

# Civil Engineering Design Report

## New High School for Leppington and Denham Court

Prepared for Department of Education (DoE) c/o TSA Riley / 14 January 2025

232024

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1	15/01/2025	S. Fok	C. Rope	REF Submission

## 1.0 Introduction

This Civil Engineering Design Report has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the new high school in Leppington (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The proposed activity is for the construction of a new high school located at 128-134 Rickard Road, Leppington, NSW, 2179 (the site).

The purpose of this report is to address the civil engineering design of the activity including stormwater quantity, stormwater quality, pavements and earthworks design.

### 1.1 Site Description

The site is known as 128-134 Rickard Road, Leppington, NSW, 2179 and is legally described as Lots A and B in Deposited Plan 411211. The site is located on the eastern side of Rickard Road and is approximately 4.1ha in area. The site is located immediately south of the existing Leppington Public School at 144 Rickard Road and is approximately 700m south of Leppington Train Station.

Figure 1 below provides an aerial image of the site.



Figure 1: Aerial Image of Site (Source: NearMap)

The northern portion of the site is currently used for residential purposes. The southern portion of the site is used for agricultural purposes, with multiple greenhouses and an existing pond on the property.

### 1.1.1 Site Topography

The existing site topography comprises of a crest central to the site with falls mostly towards the south and west, this can be visualised from the survey markup in Figure 2 below. It is noted that an existing pond is located in the southeast corner of the site.

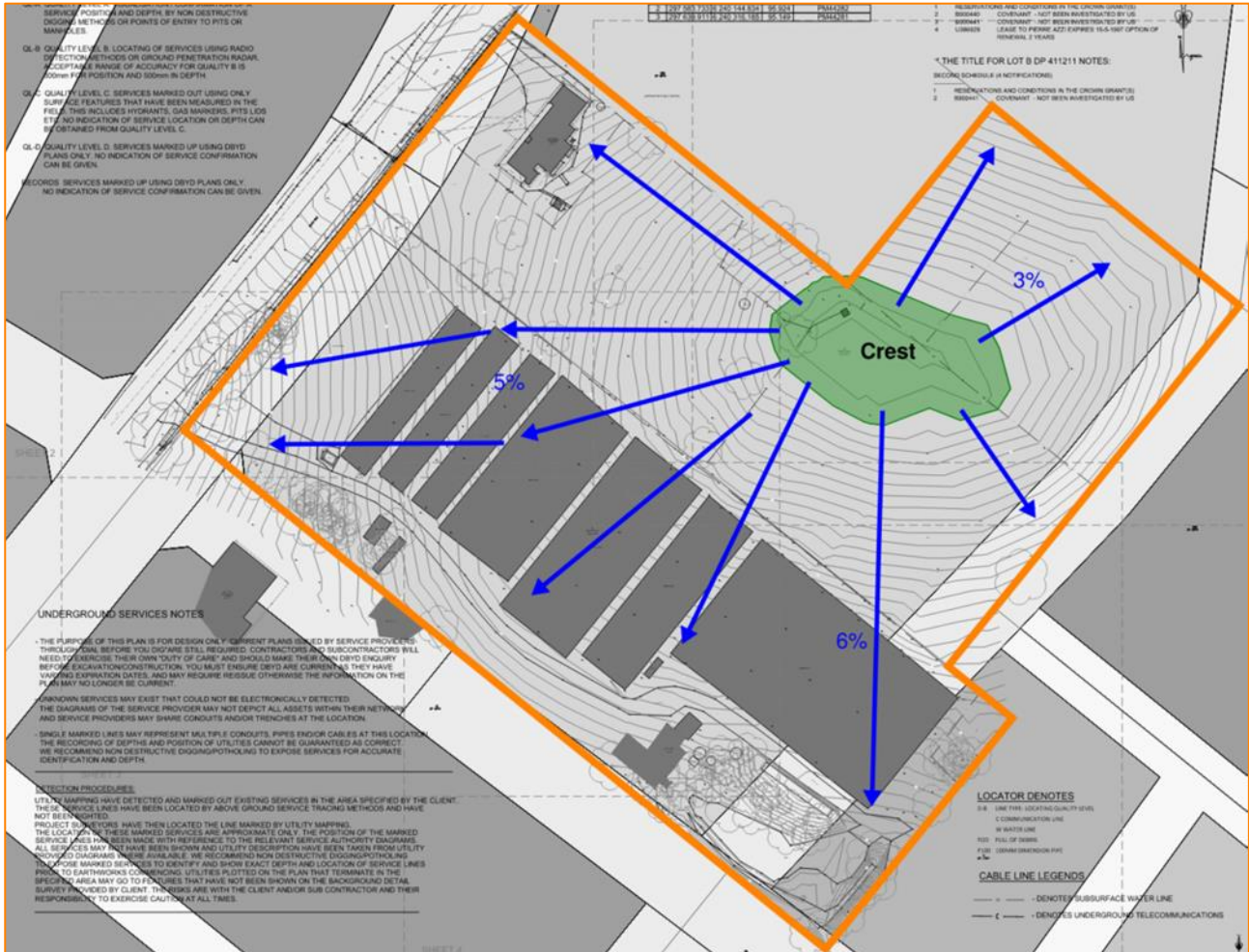


Figure 2: Site Survey (Source: Project Surveyors)

An approximate fall of 10 metres over 200 meters from the centre of the site to the western boundaries is present and equates to a grade of approximately 5%. Additionally, it has a fall of 8 meters over 140 meters from the centre to the southern boundary, equating to an approximate grade of 6%. The approximate grading to the north is 3%.

### 1.1.2 Existing Services

Taylor Thomson Whitting have conducted a Before You Dig Australia (BYDA) enquiry attached in Appendix A as part of the master plan stage to identify known in-ground public assets that may impact the activity.

The site survey contains location of communications services and overhead electricals. Services may be required to be relocated and diverted around the site or removed as part of the works. It is recommended that services be physically located prior to detailed design to identify any clash points with proposed in-ground infrastructure. The design must be progressed in accordance with the relevant services consultants' design advice and in consultation with all relevant statutory authorities.

### 1.1.3 Geotechnical Conditions

A geotechnical report for the proposed school site has been reviewed by the design team.

Notes gathered from the existing geotechnical investigation prepared by JK Geotechnics are as follows:

- Existing dam and Pond – All water-softened materials need to be removed prior to filling.
- CBR 1% - Subgrade improvement or replacement is recommended or thicker pavement design
  - Concrete pavements underlain by 150mm thick lean mix concrete subbase
- Salinity may be present (subject to testing)
- Batters
  - Temporary batters are to be no higher than 3 meters and 1:1
  - Permanent cut batters to be no higher than 3 meters and 1:2 (1:3 recommended)
- Residual silty clays are of high plasticity, subject to high swell.



## 1.2 Proposed Activity Description

The proposed activity is for a new high school in Leppington and Denham Court. The new high school will accommodate up to 1,000 students across 3 new buildings that will comprise 48 permanent teaching spaces (PTS), 3 support teaching spaces (STS), 19 specialist labs/workshops/kitchens and a hall. Buildings A, B and C will be clustered along the southern boundary and the hall will be located in south-east corner of the site. The activity also includes the construction of a sports field in the centre of the site and 3 x multipurpose courts along the northern boundary. The proposed scope of works is illustrated in Figure 3 below.



Figure 3: New Leppington High School and Denham Court (Source: DJRD)

### 1.2.1 Temporary Internal Road

An internal road is proposed extending along the southern boundary from Rickard Road to the southeast corner of the site. The road is intended to be temporary until future precinct roads are constructed by others. The planned future road works as part of the Leppington Town Centre draft planning proposal impact on the usable area within the site and results in larger setbacks for buildings to the boundary.

### 1.3 Guidance documents

The following documents have been reviewed and referenced in preparing this report:

- Camden Growth Centre Precincts Development Control Plan (DCP), 2023;
- Camden Council (CC) Development Control Plan (DCP), 2019;
- Camden Council (CC) Engineering Design Specification, 2009;
- Blue Book – Managing Urban Stormwater Soils and Construction (Landcom NSW);
- NSW Department of Education Educational Facilities Standards and Guidelines;
- NSW Floodplain Development Manual;
- Australian Rainfall and Runoff 2019;

Design inputs by others:

- Geotechnical Investigation for Proposed Leppington High School by JK Geotechnics dated 4 January 2024
- Climate Change Risk & Adaptation Assessment Leppington Public School by JHA Consulting Engineers dated 17 March 2023
- New Leppington High School | Infrastructure, Demand and Capacity Study by Stantec dated 14 December 2023
- Detailed Survey by Project Surveyors dated 8 January 2025.

## 2.0 Stormwater

### 2.1 Stormwater Quantity

#### 2.1.1 Existing Stormwater

The existing site topography allows for water to sheet flow to adjoining properties from the crest in the centre of the site. Sheet flow travels outwards from the crest in the centre of the site. Along the western frontage of the site, stormwater flows to the roadside swale along Rickard Road. Surface water also overflows the other site boundaries to private land. The nearest inground stormwater pits in Rickard Road to the north of the site is approximately 30 meters away, and to the south is approximately 300 meters away.

The site consists of two lots; one used for agriculture, and one used as a residential property with an approximate total area of 4.1 hectares. The existing site is considered to be approximately 80% pervious, with 20% of the site being pervious to allow for the existing buildings and internal roads. The survey investigation identified no in-ground stormwater drainage systems within the site or along the part of Rickard Road fronting the site.

#### 2.1.2 Proposed Stormwater Design

The proposed stormwater design is to be in accordance with the relevant Australian Standards, Australian Rainfall and Runoff 2019 (ARR 2019), the Council's DCP, Council's Stormwater Drainage Guidelines for Building Developments and SINSW's EFSG requirements.

Council's DCP requires that an adequate stormwater system shall be designed and constructed to ensure that new works do not increase stormwater peak flows in any downstream areas for all storm events up to and including the 1% (AEP).

The stormwater design can be separated into two categories – roof stormwater and surface stormwater. All roof stormwater will be collected through the use of gutters and downpipes and directed to rainwater tanks as reuse for landscape irrigation. The overflow from rainwater tanks is conveyed to the in-ground pipes system for surface stormwater up to and including the 20% Annual Exceedance Probability (AEP) storm event. All surface stormwater shall be collected by a series of surface inlet pits and in-ground pipes. Stormwater flows in excess of the 20% AEP and up to the 1% AEP event will be directed either by overland flow paths or in-ground stormwater to an on-site detention tank. Where flows exceed the 1% AEP storm or pits become blocked, surface grading will facilitate overland flow to be conveyed out of the site.

As the majority of the site falls towards the southwest corner, the main point of discharge is proposed to be to the roadside open channel within Rickard Road. Consideration is to be made for augmentation of the proposed discharge to suit the future Rickard Road widening. In the interim, discharge to the northeast and southeast will continue as sheet flow across the boundary. In future, connections to drainage constructed as part of the precinct road works may be made.

#### 2.1.3 Onsite Stormwater Detention

Section 6.5: Ecologically Sustainable Development of Council's Growth Centre Precinct DCP stipulates that post-works peak flows up to and including the 1% AEP storm event must be reduced to pre-works levels by the implementation of stormwater detention. Separately, the DCP requires works to meet a site storage requirement (SSR), and permissible site discharge (PSD) based on the site activity area. Council was contacted and have since confirmed that both requirements of the DCP apply, refer Appendix C.

The SSR and PSD requirements for the activity area for the minor and major storm events have been provided in Table 1. Two OSD tanks are proposed to detain runoff. Most of the works, consisting of the sports field, multisport courts, Building C and Building D drains to OSD Tank 1. Building A and Building B drain to OSD Tank 2. A combined effective OSD volume of 1525m<sup>3</sup> is required to comply with Council requirements.

DRAINS modelling was conducted to assess the compliance of the stormwater management system. The provided site storage and peak site discharge for the minor and major storm events are also provided in Table 1 to demonstrate compliance with Council's requirements.

DRAINS modelling has also been conducted to compare pre-works peak flows to post-works peak flows. As demonstrated in Table 2, post-works flows for all storms up to and including the 1% AEP storm events have been reduced to pre-works levels through the implementation of stormwater detention.

*Table 1: Compliance with Site Storage Requirements and Permissible Site Discharge*

Storm Event	SSR	Site Storage Provided	PSD (L/s)	Peak Flow (L/s)	Compliant (✓/✗)
2yr ARI	750	1525	75	74	✓
100yr ARI	1480	1525	425	220	✓

*Table 2: Pre-Works Peak Flows vs Post-Works Peak Flows*

Storm Event	Pre-Works Peak Flow (L/s)	Post-Works Peak Flow (L/s)	Compliant (✓/✗)
1 EY	152	67	✓
50% AEP	171	74	✓
20% AEP	365	104	✓
5% AEP	566	167	✓
1% AEP	939	221	✓

A combined detention and bioretention basin system has been proposed to reduce peak flows discharging through the temporary carpark at the southeast of the site.

A separate DRAINS analysis has been conducted to compare the pre-works peak flows and post-works peak flows from the temporary car park to downstream properties. As demonstrated in Table 3, post-works peak flows for all storms up to and including the 1% AEP storm events have been reduced to pre-works levels through the implementation of stormwater detention and does not impact downstream properties.

*Table 3: Pre-Works Peak Flows vs Post-Works Peak Flows from Temporary Carpark*

Storm Event	Pre-Works Peak Flow (L/s)	Post-Works Peak Flow (L/s)	Compliant (✓/✗)
1 EY	49	47	✓
50% AEP	56	48	✓
20% AEP	132	88	✓
5% AEP	205	190	✓
1% AEP	329	291	✓



## 2.2 Stormwater Quality

Stormwater quality treatment is required to comply with the requirements outlined in Section 2.3.2 of Council's Growth Centre Precinct DCP. Council's stormwater quality targets are depicted in Figure 4 below.

**Table 2-1: Water quality and environmental flow targets**

	WATER QUALITY % reduction in pollutant loads				ENVIRONMENTAL FLOWS Stream erosion control ratio <sup>1</sup>
	Gross Pollutants (>5mm)	Total suspended solids	Total phosphorous	Total nitrogen	
Stormwater management Objective	90	85	65	45	3.5-5.0: 1
'Ideal' stormwater outcome	100	95	95	85	1:1

<sup>1</sup> This ratio should be minimised to limit stream erosion to the minimum practicable. Development proposals should be designed to achieve a value as close to one as practicable, and values within the nominated range should not be exceeded. A specific target cannot be defined at this time.

Figure 4: DCP Water Quality Targets

A schematic treatment train and MUSIC model has been prepared and meets Council's requirements above. This treatment train consists of the following treatment devices:

- 39 x Ocean Protect Oceanguard pit filter baskets
- 20 x Ocean Protect 690mm Psorb Stormfilter cartridges
- Total of 40kL rainwater tank for landscape irrigation reuse
- 135 m<sup>2</sup> of Bioretention area

Note, the total rainwater tank volume proposed has been informed by the hydraulic and ESD consultants. Irrigation reuse rates were also assumed and will be further developed in the detailed design phase.

### 2.2.1 MUSIC Modelling

The proposed stormwater quality treatment train was modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) to ensure pollutant load target reductions are met as required by Camden Council. The results of the modelling were compared to the reduction targets prescribed by the Camden Council to determine the effectiveness of the proposed measures.

MUSIC simulates the performance of a group of stormwater management measures, configured in series or in parallel to form a "treatment train" against historic rainfall event data sets. It is the industry standard water quality modelling software developed by the MUSIC development team of the Cooperative Research Centre for Catchment Hydrology (CRCCH).

### 2.2.2 Treatment Train Effectiveness

The results of the MUSIC model compared to Council's targets are provided in Table 4.

Table 4: MUSIC Model Results

Pollutant	Min. Required Reduction (%)	Modelled Reduction (%)	Compliant (✓/✗)
Gross Pollutants (GP)	90	100	✓
Total Suspended Solids (TSS)	85	87.37	✓
Total Phosphorus (TP)	65	66.48	✓
Total Nitrogen (TN)	45	49.95	✓

## 2.3 Erosion and Sediment Control

An erosion and sediment control plan (ESCP) will be implemented during the construction stage to mitigate soil erosion and control the discharge of stormwater laden with sediment, nutrients and other pollutants to adjoining properties, bushland, roadways or receiving water bodies. Stormwater controls on site are detailed in ESCPs which are in accordance with Council's DCP and regulatory authority guidelines including Landcom NSW's Managing Urban Stormwater, Soils and Construction ("Blue Book").

The disturbance of the site during construction must be controlled through erosion prevention and sediment control measures. Typical provisions for a site of this type and scale would include:

- Silt fences to prevent silt and waste being washed into neighbouring sites and streets and may be integrated with safety fencing.
- Catch drains with hay bales to carry and treat site runoff
- Sedimentation basin(s) to be installed at the low point of site excavation.
- Shaker grids at the construction site entrance(s) to ensure that vehicles and machinery leave the site with clean wheels.
- Pits will have silt protection installed to prevent silt from entering the stormwater system during construction.

The proposed Erosion and Sediment Control Plan for the site has been developed as part of the civil engineering drawings.

## 3.0 Civil Works

### 3.1 Pavement Design

Pavements with vehicular traffic will need to be designed with capacity for the proposed design vehicle and vehicular movements. The EFSG requires the pavement design to meet a minimum 25-year design life however considering the temporary nature of the access road, consideration will be made for a lesser design life in the detailed design of the road. It is noted that the carpark adjacent Building D is proposed to be retained following removal of the temporary road and that access will be sought from the future southern road to be delivered by Camden Council.

### 3.2 Retaining Wall design

As part of the schematic phase, plans have been produced nominating locations and heights of anticipated retaining walls based on the architectural and landscape design. Given the topography of the site, there are a number of retaining walls proposed to achieve the level platforms for sports courts as well as interfacing between the boundary levels and proposed internal levels. These plans are including in the civil drawings in Appendix D. The landscape design and subsequently retaining walls will be further developed in detailed design phases.

### 3.3 Earthworks

Earthworks for the school will consist of reshaping the site to provide flat building pads and suitably graded pavements, car parking and play areas. Requirements for the removal of topsoil and any ground improvement will be dependent on the finalisation of geotechnical investigations of the site, including any imported materials and the proposed finished level.

As per geotechnical investigation, site preparation is anticipated to include the following typical measures:

- Stripping of topsoil from work areas to be stockpiled for landscape areas.
- Tyne, water, and roll the areas on which filling, paving or building slabs are to be placed. Proof roll and ameliorate subgrade as required. The final proof roll should have movement no greater than 3mm.
- Placement of acceptable fill material from cut areas or from off-site shall be placed and compacted in layers of no more than 200mm.
- Filled areas and cut areas to be overlain by buildings and pavements are to be protected to maintain constant moisture content in the soil. The protection is to remain in place until construction is complete.
- An independent approved NATA registered testing authority will be required to perform all the compaction testing of earthworks and submit test certificates. Compaction will need to comply with the earthworks specifications.

A Remediation Action Plan (RAP) has been prepared by SMEC to manage contamination found within the site. The preferred method for remediation is onsite encapsulation. This involves excavation of an encapsulation area or 'borrow pit' which is used to place fill material containing contamination. This area may then be capped with clean material. The remediation works would precede or be managed in tandem with the bulk earthworks.

#### 3.3.1 Cut & Fill

A preliminary cut and fill analysis has been conducted to provide a high-level estimate of anticipated earthworks to inform costing based on the schematic architectural plan. The initial analysis determined that there was a surplus of approximately 15,700m<sup>3</sup> of cut. Based on this, it was advantageous to raise the ground finished floor level to minimise the amount of excess cut.

Following workshops with the architect and structural engineers, TTW raised the sports field, courts and hall, and added fill beneath buildings 1, 2, and 3. In doing so, the resultant overall bulk earthworks reduced to 7,200m<sup>3</sup> of cut.

Following further workshops, the Hall has been shifted closer to the eastern boundary, the sports field has been shifted west and a temporary car park has been introduced. In doing so, the resultant overall bulk earthworks reduced to 4,600m<sup>3</sup> of cut. This analysis excluded consideration of proposed landscape works, allowance for topsoil and excavation in rock, services, stormwater trenching and OSD excavation and any remediation works. A bulk earthworks plan is provided in the civil drawings in Appendix D. The bulk earthworks plan will be further developed during the detailed design phase.

There is opportunity to stockpile excess cut onsite. Similarly, in discussion with the project team developing the adjoining primary school project, there may be opportunity to export excess cut to their site. This is to be further investigated.

### **3.4 Public Domain Works**

As part of the activity, there is limited public domain scope proposed prior to the construction of the Rickard Road widening and Council roads along the southern and eastern boundaries. The proposed temporary access road along the southern boundary will provide 'kiss & ride' areas. The scope of the traffic works will be determined in more detail by the traffic consultant during detailed design.

## 4.0 Mitigation Measures

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
<b>Erosion and Sediment Control</b>	Prior to commencement of any construction works and during construction works	The proposed activity will implement measures as documented generally in accordance with NSW Department of Planning, Housing and Infrastructure's Managing Urban Stormwater	To ensure protection of downstream drainage lines, assets, ecosystems or existing hydrological systems from silt, waste and sediment from the site.
<b>Stormwater Quantity</b>	Prior to commencement of operation	The proposed activity incorporates on-site detention to mitigate the impact of stormwater flows.	To ensure stormwater flows for all storm events up to an including the 1% AEP from the activity site will have no adverse impact upon the downstream properties and existing waterbodies.
<b>Water Sensitive Urban Design</b>	Following the removal of temporary water quality (erosion and sediment control) measures.	The proposed activity will include provision of water quality treatment measures as part of water-sensitive urban design, as documented in this report and in the Civil Engineering Drawings provided in Appendix D.  Refer to Hydraulic documentation for rainwater tank sizing and reuse strategy	To ensure the proposed activity meets Council's requirements for pollutant reduction

## 5.0 Conclusion

In conclusion, as discussed in this report, the proposed activity will not have a significant impact on the environment provided that the mitigation measures presented in this report are implemented.

Stormwater quantity management measures have been designed in accordance with Camden Council and EFSG requirements. OSD is proposed to mitigate peak flows post works. Two inground tanks are proposed with a combined effective volume of 1525m<sup>3</sup>. An additional 15m<sup>3</sup> of above ground storage has been proposed to mitigate peak flows discharging from the temporary car park at the southeast of the site.

Stormwater quality measures have also been proposed including rainwater reuse and the provision of filter baskets, filter cartridges and bioretention to meet Camden Council's pollutant reduction targets.

Erosion and sediment control measures have been proposed for the site during construction in accordance with the NSW Department of Planning, Housing and Infrastructure's Managing Urban Stormwater ('Blue Book').

Other civil works including earthworks, proposed pavements and retaining walls will not impact the environment.

Prepared by  
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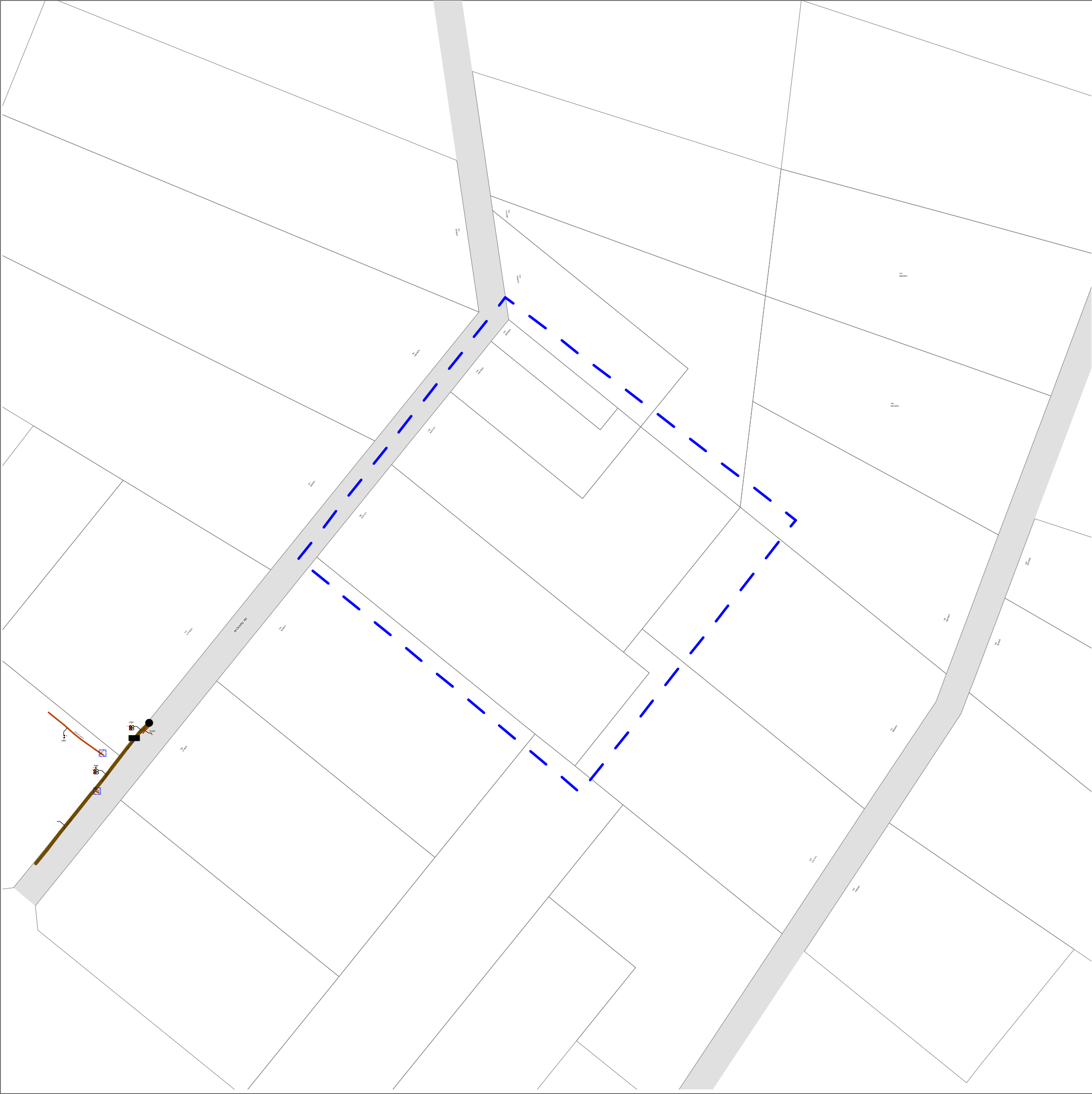
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**Colin Rope**  
Associate Director

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## Appendix A

# BYDA Documents



- WARNING**
- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
  - Underground assets may be congested at the approach to bridges and other structures. Typical asset depths and alignment may vary substantially, rising and falling sharply and at much shallower depths than elsewhere as they are channelled into shared allocated spaces on bridges and other structures. Additional precautions and underground asset location methods will be required in proximity to bridges and other structures.
  - In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
  - The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty **(20)** working days of the original plan issue date.
  - The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
  - Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
  - Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
  - Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
  - Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
  - All plans must be made available at the worksite where excavation is to be undertaken in either printed or electronic format. If the plans are in an electronic format, they must be in a format visible on a screen size 10 inches or greater. Plans must be reviewed and understood by the crew on site prior to commencing excavation.
  - Non-destructive water excavation must be operated at or below 2000PSI. Any operation exceeding 2000PSI must be classed and treated as a destructive excavation practice

- INFORMATION PROVIDED BY ENDEAVOUR ENERGY**
- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
  - Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
  - Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
  - All enquiry details and results are kept in a register.

**DISCLAIMER**

Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

- or

Street light column

Padmount substation

or


Overground pillar (O.G.Box)

Underground pit

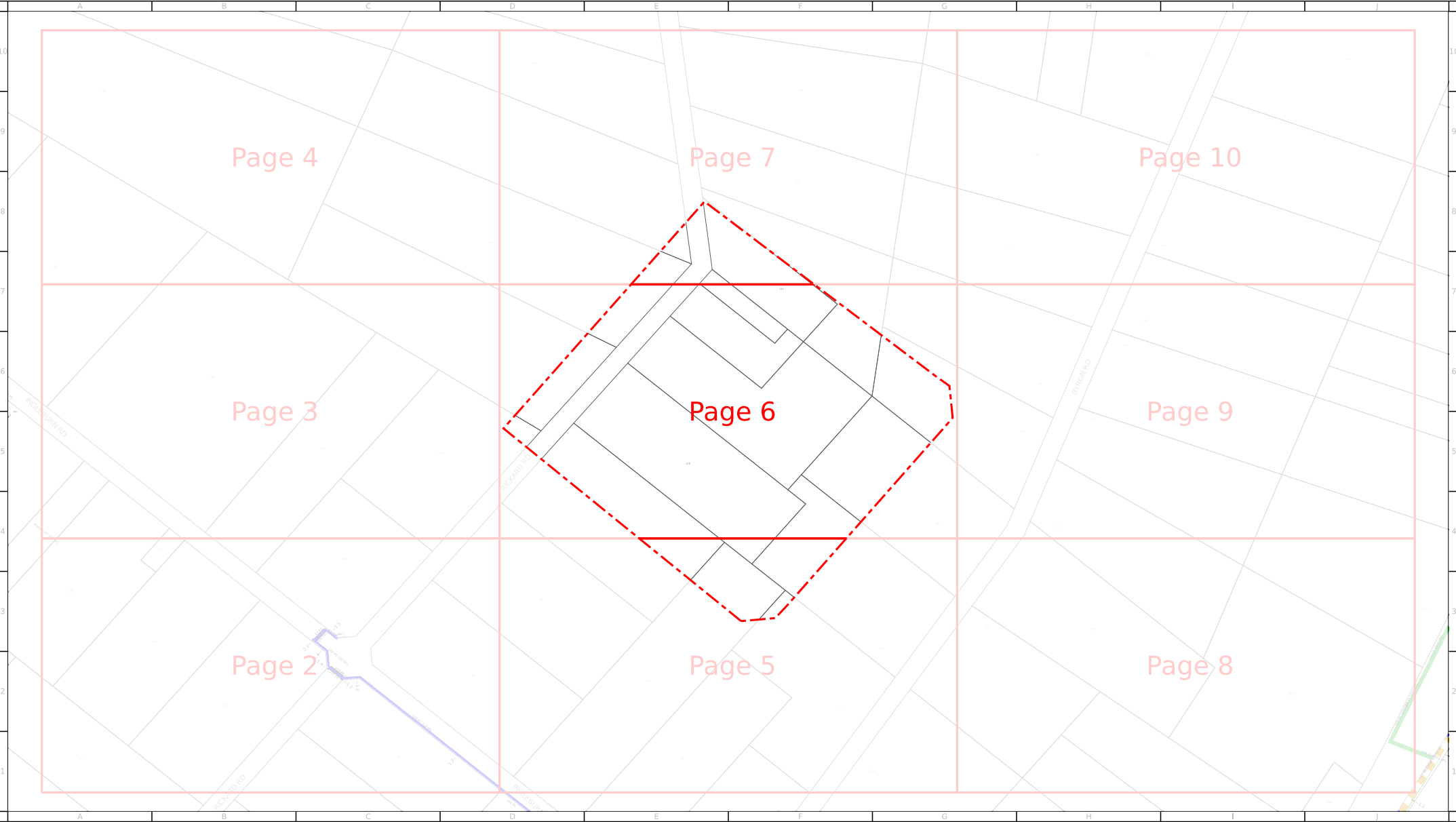
Duct run

Cable run

Typical duct section

Asbestos warning
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| Issued Date:       | 04/06/2024 |
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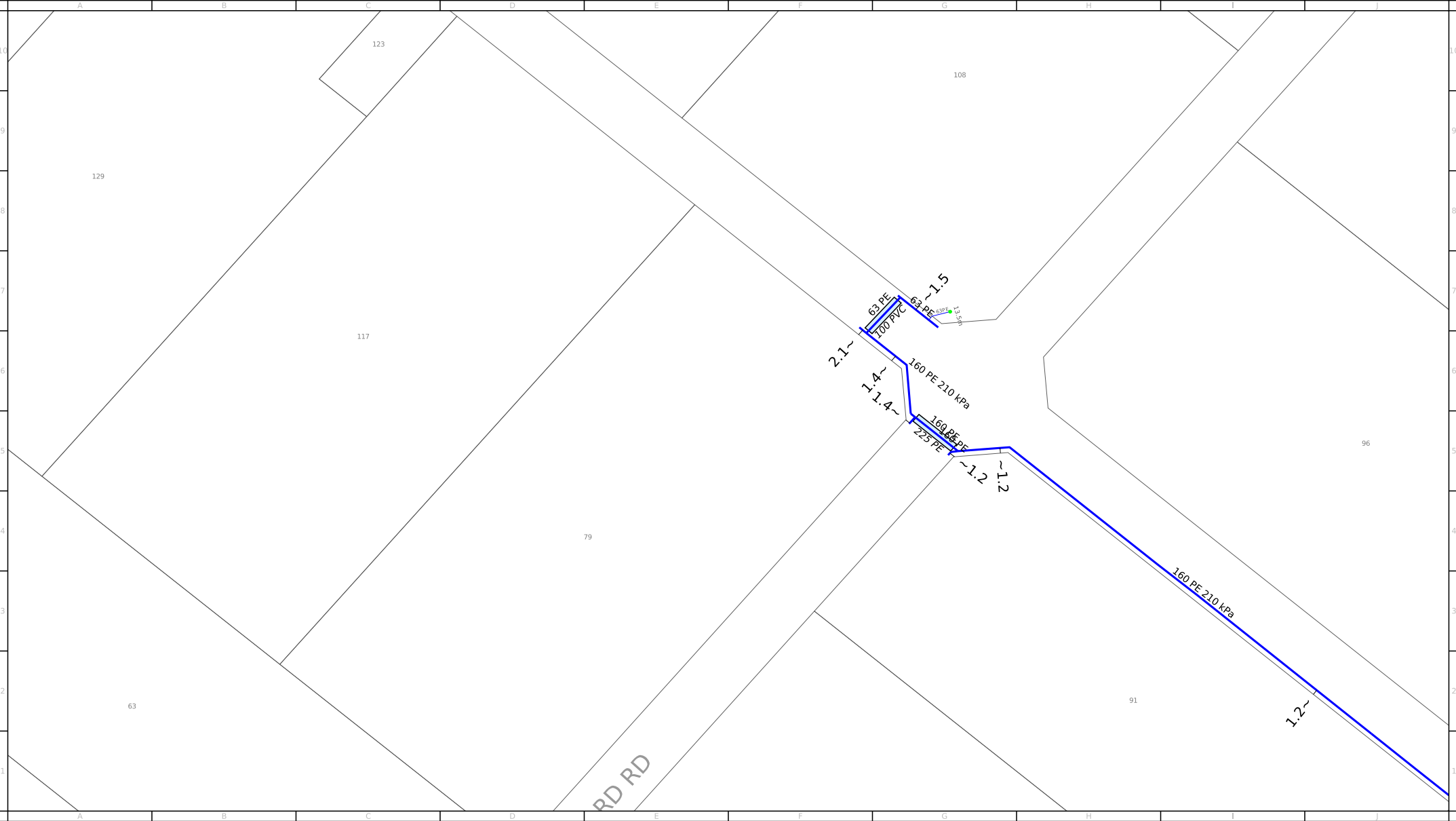
For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



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BYDA Job No: 36829765  
Overview Page:

