civil drawings provided by BG&E.

4.	"Stormwater Management All stormwater runoff should be directed into the High Early Discharge (HED) control pit/chamber to maximise the efficiency and functioning of the OSD system."	In line with UPRCT Handbook Revision 4, BG&E have opted to use a dual orifice outlet to maximise the efficiency of the OSD system.	Refer to the civil drawings provided by BG&E.
5.	"Stormwater quality / Water Sensitive Urban Design (WSUD) measures The provision of water sensitive urban design (WSUD) measures should be demonstrated by the MUSIC model. No such model have been provided demonstrating compliance with the pollutant removal target in accordance with Table 5 (section 2.5) of Cumberland DCP 2021 Part G4. The MUSIC model should be consistent with and reflect the treatment system components (water quality treatment devices) as proposed and shown on the plan. The provision needs to be re-assessed, and further comment will be made upon receipt of the MUSIC model."	MUSIC Modelling has been completed in line with the requirements of the Cumberland Council. The model is provided as part of this submission, which highlights the treatment targets achieved and the treatment devices used	Refer to Section 7 of this report for details information the treatment train

4. Site Context

4.1 Site Description

The land to which this SSDA relates is located at 1 Crescent Street, Holroyd (**the site**). The site is legally described as Lot 700 in Deposited Plan 1241836.

The site comprises an irregularly shaped allotment with an area of 37,877 m². It has a primary frontage to Crescent Street to the south and a frontage to Woodville Road to the east. The northern boundary of the site adjoins the Holroyd Sportsground, with the M4 Motorway beyond.

The site is located in the Cumberland Local Government Area (**LGA**) and is currently vacant and cleared after WesTrac ceased operations of an industrial facility there in early 2018. The site contains scattered pockets of landscaped vegetation, predominantly located along its southern and eastern boundaries to Crescent Street and Woodville Road.

The site is bounded by Parramatta Road/Church Street/Woodville Road intersection to the northeast, Woodville Road to the east, and Crescent Street to the south. The northern frontage of the site faces the Holroyd Sportsground and the M4 Motorway beyond. It is noted that the eastern portion of the site fronting Woodville Road has been identified for potential future acquisition by Transport of NSW for future planned intersection upgrades to Woodville/Parramatta Road/M4

A location plan is provided in Figure 1 below, and Figure 2 shows an aerial view of the site

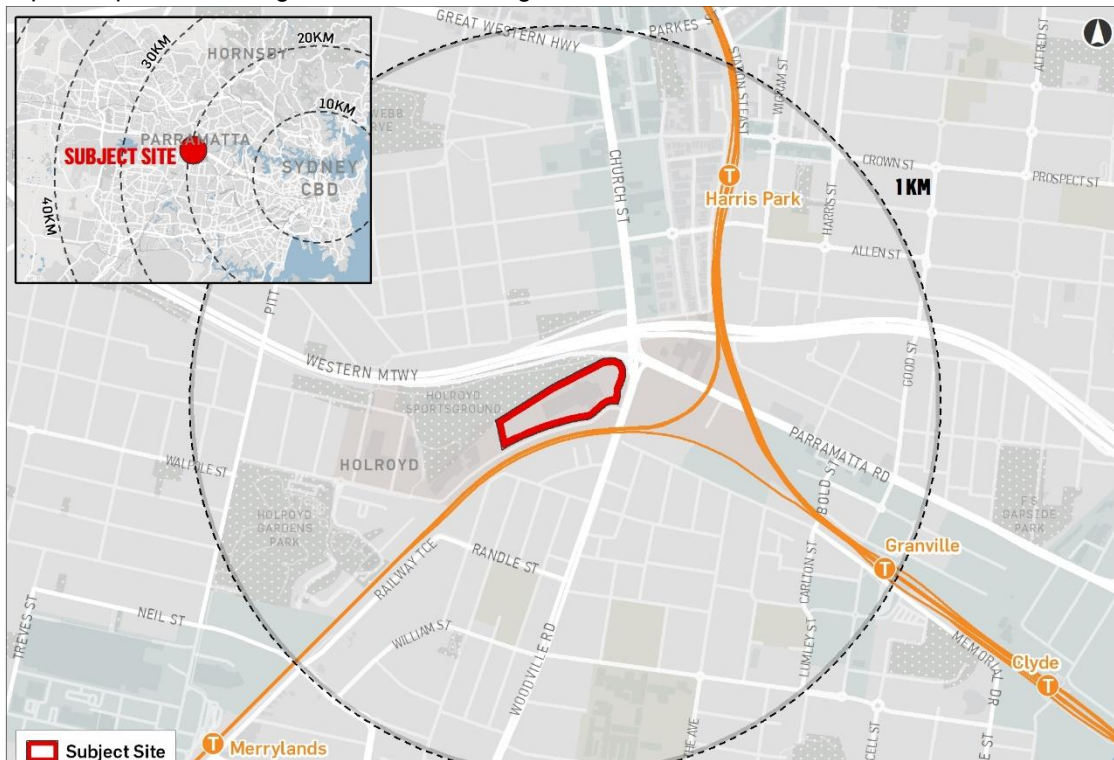


Figure 1: Location Plan (Urbis 2024)



Figure 2: Aerial Photograph (Urbis 2024)

The Site is relatively flat, with a very gentle fall towards the northeastern corner. More than 90% of the Site is currently hardstand concrete pavement, with some planted landscaping adjacent to Woodville Road and eight tree planter boxes along the creek.

4.2 Existing Drainage

The existing site drainage was through a pit and pipe network throughout the site, which had several significantly deep outlet structures along A'becketts Creek. An existing stormwater culvert drains a significant portion of the upstream catchment from residential properties. This is shown in the figure below:

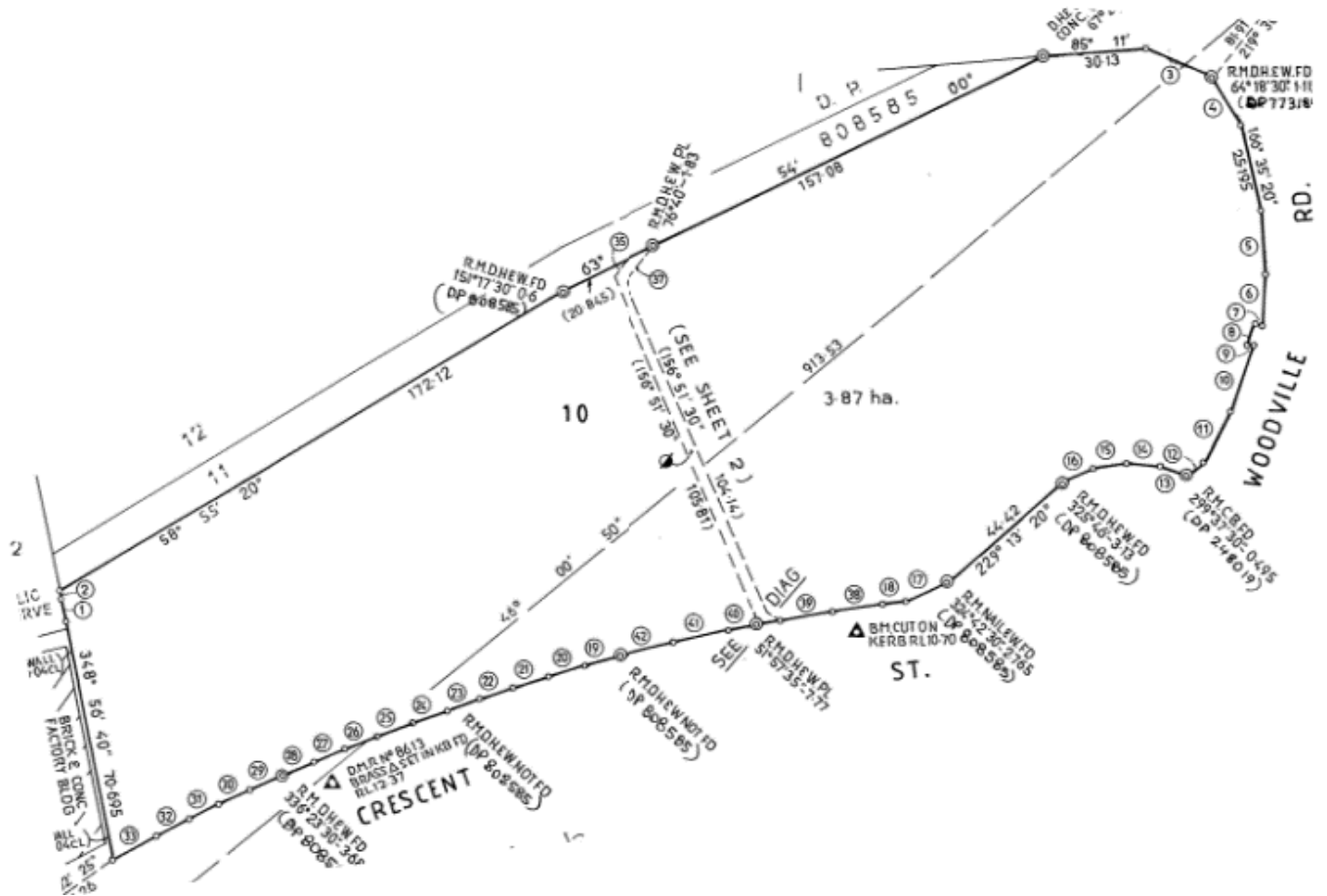


Figure 3: Culvert location from the land property boundary survey 31.10.2003

The culvert's internal dimension is 2.30m wide and 2.23m high.

BG&E plans to retain the existing discharge structures for the proposed development. Refer section 5.6 below for further details.

During the site visit, it was also observed that the Site did not have any sign of On-Site Detention.

4.3 Existing Flood Impact and Overland Flows

BG&E has prepared a detailed flood report Flood Risk Assessment 1 Crescent Street, Holroyd September 2025. The reports' findings show that the 1% AEP flow remains within the banks of A'becketts Creek. For more details, refer to the full report by BG&E (ref: S22215_RPT_FRA_001_F).

5. Proposed Development

5.1 Design Proposal

The vision for the project is to deliver a new mixed-use precinct that fosters a dynamic live-work-play lifestyle. This precinct will feature a diverse range of housing options, including affordable housing, all complemented by expansive public open spaces. Retail and commercial uses will also be integrated, establishing a new, local destination that encourages community engagement and interaction.

The proposal broadly seeks approval for an SSDA for a mixed-use precinct with public open spaces comprising the following components:

- Site establishment works, tree removal, site preparation, earthworks and excavation, services augmentation, and remediation works.
- Development of seven residential buildings comprising four shop-top housing buildings and three residential flat buildings as outlined below:
 - Buildings 1-3 are integrated with an eastern mixed-use podium building, while Building 4 is situated above mixed residential/commercial space, offering shop-top housing.
 - Buildings 5-7 consist of residential flat buildings.
- Delivery of 15% of the total floor space as affordable housing to be distributed across each of the 7 residential buildings, or within a consolidated building proposed proportionately as buildings are developed.
- Approximately 134,208 m2 total floor space comprising:
 - A total of 2,496 m2 retail GFA and approximately 2,710m2 commercial GFA.
 - 1,374 residential apartments
 - Communal amenity facilities for residents.
 - Building services areas.
- Activation of Crescent Street through a mix of amenity areas and pockets of open space.
- Shared car parking for Buildings 1 to 3 and the commercial and retail tenancies within the podium.
- Shared car parking for Buildings 4 to 7 within the above-ground parking structures adjoining Buildings 4 to 5 and 6 to 7.
- Landscaping and accompanying placemaking works, including:
 - Public open space, hard and soft landscape works.
 - Ground and rooftop communal open space.
 - Publicly accessible through-site links.
 - At-grade car parking for the park, forecourt and retail areas.
 - Vehicle access via a new internal publicly accessible road and vehicle accessway.
 - New pedestrian footpaths and access arrangements to the site.
 - Café tenancy within park-side structure.
- Staged completion of a public park.
- Associated works involving the widening of Crescent Street and upgrades to the Crescent Street and Woodville Road intersection.

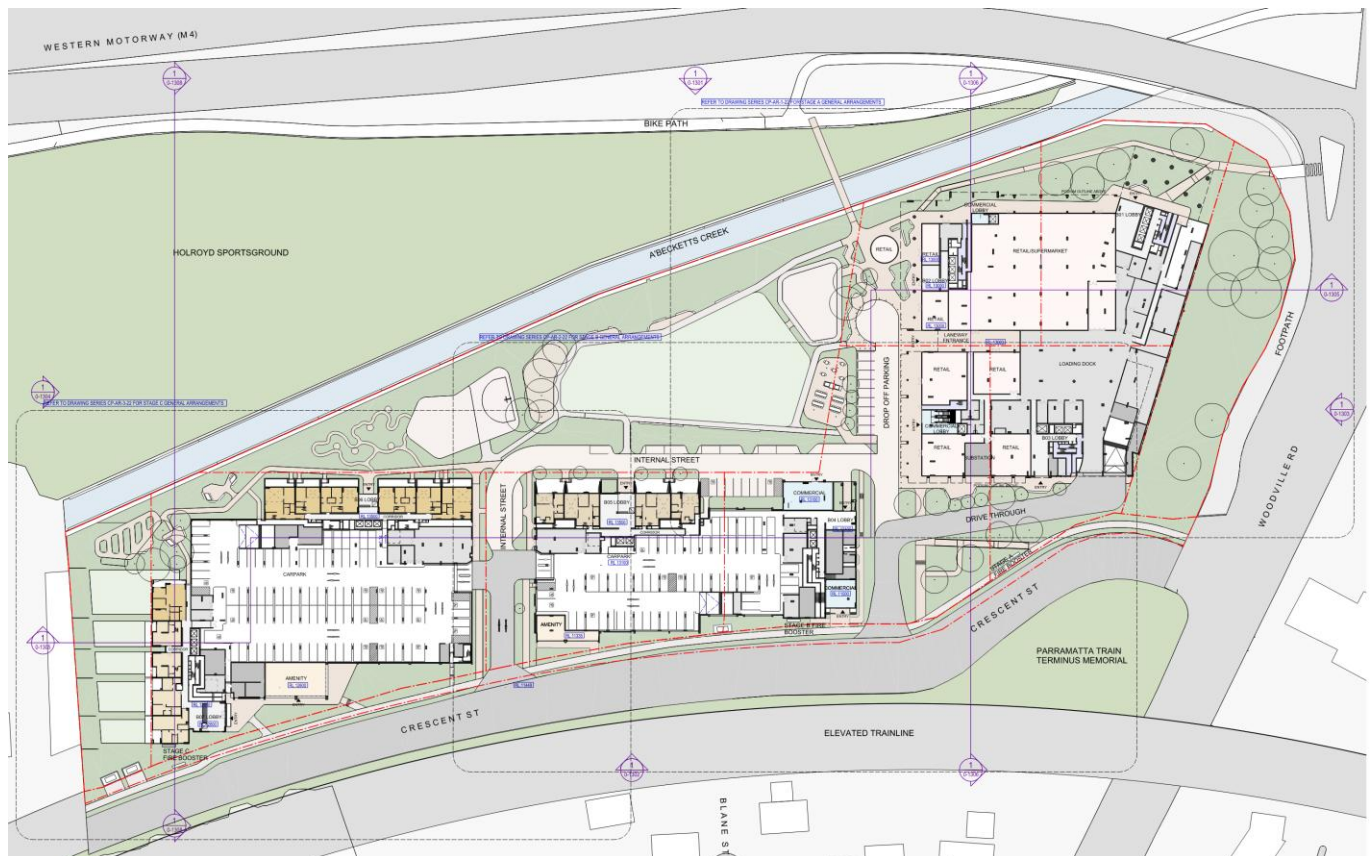


Figure 4: Site Plan from WoodsBagot 22.09.2025

5.2 Proposed Stormwater Management Strategy

The proposed management strategy is designed with three (3) OSD tanks to satisfy the requirements in sections 6 and 7 below. The site will be managed with a series of pit and pipe networks to connect to the OSD tanks, with the project's staging in mind. Each stage has a dedicated OSD tank in accordance with its respective total area and area bypassing. The road has been designed with longitudinal and cross falls to encourage runoff from the road's surface to collection pits along the kerb and gutter. The crossfall in the road and hardstand have been designed to have an overland flow to the landscaped area.

The park has been designed to fall towards A'Beckett Creek, which is adjacent to the site. The park area is zoned as RE1 (Public Recreation). The drainage strategy involved a pit and pipe network along the boundary to collect runoff and direct it to the discharge point. Localised low points and land locks have been noted, and additional pits have been added to minimise ponding in the hardstand where possible. The site has separately zoned land to the east that will be dedicated to TfNSW, and no drainage works have been proposed in this area.

The water quality for the site is proposed to be constructed with Jellyfish, OceanGuards and StormFilters to ensure minimal water leaves the site untreated. These will be located within the tower development, as noted in the stormwater management plan below.

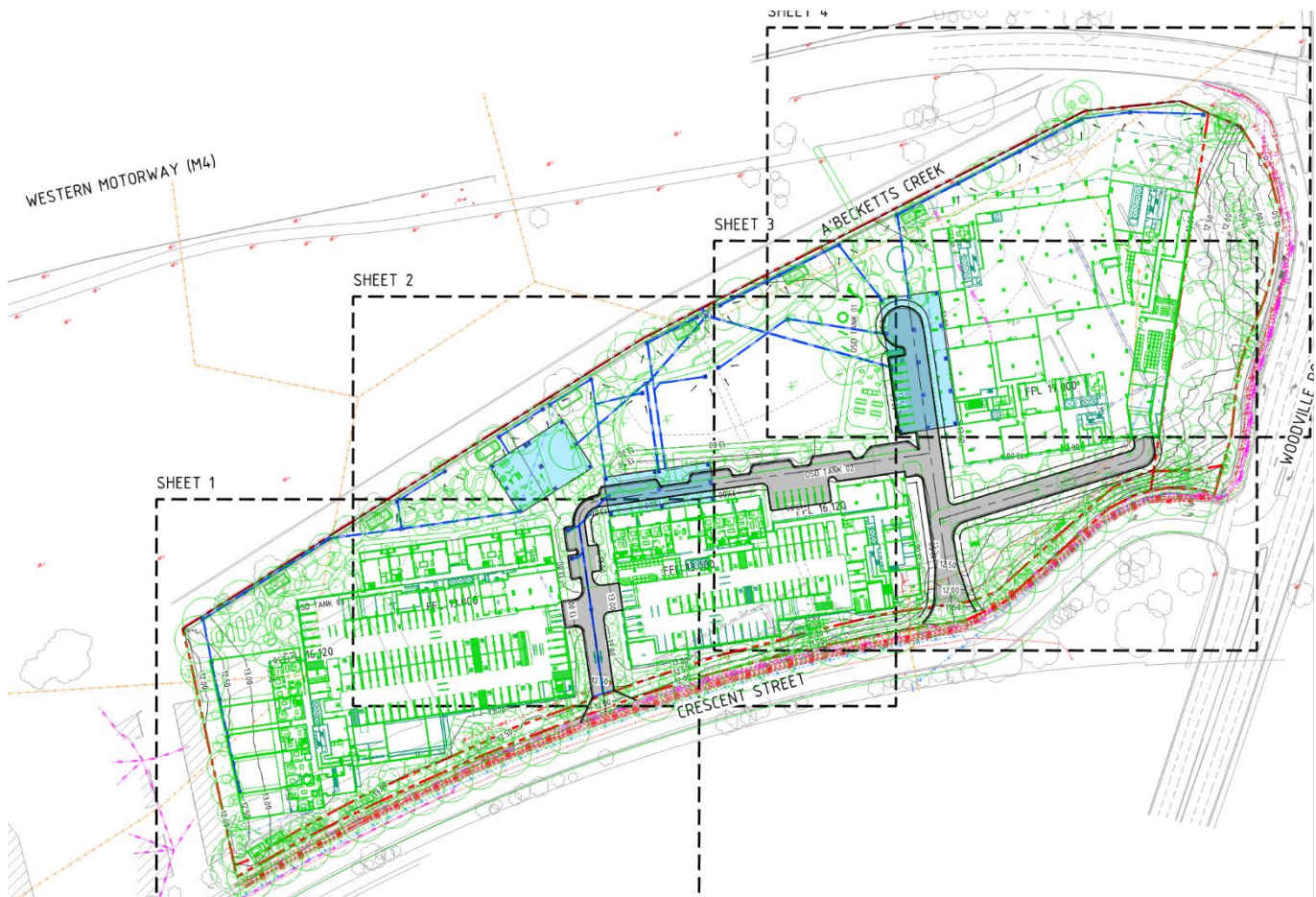


Figure 5: Stormwater Management Plan

5.3 Proposed Fill Strategy

Due to the level of contamination on-site, the development proposal is to construct the buildings on fill as much as possible to minimise excavation and the removal of contaminated soils. This strategy is outlined in the contamination assessment report prepared by Douglas Partners and reflected in the Bulk excavation plan prepared by BG&E.

All cut resulting from the bulk excavation works is to be reused on site, where possible, to minimise the movement of contaminated soils. The exception to this is the mound located near the western boundary, which is to be relocated off-site to mitigate any risk to the proposed development. This excludes any spoil due to pile drilling, and contaminated soil removed in this process will need to be disposed of in accordance with the relevant legislation and advice from the geotechnical engineer (ref: Specialist Advice Report on Geotechnical Investigation dated October 2024 by Douglas Partners) and in accordance with the RAP.

5.4 Proposed Erosion and Sediment Control Strategy

The contractor must implement erosion and sediment controls during construction to minimise the risk of sediment leaving the site and entering waterways.

The DA plans document erosion and sediment controls, which include sediment fencing downhill slope of disturbed areas, filter socks around kerb inlet pits during construction, and controls around stockpile locations.

Stabilised site access points are provided at key access points to ensure limited transfer of contaminants, with the allowance to install a washdown tap to further limit transfer. The nominal location is shown in BG&E's erosion and sediment control plans, which a contractor on site will finalise.

Two sediment basins are proposed to ensure any runoff from the site is treated appropriately. The first basin will be installed within the Stage 1 building to manage the runoff from the minimal excavation that will occur. A second basin will be constructed to manage flows from the rest of the site, which will eventually be filled. The rest of the site, as mentioned, is mostly hardstand; hence, the expectation is that the 2nd basin will account for any additional soil lost during work on the site.

After the proposed demolition works, the residual ground levels around the site will closely resemble the existing ground levels. Due to the site's slope, sediment fencing is proposed around the entirety of the site due to the proximity to road infrastructure and natural water courses. Care must be taken to ensure any runoff water will be treated before leaving the site and that there is no effect on the ecological values of the adjacent creek.

5.5 Impact on HV Cable by Road Widening

As per the planning requirement, Crescent Street will need to be widened to allow for one additional lane entering Woodville Road. As part of these works, the existing kerb, gutter, footpath, and verge will be demolished and pulled back by 3.5m to allow for the addition of the lane. The existing road surface will also need to be milled and re-sheeted (this affects only the asphalt layer of the pavement).

The existing high-voltage (HV) electrical cable running under the existing road of Crescent St will not be impacted as part of these works as there is no intent for the existing road to be demolished for any part under the asphalt layer. The existing HV cable is currently shown to be approximately 800mm below the surface. The asphalt layer is approximately 40mm thick. There is no expectation that any work over the HV cable will impact the cable.

5.6 Building Over Existing Easement and Culvert

The current easement located on the site is for a large culvert to carry water from upstream to A 'Becketts Creek. The culvert's internal dimensions are 2.3m high and 2.23m wide. Due to the proximity of the outlet to the development, maintenance and inspection can still be conducted, as all existing inspection and maintenance points will be maintained as a part of this development. Currently, two existing access points lead into the culvert, one along the boundary adjacent to Crescent Street and the outlet leaving into the Creek. These points will be retained as a part of the development. Due to the size of the culvert, the council can walk through it anytime they want to inspect it. The ability to conduct any functional repair, maintenance work, or inspection has not been impacted as the access points and their location remain unchanged. The culvert's existing IL puts it approximately 3.83m below the proposed surface (RL 13.00) at the downstream end adjacent to the Creek, and the upstream cover remains as existing or high due to the building's fill.

Due to the asset's existing depth and size, the building's structural design will ensure no additional loading on the culvert. This will result in no damage to the culvert through the construction of the proposed development. This will be achieved by placing the foundation piles on either side of the culvert and lining them to prevent load transfer to the culvert. The bridging slab supported atop the piles will span over the culvert to support the building loads above. The underside of the bridging slab will be separated from the soil below with compressible material to prevent load transfer to the top of the culvert. Using a bridging slab, the culvert can be accessed internally, repaired, and maintained, and the sections can be replaced without needing to rip out the entire structure from above.

6. On-Site Detentions Requirement

6.1 Stormwater Policies and Objectives

An integrated stormwater management and water-sensitive urban design concept has been prepared for the development. The strategy has been developed to meet the following objectives and comply with:

- Cumberland DCP – Part A – Introduction and General Controls
- Cumberland DCP – Part B – Development in Residential Zones
- Cumberland DCP – Part G – Miscellaneous Development Controls
- UPRCT On-site Stormwater Detention Handbook – Fourth Edition December 2005

As part of the proposed development, to satisfy all relevant requirements outlined in the above-stated document, an On-site Detention (OSD) tank is required to limit total discharge from the Site, minimise discharge bypassing the site OSD tank, and implement WSUD equipment to increase the quality of water discharging from the Site.

6.2 Site Specific Design Requirements

As per council guidelines outlined in Cumberland DCP—Part G, the design must comply with the Upper Parramatta River Catchment Trust (UPRCT) On-Site Stormwater Detention Handbook, which provides minimum Site Storage Requirements and maximum Permissible Site Discharge (PSD) rates for the Site, as seen in the figure below.

- Dual occupancy development is located within the Haslams Creek Catchment or Duck River East Catchment and compliant with the site coverage requirements of the DCP.
- Dwelling and secondary dwelling developments and any ancillary residential developments.

Design

Objective

- O1. Ensure that sufficient storage is provided to ensure peak flow rates at any point within the downstream drainage system do not increase as a result of the development during all storm events up to the 100 year ARI.

Controls

- C1. The permissible site detention (PSD) and site storage requirements (SSR) shall comply with the Upper Parramatta River Catchment Trust requirements.
- C2. Alternative values for the required storage volume can be considered for larger sites greater than 3000sqm if the applicant demonstrates to Council's satisfaction using appropriate computer modelling that the relevant PSD shall be satisfied.
- C3. Stormwater runoff from all new roof areas shall be routed through the OSD facility. Runoff entering the site from upstream and adjoining properties shall be directed bypassing the on-site detention system.

Figure 6: Cumberland DCP - Part G (Page G68) - OSD Design Guidelines

5.1.2 Basic OSD parameters

The basic OSD parameters are reported in Sections 2.3.2, 3.5.1 and 3.5.2, namely

SRD _L =	40 L/s/ha
SSR _L =	300 m ³ /ha
SRD _U =	150 L/s/ha
SSR _T =	455 m ³ /ha

5.1.3 OSD storage bypass

The OSD Calculation spreadsheet:

- calculates the adjusted SRDs based on the calculated percentage of the residual lot area draining to the OSD storage and the tabulation given in Section 4.2.9.

