



henry&hymas

**INTERGRATED WATER CYCLE
MANAGEMENT REPORT
Storage and Distribution Warehouse
Orchard Hills 2748**

**For SSDA
October 2025
Revision 05**

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1. EXECUTIVE SUMMARY

This Integrated Water Cycle Management Report has been prepared by Henry & Hymas Consulting Engineers to accompany a State Significant Development Application (SSDA) SSD-81434988 for a Storage and Distribution Warehouse. The project seeks detailed approval for a new Storage and Distribution Warehouse within the Alspec Industrial Business Park (AIBP) at 221-235 Luddenham Road, Orchard Hills (the site). The site is legally described as Lot 11 in DP 271602.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-81434988).

This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following mitigation measures.

- Stormwater system including rainwater tanks, on-site detention tanks and water quality measures as outlines in the civil drawings and report.

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

2. INTRODUCTION

2.1 General

This report has been prepared in support of a development at 221-235 Luddenham Road, Orchard Hills (the site), including detailed approval for a Storage and Distribution Centre. The project seeks to deliver a new a new Storage and Distribution Warehouse within the Alspeck Industrial Business Park (AIBP).

Specifically, the project comprises the following:

- Construction of a new warehouse with a two-level ancillary office. The warehouse is predominantly 14.7 metres in height, with a high-bay warehouse component at the western portion of the building which achieves a maximum height of 39 metres.
- A total building area of 45,449 sqm; broken down as follows:
 - Warehouse area: 43606 sqm
 - Office Area: 1,843 sqm
- Loading areas at the north and south sides of the warehouse, with hardstand surrounding the perimeter of the warehouse. Hardstand and carpark areas are accessed via four new driveways from the AIBP internal estate road.
- Provision of vehicular parking onsite to accommodate cars, vans, semi-trailers and B-doubles. It is envisaged that approximately 329 spaces will be provided on site within the proposed hardstand and carparking areas.
- Perimeter landscaping and tree planting with a total area of 10,236sqm (10%).

Refer to Figure 1.1 below showing the proposed arrangement of the buildings, car park and landscaping.

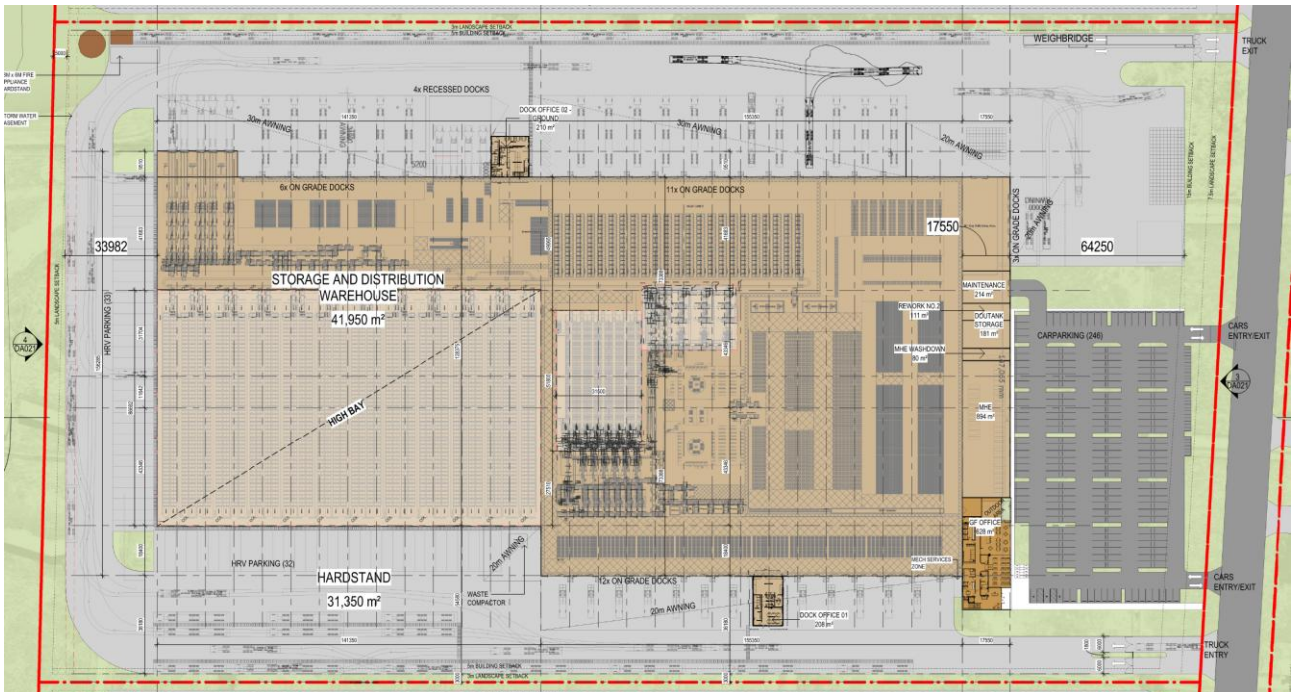


Figure 1.1 Locality Sketch

The following Engineering matters have been addressed in this report:

- Water Sensitive Urban Design (WSUD)
- Stormwater Detention

- Sediment and Erosion Control

The purpose of this report is to summarise the stormwater design, as well as the hydraulic and water quality modelling to illustrate that the proposed design is in accordance with engineering best practice principals and Penrith City Council's development control plan.

A full set of DA Drawings is provided in Appendix A of this report.

2.2 Engineering Objectives/ Principles

The stormwater network has been designed to safely convey minor storm events via a pit and pipe stormwater system with provision for larger, more infrequent storm events overland via an overland flow route. The minor storm event for this development is the 1:20yr ARI storm and the major storm event is the 1:100yr ARI storm. This is as per Council's development control plan (DCP).

In order to ensure no negative impact on downstream ecosystems and waterways, stormwater from the subject site is proposed to be managed through the implementation of water quality system, detention and sediment and erosion control. Refer to sections 2.1, 2.2, 2.3 and Appendix A for further details.

2.3 Council Policies

The civil engineering component of the aforementioned project has been designed in accordance with the following council codes and policies:

- Penrith City Council Development Control Plan 2014 – E18 Luddenham Road Industrial Business Park
- Penrith City Council Development Control Plan 2014
- Penrith City Council Stormwater Drainage Specifications for Building Developments 2018
- Penrith City Council WSUD Technical Guidelines 2015

E18 Luddenham Road Industrial Business Park

Penrith City Council have developed a sub section in the Penrith City Council DCP 2014 with controls specifically tailored for all developments covered by the Luddenham Road Industrial Business Park Precinct. In the event of any inconsistency between this section and the rest of the DCP, the requirements of Section E18 prevail. The stormwater controls are shown in Section 17.6 – Integrated Water Cycle Management of the Penrith City Council Development Control Plan 2014 Section E18 Luddenham Road Industrial Business Park.

2.4 The Site & Its Context

The site is located at 221-235 Luddenham Road, Orchard Hills within the Penrith Local Government Area (LGA). The site is legally described as Lot 11 in DP 271602.

In the context of the AIPB, the site is situated within the North Western Catchment of the AIPB Precinct. The site itself is split into two sub-catchments with the eastern half of the site proposed to connect to the stormwater in the Collector Road, and the western half of the site proposed to connect into a stormwater easement that drains through the COPE site to the north of the subject site. Prior to works relating to the development commencing, the site will be prepared to the bulk earthworks levels as indicated within the subdivision works drawings.

The pre-developed site is predominately pervious in the form of agricultural farmland, consisting of a rectangular network of fenced yards for horse and sheep agistment. The subject site is located within the Wianamatta – South Creek Catchment area and is approximately 10.496 hectares, with the entirety of the site proposed to be developed as a part of this project.

It is important to note the broader site is known as the Alspeck Industrial Business Park (AIBP) and is subject to another SSD and multiple DAs seeking approval for medium to large format industrial warehouses.

Downstream gross pollution traps and bio-retention basins has been included within the subdivision design that caters for the subject site. Council’s water quality requirements have therefore been satisfied via this downstream infrastructure. On lot on-site detention will be required for both sub-catchments of the subject site. The design is to comply with the assumptions outlined in the AIBP Estate Integrated Water Cycle Management Report for the subdivision works.

Refer to Figure 2.4 below showing an aerial photograph of the site.



Figure 2.4 Aerial Photograph

2.5 PURPOSE OF THE REPORT

This report has been prepared in response to the requirements contained within the Secretary’s Environmental Assessment Requirements (SEARs) dated 04 April 2025 and issued for the SSDA (SSD-81434988). Specifically, this report has been prepared to respond to the SEARs requirement and government agency comments issued below.

Item	Description of Requirement	Section Reference
13	Water Management	Section 3 of this report

Table 2.5 – SEARs Requirements & Government Agency Comments

3. STORMWATER MANAGEMENT

3.1 Introduction

3.1.1 Background

Stormwater controls are proposed to be implemented that ensure that the development does not adversely impact on stormwater flows and water quality of the stormwater system downstream of the site.

The principles and operation of the proposed stormwater system for the development including water quality measures and the components of the internal drainage system are detailed on the Development Application Drawings included in Appendix A.

3.1.2 Key Issues

The key issues and the proposed mitigation measures to be implemented as part of the proposed development are:

- **Stormwater Quantity** - The increased impervious surfaces (such as roads, roofs, driveways, etc) associated with the development will result in an increase in peak stormwater flows from the site during storm events. On-site Stormwater Detention (OSD) is proposed for the development to ensure that runoff from the development is appropriately managed in accordance with Council's requirements. The site stormwater system has been designed to safely convey the flows through the site and within the capacity of the downstream system. The design and operation of the proposed stormwater system is described in Section 3.2 below.
- **Water Quality** - Urban developments have the potential to increase gross pollutants, sediments, hydrocarbons and nutrient concentrations in stormwater runoff. To limit impact on the downstream water quality, water quality measures at source and end of line treatments will be provided. Section 3.3 further describes the specific implementation of these measures for the proposed development.

3.2 Stormwater Quantity

As per Penrith City Council's engineering specifications, on-site detention will be required for the site to ensure post-developed flows are reduced to pre-developed flows for the 20 and 100yr ARI storm event.

Western Catchment

Flows from the Western Catchment will be reduced via an underground tank with 1600m³ of detention storage and two orifice plates (with a 250mm openings and a 390mm opening).

The pre-developed flows for the Western Catchment has been co-ordinated with the Integrated Water Cycle Report for the subdivision works, which considers the flood modelling undertaken by Arcadis. Refer to the below pre-developed flow calculations, which the on-site detention system has been sized in accordance with.

Subject Site Area (Western Catchment)	= 5.0570 hectares
Reduce post developed flows in critical 5% AEP storm to	= 0.078m ³ /s/ha = 0.394m ³ /s
Reduce post developed flows in critical 1% AEP storm to	= 0.125m ³ /s/ha = 0.632 m ³ /s

Refer to the table below for a summary of the pre and post developed flows for the relevant storm events. Refer to Appendix A for sections and details of the on-site detention tank, and the DRAINS model included in the DA submission for a full analysis of the hydraulics of the site.

Storm event	Pre-developed Flows (m3/s)	Post – Developed Flows (m3/s)
20year ARI storm	0.394	0.382
100year ARI storm	0.632	0.587

Table 2.2.1 Western Catchment Flows

The proposed development meets Penrith City Council’s stormwater detention requirements as shown by the table above. The proposal is in line with the design intents and assumptions outlined in the Integrated Water Cycle Management Report for the subdivision works. For more details refer to the “19221 Alspeck Industrial Business Park - Integrated Water Cycle management Report”.

Refer to the DRAINS model ‘241745[05].drn’, which has been included in the SSDA submission for further details on the hydraulic modelling for the western catchment.

Stormwater Easement

It should be noted that a portion of Pad 4b and Pad 4c, located south of the development, is proposed to drain through the site as part of the civil design of the overall Alspeck Industrial Business Park Precinct. A stormwater easement containing a 750mm diameter pipe is proposed as part of the works for the subject site to cater for these upstream catchments. Refer to the civil drawings included in Appendix A, in addition to the DRAINS model and the Integrated Water Cycle Management Report for the subdivision works for further details.

Eastern Catchment

Flows from the Western Catchment will be reduced via an underground tank with 2550m³ of detention storage and two orifice plates (with a 435mm opening and a 390mm opening).

The pre-developed flows for the Western Catchment have been co-ordinated with the Integrated Water Cycle Report for the subdivision works, which considers the flood modelling undertaken by Arcadis. Refer to the below pre-developed flow calculations, which the on-site detention system has been sized in accordance with.

Subject Site Area (Western Catchment)	= 5.5560 hectares
Reduce post developed flows in critical 5% AEP storm to	= 0.078m ³ /s/ha = 0.433m ³ /s
Reduce post developed flows in critical 1% AEP storm to	= 0.125m ³ /s/ha = 0.695 m ³ /s

Refer to the table below for a summary of the pre and post developed flows for the relevant storm events. Refer to Appendix A for sections and details of the on-site detention tank, and the DRAINS model included in the DA submission for a full analysis of the hydraulics of the site.

Storm event	Pre-developed Flows (m3/s)	Post – Developed Flows (m3/s)
20year ARI storm	0.433	0.418
100year ARI storm	0.695	0.666

Table 2.2.2 Eastern Catchment Flows

The proposed development meets Penrith City Council’s stormwater detention requirements as shown by the table above. The proposal is in line with the design intents and assumptions outlined in the Integrated Water Cycle Management Report for the subdivision works. For more details refer to the “19221 Alspeck Industrial Business Park - Integrated Water Cycle Management Report”.

Refer to the DRAINS model ‘241745[05].drn’, which has been included in the SSDA submission for further details on the hydraulic modelling for the western catchment.

3.3 Water Quality

Council's requirements also dictate that the stormwater be treated before discharging from the site. The requirements dictate that the post developed pollutants be reduced by the following factors:

- Total Nitrogen to be reduced by 65%
- Total Phosphorus to be reduced by 80%
- Total Suspended Solids to be reduced by 90%
- Gross Pollutants to be reduced by 90%

The above targets have been satisfied through the downstream infrastructure proposed as part of the subdivision works. A CDS 2028 gross pollutant trap and a 4800m² end of line bio-retention basin has been proposed to treat all stormwater runoff in the Northwestern Catchment of the Alspec Industrial Business Park Precinct.

In addition to the above treatment measures, pit baskets are proposed to be installed in all grated inlet pits within the subject site. This is in accordance with the wider water quality strategy for the subdivision. For more details refer to the "19221 Alspec Industrial Business Park - Integrated Water Cycle management Report".

Refer to the MUSIC model titled '241745_R2.sqz' that has been included as part of this SSDA submission.

Water Conservation

Council's DCP requires 80% of non-potable demand to be provided through rainwater or stormwater harvesting storages. Refer to the MUSIC model submitted as a part of this development application and the table below which demonstrates the reuse rates that have been achieved for the development.

Storage	Reuse Rate (%)	Demand Calculations
80kL Rainwater Tank (West)	81.29%	Tank to be connected to 2300m ² of irrigation area at 0.6 KL/yr to generate a total demand of 1380 KL/yr.
80kL Rainwater Tank (East)	80.64%	Tank to be connected to 2300m ² of irrigation area at 0.6 KL/yr to generate a total demand of 1380 KL/yr.

Table 2.3 Water Conservation Summary

Council's water conservation requirements are proposed to be satisfied through the installed of two 80kL rainwater tanks that are proposed to be connected to a combined irrigation area of 5,118m². No allowance has been made for the connection of the rainwater tanks for toilet flushing reuse, as all toilets within the development are proposed to be connected to the recycled water main from the on-site sewer management facility (OSSM). This is considered in accordance with Penrith Council's water conservation strategy, as the reliance on potable water is minimised.

Mean Annual Runoff Volume (MARV)

As per the E18 Luddenham Road Industrial Business Park DCP, the subject site is required to satisfy the MARV stormwater controls, as outlined in Table E18.7 of the aforementioned DCP. Refer to the table below outlining the requirements.