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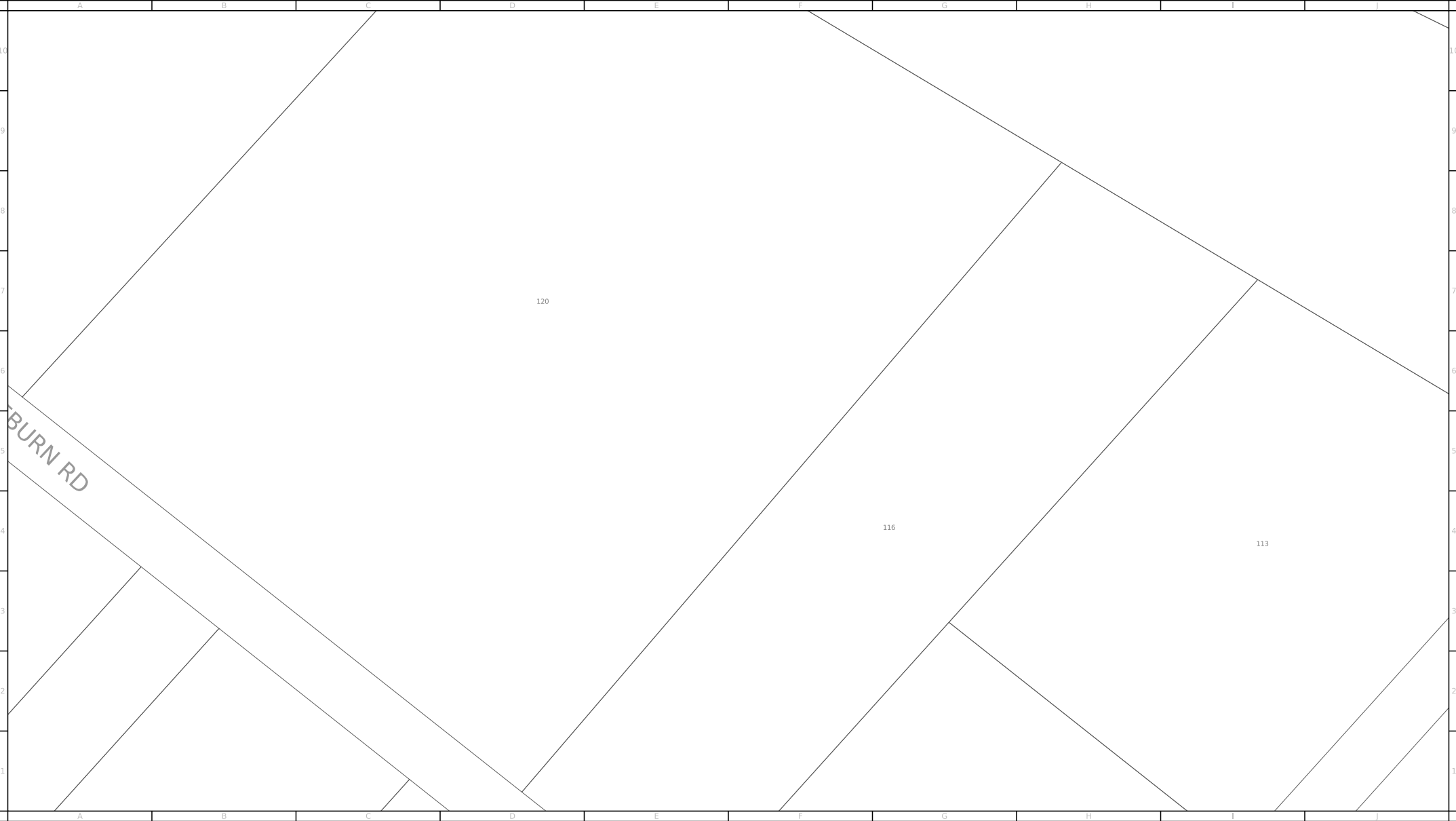


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BYDA Seq No: 240112377  
BYDA Job No: 36829765

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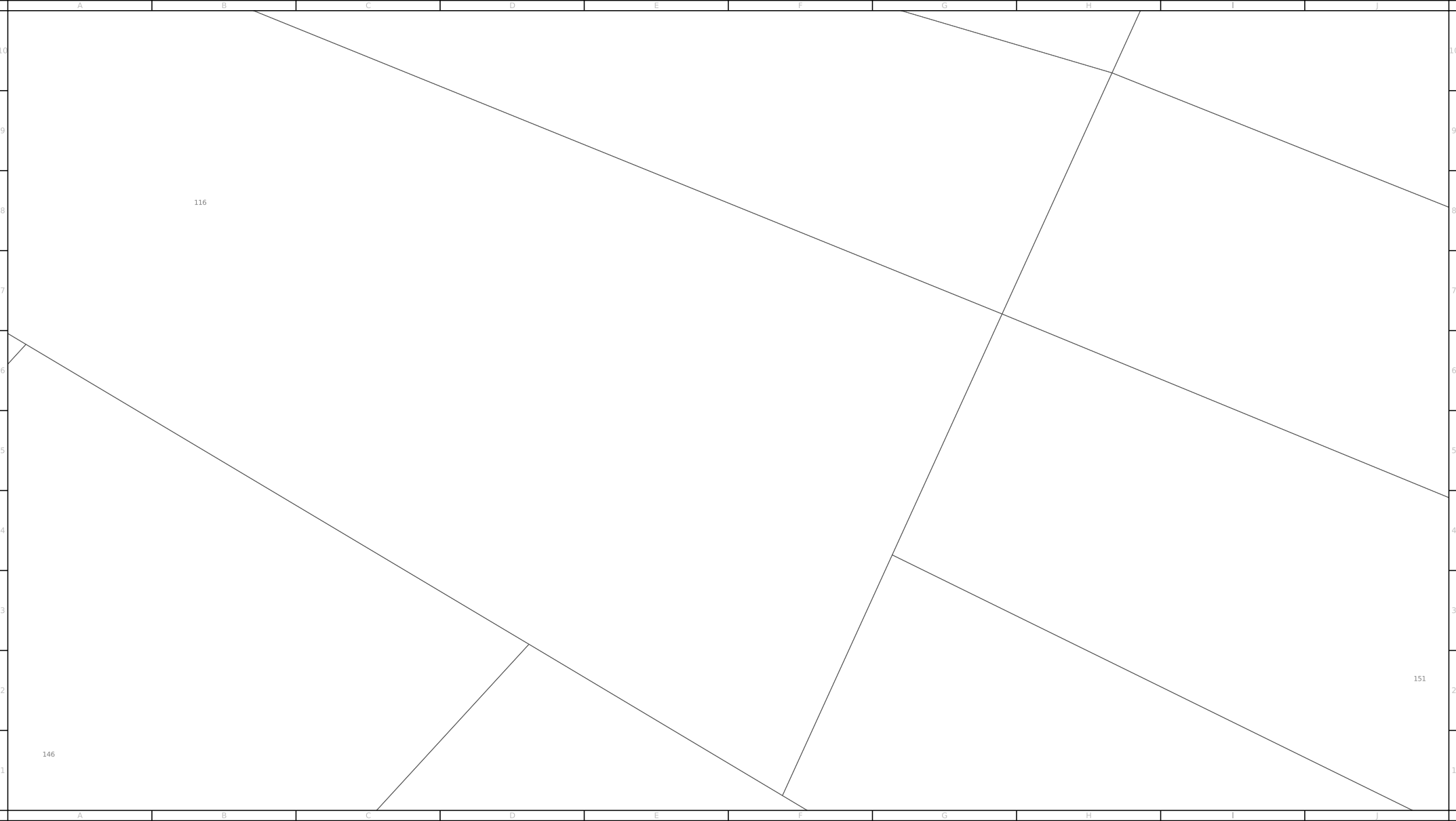
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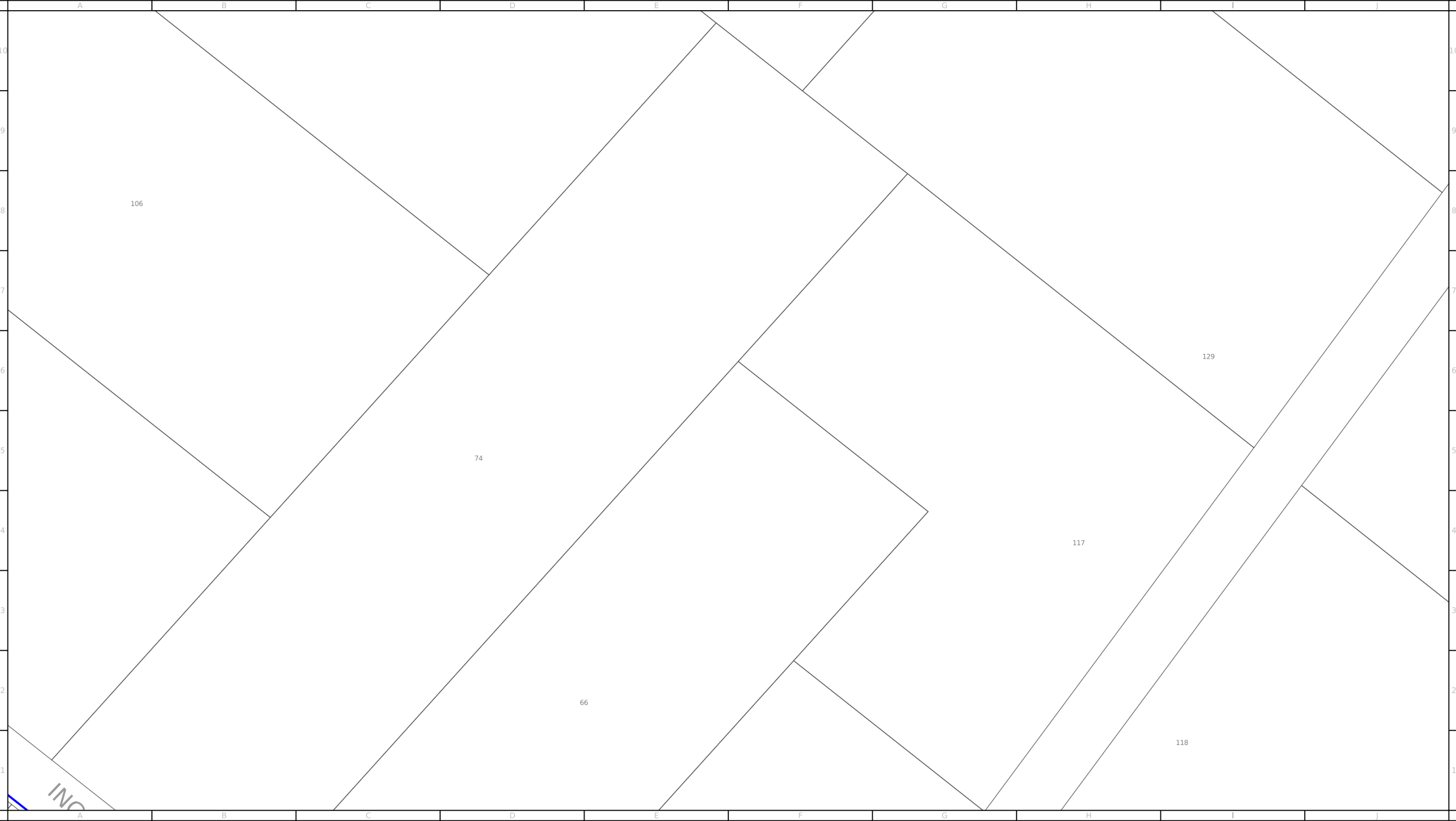
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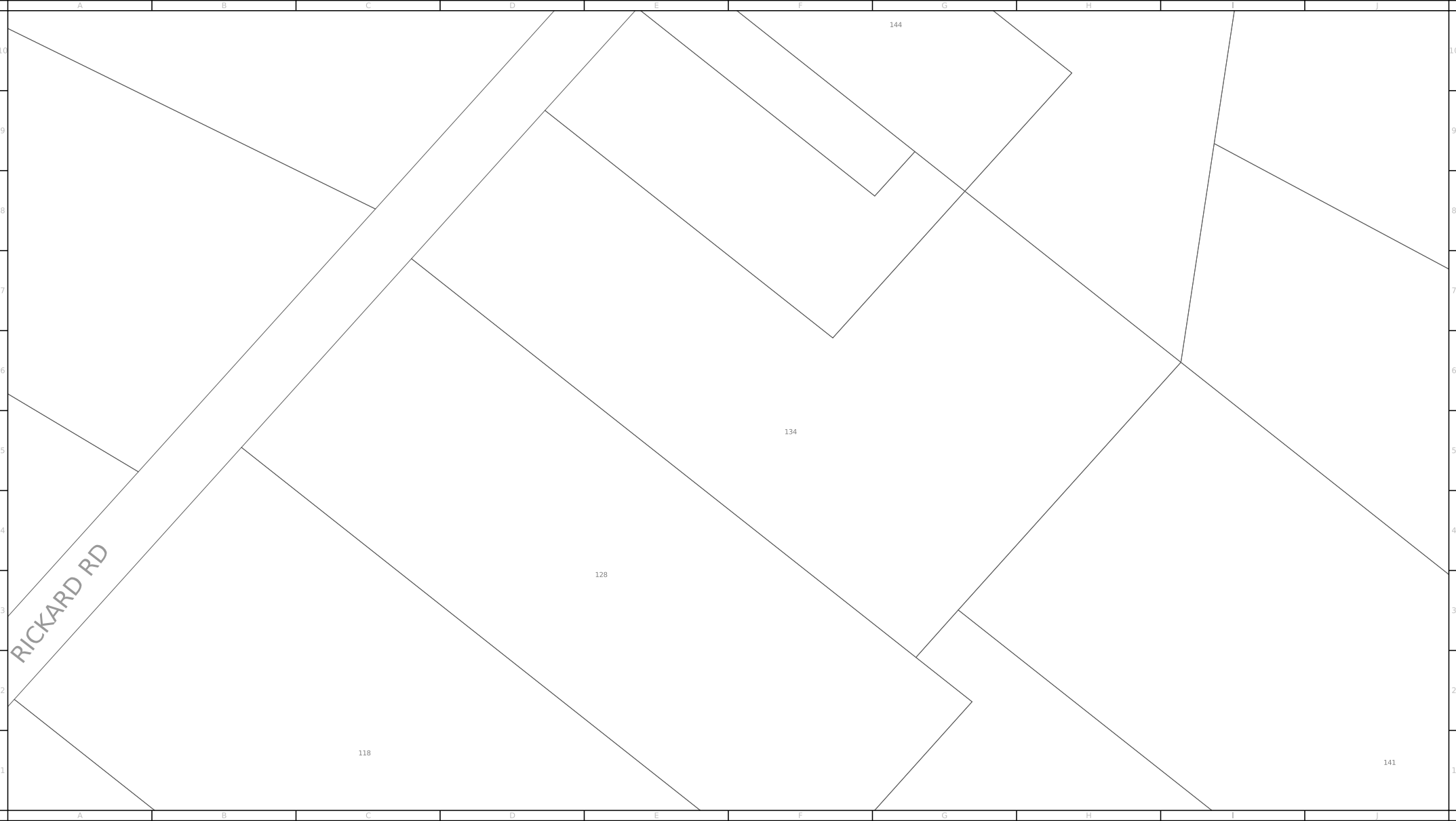


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BYDA Seq No: 240112377  
BYDA Job No: 36829765



**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



Scale: 1:2000

Issue Date: 04/06/2024

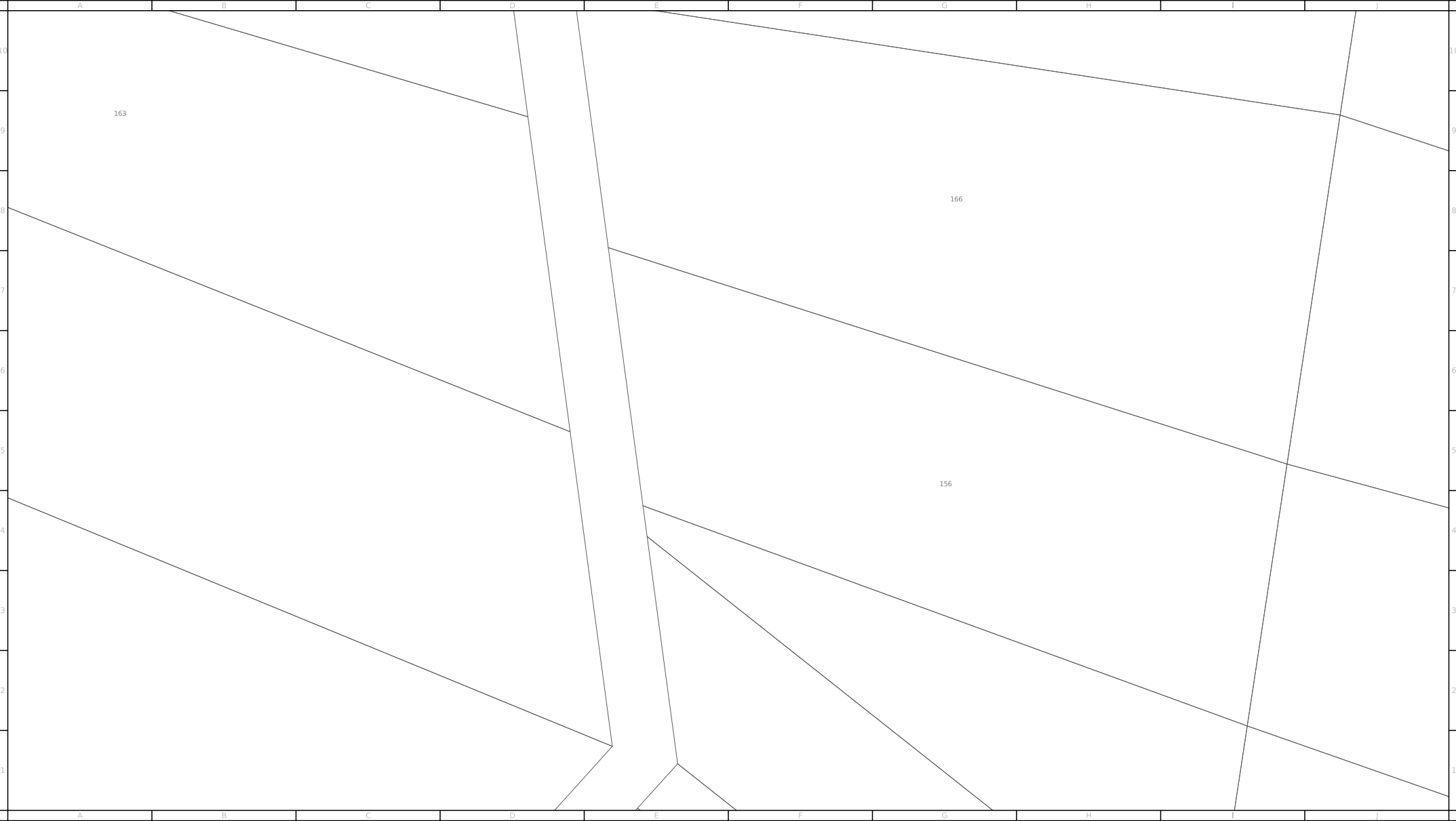
BYDA Seq No: 240112377

BYDA Job No: 36829765

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



**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.




Scale:1:2000

Issue Date: 04/06/2024

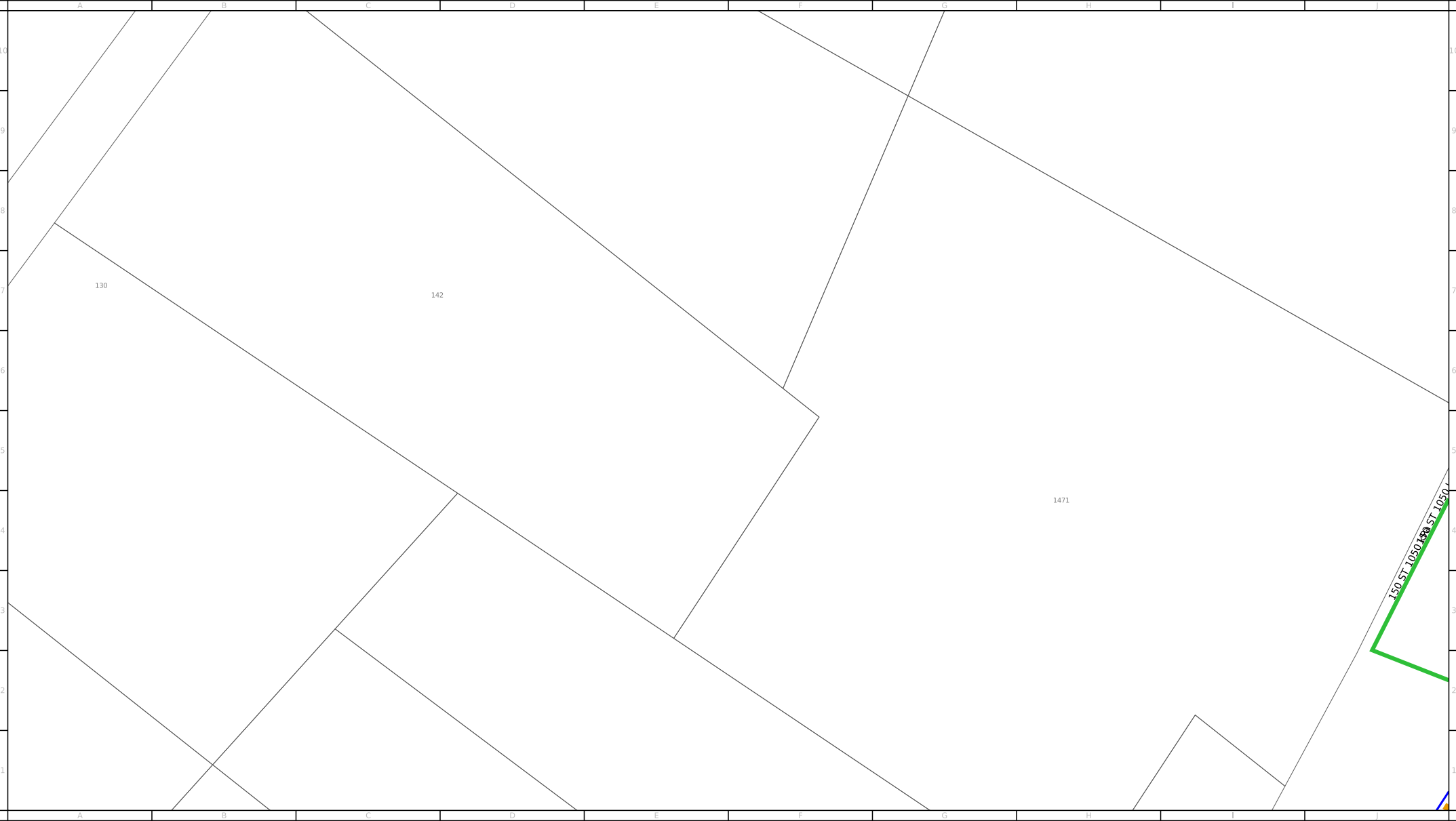
BYDA Seq No: 240112377

BYDA Job No: 36829765

0m 10m 20m 30m 40m 50m 60m 70m80m



**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



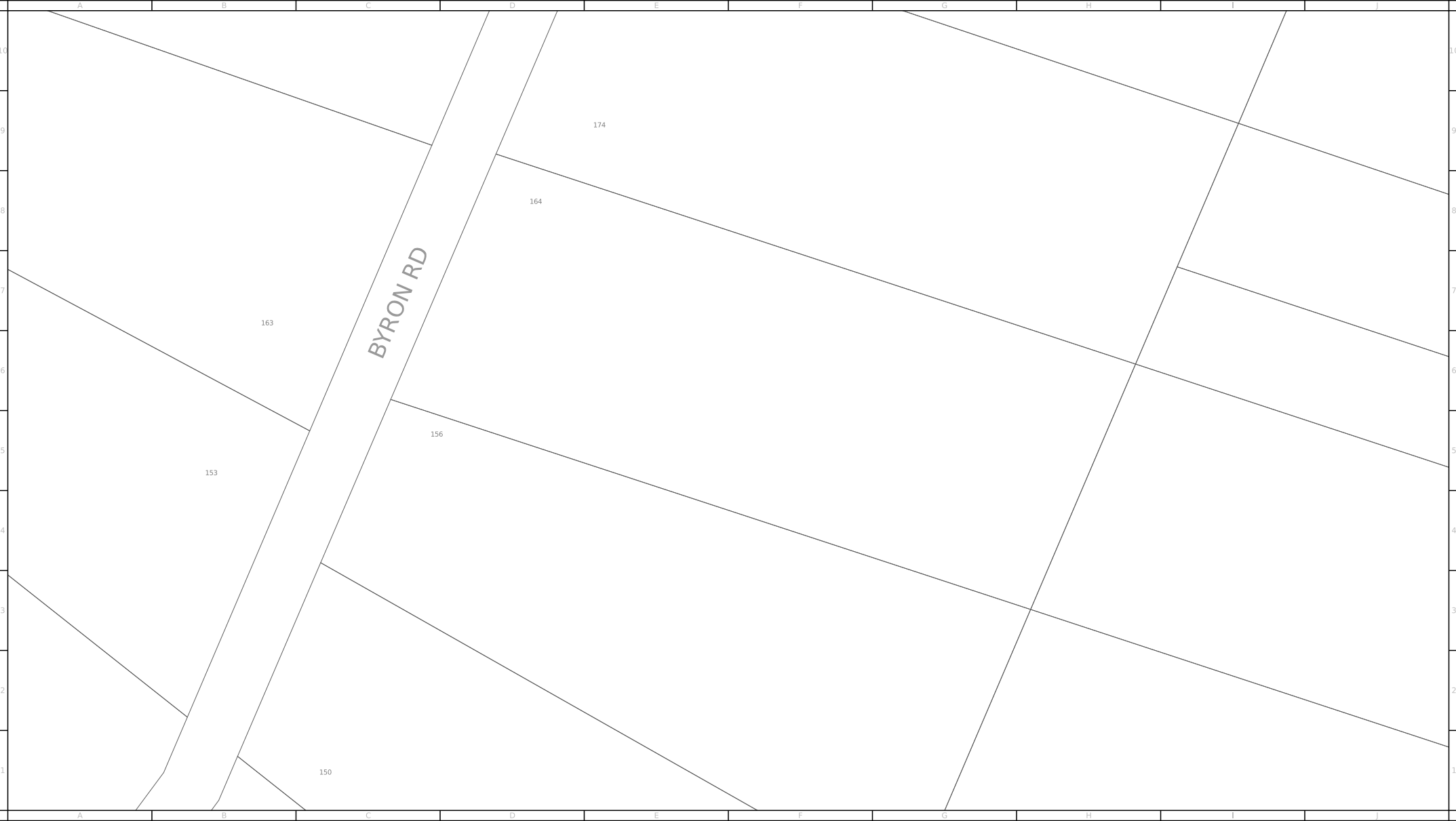
Scale:1:2000

Issue Date: 04/06/2024  
BYDA Seq No: 240112377  
BYDA Job No: 36829765



**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.





For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



Scale:1:2000

Issue Date: 04/06/2024

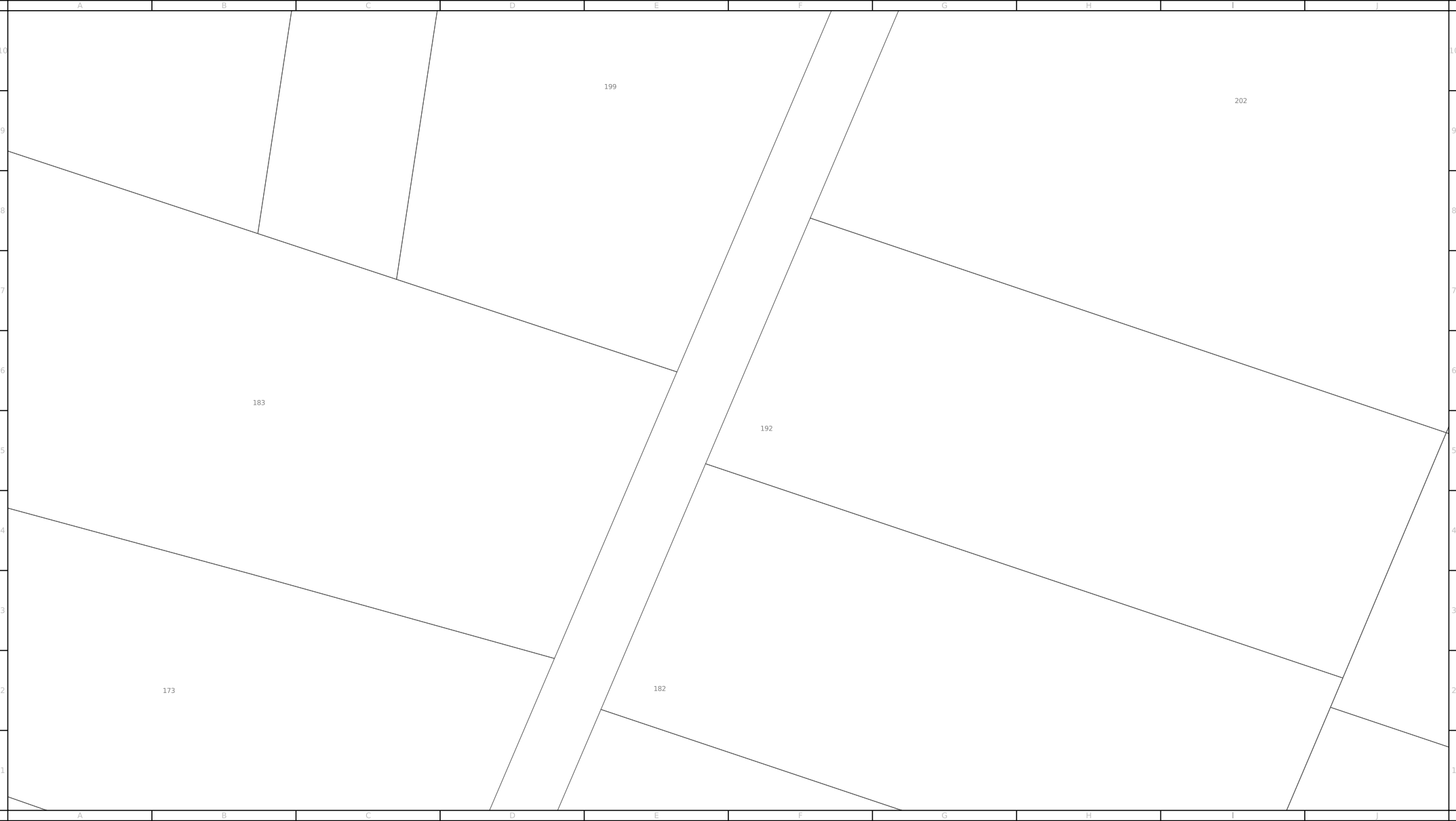
BYDA Seq No: 240112377

BYDA Job No: 36829765

0m 10m 20m 30m 40m 50m 60m 70m80m



**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



Scale: 1:2000

Issue Date: 04/06/2024


BYDA Seq No: 240112377

BYDA Job No: 36829765

0m 10m 20m 30m 40m 50m 60m 70m80m

**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

**To:** Kyrellos Habib  
**Phone:** Not Supplied  
**Fax:** Not Supplied  
**Email:** Kyrellos.habib@ttw.com.au

<b>Dial before you dig Job #:</b>	36829765	
<b>Sequence #</b>	240112374	
<b>Issue Date:</b>	04/06/2024	
<b>Location:</b>	134 Rickard Road , Leppington , NSW , 2179	

Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans

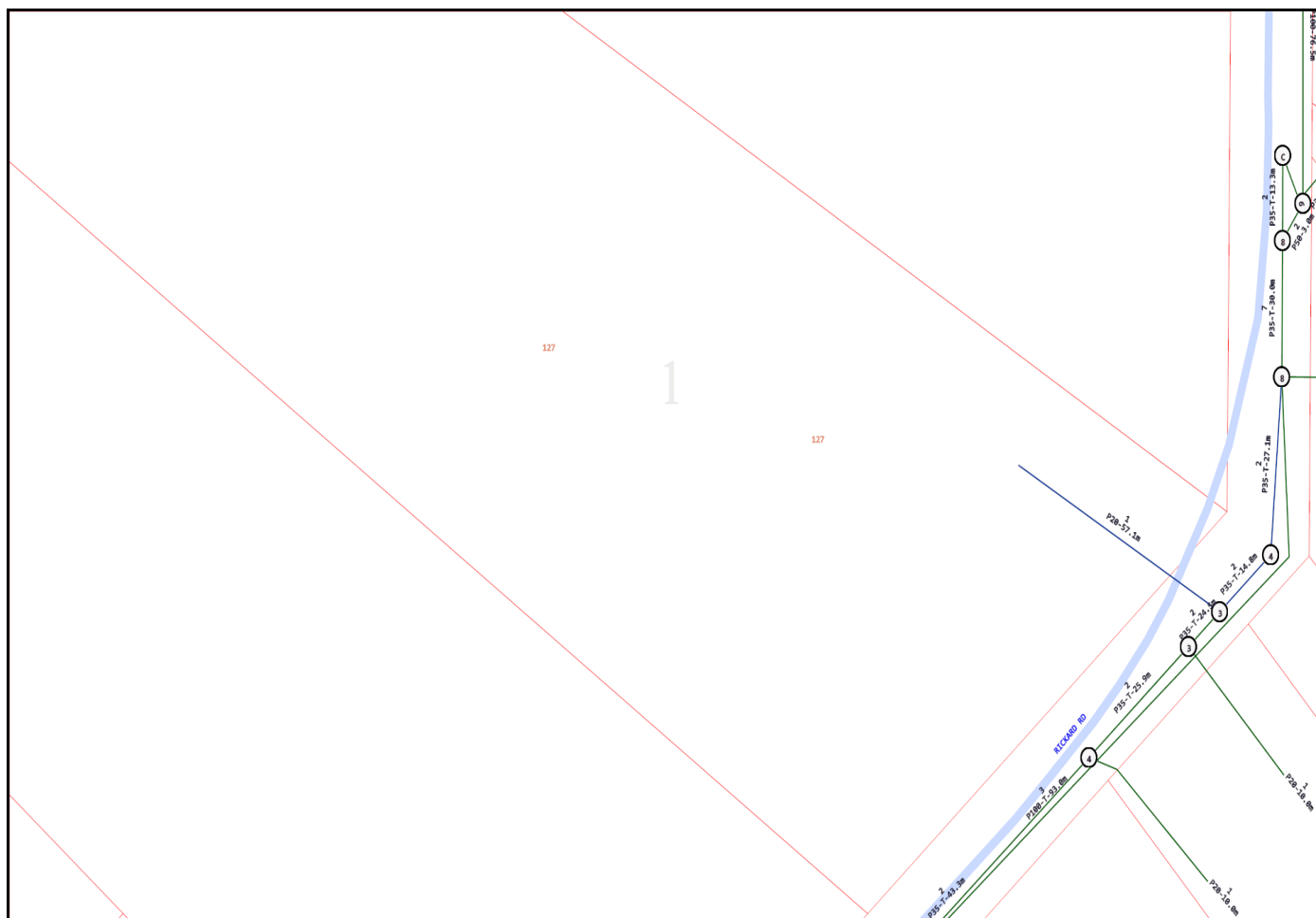
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2	5
3	6