Figure 7: OSD Design Criteria - UPRCT OSD Design Handbook - Section 5

Due to Site constraints, portions of the Site are bypassing the OSD; hence, the PSD will need to be reduced to accommodate the bypassing areas. UPRCT has provided additional requirements for up to 30% bypass from the Site. The development, in this case, will bypass 20% of the total Site area, and the following requirements will apply:

4.2.9 Areas not directed to the OSD storages

Where possible, the drainage system should be designed to direct runoff from the entire site to the OSD system. Sometimes, because of ground levels, the receiving drainage system or because of other circumstances eg. retention of major trees, this will not be feasible.

In these cases up to 30% of the residual site area may be permitted to bypass the OSD systems, provided that as much as possible of the runoff from impervious site areas is drained to the OSD system and specific Council approval is obtained.

The storage volume is still calculated on the entire site area, while the SRD is adjusted downwards in accordance with the values given in the table below (see also Section 3.4.3 where the development affects only part of a site).

Residual Lot Capture	Primary Outlet SRD _L (L/s/ha)	Extended Detention Storage SSR _L (m ³ /ha)	Secondary Outlet SRD _U (L/s/ha)	Overall Detention Storage SSR _T (m ³ /ha)
100%	40.0	300	150	455
95%	38.5	300	140	455
90%	37.0	300	130	455
85%	35.5	300	120	455
80%	34.0	300	110	455
75%	32.5	300	100	455
70%	31.0	300	90	455

Note: 100% of Roof Area assumed to be directed to the OSD storage

Figure 8: Bypass OSD Design Criteria - UPRCT OSD Design Handbook - Section 4

6.3 Existing Site Conditions

The existing catchment data is not required for any design requirements specified by the Cumberland Council or UPRCT OSD Handbook. All calculations will be based on future proposed stormwater and civil design.

6.4 OSD Tank Sizing and Calculations

To provide flexibility in the project's construction, a separate OSD tank has been provided for each stage, discharging into the creek. The tank levels are provided on the plan and in the summaries below, will be subject to change based on design development changes based on the final road design

PHASE A OSD TANK CALCULATIONS:

Phase Area: 17770 m²

Extended Detention Required = 533m³

Orifice Diameter For Extended Detention = 170mm

Maximum Water Level Of Extended Detention = RL12.350

Average Water Depth: 0.75m

Area Of Tank: 786m²

Extended Detention Volume Provided = 589m³

Overall Detention Required = 808m³

Orifice Diameter For Detention = 285mm

Maximum Water Level Of Detention = RL12.70

Average Water Depth: 1.05m

Area Of Tank: 786m²

Detention Volume Provided = 825m³

STAGE B OSD TANK CALCULATIONS

Phase B Area: 8289 m²

Extended Detention Required = 294m³

Orifice Diameter For Extended Detention = 110mm

Maximum Water Level Of Extended Detention = RL12.450

Average Water Depth: 0.75m

Area Of Tank: 407m²

Extended Detention Volume Provided = 350.25m³

Overall Detention Required = 378m³

Orifice Diameter For Detention = 200mm

Maximum Water Level Of Detention = RL12.700

Average Water Depth: 1.0m

Area Of Tank: 407m²

Detention Volume Provided = 407m³

STAGE C OSD TANK CALCULATIONS

Phase C Area: 10348 m²

Extended Detention Required = 311m³

Orifice Diameter For Extended Detention = 140mm

Maximum Water Level Of Extended Detention = RL12.300

Average Water Depth: 0.70m

Area Of Tank: 475m²

Extended Detention Volume Provided = 332.5m³

Overall Detention Required = 471m³

Orifice Diameter For Detention = 210mm

Maximum Water Level Of Detention = RL12.700

Average Water Depth: 1.05m

Area Of Tank: 475m²

Detention Volume Provided = 498m³

7. Water-Sensitive Urban Design Requirements

7.1 Council Water Urban Design Requirements

The main objectives for stormwater quality are indicated in Section 2.5 of Cumberland DCP Part G – Miscellaneous Development Controls. The technical requirements are presented below:

- Achieve a minimum of 90% retention of the Gross Pollutants (GP) average annual load.
- Achieve a minimum of 85% retention of the Suspended Solids (SS) average annual load.
- Achieve a minimum of 60% retention of the Total Phosphorus (TP) average annual load.
- Achieve a minimum of 60% retention of the Total Nitrogen (TN) average annual load.

Methods to achieve the above treatment targets can include proprietary products, rainwater reuse, rain gardens, detention basins or downstream treatment within the external stormwater network.

7.2 Proposed Development

The proposed development catchment plan is shown below in Figure 10:

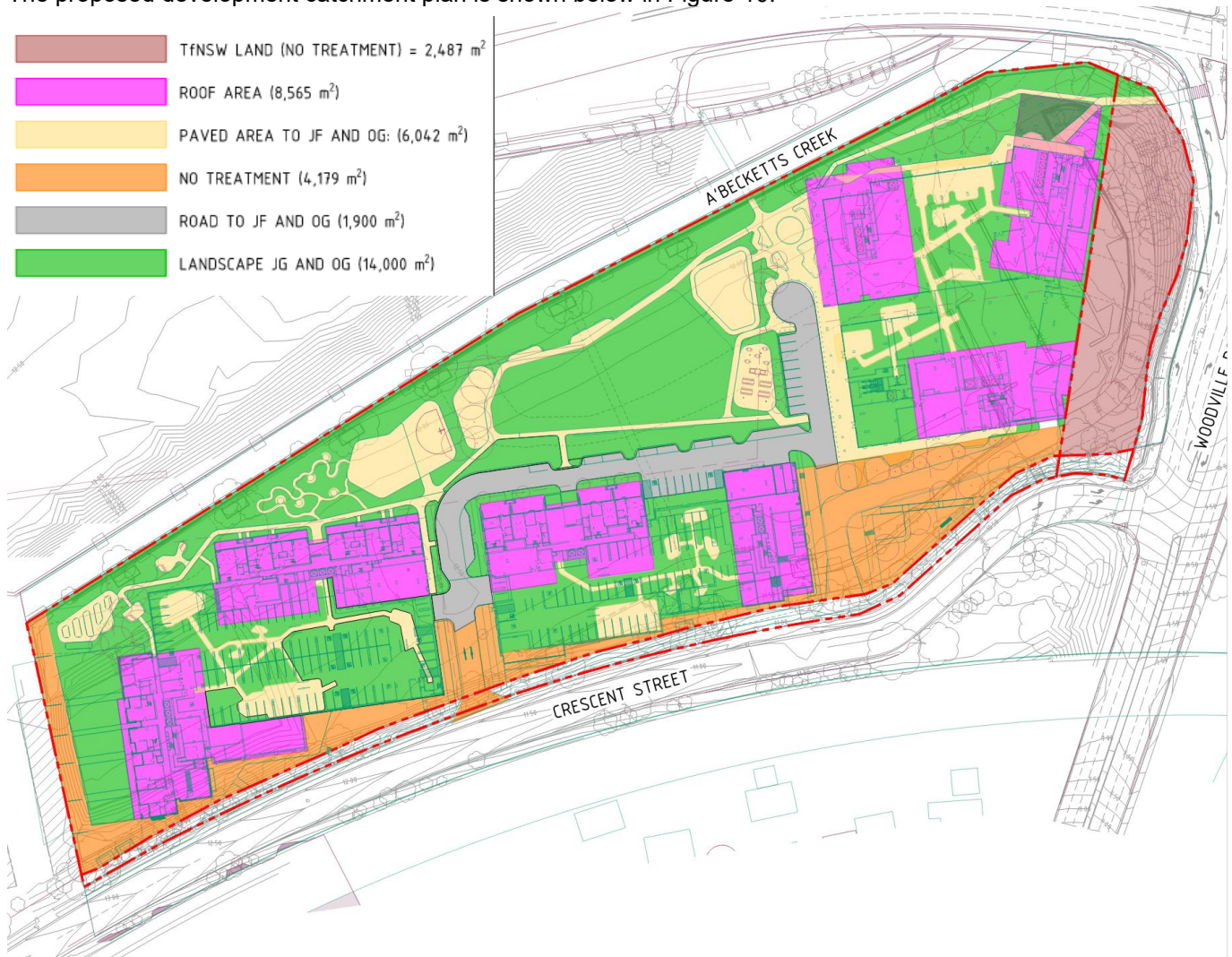


Figure 9: Catchment Plan

7.3 Water Quality Proposal

The quality of water discharging from the Site will be managed using multiple OceanProtect products, specifically the OceanGuards and Ocean Filters.

The water quality modelling software MUSIC v6.3 was used to analyse the treatment train's performance. Figure 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 proposed stormwater treatment measure and ensure that stormwater quality meets the objectives before stormwater runoff leaves the Site.

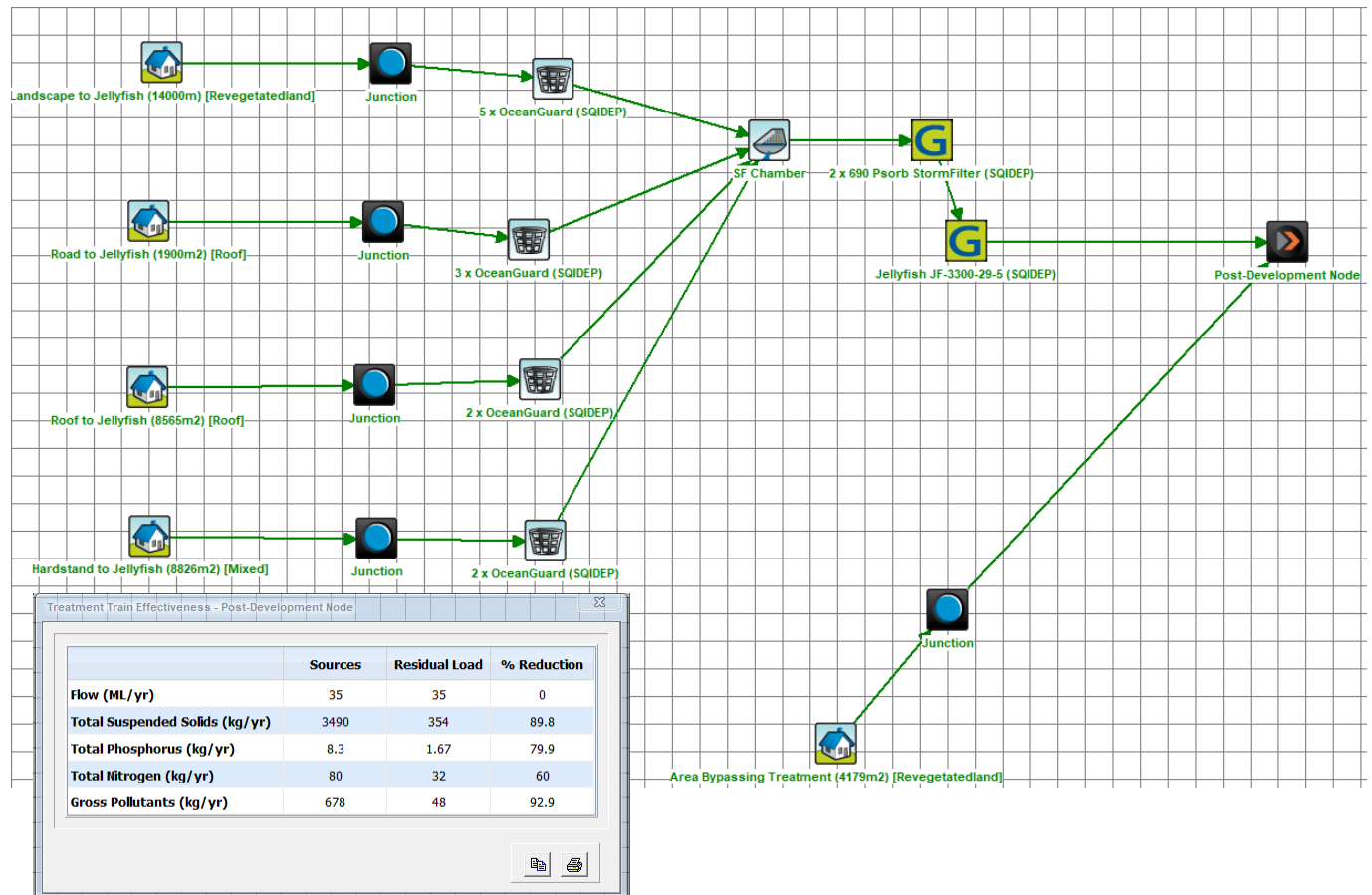


Figure 10: MUSIC Model and Results

The analysis showed that the treatment train would achieve the water quality targets in the Councils. DCP. Table 2 below displays the effectiveness of the treatment train for the primary and secondary treatment. To meet the requirements set out by the Council, the following treatment devices were implemented: 12x OceanGuard from Ocean Protect, 1 JF3300-29-5 and a separate WSUD chamber with 2x690Psorb filters. The number of products used will vary based on final area calculations and layout. This will need to be re-evaluated during detailed design. The jellyfish will be located at the end of the stormwater network before discharging to the creek. Refer to the snippet below and the stormwater plan for the exact location. Each OSD tank will be installed with a separate WSUD chamber to include the storm filters to ensure all the relevant area passes through the filters and through to the jellyfish.

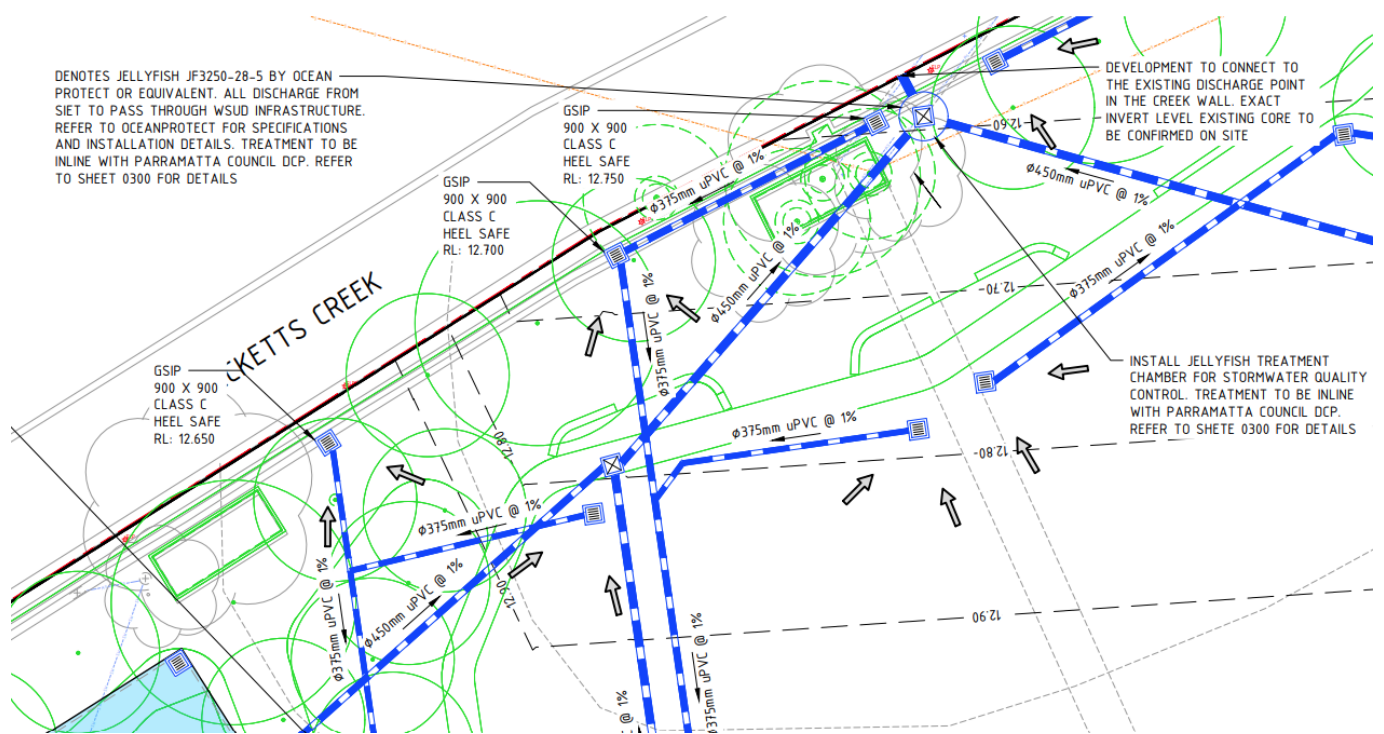


Figure 11: Location of Jellyfish Filter

The water quality model created using MUSIC software indicates the pollutant removal rates expected when a treatment train of water quality measures is applied to the proposed development layout. Refer to Appendix D for standard details for the Jellyfish filter and OceanGuard (OG)

Table 2: Tabulated MUSIC Targets and Results

Pollutant	Before Treatment (Kg/yr.)	Post Treatment (Kg/yr.)	Water Quality Objective (%)	Percentage Reduction Achieved (%)
Gross Pollutants (GP)	678	48	90	92.9
Total Suspended Solids (TSS)	3490	354	85	89.8
Total Phosphorus (TP)	8.3	1.67	60	79.9
Total Nitrogen (TN)	80	32	60	60

8. Conclusion

Tiberius has engaged BG&E Pty Ltd (BG&E) to prepare a Stormwater Report for the proposed development of 1 Crescent Street, Holroyd (Site). Previously, the Site was used as a WestTrac NSW Operational Headquarters. The proposed development includes seven (7) mixed-use towers and significant public parkland.

This report has outlined the methodology adopted and the associated results:

- Requirement of a detention tank.
- Water-sensitive urban design; and

The key difference between the previous design and the modified design is:

- The rationalisation of the stage areas and the OSD tanks
- Clarity around the water quality elements and details provided
- OSD tank details, section and orifice information inline with

Overall, the site has been designed to achieve all discharge and water quality targets independently and does not rely on any existing discharge or WSUD infrastructure. These items have been rationalised and redocumented for clarity with the council. As outlined in this report, the following essential items have been identified.

- The Site will drain to the adjacent creek through existing discharge locations
- The Site is not flood-affected.
- Detention tanks have been proposed for each stage, which have been designed to meet UPRCT Site Storage Requirements
- Each tank has been installed with two orifices to limit the total flow from the Site at the 20% event and in the 1% AEP event. Each tank to discharge to the creek adjacent to the development
- Water-sensitive urban Design is needed as part of the site's development. This has been achieved using proprietary products. The site requires 12 OceanGuard units from Ocean Protect, 1 JF3300-29-5, and a separate chamber containing 2 x 690Psorb filters by Ocean Protect. These will need to be finalised and rationalised during detailed design based on final area calculations.

Appendices

Appendix A -Site Survey

UNDERGROUND SERVICES NOTES

NOTES:

- THE PURPOSE OF THIS PLAN IS FOR DESIGN ONLY. CURRENT PLANS ISSUED BY SERVICE PROVIDERS THOUGHT "DIAL BEFORE YOU DIG" ARE STILL REQUIRED. CONTRACTORS AND SUBCONTRACTORS WILL NEED TO EXERCISE THEIR OWN "DUTY OF CARE" AND SHOULD MAKE THEIR OWN DBYD ENQUIRY BEFORE EXCAVATION/CONSTRUCTION. YOU MUST ENSURE DBYD ARE CURRENT AS THEY HAVE VARYING EXPIRATION DATES, AND MAY REQUIRE REISSUE OTHERWISE THE INFORMATION ON THE PLAN MAY NO LONGER BE CURRENT.

- UNKNOWN SERVICES MAY EXIST THAT COULD NOT BE ELECTRONICALLY DETECTED. THE DIAGRAMS OF THE SERVICE PROVIDER MAY NOT DEPICT ALL ASSETS WITHIN THEIR NETWORK AND SERVICE PROVIDERS MAY SHARE CONDUITS AND/OR TRENCHES AT THE LOCATION.

- SINGLE MARKED LINES MAY REPRESENT MULTIPLE CONDUITS, PIPES END/OR CABLES AT THIS LOCATION. THE RECORDING OF DEPTHS AND POSITION OF UTILITIES CANNOT BE GUARANTEED AS CORRECT. WE RECOMMEND NON DESTRUCTIVE DIGGING/POTHOLING TO EXPOSE SERVICES FOR ACCURATE IDENTIFICATION AND DEPTH.

DETECTION PROCEDURES:

SURESEARCH HAVE DETECTED AND MARKED OUT EXISTING SERVICES IN THE AREA SPECIFIED BY THE CLIENT. THESE SERVICE LINES HAVE BEEN LOCATED BY ABOVE GROUND SERVICE TRACING METHODS AND HAVE NOT BEEN SIGHTED.

PROJECT SURVEYORS HAVE THEN LOCATED THE LINE MARKED BY SURESEARCH. THE LOCATION OF THESE MARKED SERVICES ARE APPROXIMATE ONLY. THE POSITION OF THE MARKED SERVICE LINES HAS BEEN MADE WITH REFERENCE TO THE RELEVANT SERVICE AUTHORITY DIAGRAMS. ALL SERVICES MAY NOT HAVE BEEN SHOWN AND UTILITY DESCRIPTION HAVE BEEN TAKEN FROM UTILITY PROVIDED DIAGRAMS WHERE AVAILABLE. WE RECOMMEND NON DESTRUCTIVE DIGGING/POTHOLING TO EXPOSE MARKED SERVICES TO IDENTIFY AND SHOW EXACT DEPTH AND LOCATION OF SERVICE LINES PRIOR TO EARTHWORKS COMMENCING. UTILITES PLOTTED ON THE PLAN THAT TERMINATE IN THE SPECIFIED AREA MAY GO TO FEATURES THAT HAVE NOT BEEN SHOWN ON THE BACKGROUND DETAIL SURVEY PROVIDED BY CLIENT. THE RISKS WITH THE CLIENT AND/OR SUB CONTRACTOR AND THEIR RESPONSIBILITY TO EXERCISE CAUTION AT ALL TIMES.

LOCATING QUALITY LEVELS PURSUANT TO AS5488-2013

QL-A QUALITY LEVEL A. VISUALISATION / CONFIRMATION OF A SERVICE, POSITION AND DEPTH, BY NON DESTRUCTIVE DIGGING METHODS OR POINTS OF ENTRY TO PITS OR MANHOLES.

QL-B QUALITY LEVEL B. LOCATING OF SERVICES USING RADIO DETECTION METHODS OR GROUND PENETRATION RADAR. ACCEPTABLE RANGE OF ACCURACY FOR QUALITY B IS 300mm FOR POSITION AND 500mm IN DEPTH.

QL-C QUALITY LEVEL C. SERVICES MARKED OUT USING ONLY SURFACE FEATURES THAT HAVE BEEN MEASURED IN THE FIELD. THIS INCLUDES HYDRANTS, GAS MARKERS, PITS LIDS ETC. NO INDICATION OF SERVICE LOCATION OR DEPTH CAN BE OBTAINED FROM QUALITY LEVEL C.

QL-D QUALITY LEVEL D. SERVICES MARKED UP USING DBYD PLANS ONLY. NO INDICATION OF SERVICE CONFIRMATION CAN BE GIVEN.

- DENOTES SUBSURFACE UNKNOWN LINE QUALITY LEVEL B.
- DENOTES SUBSURFACE SEWER LINE QUALITY LEVEL B.
- DENOTES SUBSURFACE STORMWATER LINE QUALITY LEVEL B.
- DENOTES SUBSURFACE WATER LINE QUALITY LEVEL B.
- DENOTES UNDERGROUND ELECTRICITY QUALITY LEVEL B.
- DENOTES UNDERGROUND TELECOMMUNICATIONS QUALITY LEVEL B.
- DENOTES SUBSURFACE GAS LINE QUALITY LEVEL B.
- DENOTES UNDERGROUND TELECOMMUNICATIONS QUALITY LEVEL D.
- DENOTES SUBSURFACE STORMWATER LINE QUALITY LEVEL D.
- DENOTES SUBSURFACE GAS LINE QUALITY LEVEL D.
- DENOTES UNDERGROUND ELECTRICITY LINE QUALITY LEVEL D.
- DENOTES SUBSURFACE UNKNOWN SERVICE LINE QUALITY LEVEL D.
- DENOTES UNDERGROUND TELECOMMUNICATIONS QUALITY LEVEL B.
- DENOTES UNDERGROUND WATER QUALITY LEVEL D.