Option 1: Mean Annual Runoff Volume (MARV) Approach	
MARV	≤ 2 ML/ha/year at the point of discharge to the local waterway
90%ile flow	1000 to 5000 L/ha/day at the point of discharge to the local waterway
50%ile flow	5 to 100 L/ha/day at the point of discharge to the local waterway
10%ile flow	0 L/ha/day at the point of discharge to the local waterway

Table 2.4.1: MARV Targets

The downstream storage basin, which is proposed as part of the subdivision works, caters for all lots which discharge towards the north-west part of the overall site. The Integrated Water Cycle Management Report prepared as part of the subdivision DA, summarises the MUSIC modelling completed as part of the subdivision design and confirms that the subject site has been adequately allowed for from a MARV standpoint.

4 SEDIMENT AND EROSION CONTROL

Sediment and Erosion Control measures have been implemented to ensure that site run-off is appropriately treated of sediments in accordance with the Penrith City Council's guidelines and the Blue Book "Managing Urban Stormwater-Soils and Construction, 4th Edition (2004) by Landcom. Catch Drains have been designed to collect site run-off during construction. Since the site is more than 2000m², a sediment basin has been designed. The sediment control measures to be implemented have formed part of the subdivision works design.

The sediment basins are required to be high efficiency basins, as per the Wianamatta technical guidelines.

The Western 324m³ Type B basin, with an automated flocculation system, has been proposed. This basin includes 264m³ of settling volume and 60m³ of sediment storage volume. The Eastern 346m³ Type B basin, with an automated flocculation system, has been proposed. This basin includes 282m³ of settling volume and 64m³ of sediment storage volume. The basins are to discharge stormwater with PH levels between 6.5-8.5, and allow a maximum total suspended solid fraction (TSS) of 50mg/L. Refer to the calculations on drawing SE01 in appendix A for further details.

5. WATER SERVICES

Potable Water

Based on the BYDA information, there is a Sydney Water potable water asset located on Patons Lane in the form of a 250mm diameter Polyethylene (PE) main. The water main is located on the southern verge of Patons Lane and connects into a 250mm PE main on the eastern verge of Luddenham Road. As a part of the AIBP subdivision works, the potable water service will be extended within the Collector Road to the frontage of the subject site.

Refer to Appendix B and the Arcadis Concept Utilities Plan for further details, including calculations associated with potable demand.

In summary, it is expected that potable water service will be available for the subject site. Connection details to be provided during the detailed design stage.

Recycled Water

There is no Sydney Water infrastructure for recycled water in the vicinity of the development. Sydney Water is undertaking an Options Assessment Study for the Orchard Hills Precinct and is considering providing recycled water services to Orchard Hills South in the future.

HB+B are proposing to install a recycled water network throughout the estate. The network will be owned by the developer and provide access to recycled water through the onsite sewer management system (OSSM) which will clean and treat wastewater from the development. The recycled water main is proposed to be installed along the western verge of the new collector road within the standard corridor allocation.

Refer to Appendix B and the Arcadis Concept Utilities Plan for further details, including a concept service plan for the proposed recycled network.

In summary, it is expected that recycled water service will be available for the subject site. Connection details to be provided during the detailed design stage.

Wastewater

Sydney Water wastewater infrastructure does not currently exist in the vicinity of the development site. DBYD information indicates that the nearest reticulated gravity sewer connection is on Mamre Road, approximately 2.2km to the north-east of the site.

An onsite sewer management system is proposed which will be privately owned and operated to service the wastewater produced on site. A separate Development Application has been lodged with Penrith City Council for the OSSM. The OSSM is located west of the Alspec site, within the AIBP Estate. Sydney Water have been consulted regarding the OSSM and confirm that they have no objection to the onsite solution. The OSSM treats the wastewater by extracting contaminants and pathogens and then emitting the cleaned wastewater back into the environment. Wastewater flows from the estate (including the subject site) will be conveyed via the proposed internal estate sewer network to the OSSM where they are treated. The treated water can then be used for toilet flushing and for irrigation of landscaping areas within the estate.

Refer to Appendix B and the Arcadis Concept Utilities Plan for further details, including the proposed wastewater extension adjacent to the Collector Road.

It is expected that a wastewater service will be available for to this site and that gravity connection will be possible from the proposed building. Wastewater design and connection details to be provided during the detailed design stage.

6. SEARS

The site specific SEARS for the Alspec project have been addressed within this Integrated Water Cycle Management Report. Detailed responses have been provided to the SEARS that are relevant to the civil engineering design below:

Provide an Integrated Water Management Plan for the development that is prepared in consultation with the local council and any other relevant drainage or water authority.

Penrith City Council and Sydney Water (amongst other authorities) have been consulted with numerous times over the past few years in regards to the proposed Alspec Industrial Business Park Development. The feedback from Council and Sydney Water has been incorporated into the SSDA design.

Provide an Integrated Water Management Plan for the development that outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision).

Refer to section 5 of this report for a summary of the water services connections available to the subject site. Further information is provided in the Arcadis Concept Utilities Plan in Appendix B and the Utilities report for the AIBP by Arcadis, which was submitted as a part of the AIBP subdivision DA. In addition to this, Section 3.3 of this report summarises the modelling of the proposed rainwater tanks. Two 80kL rainwater tanks are proposed for irrigation reuse purposes to reduce the reliance on potable water.

Provide an Integrated Water Management Plan for the development that details the proposed drainage design (stormwater and wastewater) for the site including any on-site detention facilities, water quality management measures and nominated discharge points, on-site sewage management, and measures to treat, reuse or dispose of water.

Refer to Sections 3, 4 and 5 as well as Appendix A and B of this report.

Provide an Integrated Water Management Plan for the development that demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.

Refer to Sections 3, 4 and 5 as well as Appendix A and B of this report. The findings of this report concludes that Council's requirements have been satisfied and there is no expectation for any negative downstream impacts.

Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.

There is no expectation for any drainage works to be handed over to Council.

7. CONCLUSION

Appropriate stormwater management practices are proposed to be implemented that minimise the impact of development on the existing stormwater system in terms of water quality and water quantity whilst ensuring safe and efficient conveyance of runoff and the provision of adequate freeboard to habitable dwellings. The design is in accordance with both Penrith City Council's requirements and best practice principles; hence it can be ensured that there will be minimal impact on the existing environment as a result of the proposed development.

To summarise, the following key Council DCP requirements have been satisfied as part of the civil engineering design:

- On-site detention and the reduction of post-developed flows
- Water quality measures to manage stormwater pollutants including nitrogen, phosphorus, suspended solids and gross pollutants.
- Mean Annual Run-off Volume from the subject site.
- Sediment and Erosion Control.
- Water Conservation

8. REFERENCES

- Penrith City Council Development Control Plan 2014 – E18 Luddenham Road Industrial Business Park
- Penrith City Council Development Control Plan 2014
- Penrith City Council Stormwater Drainage Specifications for Building Developments 2018
- Penrith City Council WSUD Technical Guidelines 2015
- Blue Book "Managing Urban Stormwater- Soils and Construction, 4th Edition Landcom 2004
- 19221 Alspec Business Park - Integrated Water Cycle Management Report[02], Henry & Hymas 2023

APPENDIX A – Civil SSDA Drawings

STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW CIVIL ENGINEERING WORKS

GENERAL NOTES:

- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH PENRITH CITY COUNCIL SPECIFICATION. CONTRACTOR TO OBTAIN AND RETAIN A COPY ON SITE DURING THE COURSE OF THE WORKS.
- ALL NEW WORKS ARE TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS AND MARRY IN A 'WORKMANLIKE' MANNER.
- THE CONTRACTOR IS TO VERIFY THE LOCATION OF ALL SERVICES WITH EACH RELEVANT AUTHORITY. ANY DAMAGE TO SERVICES SHALL BE RECTIFIED BY THE CONTRACTOR OR THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. SERVICES SHOWN ON THESE PLANS ARE ONLY THOSE EVIDENT AT THE TIME OF SURVEY OR AS DETERMINED FROM SERVICE DIAGRAMS. H & H CONSULTING ENGINEERS PTY. LTD CANNOT GUARANTEE THE INFORMATION SHOWN NOR ACCEPT ANY RESPONSIBILITY FOR INACCURACIES OR INCOMPLETE DATA.
- SERVICES & ACCESSES TO THE EXISTING PROPERTIES ARE TO BE MAINTAINED IN WORKING ORDER AT ALL TIMES DURING CONSTRUCTION.
- ADJUST EXISTING SERVICE COVERS TO SUIT NEW FINISHED LEVELS TO RELEVANT AUTHORITY REQUIREMENTS WHERE NECESSARY.
- REINSTATE AND STABILISE ALL DISTURBED LANDSCAPED AREAS.
- MINIMUM GRADE OF SUBSOIL SHALL BE 0.5% (1:200) FALL TO OUTLETS.
- ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS, EROSION AND SEDIMENTATION CONTROL PLAN AND PENRITH CITY COUNCIL REQUIREMENTS WHERE APPLICABLE.
- CONTRACTOR TO CHECK AND CONFIRM SITE DRAINAGE CONNECTIONS ACROSS THE VERGE PRIOR TO COMMENCEMENT OF SITE DRAINAGE WORKS.
- PROPERTIES AFFECTED BY THE WORKS ARE TO BE NOTIFIED IN ADVANCE WHERE DISRUPTION TO EXISTING ACCESS IS LIKELY.

EXISTING SERVICES & FEATURES

- THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA OR AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF HIS PROGRAM FOR THE RELOCATION/ CONSTRUCTION OF TEMPORARY SERVICES.
- CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN SUPPLY TO EXISTING BUILDING REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
- INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. CONTRACTOR TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
- EXISTING SERVICES, BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE EXISTING FEATURES PRIOR TO ANY DEMOLITION WORKS.
- EXISTING SERVICES UNLESS SHOWN ON SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETE A 'DIAL BEFORE YOU DIG' SEARCH AND TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.



LOCALITY SKETCH

SCALE: N.T.S.

DRAWING SCHEDULE

241745_DA_C000	COVER SHEET, DRAWING SCHEDULE, NOTES AND LOCALITY SKETCH
241745_DA_C100	GENERAL ARRANGEMENT PLAN
241745_DA_C101	DETAIL PLANS SHEET 1 OF 2
241745_DA_C102	DETAIL PLANS SHEET 2 OF 2
241745_DA_C110	SITE SECTIONS - SHEET 1 OF 2
241745_DA_C111	SITE SECTIONS - SHEET 2 OF 2
241745_DA_C200	STORMWATER MISCELLANEOUS DETAILS & PIT SCHEDULE
241745_DA_C201	EASTERN OSD TANK PLANS AND DETAILS
241745_DA_C202	WESTERN OSD TANK PLANS AND DETAILS
241745_DA_C210	STORMWATER LONGITUDINAL SECTIONS - SHEET 1 OF 2
241745_DA_C211	STORMWATER LONGITUDINAL SECTIONS - SHEET 2 OF 2
241745_DA_C250	STORMWATER CATCHMENT PLAN
241745_DA_BE01	BULK EARTHWORKS CUT FILL PLAN
241745_DA_SE01	SEDIMENT AND EROSION CONTROL PLAN
241745_DA_SE02	SEDIMENT AND EROSION CONTROL DETAILS

SITeworks NOTES

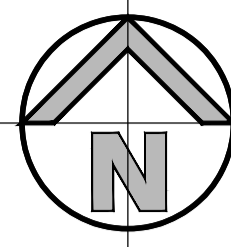
- DATUM : A.H.D.
- ORIGIN OF LEVELS : REFER TO BENCH OR STATE SURVEY MARKS WHERE SHOWN ON PLAN.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
- ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS & THE DIRECTIONS OF THE SUPERINTENDENT.
- EXISTING SERVICES UNLESS SHOWN ON THE SURVEY PLAN HAVE BEEN PLOTTED FROM SERVICES SEARCH PLANS AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- WHERE NEW WORKS ABOUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS ACHIEVED.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION IS TO BE UNDERTAKEN OVER TELSTRA OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
- CONTRACTOR TO OBTAIN AUTHORITY APPROVALS WHERE APPLICABLE.
- MAKE SMOOTH TRANSITION TO EXISTING SURFACES AND MAKE GOOD.
- THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED LANDSCAPE, ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT AT THE SITE.
- TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50mm IN BITUMINOUS PAVING.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND EDGE OF PAVING.
- GRADES TO PAVEMENTS TO BE AS IMPLIED BY RL'S ON PLAN. GRADE EVENLY BETWEEN NOMINATED RL'S. AREAS EXHIBITING PONDING GREATER THAN 5mm DEPTH WILL NOT BE ACCEPTED UNLESS IN A DESIGNATED SAG POINT.
- ALL COVERS AND GRATES ETC TO EXISTING SERVICE UTILITIES ARE TO BE ADJUSTED TO SUIT NEW FINISHED SURFACE LEVELS WHERE APPLICABLE.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY THE SURVEYOR SPECIFIED IN THE TITLE BLOCK. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. HENRY AND HYMAS PTY. LTD. DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT HENRY AND HYMAS PTY. LTD. THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM ORIGINAL SURVEY DOCUMENTS.

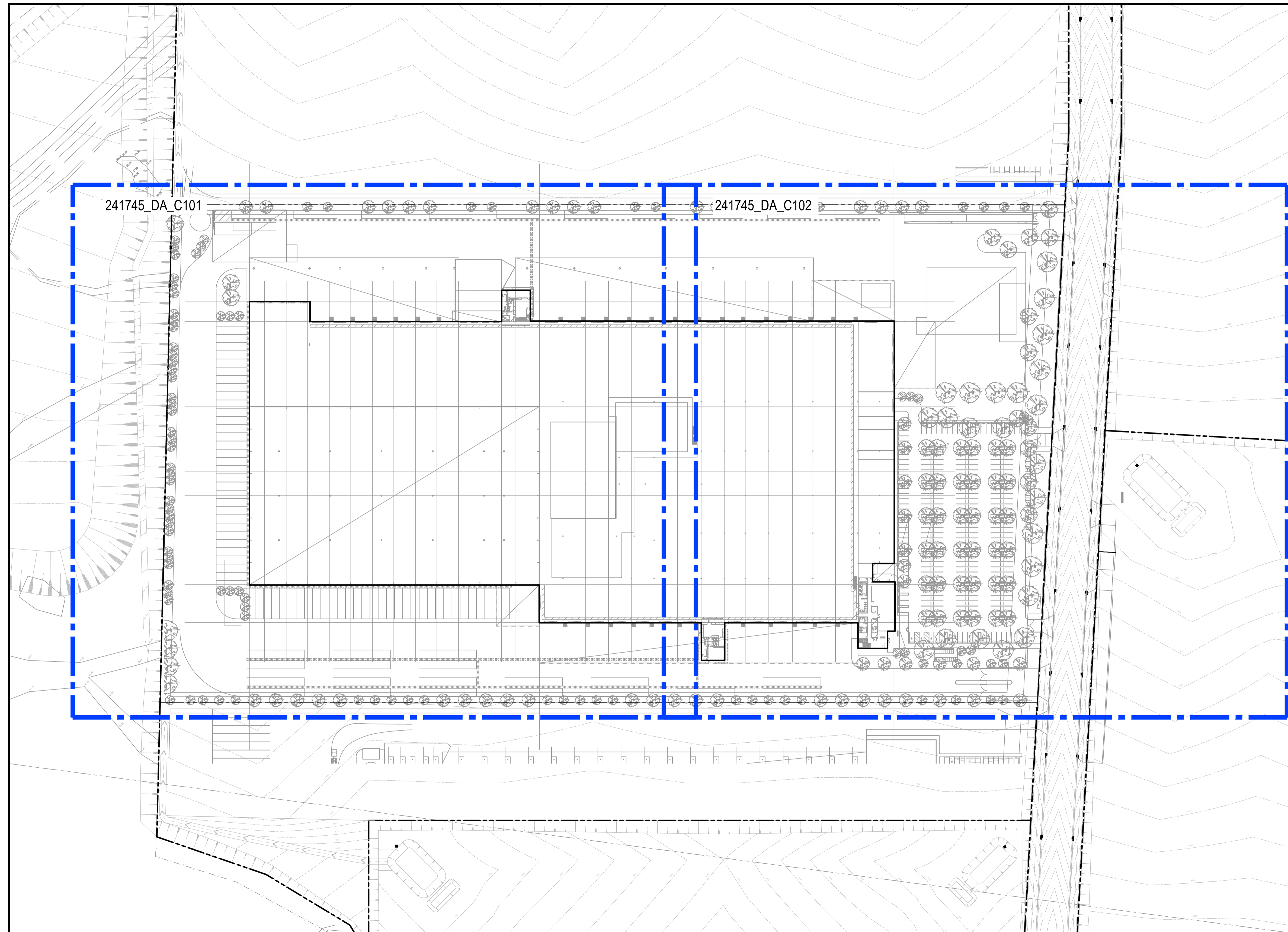
FOR DA ONLY

SURVEY INFORMATION				Client				Project		Drawn		Designed		Original issue date	
SURVEYED BY: WATSDON BUCHAN				HB&B PROPERTY PTY LTD				STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW		E. Formadero		S. Chen		Feb 2025	
DATUM: A.H.D.				Architect				Title		Checked		Approved		Scale @A1	
ORIGIN OF LEVELS: SSM 22740 RL:41.10				NETTLETONTRIBE				COVER SHEET, DRAWING SCHEDULE, NOTES AND LOCALITY SKETCH		N. Heazlewood		T. Rozehnal		NTS	
REVISION				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR		Drawing number		241745_DA_C000		Revision	
2 ISSUED FOR DA ONLY				AFe NH 10.04.2025				henry&hymas						2	
1 ISSUED FOR DA ONLY				EF NH 10.03.2025											
AMENDMENT				DRAWN											
				DESIGNED											
				DATE											