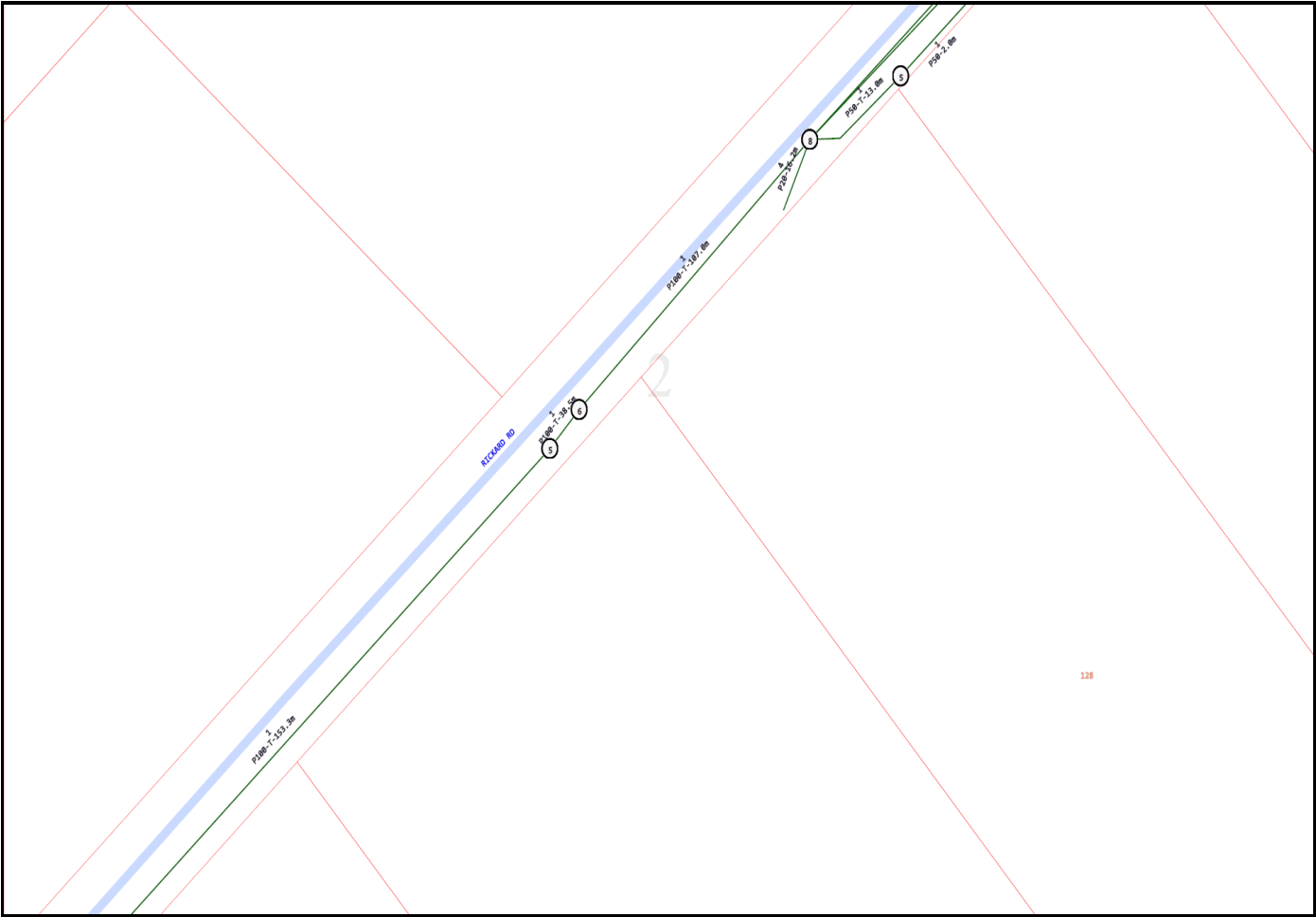


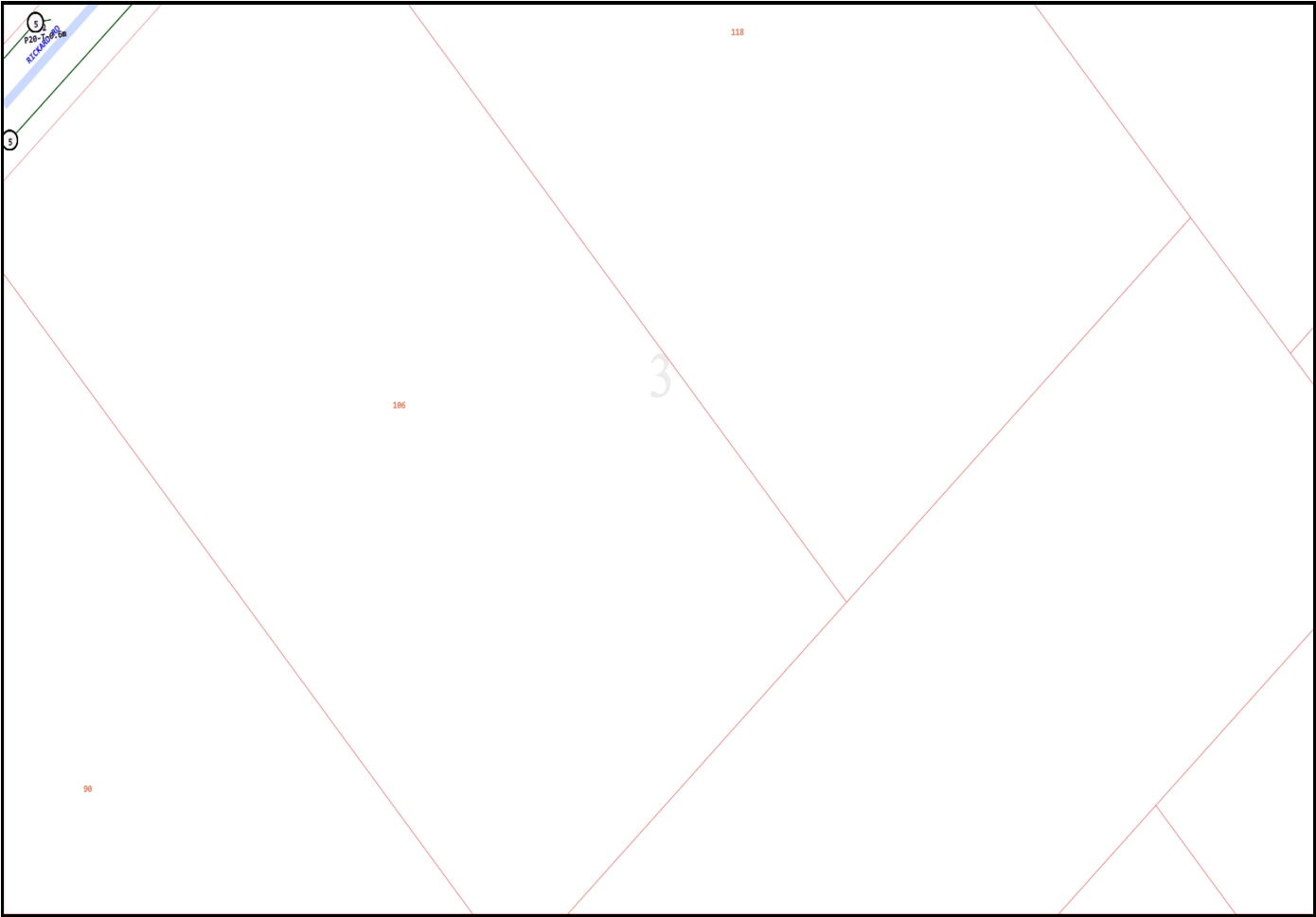
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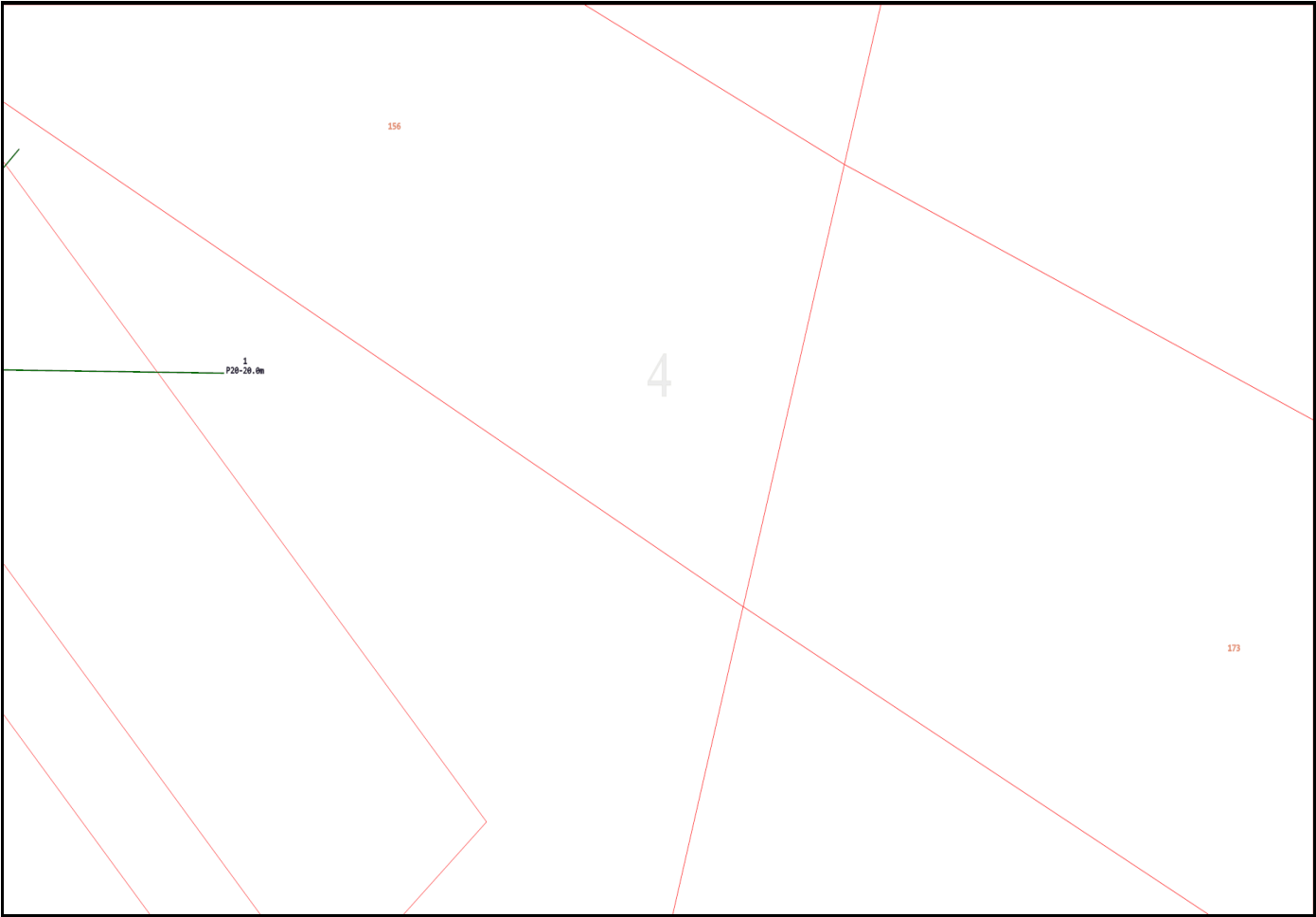


	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any <b>INSERVICE/CONSTRUCTED</b> (Copper/RF/Fibre) cables.
	Trench containing only <b>DESIGNED/PLANNED</b> (Copper/RF/Fibre/Power) cables.
	Trench containing any <b>INSERVICE/CONSTRUCTED</b> (Power) cables.
	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000  1 cm equals 20 m

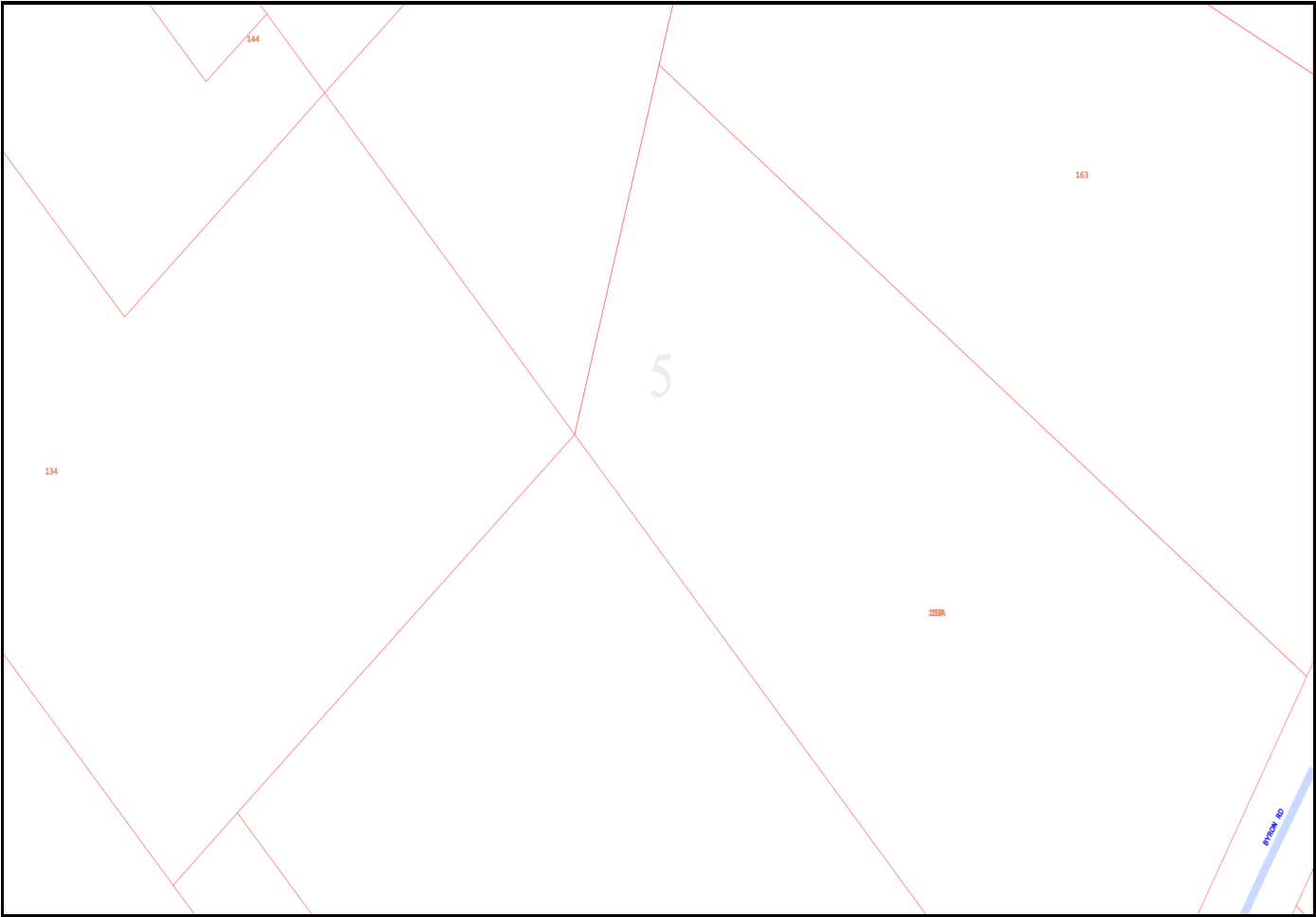


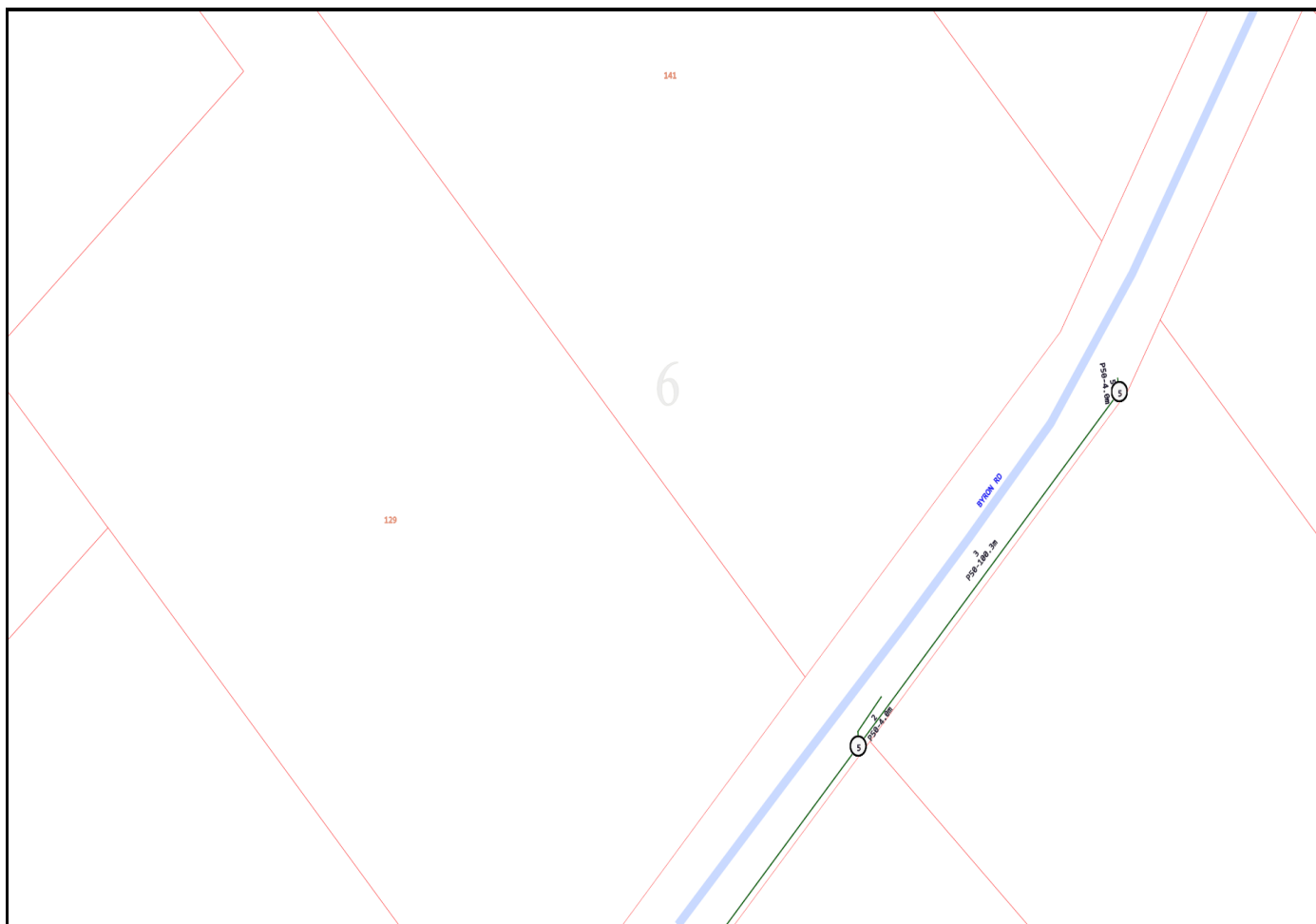












## Emergency Contacts

You must immediately report any damage to the **nbn**™ network that you are/become aware of. Notification may be by telephone - 1800 626 329.

DBYD Address:  
134 Rickard Road  
Leppington NSW 2179

DBYD Job No: 36829765

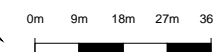
DBYD Sequence No: 240112376

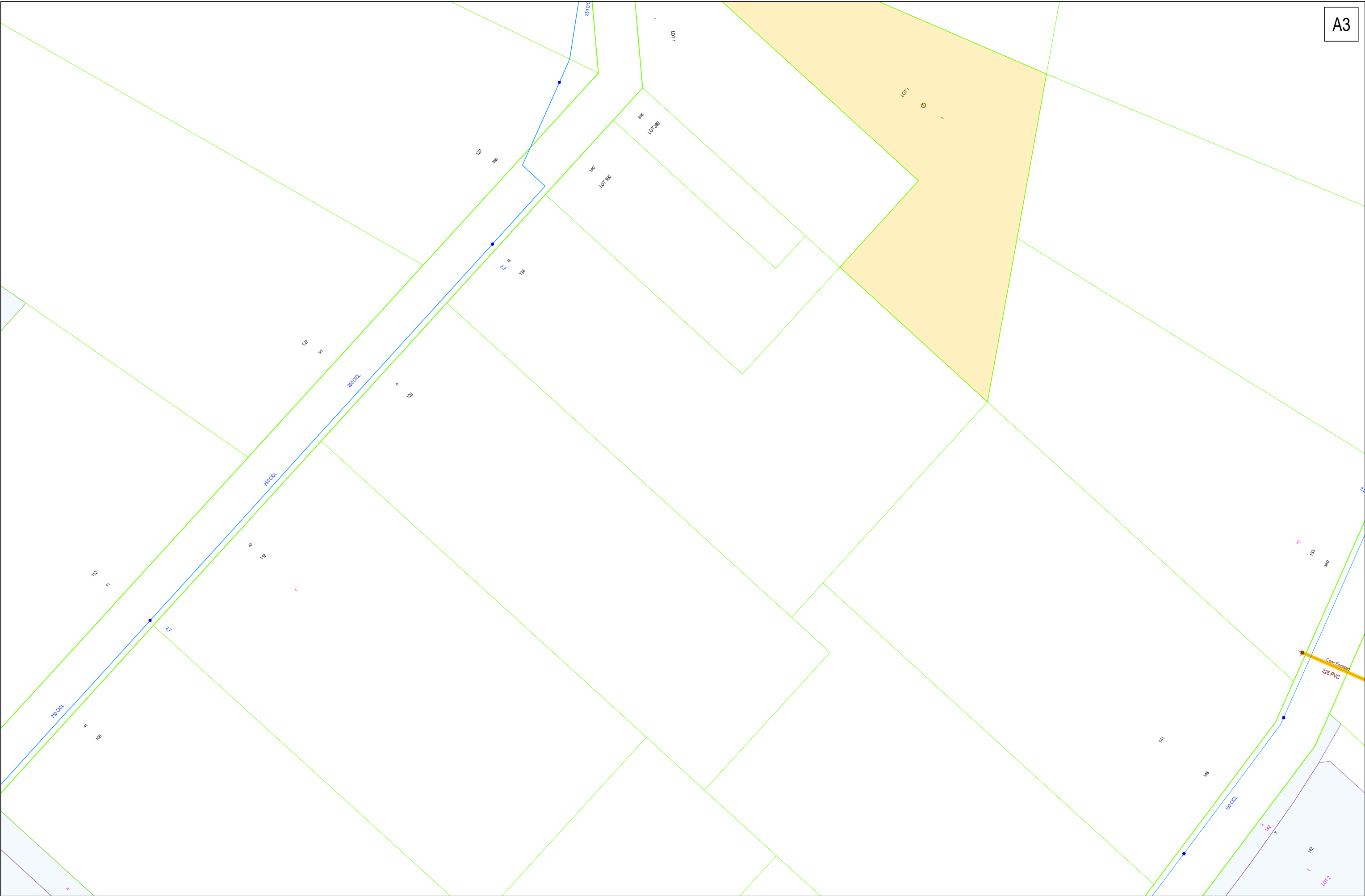
Copyright Reserved Sydney Water 2024  
No warranty is given that the information shown is complete or accurate.  
SYDNEY WATER CORPORATION

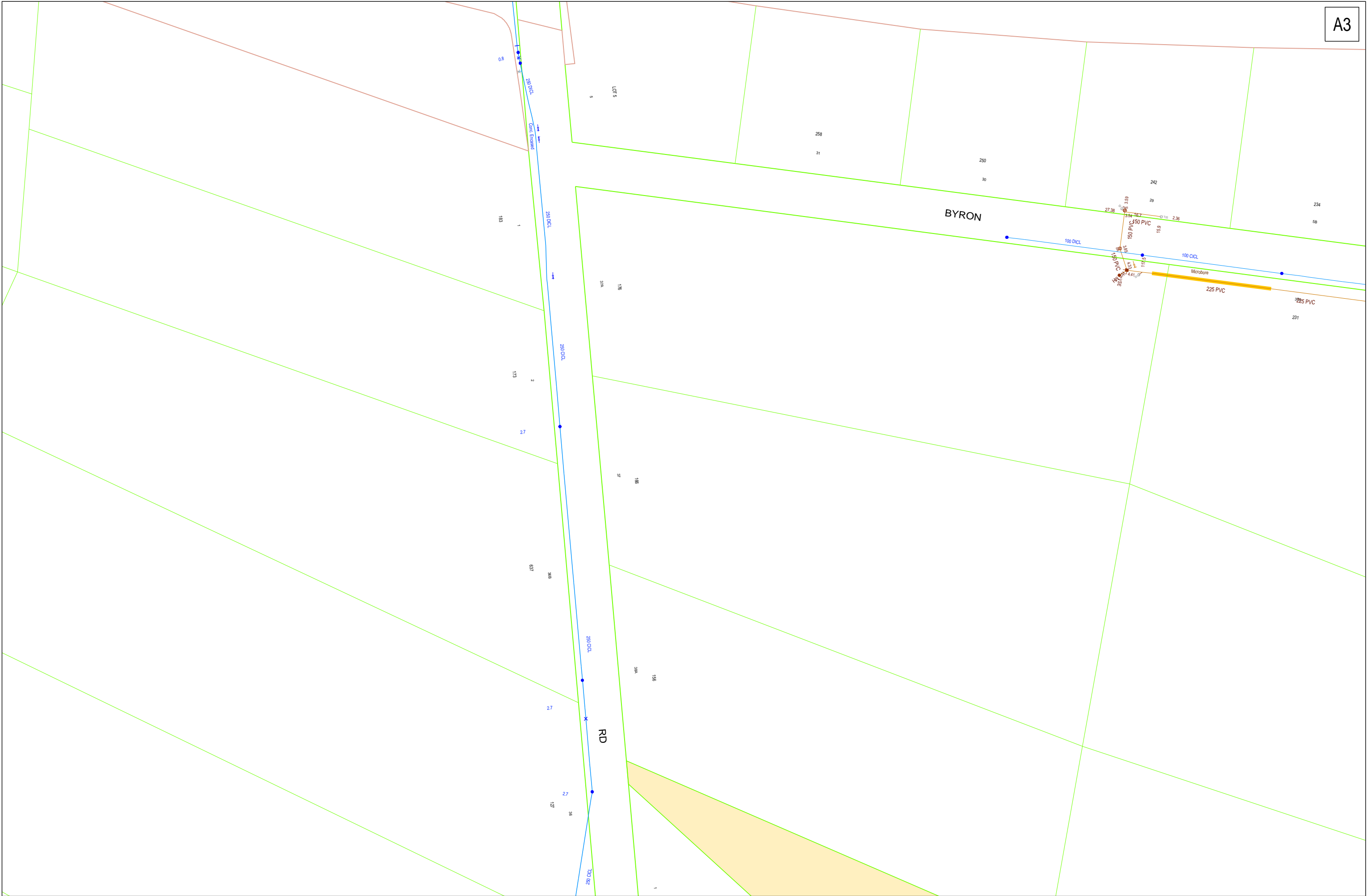
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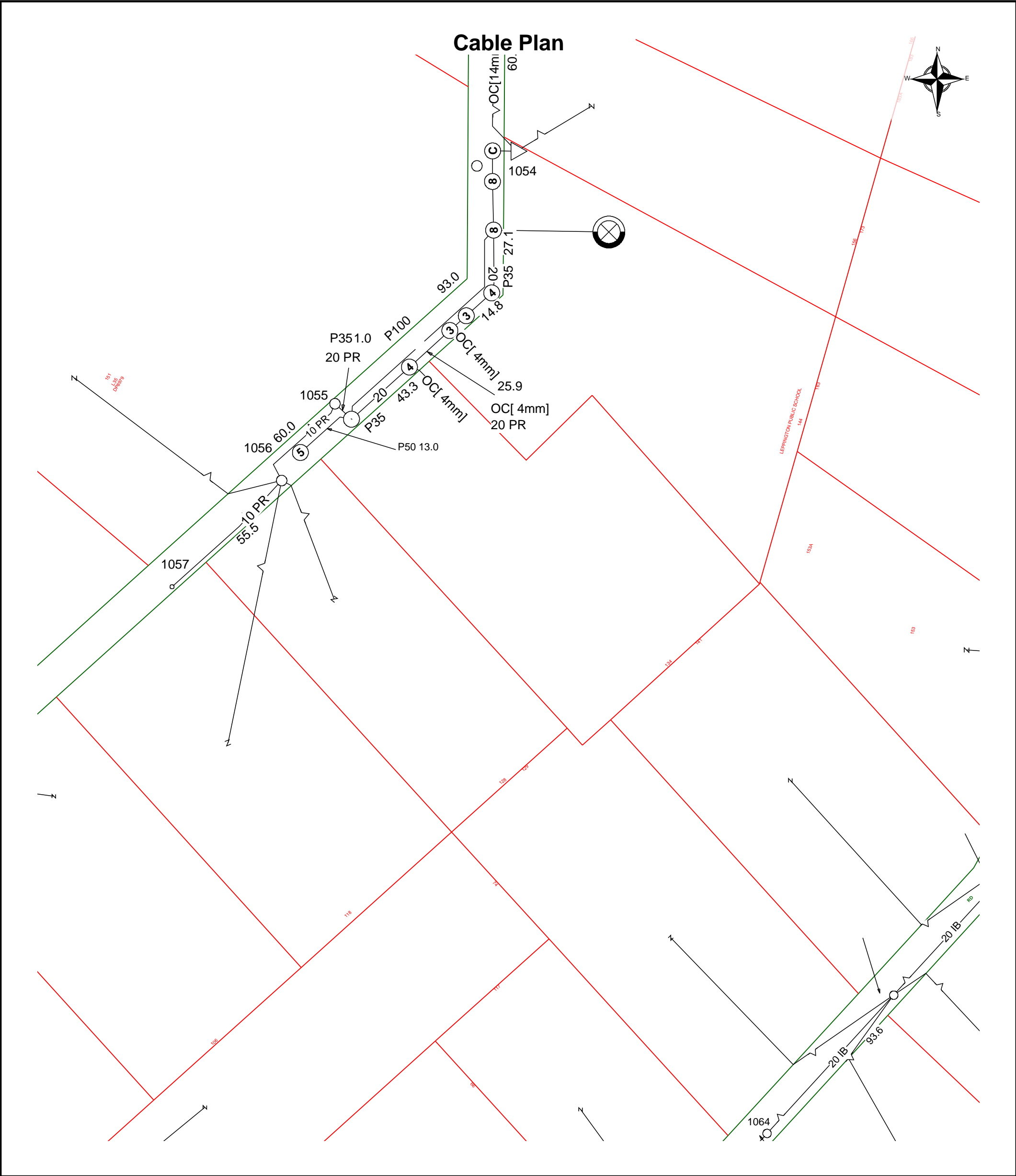



Plan 1 of 3









	<p>Report Damage: <a href="https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment">https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment</a> Ph - 13 22 03 Email - <a href="mailto:Telstra.Plans@team.telstra.com">Telstra.Plans@team.telstra.com</a> Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries</p>	<p>Sequence Number: 240112378</p>
<p>TELSTRA LIMITED A.C.N. 086 174 781</p> <p>Generated On 04/06/2024 12:48:26</p>		<p><b>CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.</b></p>

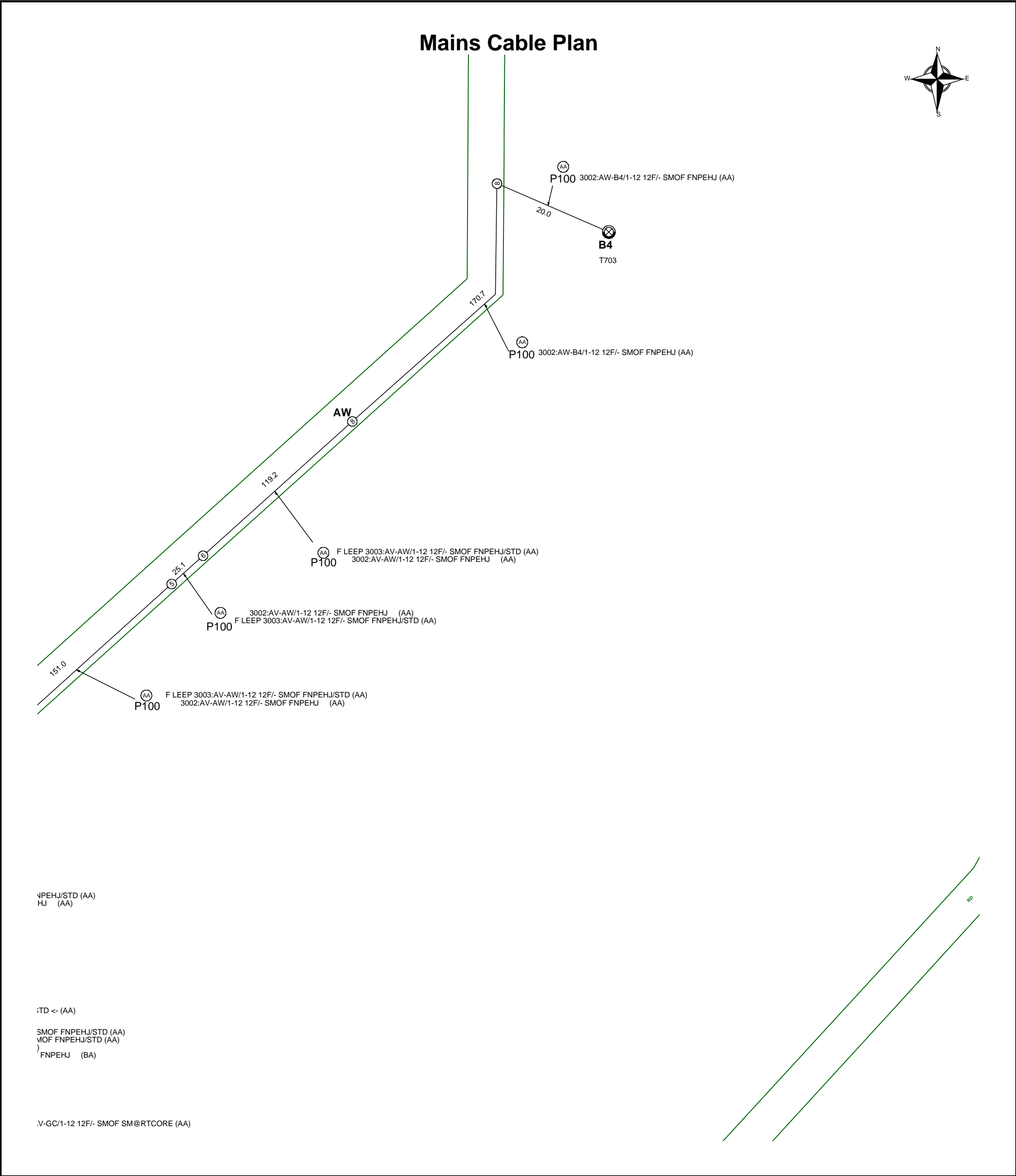
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

**WARNING**

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 1 of 2



	Report Damage: <a href="https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment">https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment</a> Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 240112378
	TELSTRA LIMITED A.C.N. 086 174 781	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
	Generated On 04/06/2024 12:48:27	

**WARNING**

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See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

## Appendix B

# Site Survey



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.

RECORDS SERVICES MARKED UP USING DBYD PLANS ONLY. NO INDICATION OF SERVICE CONFIRMATION CAN BE GIVEN.

SCHEDULE OF SURVEY CONTROL				
STN	EASTING	NORTHING	LEVEL	DESCRIPTION
1	297 524.104	6 240 067.800	91.855	STN1 GIN
2	297 583.733	6 240 144.834	95.924	PM44282
3	297 639.911	6 240 316.185	95.149	PM44281

\* THE TITLE FOR LOT A DP 411211 NOTES:

SECOND SCHEDULE (4 NOTIFICATIONS)

1	RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2	B900440 COVENANT - NOT BEEN INVESTIGATED BY US
3	B900441 COVENANT - NOT BEEN INVESTIGATED BY US
4	U386929 LEASE TO PIERRE AZZI EXPIRES 15-5-1997 OPTION OF RENEWAL 2 YEARS

\* THE TITLE FOR LOT B DP 411211 NOTES:

SECOND SCHEDULE (4 NOTIFICATIONS)

1	RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2	B900441 COVENANT - NOT BEEN INVESTIGATED BY US

NOTES :

- \* BOUNDARIES HAVE NOT BEEN DEFINED BY SURVEY AND ARE DIAGRAMMATIC ONLY
- \* LAND DIMENSIONS AND AREAS HAVE BEEN COMPILED FROM PLANS OBTAINED FROM NSW LRS
- \* BEARINGS RELATE TO PM44282 NORTH ORIGINATING FROM DP 411211
- \* EXISTENCE OF SERVICES MUST BE VERIFIED BY CONTACTING BEFORE YOU DIG (BYDA) BYDA.COM.AU
- \* CRITICAL SERVICES MUST BE EXPOSED AND LOCATED.
- \* NEIGHBOURING HOUSES, WINDOWS AND ROOF POSITIONS ARE APPROXIMATELY 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.