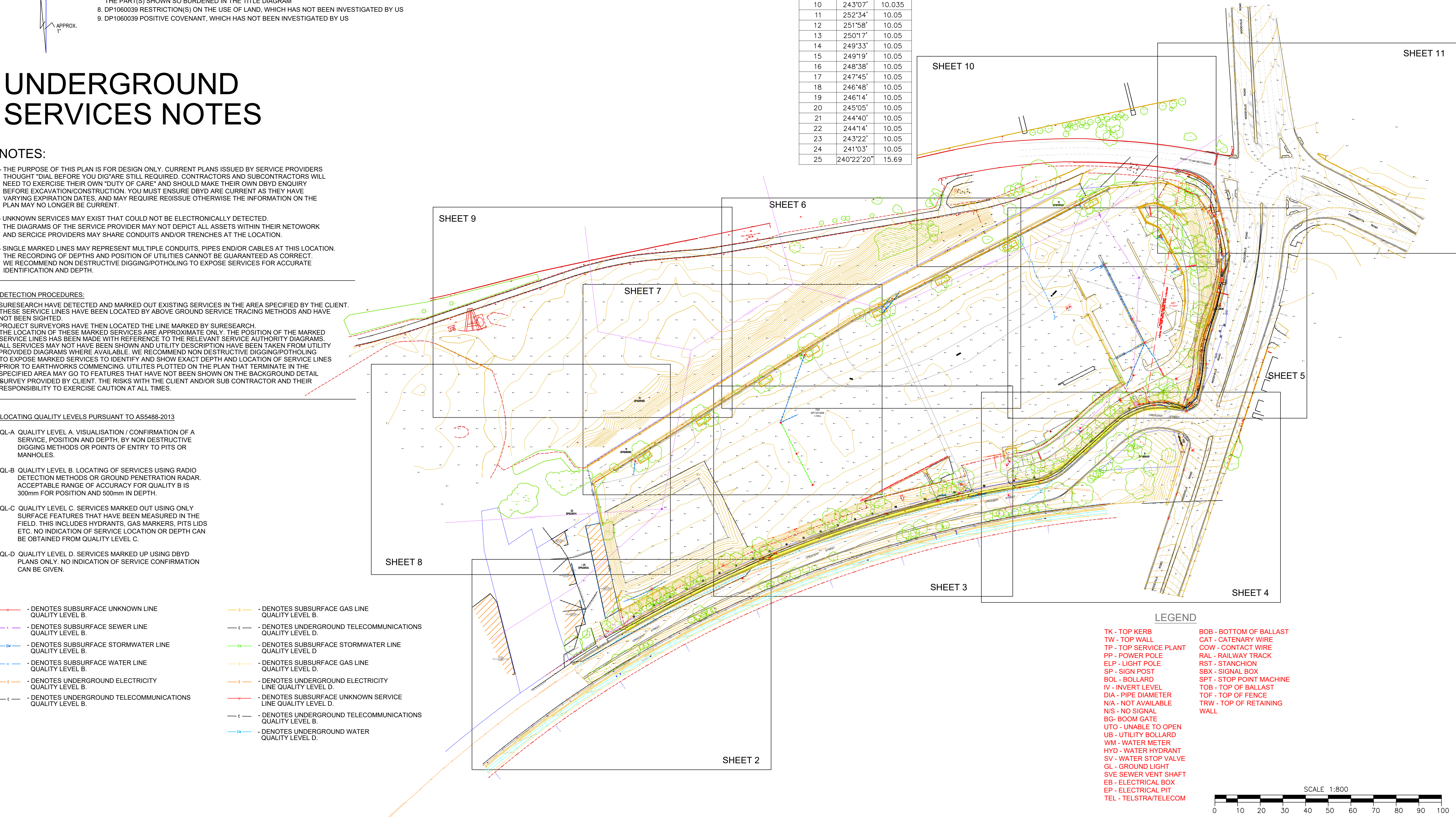
- (A) RESTRICTION ON THE USE OF LAN (Y545143)
- (B) RESTRICTION ON THE USE OF LAN (Y545142)
- (C) RESTRICTION ON THE USE OF LAN (Y545183)
- (D) RESERVATIONS AND CONDITIONS IN THE CROWN GRANT
- (E) EASEMENT FOR DRAINAGE OF WATER 3 WIDE (DP1060030)
- (F) LAND EXCLUDES MINERALS (T447400)
- (G) EASEMENT TO DRAIN WATER 2.6 WIDE AND VARIABLE WIDTH (DP1060039)

SCHEDULE OF SHORT BOUNDARIES

Number	Bearing	Distance
1	347°44'40"	1.825
2	288°10'30"	1.83
3	192°24'40"	6.655
4	97°27'	1.19
5	231°52'	5.485
6	288°07'	3.5
7	288°07'	5.1
8	273°07'	10.035
9	258°07'	10.03
10	243°07'	10.035
11	252°34'	10.05
12	251°58'	10.05
13	250°17'	10.05
14	249°33'	10.05
15	249°19'	10.05
16	248°38'	10.05
17	247°45'	10.05
18	246°48'	10.05
19	246°14'	10.05
20	245°05'	10.05
21	244°40'	10.05
22	244°14'	10.05
23	243°22'	10.05
24	241°03'	10.05
25	240°22'20"	15.69

SCHEDULE OF CURVED BOUNDARIES

Number	Chord Bearing	Chord Distance	Arc Length	Radius
101	261°37'30"	5.975	5.975	618.75
102	260°34'30"	16.69	16.69	618.75
103	259°01'50"	16.69	16.69	618.75
104	77°28'30"	16.69	16.69	618.75
105	75°56'20"	16.69	16.69	618.75
106	74°23'40"	16.69	16.69	618.74



A1

NOTES :

- * BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
- * BEARINGS RELATE TO MGA NORTH SCIMS.
- * LEVEL DATUM IS AHD ORIGINATING FROM PM 15822 RL 10.518 LOCATED AT CHURCH STREET.
- * VISIBLE, ACCESSIBLE SERVICES ONLY HAVE BEEN LOCATED. THIS PLAN DOES NOT PURPORT TO SHOW UNDERGROUND SERVICES.
- * THE EXISTENCE OF UNDERGROUND SERVICES HAS NOT BEEN ESTABLISHED.
- * EXISTENCE OF SERVICES MUST BE VERIFIED BY CONTACTING DIAL BEFORE YOU DIG (DBYD) 1100.COM.AU
- * CRITICAL SERVICES MUST BE EXPOSED AND LOCATED
- * NEIGHBOURING HOUSES, WINDOWS AND ROOF POSITIONS ARE APPROXIMATE ONLY.
- * FLOOR LEVELS GENERALLY SURVEYED AT DOOR THRESHOLDS. INTERNAL ROOMS NOT SURVEYED.
- * CONTOURS SHOWN ARE INDICATIVE OF LAND FORM. SPOT LEVELS SHOULD TAKE PRECEDENCE.
- * REFER TO FACE OF PLAN FOR SUBJECT TITLE NOTATIONS.
- * THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DRAWING AND SHOULD NOT BE REMOVED.

REFERENCE SYSTEM: GDA 2020



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REV	AMENDMENTS	DATE
H	ADDITIONAL SURVEY FOR BRIDGE	22/07/2025
F	RAIL SURVEY & HV CABLE ADDED	16/09/2024
E	ZONING BOUNDARIES ADDED	14/03/2023
D	UPDATED DTM SURFACE	10/03/2023
C	PROPOSED ROAD BOUNDARY ADDED	8/02/2023
B	UPDATED DETAIL PLAN	8/12/2022

CLIENT: TIBERIUS (HOLROYD) P/L

PLAN OF: 1 CRESECENT STREET
HOLROYD

BEING: LOT 700 IN DP1241836
SHOWING: GENERAL DETAIL AND
SITE LEVELS

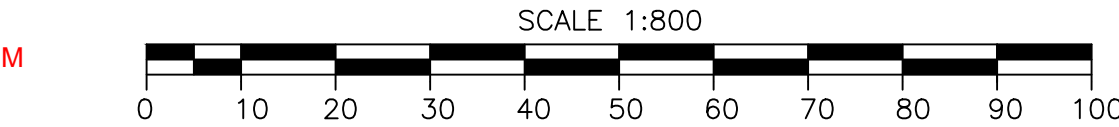
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COUNCIL SUBMISSION

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NATHAN MILLIGAN
REGISTERED LAND SURVEYOR
NOVEMBER 2022
A.H.D.
PM 15822 RL 10.518

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ORIGIN:



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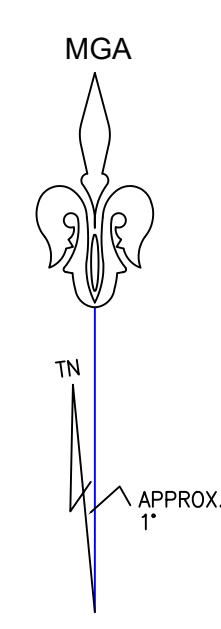
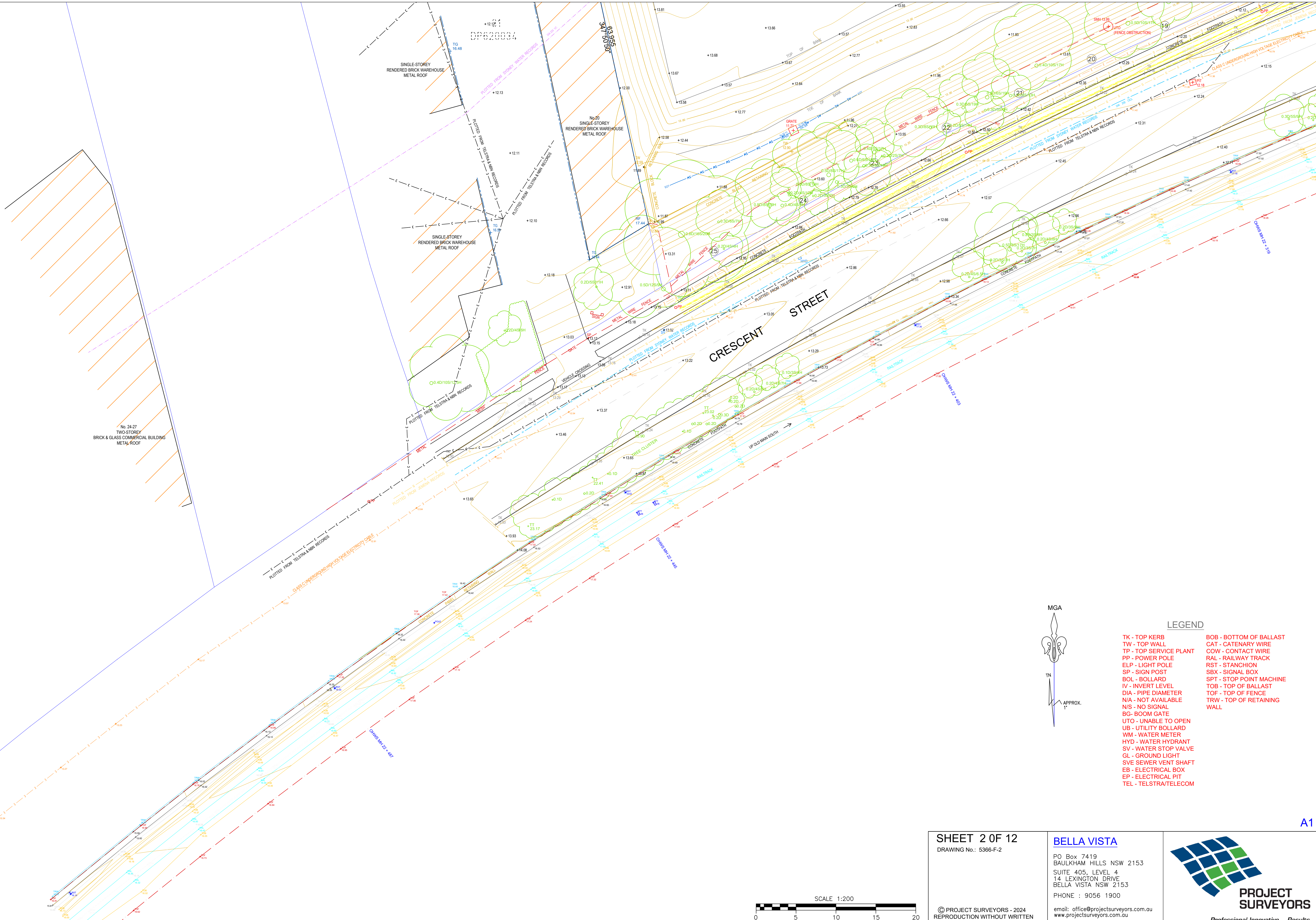
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- CAT - CATENARY WIRE
- COW - CONTACT WIRE
- RAL - RAILWAY TRACK
- RST - STANCHION
- SBX - SIGNAL BOX
- SPT - STOP POINT MACHINE
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- TRW - TOP OF RETAINING WALL

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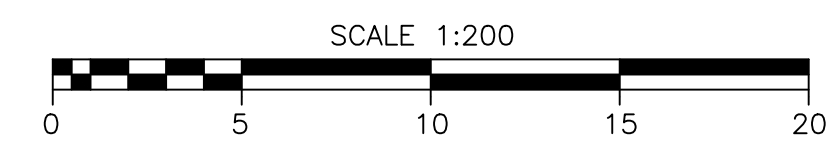
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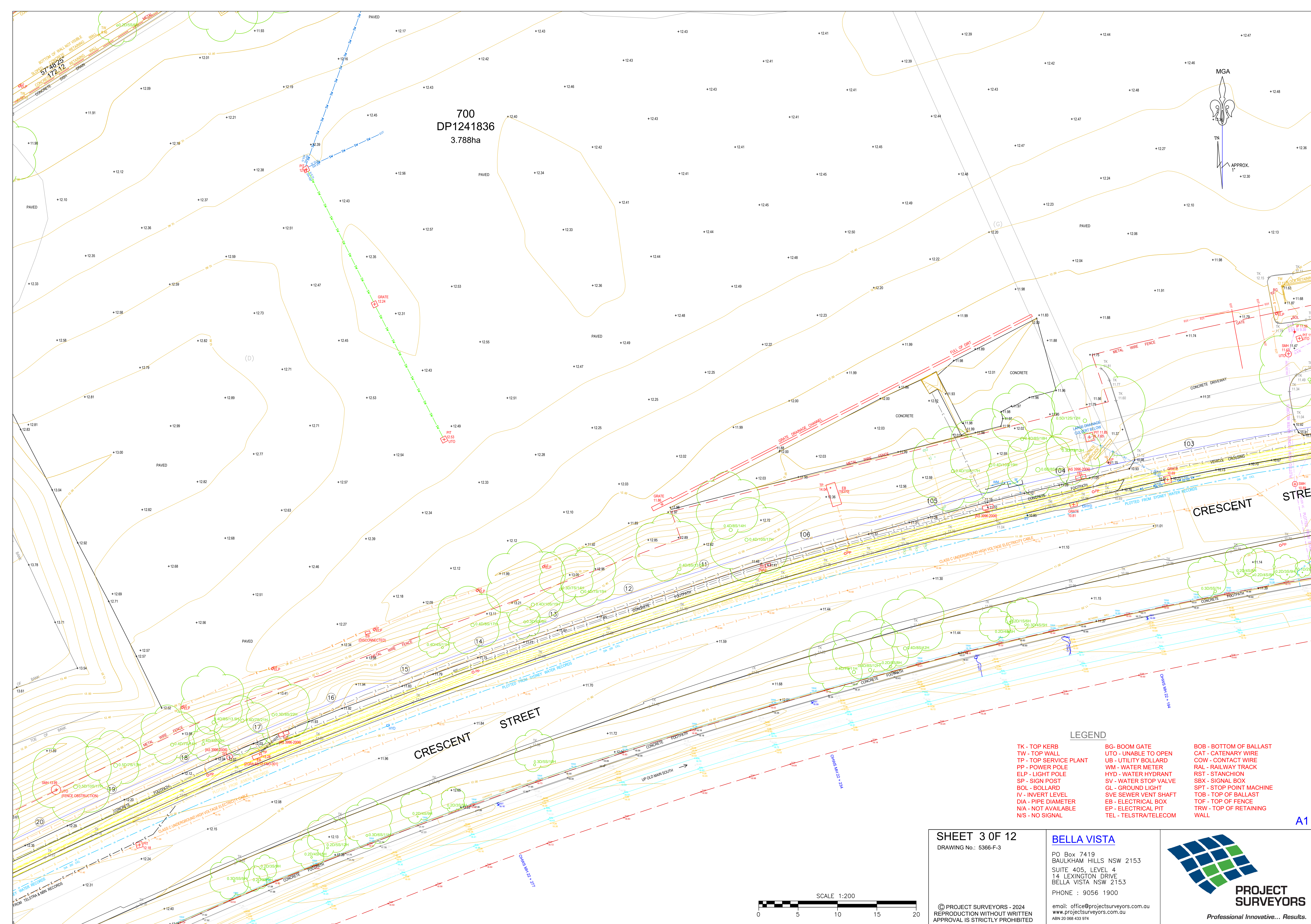
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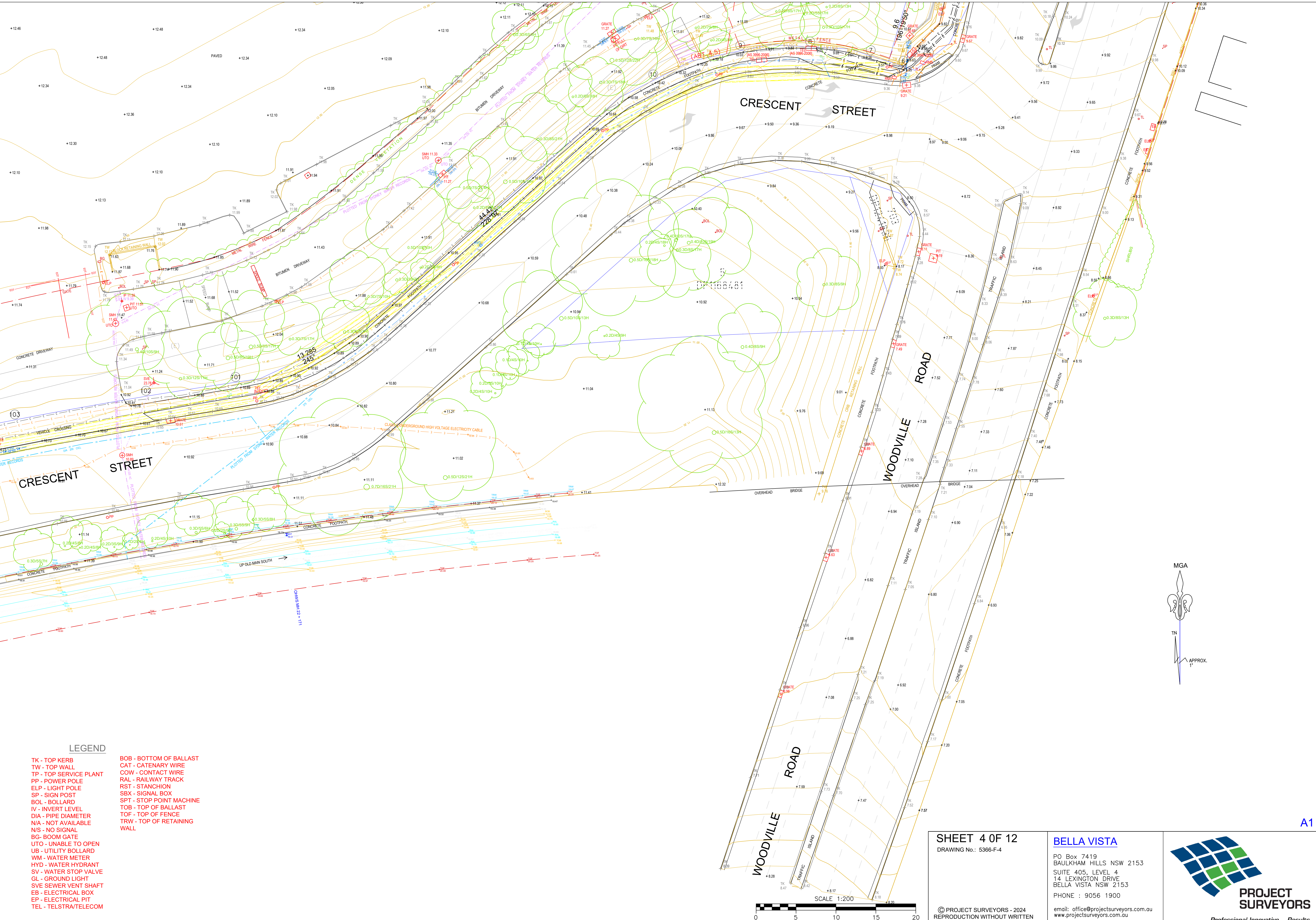
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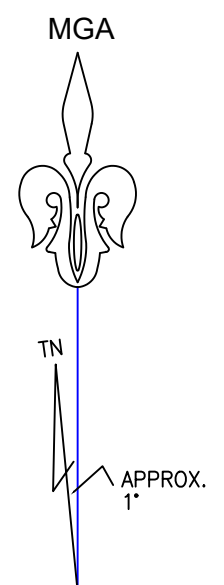
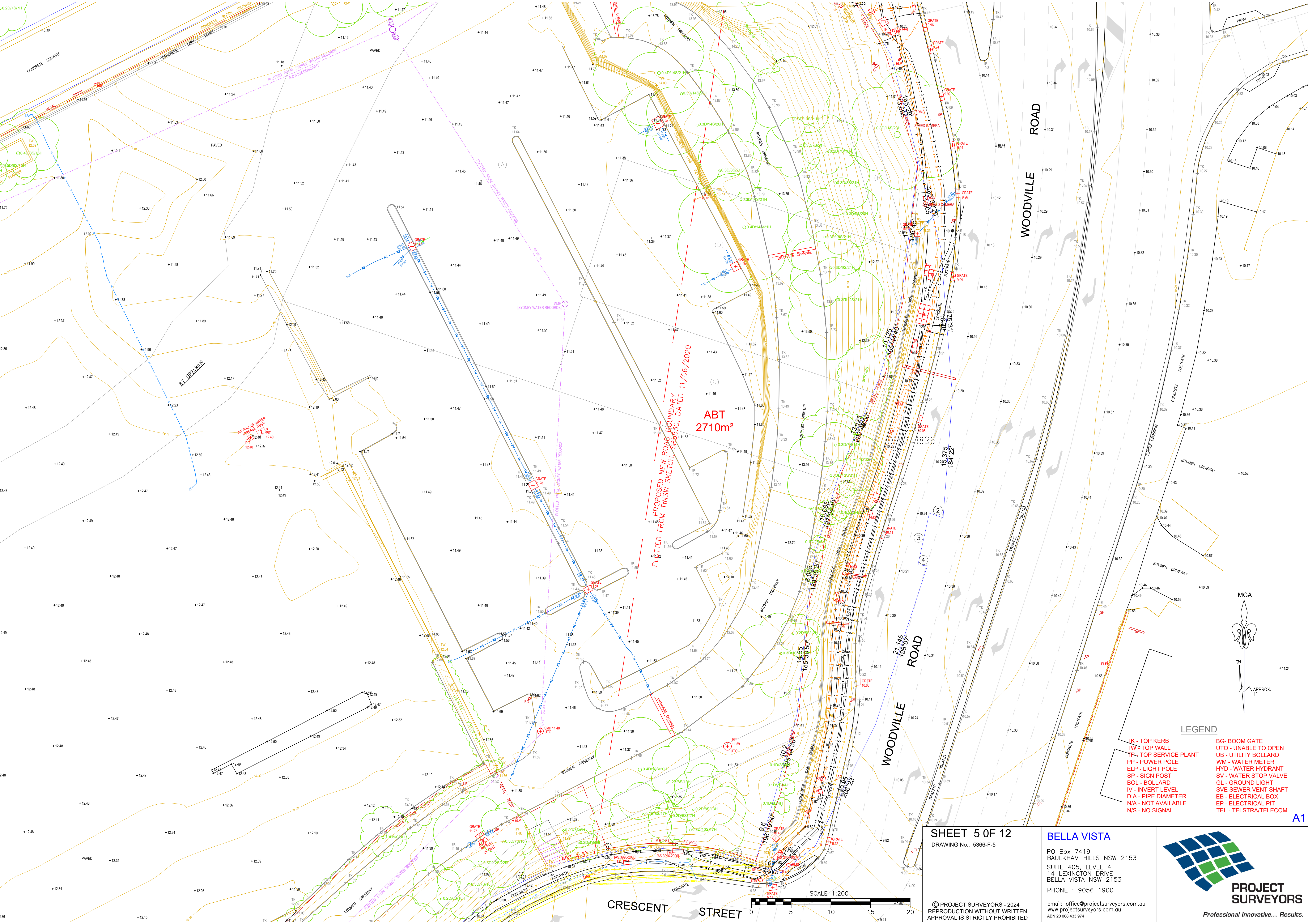
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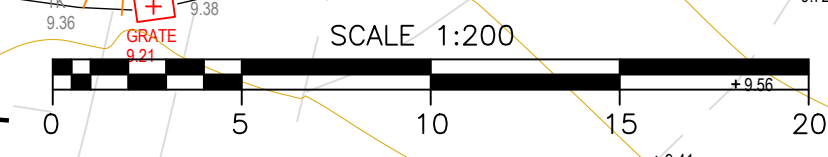
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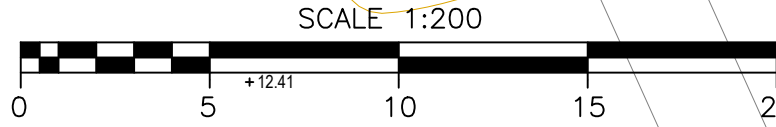
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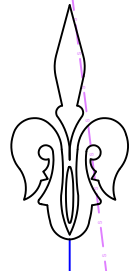
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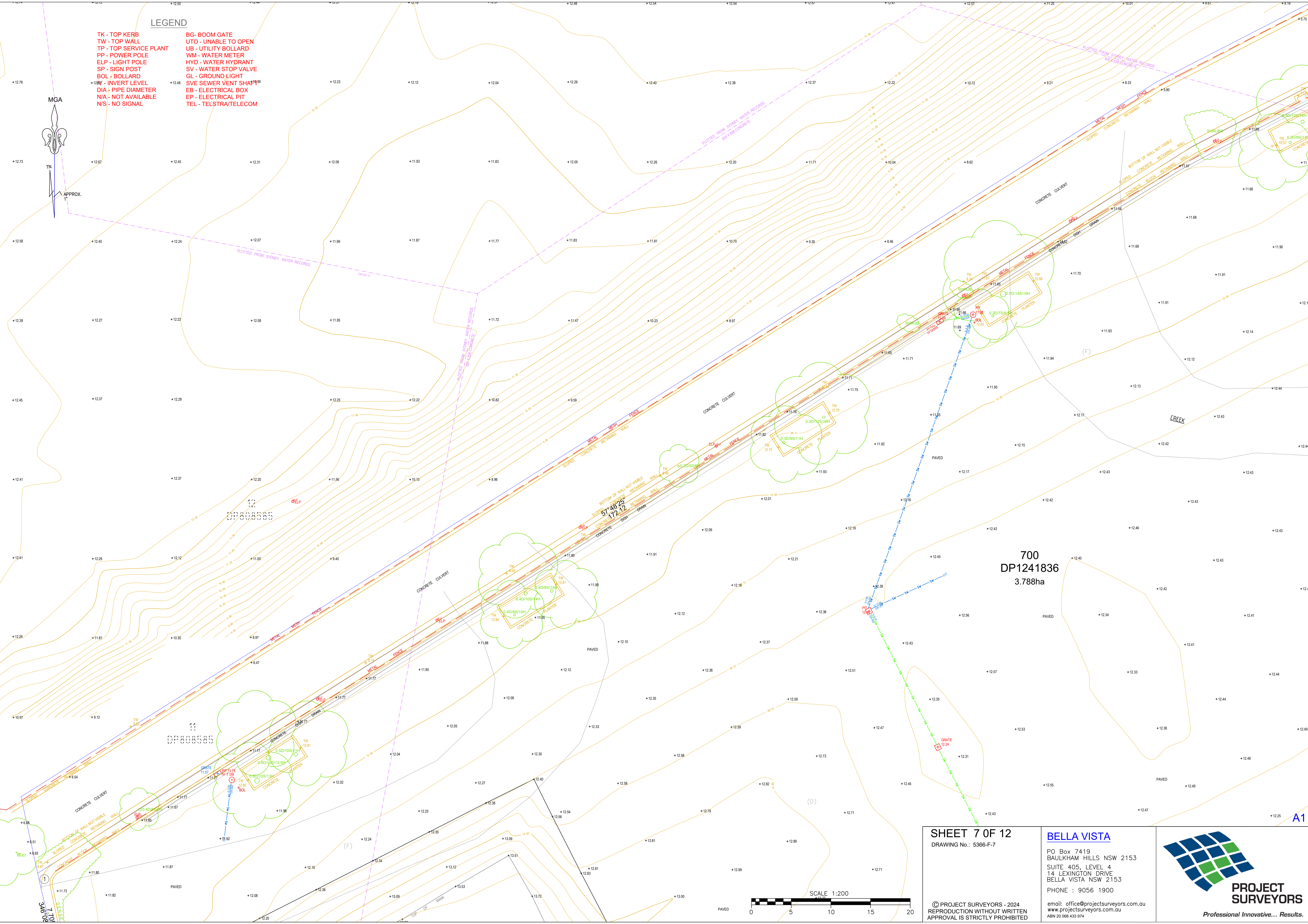
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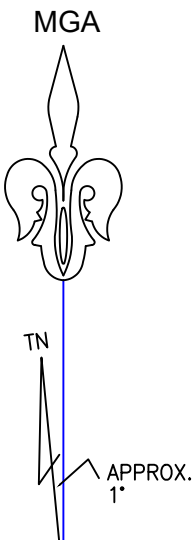