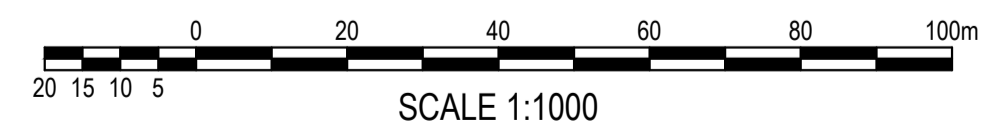
LEGEND

- PROPOSED BOUNDARY
- PROPOSED RIDGE LINE
- PROPOSED VALLEY LINE
- PROPOSED SUBSOIL LINE
- PROPOSED STORMWATER PIPE
- STORMWATER UPSTREAM INVERT RL.
STORMWATER PIPE DIAMETER & CLASS
STORMWATER PIPE LENGTH
STORMWATER PIPE GRADE
STORMWATER DOWNSTREAM INVERT RL.
- PROPOSED SURFACE INLET PITS
- PROPOSED JUNCTION PITS
- PROPOSED LINTEL ONGRADE & SAG PITS
- PROPOSED PIT TAG
- PROPOSED BATTER LINE
- PROPOSED KERB ONLY
- PROPOSED RETAINING WALL
- PROPOSED CONTOURS
- EXISTING CONTOURS
- PROPOSED SPOT LEVEL
- TOP OF WALL LEVEL
- BOTTOM OF WALL LEVEL
- EXISTING SPOT LEVEL
- PROPOSED EASEMENT
- PROPOSED FALL
- PROPOSED HEIGHT OF WALL
- PROPOSED INTERMEDIATE RISER (IR)
- PROPOSED FLUSHING POINT (FP)
- PROPOSED DOWNPIPE (DP)
- PROPOSED HEADWALL
- PROPOSED SEDIMENT BASIN
- EXISTING STORMWATER
- EXISTING WATER LINE
- EXISTING ELECTRICAL LINE
- EXISTING GAS LINE
- EXISTING SEWER LINE



GENERAL ARRANGEMENT PLAN

SCALE: 1:1000

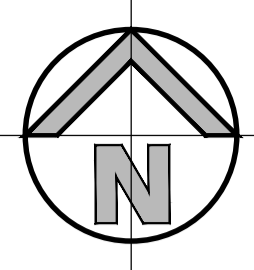


FOR DA ONLY

SURVEY INFORMATION SURVEYED BY: WATSDON BUCHAN DATUM: A.H.D. ORIGIN OF LEVELS: SSM 22740 RL: 41.10	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISION</th> <th>AMENDMENT</th> <th>DRAWN</th> <th>DESIGNED</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>ISSUED FOR DA ONLY</td> <td>AFe</td> <td>NH</td> <td>10.04.2025</td> </tr> <tr> <td>1</td> <td>ISSUED FOR DA ONLY</td> <td>EF</td> <td>NH</td> <td>10.03.2025</td> </tr> </tbody> </table>	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	2	ISSUED FOR DA ONLY	AFe	NH	10.04.2025	1	ISSUED FOR DA ONLY	EF	NH	10.03.2025	Client HB&B PROPERTY PTY LTD Architect NETTLETONTRIBE This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.	Suite 2.01 828 Pacific Highway Gordon NSW 2072 Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hphonsult.com.au Web www.henryandhymas.com.au 	Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW Title GENERAL ARRANGEMENT PLAN	Drawn E. Formadero Designed S. Chen Checked N. Heazlewood Approved T. Rozehnal Original issue date Feb 2025 Scale @A1 NTS Drawing number 241745_DA_C100 Revision 2
REVISION	AMENDMENT	DRAWN	DESIGNED	DATE																
2	ISSUED FOR DA ONLY	AFe	NH	10.04.2025																
1	ISSUED FOR DA ONLY	EF	NH	10.03.2025																

DRAWING TO BE PRINTED IN COLOUR





CONNECT INTO EXISTING PIT
SURFACE RL 42.90
PIPE IL 40.12

PROPOSED STORMWATER
SYSTEM TO CONNECT TO
PROPOSED STORMWATER
EASEMENT AT IL 41.90

PROPOSED OSD TANK TO
PROVIDE 1600 m³ OF
STORAGE VOLUME. REFER TO
DWG C202 FOR DETAILS

3m WIDE PROPOSED
STORMWATER EASEMENT

PROPOSED BATTER
WITHIN LANDSCAPING
AREA AT MAX 1:3

3m WIDE PROPOSED
STORMWATER
EASEMENT

NORTH-WESTERN ROOF CATCHMENT TO
DISCHARGE TO RAINWATER TANK. TO BE
CO-ORDINATED WITH HYD ENG AT
DETAILED DESIGN STAGE.

80kL RAINWATER TANK. ROOF
AREA TO CONNECT DIRECTLY TO
TANK. WATER TO BE REUSED
FOR IRRIGATION PURPOSES.

SECONDARY OVERFLOW PIT
PROPOSED IN RECESSED
DOCK TO DISCHARGE FLOWS
IN CASE OF GD-1 BLOCKAGE

ROOF CATCHMENT TO CONNECT INTO
IN-GROUND STORMWATER DRAINAGE.
TO BE CO-ORDINATED WITH HYD ENG AT
DETAILED DESIGN STAGE.

PROPOSED 4 X 1.3m
RECESSED DOCKS



SCALE 1:500

DETAIL PLAN
SCALE: 1:500

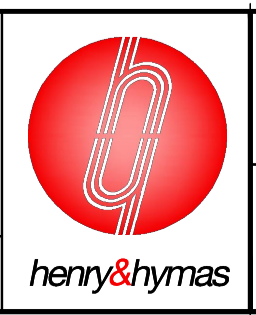
REFER TO 241745_DA_C102 FOR CONTINUATION

FOR DA ONLY

SURVEY INFORMATION		SURVEYED BY:		WATSDON BUCHAN	
DATUM A.H.D.		AFe	NH	10.04.2025	
ORIGIN OF LEVELS:		EF	NH	10.03.2025	
SSM 22740 RL.41.10		MB	NH	20.02.2025	
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2	ISSUED FOR DA ONLY				
1	PRELIMINARY				

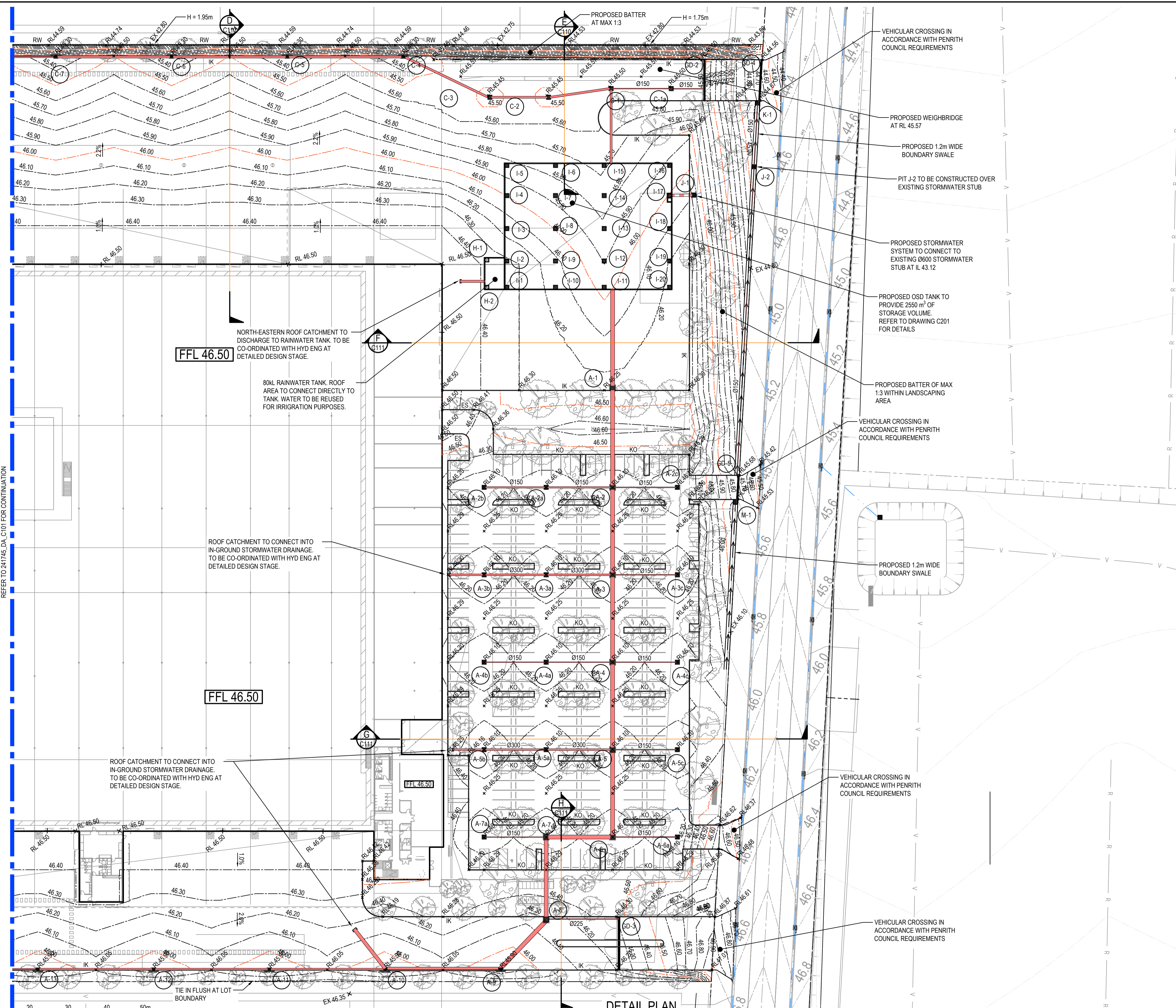
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Architect	NETTLETONTRIBE
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Project	STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW
Drawn	E. Formadero
Designed	S. Chen
Checked	N. Heazlewood
Approved	T. Rozehnal
Title	DETAIL PLANS SHEET 1 OF 2

Original issue date	Feb 2025
Scale	A1
NTS	
Drawing number	241745_DA_C101
Revision	3



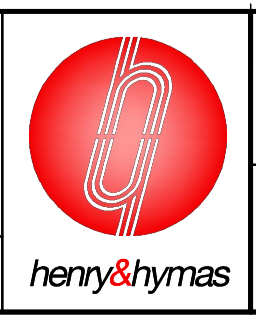
DETAIL PLAN
SCALE: 1:500

FOR DA ONLY

SURVEY INFORMATION			
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DATUM A.H.D.	REVISION	AMENDMENT	DATE
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	2	ISSUED FOR DA ONLY	10.03.2025
	1	PRELIMINARY	20.02.2025
ORIGIN OF LEVELS: SSM 22740 RL.41.10			

Client	
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Architect	
NETTLETONTRIBE	
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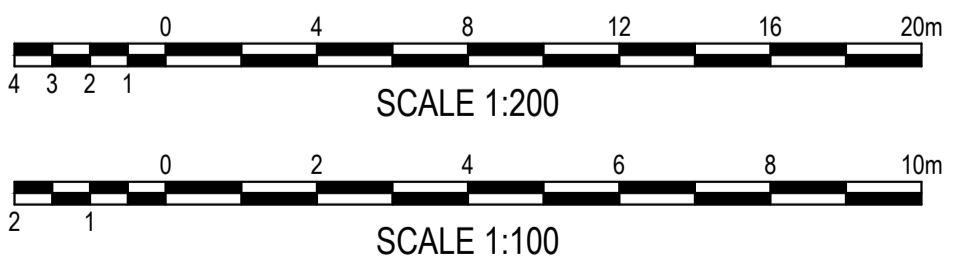
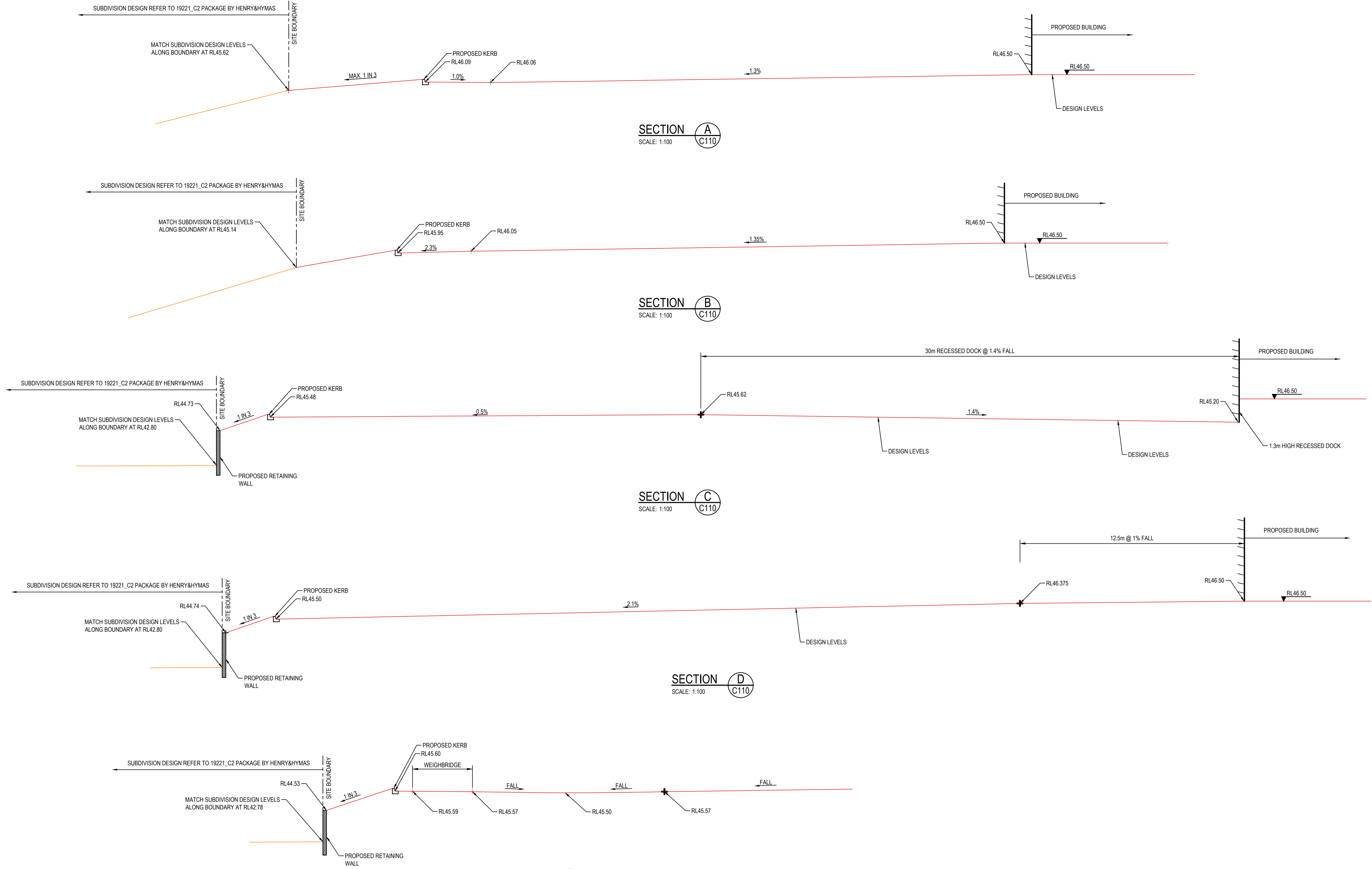
Suite 2.01 828 Pacific Highway Gordon NSW 2072	Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hnyandhymas.com.au Web www.henyandhymas.com.au
DRAWING TO BE PRINTED IN COLOUR	