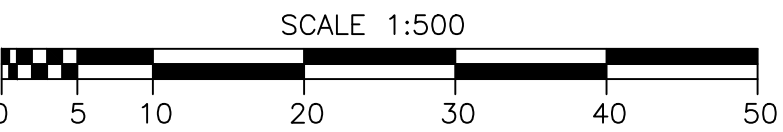


SCIMS SURVEY MARK

LEGEND

AWN - AWNING	MW - MONITORING WELL
BB - BOTTOM OF BANK	PP - POWER POLE
BIT - BITUMEN	RDG - RIDGE
CL - CENTRELINE	SIGN - SIGN POST
COL - COLUMN	STN - TRAVERSE STATION
CONC - CONCRETE SURFACE	TB - TOP OF BANK
LEVEL	TEL - TELSTRA PIT
ELP - ELECTRIC LIGHT POLE	TG - TOP OF GUTTER
FCE - FENCE	TK - TOP OF KERB
HYD - HYDRANT	TW - TOP OF WALL
0.1D/35/SH - TREE DIAMETER, SPREAD, HEIGHT	VC - VEHICLE CROSSING

© PROJECT SURVEYORS - 2024  
REPRODUCTION WITHOUT WRITTEN  
APPROVAL IS STRICTLY PROHIBITED



SHEET 1 OF 4 - DETAIL SURVEY

CLIENT: SINSW

JOB REF. :	5576
DRAWING No.	5576-DET-E
SURVEYOR:	PHILLIP KIM
CHECKED:	JONATHAN SAXON
	REGISTERED LAND SURVEYOR
DATE:	28/11/2023
DATUM:	A.H.D.
ORIGIN:	PM 44282 RL 95.924
REFERENCE SYSTEM:	GDA 2020

PLAN OF: 128 & 134 RICKARD ROAD  
LEPPINGTON, NSW, 2179

BEING: LOT A & LOT B IN DP 411211

SHOWING: GENERAL DETAIL AND  
SITE LEVELS

PURPOSE: REF SUBMISSION TO DoE

BELLA VISTA

PO Box 7419 BAULKHAM HILLS NSW 2153  
UNIT 1, GROUND FLOOR, 16 LEXINGTON DRIVE,  
BELLA VISTA NSW 2153  
PHONE : 9056 1900  
email: office@projectsurveyors.com.au

www.projectsurveyors.com.au



PROJECT  
SURVEYORS

Professional Innovative... Results.

MONITORING WELL				
MW	EASTING	NORTHING	LEVEL	DESCRIPTION
1	297552.54	6240041.03	94.99	TOP OF CASING
1			88.44	GROUND WATER LEVEL
1			84.59	BOTTOM OF WELL
2	297682.10	6240117.23	101.31	TOP OF CASING
2			90.08	BOTTOM OF WELL
3	297722.60	6239940.83	95.90	TOP OF CASING
3			94.72	GROUND WATER LEVEL
3			86.83	BOTTOM OF WELL

UNDERGROUND SERVICES NOTES

- THE PURPOSE OF THIS PLAN IS FOR DESIGN ONLY. CURRENT PLANS ISSUED BY SERVICE PROVIDERS THROUGH "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.

SHEET 3

DETECTION PROCEDURES:

UTILITY MAPPING 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 UTILITY MAPPING. 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. UTILITIES 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 ARE WITH THE CLIENT AND/OR SUB CONTRACTOR AND THEIR RESPONSIBILITY TO EXERCISE CAUTION AT ALL TIMES.

SHEET 4



## LOCATOR DENOTES

C-A LINE TYPE- LOCATING QUALITY LEVEL  
C COMMUNICATION LINE  
W WATER LINE  
FOD FULL OF DEBRIS  
PINV PIT INVERT  
INV100 INVERT OF PIPE,PIPE DIMENSION 100mm  
P100X2 2 100MM DIMENSION PIPES

## 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.

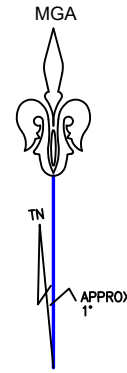
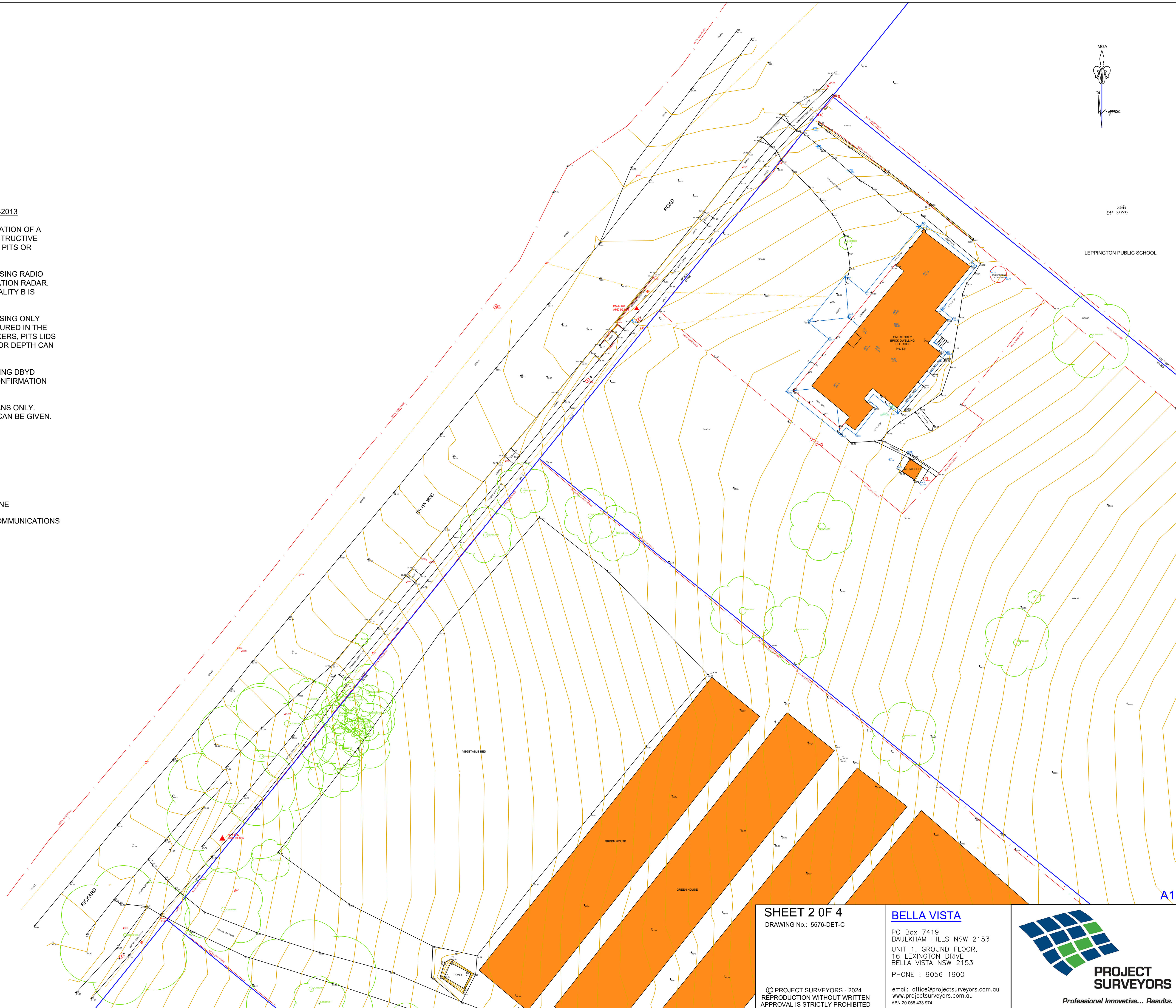
RECORDS SERVICES MARKED UP USING DBYD PLANS ONLY. NO INDICATION OF SERVICE CONFIRMATION CAN BE GIVEN.

## CABLE LINE LEGENDS

W - DENOTES SUBSURFACE WATER LINE  
C - DENOTES UNDERGROUND TELECOMMUNICATIONS

## LEGEND

AWN - AWNING  
BB - BOTTOM OF BANK  
BIT - BITUMEN  
CL - CENTRELINE  
COL - COLUMN  
CONC - CONCRETE SURFACE LEVEL  
ELP - ELECTRIC LIGHT POLE  
FCE - FENCE  
HYD - HYDRANT  
0.1D/3S/SH - TREE DIAMETER, SPREAD, HEIGHT  
MW - MONITORING WELL  
PP - POWER POLE  
RDG - RIDGE  
SIGN - SIGN POST  
STN - TRAVERSE STATION  
TB - TOP OF BANK  
TEL - TELSTRA PIT  
TG - TOP OF GUTTER  
TK - TOP OF KERB  
TW - TOP OF WALL  
VC - VEHICLE CROSSING



39B  
DP 8979

LEPPINGTON PUBLIC SCHOOL

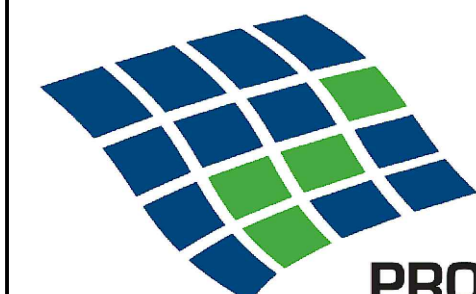
A1

SHEET 2 OF 4  
DRAWING No.: 5576-DET-C

## BELLA VISTA

PO Box 7419  
BAULKHAM HILLS NSW 2153  
UNIT 1, GROUND FLOOR,  
16 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.

SCALE 1:250  
0 5 10 15 20



### LOCATOR DENOTES

C-A LINE TYPE-LOCATING QUALITY LEVEL  
C COMMUNICATION LINE  
W WATER LINE  
FOD FULL OF DEBRIS  
PINV PIT INVERT  
INV100 INVERT OF PIPE,PIPE DIMENSION 100mm  
P100X2 2 100MM DIMENSION PIPES

### LOCATING QUALITY LEVELS PURSUANT TO AS5488-2013

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RECORDS SERVICES MARKED UP USING DBYD PLANS ONLY. NO INDICATION OF SERVICE CONFIRMATION CAN BE GIVEN.

### CABLE LINE LEGENDS

W - DENOTES SUBSURFACE WATER LINE  
C - DENOTES UNDERGROUND TELECOMMUNICATIONS

MONITORING WELL				
MW	EASTING	NORTHING	LEVEL	DESCRIPTION
1	297552.54	6240041.03	94.99	TOP OF CASING
1			88.44	GROUND WATER LEVEL
1			84.59	BOTTOM OF WELL
2	297682.10	6240117.23	101.31	TOP OF CASING
2			90.08	BOTTOM OF WELL
3	297722.60	6239940.83	95.90	TOP OF CASING
3			94.72	GROUND WATER LEVEL
3			86.83	BOTTOM OF WELL

### LEGEND

AWN - AWNING  
BB - BOTTOM OF BANK  
BIT - BITUMEN  
CL - CENTRELINE  
COL - COLUMN  
CONC - CONCRETE SURFACE LEVEL  
ELP - ELECTRIC LIGHT POLE  
FCE - FENCE  
HYD - HYDRANT  
0.1D/35/5H - TREE DIAMETER, SPREAD, HEIGHT  
MW - MONITORING WELL  
PP - POWER POLE  
RDG - RIDGE  
SIGN - SIGN POST  
STN - TRAVERSE STATION  
TB - TOP OF BANK  
TEL - TELSTRA PIT  
TG - TOP OF GUTTER  
TK - TOP OF KERB  
TW - TOP OF WALL  
VC - VEHICLE CROSSING

L9  
DP 8879

SCALE 1:250  
0 5 10 15 20

SHEET 3 OF 4  
DRAWING No.: 5576-DET-C

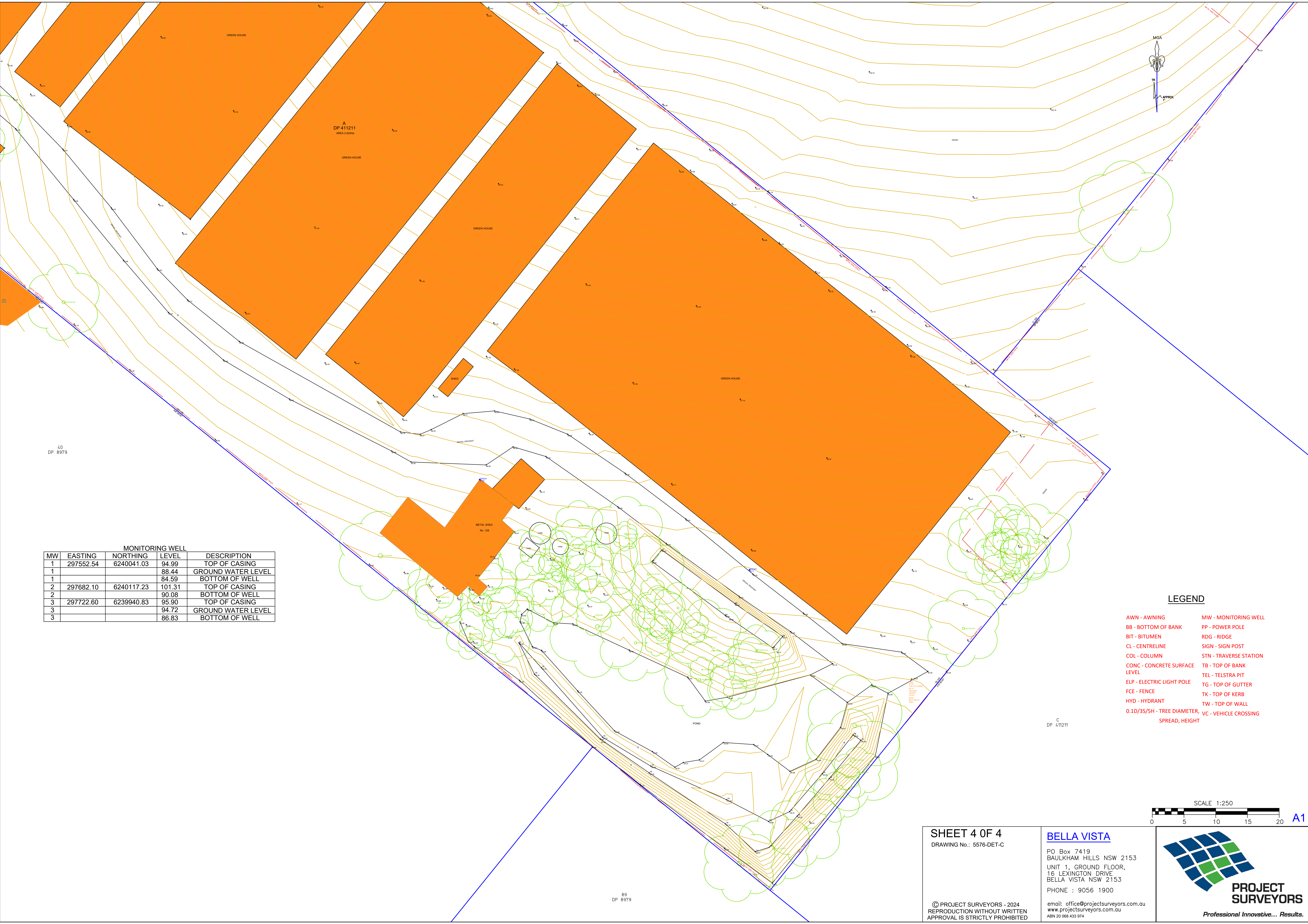
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### BELLA VISTA

PO Box 7419  
BAULKHAM HILLS NSW 2153  
UNIT 1, GROUND FLOOR,  
16 LEXINGTON DRIVE  
BELLA VISTA NSW 2153  
PHONE : 9056 1900  
email: office@projectsurveyors.com.au  
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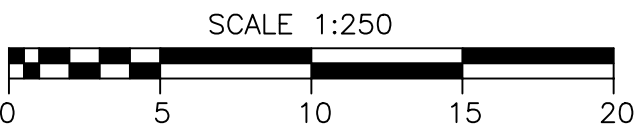




MONITORING WELL				
MW	EASTING	NORTHING	LEVEL	DESCRIPTION
1	297552.54	6240041.03	94.99	TOP OF CASING
1			88.44	GROUND WATER LEVEL
1			84.59	BOTTOM OF WELL
2	297682.10	6240117.23	101.31	TOP OF CASING
2			90.08	BOTTOM OF WELL
3	297722.60	6239940.83	95.90	TOP OF CASING
3			94.72	GROUND WATER LEVEL
3			86.83	BOTTOM OF WELL

LEGEND

- AWN - AWNING  
BB - BOTTOM OF BANK  
BIT - BITUMEN  
CL - CENTRELINE  
COL - COLUMN  
CONC - CONCRETE SURFACE  
LEVEL  
ELP - ELECTRIC LIGHT POLE  
FCE - FENCE  
HYD - HYDRANT  
0.1D/3S/SH - TREE DIAMETER,  
SPREAD, HEIGHT
- MW - MONITORING WELL  
PP - POWER POLE  
RDG - RIDGE  
SIGN - SIGN POST  
STN - TRAVERSE STATION  
TB - TOP OF BANK  
TEL - TELSTRA PIT  
TG - TOP OF GUTTER  
TK - TOP OF KERB  
TW - TOP OF WALL  
VC - VEHICLE CROSSING  
SPREAD, HEIGHT



A1

SHEET 4 OF 4  
DRAWING No.: 5576-DET-C

BELLA VISTA

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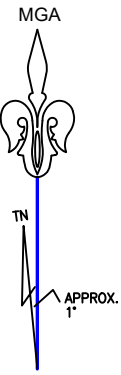


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38B  
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LEPPINGTON PUBLIC SCHOOL

MONITORING WELL				
MW	EASTING	NORTHING	LEVEL	DESCRIPTION
1	297552.54	6240041.03	94.99	TOP OF CASING
1			88.44	GROUND WATER LEVEL
1			84.59	BOTTOM OF WELL
2	297682.10	6240117.23	101.31	TOP OF CASING
2			90.08	BOTTOM OF WELL
3	297722.60	6239940.83	95.90	TOP OF CASING
3			94.72	GROUND WATER LEVEL
3			86.83	BOTTOM OF WELL

LEGEND

- AWN - AWNING

BB - BOTTOM OF BANK

BIT - BITUMEN

CL - CENTRELINE

COL - COLUMN

CONC - CONCRETE SURFACE LEVEL

ELP - ELECTRIC LIGHT POLE

FCE - FENCE

HYD - HYDRANT

0.1D/3S/5H - TREE DIAMETER, SPREAD, HEIGHT
- MW - MONITORING WELL

PP - POWER POLE

RDG - RIDGE

SIGN - SIGN POST

STN - TRAVERSE STATION

TB - TOP OF BANK

TEL - TELSTRA PIT

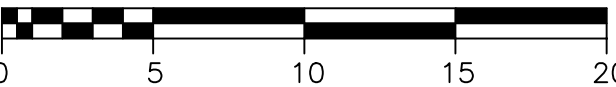
TG - TOP OF GUTTER

TK - TOP OF KERB

TW - TOP OF WALL

VC - VEHICLE CROSSING

SCALE 1:250



A1

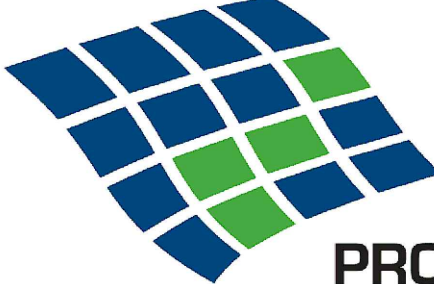
SHEET 4 OF 4  
DRAWING No.: 5576-DET-C

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## Appendix C

# Council Correspondence

## Stephen Fok

---

**From:** Nikhil Pattanashetti <Nikhil.Pattanashetti@camden.nsw.gov.au>  
**Sent:** Monday, 29 July 2024 5:17 PM  
**To:** Stephen Fok  
**Subject:** RE: CRM 22661/2024 & CRM 22648/2024 - Stormwater and Floodplain Management Enquiry - 128-134 Rickard Road LEPPINGTON & 9 Gregory Hills Drive GLEDSWOOD HILLS

**[External Email]: Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hi Stephen,

You will be expected to meet all relevant requirements of the DCP. If it comes to a point when we are assessing the applications where deviation from the Spec. or DCP is the only option, we will assess it on a case-by-case basis.

Kind Regards,

**Nikhil Pattanashetti**  
Land Development Engineer



70 Central Avenue, Oran Park, 2570  
(02) 4654 7699  
[www.camden.nsw.gov.au](http://www.camden.nsw.gov.au)

PO Box 183, Camden NSW 2570  
Nikhil.Pattanashetti@camden.nsw.gov.au



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Keep up-to-date with the latest  
news from across the Camden area

Camden Council acknowledges the Dharawal peoples as the Traditional Custodians of our lands and waterways, and also recognises the Dharug and Gundungurra Nations. We pay our respects to Elders past, present and emerging and to all Aboriginal and Torres Strait Islander peoples on these lands.



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---

**From:** Stephen Fok <stephen.fok@ttw.com.au>  
**Sent:** Monday, July 29, 2024 3:12 PM  
**To:** Nikhil Pattanashetti <Nikhil.Pattanashetti@camden.nsw.gov.au>  
**Subject:** RE: CRM 22661/2024 & CRM 22648/2024 - Stormwater and Floodplain Management Enquiry - 128-134 Rickard Road LEPPINGTON & 9 Gregory Hills Drive GLEDSWOOD HILLS

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---

Hi Nikhil,

Apologies for the repetitiveness, I just wanted to confirm we can follow a pre vs post development flow assessment (as indicated by your comments and under Section 2.3.2 Control 6 (pg 17) of the Camden growth



precincts DCP below) rather than following the SSR and PSD requirements provided in Section 6.5 Control 5 (pg158) of the same document (also shown below). For example, if we are able to meet the pre-development flows with a storage volume less than the relevant SSR based on DRAINS modelling, then this would still be compliant.

6. The developed 1%, 20% and 50% AEP peak flows are to be maintained at pre-development flows through the incorporation of stormwater detention and management devices. Where subdivision works occur prior to the completion of required trunk drainage works, temporary on site facilities need to be provided in order to limit drainage volume and velocity to that experienced prior to development.
7. Where development includes the construction of water quality treatment infrastructure, the infrastructure is to be constructed in accordance with the Precinct Water Cycle Management Strategy (available from Council) and Council's Engineering Specification. The applicant must demonstrate that the proposed infrastructure will achieve the water quality targets in **Table 2-1**.
8. Trunk drainage channels are to be designed and constructed as naturalised channels.
9. Council may consider amendments to the Precinct water cycle management strategy if a revised strategy is submitted that can demonstrate to Council's satisfaction:
  - compliance with the targets in **Table 2-1**;
  - any costs associated with construction (including the cost of land) will be met by the applicant; and
  - a maintenance framework addressing maintenance strategies and life-cycle maintenance costs
10. Where development is located on land that drains towards the Sydney Catchment Authority Upper Canal, specific water quality measures may be required to ensure that development does not adversely impact on the quality of water in the Upper Canal. Specific controls are contained in relevant Precinct Schedules.

Camden Growth Centre Precincts Development Control Plan
Page 17

amenity, public safety and the integrity of property are not compromised, and it does not interfere with overland flow paths or adversely affect flood behaviour.

5. The required upper and lower limits for sizing the OSD shall be informed by the following:

2yr ARI SSR* (m³/ha)	2yr ARI PSD** (l/s/ha)	100yr ARI SSR (m³/ha)	100yr ARI PSD (l/s/ha)
300	30	594	170

\*SSR: Site Storage Requirement – the volume of stormwater required to be stored on site.

\*\*PSD: Permissible Site Discharge – the allowable rate of stormwater discharge from a development site.

Regards,  
Stephen



**Stephen Fok | Senior Civil Engineer**

+61 2 9439 7288 | | [stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)

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**From:** Nikhil Pattanashetti <[Nikhil.Pattanashetti@camden.nsw.gov.au](mailto:Nikhil.Pattanashetti@camden.nsw.gov.au)>  
**Sent:** Wednesday, July 17, 2024 12:34 PM  
**To:** Stephen Fok <[stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)>  
**Cc:** Kyrellos Habib <[kyrellos.habib@ttw.com.au](mailto:kyrellos.habib@ttw.com.au)>  
**Subject:** RE: CRM 22661/2024 & CRM 22648/2024 - Stormwater and Floodplain Management Enquiry - 128-134 Rickard Road LEPPINGTON & 9 Gregory Hills Drive GLEDSWOOD HILLS

You don't often get email from [nikhil.pattanashetti@camden.nsw.gov.au](mailto:nikhil.pattanashetti@camden.nsw.gov.au). [Learn why this is important](#)

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Hi Stephen,

Yes, confirming yellow highlighted are correct.

Regarding the enviro flows requirement, I wouldn't stress about it now and if any issues are raised during DA assessment, guidance will be provided. Noting that following discussions with my team, we generally don't look into compliance with the enviro flows requirement of the spec.

Kind Regards,

**Nikhil Pattanashetti**  
**Land Development Engineer**



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PO Box 183, Camden NSW 2570

[Nikhil.Pattanashetti@camden.nsw.gov.au](mailto:Nikhil.Pattanashetti@camden.nsw.gov.au)



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**From:** Stephen Fok <[stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)>  
**Sent:** Wednesday, July 17, 2024 12:03 PM  
**To:** Nikhil Pattanashetti <[Nikhil.Pattanashetti@camden.nsw.gov.au](mailto:Nikhil.Pattanashetti@camden.nsw.gov.au)>  
**Cc:** Kyrellos Habib <[kyrellos.habib@ttw.com.au](mailto:kyrellos.habib@ttw.com.au)>  
**Subject:** RE: CRM 22661/2024 & CRM 22648/2024 - Stormwater and Floodplain Management Enquiry - 128-134 Rickard Road LEPPINGTON & 9 Gregory Hills Drive GLEDSWOOD HILLS

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Thanks Nikhil,

Appreciate you getting back to me.

So confirming, the yellow highlighted assumptions below are correct?

Also, are you able to provide some guidance on how the environmental flows requirements is met or examples of where it has been met? I haven't come across this requirement before.

Regards,  
Stephen



**Stephen Fok | Senior Civil Engineer**

+61 2 9439 7288 | | [stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)

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**From:** Nikhil Pattanashetti <[Nikhil.Pattanashetti@camden.nsw.gov.au](mailto:Nikhil.Pattanashetti@camden.nsw.gov.au)>

**Sent:** Tuesday, July 16, 2024 11:53 AM

**To:** Stephen Fok <[stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)>

**Subject:** CRM 22661/2024 & CRM 22648/2024 - Stormwater and Floodplain Management Enquiry - 128-134 Rickard Road LEPPINGTON & 9 Gregory Hills Drive GLEDSDOOD HILLS

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Hi Stephen,

Thank you for sending your query for the abovementioned sites. I have responded to the questions in this email for the Leppington job, however please use these responses for the Gledswood Hills job as well, noting that the questions were the same. Please see below:

Regarding your queries below, please see my responses below in **red**.

Kind Regards,

**Nikhil Pattanashetti**

**Land Development Engineer**



70 Central Avenue, Oran Park, 2570

(02) 4654 7699

[www.camden.nsw.gov.au](http://www.camden.nsw.gov.au)

PO Box 183, Camden NSW 2570

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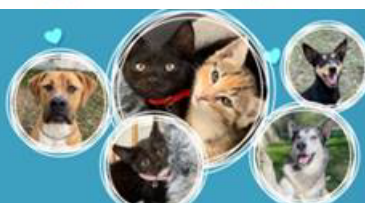


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---

**From:** Stephen Fok <[stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)>  
**Sent:** Friday, July 5, 2024 11:37 AM  
**To:** Council Mailbox <[Council.Mailbox@camden.nsw.gov.au](mailto:Council.Mailbox@camden.nsw.gov.au)>  
**Cc:** Mardi Christian <[mardi.christian@tsariley.au](mailto:mardi.christian@tsariley.au)>; Alexander Quah-Smith <[alexander.quahsmith@tsariley.au](mailto:alexander.quahsmith@tsariley.au)>; Colin Rope <[colin.rope@ttw.com.au](mailto:colin.rope@ttw.com.au)>  
**Subject:** Stormwater Requirements - 128-134 Rickard Road, Leppington

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Dear Sir/Madam,

I am hoping to get confirmation on the stormwater requirements for a proposed development at 128-134 Rickard Road, Leppington.



I understand the requirements of the Camden Growth Centre Precincts Development Control Plan apply to this site. From this, the proposed development is required to:

- Provide detention to attenuate peak flows from the 50% AEP to the 1% AEP storms
- Provide water quality treatment in accordance with Table 2-1 of the DCP (excerpt below)

**Table 2-1: Water quality and environmental flow targets**

	WATER QUALITY % reduction in pollutant loads				ENVIRONMENTAL FLOWS Stream erosion control ratio¹
	Gross Pollutants (>5mm)	Total suspended solids	Total phosphorous	Total nitrogen	
Stormwater management Objective	90	85	65	45	3.5-5.0: 1
'Ideal' stormwater outcome	100	95	95	85	1:1

<sup>1</sup> This ratio should be minimised to limit stream erosion to the minimum practicable. Development proposals should be designed to achieve a value as close to one as practicable, and values within the nominated range should not be exceeded. A specific target cannot be defined at this time.

- Prepare soil and water management plans in accordance with 'The Blue Book'

A few queries:

- Majority of the site currently discharges to an open channel in Rickard Road. We are proposing to maintain this as the discharge point for the developed site noting that OSD will be provided. Does Council have any comments on this proposal? **I don't believe there should be any issues with this, however once a DA is submitted, any issues with the discharge points will be looked at more closely. Council may issue you with an ultimate design for Rickard Rd fronting your development, which you may use for designs, or may instruct you to develop interim designs. The Leppington team (which looks after developments fronting major roads within Leppington and their ultimate designs) will provide this advice.**
- Could you please confirm if the environmental flows requirement applies to this development? **Yes.**
- There are significant areas of the site that will remain undeveloped as part of the development including areas designated for future road or road widening (Rickard Road). Do the requirements above apply to the entire site or just areas that are to be developed or otherwise draining to areas that are to be developed? **The entire site is usually considered during a pre-development vs. post-development assessment.**
- Is there a timeline for when the Rickard Road widening and Town Centre Road are to be delivered? **Leppington team may assist you with this query.**
- Are there any further specific requirements which apply to development at this site? **N/A, items may raise during DA assessment.**

Regards,

Stephen



**Stephen Fok | Senior Civil Engineer**

+61 2 9439 7288 | | [stephen.fok@ttw.com.au](mailto:stephen.fok@ttw.com.au)

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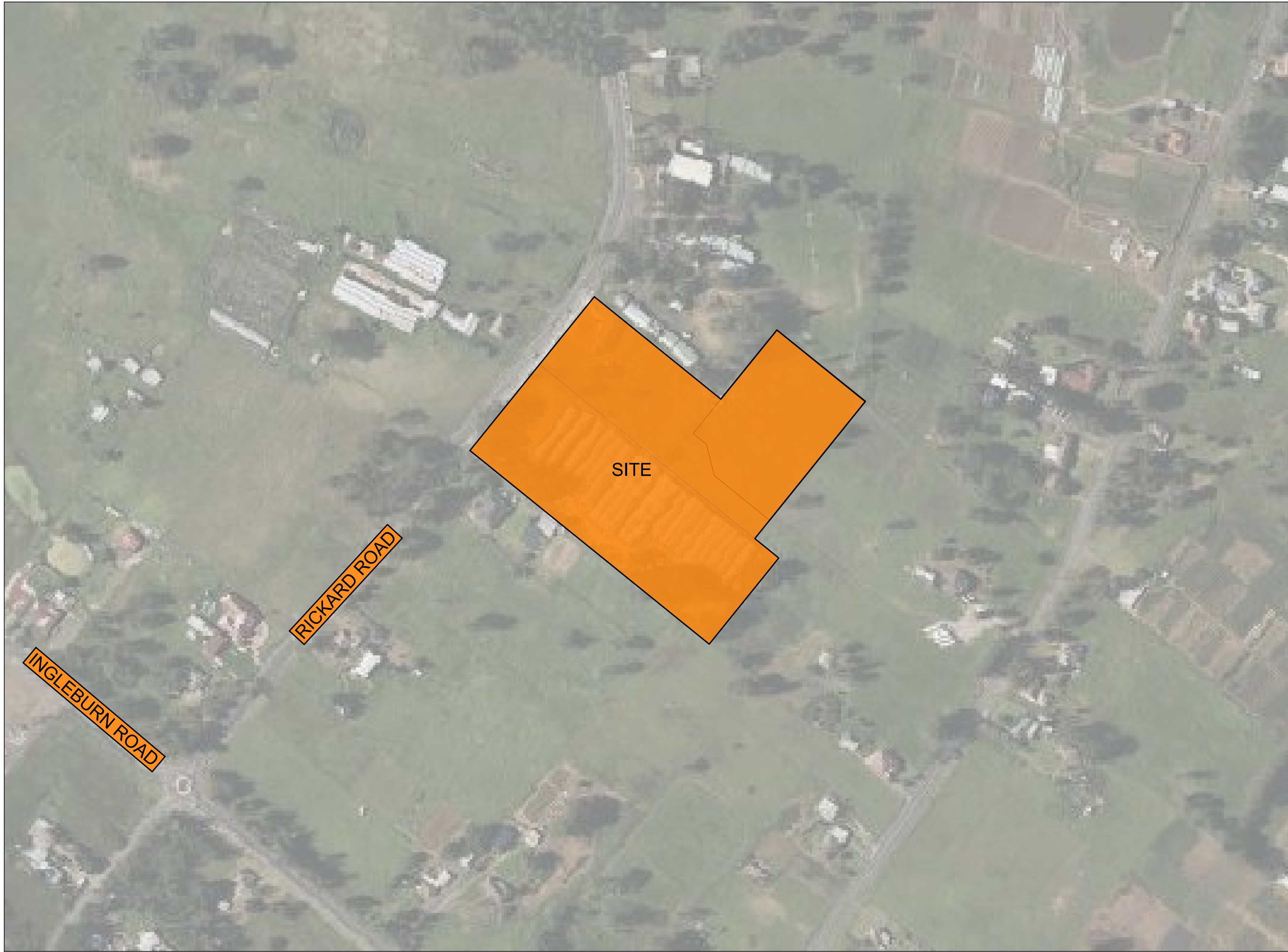


## Appendix D

# Civil Engineering Drawings

# NEW HIGH SCHOOL FOR LEPPINGTON AND DENHAM COURT

## LEPPINGTON, NSW 2179



NUMBER	DRAWING TITLE
GENERAL-00000	
LHS-TTW-01-00-DR-C-00001	GENERAL COVER SHEET
LHS-TTW-01-00-DR-C-00003	GENERAL NOTES AND LEGEND
LHS-TTW-01-00-DR-C-00401	GENERAL ARRANGEMENT PLAN SHEET 1
LHS-TTW-01-00-DR-C-00402	GENERAL ARRANGEMENT PLAN SHEET 2
LHS-TTW-01-00-DR-C-01501	ROAD TYPICAL SECTION
EROSION AND SEDIMENT CONTROL-02000	
LHS-TTW-01-00-DR-C-02001	EROSION AND SEDIMENT CONTROL NOTES AND LEGEND
LHS-TTW-01-00-DR-C-02101	EROSION AND SEDIMENT CONTROL PLAN
EARTHWORKS-03000	
LHS-TTW-01-00-DR-C-03101	EARTHWORKS CUT AND FILL VOLUMES PLAN
STORMWATER-04000	
LHS-TTW-01-00-DR-C-04001	STORMWATER NOTES AND LEGEND
LHS-TTW-01-00-DR-C-04101	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 1
LHS-TTW-01-00-DR-C-04102	STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 2
LHS-TTW-01-00-DR-C-04501	STORMWATER DETAILS SHEET 1
LHS-TTW-01-00-DR-C-04502	STORMWATER DETAILS SHEET 2
RETAINING WALLS-06000	
LHS-TTW-01-00-DR-C-06501	RETAINING WALL DETAILS
PAVEMENT-07000	
LHS-TTW-01-00-DR-C-07001	PAVEMENT NOTES AND LEGEND
LHS-TTW-01-00-DR-C-07101	PAVEMENT PLAN SHEET 1
LHS-TTW-01-00-DR-C-07102	PAVEMENT PLAN SHEET 2
LHS-TTW-01-00-DR-C-07501	PAVEMENT DETAILS SHEET 1
SIGNAGE AND LINEMARKING-08000	
LHS-TTW-01-00-DR-C-08101	SIGNAGE AND LINEMARKING PLAN



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2. STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA. ALL STRIPPED TOPSOIL SHALL BE DISPOSED OF OFF-SITE UNLESS DIRECTED OTHERWISE.
3. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS.
4. COMPACT SUBGRADE UNDER BUILDINGS AND PAVEMENTS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.1.1. COMPACTION UNDER BUILDINGS TO EXTEND 2M MINIMUM BEYOND BUILDING FOOTPRINT.
5. ALL WORK ON PUBLIC PROPERTY, PROPERTY WHICH IS TO BECOME PUBLIC PROPERTY, OR ANY WORK WHICH IS TO COME UNDER THE CONTROL OF THE STATUTORY AUTHORITY, THE CONTRACTOR IS TO ENSURE THAT THE DRAWINGS, USED FOR CONSTRUCTION HAVE BEEN APPROVED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT SITE.
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7. FOR ALL TEMPORARY BATTERS REFER TO GEOTECHNICAL RECOMMENDATIONS.