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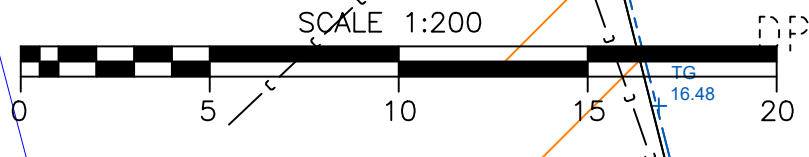
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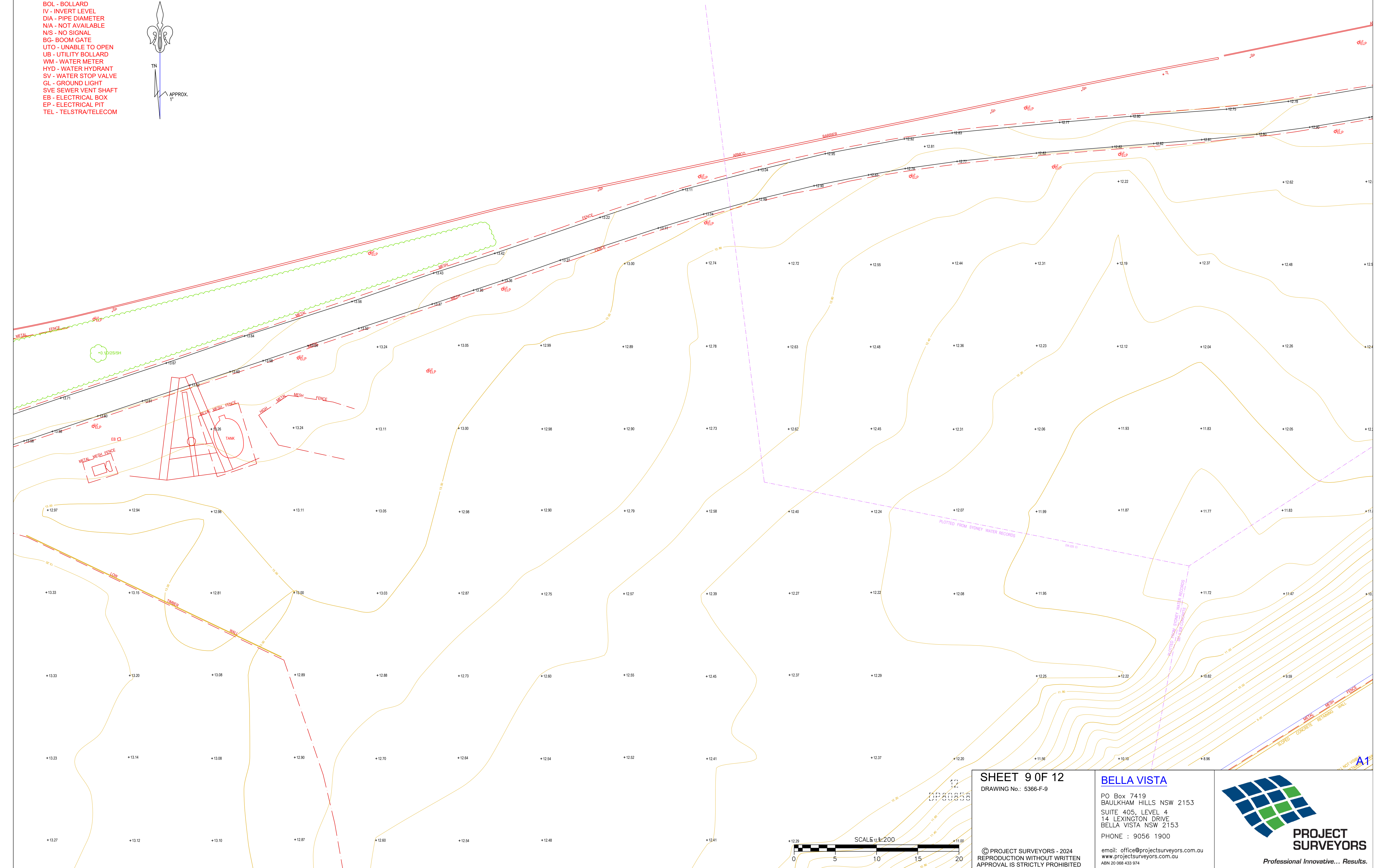
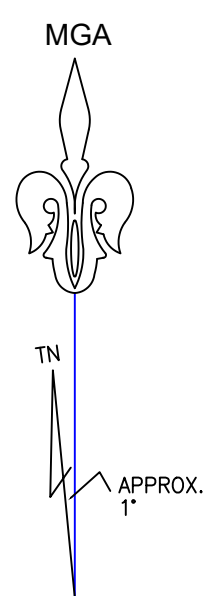
PO Box 7419
BAULKHAM HILLS NSW 2153
SUITE 405, LEVEL 4
14 LEXINGTON DRIVE
BELLA VISTA NSW 2153
PHONE : 9056 1900
email: office@projectsurveyors.com.au
www.projectsurveyors.com.au
ABN 20 068 433 974



**PROJECT
SURVEYORS**

Professional Innovative... Results.

TK - TOP KERB
TW - TOP WALL
TP - TOP SERVICE PLANT
PP - POWER POLE
ELP - LIGHT POLE
SP - SIGN POST
BOL - BOLLARD
IV - INVERT LEVEL
DIA - PIPE DIAMETER
N/A - NOT AVAILABLE
N/S - NO SIGNAL
BG - BOOM GATE
UTO - UNABLE TO OPEN
UB - UTILITY BOLLARD
WM - WATER METER
HYD - WATER HYDRANT
SV - WATER STOP VALVE
GL - GROUND LIGHT
SVE SEWER VENT SHAFT
EB - ELECTRICAL BOX
EP - ELECTRICAL PIT
TEL - TELSTRATELECOM



SHEET 9 OF 12
DRAWING No.: 5366-F-9

BELLA VISTA

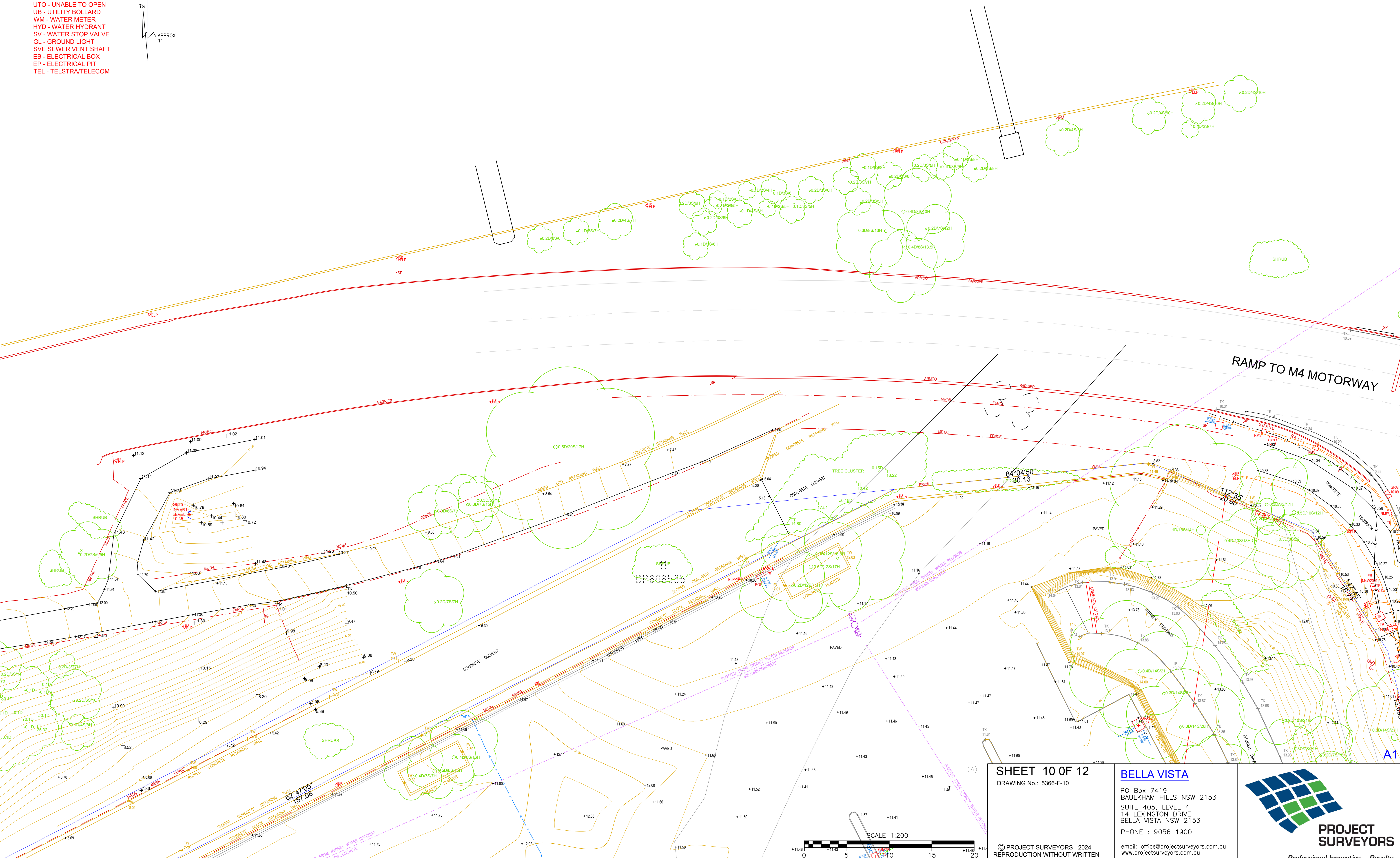
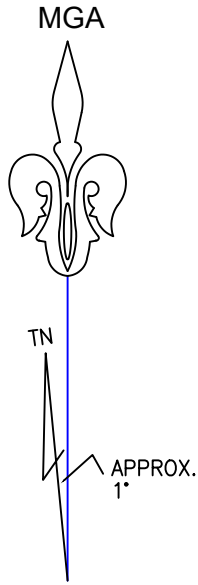
PO Box 7419
BAULKHAM HILLS NSW 2153
SUITE 405, LEVEL 4
14 LEXINGTON DRIVE
BELLA VISTA NSW 2153
PHONE : 9056 1900

email: office@projectsurveyors.com.au
www.projectsurveyors.com.au
 ABN 20 068 433 974



LEGEND

TK - TOP KERB
TW - TOP WALL
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PP - POWER POLE
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GL - GROUND LIGHT
SVE SEWER VENT SHAFT
EB - ELECTRICAL BOX
EP - ELECTRICAL PIT
TEL - TELSTRA/TELECOM



SHEET 10 OF 12
DRAWING No.: 5366-F-10

BELLA VISTA

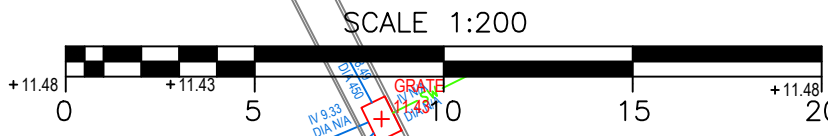
PO Box 7419
BAULKHAM HILLS NSW 2153
SUITE 405, LEVEL 4
14 LEXINGTON DRIVE
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email: office@projectsurveyors.com.au
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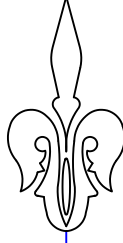


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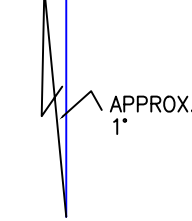
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TW - TOP WALL
TP - TOP SERVICE PLANT
PP - POWER POLE
ELP - LIGHT POLE
SP - SIGN POST
BOL - BOLLARD
IV - INVERT LEVEL
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SV - WATER STOP VALVE
GL - GROUND LIGHT
SVE SEWER VENT SHAFT
EB - ELECTRICAL BOX
EP - ELECTRICAL PIT
TEL - TELSTRA/TELECOM

MGA



TN



WOODVILLE ROAD

VILLE ROAD

PARRAMATTA ROAD

SHEET 11 OF 12
DRAWING No.: 5366-F-11

BELLA VISTA

PO Box 7419
BAULKHAM HILLS NSW 2153
SUITE 405, LEVEL 4
14 LEXINGTON DRIVE
BELLA VISTA NSW 2153
PHONE : 9056 1900

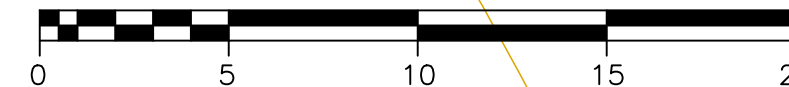
email: office@projectsurveyors.com.au
www.projectsurveyors.com.au
ABN 20 068 433 974



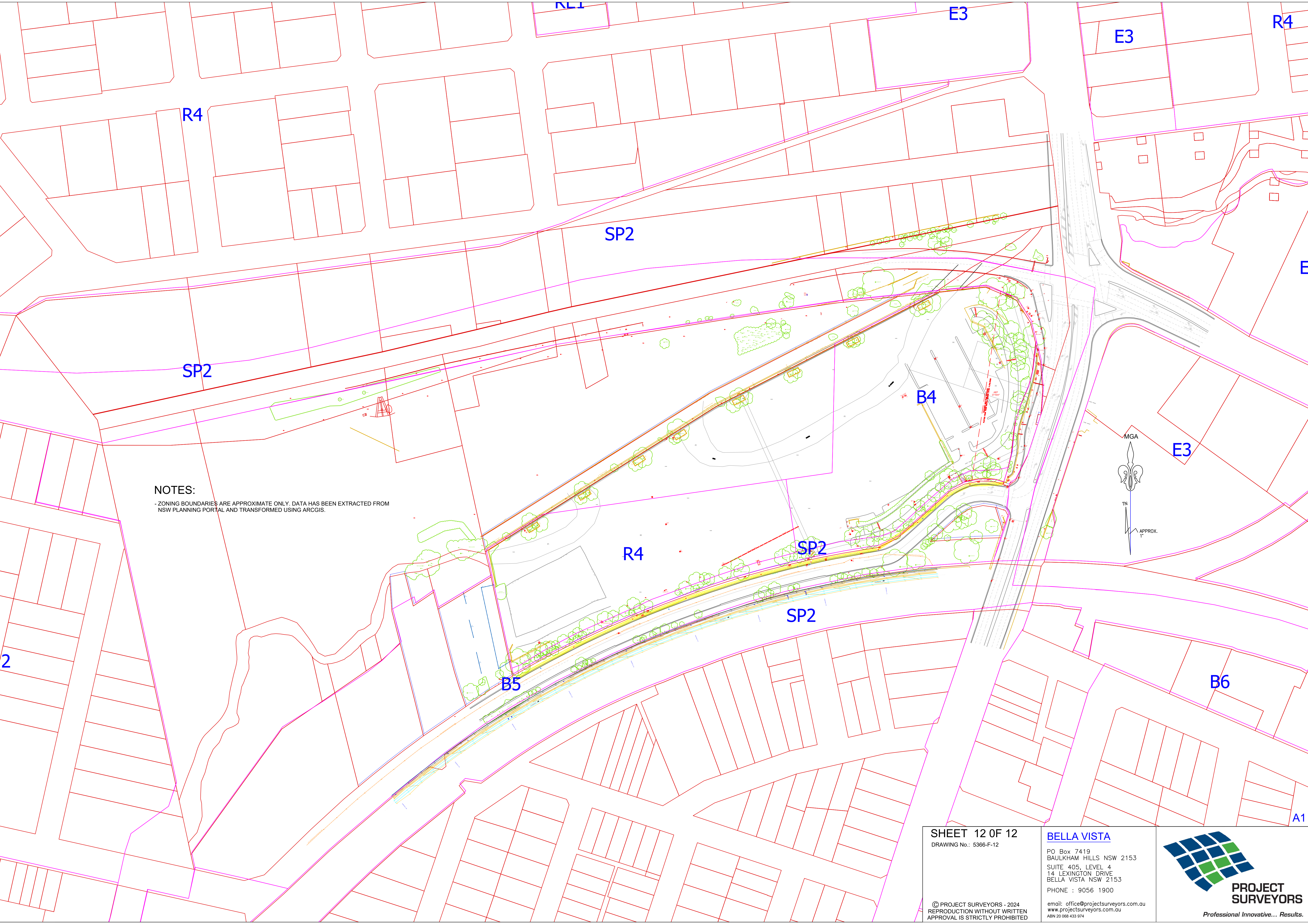
**PROJECT
SURVEYORS**

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SCALE 1:200



A1



NOTES:
- ZONING BOUNDARIES ARE APPROXIMATE ONLY. DATA HAS BEEN EXTRACTED FROM
NSW PLANNING PORTAL AND TRANSFORMED USING ARCGIS.

SHEET 12 OF 12 DRAWING No.: 5366-F-12	BELLA VISTA PO Box 7419 BAULKHAM HILLS NSW 2153 SUITE 405, LEVEL 4 14 LEXINGTON DRIVE BELLA VISTA NSW 2153 PHONE : 9056 1900 email: office@projectsurveyors.com.au www.projectsurveyors.com.au ABN 20 068 433 974	 PROJECT SURVEYORS Professional Innovative... Results.
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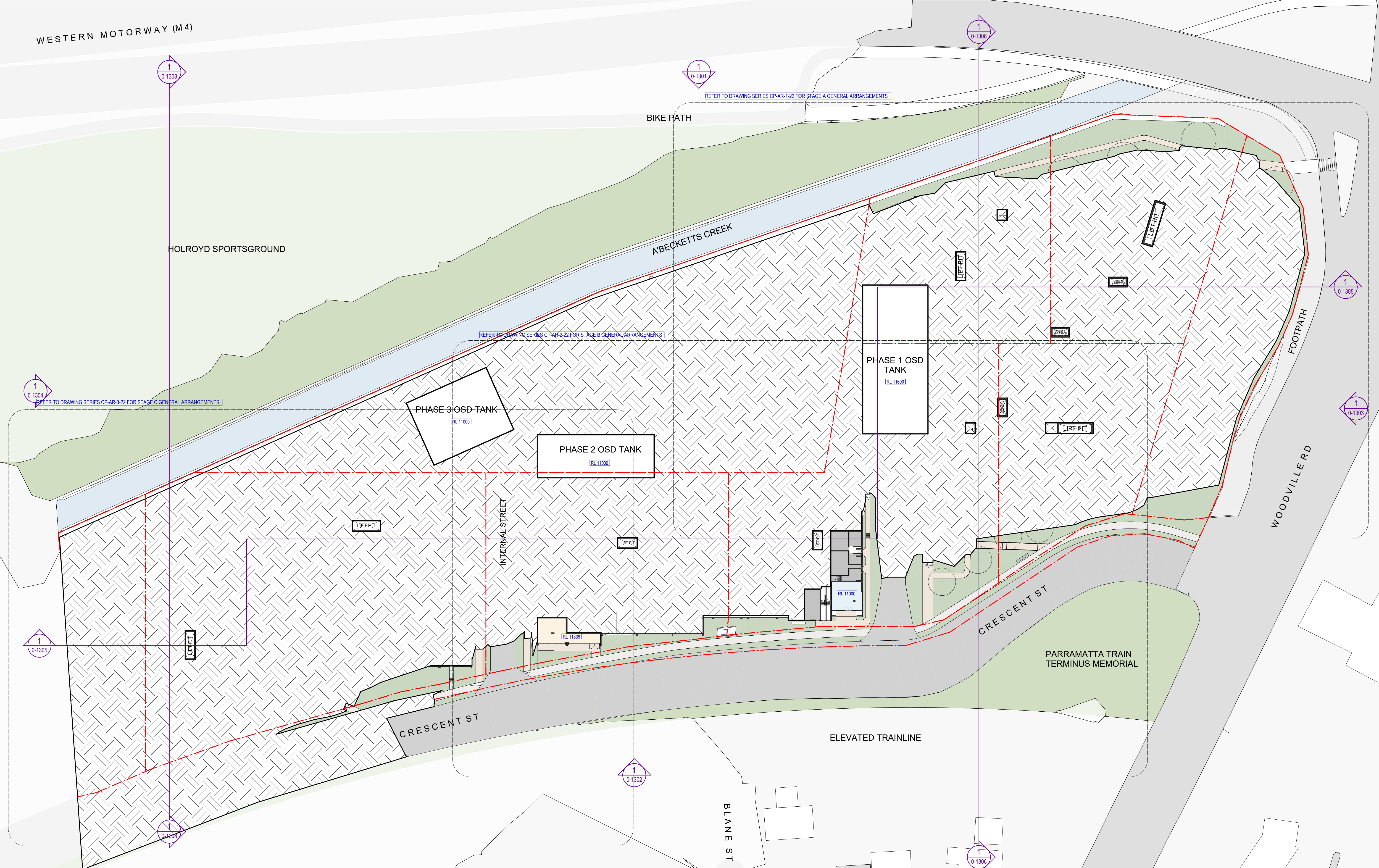
Appendix B - Architectural Plan

At BG&E, we are united by a common purpose – we believe that truly great engineering takes curiosity, bravery and trust, and is the key to creating extraordinary built environments.

Our teams in Australia, New Zealand, South East Asia, the United Kingdom and the Middle East, design and deliver engineering solutions for clients in the Property, Transport, Ports and Marine, Water, Defence, Renewables and Resources sectors.

We collaborate with leading contractors, developers, architects, planners, financiers and government agencies, to create projects for today and future generations.

ABN 67 150 804 603



Recent revision history			Notes
#	Status	Description	
A		SSDA Submission	
B		SSDA Submission Update	
C		SSDA RTS Submission	
D		SSDA RTS Submission	
E		SSDA RTS Submission	
			Copyright © Woods Bagot 2018 All Rights Reserved No material may be reproduced without prior permission Contractor must verify all dimensions on site before commencing work or preparing shop drawings. Do not scale drawings.

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Project
Crescent Parklands

Client
Tiberius (Holroyd) Pty Ltd (as trustee
for the Holroyd Unit Trust)

W-B
WOODS BAGOT

Project number
121784

Checked
OR

Approved
DS

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Sheet size
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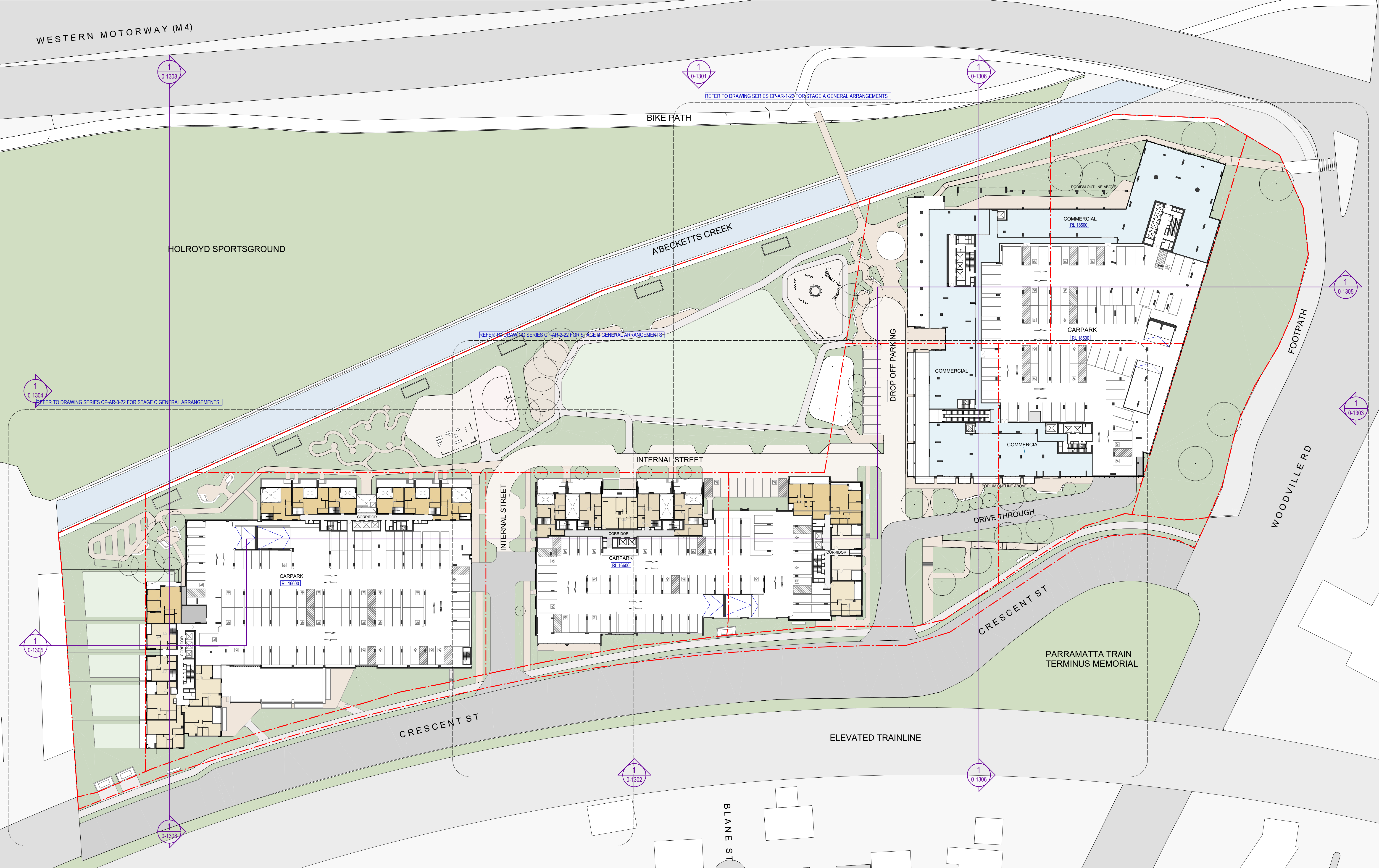
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Overall Plan Lower Ground

Sheet number
CP-AR-0-12LG

Revision
E

Status
For information



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B	SSDA Submission Update	20/11/24	
C	SSDA RTS Submission	04/09/25	
D	SSDA RTS Submission	12/09/25	Contractor must verify all dimensions on site before commencing work or preparing shop drawings.
E	SSDA RTS Submission	19/09/25	
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Project
Crescent Parklands

Client
Tiberius (Holroyd) Pty Ltd (as trustee
for the Holroyd Unit Trust)