Project	
STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW	
Title	
DETAIL PLANS SHEET 2 OF 2	

Drawn	Designed	Original issue date
E. Formadero	S. Chen	Feb 2025
Checked	Approved	Scale
N. Heazlewood	T. Rozehnal	NTS
Drawing number		Revision
241745_DA_C102		3

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SECTION **E**
SCALE: 1:100

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SURVEY INFORMATION		DATE		REVISION		AMENDMENT		DRAWN		DESIGNED		DATE	
SURVEYED BY: WATSDON BUCHAN													
DATUM: A.H.D.													
ORIGIN OF LEVELS: SSM 22740 RL-41.10													
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Client
HB&B PROPERTY PTY LTD

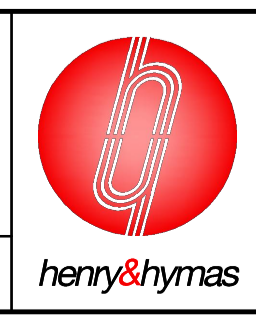
Architect
NETTLETONTRIBE

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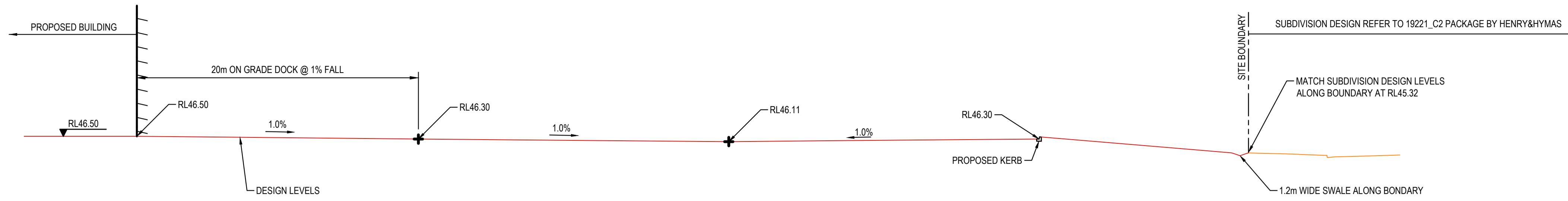
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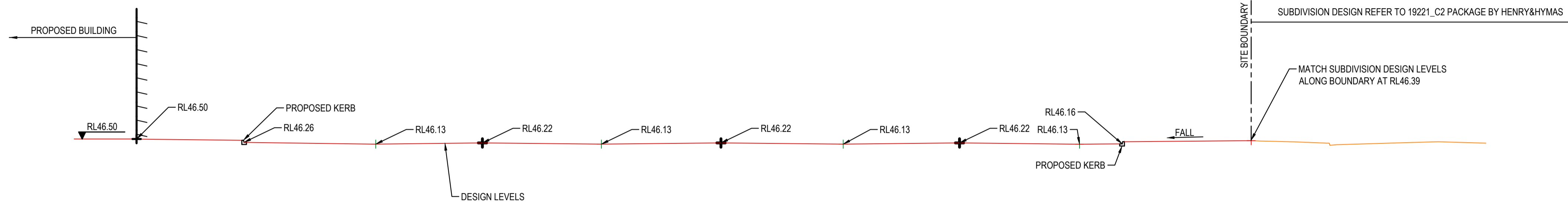
Project
**STORAGE AND DISTRIBUTION WAREHOUSE
LUDDENHAM ROAD, ORCHARD HILLS, NSW**

Title
SITE SECTIONS - SHEET 1 OF 2

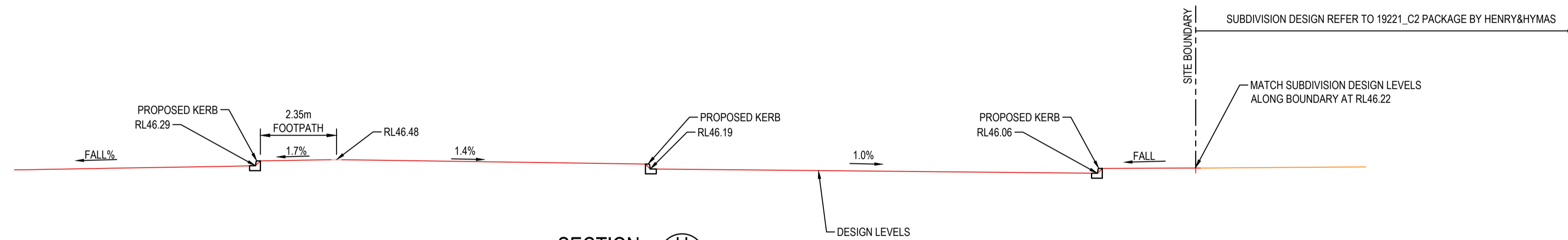
Drawn	Designed	Original issue date
E. Formadero	S. Chen	Feb 2025
Checked	Approved	Scale
N. Heazlewood	T. Rozehnal	@A1
Drawing number	Revision	
241745_DA_C110	1	



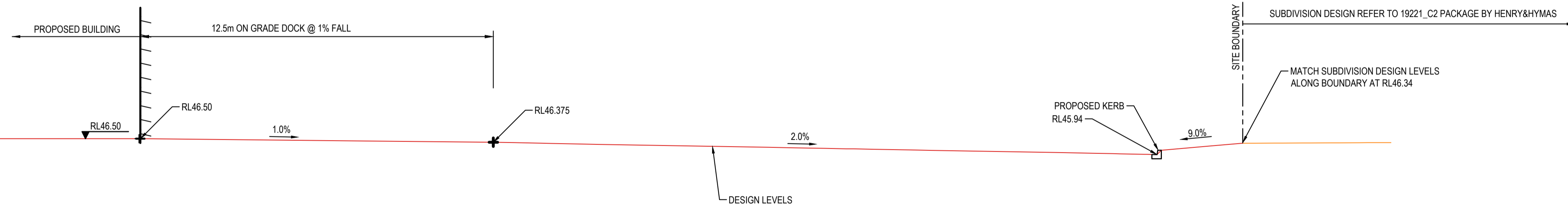
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SCALE: 1:200
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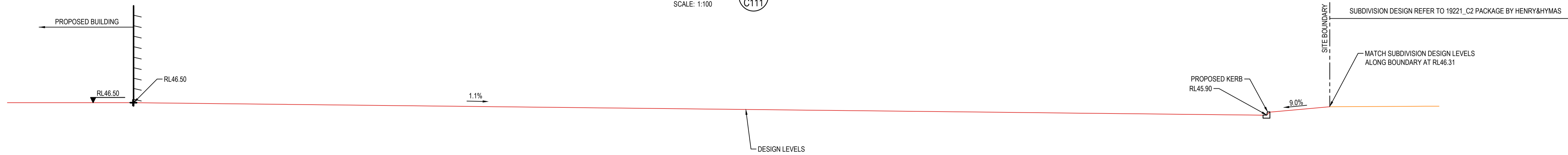
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SCALE: 1:200
C111



SECTION H
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C111



SECTION I
SCALE: 1:100
C111



SECTION J
SCALE: 1:100
C111



FOR DA ONLY

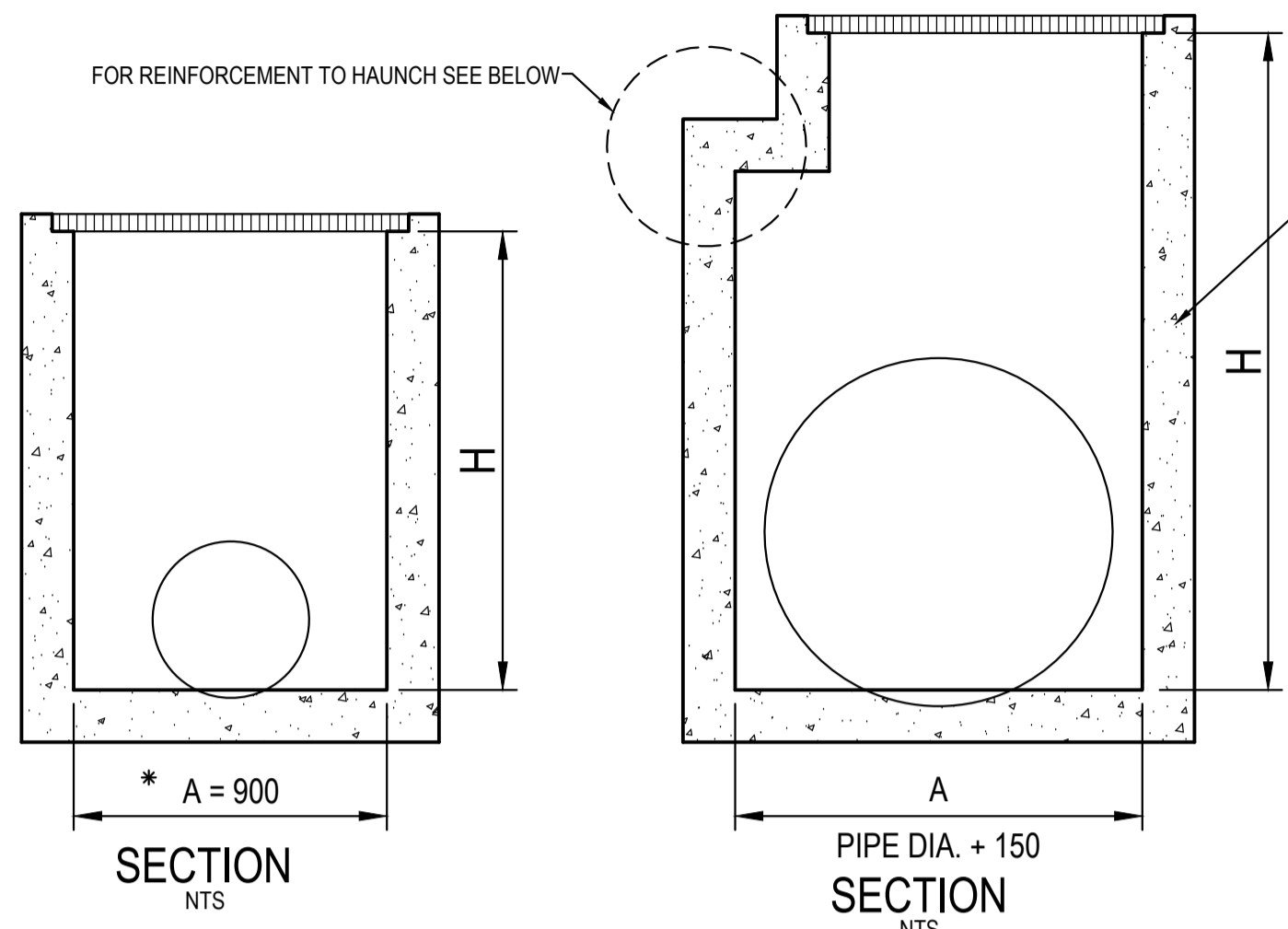
SURVEY INFORMATION				Client HB&B PROPERTY PTY LTD				Suite 2.01 828 Pacific Highway Gordon NSW 2072				Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hbcosult.com.au Web www.henryandhymas.com.au				Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW				Drawn E. Formadero				Designed S. Chen				Original issue date Feb 2025			
SURVEYED BY: WATSDON BUCHAN				Architect NETTLETONTRIBE												Checked N. Heazlewood				Approved T. Rozehnal				Scale @A1 NTS							
DATUM: A.H.D.				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR				Title SITE SECTIONS - SHEET 2 OF 2				Drawing number 241745_DA_C111				Revision 1											
ORIGIN OF LEVELS: SSM 22740 RL-41.10				REVISION				AMENDMENT				DRAWN				DESIGNED				DATE											

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TYPICAL PIT CHAMBER SIZES
IT IS THE CONTRACTORS RESPONSIBILITY TO SELECT PIT CHAMBER SIZE WITH REGARDS TO PIPE SIZE, DEPTH TO INVERT AND SKEW ANGLE. REFER SKETCHES BELOW.

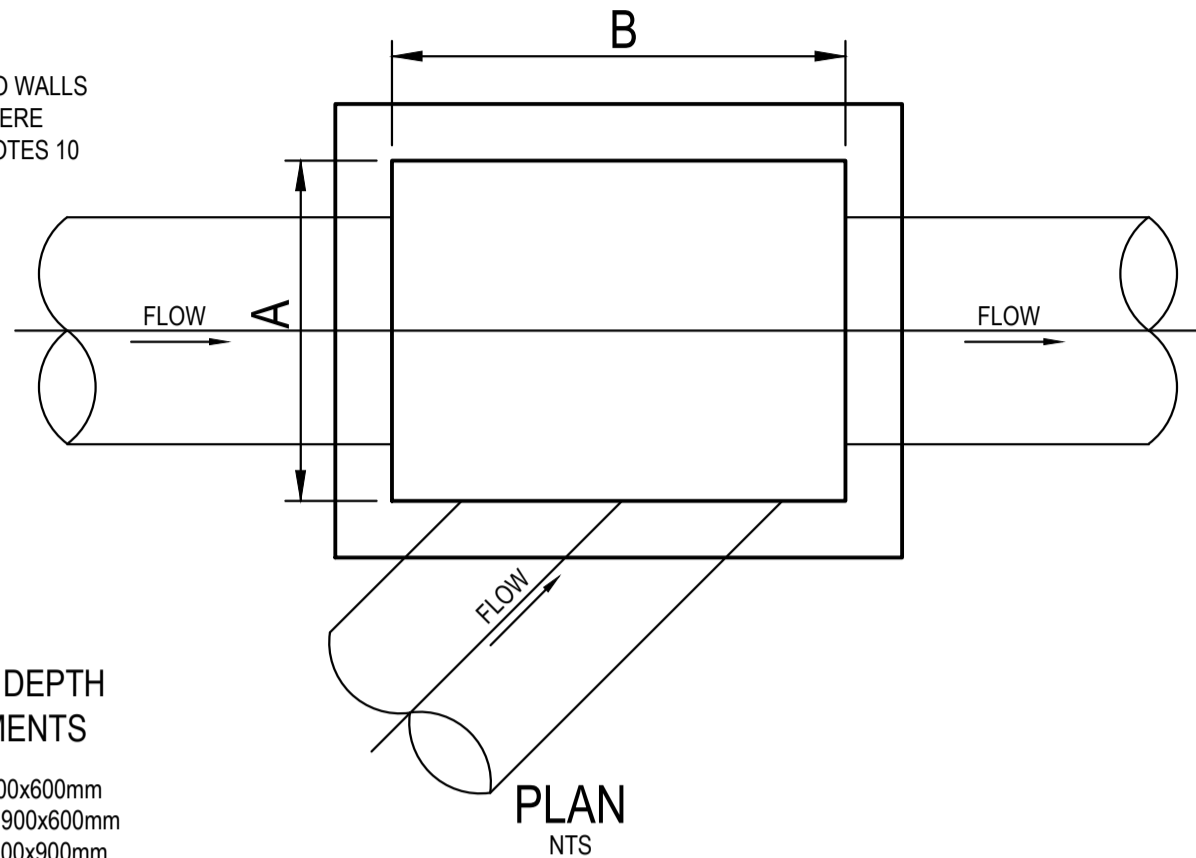
- SELECT PIT CHAMBER USING THE STEPS BELOW:
- SELECT PIT CHAMBER SIZE DEPENDING ON THE PIPE DIAMETERS.
- CHECK PIT CHAMBER SIZE TO SATISFY DEPTH TO INVERT REQUIREMENTS.
- CHECK PIT CHAMBER DIMENSIONS TO SATISFY THE SKEW ANGLE IN THE TABLE.