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ORIGIN OF LEVELS: PM 44282 RL 95.924  
 DATUM OF LEVELS: AHD  
 COORDINATE SYSTEM: GDA2020  
 SURVEY PREPARED BY: PHILLIP KIM

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3. THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND EXTENT OF SERVICES PRIOR TO CONSTRUCTION AND NOTIFY ANY CONFLICT WITH THE DRAWINGS IMMEDIATELY TO THE ENGINEER/SUPERINTENDENT.
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2. THE LOCATION OF SERVICES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED AS ACCURATELY AS POSSIBLE FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES AND SHOULD BE CONFIRMED BY SITE INSPECTION."

1. ALL BASECOURSE MATERIAL TO COMPLY WITH RMS SPECIFICATION NO 3051 AND COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
2. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
3. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH AN APPROVED SELECT MATERIAL AND COMPACTED TO A MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1

1. PUBLIC DOMAIN WORKS ARE NOT TO COMMENCE UNTIL THESE DRAWINGS ARE STAMPED AS APPROVED. SINSW TO CONFIRM IF THESE DRAWINGS WILL BE STAMPED AS APPROVED.

1. THE LEVEL OF DETAIL DESIGN REFLECTED IN THESE DOCUMENTS IS BASED ON THE UNDERSTANDING THIS WILL BE BUILT AS PART OF A DESIGN & CONSTRUCT CONTRACT.
2. THE CONTRACTOR SHALL RETAIN THE RESPONSIBILITY TO UNDERTAKE DETAILED DESIGN, CONFIRM COMPLIANCE WITH RELEVANT STANDARDS, CONSENT CONDITIONS & THE SPECIFICATION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE FINAL DESIGN IS CO-ORDINATED FULLY WITH OTHER CONSULTANTS.
4. NO VARIATION WILL BE ACCEPTED FOR DESIGN AMENDMENTS REQUIRED TO MEET THE FUNCTIONAL OBJECTIVE OF THIS DOCUMENTATION.

CONTRACTOR TO REFER TO APPENDIX B OF THE CIVIL SPECIFICATION FOR THE CIVIL RISK AND SOLUTIONS REGISTER.

- EXISTING SERVICES  
CONTRACTOR TO BE AWARE EXISTING SERVICES ARE LOCATED WITHIN THE SITE. LOCATION OF ALL SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORKS.  
CONTRACTOR TO CONFIRM WITH RELEVANT AUTHORITY REGARDING MEASURES TO BE TAKEN TO ENSURE SERVICES ARE PROTECTED OR PROCEDURES ARE IN PLACE TO DEMOLISH AND/OR RELOCATE.
2. EXISTING STRUCTURES  
CONTRACTOR TO BE AWARE EXISTING STRUCTURES MAY EXIST WITHIN THE SITE. TO PREVENT DAMAGE TO EXISTING STRUCTURE(S) AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICALLY POSSIBLE FROM EXISTING STRUCTURE(S).
3. EXISTING TREES  
CONTRACTOR TO BE AWARE EXISTING TREES EXIST WITHIN THE SITE WHICH NEED TO BE PROTECTED. TO PREVENT DAMAGE TO TREES AND/OR PERSONNEL, SITE WORKS TO BE CARRIED OUT AS FAR AS PRACTICALLY POSSIBLE FROM EXISTING TREES. ADVICE NEEDS TO BE SOUGHT FROM ARBORIST AND/OR LANDSCAPE ARCHITECT ON MEASURES REQUIRED TO PROTECT TREES.
4. GROUNDWATER  
CONTRACTOR TO BE AWARE GROUND WATER LEVELS ARE CLOSE TO EXISTING SURFACE LEVEL. TEMPORARY DE-WATERING MAY BE REQUIRED DURING CONSTRUCTION WORKS.
5. EXCAVATIONS  
DEEP EXCAVATIONS DUE TO STORMWATER DRAINAGE WORKS IS REQUIRED. CONTRACTOR TO ENSURE SAFE WORKING PROCEDURES ARE IN PLACE FOR WORKS. ALL EXCAVATIONS TO BE FENCED OFF AND BATTERS ADEQUATELY SUPPORTED TO APPROVAL OF GEOTECHNICAL ENGINEER.
6. GROUND CONDITIONS  
CONTRACTOR TO BE AWARE OF THE SITE GEOTECHNICAL CONDITIONS. REFER TO GEOTECHNICAL REPORT BY
  - GEOTECHNICAL INVESTIGATION FOR PROPOSED LEPPINGTON HIGH SCHOOL PREPARED BY JK GEOTECHNICS DATED 3RD SEPTEMBER 2024 (REF.35910LTrpt)
7. HAZARDOUS MATERIALS  
EXISTING ASBESTOS PRODUCTS & CONTAMINATED MATERIAL MAY BE PRESENT ON SITE. CONTRACTOR TO ENSURE ALL HAZARDOUS MATERIALS ARE IDENTIFIED PRIOR TO COMMENCING WORKS. SAFE WORKING PRACTICES AS PER RELEVANT AUTHORITY TO BE ADOPTED AND APPROPRIATE PPE TO BE USED WHEN HANDLING ALL HAZARDOUS MATERIALS. REFER TO GEOTECHNICAL/ENVIRONMENTAL REPORT BY
  - PROPOSED LEPPINGTON HIGH SCHOOL - HAZARDOUS BUILDING MATERIALS SURVEY PREPARED BY JBS&G DATED 15TH AUGUST 2024 (REF. JBS&G 67303)
  - DETAILED SITE INVESTIGATION LEPPINGTON HIGH SCHOOL - ADJACENT SITES PREPARED BY SMEC DATED 18TH MARCH 2024 (REF. 30018043)
8. CONFINED SPACES  
CONTRACTOR TO BE AWARE OF POTENTIAL HAZARDS DUE TO WORKING IN CONFINED SPACES SUCH AS STORMWATER PITS, TRENCHES AND/OR TANKS. CONTRACTOR TO PROVIDE SAFE WORKING METHODS AND USE APPROPRIATE PPE WHEN ENTERING CONFINED SPACES.
9. MANUAL HANDLING  
CONTRACTOR TO BE AWARE MANUAL HANDLING MAY BE REQUIRED DURING CONSTRUCTION. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ENSURE MANUAL HANDLING PROCEDURES AND ASSESSMENTS ARE IN PLACE PRIOR TO COMMENCING WORKS.
10. WATER POLLUTION  
CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE TAKEN TO PREVENT POLLUTANTS FROM CONSTRUCTION WORKS CONTAMINATING THE SURROUNDING ENVIRONMENT.
11. SITE ACCESS/EGRESS  
CONTRACTOR TO BE AWARE SITE WORKS OCCUR IN CLOSE PROXIMITY TO FOOTPATHS AND ROADWAYS. CONTRACTOR TO ERECT APPROPRIATE BARRIERS AND SIGNAGE TO PROTECT SITE PERSONNEL AND PUBLIC.
12. VEHICLE MOVEMENT  
CONTRACTOR TO SUPPLY AND COMPLY WITH TRAFFIC MANAGEMENT PLAN AND PROVIDE ADEQUATE SITE TRAFFIC CONTROL INCLUDING A CERTIFIED TRAFFIC MARSHALL TO SUPERVISE VEHICLE MOVEMENTS WHERE NECESSARY.

THE FOLLOWING MUST BE PROVIDED BY THE CONTRACTOR A MINIMUM 2 WEEKS PRIOR TO THE REQUESTED DATE OF A CIVIL INSPECTION CERTIFICATE FOR OCCUPATION CERTIFICATE. SUBMISSIONS MUST BE PROVIDED PROGRESSIVELY AS WORKS ARE COMPLETED IN ACCORDANCE WITH THE CIVIL SPECIFICATION. THE PROGRAM MUST ALLOW ADEQUATE TIME FOR DEFECTS TO BE RECTIFIED SHOULD THIS BE REQUIRED.

1. NOTIFICATION THAT ALL CIVIL WORKS TO BE CERTIFIED HAVE BEEN COMPLETED TO ALLOW A FINAL INSPECTION TO BE UNDERTAKEN.
2. WRITTEN CONFIRMATION FROM THE CONTRACTOR THAT ALL CIVIL SITE INSPECTION REPORTS HAVE BEEN CLOSED OUT.
3. CCTV (INCLUDING WINSCAN LOG OR EQUIVALENT) OF ALL CIVIL STORMWATER WORKS TO BE CERTIFIED.
4. WAE FROM A REGISTERED SURVEYOR (PDF & DWG) FOR ALL CIVIL STORMWATER TO BE CERTIFIED.
5. WAE FROM A REGISTERED SURVEYOR (PDF, DWG & 3D TIN) FOR ALL EXTERNAL CIVIL LEVELS TO BE CERTIFIED.
6. HEAD CONTRACTORS STATEMENT OF CONSTRUCTION COMPLIANCE.
7. HYDRAULIC CONTRACTORS INSTALLATION CERTIFICATE.
8. 3RD PARTY INSTALLATION CERTIFICATES FOR PROPRIETARY PRODUCTS AND/OR D&C ELEMENTS
9. COMPACTION TEST RESULTS IN ACCORDANCE WITH THE CIVIL SPECIFICATION.
10. MATERIALS CERTIFICATES PRIOR TO INSTALLATION IN ACCORDANCE WITH THE CIVIL SPECIFICATION.
11. WRITTEN CONFIRMATION FROM TFNSW AND/OR COUNCIL CONFIRMING COMPLETION AND ACCEPTANCE OF S138 WORKS IF APPLICABLE.

EXISTING      REMOVED      PROPOSED

-----      -X-X-X-X-X-X-X-X-      =====      BLOCK BOUNDARY


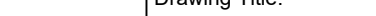
The diagram illustrates the process of removing an existing building envelope and adding a new one. It is divided into three columns: **EXISTING**, **REMOVED**, and **PROPOSED**. In the **EXISTING** column, there is a solid grey rectangle. In the **REMOVED** column, there is a red dashed rectangle. In the **PROPOSED** column, there are two rectangles: a light blue one labeled **BUILDING ENVELOPE** and a grey one labeled **FUTURE BUILDING ENVELOPE**.

SOFT LANDSCAPE

	STORMWATER
	ELECTRICAL
	GAS
	TELECOMMUNICATIONS
	SEWER
	WATER
	SERVICE TO BE DEMOLISHED

A	-	SIGHTED, MUST BE LOCATED, THEN POTHOLED. UTILITY MUST BE PHYSICALLY SIGHTED AND MEASURED.
B	-	ELECTRONICALLY DETECTED AND LOCATED ON SITE USING VARIOUS TRACING METHODS.
C	-	ALIGNED FROM SURFACE FEATURES AND DIGITISED DATA.
D	-	DIGITISED DATA (DIAL BEFORE YOU DIG).

1. BELOW GROUND SERVICES CAN BE REPRESENTED AS GREY FOR EXISTING AND BLACK FOR PROPOSED DEPENDING ON THE PLAN.
2. EXISTING SERVICES PITS, STRUCTURES AND COLUMNS ARE ILLUSTRATED AS PER THE ORIGINAL SURVEY.

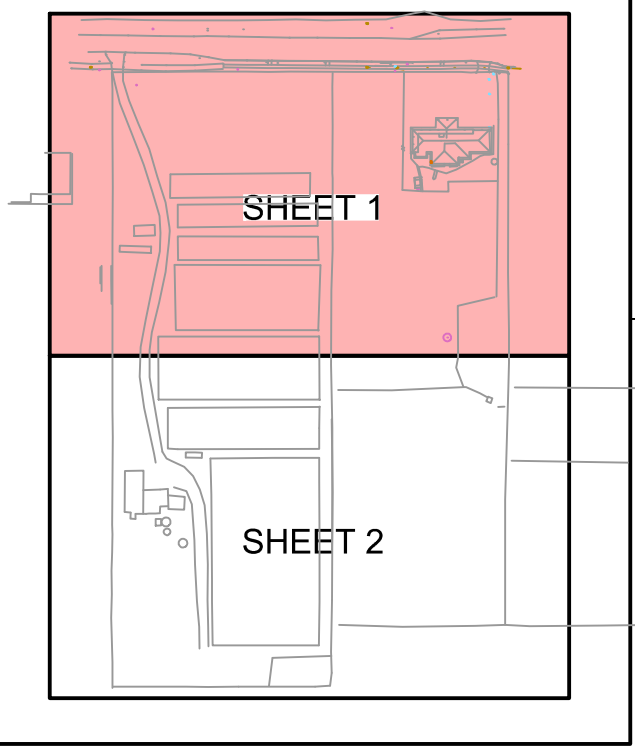
						Client:			Engineer:			Project:			Drawing Title:			Scale at A1			Drawn			Designed			Approved		
						 <b>School Infrastructure NSW</b>			 www.ttwengineers.com			NEW HIGH SCHOOL FOR LEPPINGTON AND DENHAM COURT LEPPINGTON, NSW 2179			GENERAL NOTES AND LEGEND			RT      AW      CR Type   Role   Sheet No.   Rev LHS-TTW-01-00-DR-C-00003-3 14.01.2025 4:30 PM											
3   REF SUBMISSION      SF   RT   14.01.2025																													
2   SCHEMATIC DESIGN FOR REF   SF   RT   13.12.2024																													
1   FINAL DRAFT ISSUE FOR REF   SF   RT   21.11.2024																													
Rev   Description			Eng   Draft   Date			Rev   Description			Eng   Draft   Date			Rev   Description			Eng   Draft   Date														



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0.0 5.0 10.0 15.0 20.0m  
1:250 A1 1:500 A3

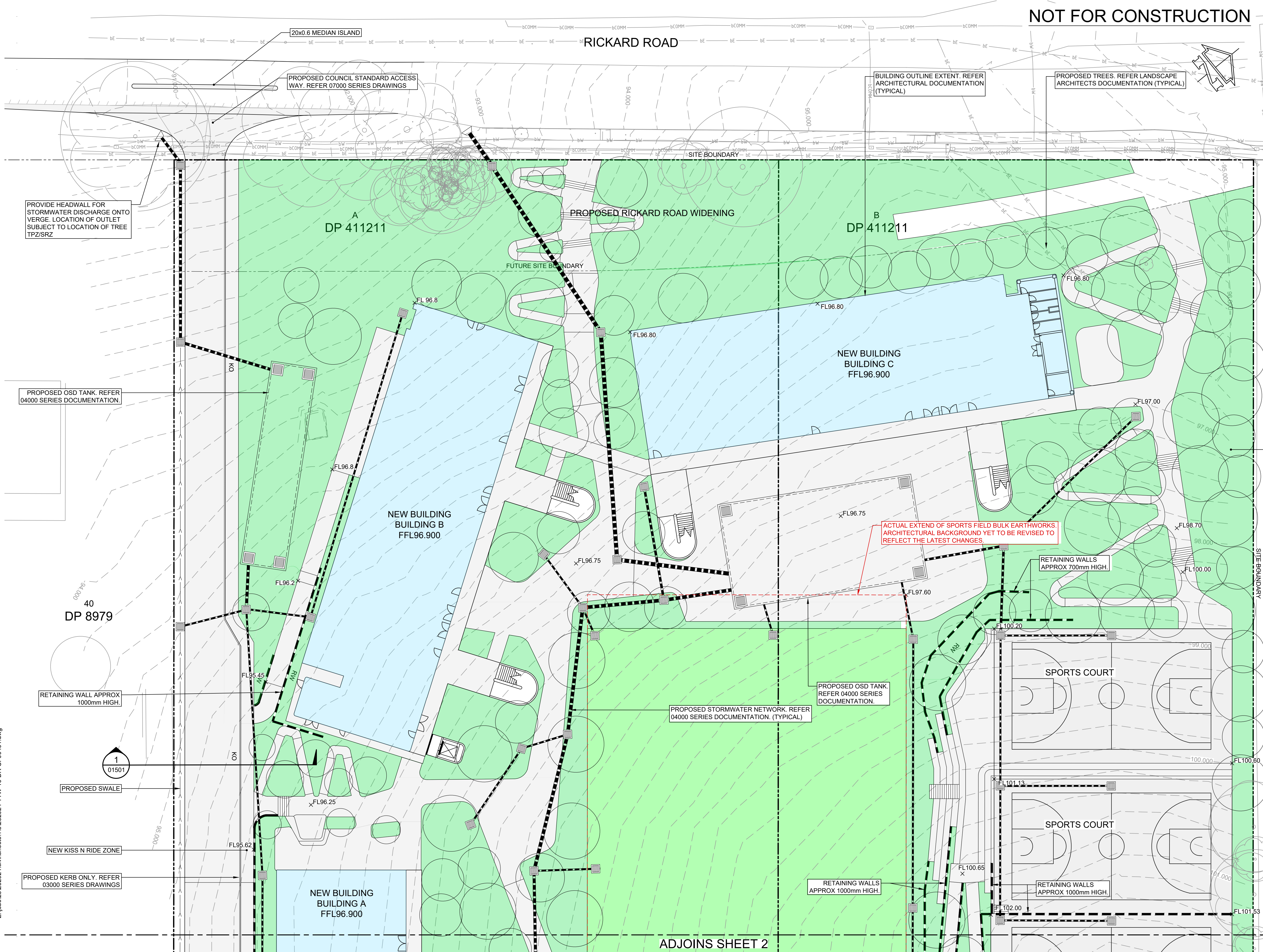


KEY PLAN

CAR PARK ARRANGEMENT AND GRADES IS SHOWN INDICATIVELY BASED ON ARCHITECTURAL SITE PLANS, TO BE DEVELOPED IN DETAIL DESIGN.


PROPOSED SOFT LANDSCAPE ZONE (TYPICAL)

39B  
DP 8979



Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

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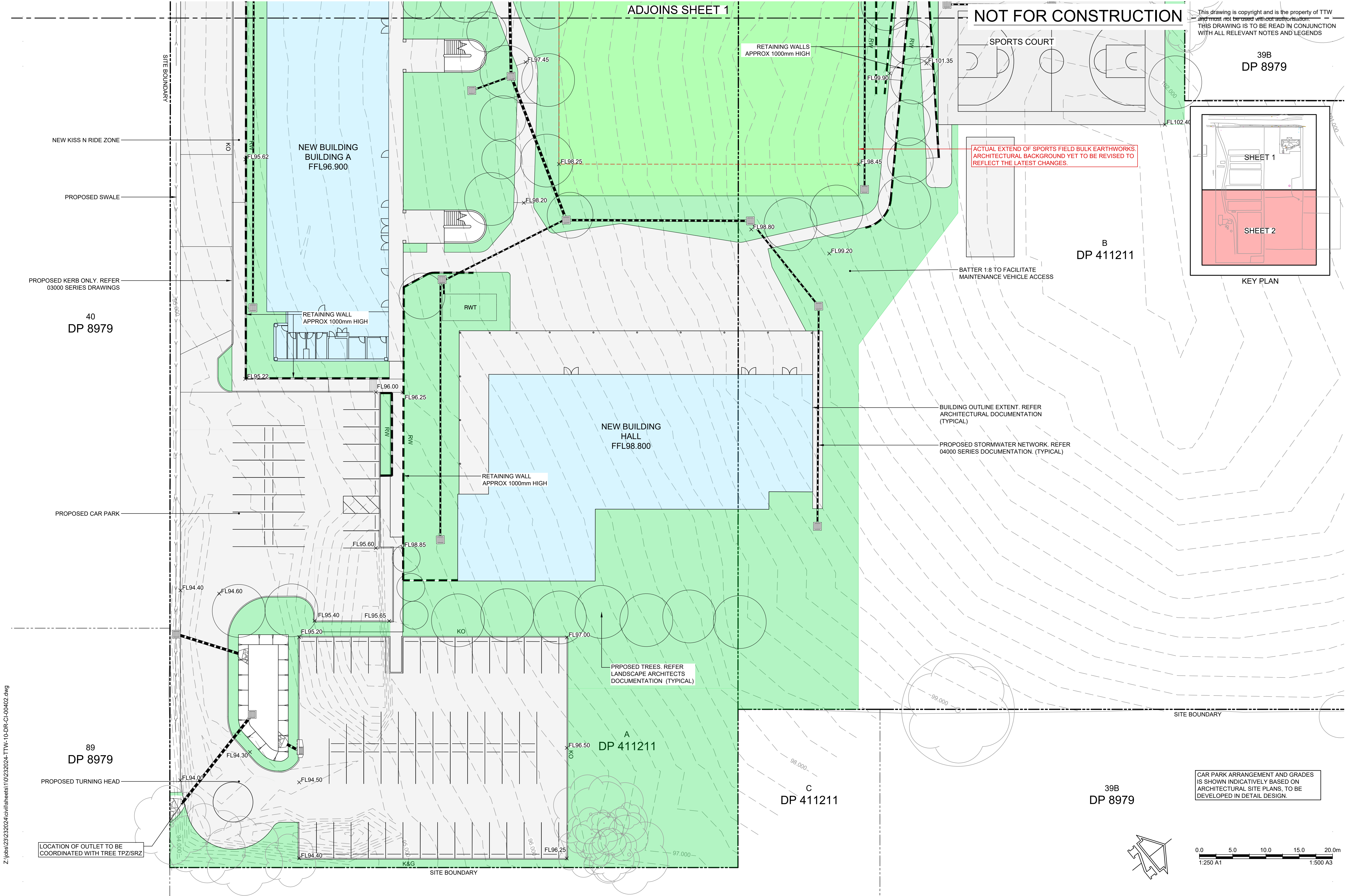
Project:  
NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title:  
GENERAL  
ARRANGEMENT PLAN  
SHEET 1

Scale at A1  
250  
Project No  
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Role  
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Rev

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3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

Client:

 **School Infrastructure NSW**

Engineer:

 **TTW**  
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Project:

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DENHAM COURT  
LEPPINGTON, NSW 2179**

Drawing Title:

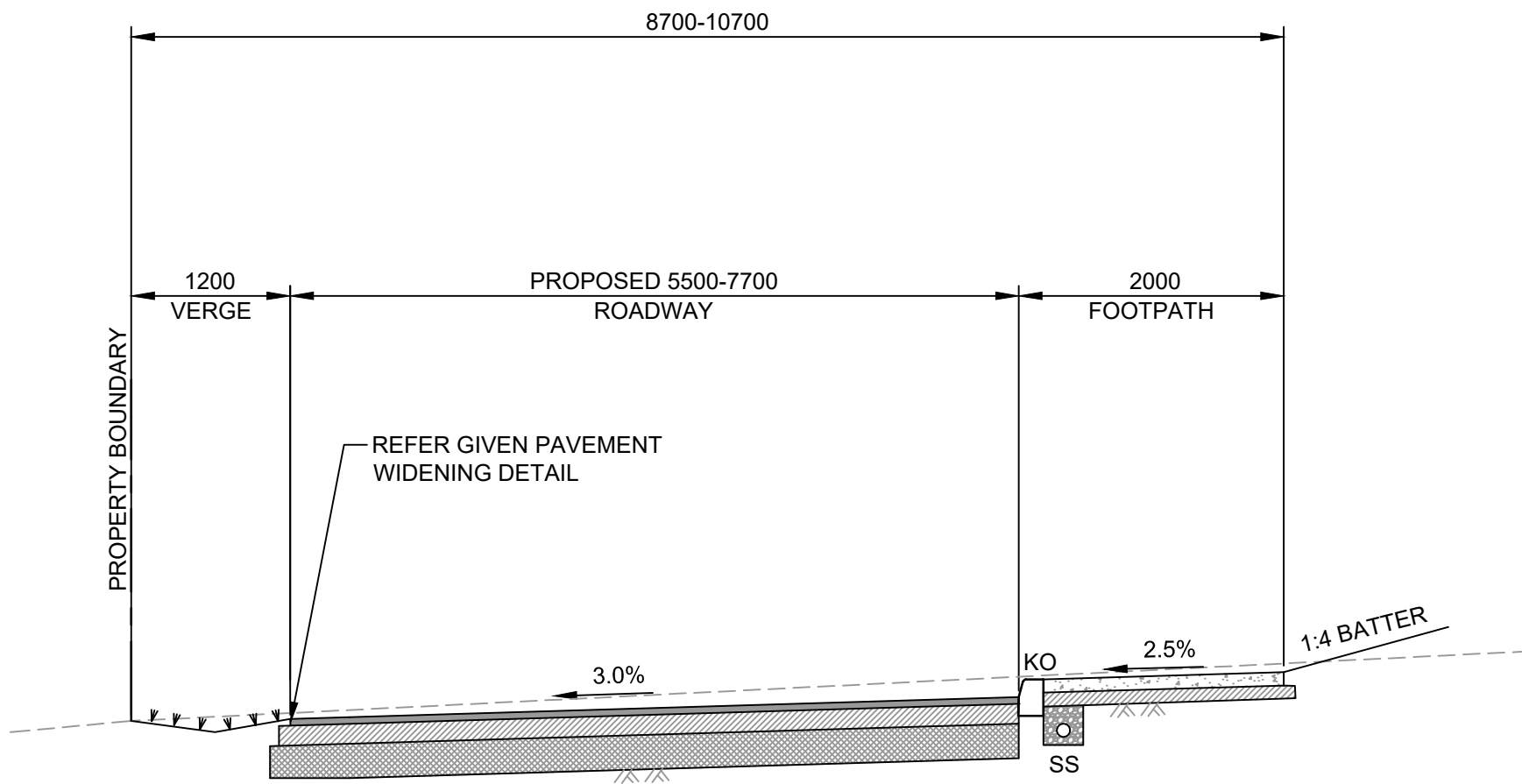
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ARRANGEMENT PLAN  
SHEET 2**

Scale at A1: 250

Drawn: RT, Designed: AW, Approved: CR

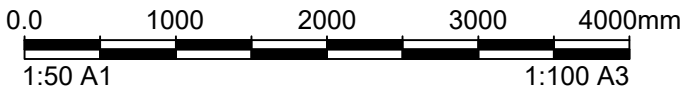
Project No: LHS-TTW-01-00-DR-C-00402-3

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SECTION 1 DRIVEWAY TYPICAL SECTION  
SCALE 1:50

1  
00401



Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

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**NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179**

Drawing Title:

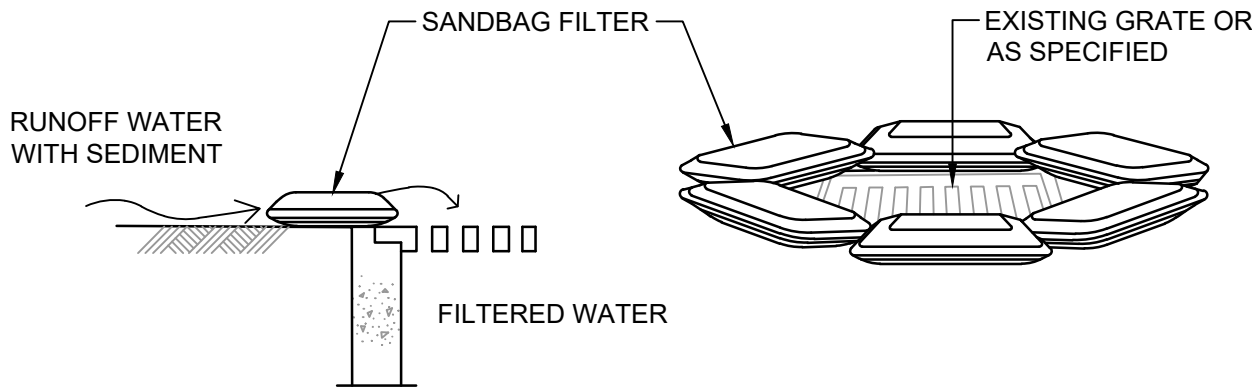
**ROAD  
TYPICAL SECTION**

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Project No	Originator	Type	Role	Sheet No.	Rev
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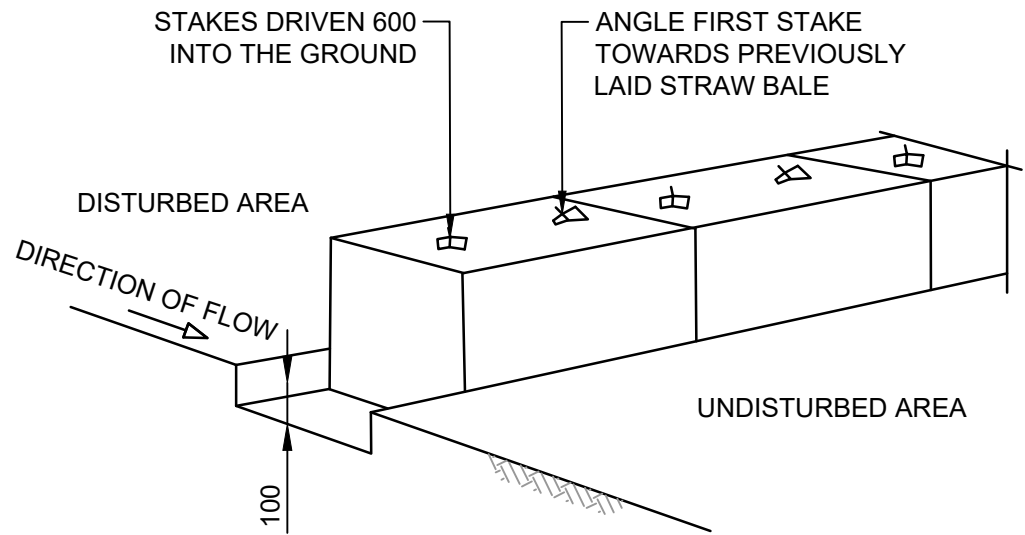


EROSION AND SEDIMENT CONTROL PUMP OUT NOTES

ANY ACCUMULATED WATER CONTAMINATED WITH SEDIMENT, FROM A SEDIMENT BASIN OR EXCAVATION PIT, IS TO BE FLOCCULATED OR FILTERED IN ORDER TO LOWER THE SUSPENDED SOLID LOAD TO LESS THAN 50MG PER LITRE GYPSUM GAS OR OTHER APPROVED FLOCCULANT SHOULD BE APPLIED WITHIN 24 HOURS OF THE END OF THE STORM EVENT. THE GYPSUM MUST BE SPREAD EVENLY OVER THE ENTIRE WATER SURFACE. PUMPING IS NOT TO OCCUR FOR AT LEAST 36 HOURS AND PREFERABLY 48 HOURS AFTER APPLICATION. CLEAN WATER IS TO BE DISCHARGED TO THE WATER TABLE VIA A HALE BAIL SEDIMENT FILTER IN A WAY THAT DOES NOT PICK UP SEDIMENT THAT HAS DROPPED TO THE BOTTOM. NOTE: GYPSUM IS A HYDRATED FORM OF CALCIUM SULPHATE AND IS AVAILABLE AT MANY SWIMMING POOL SHOPS AND HARDWARE STORES.