Issuer
W-B
WOODS BAGOT

Project number
121784

Checked
OR

Approved
DS

Size check
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Sheet size
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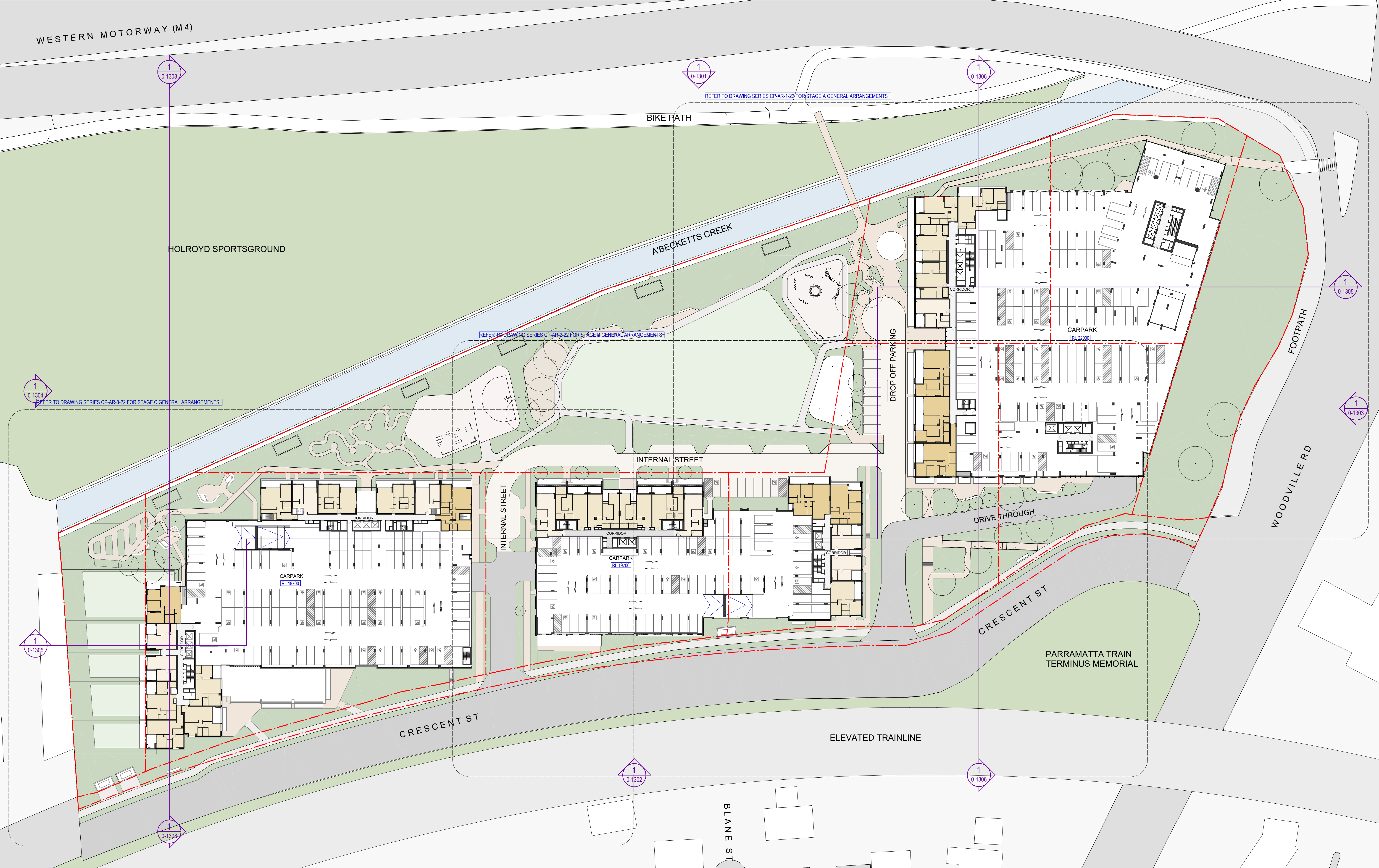
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Revision
E



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C		SSDA RTS Submission	04/09/25
D		SSDA RTS Submission	12/09/25
E		SSDA RTS Submission	19/09/25
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Project
Crescent Parklands

Client
Tiberius (Holroyd) Pty Ltd (as trustee
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W-B
WOODS BAGOT

Project number
121784

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Checked OR
Approved DS
Sheet size A1

Sheet title
Overall Plan Level 02

Sheet number
CP-AR-0-1202
Status
For information

Revision
E



Recent revision history			Notes
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C		SSDA RTS Submission	
D		SSDA RTS Submission	Contractor must verify all dimensions on site before commencing work or preparing shop drawings.
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Project
Crescent Parklands

Client
Tiberius (Holroyd) Pty Ltd (as trustee
for the Holroyd Unit Trust)

Issuer
W-B
WOODS BAGOT

Project number
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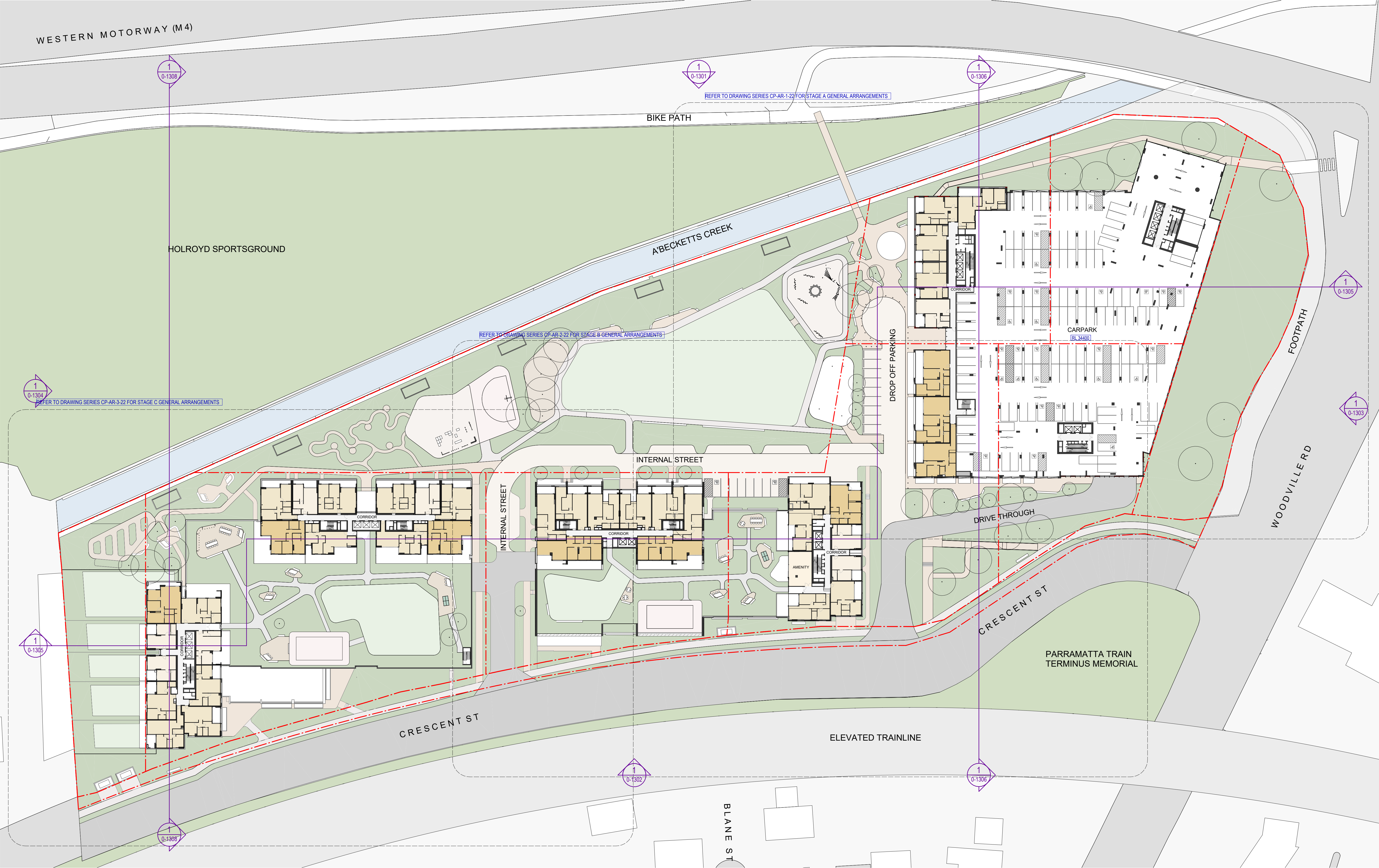
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Project

Crescent Parklands

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121784

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DS

Sheet size

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Scale

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Issuer

W-B
WOODS BAGOT

Project number

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Overall Plan Level 04

Sheet number

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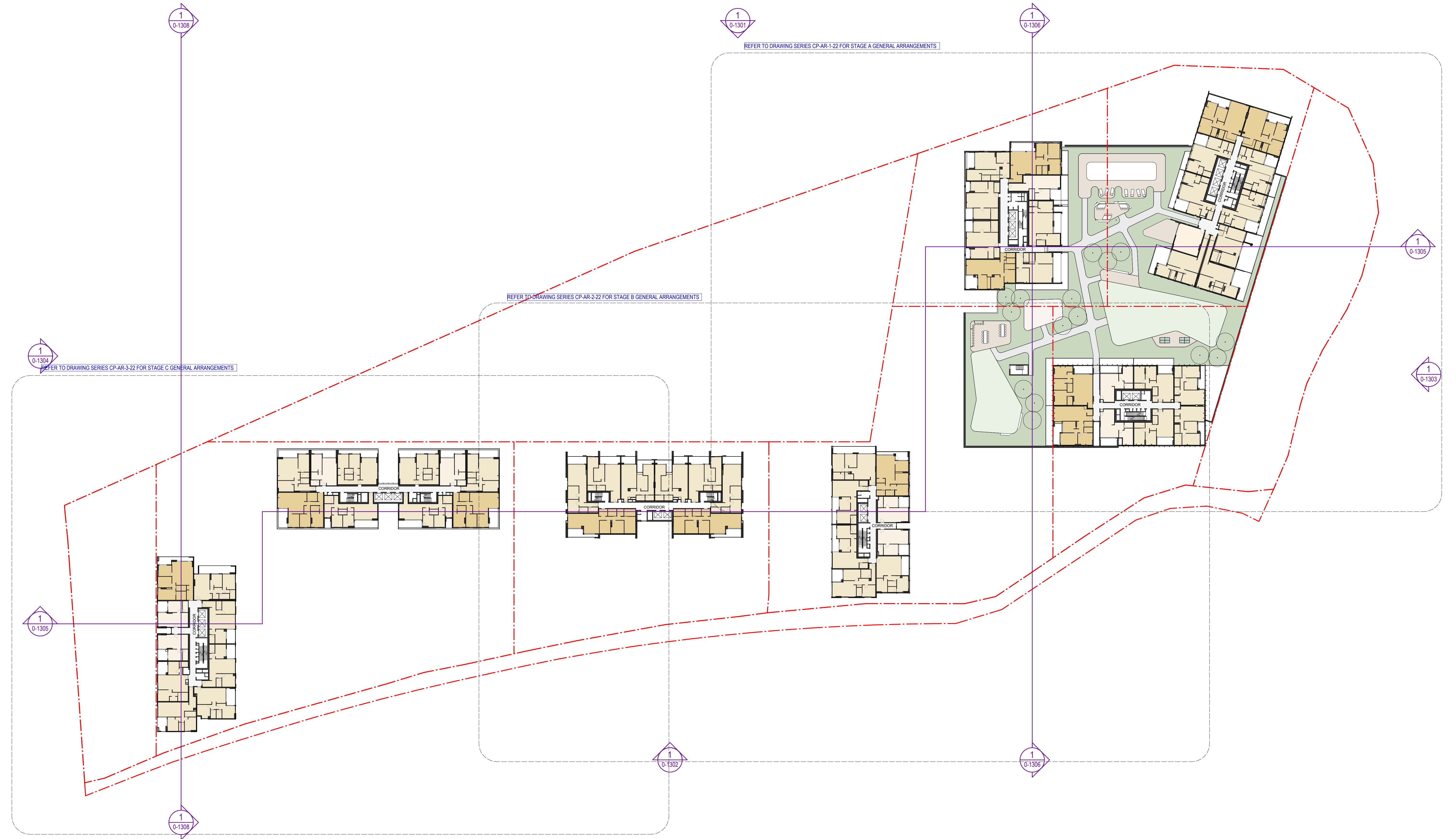
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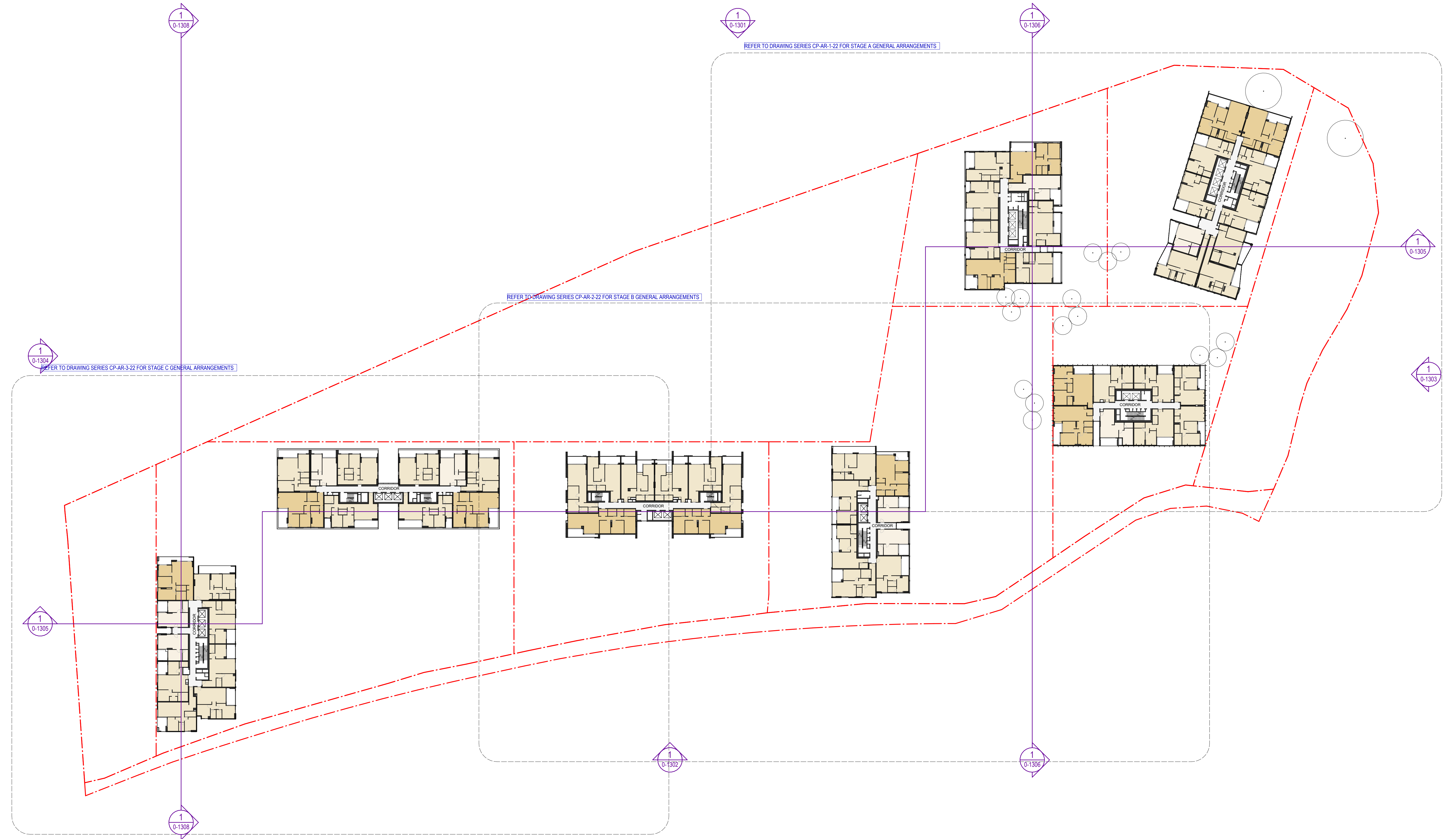
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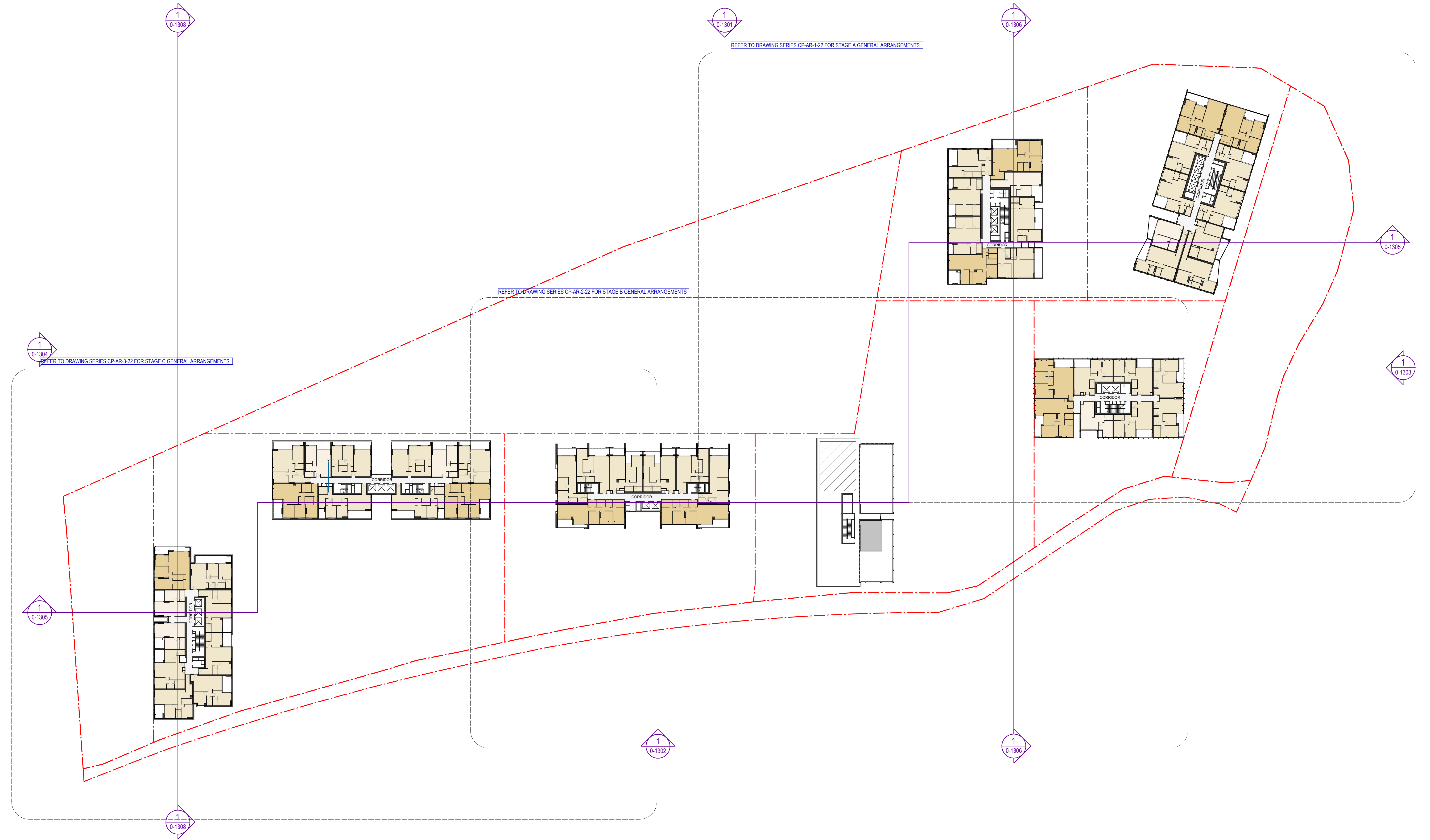
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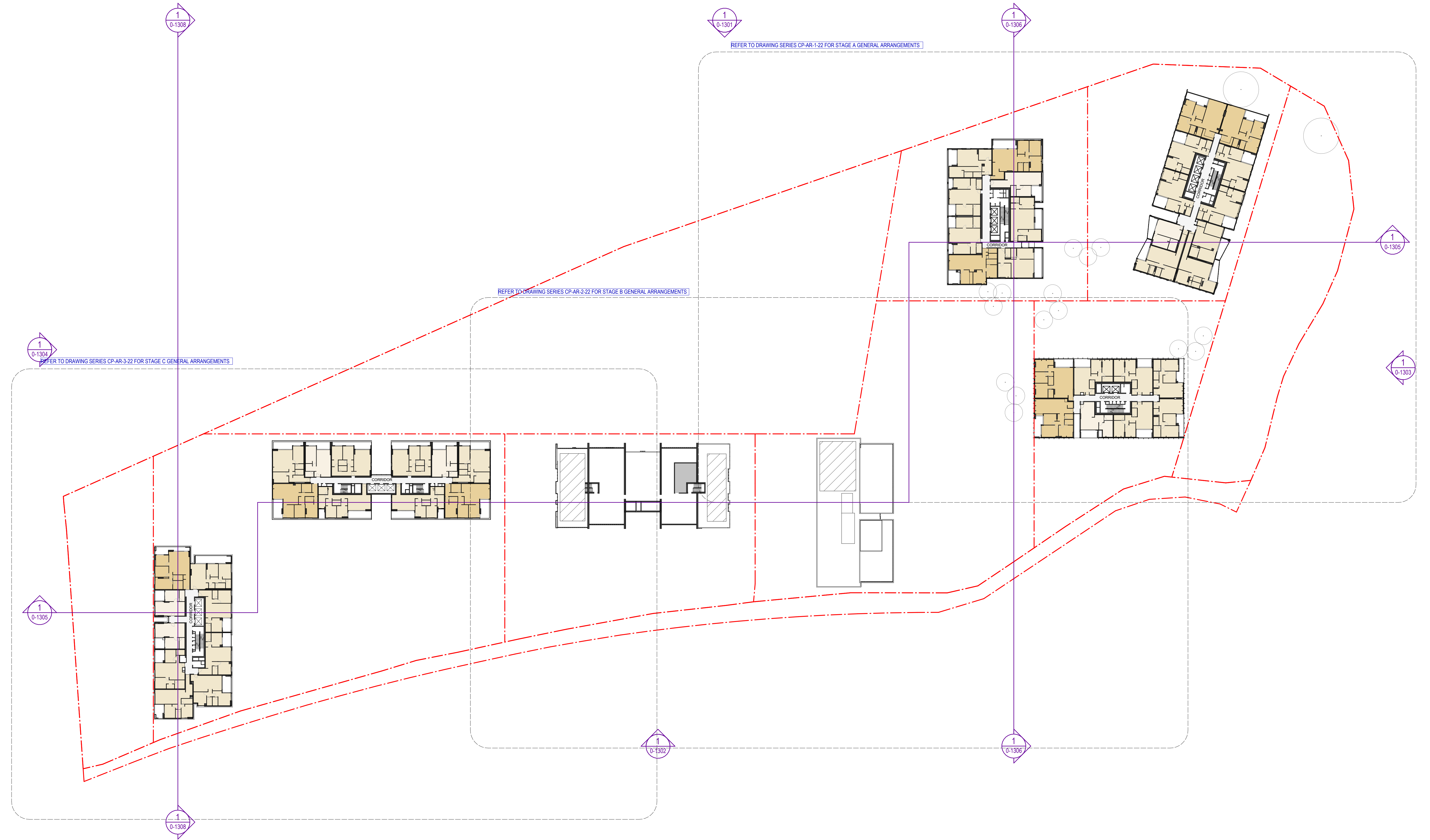
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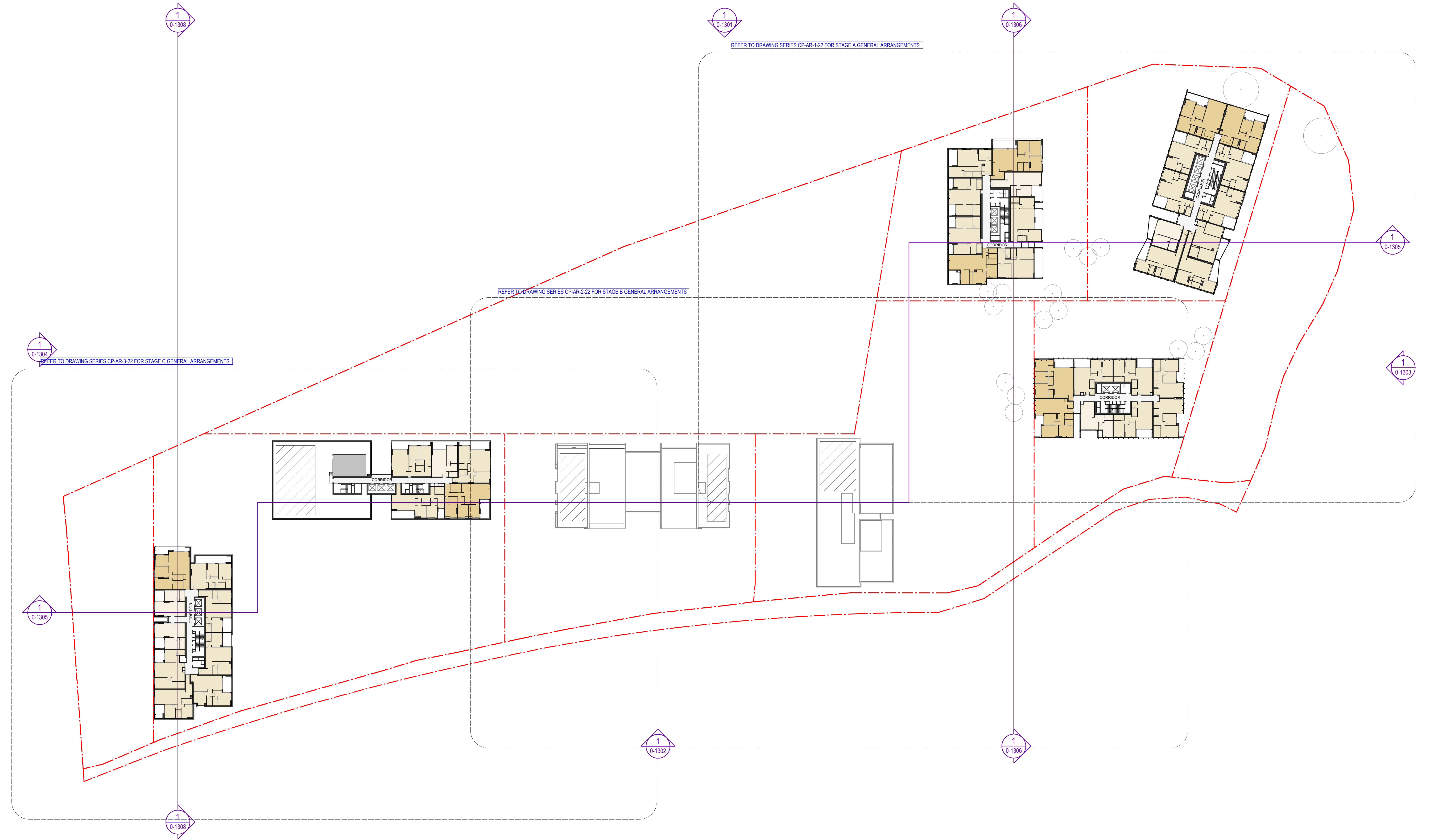
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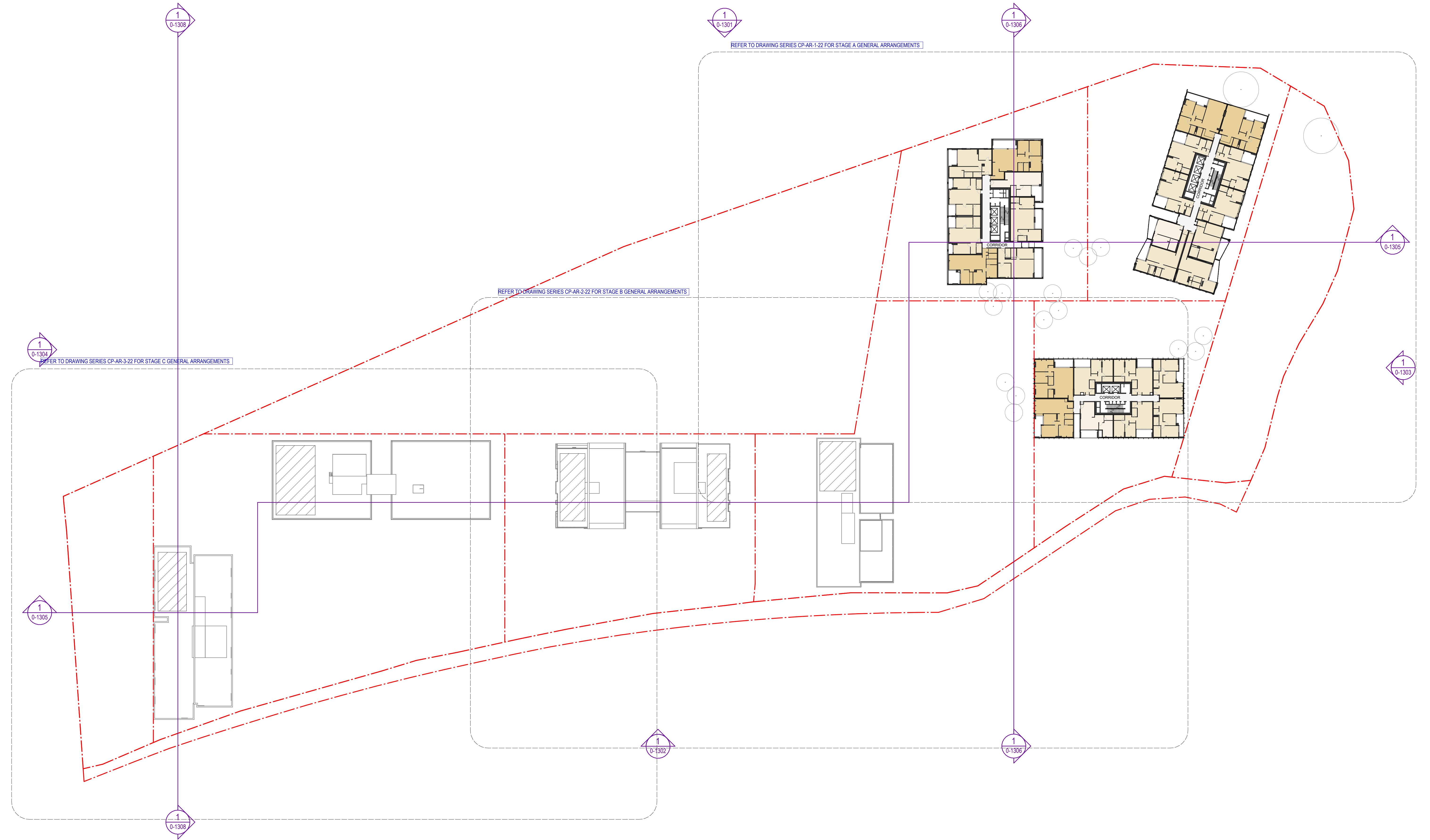