FOR B = 600mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 225mm
 FOR B = 900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 375mm
 FOR B = 1200mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 600mm
 FOR B = 1500mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 825mm
 FOR B = 1900mm - MAX. SIDE ENTRY PIPE AT 45° SKEW = 1050mm



*A = 600 FOR PIPES UP TO 375 DIA.
1 PIT CHAMBER DIMENSIONS FOR PIPES UP TO 600 DIA.

1 PIT CHAMBER FOR PIPES GREATER THAN 600 DIA.



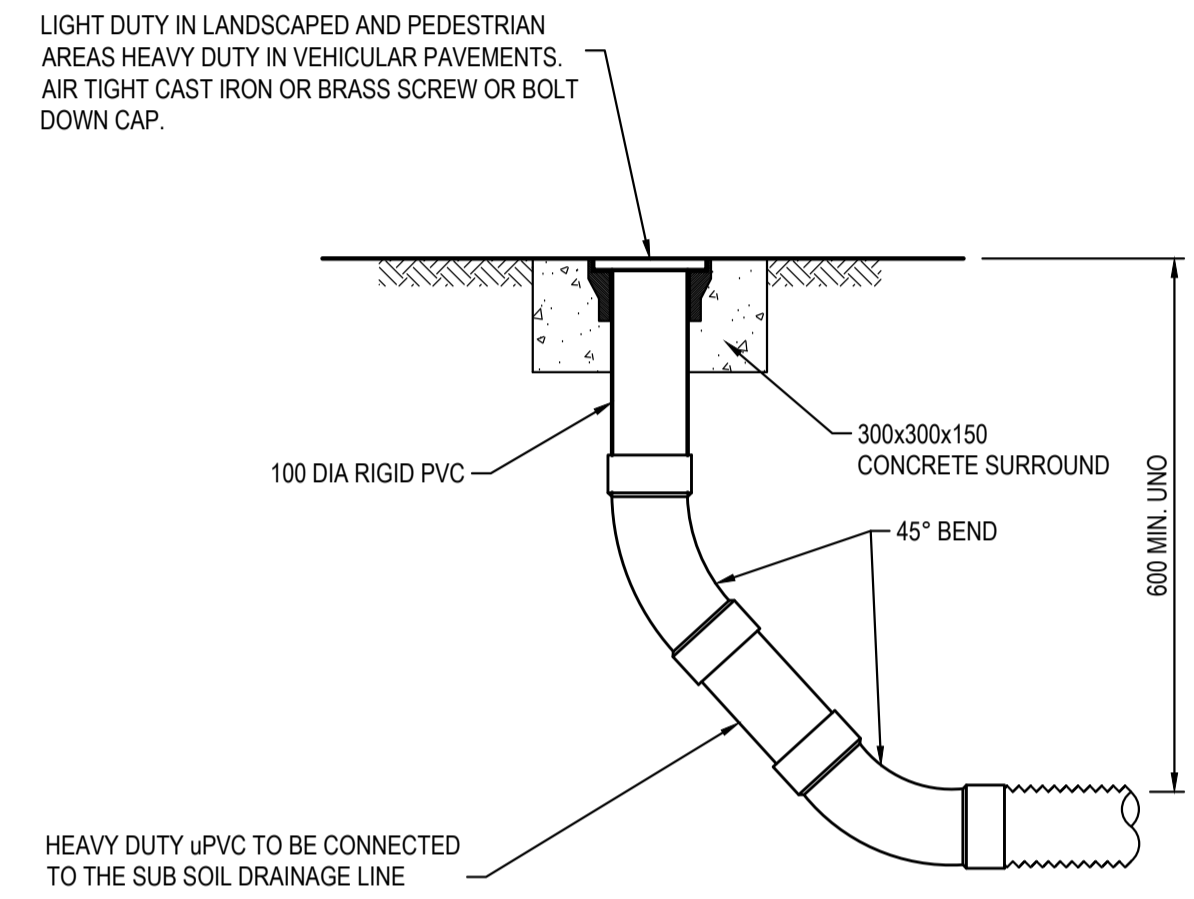
3 PIT CHAMBER FOR SIDE ENTRY ON SKEW

2 PIT SIZE & DEPTH REQUIREMENTS
 H = 0-900mm - Ax B = 600x600mm
 H = 900-1200mm - Ax B = 900x600mm
 H = >1200mm - Ax B = 900x900mm

SIEVE SIZE (MM)	WEIGHT PASING (%)
75.0	100
9.5	100 TO 50
2.36	100 TO 30
0.60	50 TO 15
0.075	25 TO 0

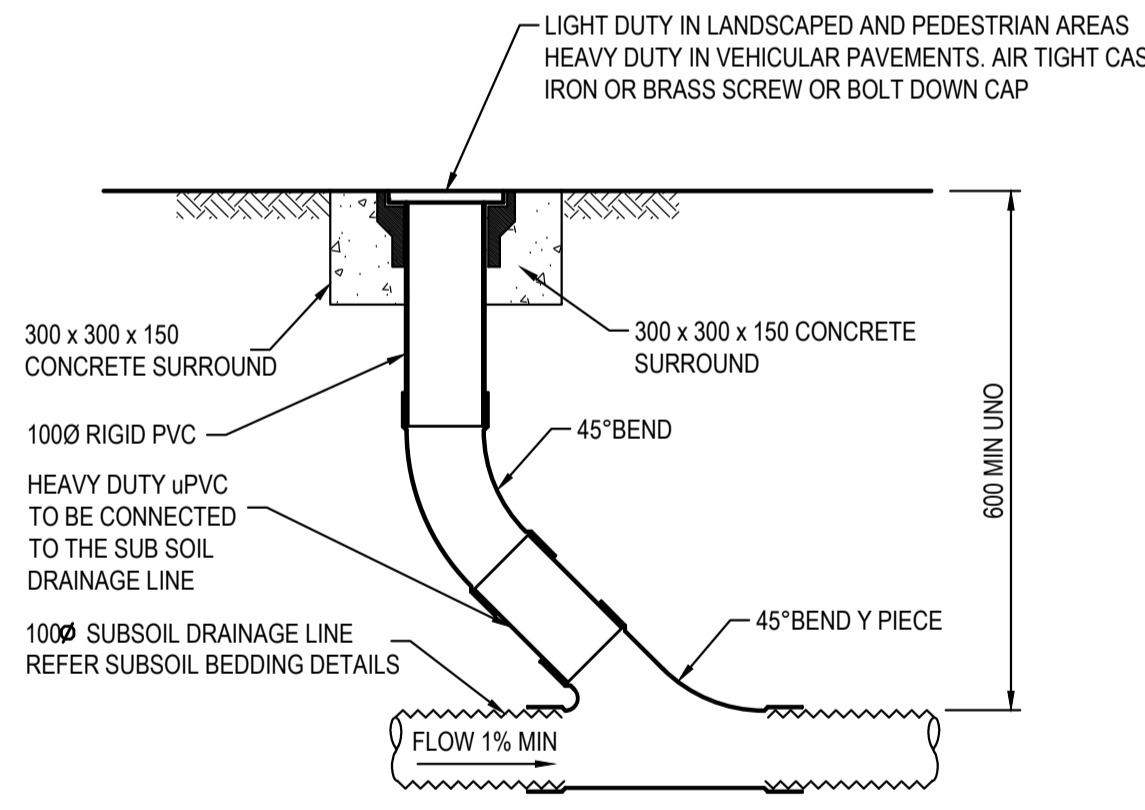
SIEVE SIZE (MM)	WEIGHT PASING (%)
19.0	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SUPPORT TYPE	BED ZONE X	HAUNCH ZONE Y	BED AND HAUNCH ZONES COMPACTION	MAX BEDDING FACTOR
HS1	100 IF D<=1500, OR 150 IF D>=1500	0.1D	50	2.0
HS2		0.3D	60	2.5
HS3		0.3D	70	4.0



FLUSHING POINT (FP)

SCALE 1:10
 NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED



INTERMEDIATE RISER (IR)

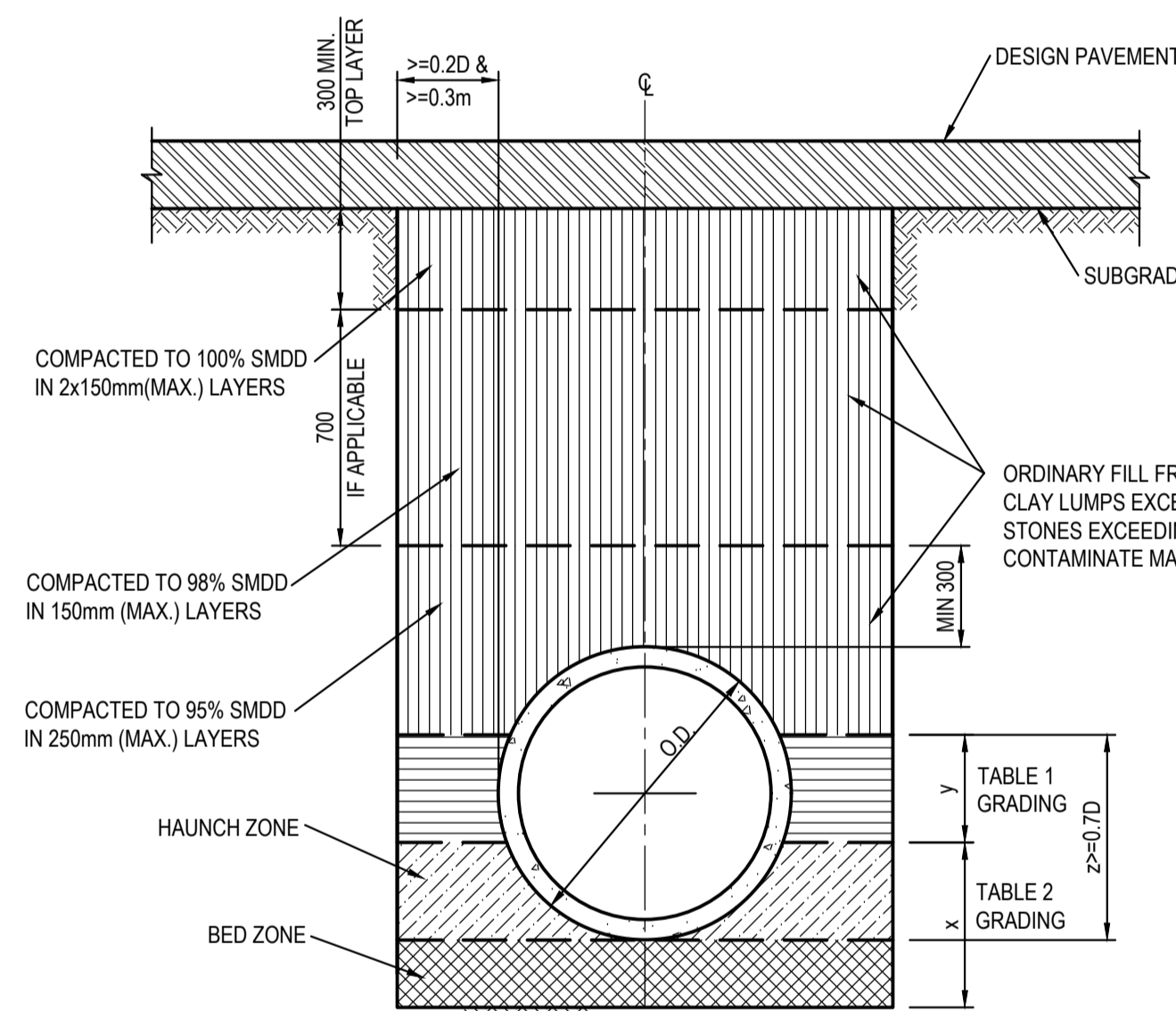
SCALE 1:10
 NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED

PIT LID SCHEDULE

PIT/STRUCTURE NUMBER	DESCRIPTION
A-1 A-2 A-3 A-4 A-5 A-6 A-7 A-8 B-1 B-2 B-3 B-4 B-5 B-6 C-1 C-1a C-2 C-3 D-11 D-12 D-13 D-14 D-15 D-16 F-1 F-2 F-3 F-4 F-5 F-6 F-7 F-8 F-9 F-10 F-11 F-12 F-13 F-14 F-15 F-16 I-1 I-2 I-3 I-4 I-5 I-6 I-7 I-8 I-9 I-10 I-11 I-12 I-13 I-14 I-15 I-16 I-17 I-18 I-19 I-20	PROPOSED 900x900 SURFACE INLET PIT WITH HINGED GRATED LID HEAVY DUTY CLASS "D" IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.
GD-1 GD-2 GD-3	PROPOSED 250mm WIDE GRATED DRAIN HEAVY DUTY CLASS "D" IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.
G-1 G-2 H-1 H-2	PROPOSED JUNCTION PIT WITH 900x900 HEAVY DUTY SEALED LID CLASS "D" IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.
J-1	PROPOSED 1200x1200 SURFACE INLET PIT WITH HINGED GRATED LID HEAVY DUTY CLASS "D" IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.
A-2a A-2b A-2c A-3a A-3b A-3c A-4a A-4b A-4c A-5a A-5b A-5c A-6a A-7a	PROPOSED 600x600 WITH HEAVY DUTY CLASS "D" LID GRATED INLET IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.
A-9 A-10 A-11 A-12 A-13 A-14 B-7 B-8 B-9 B-10 B-11 C-4 C-5 C-6 C-7 C-8 E-1 E-2 E-3 E-4 E-5	PROPOSED 1.2m INLET INLET PIT WITH HINGED GRATED LID HEAVY DUTY CLASS "D" IN ACCORDANCE WITH PENRITH CITY COUNCIL'S REQUIREMENTS.