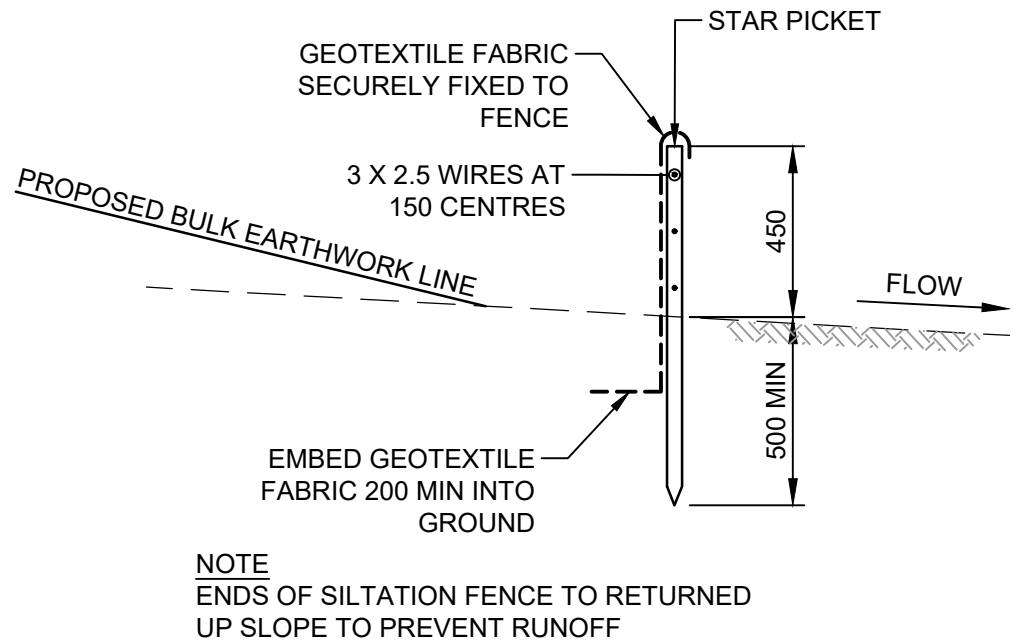


SANDBAG KERB SEDIMENT TRAP  
NTS

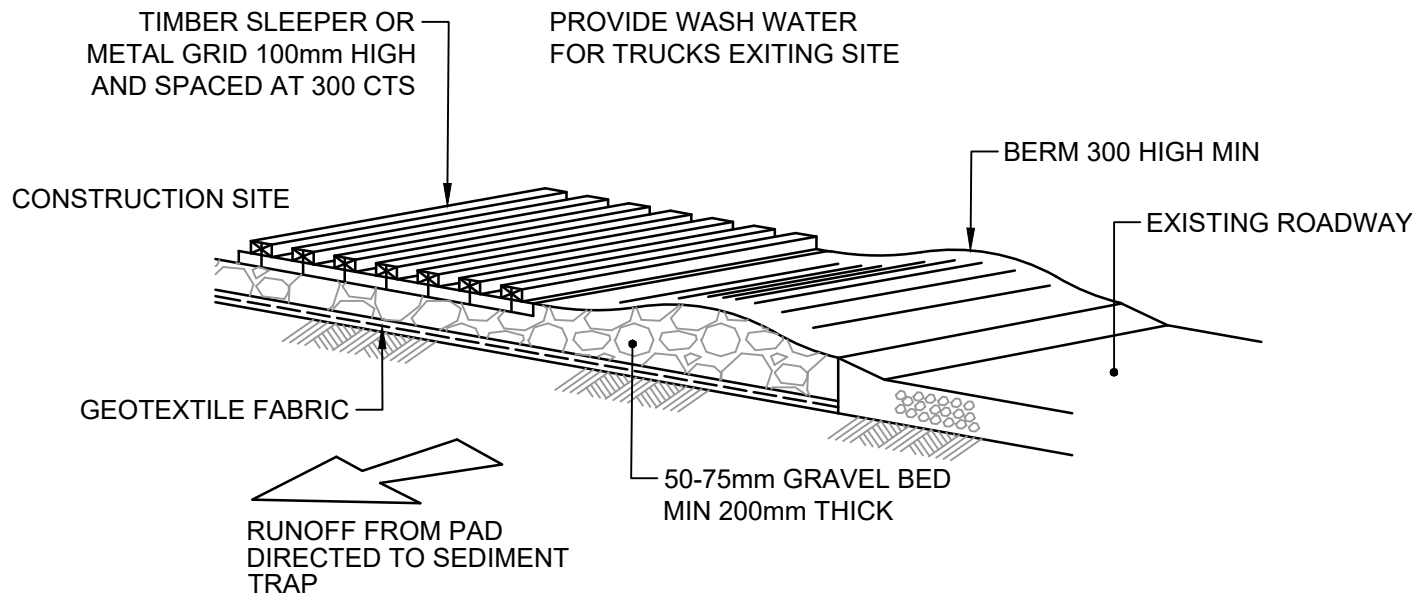


HAY BALE SEDIMENT FILTER  
NTS

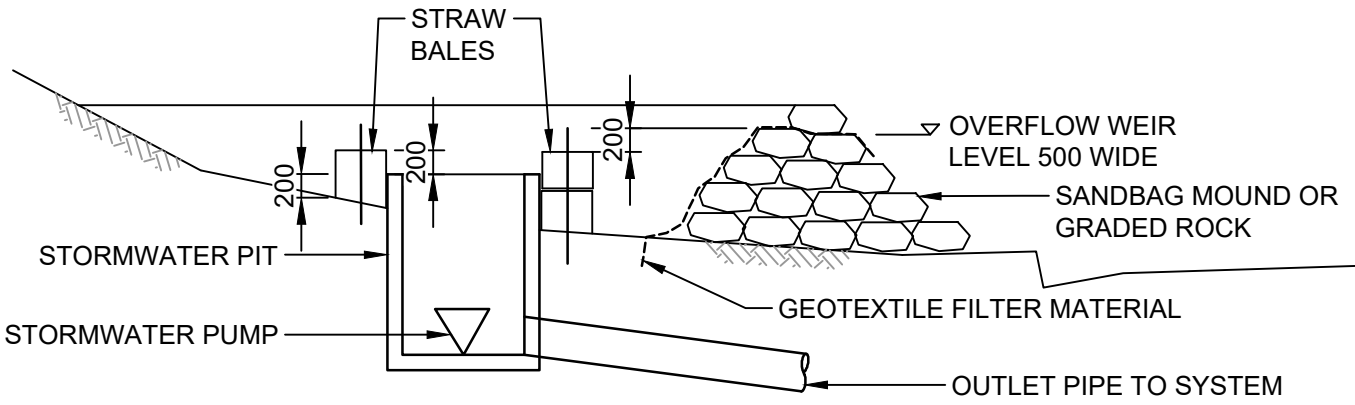
NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD



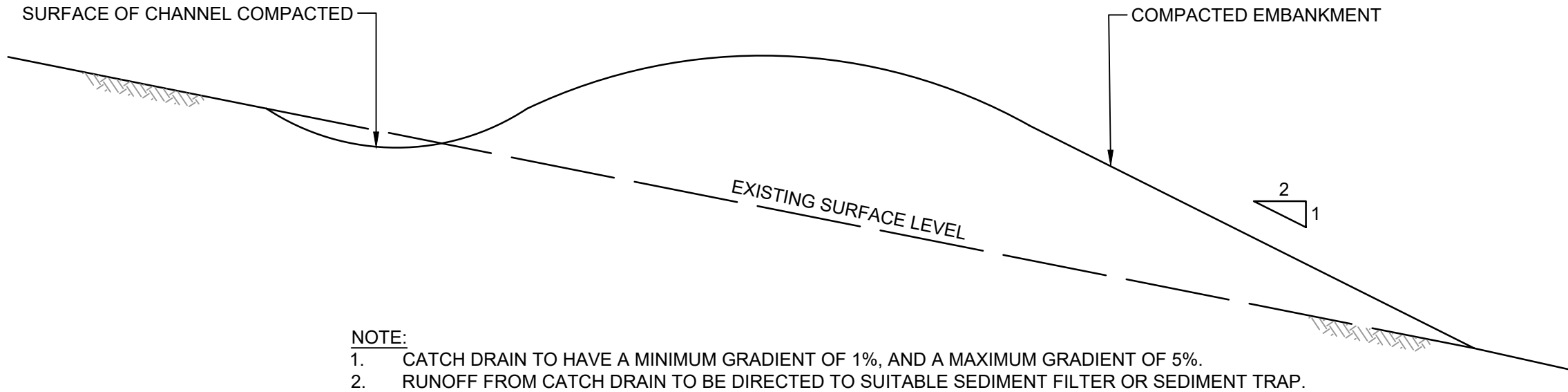
SILTATION FENCE DETAIL  
SCALE 1:20



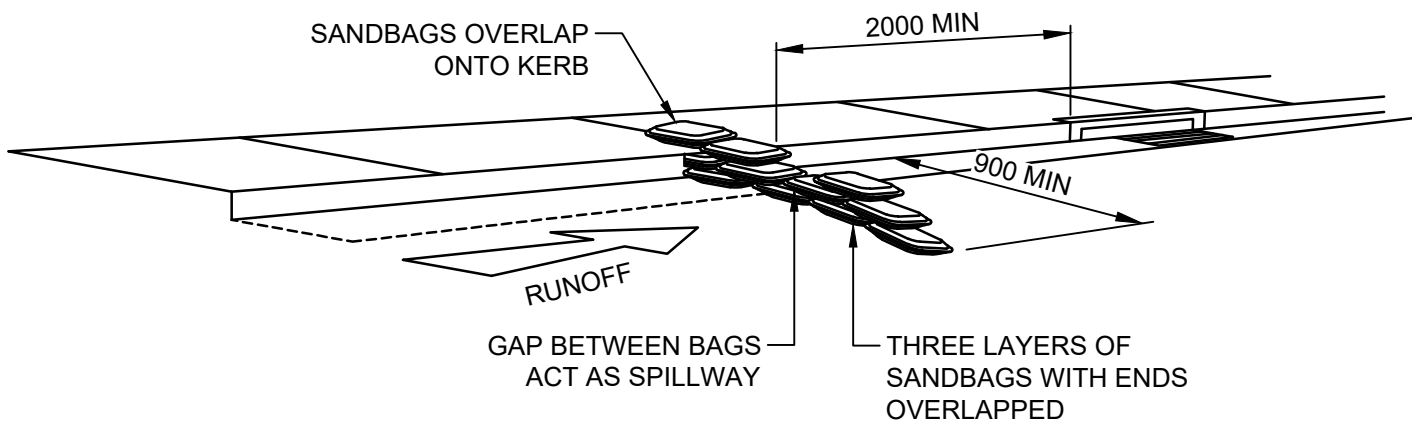
TEMPORARY CONSTRUCTION VEHICLE EXIT  
NTS



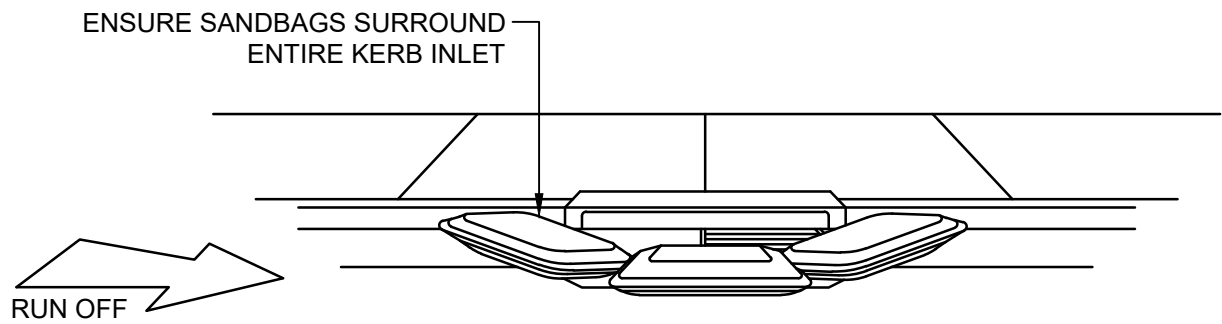
SEDIMENTATION TRAP  
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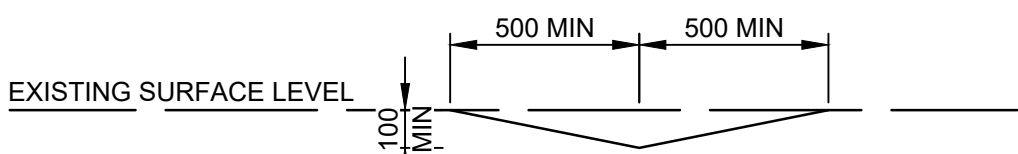
TYPICAL SECTION THROUGH CATCH DRAIN  
SCALE 1:20



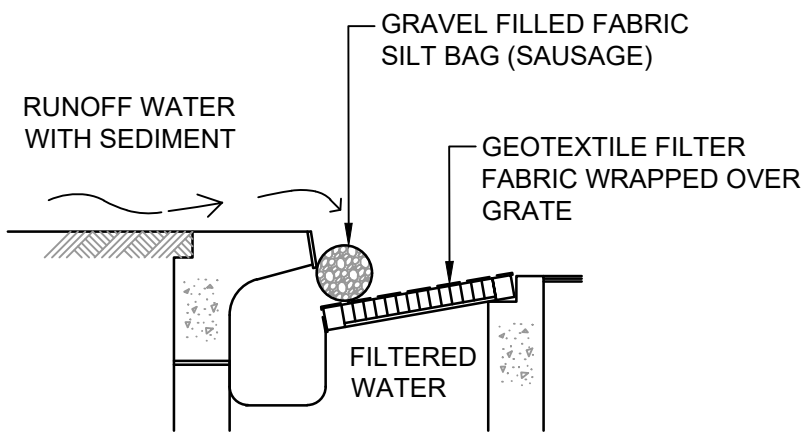
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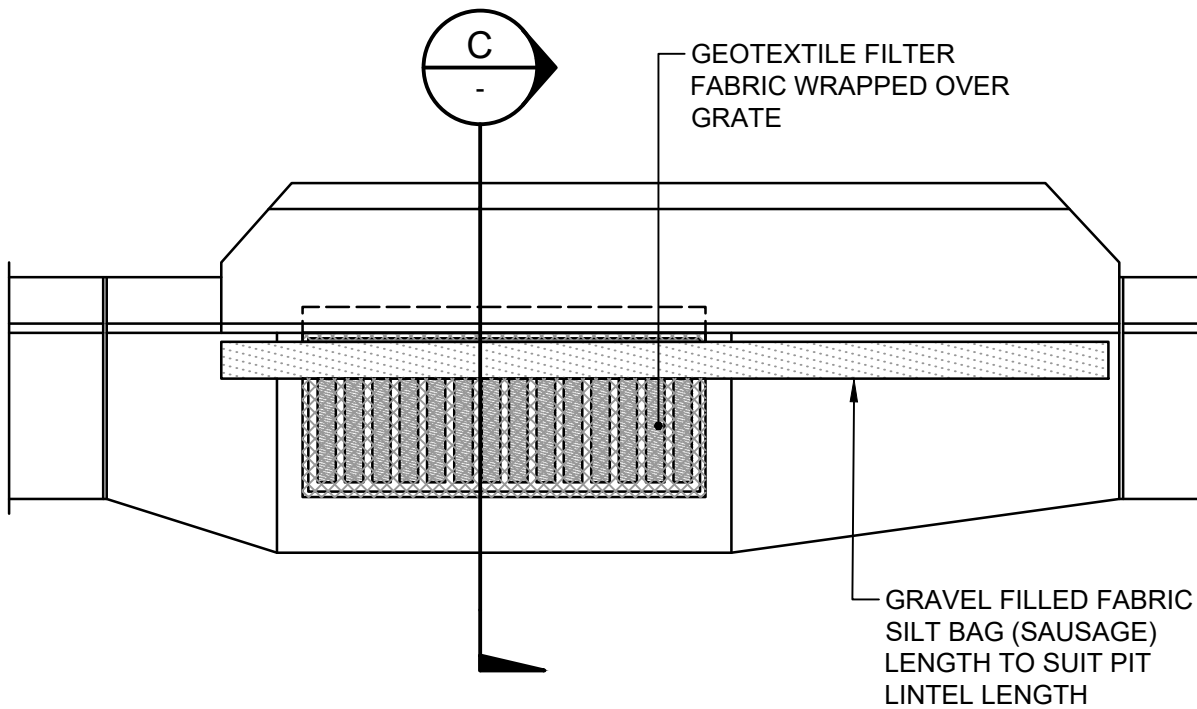
SANDBAG KERB INLET SEDIMENT TRAP  
NTS



TYPICAL SECTION  
THROUGH CATCH DRAIN  
SCALE 1:20



SECTION C  
SCALE 1:20



KERB INLET SEDIMENT TRAP  
SCALE 1:20

			Client:			Engineer:			Project:			Drawing Title:			Scale at A1		
									NEW HIGH SCHOOL FOR LEPPINGTON AND DENHAM COURT LEPPINGTON, NSW 2179			EROSION AND SEDIMENT CONTROL NOTES AND LEGEND			Drawn RT		
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															Project No		
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															Type		
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															Sheet No.		
															Rev		
															LHS-TTW-01-00-DR-C-02001-3		
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3	REF SUBMISSION	SF	RT	14.01.2025													
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024													
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024													
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School Infrastructure NSW



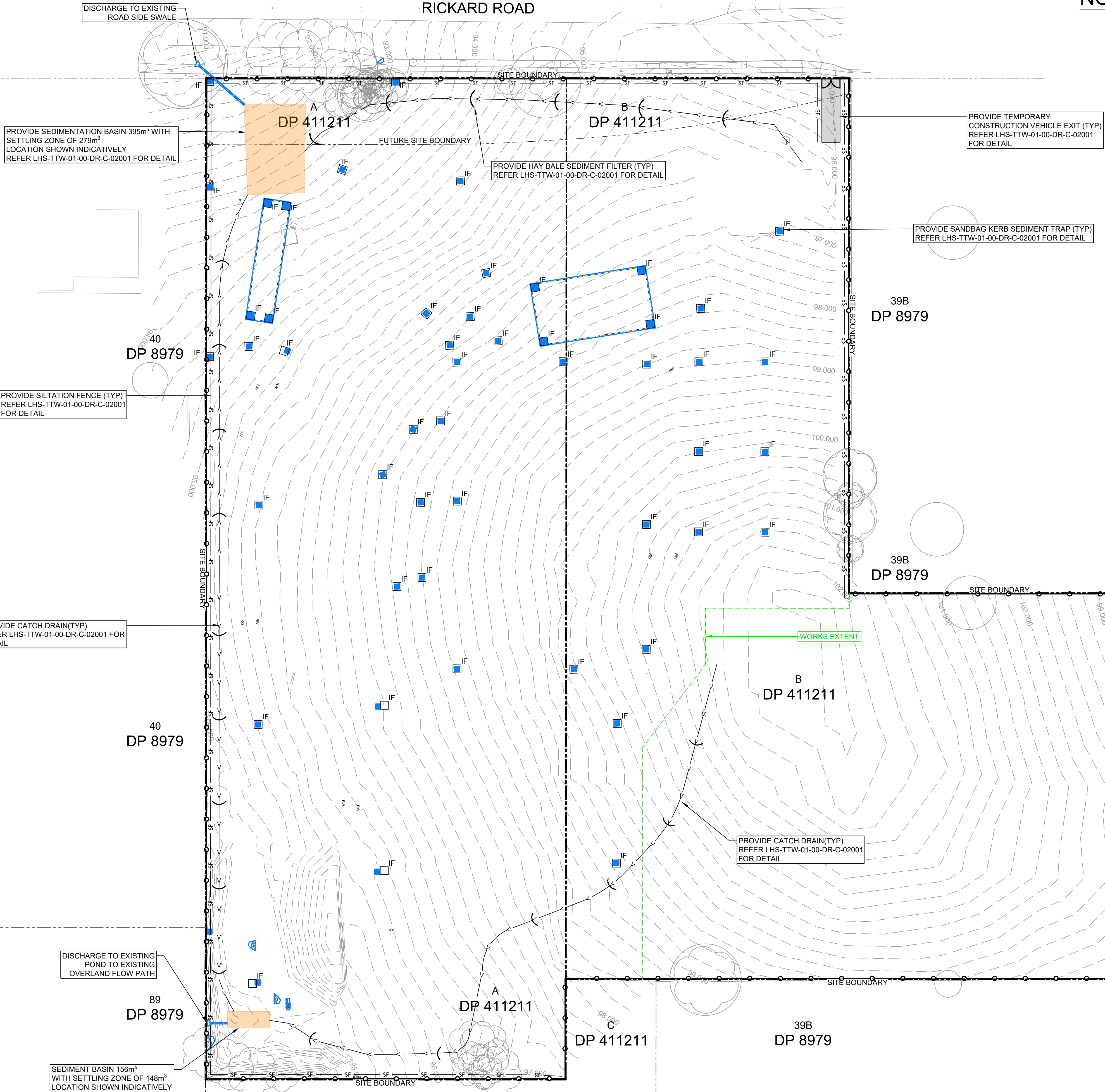
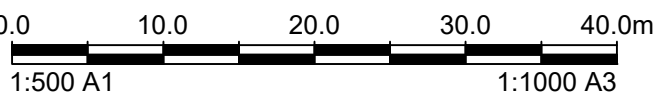
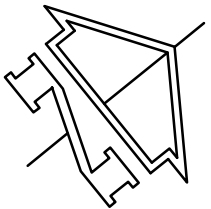
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Project:  
NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title:  
EROSION AND SEDIMENT  
CONTROL NOTES AND  
LEGEND

Scale at A1  
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Sheet No.  
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PROVIDE SEDIMENTATION BASIN 395m³ WITH SETTLING ZONE OF 279m³ LOCATION SHOWN INDICATIVELY REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE HAY BALE SEDIMENT FILTER (TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE TEMPORARY CONSTRUCTION VEHICLE EXIT (TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE SANDBAG KERB SEDIMENT TRAP (TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE SILTATION FENCE (TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE CATCH DRAIN(TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL

PROVIDE CATCH DRAIN(TYP) REFER LHS-TTW-01-00-DR-C-02001 FOR DETAIL


DISCHARGE TO EXISTING POND TO EXISTING OVERLAND FLOW PATH

SEDIMENT BASIN 156m³ WITH SETTLING ZONE OF 148m³ LOCATION SHOWN INDICATIVELY

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Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date
3	REF SUBMISSION	SF	RT 14.01.2025								
2	SCHEMATIC DESIGN FOR REF	SF	RT 13.12.2024								
1	FINAL DRAFT ISSUE FOR REF	SF	RT 21.11.2024								

Client:  
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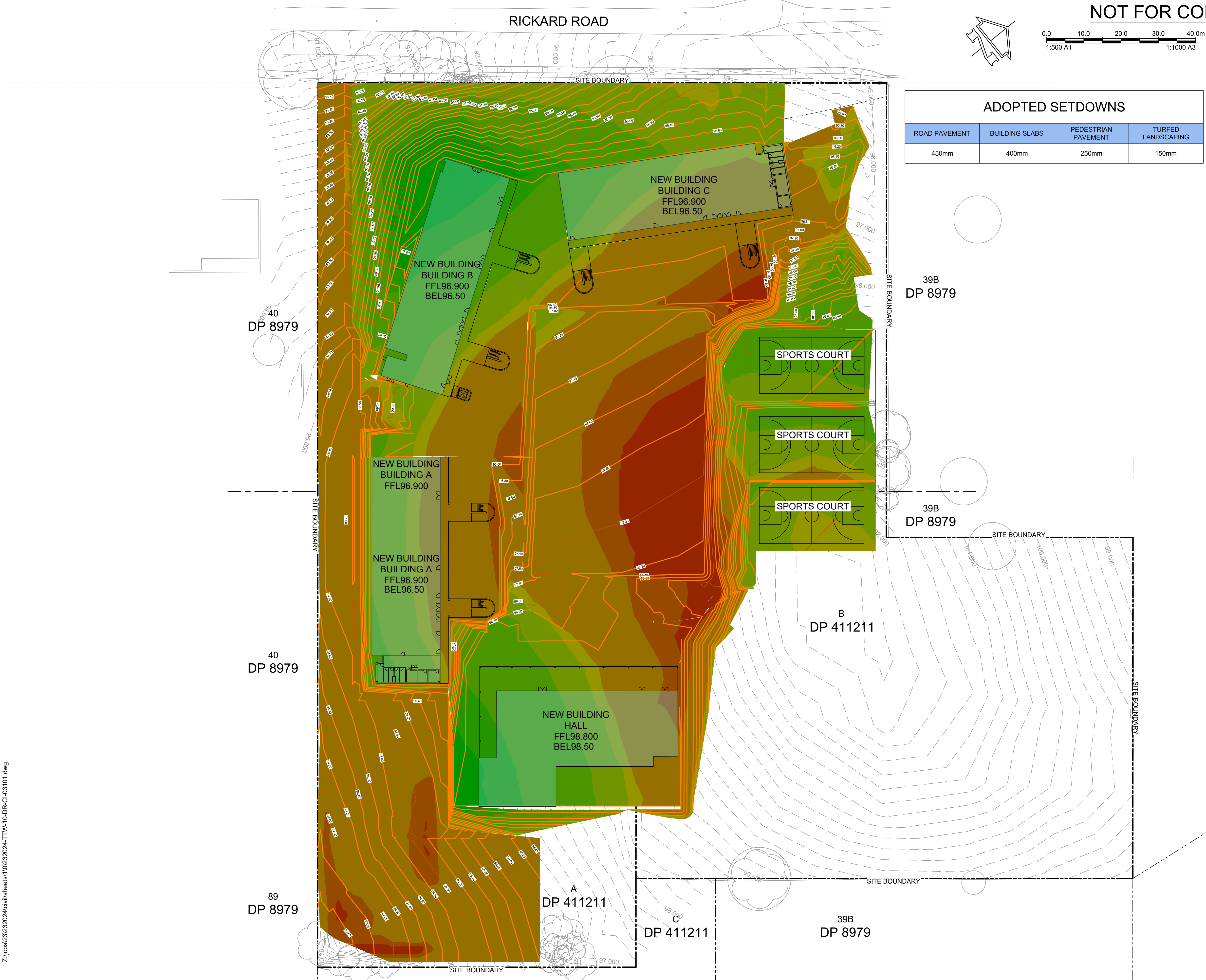
Project:  
NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title:  
EROSION AND SEDIMENT  
CONTROL PLAN

Scale at A1	Drawn	Designed	Approved	
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- BULK EARTHWORKS NOTES**
- All bulk earthworks setout from grid lines U.N.O.
  - All batters at a slope of 2 (H) : 1 (V) U.N.O.
  - Excavated material may be used as structural fill provided,  
(i) it complies with the specification requirements for fill material,  
(ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
  - Compact fill areas and subgrade to not less than:

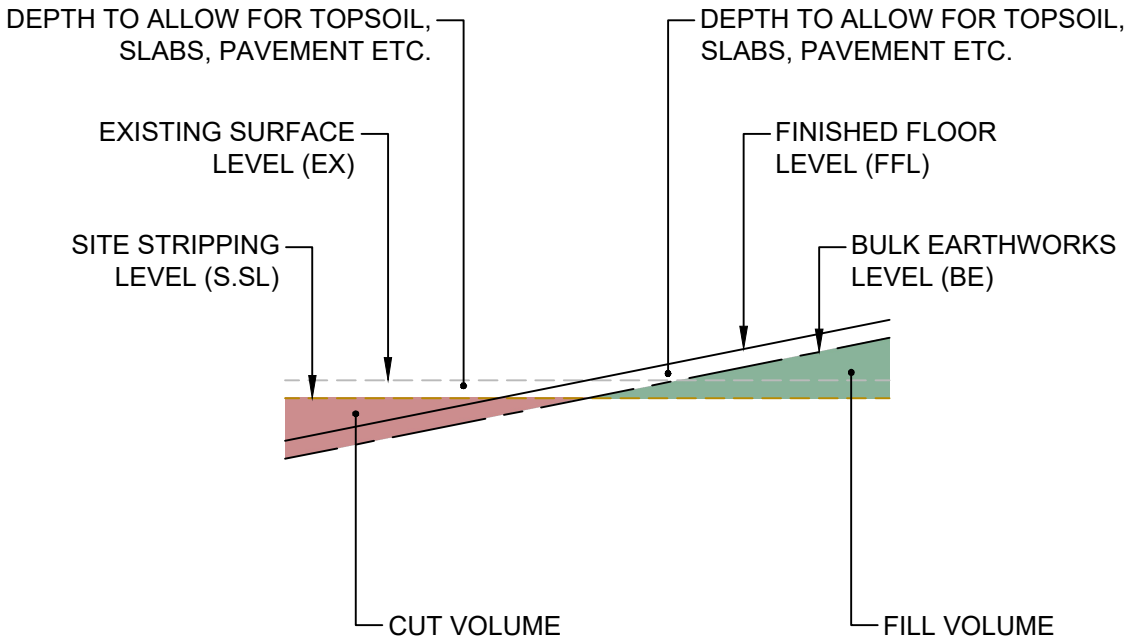
Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%
  - Before placing fill, proof roll exposed subgrade with a 12 tonne minimum roller to test subgrade and then remove soft spots(areas with more than 3mm movement under roller). Soft spots to be replaced with granular fill U.N.O.
  - Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
  - For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
  - Bulk earthwork drawings are not to be used for detailed excavation.
  - Refer to Geotechnical Report
  - Detailed earthworks such as piling, pile caps, ground beams, lift pits, service trenching & landscape mounding etc is excluded.
  - All bulk earthworks in accordance with AS3798-2007 Guidelines on earthworks for commercial and residential developments.

ADOPTED SETDOWNS			
ROAD PAVEMENT	BUILDING SLABS	PEDESTRIAN PAVEMENT	TURFED LANDSCAPING
450mm	400mm	250mm	150mm

LEVELS TABLE			
No.	FROM LEVEL (m)	TO LEVEL (m)	COLOUR
1	-2.75	-2.20	
2	-2.20	-1.70	
3	-1.70	-1.20	
4	-1.20	-0.70	
5	-0.70	-0.20	
6	-0.20	0.00	
7	0.00	0.50	
8	0.50	1.00	
9	1.00	1.50	
10	1.50	2.00	
11	2.00	2.50	
12	2.50	3.17	

CUT/FILL SUMMARY			
AREA (m²)	CUT (m³)	FILL (m³)	NET (m³)
27948	13366	8742	4624(CUT)

- NOTES:**
- SITE STRIP OF TOPSOIL HAS NOT BEEN SEPARATED FOR CUT AND FILL VOLUMES. CONTRACTOR TO MAKE ALLOWANCE FOR SITE STRIP, STOCKPILE AND DISPOSAL.
  - STRUCTURAL SLAB ON GRADE SOLUTION FOR GROUND FLOOR BUILDING SLABS ASSUMES REMOVAL OF THE EXISTING FILL AND RE-COMPACTION OF SITE-WON CLAY TO A MAXIMUM DEPTH OF 500mm. ANY ADDITION FILLING REQUIRED TO MEET BULK EXCAVATION LEVELS IS TO USE A NON-REACTIVE GRANULAR MATERIAL. REFER TO THE GEOTECHNICAL ADVICE FOR FURTHER DETAIL.
  - BULK EARTHWORKS PREPARED TO A SCHEMATIC DESIGN LEVEL ONLY BASED ON INFORMATION AVAILABLE. CONTRACTOR TO CONDUCT THEIR OWN ASSESSMENT OF BULK EARTHWORKS CUT AND FILL VOLUMES.
  - CONTRACTOR TO MAKE ALLOWANCE FOR STOCKPILE/ SPREADING OF EXCESS CUT ON SITE.



EARTHWORKS TYPICAL SECTION

LEGEND			
---	EX308.00	---	EXISTING SURFACE CONTOUR
---	BE308.80	---	BULK EARTHWORKS CONTOUR

Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date
3	REF SUBMISSION	SF	RT 14.01.2025								
2	SCHEMATIC DESIGN FOR REF	SF	RT 13.12.2024								
1	FINAL DRAFT ISSUE FOR REF	SF	RT 21.11.2024								

Client:

School Infrastructure NSW

Engineer:

www.ttweengineers.com

Project:

NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title:

EARTHWORKS  
CUT AND FILL  
VOLUMES PLAN

Scale at A1: 500

Drawn: RT

Designed: AW

Approved: CR

Project No: LHS-TTW-01-00-DR-C-03101-3

14.01.2025 4:32 PM



## 1. STORMWATER DESIGN CRITERIA

- (A) AVERAGE EXCEEDANCE PROBABILITY: -
- 1% AEP FOR ROOF DRAINAGE TO FIRST EXTERNAL PITS
  - 5% AEP FOR PAVED AND LANDSCAPED AREAS
- (B) RAINFALL INTENSITIES: -
- TIME OF CONCENTRATION: 5 MINUTES
  - 1% AEP = 226mm/hr
  - 5% AEP = 168mm/hr
- (C) RAINFALL LOSSES: -
- IMPERVIOUS AREAS: IL = 1mm CL = 0mm/hr
  - PERVIOUS AREAS: IL = 25.96mm CL = 0.92mm/hr
2. PIPES 300 DIA AND LARGER TO BE REINFORCED CONCRETE CLASS "A" APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
3. PIPES UP TO 300 DIA MAY BE SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS, SUBJECT TO APPROVAL BY THE ENGINEER.
4. EQUIVALENT STRENGTH VCP OR FRP PIPES MAY BE USED SUBJECT TO APPROVAL.
5. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY ENGINEER.
6. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE MANUFACTURED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
7. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED UPVC SEWER GRADE PIPE IS TO BE USED.
8. GRATES AND COVERS SHALL CONFORM WITH AS 3996-2006, AND AS 1428.1 FOR ACCESS REQUIREMENTS.
9. PIPES ARE TO BE INSTALLED IN ACCORDANCE WITH AS 3725. ALL BEDDING TO BE TYPE H2 U.N.O.
10. CARE IS TO BE TAKEN WITH INVERT LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
11. ALL STORMWATER PIPES TO BE 150 DIA AT 1.0% MIN FALL U.N.O.
12. SUBSOIL DRAINS TO BE SLOTTED FLEXIBLE UPVC U.N.O.
13. ADOPT INVERT LEVELS FOR PIPE INSTALLATION (GRADES SHOWN ARE ONLY NOMINAL).

### PIPE INFORMATION

USIL	UPSTREAM INVERT LEVEL	SW	
Ø000	PIPE INTERNAL DIAMETER	L 10.0m	TIE LENGTH
—	PIPE MATERIAL AND CLASS	D 1.0m	TIE DEPTH
0.0m	PIPE LENGTH	Ø150	TIE DIAMETER
0.0 m/s	HYDRAULIC FLOW RATE		
%0.0	PIPE GRADE		
DSIL	DOWNSSTREAM INVERT LEVEL		









## SW1-2

LINE NUMBER 1 - STRUCTURE NUMBER 2

1. ALL SUBSOIL DRAINAGE WORKS ARE TO BE COMPLETED IN ACCORDANCE WITH THE RELEVANT STANDARDS AND SPECIFICATIONS OUTLINED IN THE PROJECT SPECIFICATION.
2. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
3. SUBSOIL DRAINS TO BE Ø100 SLOTTED FLEXIBLE uPVC UNLESS NOTED OTHERWISE.
4. ALL SUBSOIL DRAINS ARE TO BE AT MINIMUM 1% GRADE UNLESS NOTED OTHERWISE.
5. ALL SUBSOIL DRAINS TO BE RODDED PRIOR TO THE PLACEMENT OF ASPHALT.
6. ALL SUBSOIL DRAINS ARE DRAWN DIAGRAMMATICALLY FOR CLARITY. REFER TO TYPICAL DETAIL FOR SUBSOIL SETOUT.



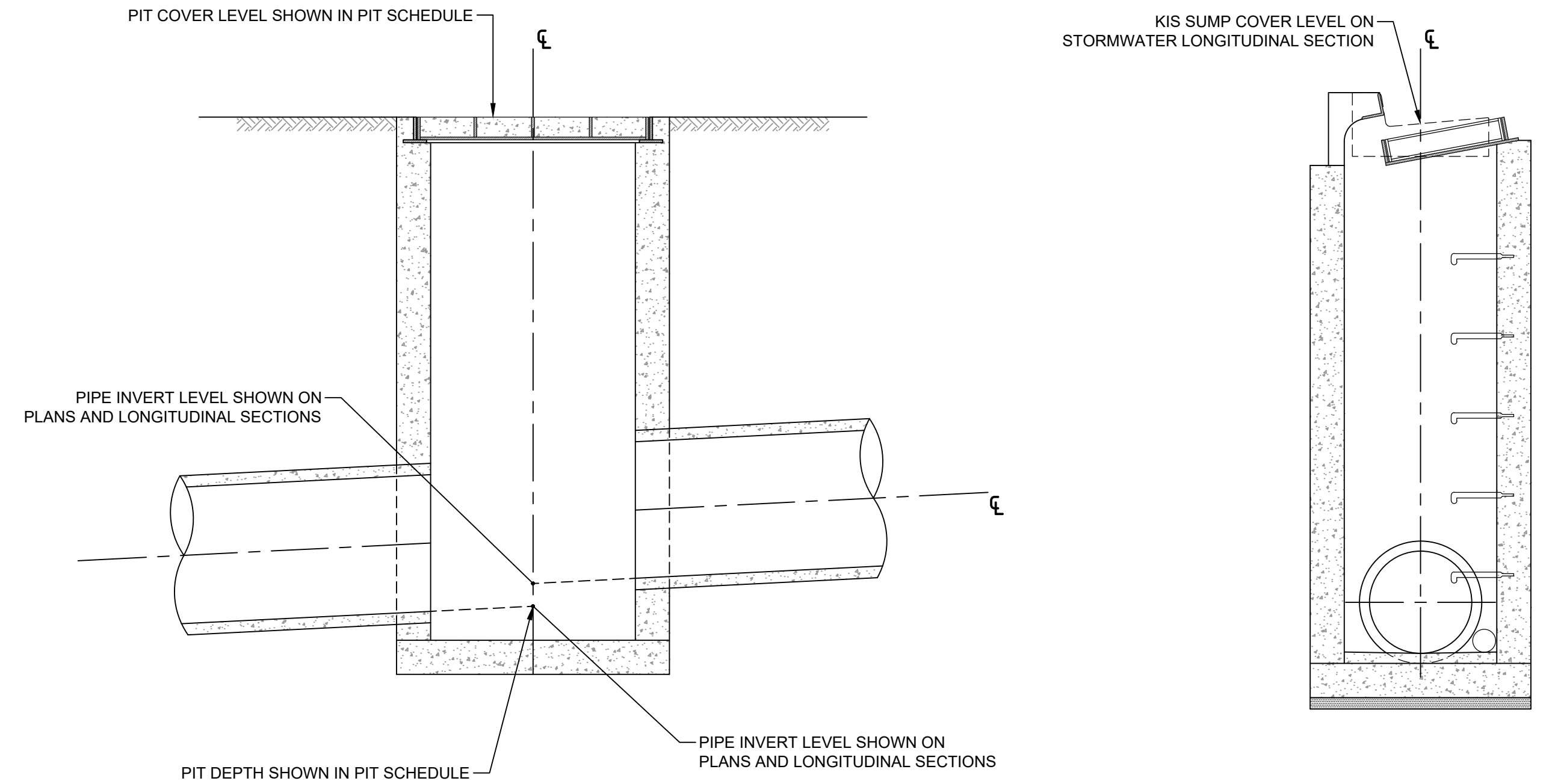
STORMWATER PIT AND PIPE

- |   |                       |
|---|-----------------------|
|  | DOWN PIPE             |
|  | RODDING POINT         |
|  | PLANTER OUTLET        |
|  | RAINWATER OUTLET      |
|  | GROSS POLLUTANT TRAP  |
|  | OVERLAND FLOW ARROW   |
|  | CONCRETE INCASED PIPE |
|  | SWALE DRAIN           |

## IL PIPE INVERT LEVEL

- |    |                   |
|----|-------------------|
| OL | PIPE OBVERT LEVEL |
| CL | PIT COVER LEVEL   |
| WL | WATER LEVEL       |

STORMWATER DRAINAGE NOTES AND LEGEND IS TO READ IN CONJUNCTION  
WITH GENERAL NOTES AND LEGEND. REFER DRAWING No. 00002



# DESIGN INVERT LEVELS AT STORMWATER STRUCTURES

SCALE 1:20

KERB INLET STRUCTURE (KIS)  
COVER LEVEL FOR KIS IN ROAD  
SCALE 1:20

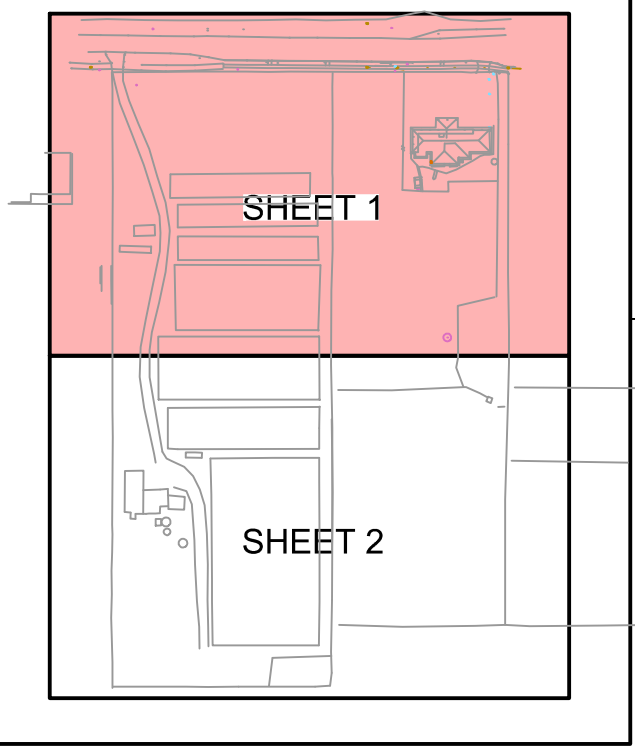
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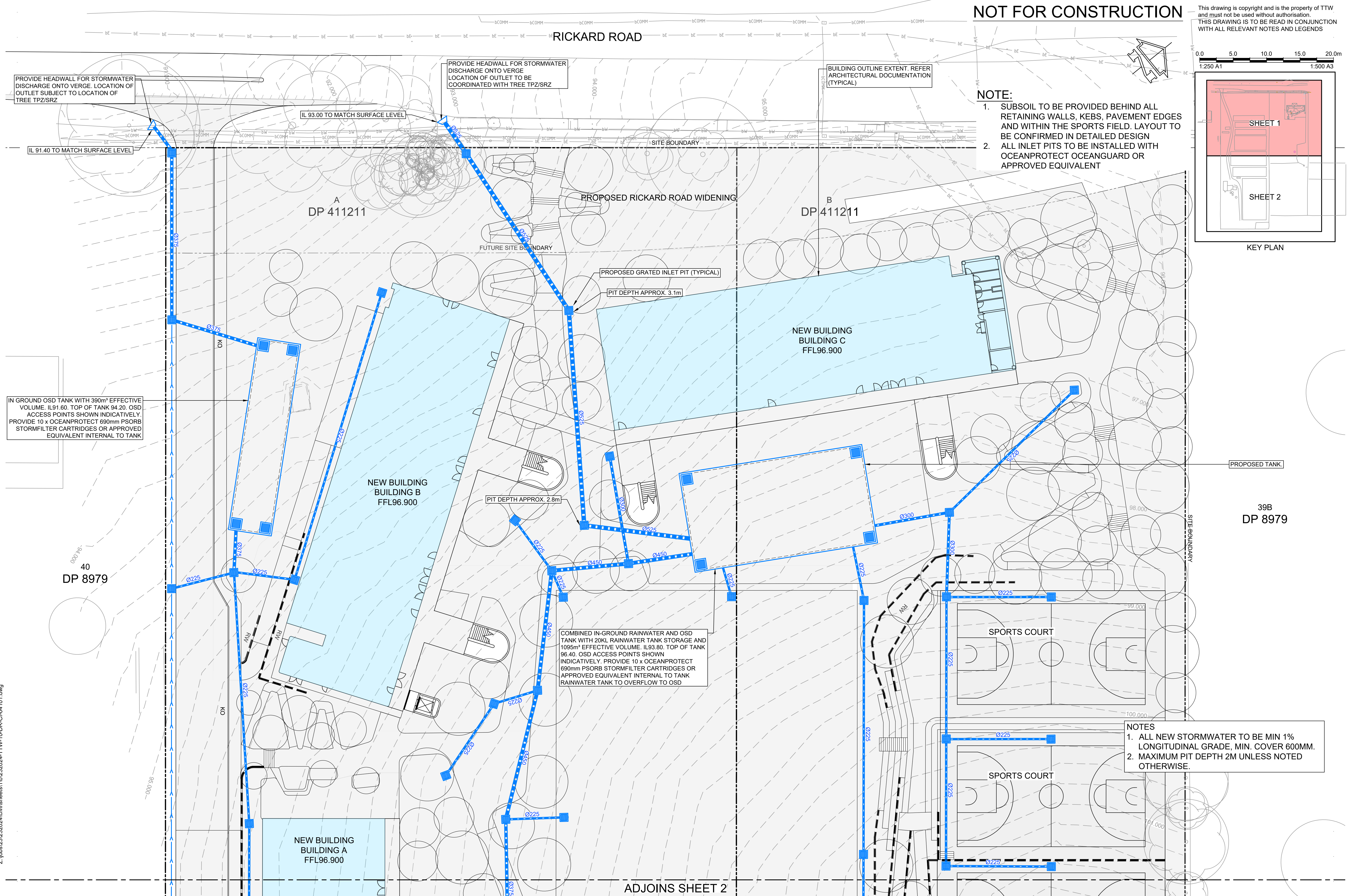
0.0 5.0 10.0 15.0 20.0m  
1:250 A1 1:500 A3



KEY PLAN

NOTE:

- SUBSOIL TO BE PROVIDED BEHIND ALL RETAINING WALLS, KEBS, PAVEMENT EDGES AND WITHIN THE SPORTS FIELD. LAYOUT TO BE CONFIRMED IN DETAILED DESIGN
- ALL INLET PITS TO BE INSTALLED WITH OCEANPROTECT OCEANGUARD OR APPROVED EQUIVALENT



NOTES

- ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600MM.
- MAXIMUM PIT DEPTH 2M UNLESS NOTED OTHERWISE.