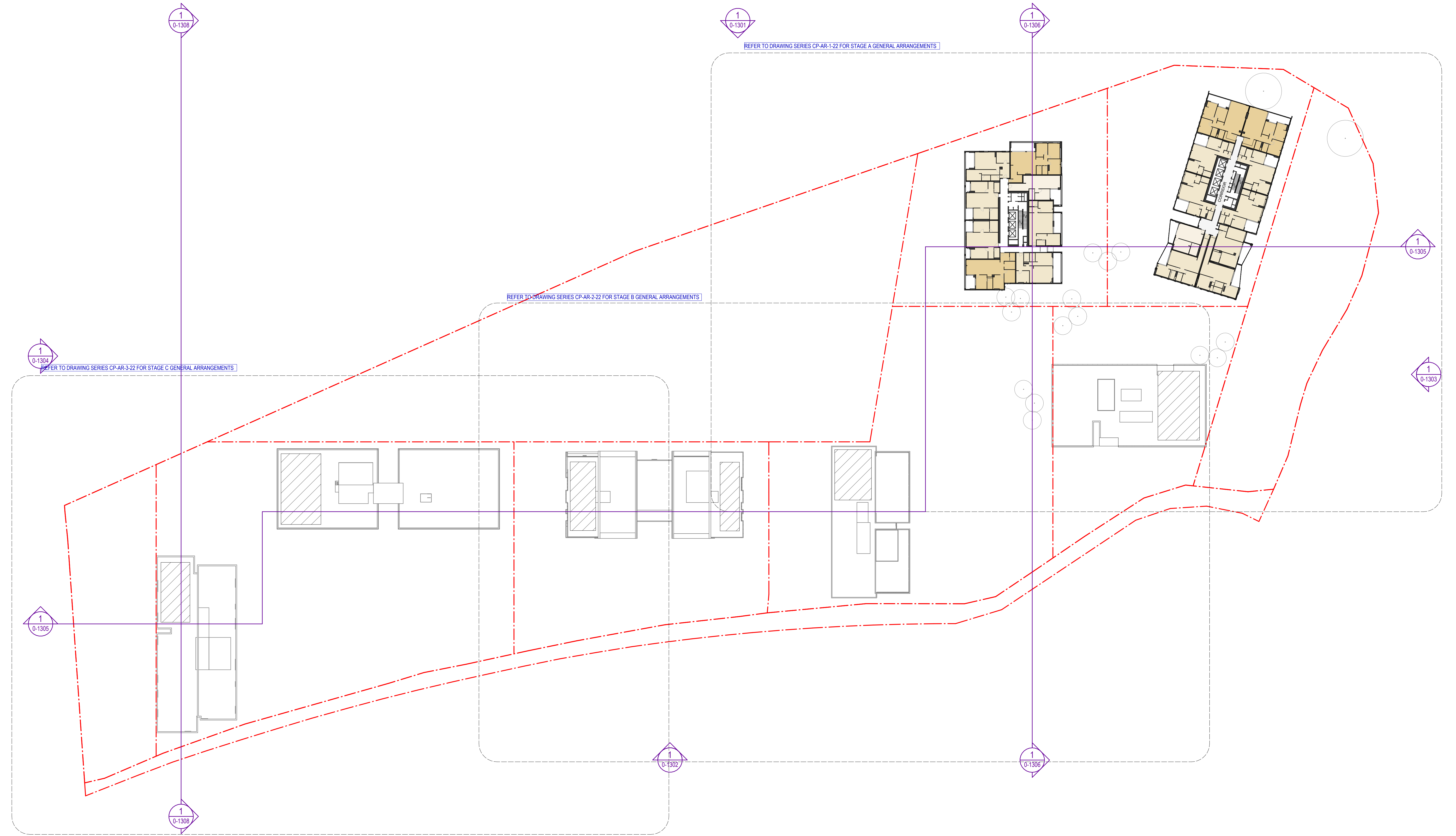








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C		SSDA RTS Submission	04/09/25				Size check		Revision	
D		SSDA RTS Submission	12/09/25				25mm		E	
E		SSDA RTS Submission	19/09/25				Checked		Status	
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D		SSDA RTS Submission	12/09/25														
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										25mm				E			
										Checked				Status			
										OR				For information			
										Approved							
										Sheet size				Scale			
										A1				1 : 500			

Appendix C - Stormwater Plan





	SITE BOUNDARY
	SURVEY
	GROUND FLOOR ARCHITECTURAL
	LANDSCAPE
	MAJOR DESIGN CONTOUR
	MINOR DESIGN CONTOUR
	PROPOSED STORMWATER (SIZE AND GRADE)
	PROPOSED GRATED INLET PIT / PROPOSED KERB INLET PIT
	PROPOSED JUNCTION PIT
	PROPOSED GRATED DRAIN
	FLOW ARROW
	EXISTING PIT
	PROPOSED OSD TANK 1
	PROPOSED OSD TANK 2
	PROPOSED OSD TANK 3

--E--E--	EXISTING ELECTRICITY
---HV---	EXISTING ELECTRICITY HIGH VOLTAGE
---OH---	EXISTING ELECTRICITY OVERHEAD
---S---	EXISTING SEWER
---C---	EXISTING COMMS
---W---	EXISTING WATER
---G---	EXISTING GAS
---SW---	EXISTING STORMWATER
---?---?---	UNKNOWN

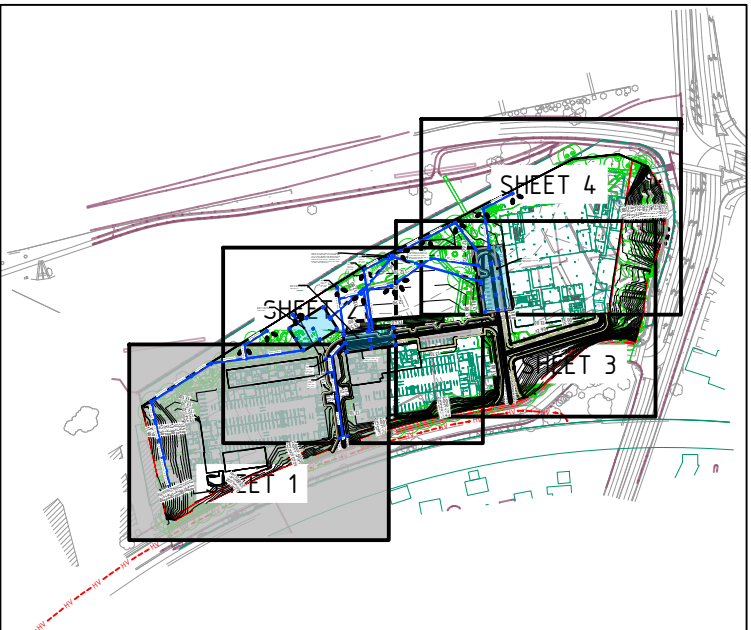
1. ALL STORMWATER PITS ARE 900x900 AND LINTEL PITS ARE 1.8m.
2. GRATED TRENCH DRAINS IN ROADS ARE 200x200 AND 100x100 IN FOOTPATHS.

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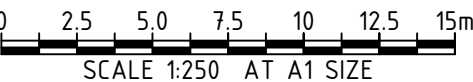


- LEGEND**
- SITE BOUNDARY
 - SURVEY
 - GROUND FLOOR ARCHITECTURAL
 - LANDSCAPE
 - 15.0 MAJOR DESIGN CONTOUR
 - MINOR DESIGN CONTOUR
 - PROPOSED STORMWATER (SIZE AND GRADE)
 - PROPOSED GRATED INLET PIT / PROPOSED KERB INLET PIT
 - PROPOSED JUNCTION PIT
 - PROPOSED GRATED DRAIN
 - FLOW ARROW
 - EXISTING PIT
 - PROPOSED OSD TANK 1
 - PROPOSED OSD TANK 2
 - PROPOSED OSD TANK 3
- EXISTING SERVICES**
- EXISTING ELECTRICITY
 - EXISTING ELECTRICITY HIGH VOLTAGE
 - EXISTING ELECTRICITY OVERHEAD
 - EXISTING SEWER
 - EXISTING COMMS
 - EXISTING WATER
 - EXISTING GAS
 - EXISTING STORMWATER
 - UNKNOWN



KEY PLAN

- NOTES**
- ALL STORMWATER PITS ARE 900x900 AND LINTEL PITS ARE 18m.
 - GRATED TRENCH DRAINS IN ROADS ARE 200x200 AND 100x100 IN FOOTPATHS.



REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION
G	13.01.26	ISSUED FOR SSDA APPROVAL	SH		
F	18.12.25	ISSUED FOR SSDA APPROVAL	SH		
E	19.09.25	ISSUED FOR SSDA APPROVAL	SH		
D	21.11.24	ISSUED FOR SSDA APPROVAL	SH		
C	19.11.24	ISSUED FOR SSDA APPROVAL	SH		
B	18.11.24	ISSUED FOR SSDA APPROVAL	SH		
A	08.11.24	ISSUED FOR SSDA APPROVAL	SH		
REV	DATE	DESCRIPTION	RVD	REV	DATE
		REVISIONS			

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W-B
WOODS BAGOT

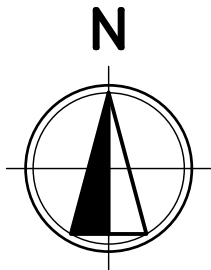
Sydney Office—
12, 8 Windmill St
Sydney NSW 2000
P / +61 2 9770 3300 E / info@bgeeng.com
bgeeng.com—

BG
&
E

1 CRESCENT STREET
HOLROYD, NSW 2142

STATUS			
ISSUED FOR INFORMATION			
NOT TO BE USED FOR CONSTRUCTION			
DRAWN	DESIGNED	CHECKED	APPROVED
CMM	AM	SH	
DATUM	GRID	SCALE	
AHD	GDA 2020 MGAS6	1:250	
AT	A1 SIZE		

TITLE		
DRAINAGE GROUND FLOOR SHEET 1 OF 4		
PROJECT No.	DRAWING No.	REV
S22215	CI-0301	G



DENOTES JELLYFISH JF3250-28-5 BY OCEAN PROTECT OR EQUIVALENT. ALL DISCHARGE FROM SIE TO PASS THROUGH WSUD INFRASTRUCTURE. REFER TO OCEANPROTECT FOR SPECIFICATIONS AND INSTALLATION DETAILS. TREATMENT TO BE IN LINE WITH PARRAMATTA COUNCIL DCP. REFER TO SHEET 0300 FOR DETAILS

PHASE B OSD
REFER TO SHEET 0351 FOR
TANK DETAILS

PHASE C (1&2) OSD:
REFER TO SHEET 0352 FOR
TANK DETAILS

GSIP
900 X 900
CLASS C
HEEL SAFE
RL: 12.650

GSIP
900 X 900
CLASS C
HEEL SAFE
RL: 12.750

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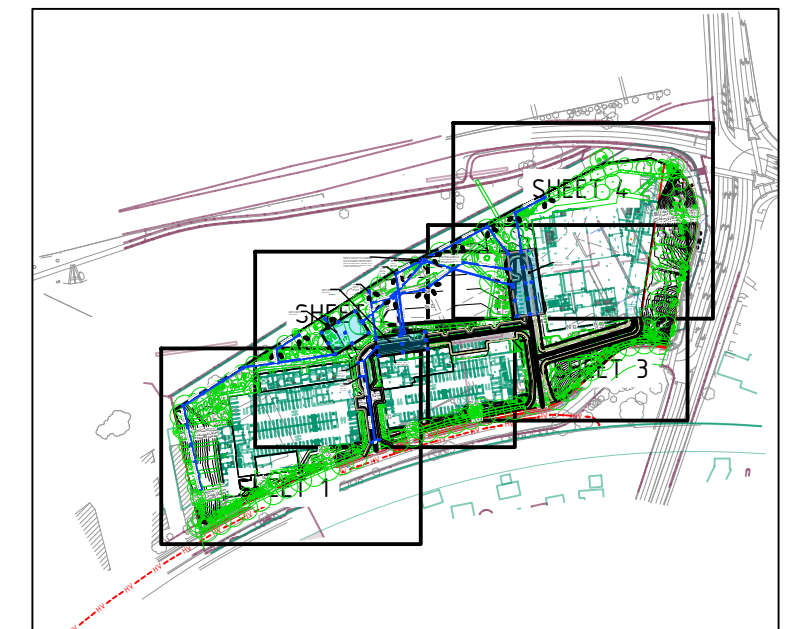
BUILDING 4 AND 5 TO
DRAIN TO OSD TANK

HATCH DENOTES AREAS BYPASSING OSD
TANK ALLOWANCE FOR 19% OF SITE TO
BYPASS OSD. REFER STORMWATER REPORT
BY BG&E FOR DETAILS

DEVELOPMENT TO CONNECT TO
THE EXISTING DISCHARGE POINT
IN THE CREEK WALL EXACT
INVERT LEVEL EXISTING CORE TO
BE CONFIRMED ON SITE

LEGEND

- SITE BOUNDARY
- SURVEY
- GROUND FLOOR ARCHITECTURAL
- LANDSCAPE
- 15.0 MAJOR DESIGN CONTOUR
- MINOR DESIGN CONTOUR
- PROPOSED STORMWATER (SIZE AND GRADE)
- PROPOSED GRATED INLET PIT / PROPOSED KERB INLET PIT
- PROPOSED JUNCTION PIT
- PROPOSED GRATED DRAIN
- FLOW ARROW
- EXISTING PIT
- PROPOSED OSD TANK 1
- PROPOSED OSD TANK 2
- PROPOSED OSD TANK 3
- EXISTING SERVICES
- EXISTING ELECTRICITY
- EXISTING ELECTRICITY HIGH VOLTAGE
- EXISTING ELECTRICITY OVERHEAD
- EXISTING SEWER
- EXISTING COMMS
- EXISTING WATER
- EXISTING GAS
- EXISTING STORMWATER
- UNKNOWN



KEY PLAN

NOTES

- ALL STORMWATER PITS ARE 900x900 AND LINTEL PITS ARE 18m.
- GRATED TRENCH DRAINS IN ROADS ARE 200x200 AND 100x100 IN FOOTPATHS.

0 2.5 5.0 7.5 10 12.5 15m
SCALE 1:250 AT A1 SIZE

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D	21.11.24	ISSUED FOR SSDA APPROVAL	SH				
C	19.11.24	ISSUED FOR SSDA APPROVAL	SH				
B	18.11.24	ISSUED FOR SSDA APPROVAL	SH				
A	08.11.24	ISSUED FOR SSDA APPROVAL	SH				
REV	DATE	DESCRIPTION	RVD	REV	DATE	DESCRIPTION	RVD

TIBERIUS (HOLROYD) Pty Ltd
(as trustee for the Holroyd Unit Trust)

W-B
WOODS BAGOT

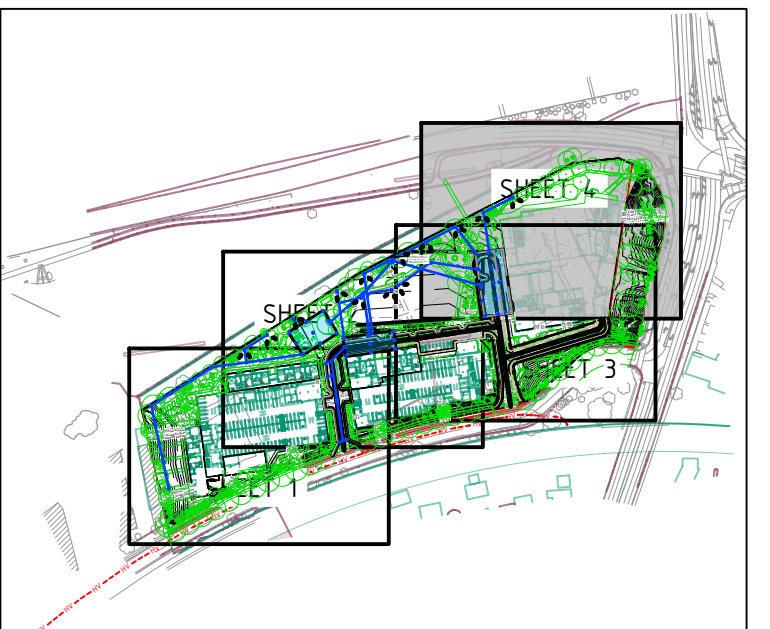
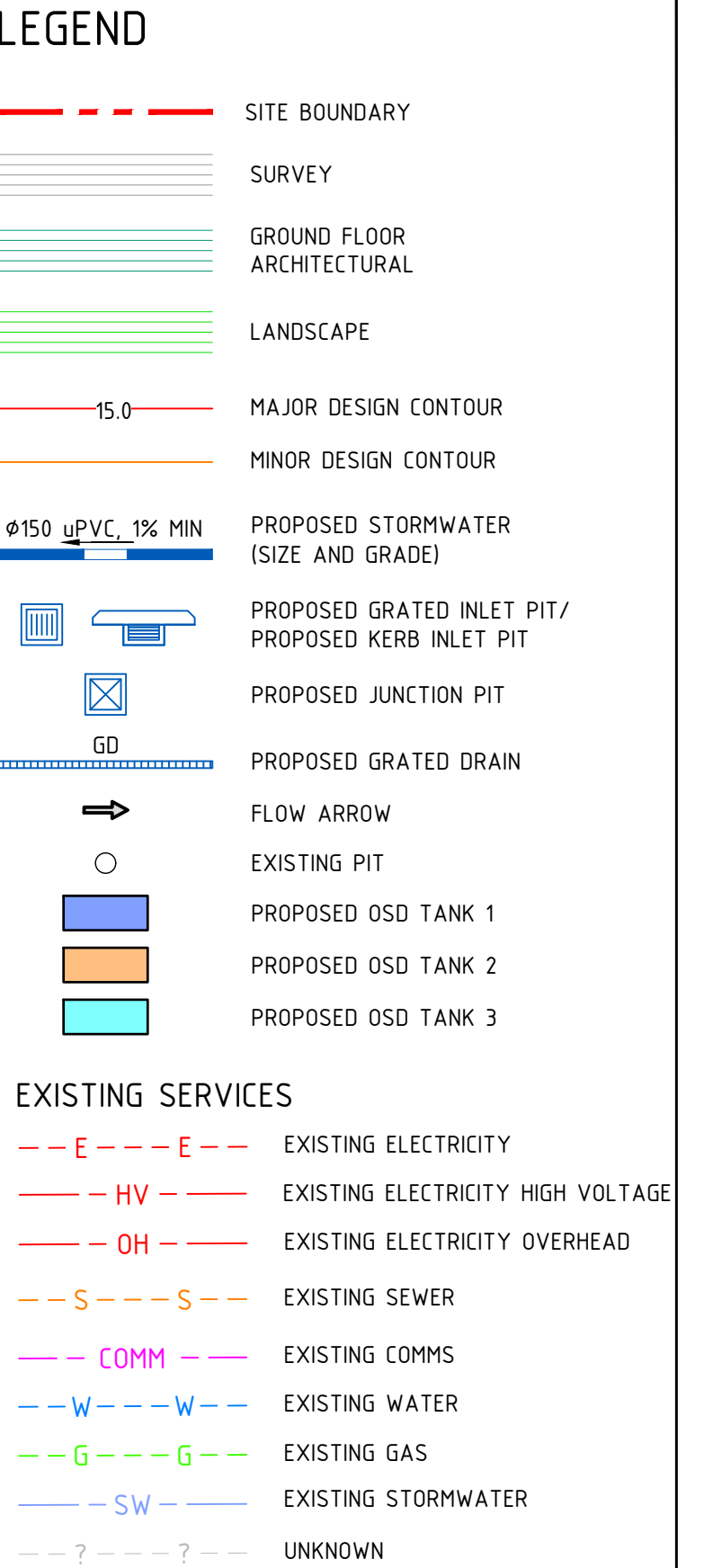
Sydney Office—
12, 8 Windmill St
Sydney NSW 2000
P / +61 2 9770 3300 E / info@bgeeng.com
bgeeng.com—

BG
&E

1 CRESCENT STREET
HOLROYD, NSW 2142

ISSUED FOR INFORMATION NOT TO BE USED FOR CONSTRUCTION			
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TITLE DRAINAGE GROUND FLOOR SHEET 2 OF 4		
PROJECT No. S22215	DRAWING No. CI-0302	REV G



KEY PLAN

NOTES

1. ALL STORMWATER PITS ARE 900x900 AND LINTEL PITS ARE 1.8m.
2. GRATED TRENCH DRAINS IN ROADS ARE 200x200 AND 100x100 IN FOOTPATHS.