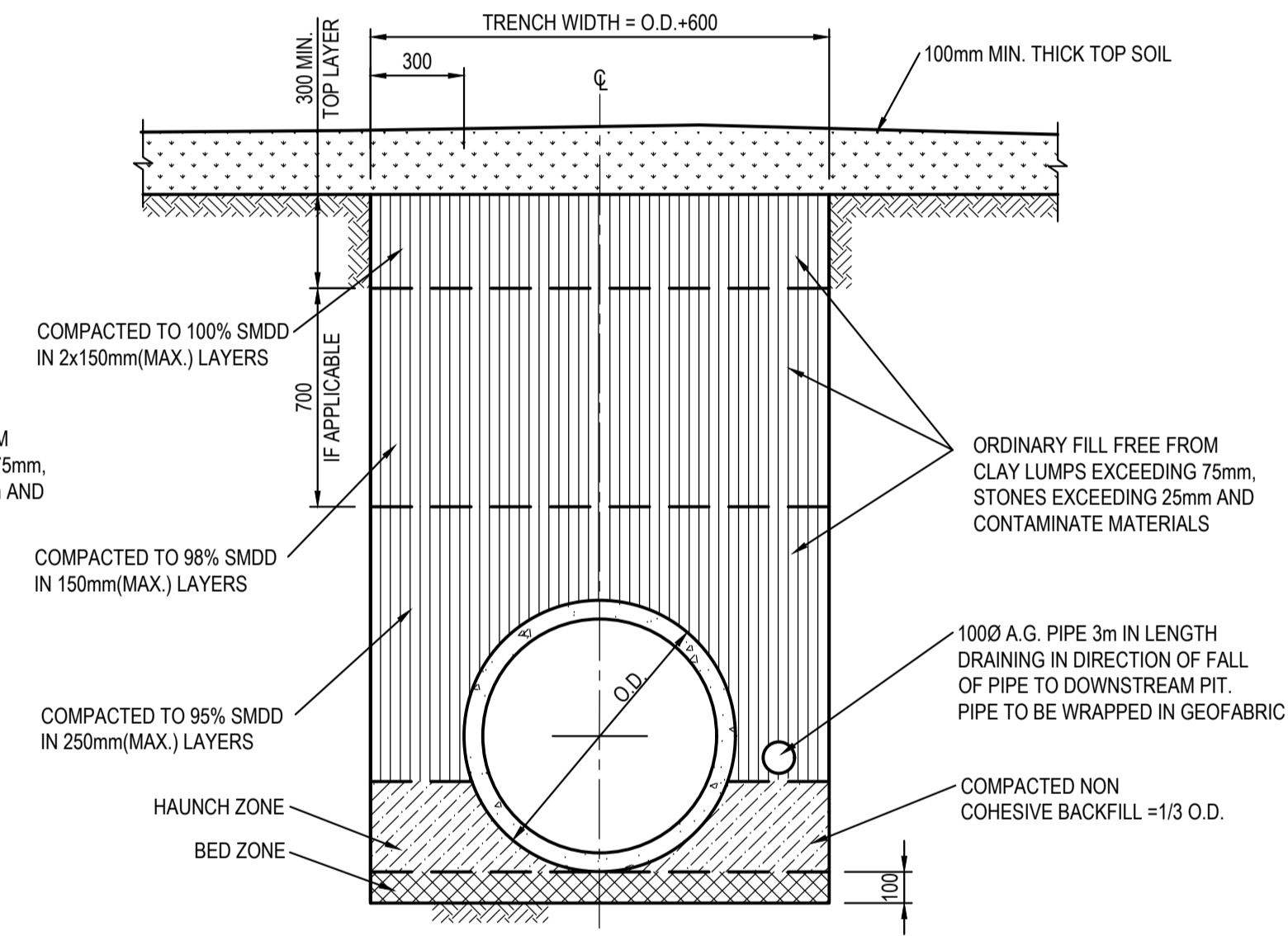
DRAINAGE NOTES:

- ALL STORMWATER WORK TO COMPLY WITH AS 3500 PART 3.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE MINIMUM COVER OF 600mm ON ALL PIPES.
- PROTECTION OF PIPES DUE TO LOADS EXCEEDING W7 WHEEL LOAD SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- BEDDING TYPE SHALL BE TYPE H2 FOR RCP. WHERE NECESSARY THE OVERLAY ZONE SHALL BE REDUCED TO ACCOMMODATE PAVEMENT REQUIREMENTS. REFER TO THIS DRAWING FOR DETAILS.
- MINIMUM COVER OVER EXISTING PIPES FOR PROTECTION DURING CONSTRUCTION SHALL BE 800mm.
- NO CONSTRUCTION LOADS SHALL BE APPLIED TO PLASTIC PIPES.
- FINISHED SURFACE LEVELS SHOWN ON LAYOUT PLAN DRGS TAKE PRECEDENCE OVER DESIGN DRAINAGE SURFACE LEVELS.
- ALL PIPES UP TO AND INCLUDING 300 DIA. SHALL BE SOLVENT OR RUBBER RING JOINTED PVC CLASS SH PIPE TO AS1260. ALL OTHER PIPES TO BE RCP USING CLASS 2 RUBBER RING JOINTED PIPE. HARDIES FRC PIPE MAY BE USED IN LIEU OF RCP IF DESIRED IN GROUND. ALL AERIAL PIPES TO BE PVC CLASS SH.
- ALL PITS IN NON TRAFFICABLE AREAS TO BE PREFABRICATED POLYESTER CONCRETE "POLYCRETE" WITH "LIGHT DUTY" CLASS B GALV. MILD STEEL GRATING AND FRAME. ALL PITS IN TRAFFICABLE AREAS (CLASS "D" LOADING MAX) TO HAVE 150mm THICK CONCRETE WALLS AND BASE CAST IN-SITU Fc=32 MPa. REINFORCED WITH N12-200 BOTH LOADING WAYS CENTRALLY PLACE U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. GALV MILD STEEL GRATING AND FRAME TO SUIT DESIGN LOADING. PRECAST PITS, RECTANGULAR OR CIRCULAR IN SHAPE, MAY BE USED IN LIEU AND SHALL COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.
- ALL PITS, GRATINGS AND FRAMES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION AND TO BE IN ACCORDANCE WITH AS3500.3 AND AS3996.
- PIT CHAMBER DIMENSIONS ARE TO BE SELECTED TO SATISFY THE FOLLOWING:
 - PIPE SIZE
 - DEPTH TO INVERT
 - SKEW ANGLE
 REFER TYPICAL PIT CHAMBER DETAILS BELOW
 IF PIT LID SIZE IS SMALLER THAN THE PIT CHAMBER SIZE THEN THE PIT LID IS TO BE CONSTRUCTED ON THE CORNER OF THE PIT CHAMBER WITH THE STEP IRONS DIRECTLY BELOW. ALTERNATIVELY THE PIT LID TO BE USED, IS TO BE THE SAME SIZE AS THE PIT CHAMBER.
- FOR PIPE SIZES GREATER THAN Ø300mm, PIT FLOOR IS TO BE BENCH TO FACILITATE FLOW.
- GALVANISED STEP IRONS SHALL BE PROVIDED AT 300 CTS FOR PITS HAVING A DEPTH EXCEEDING 1200mm. SUBSOIL DRAINAGE PIPE SHALL BE PROVIDED IN PIPE TRENCHES ADJACENT TO INLET PIPES. (MINIMUM LENGTH 3m).
- ALL SUBSOIL PIPES SHALL BE 100mm SLOTTED PVC IN A FILTER SOCK, UNO, WITH 3m INSTALLED UPSTREAM OF ALL PITS.
- ALL PIPEWORK SHALL HAVE MINIMUM DIAMETER 100.
- MINIMUM GRADE FOR ROOFWATER DRAINAGE LINES SHALL BE 1%.
- ALL PIPE JUNCTIONS AND TAPER UP TO AND INCLUDING 300 DIA. SHALL BE VIA PURPOSE MADE FITTINGS.
- ALL ROOF DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH AS3500, PART 3. TESTING TO BE UNDERTAKEN AND REPORTS PROVIDED TO THE SUPERINTENDENT.
- LOCATION OF THE DIRECT DOWN PIPE CONNECTIONS MAY VARY ON SITE TO SUIT SITE CONDITIONS, WHERE CONNECTION SHOWN ON LONG SECTIONS CHAINAGES ARE INDICATIVE ONLY.
- PITS IN EXCESS OF 1.5 m DEEP TO HAVE WALL AND FLOOR THICKNESS INCREASED TO 200mm. REINFORCED WITH N12@200 CTS CENTRALLY PLACED BOTH WAYS THROUGHOUT U.N.O. ON SEPARATE DESIGN DRAWINGS IN THIS SET. IF DEPTH EXCEEDS 5m CONTACT ENGINEER.
- SUBSOIL DRAINAGE LINES FOR LANDSCAPE AREA NOT SHOWN ON THESE DRAWINGS. REFER TO LANDSCAPING PLANS FOR DETAILS.
- ALL STORMWATER PITS TO HAVE Ø100 uPVC SLOTTED SUBSOIL PIPES CONNECTED TO THEM. THESE SUBSOILS TO EXTEND 3m UPSTREAM OF THE PIT AT A MINIMUM GRADE.



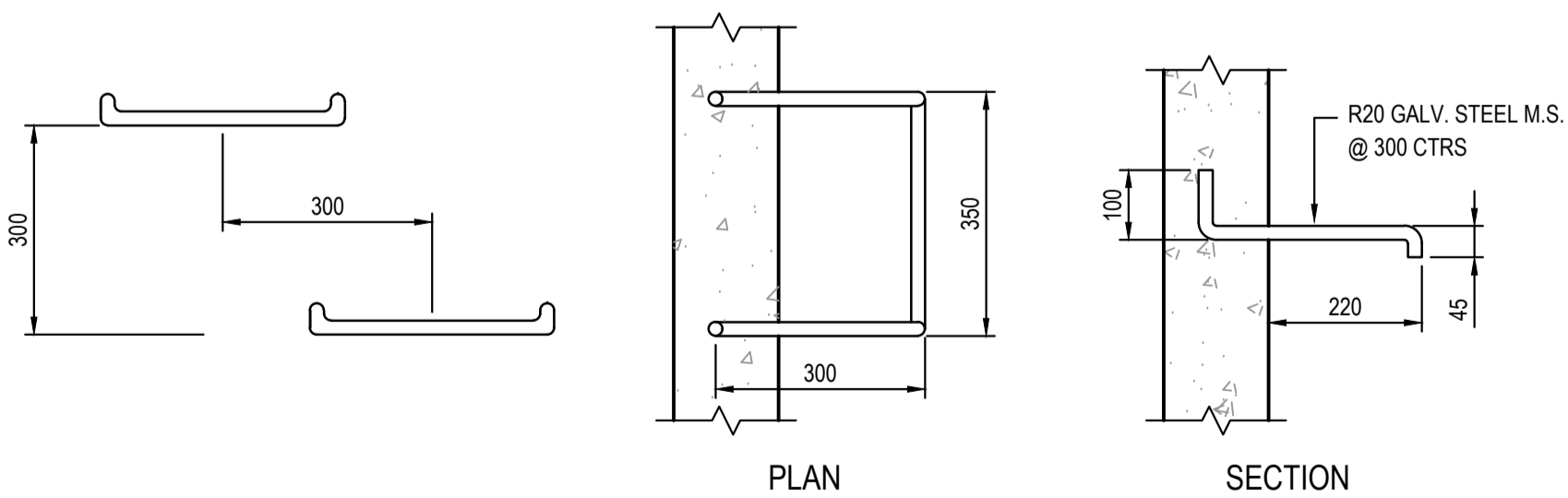
PIPE TRENCH INSTALLATION BENEATH PAVEMENT

(HS SUPPORT TO BE USED UNDER ROADWAY)
 SCALE 1:20



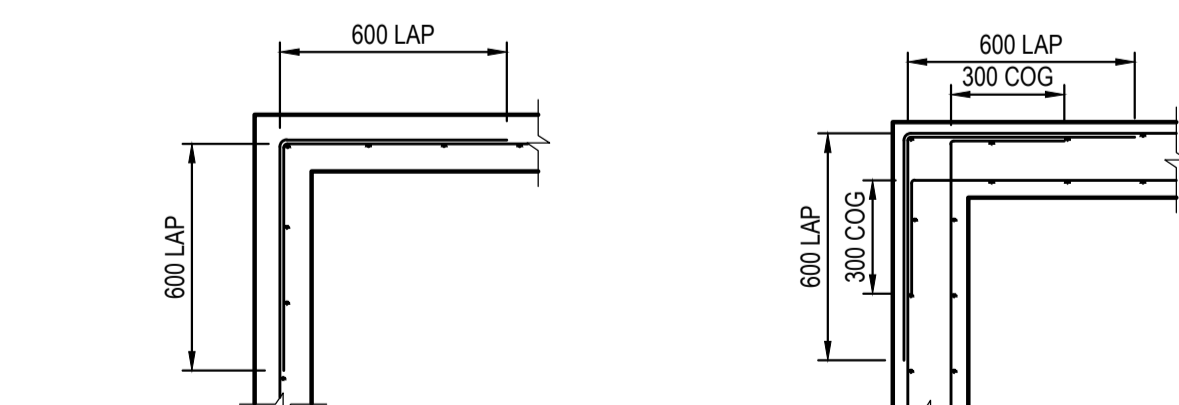
PIPE TRENCH INSTALLATION IN LANDSCAPE AREAS

(H1 & H2 SUPPORT)
 SCALE 1:20



TYPICAL STEP IRON DETAIL

SCALE 1:10



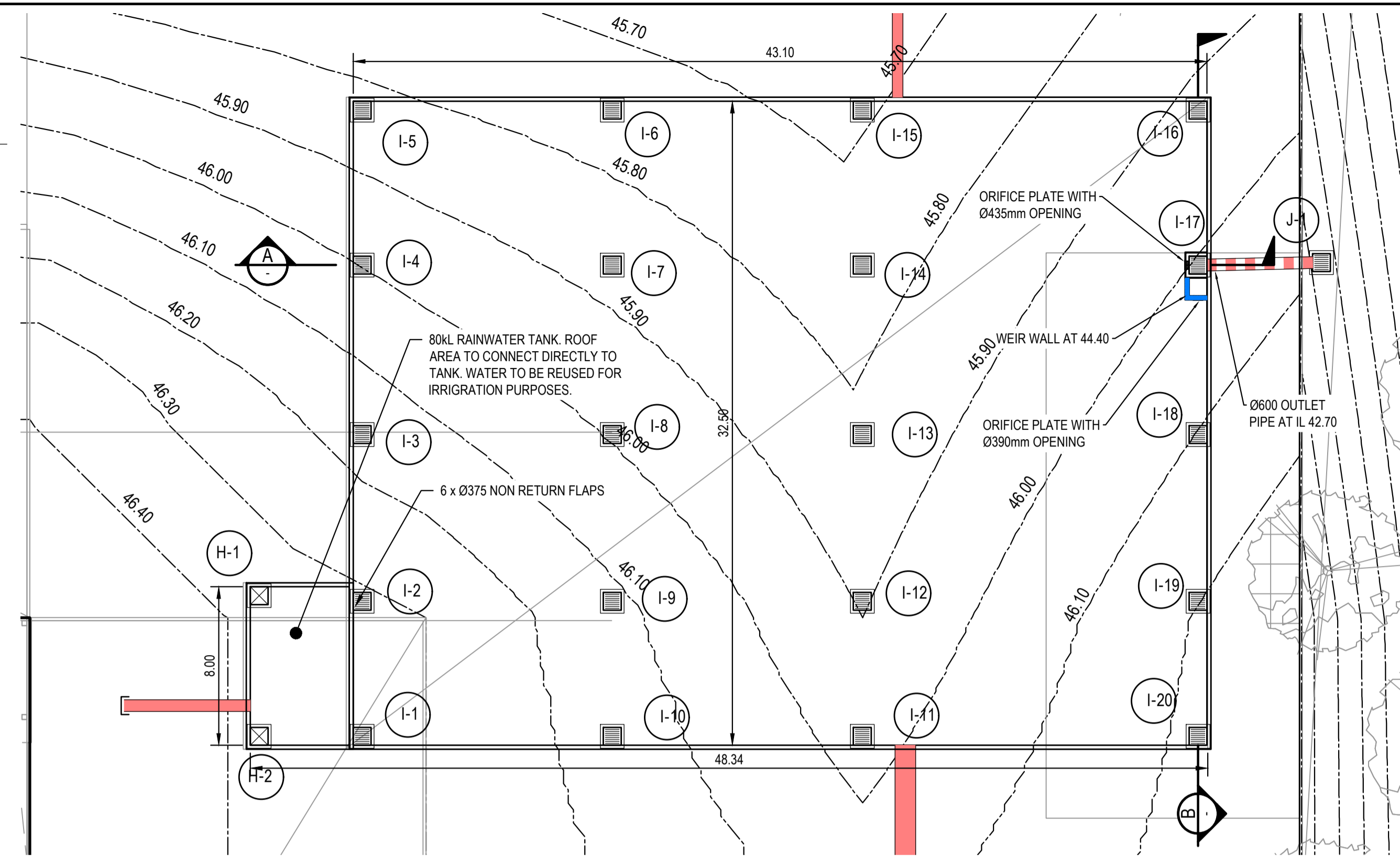
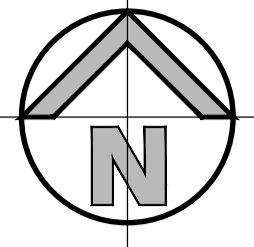
150 WALL - CORNER DETAIL