3 REF SUBMISSION SF RT 14.01.2025			Client:			Engineer:			Project:			Drawing Title:			Scale at A1			Drawn			Designed			Approved		
2 SCHEMATIC DESIGN FOR REF SF RT 13.12.2024									NEW HIGH SCHOOL FOR LEPPINGTON AND DENHAM COURT			STORMWATER AND SUBSOIL DRAINAGE PLAN SHEET 1			250			RT			AW			CR		
1 FINAL DRAFT ISSUE FOR REF SF RT 21.11.2024									LEPPINGTON, NSW 2179						Project No			Originator			Type			Role Sheet No.		
Rev Description Eng Draft Date			Rev Description Eng Draft Date			Rev Description Eng Draft Date									LHS-TTW-01-00-DR-C-04101-3											
															15.01.2025 10:23 AM											



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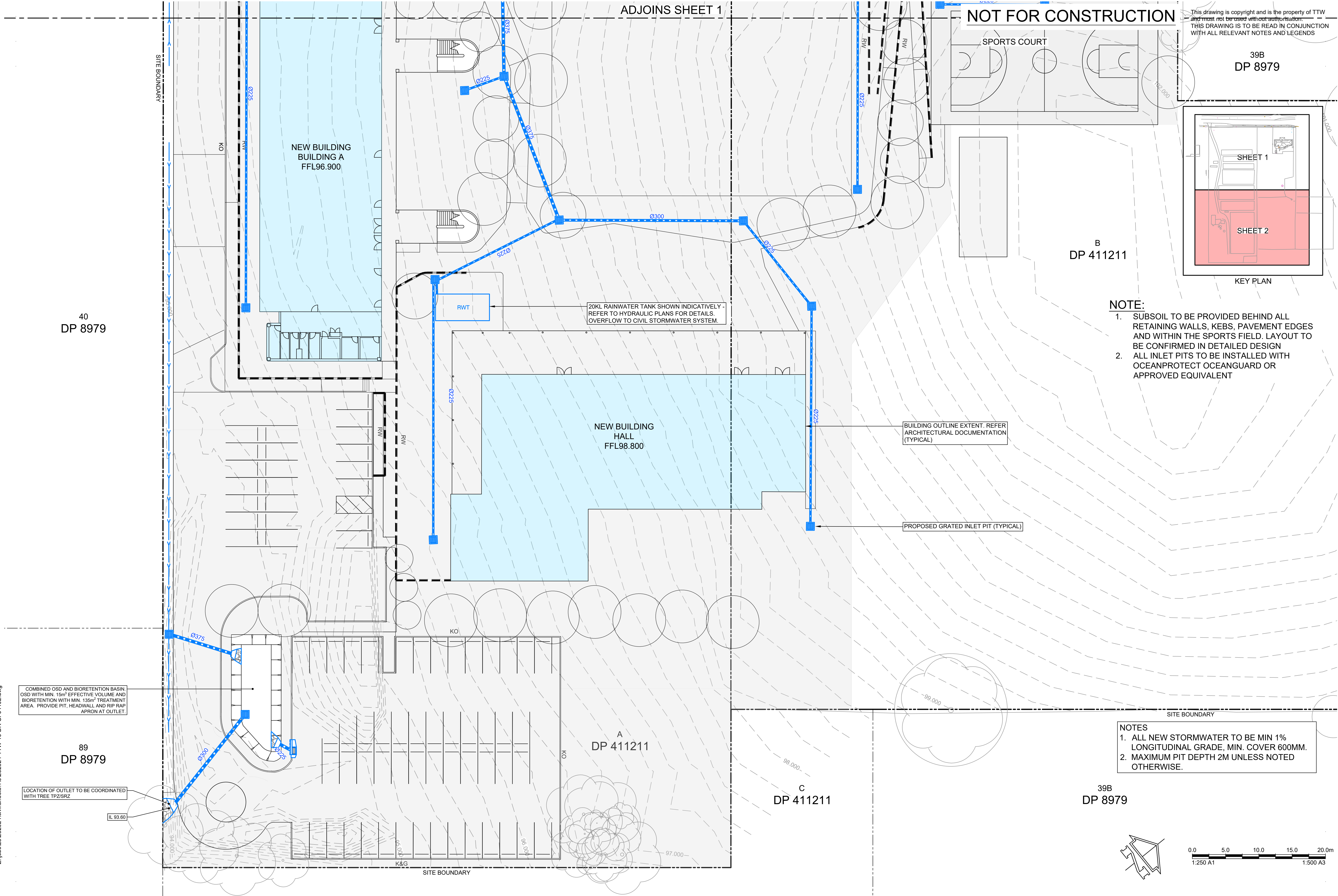
Project: NEW HIGH SCHOOL FOR LEPPINGTON AND DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title: STORMWATER AND SUBSOIL DRAINAGE  
PLAN SHEET 1

Scale at A1: 250  
Project No: LHS-TTW-01-00-DR-C-04101-3  
15.01.2025 10:23 AM



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- NOTE:**
- SUBSOIL TO BE PROVIDED BEHIND ALL RETAINING WALLS, KEBS, PAVEMENT EDGES AND WITHIN THE SPORTS FIELD. LAYOUT TO BE CONFIRMED IN DETAILED DESIGN
  - ALL INLET PITS TO BE INSTALLED WITH OCEANPROTECT OCEANGUARD OR APPROVED EQUIVALENT

- NOTES**
- ALL NEW STORMWATER TO BE MIN 1% LONGITUDINAL GRADE, MIN. COVER 600MM.
  - MAXIMUM PIT DEPTH 2M UNLESS NOTED OTHERWISE.

Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

Client:

 **School Infrastructure NSW**

Engineer:

 **TTW**  
www.ttwengineers.com

Project:

**NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179**

Drawing Title:

**STORMWATER  
AND SUBSOIL DRAINAGE  
PLAN SHEET 2**

Scale at A1: 250

Drawn: RT

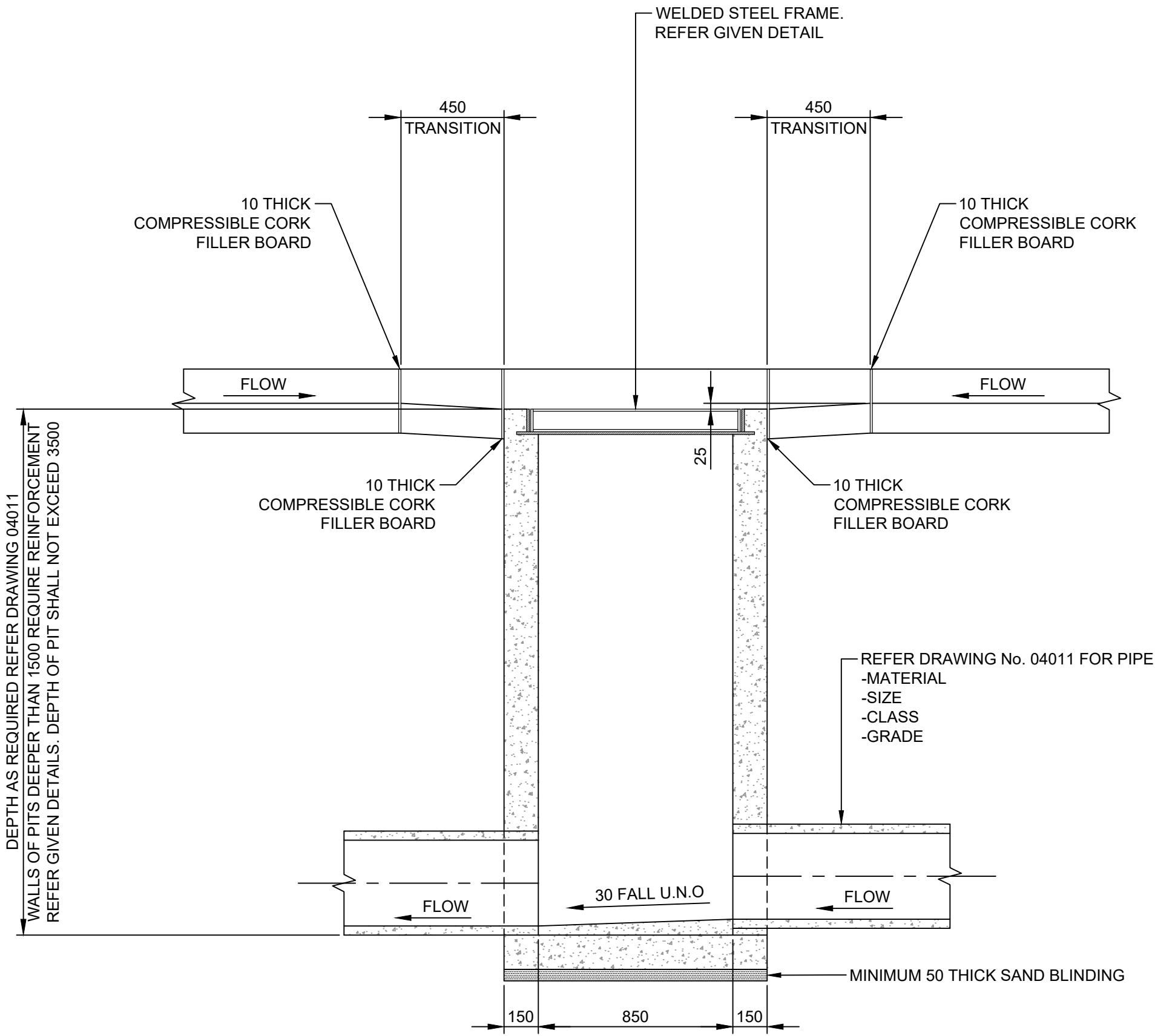
Designed: AW

Approved: CR

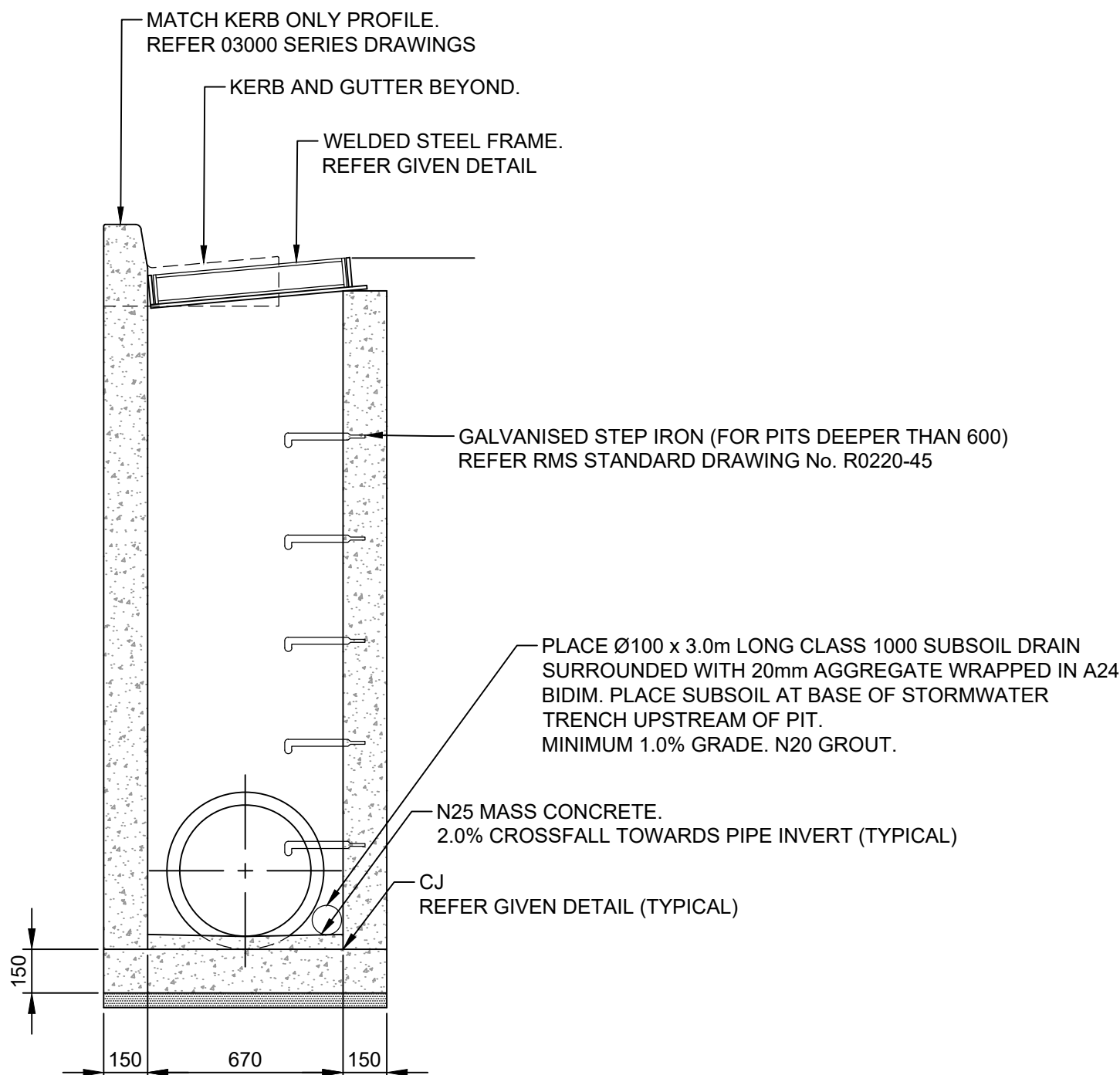
Project No: LHS-TTW-01-00-DR-C-04102-3

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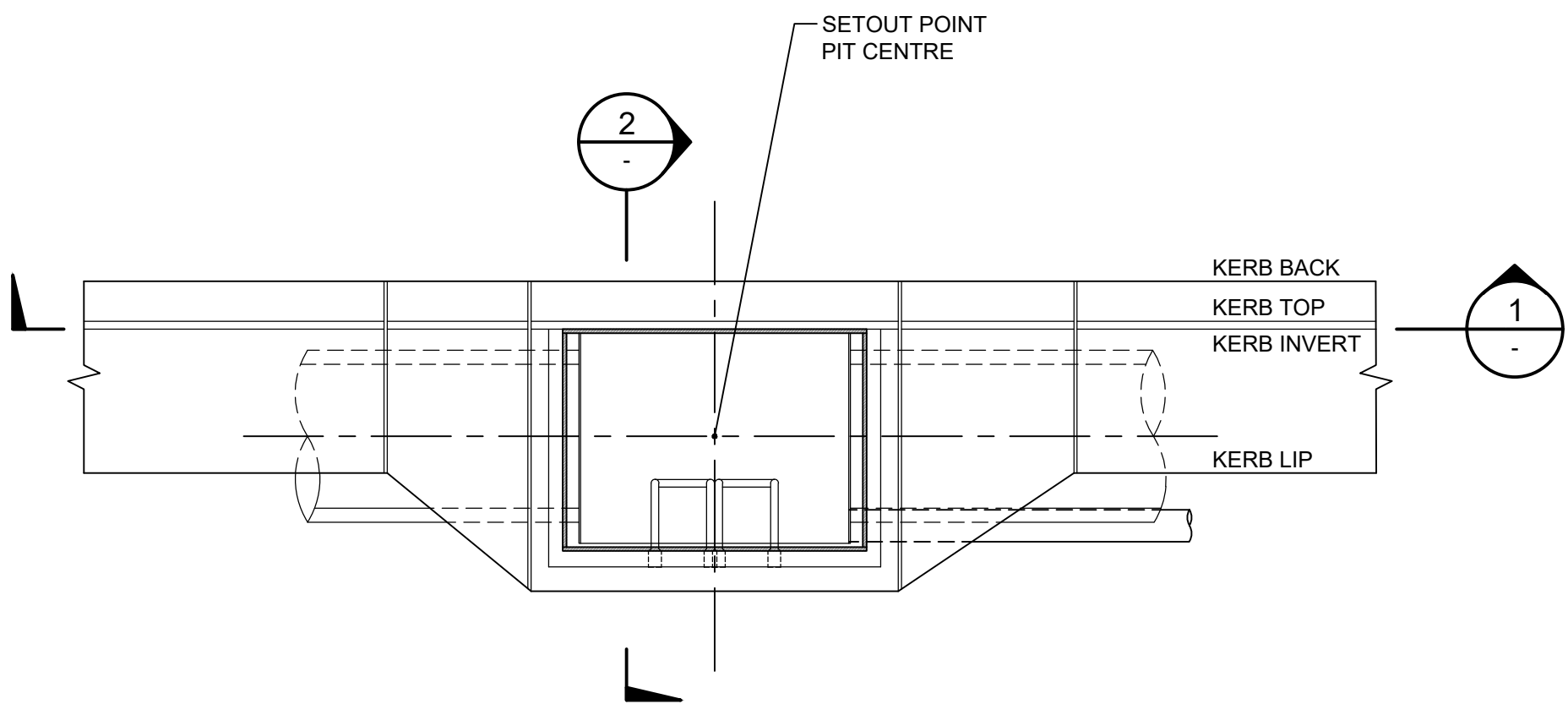




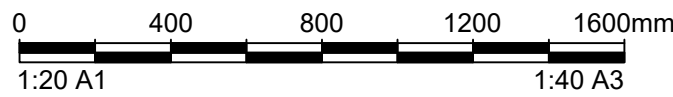
SECTION 1  
SCALE 1:20



SECTION 2  
SCALE 1:20



KERB GRATED INLET PIT (KGIS)  
FOR PIPES UP TO Ø450  
SCALE 1:20



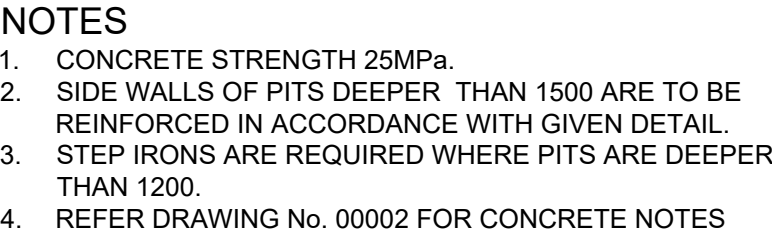
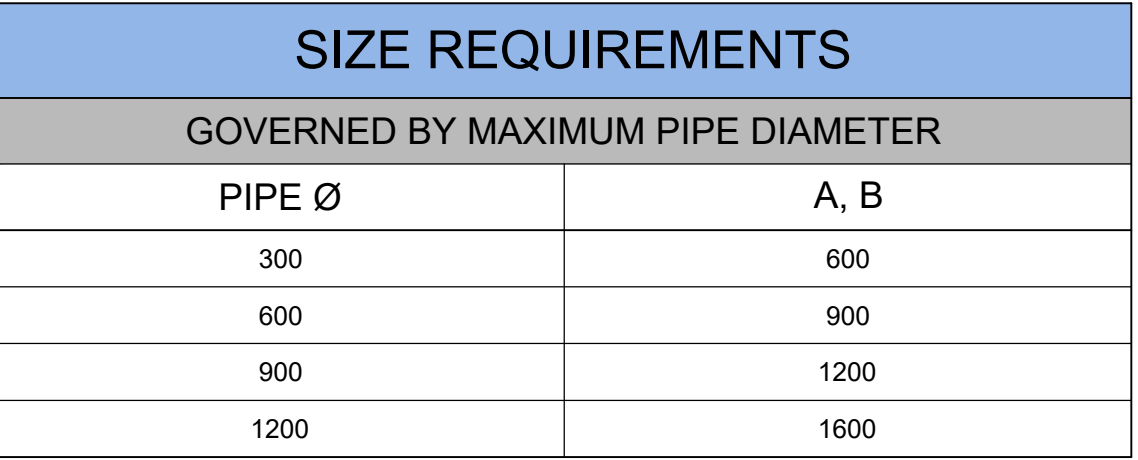
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										



Project: NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title: STORMWATER  
DETAILS  
SHEET 1

Scale at A1	Drawn	Designed	Approved		
	RT	AW	CR		
Project No	Originator	Type	Role	Sheet No.	Rev
LHS-TTW-01-00-DR-C-04501-3					
14.01.2025 4:33 PM					



NOTE: RETAINING WALLS ARE SHOWN  
INDICATIVELY AND ARE SUBJECT TO  
DETAILED DESIGN

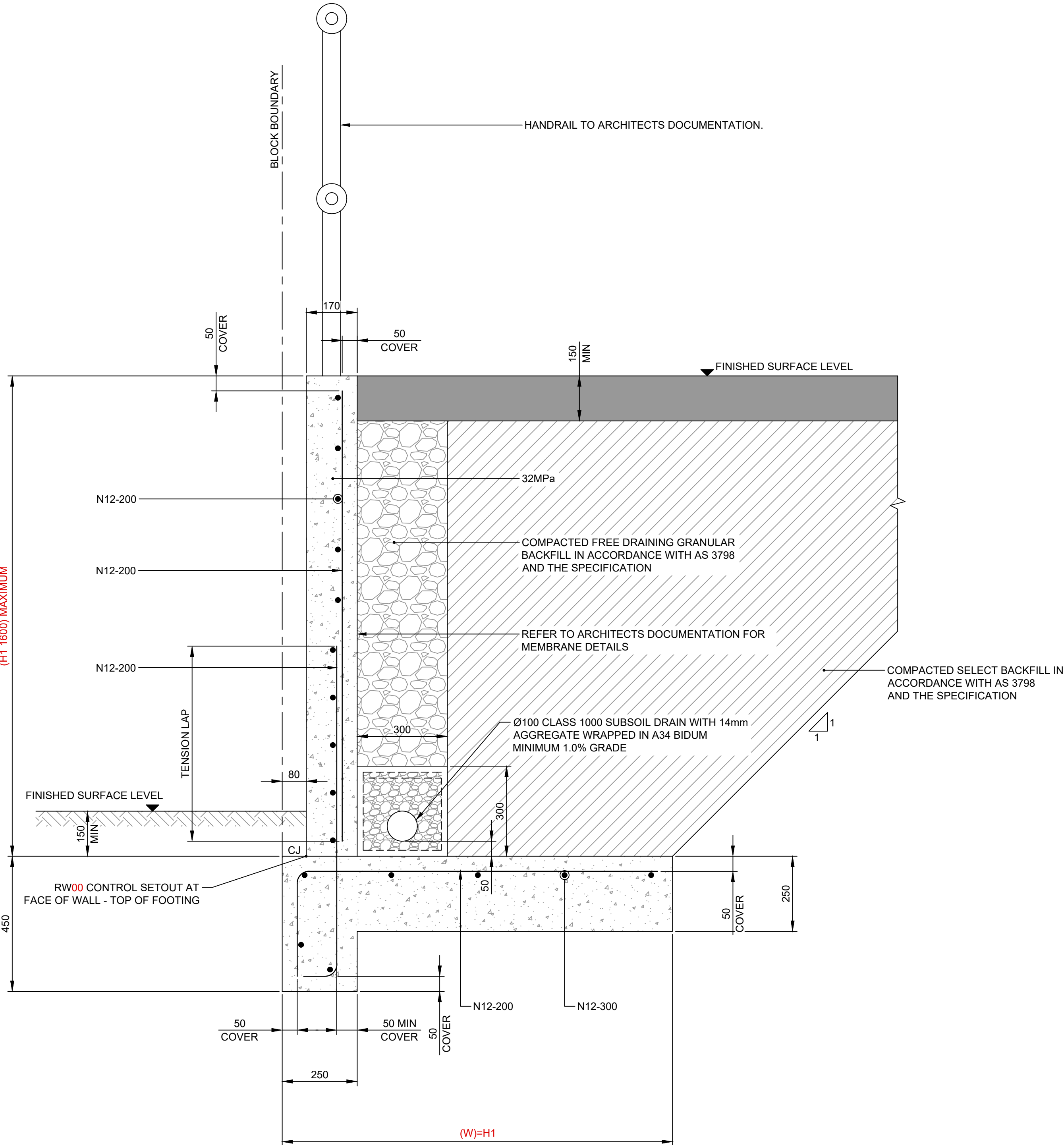
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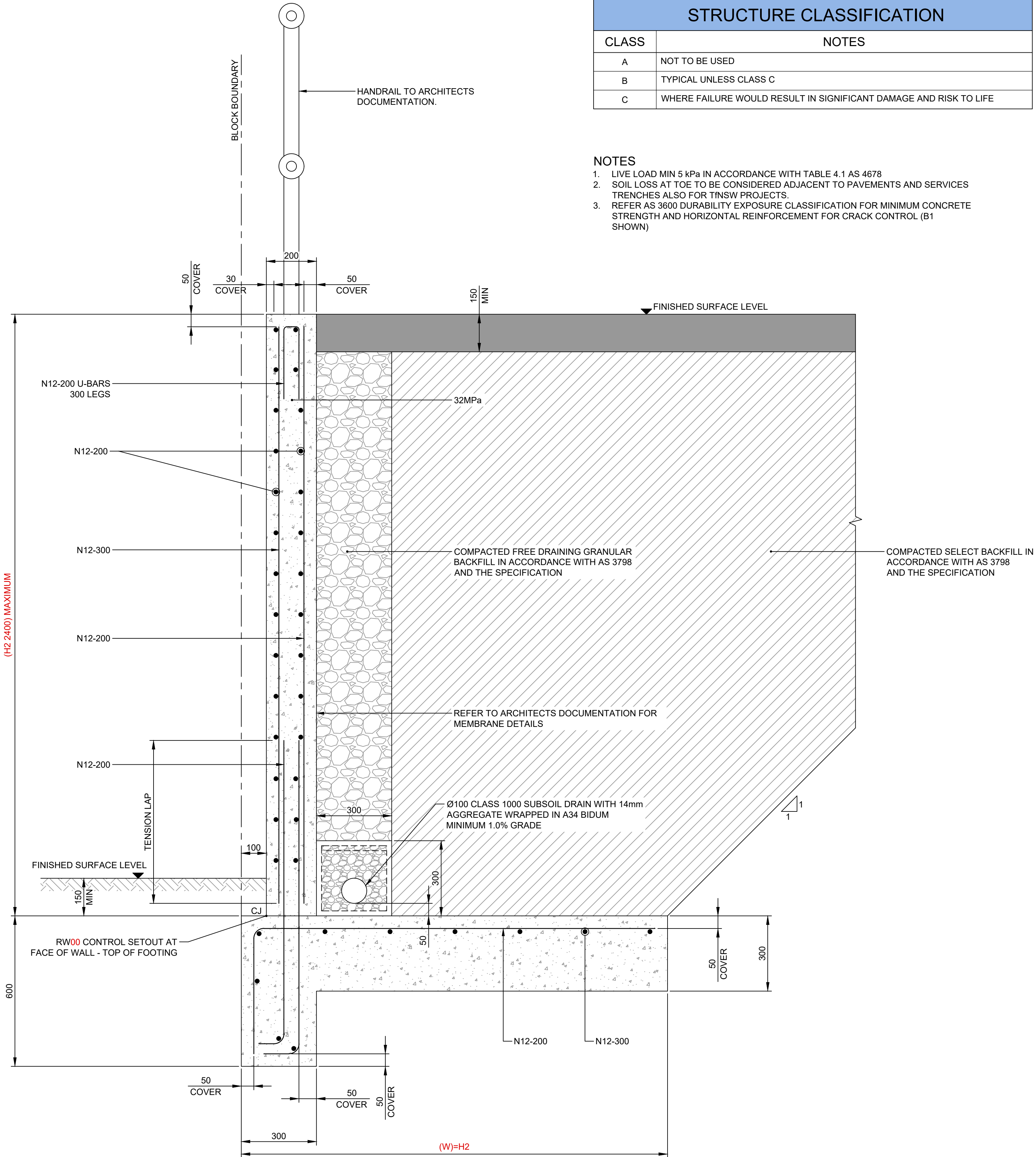
STRUCTURE CLASSIFICATION	
CLASS	NOTES
A	NOT TO BE USED
B	TYPICAL UNLESS CLASS C
C	WHERE FAILURE WOULD RESULT IN SIGNIFICANT DAMAGE AND RISK TO LIFE

## NOTES


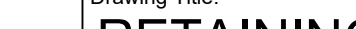
1. LIVE LOAD MIN 5 kPa IN ACCORDANCE WITH TABLE 4.1 AS 4678
2. SOIL LOSS AT TOE TO BE CONSIDERED ADJACENT TO PAVEMENTS AND SERVICES TRENCHES ALSO FOR TNSW PROJECTS.
3. REFER AS 3600 DURABILITY EXPOSURE CLASSIFICATION FOR MINIMUM CONCRETE STRENGTH AND HORIZONTAL REINFORCEMENT FOR CRACK CONTROL (B1 SHOWN)



RETAINING WALL TYPE - 1  
170 THICK REINFORCED CONCRETE  
SCALE 1:10



RETAINING WALL TYPE - 2  
200 THICK REINFORCED CONCRETE  
SCALE 1:10

										Client:										Engineer:										Project:										Drawing Title:										Scale at 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1. PLACE CONCRETE OF THE FOLLOWING CHARACTERISTIC COMPRESSIVE STRENGTH  $f_c$  IN ACCORDANCE WITH AS 1379.
- 2.

3. USE TYPE 'GP' CEMENT, UNLESS OTHERWISE SPECIFIED.
4. ALL CONCRETE SHALL BE SUBJECT TO PROJECT ASSESSMENT AND TESTING TO AS 1379.
5. CONSOLIDATE BY MECHANICAL VIBRATION. CURE ALL CONCRETE SURFACES AS DIRECTED IN THE SPECIFICATION.
6. FOR ALL FALLS IN SLAB, DRIP GROOVES, REGLETS, CHAMFERS ETC. REFER TO ARCHITECTS DRAWINGS AND SPECIFICATIONS.
7. UGLS SHOWN ON THE DRAWINGS, THE LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.
8. NO HOLES OR CHASES SHALL BE MADE IN THE SLAB WITHOUT THE APPROVAL OF THE ENGINEER.
9. CONDUITS AND PIPES ARE TO BE FIXED TO THE UNDERSIDE OF THE TOP REINFORCEMENT LAYER.
10. SLURRY USED TO LUBRICATE CONCRETE PUMP LINES IS NOT TO BE USED IN ANY STRUCTURAL MEMBERS.
11. ALL SLABS CAST ON GROUND REQUIRE SAND BLINDING WITH A CONCRETE UNDERLAY

1. ALL EXPOSED CONCRETE PAVEMENTS ARE TO BE BROOMED FINISHED.
2. ALL EDGES OF THE CONCRETE PAVEMENT INCLUDING KEYED AND DOWELLED JOINTS ARE TO BE FINISHED WITH AN EDGING TOOL.
3. CONCRETE PAVEMENTS WITH GRADES GREATER THAN 10 % SHALL BE HEAVILY BROOMED FINISHED.
4. CARBORUNDUM TO BE ADDED TO ALL STAIR TREADS AND RAMPED CROSSINGS U.N.O.

1. THE DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK, FALSEWORK AND BACKPROPPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROPOSED METHOD OF INSTALLATION AND REMOVAL OF FORMWORK IS TO BE SUBMITTED TO THE SUPERINTENDENT FOR COMMENT PRIOR TO WORK BEING CARRIED OUT.