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E	19.09.25	ISSUED FOR SSDA APPROVAL	SH					
D	21.11.24	ISSUED FOR SSDA APPROVAL	SH					
C	19.11.24	ISSUED FOR SSDA APPROVAL	SH					
B	18.11.24	ISSUED FOR SSDA APPROVAL	SH					
A	08.11.24	ISSUED FOR SSDA APPROVAL	SH					
REV	DATE	DESCRIPTION		RVD	REV	DATE	DESCRIPTION	RVD
REVISIONS					REVISIONS			

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PROJECT

1 CRESCENT STREET
HOLROYD, NSW 2142

STATUS

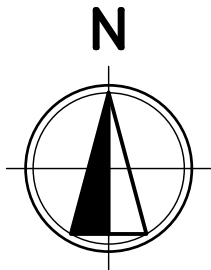
ISSUED FOR INFORMATION

NOT TO BE USED FOR CONSTRUCTION

DRAWN CMM	DESIGNED AM	CHECKED SH	APPROVED
DATUM AHD	GRID GDA 2020 MGA56	SCALE 1:250	AT A1 SIZE

TITLE
DRAINAGE
GROUND FLOOR
SHEET 4 OF 4

PROJECT No. S22215	DRAWING No. CI-0304	REV. G
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LEGEND

- SITE BOUNDARY
- GROUND FLOOR ARCHITECTURAL
- TfNSW LAND (NO TREATMENT) = 2,487 m²
- ROOF AREA (8,565 m²)
- PAVED AREA TO JF AND OG: (6,042 m²)
- NO TREATMENT (4,179 m²)
- ROAD TO JF AND OG (1,900 m²)
- LANDSCAPE JG AND OG (14,000 m²)

WESTERN MOTORWAY (M4)

HOLROYD SPORTSGROUND

A'BECKETTS CREEK

WOODVILLE ROAD

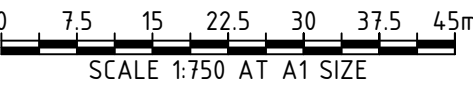
CRESCENT STREET

WATER QUALITY FOR DEVELOPMENT

- TREATMENT DEVICES:
- ONE JELLYFISH JF3300-29-5 BY OCEANPROTECT
 - 22 x OCEANGUARD
 - EACH OSD TANK INSTALLED WITH 2 690Psorb STORMFILTERS BY OCEANPROTECT

TREATMENT STANDARDS				
POLLUTANT	PRE	POST	WATER QUALITY OBJECTIVE	DEVELOPMENT ACHIEVED PERCENTAGE
GROSS POLLUTANTS (GP)	678	48	90%	93%
TOTAL SUSPENDED SOLIDS (TSS)	3460	355	85%	89.7%
TOTAL PHOSPHORUS (TP)	8.6	1.66	60%	80.7%
TOTAL NITROGEN (TN)	79.5	31.2	60%	60.8%

STORMWATER DRAINAGE REQUIREMENTS HAVE BEEN CALCULATED IN ACCORDANCE WITH CUMBERLAND DCP PART G - MISCELLANEOUS DEVELOPMENT CONTROLS



REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION
E	18.12.25	ISSUED FOR SSDA APPROVAL	SH		
D	22.09.25	ISSUED FOR SSDA APPROVAL	SH		
C	19.11.24	ISSUED FOR SSDA APPROVAL	SH		
B	18.11.24	ISSUED FOR SSDA APPROVAL	SH		
A	08.11.24	ISSUED FOR SSDA APPROVAL	SH		
REV	DATE	DESCRIPTION	RVD	REV	DATE
REVISIONS			REVISIONS		

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1 CRESCENT STREET
HOLROYD, NSW 2142

ISSUED FOR APPROVAL			
NOT TO BE USED FOR CONSTRUCTION			
DRAWN CMM	DESIGNED AM	CHECKED SH	APPROVED
DATUM AHD	GRID GDA 2020 MGA56	SCALE 1:750	AT A1 SIZE

MUSIC CATCHMENT PLAN		
PROJECT No. S22215	DRAWING No. CI-0310	REV E



4170 ORIFICE
CENTRALLY LOCATED

50 TYP.

3mm STAINLESS
STEEL PLATE

OUTLET PIPE
BEHIND

450

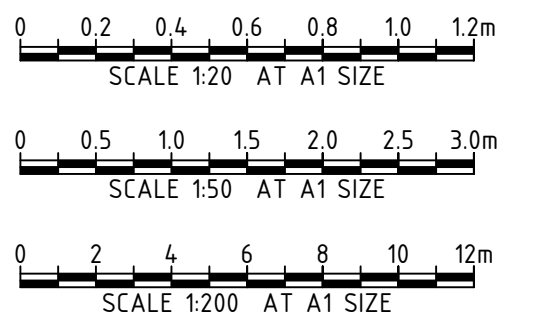
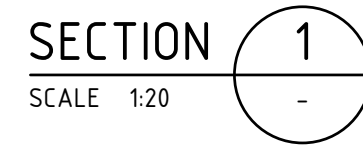
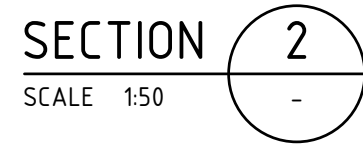
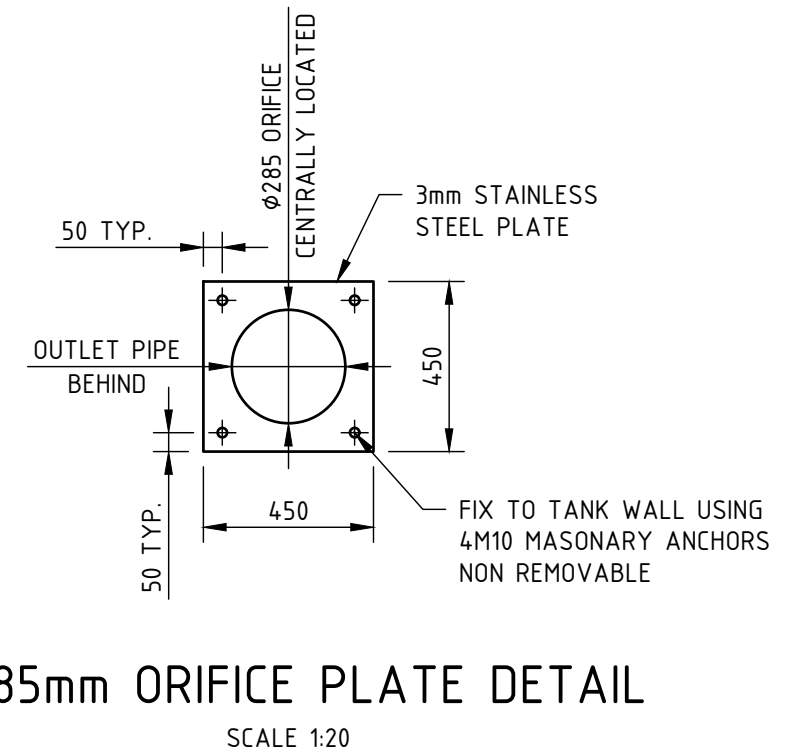
450

50 TYP.

FIX TO TANK WALL USING
4M10 MASONRY ANCHORS
NON REMOVABLE

Ø170mm ORIFICE PLATE DETAIL

SCALE 1:20

[illegible]

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	PROJECT
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1 CRESCENT STREET
HOLROYD, NSW 2142

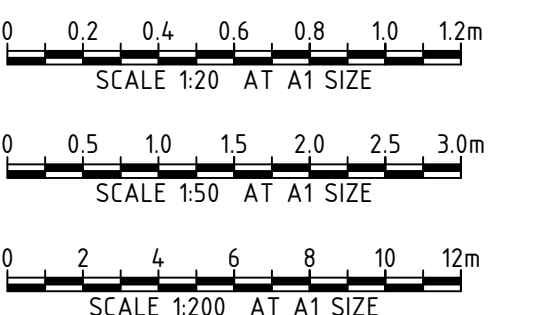
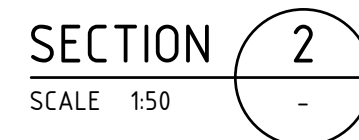
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ISSUED FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION			
DRAWN	DESIGNED	CHECKED	APPROVED
CMW	AM	SH	
DATUM	GRID	SCALE	
AHD	GDA 2020 MGA556	AS SHOWN	AT A1 SIZE

TITLE
OSD PLAN AND SECTION
OSD TANK 1

PROJECT No. S22215	DRAWING No. CI-0350	REV. D
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OVERALL DETENTION REQUIRED = 378m³
ORIFICE DIAMETER FOR DETENTION = 200mm
MAXIMUM WATER LEVEL OF DETENTION = RL12.700
AVERAGE WATER DEPTH: 1.0m
AREA OF TANK: 407m²
DETENTION VOLUME PROVIDED = 407m³



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18/12/2025 6:19:44 PM

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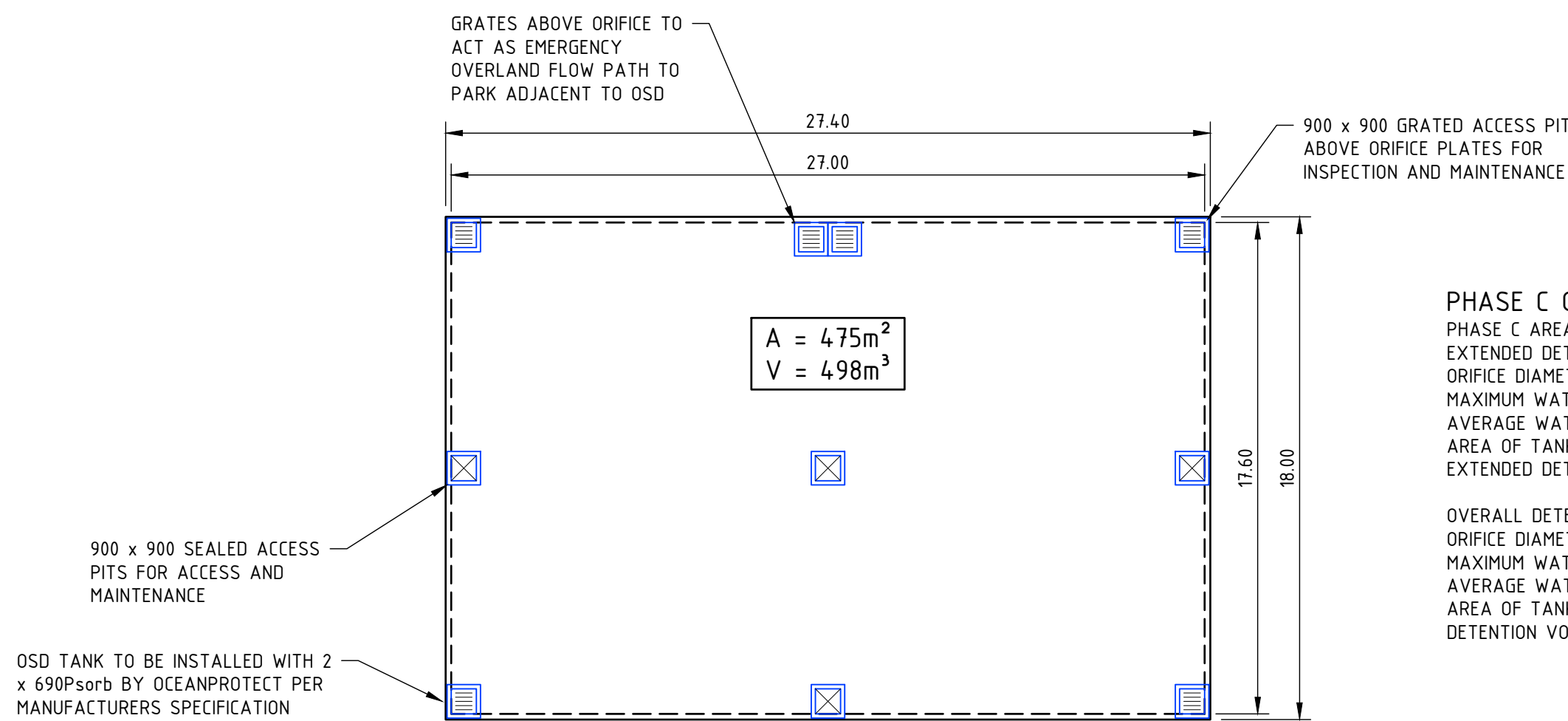
PROJECT

1 CRESCENT STREET
HOLROYD, NSW 2142

DRAWN CMM	DESIGNED AM	CHECKED SH	APPROVED
DATUM AHD	GRID GDA 2020 MGA56	SCALE AS SHOWN	

PROJECT No.	DRAWING No.	REV.
S22215	CI-0351	D

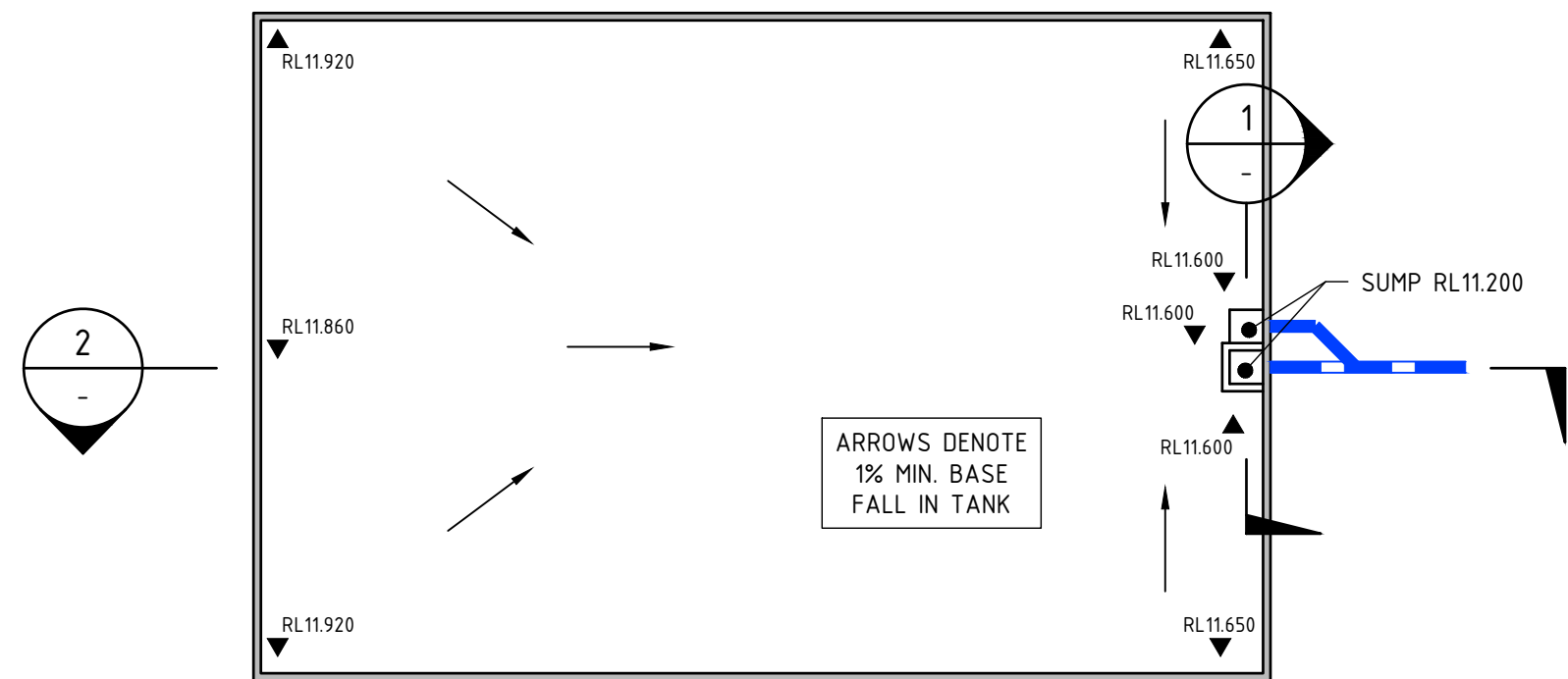
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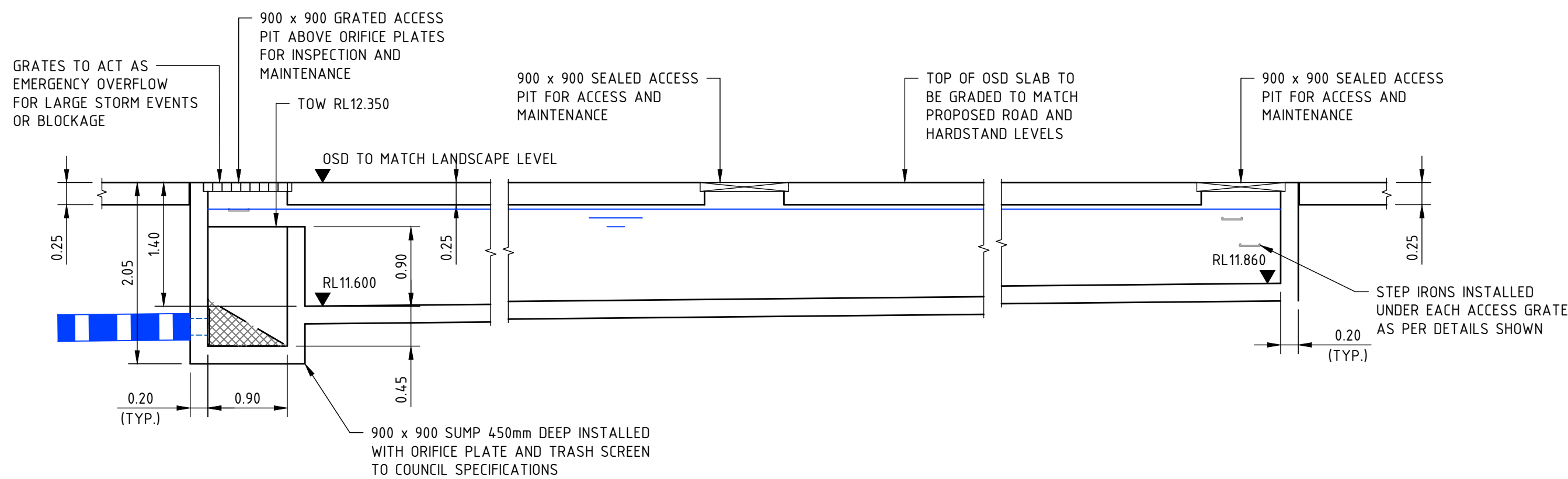
PHASE C OSD TANK ROOF PLAN
SCALE 1:200

PHASE C OSD TANK CALCULATIONS:
PHASE C AREA: 1034.8 m²
EXTENDED DETENTION REQUIRED = 311m³
ORIFICE DIAMETER FOR EXTENDED DETENTION = 140mm
MAXIMUM WATER LEVEL OF EXTENDED DETENTION = RL12.300
AVERAGE WATER DEPTH: 0.70m
AREA OF TANK: 475m²
EXTENDED DETENTION VOLUME PROVIDED = 332.5m³

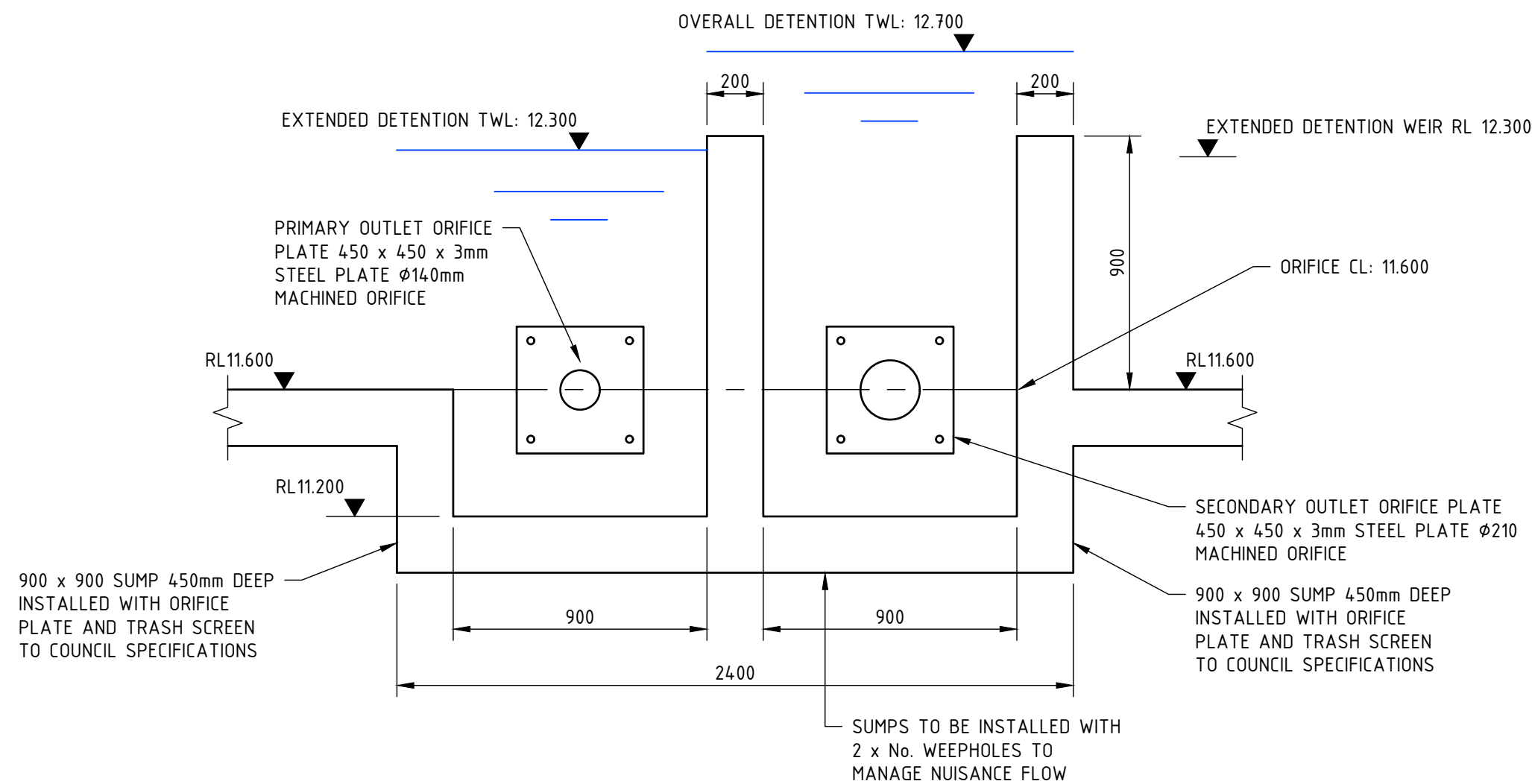
OVERALL DETENTION REQUIRED = 471m³
ORIFICE DIAMETER FOR DETENTION = 210mm
MAXIMUM WATER LEVEL OF DETENTION = RL12.700
AVERAGE WATER DEPTH: 1.05m
AREA OF TANK: 475m²
DETENTION VOLUME PROVIDED = 498m³



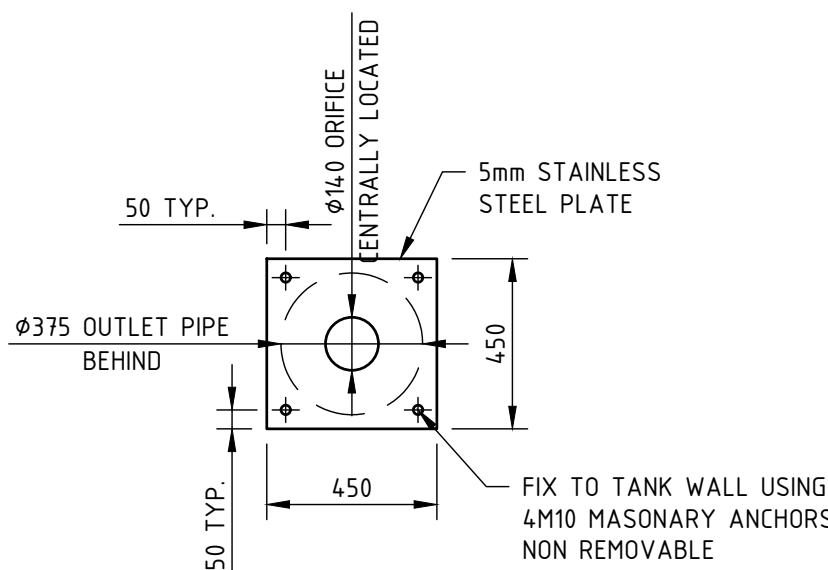
PHASE C OSD TANK BASE PLAN
SCALE 1:200



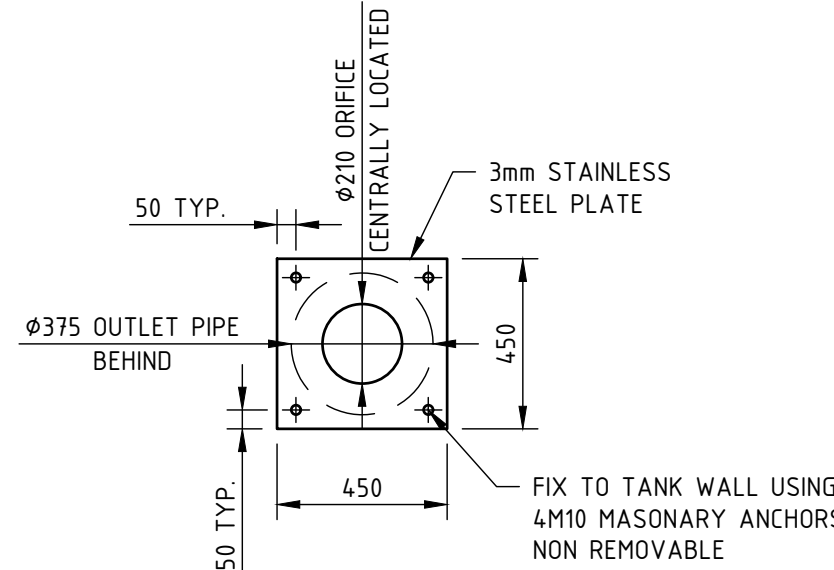
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SCALE 1:50



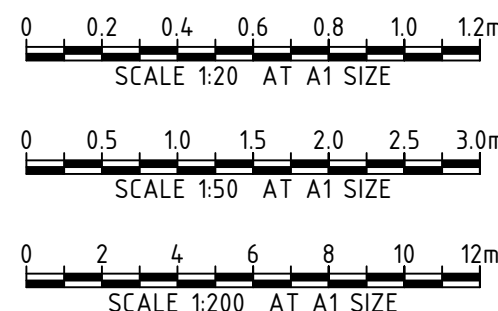
SECTION 1
SCALE 1:20



Ø140mm ORIFICE PLATE DETAIL
SCALE 1:20



Ø210mm ORIFICE PLATE DETAIL
SCALE 1:20



REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION
D	18.12.25	ISSUED FOR SSDA APPROVAL	SH		
C	19.09.25	ISSUED FOR SSDA APPROVAL	SH		
B	18.11.24	ISSUED FOR SSDA APPROVAL	SH		
A	08.11.24	ISSUED FOR SSDA APPROVAL	SH		
REV	DATE	DESCRIPTION	RVD	REV	DATE
REVISIONS			REVISIONS		