SCALE 1:20

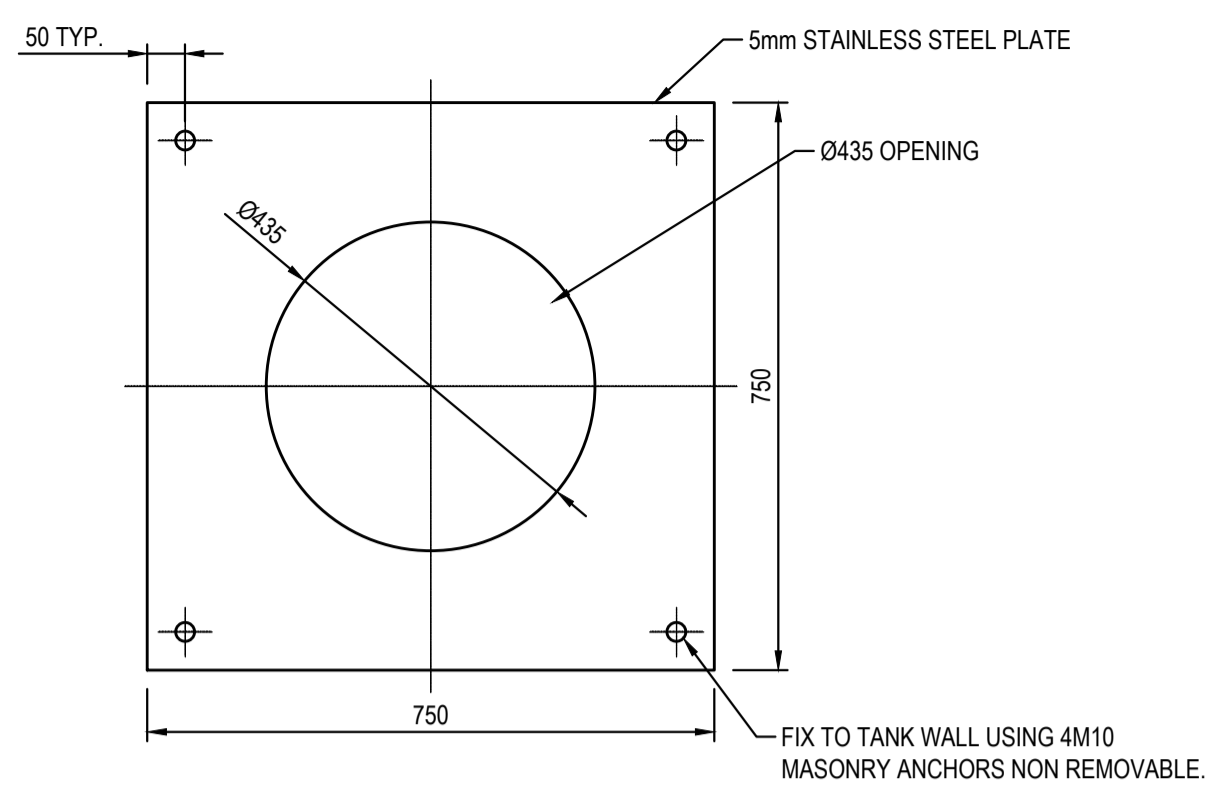
200 WALL - CORNER DETAIL

FOR DA ONLY

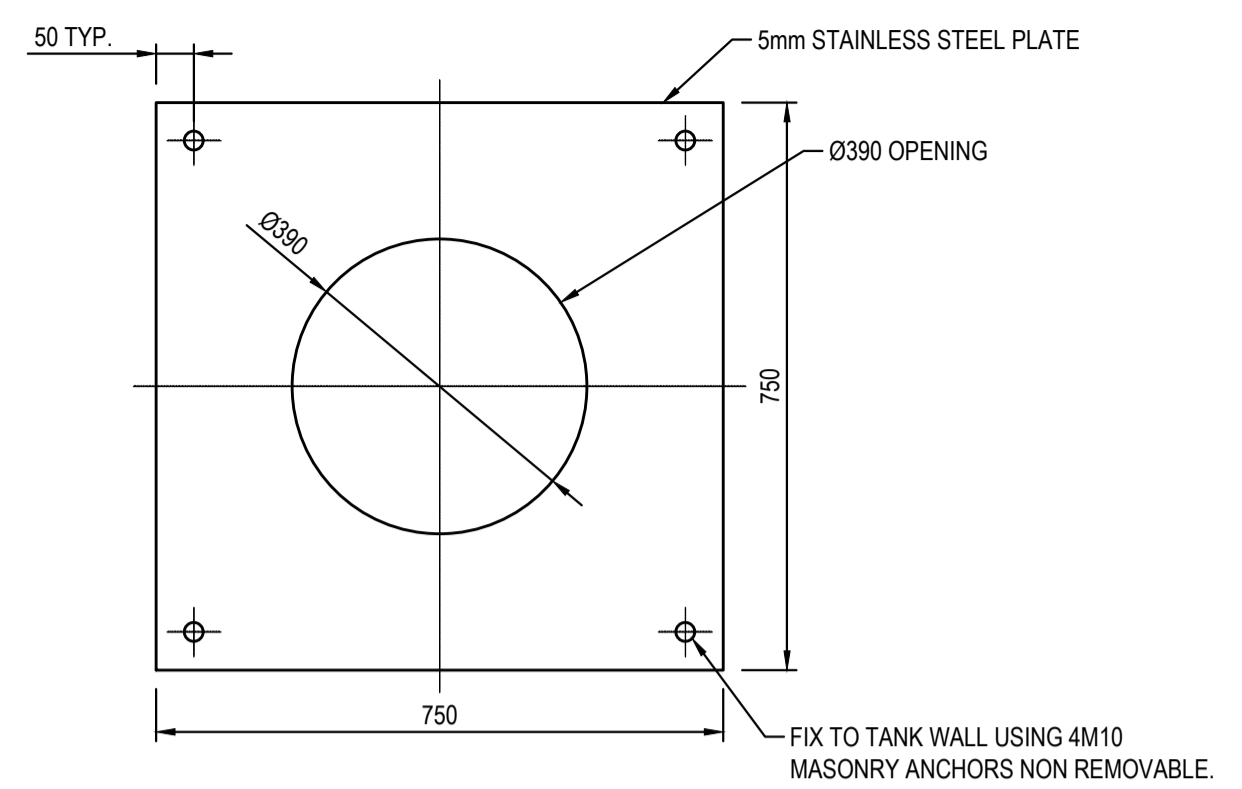
SURVEY INFORMATION				Client: HB&B PROPERTY PTY LTD				Suite 2 011 828 Pacific Highway Gordon NSW 2072				Telephone: +61 2 9417 8400 Facsimile: +61 2 9417 8337 Email: email@hphonsult.com.au Web: www.henryandhymas.com.au				Project: STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW				Drawn: E. Formadero Designed: S. Chen Checked: N. Heazlewood Approved: T. Rozehnal				Original issue date: Feb 2025 Scale: @A1 NTS			
SURVEYED BY: WATSDON BUCHAN				Architect: NETTLETONTRIBE				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR				Title: STORMWATER MISCELLANEOUS DETAILS & PIT SCHEDULE				Drawing number: 241745_DA_C200				Revision: 2			
DATUM: A.H.D.				2 ISSUED FOR DA ONLY				AFH NH 10.04.2025																			
ORIGIN OF LEVELS: SSM 22740 RL+1.10				1 ISSUED FOR DA ONLY				EF NH 10.03.2025																			
REVISION				AMENDMENT				DRAWN				DESIGNED				DATE											



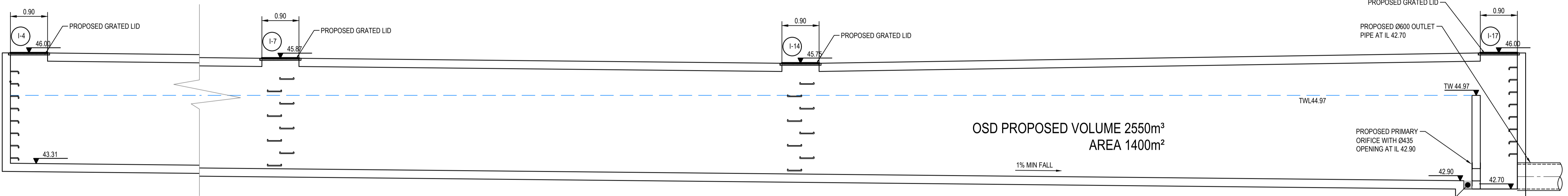
EASTERN OSD TANK PLAN
SCALE: 1:200



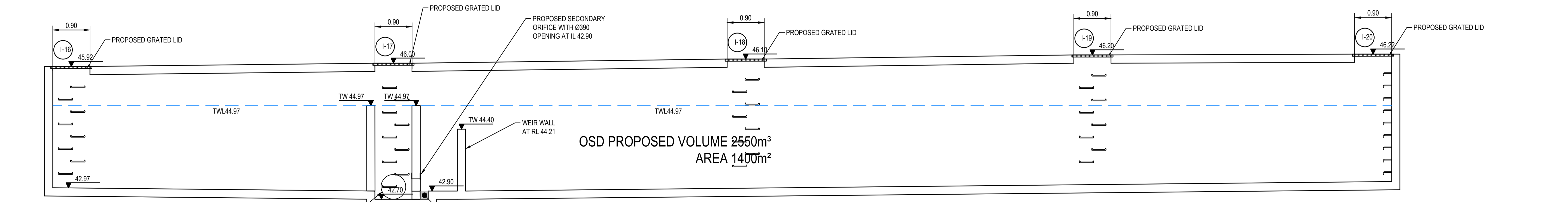
ORIFICE PLATE DETAIL
SCALE 1:10



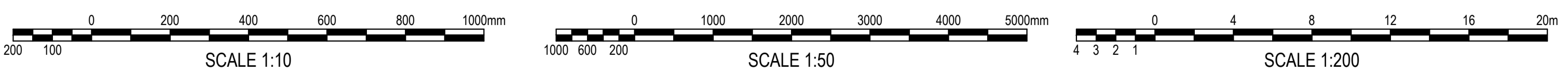
ORIFICE PLATE DETAIL
SCALE 1:10



SECTION A
SCALE: 1:50

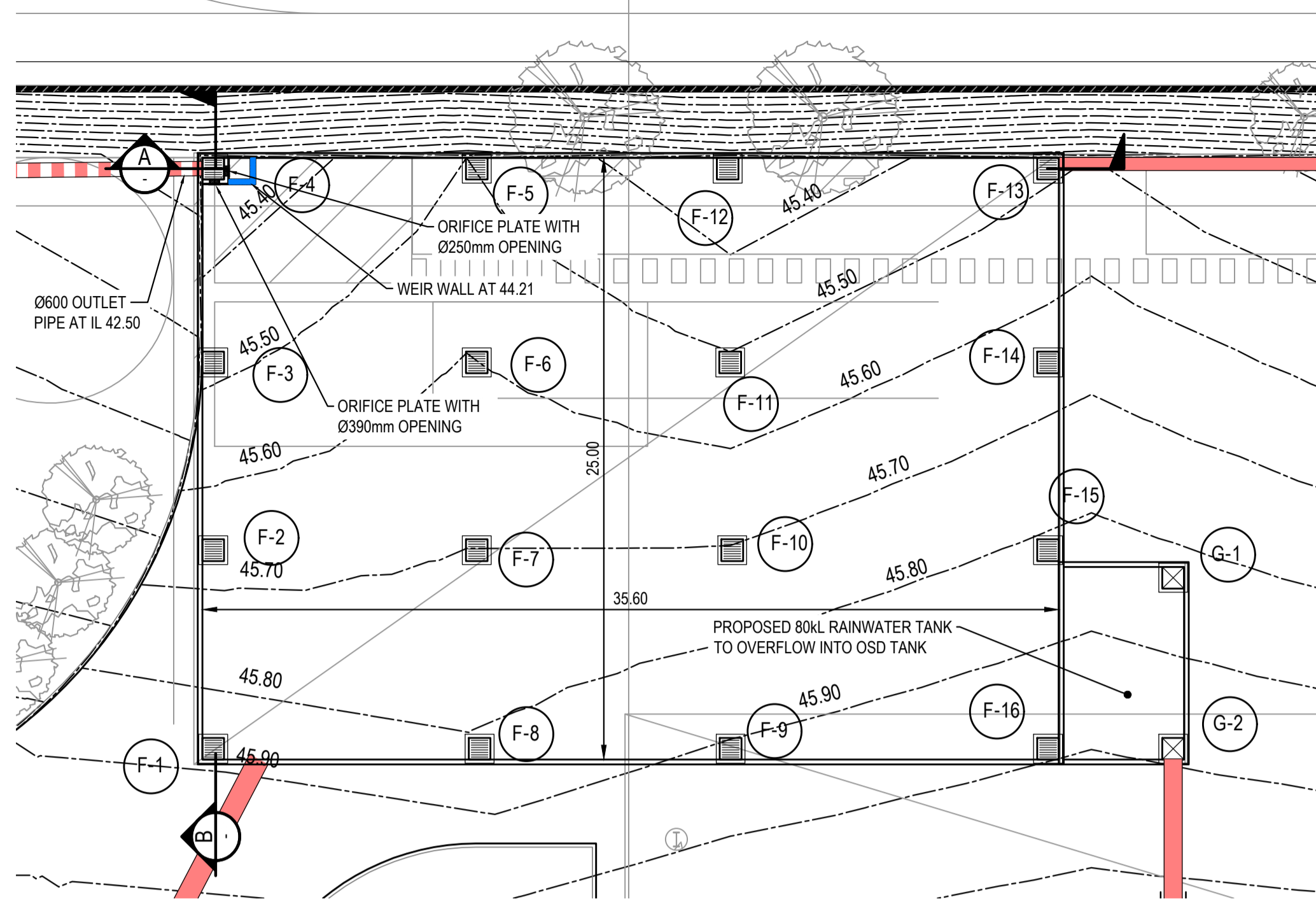
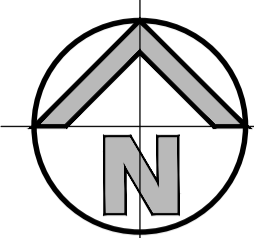