PT1	<p>CONCRETE BLEACHERS</p>
PT2	<p>HARDSTANDING - PEDESTRIAN PAVEMENT  125MM THICK 32MPA CONCRETE (COLOUR OXIDE TO LANDSCAPE SPECIFICATION) SL72 ON,  150MM THICK COMPACTED FINE CRUSHED ROCK (DGB20) ON,  COMPACTED SUBGRADE</p>
PT3	<p>CARPAK AND DELIVERY ZONE  40mm COMPACTED THICKNESS AC14 WEARING COURSE ON  150mm COMPACTED THICKNESS DGB20 CLASS 1 BASE TO 98% MMDD AT ±2% OMC ON  175mm COMPACTED THICKNESS DGS20 SUBBASE TO 98% MMDD AT ±2% OMC ON  SUBGRADE MIN. CBR 4% COMPACTED TO 98% SMDD AT ±2% OMC</p>
PT4	<p>MULTI SPORTS COURTS  TO LANDSCAPE ARCHITECT'S DOCUMENTATION</p>
PT5	<p>SPORTS FIELD  TO LANDSCAPE ARCHITECT'S DOCUMENTATION</p>
PT6	<p>HARDSTANDING - PEDESTRIAN PAVEMENT  125MM THICK 32MPA CONCRETE (COLOUR OXIDE TO LANDSCAPE SPECIFICATION) SL72 ON,  150MM THICK COMPACTED FINE CRUSHED ROCK (DGB20) ON,  COMPACTED SUBGRADE</p>
PT8	<p>RIGID PAVEMENT - LOADING DOCK AND WASTE  170MM THICK FC 32MPA WITH F82 MESH  100MM THICK COMPACTED FINE CRUSHED ROCK (DGB20) ON,  COMPACTED SUBGRADE</p>
	<p>LANDSCAPING  REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION</p>

1. PAVEMENT BUILDUPS ARE INDICATIVE AND TO BE DEVELOPED IN DETAILED DESIGN
2. ADOPTED DESIGN PARAMETERS:  
DESIGN TRAFFIC  $5 \times 10^5$  ESA, SUBGRADE 4% CBR MIN.

1. FIX REINFORCEMENT AS SHOWN ON DRAWINGS. THE TYPE AND GRADE IS INDICATED BY A SYMBOL AS SHOWN BELOW. ON THE DRAWINGS THIS IS FOLLOWED BY A NUMERAL WHICH INDICATES THE SIZE IN MILLIMETRES OF THE REINFORCEMENT.

2. PROVIDE BAR SUPPORTS OR SPACERS TO GIVE THE FOLLOWING CONCRETE COVER TO ALL REINFORCEMENT UNLESS OTHERWISE NOTED ON DRAWINGS.

3. COVER TO REINFORCEMENT ENDS TO BE 50 mm U.N.O.
4. PROVIDE N12-450 SUPPORT BARS TO TOP REINFORCEMENT AS REQUIRED, LAP 500 U.N.O.
5. MAINTAIN COVER TO ALL PIPES, CONDUITS, REGLETS, DRIP GROOVES ETC
6. ALL COGS TO BE STANDARD COGS UNLESS NOTED OTHERWISE.
7. FABRIC END AND SIDE LAPS ARE TO BE PLACED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS TO ACHIEVE A FULL TENSILE LAP. FABRIC SHALL BE LAID SO THAT THERE IS A MAXIMUM OF 3 LAYERS AT ANY LOCATION.

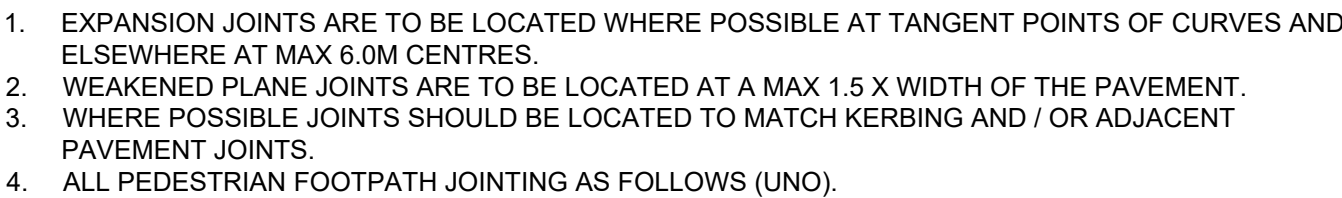
FABRIC LAP

8. LAPS IN REINFORCEMENT SHALL BE MADE ONLY WHERE SHOWN ON THE DRAWINGS UNLESS OTHERWISE APPROVED. LAP LENGTHS AS PER TABLE BELOW.


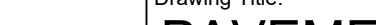
COMPRESSION LAPS	
BAR SIZE	
N16	640
N20	800
N24	960
N28	1120
N32	1280
N36	1440

1. TOP BARS IN BANDS AND BEAMS:  
MORE THAN 300mm OF CONCRETE BELOW THE BAR.
2. MINIMUM COVER OF 25mm AND MINIMUM STIRRUP SIZE OF N12 GIVING  $C_d = 37\text{mm}$ ; THEREFORE MINIMUM CLEAR SPACING BETWEEN BARS  $= 2 \times C_d = 74\text{mm}$ . MINIMUM COVER IS BASED ON THE NEW A2 EXPOSURE CLASSIFICATION FOR INTERIOR, NON-RESIDENTIAL WHICH REQUIRES 25mm COVER FOR 32Mpa CONCRETE.
3.  $f_c = 32\text{Mpa}$
4. ALL OTHER BARS:  
1. LESS THAN 300mm OF CONCRETE BELOW THE BAR.
2. MINIMUM COVER OF 25mm GIVING  $C_d = 25\text{mm}$ ; THEREFORE MINIMUM CLEAR SPACING BETWEEN BARS  $= 2 \times C_d = 50\text{mm}$ .
3.  $f_c = 32\text{Mpa}$
5. COLUMNS:  
1. COVER TO COLUMNS  $= 40\text{mm}$   $(30+10)$   $k7 = 1.25$
2. COVERS FOR FIRE RATING ARE TO BE DESIGNED BY THE ENGINEER.

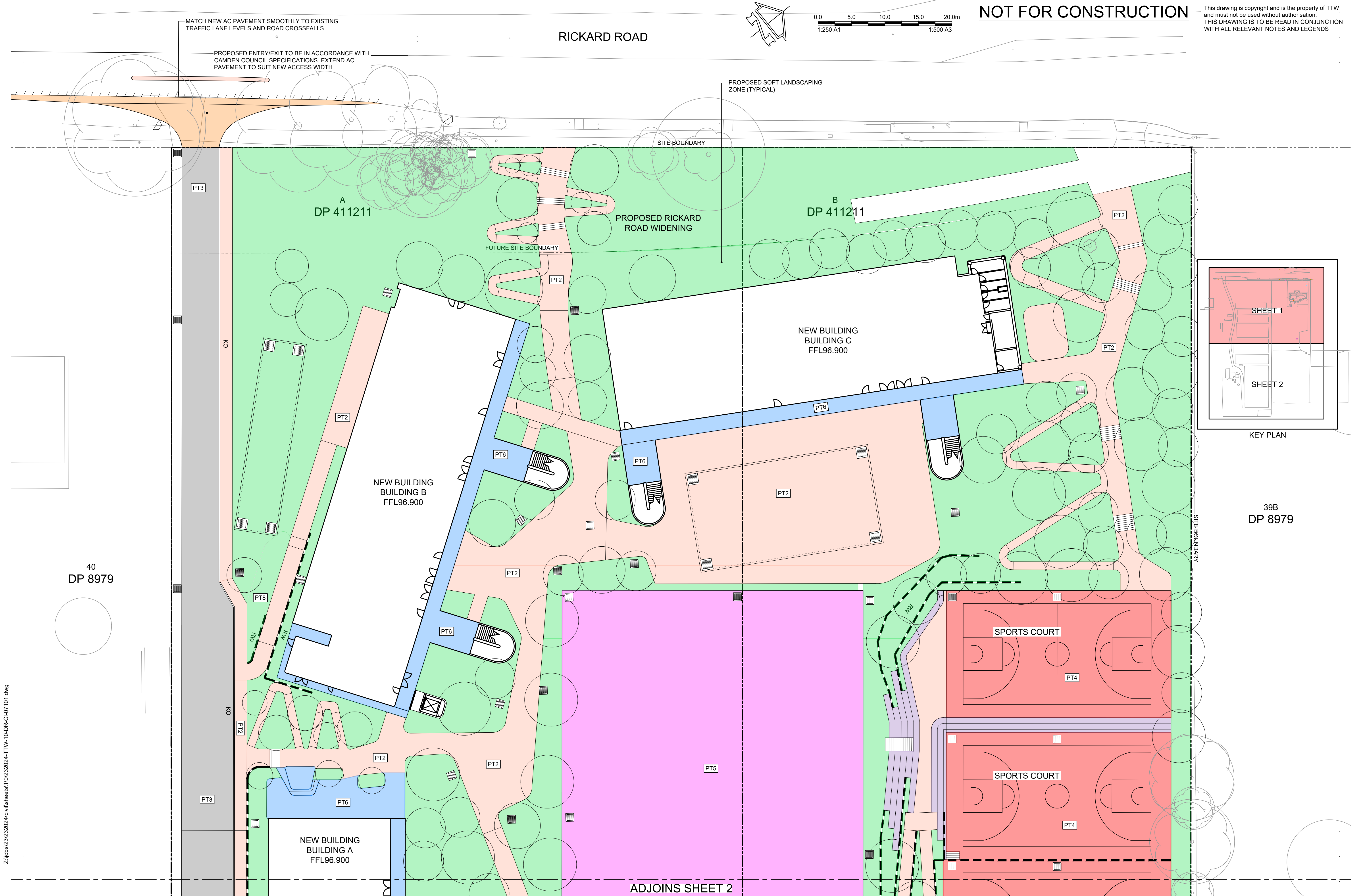
1. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.
2. DOWEL BARS ARE TO BE IN ACCORDANCE WITH GIVEN DETAIL. REFER 03000 SERIES DRAWINGS.
3. COVELEDED EXPANSION JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 24.0M CENTRES.
4. SAWN JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 6.0M CENTRES OR 1.5 X THE SPACING OF PERPENDICULAR SAWN JOINTS.
5. PROVIDE 10mm wide FULL DEPTH EXPANSION JOINTS BETWEEN BUILDINGS/STRUCTURES AND ALL CONCRETE OR CURB PAVERS.
6. THE TIMING OF THE SAW CUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE OFFICIALS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POURS BEFORE THE SAW CUTS ARE COMMENCED. REFER TO THE SPECIFICATION FOR WEATHER CONDITIONS AND TEMPERATURES REQUIRED.
7. VEHICULAR PAVEMENT JOINTING AS FOLLOWS.



1. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON MINIMUM 75mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
2. EXPANSION JOINTS (EJ) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT 12M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
3. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3M CENTRES EXCEPT FOR INTEGRAL KERBS WHERE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN SLABS.
4. BROOMED FINISHED TO ALL RAMPED AND VEHICULAR CROSSINGS, ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
5. IN THE REPLACEMENT OF KERBS - EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm FROM LIP OF GUTTER. UPON COMPLETION OF NEW KERBS, NEW BASE COURSE AND SURFACE IS TO BE LAID 900mm WIDE TO MATCH EXISTING MATERIALS AND THICKNESSES. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB WITH A 100mm DIA HOLE. EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

										Client:										Engineer:										Project:										Drawing Title:										Scale at A1										Drawn										Designed										Approved																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

Client:

School Infrastructure NSW

Engineer:

www.ttwengineers.com

Project:

NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179

Drawing Title:

PAVEMENT  
PLAN  
SHEET 1

Scale at A1:

250

Drawn:

RT

Designed:

AW

Approved:

CR

Project No:

LHS-TTW-01-00-DR-C-07101-3

Originator:

15.01.2025 10:26 AM

Type:

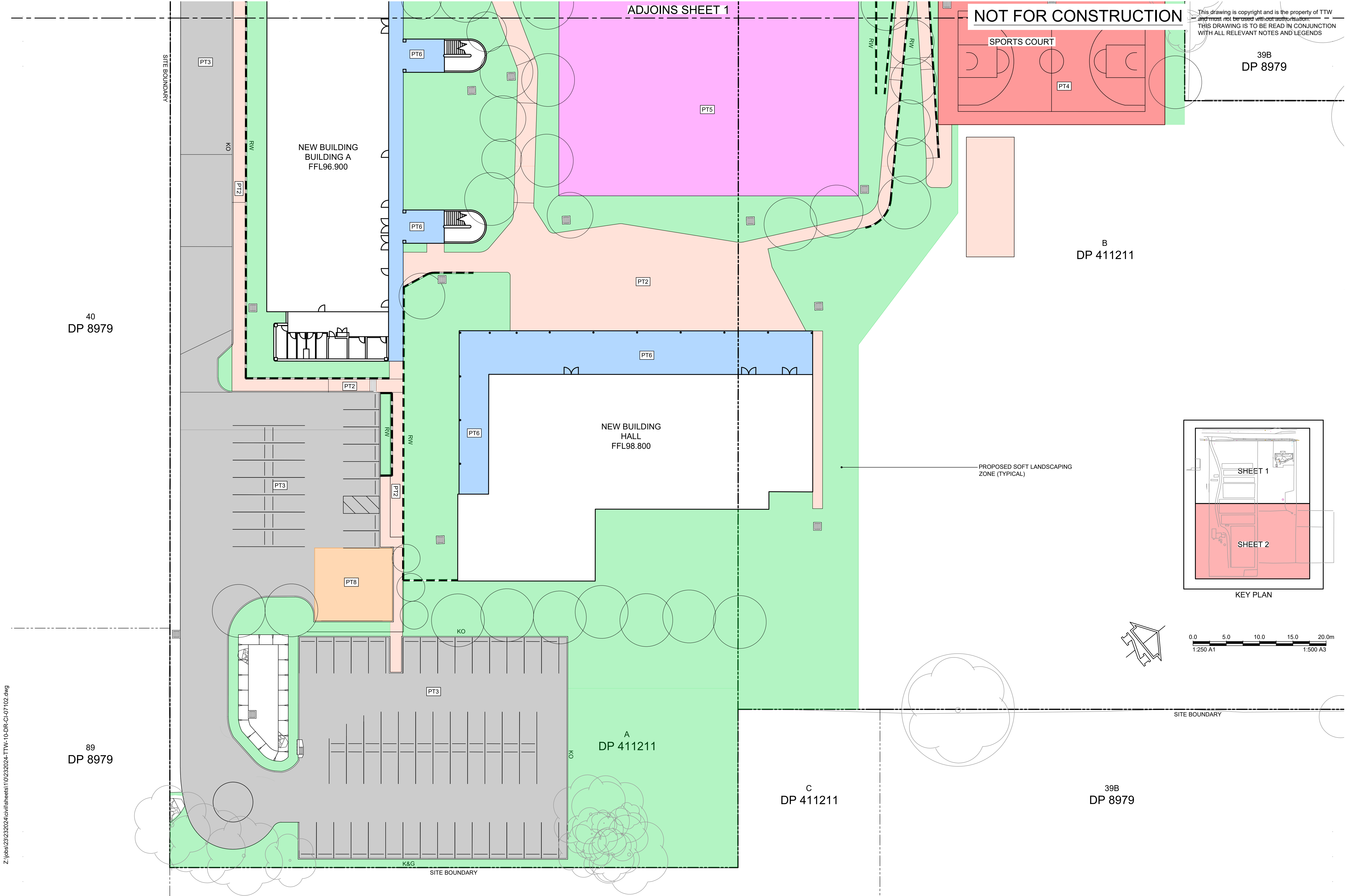
Role:

Sheet No.:

Rev:



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Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
3	REF SUBMISSION	SF	RT	14.01.2025										
2	SCHEMATIC DESIGN FOR REF	SF	RT	13.12.2024										
1	FINAL DRAFT ISSUE FOR REF	SF	RT	21.11.2024										

Client:

 **School Infrastructure NSW**

Engineer:

  
www.ttweengineers.com

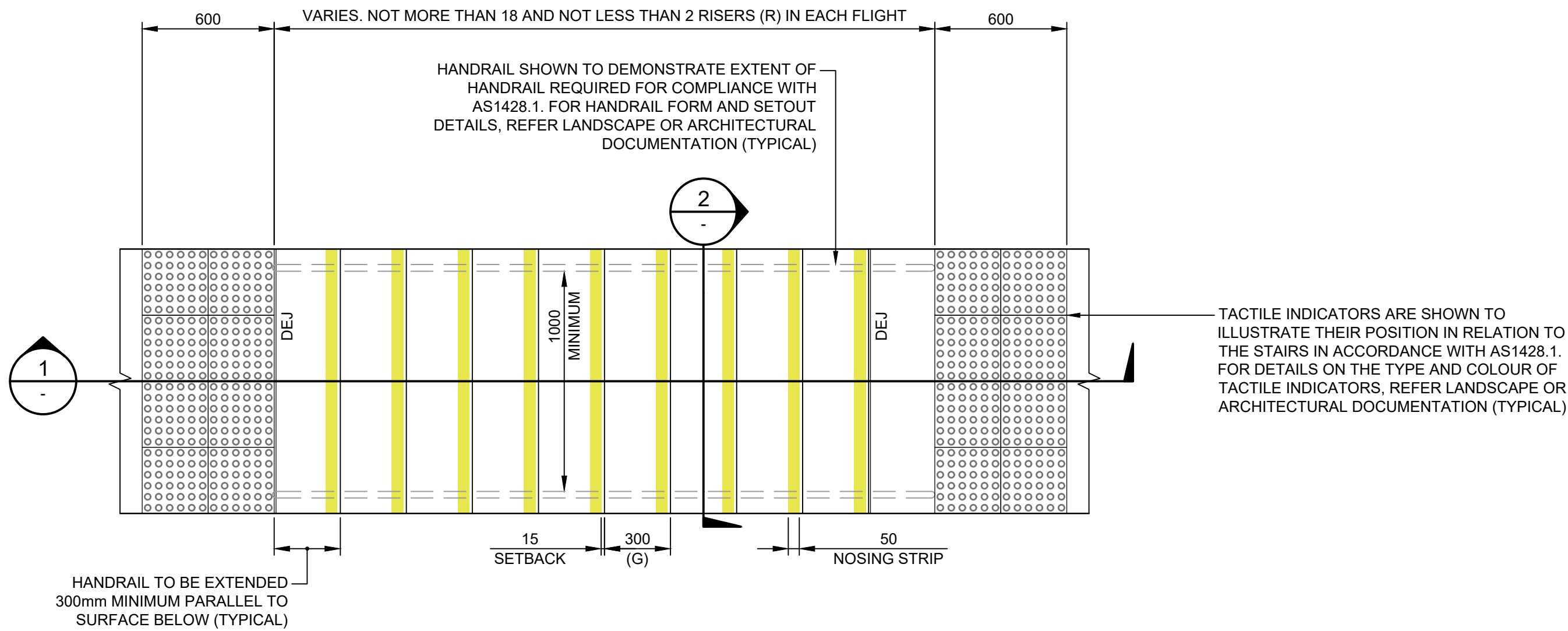
Project:

**NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179**

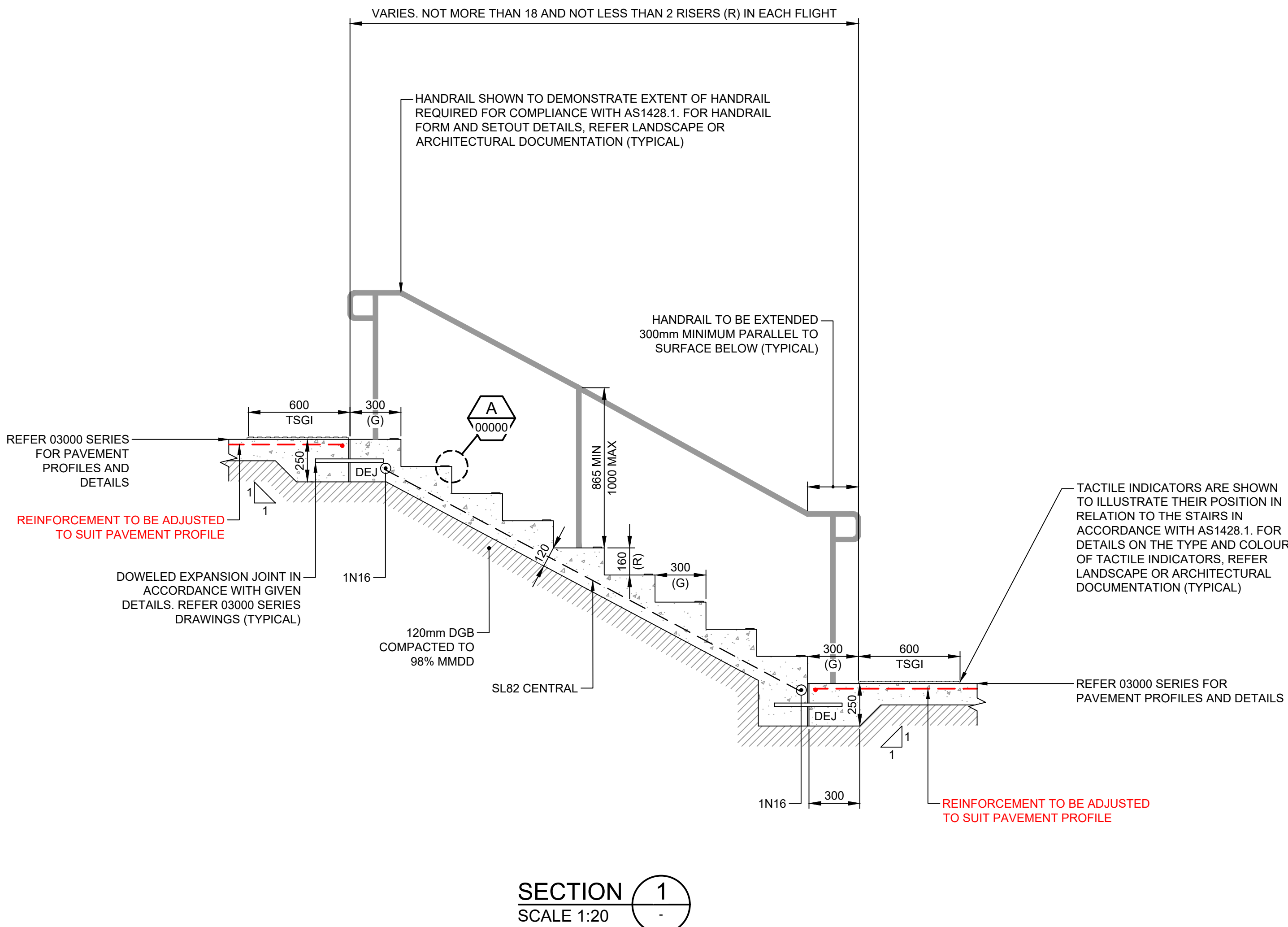
Drawing Title:

**PAVEMENT  
PLAN  
SHEET 2**

Scale at A1	Drawn	Designed	Approved		
250	RT	AW	CR		
Project No	Originator	Type	Role	Sheet No.	Rev
LHS-TTW-01-00-DR-C-07102-3					
15.01.2025 11:13 AM					



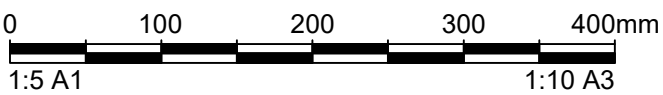
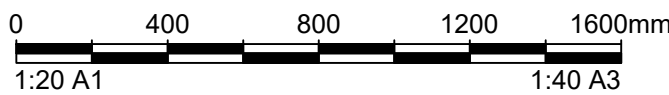
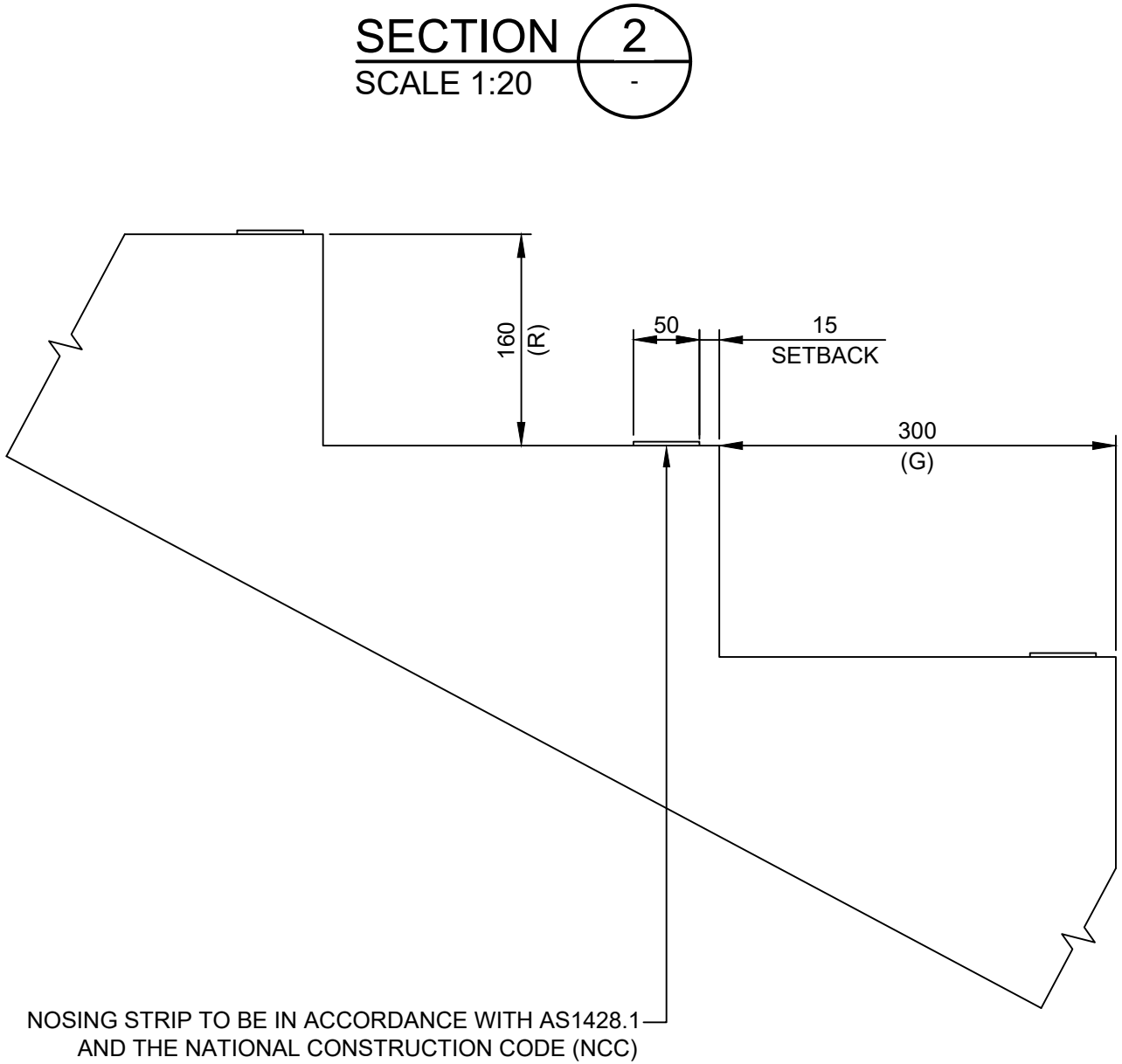
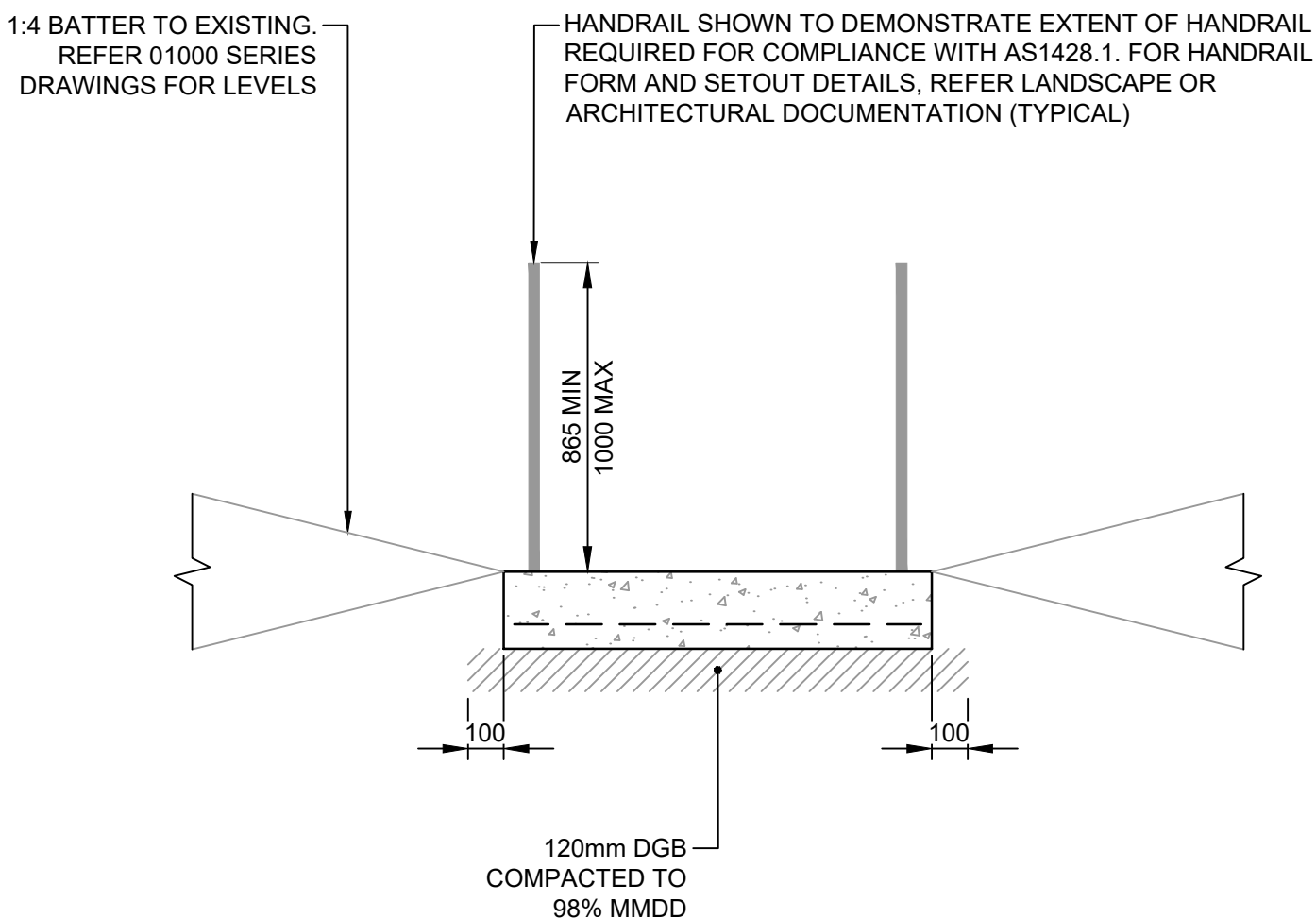
TYPICAL STAIR ON GRADE  
SCALE 1:20





RISER AND GOING DIMENSIONS						
STAIR TYPE	RISER (R)		GOING (G)		SLOPE RELATIONSHIP (2R+G)	
	MAX	MIN	MAX	MIN	MAX	MIN
STAIRS (OTHER THAN SPIRAL)	190	115	355	240	700	550
SPIRAL	220	140	370	210	680	590

NOTES

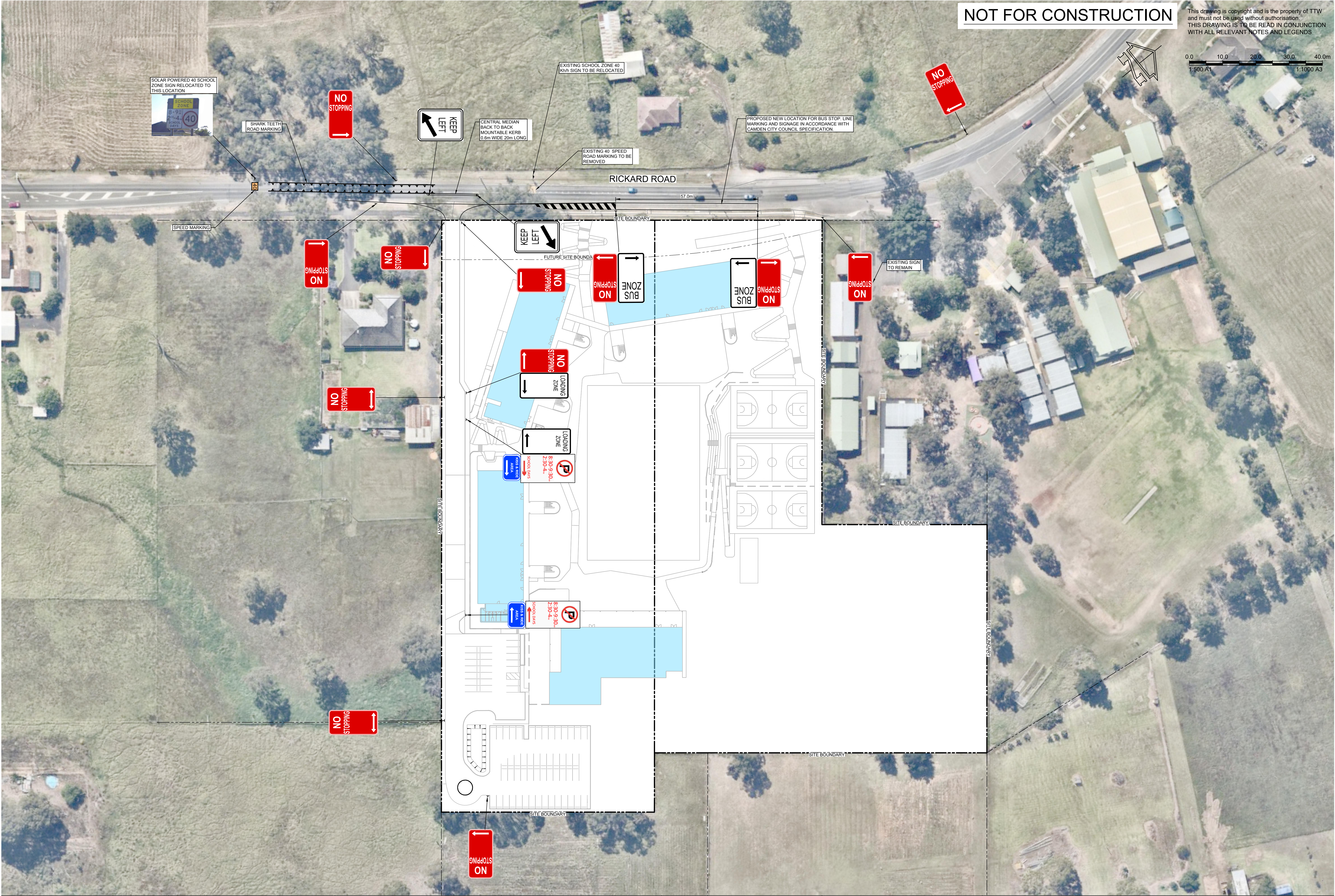
1. CONCRETE STRENGTH TO BE 32MPa
2. REFER SITE PLANS FOR SETOUT, LEVELS AND GEOMETRY
3. FOR MINIMUM SLIP RESISTANCE OF STAIR TREADS AND LANDINGS REFER LANDSCAPE OR ARCHITECTURAL DOCUMENTATION



										Client:										Engineer:										Project:										Drawing Title:										Scale at 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Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date	Rev	Description	Eng Draft	Date
3	REF SUBMISSION	SF	RT 14.01.2025								
2	SCHEMATIC DESIGN FOR REF	SF	RT 13.12.2024								
1	FINAL DRAFT ISSUE FOR REF	SF	RT 21.11.2024								

Client:

 **School Infrastructure NSW**

Engineer:

  
www.ttwengineers.com

Project:

**NEW HIGH SCHOOL  
FOR LEPPINGTON AND  
DENHAM COURT  
LEPPINGTON, NSW 2179**

Drawing Title:

**SIGNAGE AND LINEMARKING  
PLAN**

Scale at A1

Drawn	Designed	Approved
RT	AW	CR

Project No

Originator

Type

Role

Sheet No.

Rev

**LHS-TTW-01-00-DR-C-08101-3**

15.01.2025 11:03 AM