CLIENT
TIBERIUS (HOLROYD) Pty Ltd
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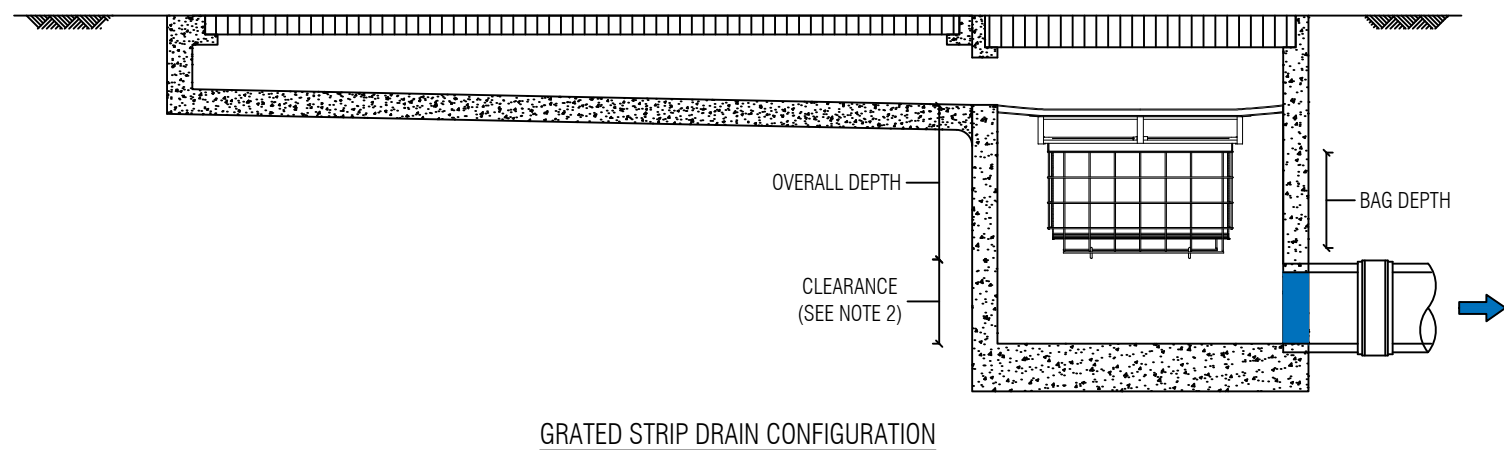
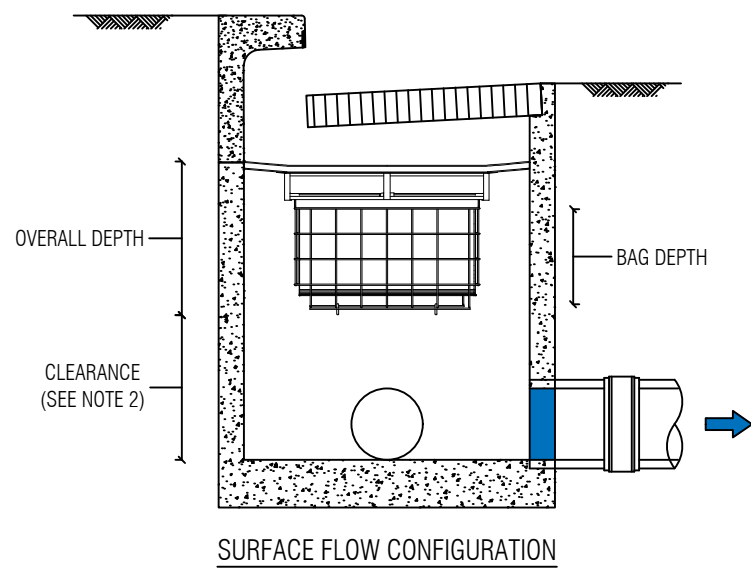
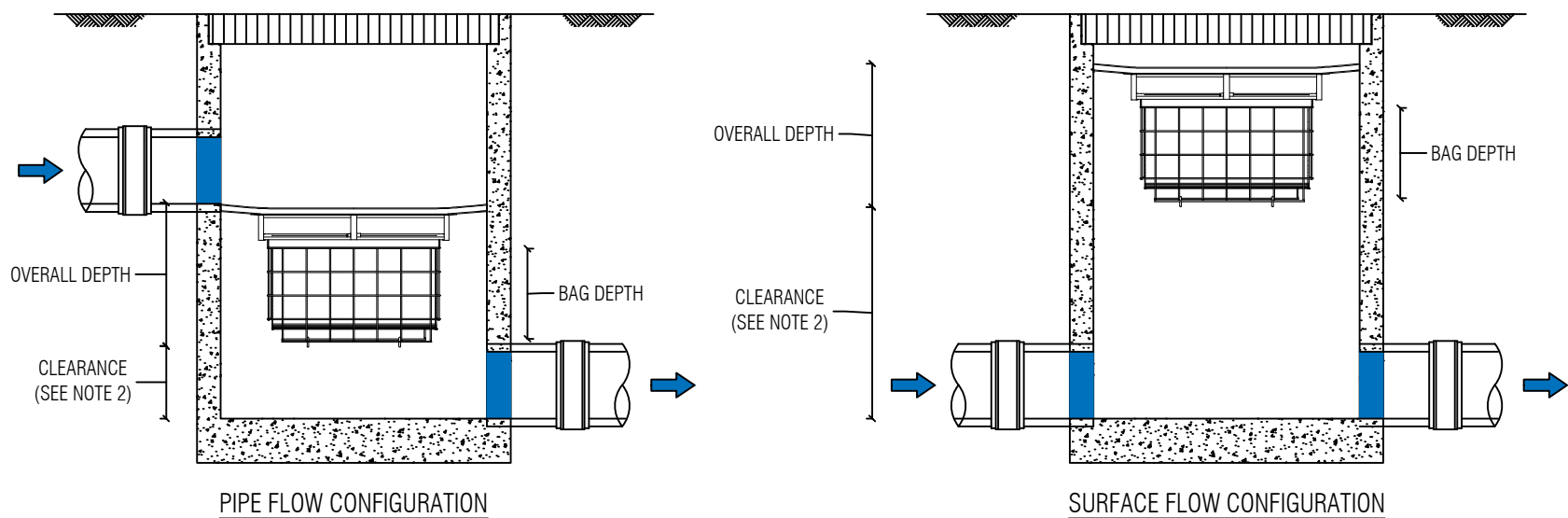
BG
&E

PROJECT
1 CRESCENT STREET
HOLROYD, NSW 2142

STATUS			
ISSUED FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION			
DRAWN CMM	DESIGNED AM	CHECKED SH	APPROVED
DATUM AHD	GRID GDA 2020 MGA56	SCALE AS SHOWN	AT A1 SIZE

TITLE		
OSD PLAN AND SECTION		
OSD TANK 3		
PROJECT No. S22215	DRAWING No. CI-0352	REV D

Appendix D - WSUD Details



PLAN ID	MAXIMUM PIT PLAN DIMENSIONS
S	450mm x 450mm
M	600mm x 600mm
L	900mm x 900mm
XL	1200mm x 1200mm

DEPTH ID	BAG DEPTH	OVERALL DEPTH
1	170	270
2	300	450
3	600	700

PLAN ID	DEPTH ID			
	S	1	2	3
	M	■	■	■
	L	■	■	■
	XL	■	■	■



GENERAL NOTES

1. THE MINIMUM CLEARANCE DEPENDS ON THE CONFIGURATION (SEE NOTE 2) AND THE LOCAL COUNCIL REQUIREMENTS.
2. CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
3. OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:- 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING AND A COARSE BAG FOR TARGETING GROSS POLLUTANTS.
4. DRAWINGS NOT TO SCALE.

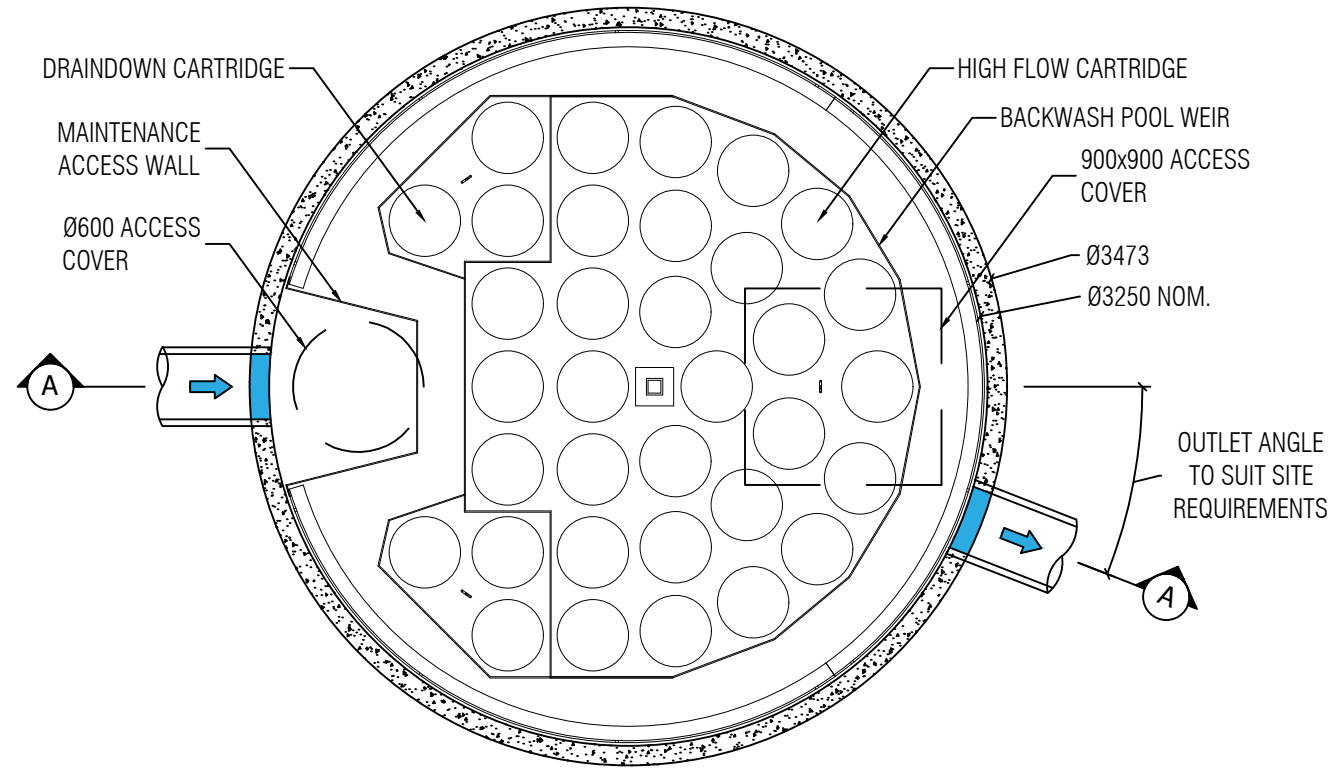


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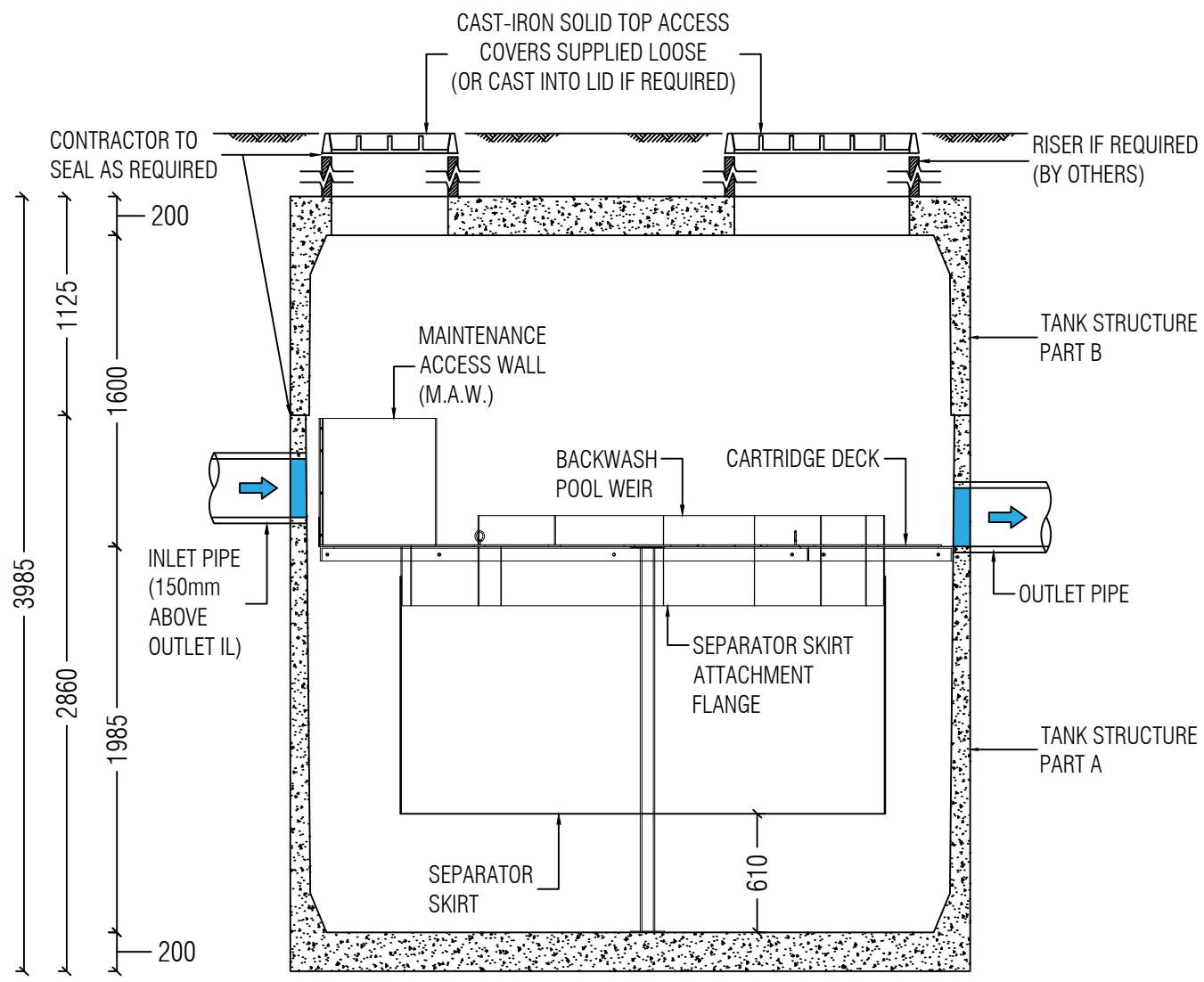
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OCEANGUARD
TYPICAL ARRANGEMENTS
SPECIFICATION DRAWING

NOT FOR CONSTRUCTION



JELLYFISH PLAN



JELLYFISH SECTION

JELLYFISH DESIGN TABLE

JELLYFISH TREATMENT FLOW IS A FUNCTION OF THE NUMBER OF CARTRIDGES AND THE DEVICE TOTAL HEAD DIFFERENTIAL. IF THE PIPE FLOW EXCEEDS THE TREATMENT FLOW THEN AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

REQUIRED DEVICE TOTAL HEAD DIFFERENTIAL [mm]	460	230
CARTRIDGE FLOW RATE FOR HIGH-FLOW / DRAINDOWN [L/s]	5 / 2.5	2.5 / 1.25
CARTRIDGE LENGTH [mm]	1375	1375
OUTLET INVERT TO STRUCTURE INVERT [mm]	1985	1985



SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID		[]	
WATER QUALITY FLOW RATE (L/S)		[]	
# OF CARTRIDGES REQUIRED (HF - DD)		[-]	
CARTRIDGE SIZE		1375	
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE	[]	[]	[]
OUTLET PIPE	[]	[]	[]
UPPER TANK WEIGHT		7,500kg	
LOWER TANK WEIGHT		12,500kg	

NOTE: TANK SUPPLIED IN TWO PARTS; PARTS A & B TO BE JOINED ON SITE

GENERAL NOTES

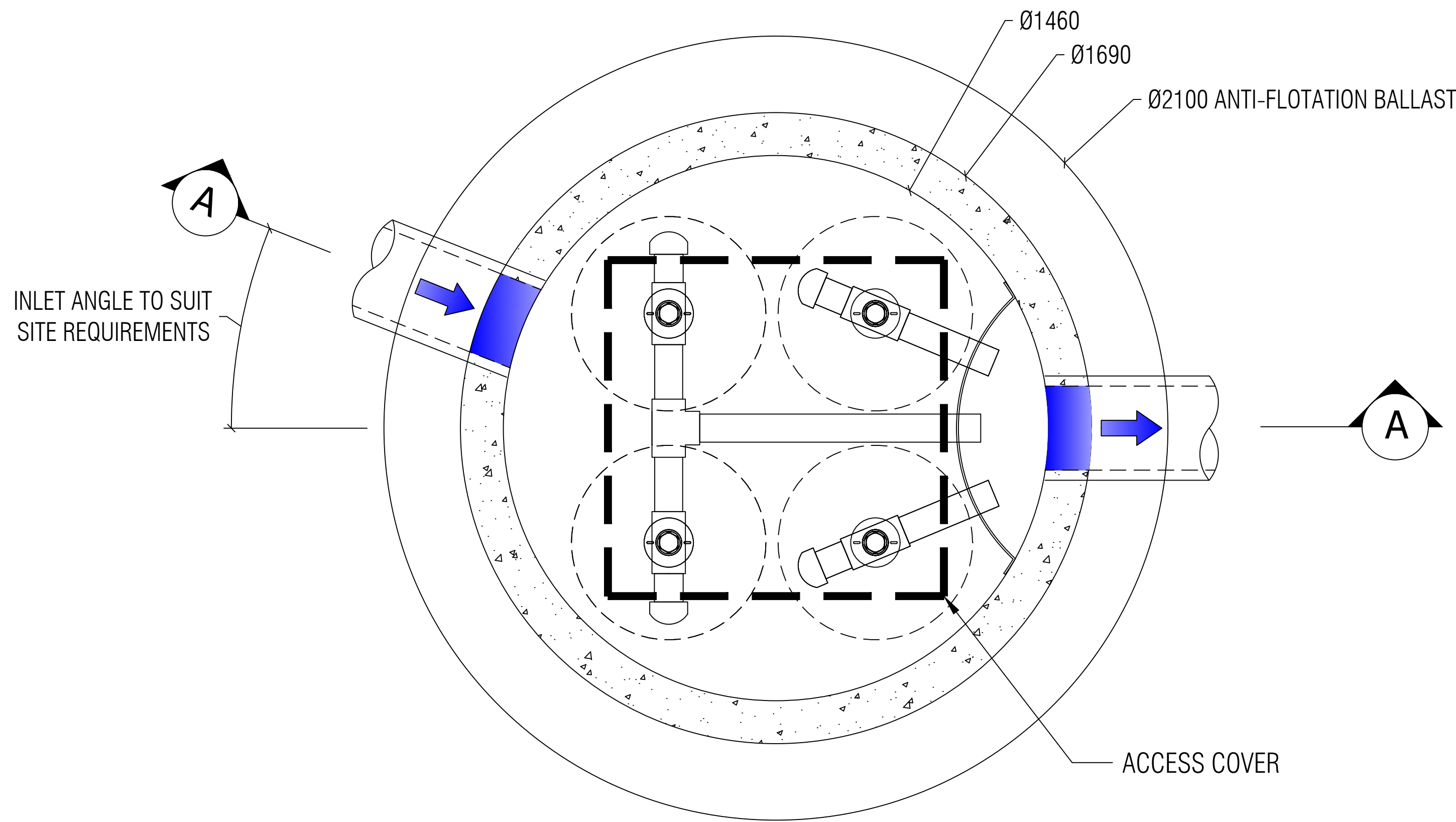
- JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF THE PROJECT.
- PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
- PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
- IF THE PEAK FLOW RATE, AS DETERMINED BY THE CERTIFYING ENGINEER, EXCEEDS THE TREATMENT FLOW RATE OF THE SYSTEM, AN UPSTREAM BYPASS STRUCTURE IS REQUIRE.
- ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
- SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
- DRAWING NOT TO SCALE.

INSTALLATION NOTES

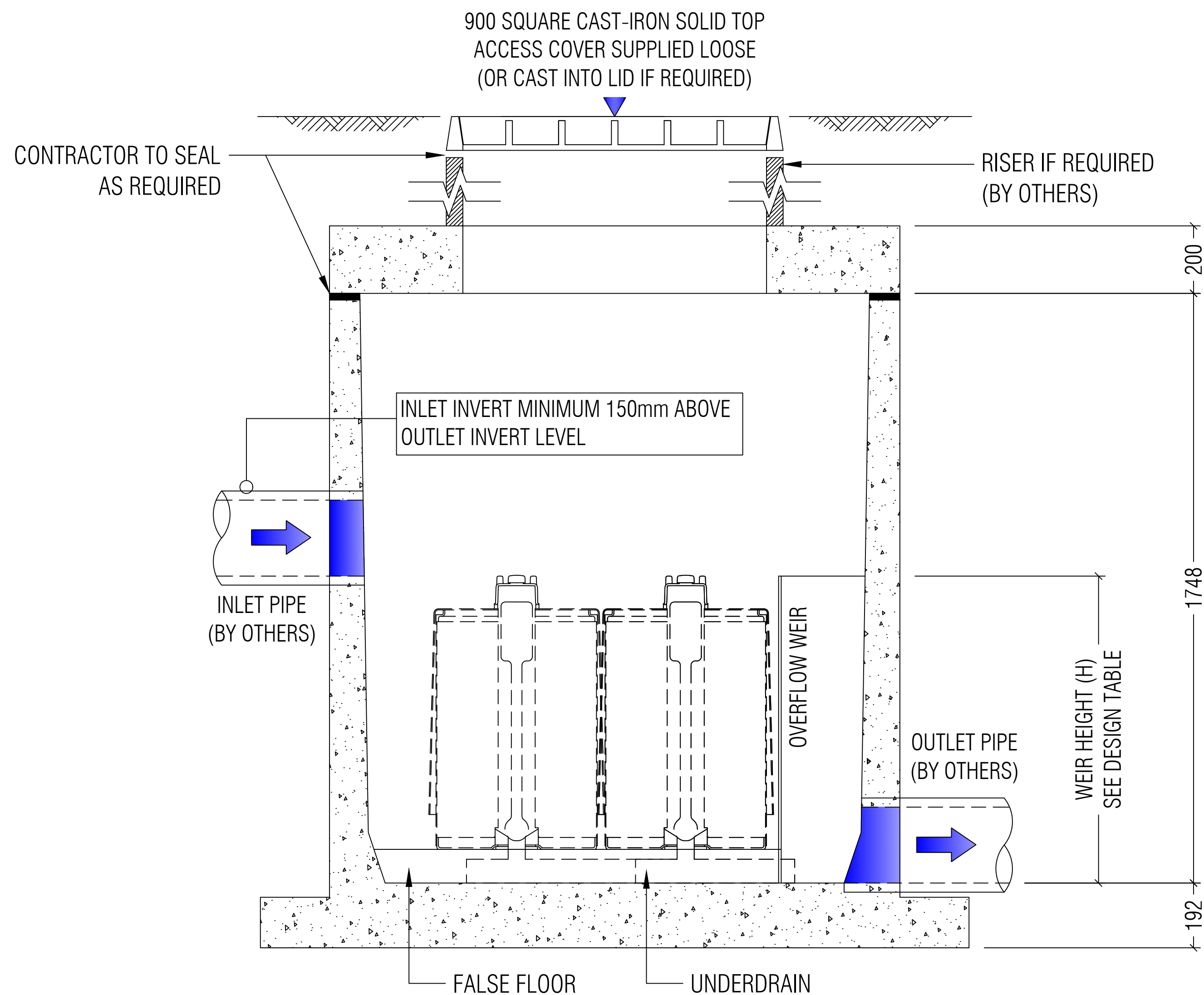
- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE SPECIFIC DESIGN CONSIDERATION AND SHALL BE SPECIFIED BY THE CERTIFYING ENGINEER.
- CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
- CONTRACTOR TO INSTALL AND LEVEL THE STRUCTURE, APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL AND GROUT INLET AND OUTLET PIPES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
- CARTRIDGE INSTALLATION, BY OCEANPROTECT, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT OCEAN PROTECT TO COORDINATE CARTRIDGE INSTALLATION WITH SITE COMPLETION.



OCEAN PROTECT
JELLYFISH 3250
STANDARD PRODUCT DRAWING



PLAN

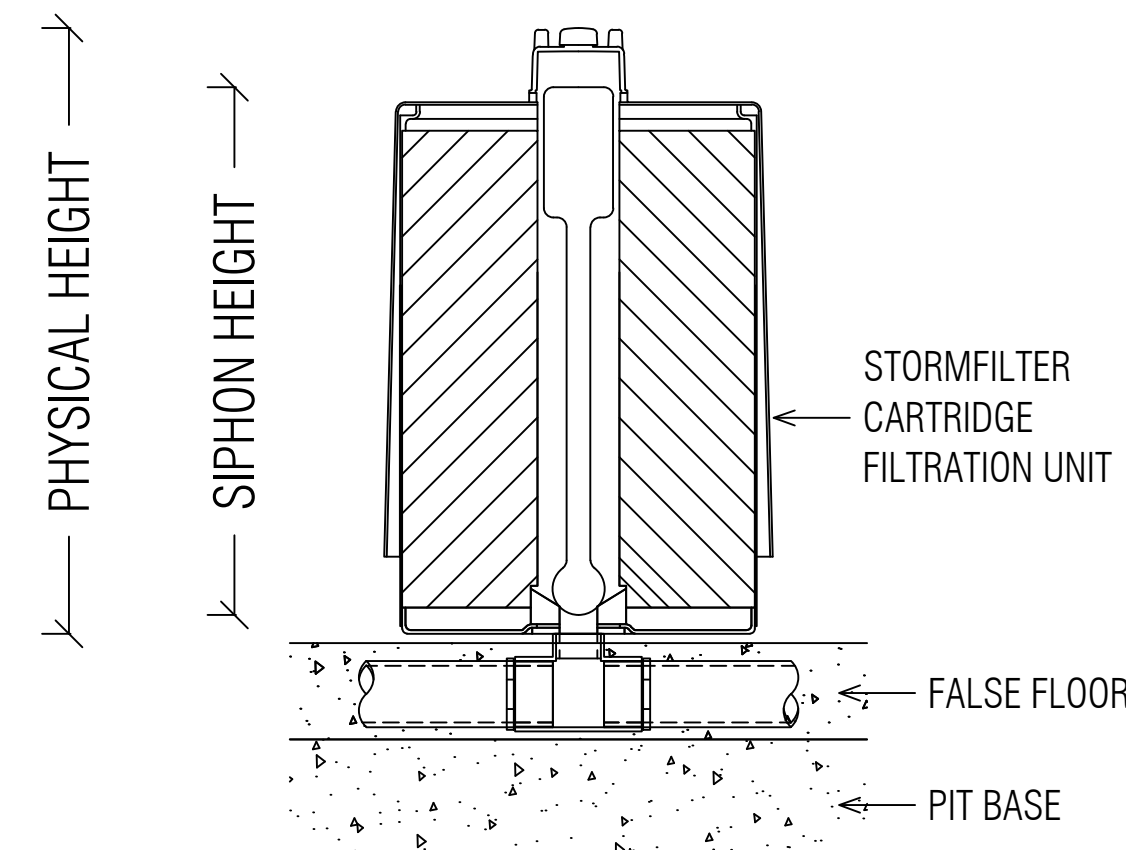


SECTION A-A

STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [H] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39



STORMFILTER
CARTRIDGE DETAIL

SITE SPECIFIC
DATA REQUIREMENTS

STRUCTURE ID	[]		
NUMBER OF CARTRIDGES REQ'D	4		
SIPHON HEIGHT (310 / 460 / 690)	[]		
MEDIA TYPE (ZPG / PSORB)	[]		
WATER QUALITY FLOW RATE (L/S)	[]		
HYDRAULIC CAPACITY (L/S)	90		
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	[]	[]	[]
INLET PIPE #2	[]	[]	[]
INLET PIPE #3	[]	[]	[]
OUTLET PIPE	[]	[]	[]
PRECAST MANHOLE WEIGHT		4100kg	
PRECAST LID WEIGHT		1100kg	

GENERAL NOTES

1. PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
2. PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
3. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CERTIFYING ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE SYSTEM, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.
4. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
5. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
6. DRAWING NOT TO SCALE.

INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY CERTIFYING ENGINEER.
2. CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
3. CONTRACTOR TO APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL AND GROUT INLET AND OUTLET PIPES.



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4 CARTRIDGE STORMFILTER SYSTEM
DN1460 MANHOLE
SPECIFICATION DRAWING