SECTION B
SCALE: 1:50



FOR DA ONLY

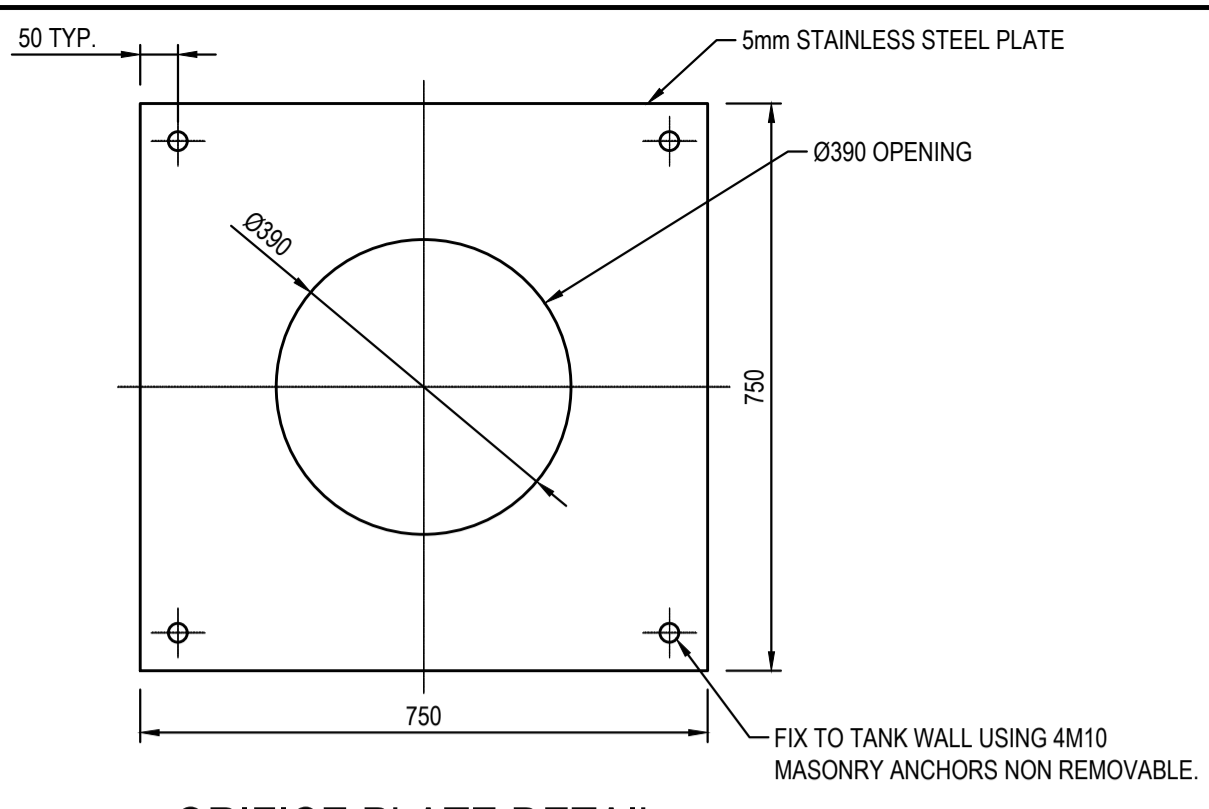
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1	ISSUED FOR DA ONLY	EF	NH	10.04.2025	This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.						
REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	AMENDMENT	DRAWN	DESIGNED	DATE	DRAWING TO BE PRINTED IN COLOUR 		



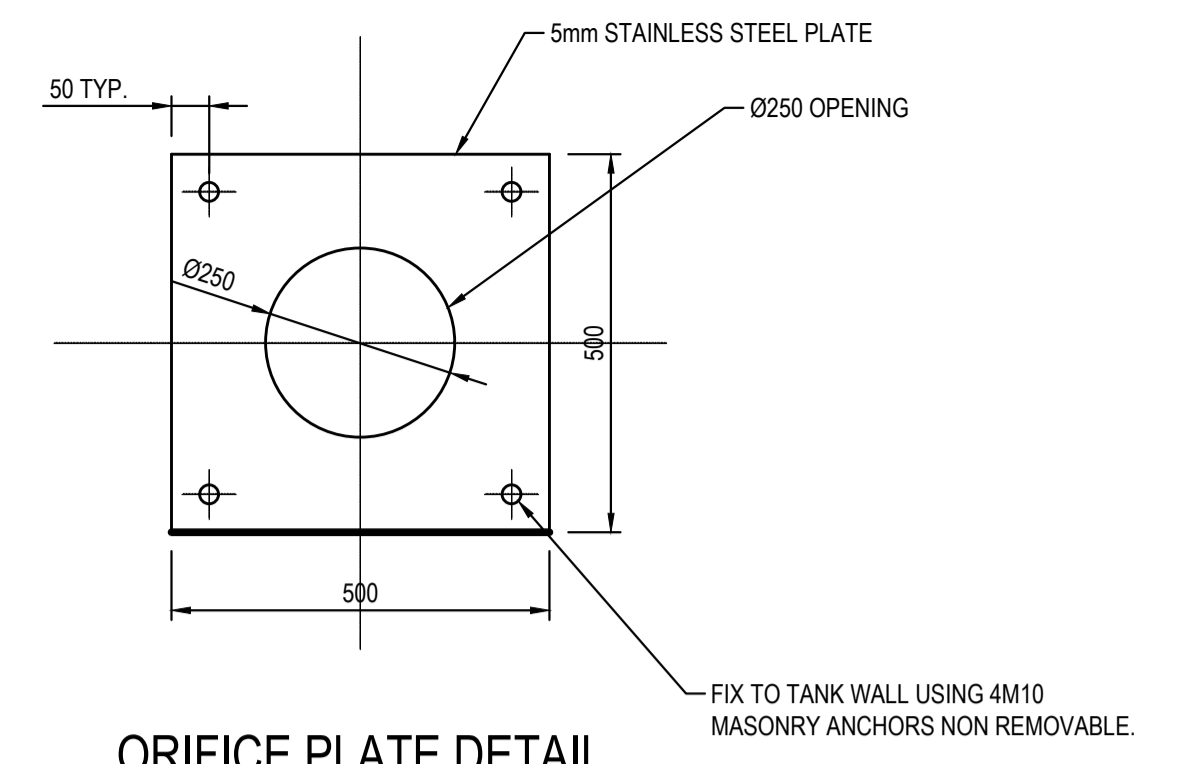
WESTERN OSD TANK PLAN
SCALE: 1:200



- A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANKS/ CONFINED SPACE AT ALL ACCESS POINTS OF THE TANK/ CONFINED SPACE.
- B) SIGN TO BE MINIMUM DIMENSIONS: 250mm x 180mm ENTRIES I.E. GRATES, MANHOLES
- C) SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED METAL OR POLYPROPYLENE
- D) SIGN SHALL BE AFFIXED TO A SURFACE WITH SCREWS AT EACH CORNER.



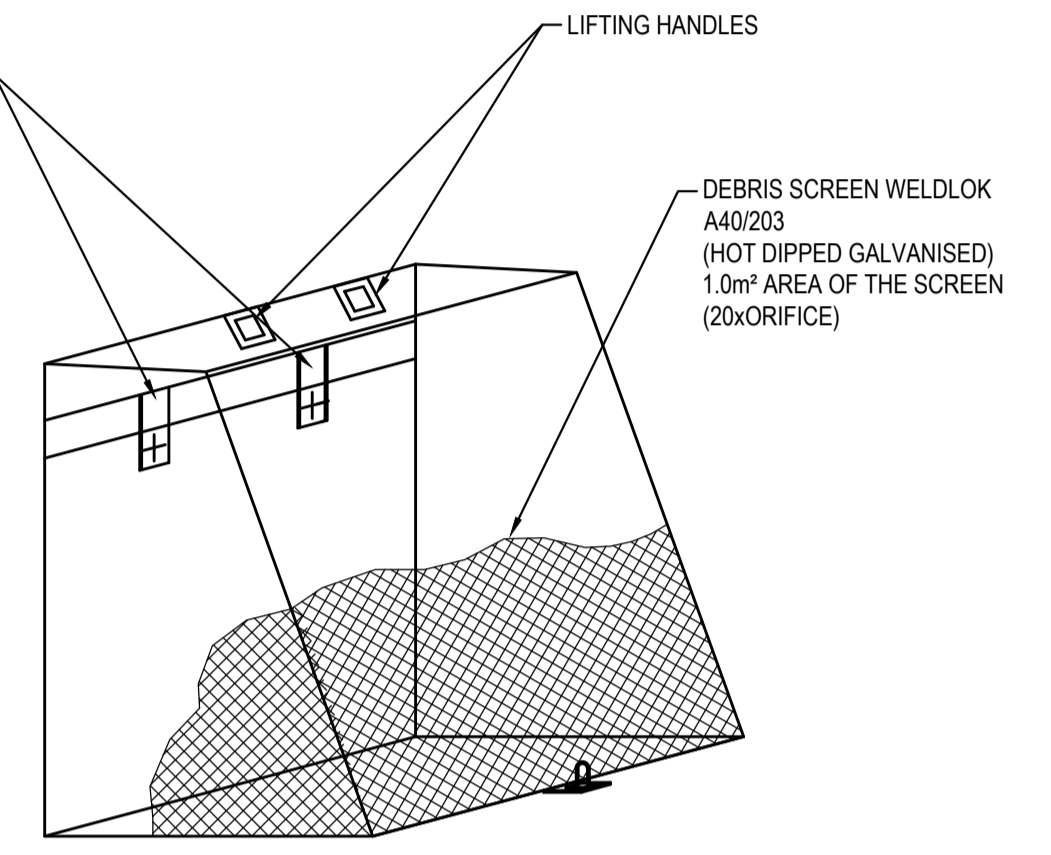
ORIFICE PLATE DETAIL
SCALE 1:10



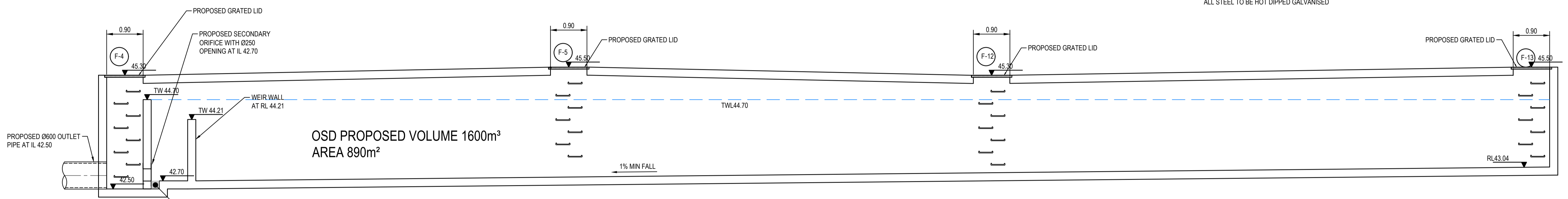
ORIFICE PLATE DETAIL
SCALE 1:10

100 x 16 MOUNTING BAR WITH BRACKETS, SCREEN TO BE ATTACHED (GENERALLY ON A SLIDING MECHANISM) TO THE WALL, BUT SHOULD BE REMOVABLE (WITHOUT THE USE OF TOOLS) TO PERMIT CLEANSING AND EASY INSPECTION OF THE OUTLET CONTROL. ALL STEEL TO BE HOT DIPPED GALVANISED.

SCREEN TYPE WELDLOK A40/203 IS RECOMMENDED FOR ORIFICES LARGER THAN 150mm AND SCREEN AREA 20 x THE ORIFICE AREA FOR THAT TYPE OF SCREEN - REFER UPRCT SECTION 4-13



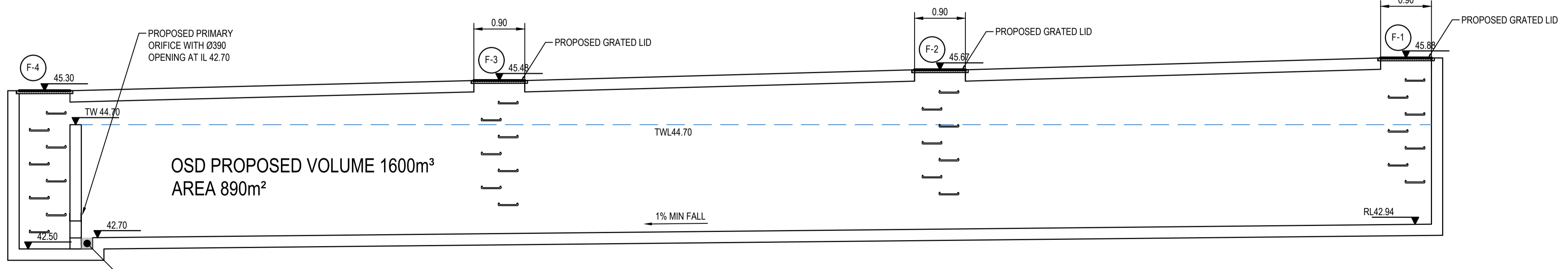
DEBRIS SCREEN DETAIL
NOT TO SCALE
ALL STEEL TO BE HOT DIPPED GALVANISED



SECTION A
SCALE: 1:50

PROPOSED DISCHARGE CHAMBER
GROUT FILL AFTER INSTALLATION OF ORIFICE PLATE

PROPOSED DISCHARGE CHAMBER
GROUT FILL AFTER INSTALLATION OF ORIFICE PLATE



SECTION B
SCALE: 1:50

FOR DA ONLY

SURVEY INFORMATION				Client: HB&B PROPERTY PTY LTD				Telephone: +61 2 9417 8400				Project: STORAGE AND DISTRIBUTION WAREHOUSE				Drawn: E. Formadero				Designed: S. Chen				Original Issue Date: Feb 2025			
SURVEYED BY: WATSDON BUCHAN				Architect: NETTLETONTRIBE				Facsimile: +61 2 9417 8337				LUDDENHAM ROAD, ORCHARD HILLS, NSW				Checked: N. Heazlewood				Approved: T. Rozehnal				Scale: @A1			
DATUM: A.H.D.				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				Email: email@hhoonsult.com.au				Title: WESTERN OSD TANK PLAN AND DETAILS				Drawing Number: 241745_DA_C202				Revision: 1							
ORIGIN OF LEVELS: SSM 22740 RL:41.10				DRAWING TO BE PRINTED IN COLOUR				Web: www.henryandhymas.com.au				henry&hymas															
1 ISSUED FOR DA ONLY				REVISION				AMENDMENT				DRAWN				DESIGNED				DATE							

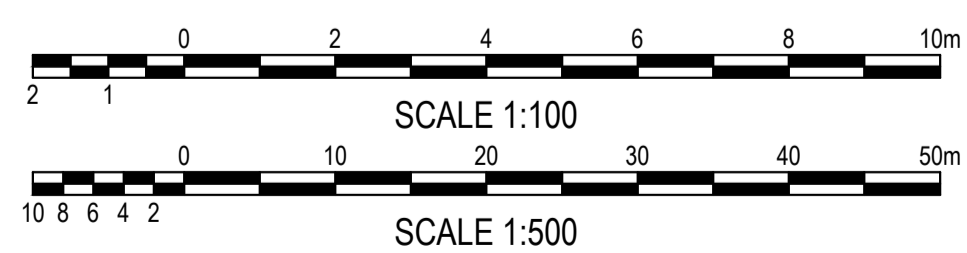
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Station	Flow (L/s)	Pipe Size (mm)	Slope (%)	Datum El. 38	HCL	Surface	Invert	Change
A14	64L/s	225mm	0.50%		46.148	45.9	44.650	0
A13	116L/s	300mm	0.50%		46.147	45.9	44.650	29.96
A12	144L/s	300mm	0.50%		46.149	45.9	44.650	69.98
A11	200L/s	375mm	0.40%		46.167	45.9	44.300	89.97
A10	962L/s	900mm	0.30%		46.195	45.9	44.220	119.97
A9	1015L/s	900mm	0.30%		46.214	45.9	44.090	149.99
A8	974L/s	900mm	0.30%		46.207	46.2	44.007	167.54
A7	1012L/s	900mm	0.30%		46.203	46.1	43.946	198.52
A6	1005L/s	900mm	0.30%		46.203	46.1	43.946	208.05
A5	1155L/s	900mm	0.30%		46.224	46.1	43.762	229.74
A4	1149L/s	900mm	0.30%		46.222	46.1	43.682	251.43
A3	1272L/s	900mm	0.30%		46.202	46.1	43.500	274.11
A2	1383L/s	900mm	0.30%		46.204	46.1	43.512	296.79
A1	1398L/s	900mm	0.30%		44.994	46.25	44.600	322.59
OSDE					44.999	46.300	43.321	348.93

LINE A
1:500(H) 1:100(V)

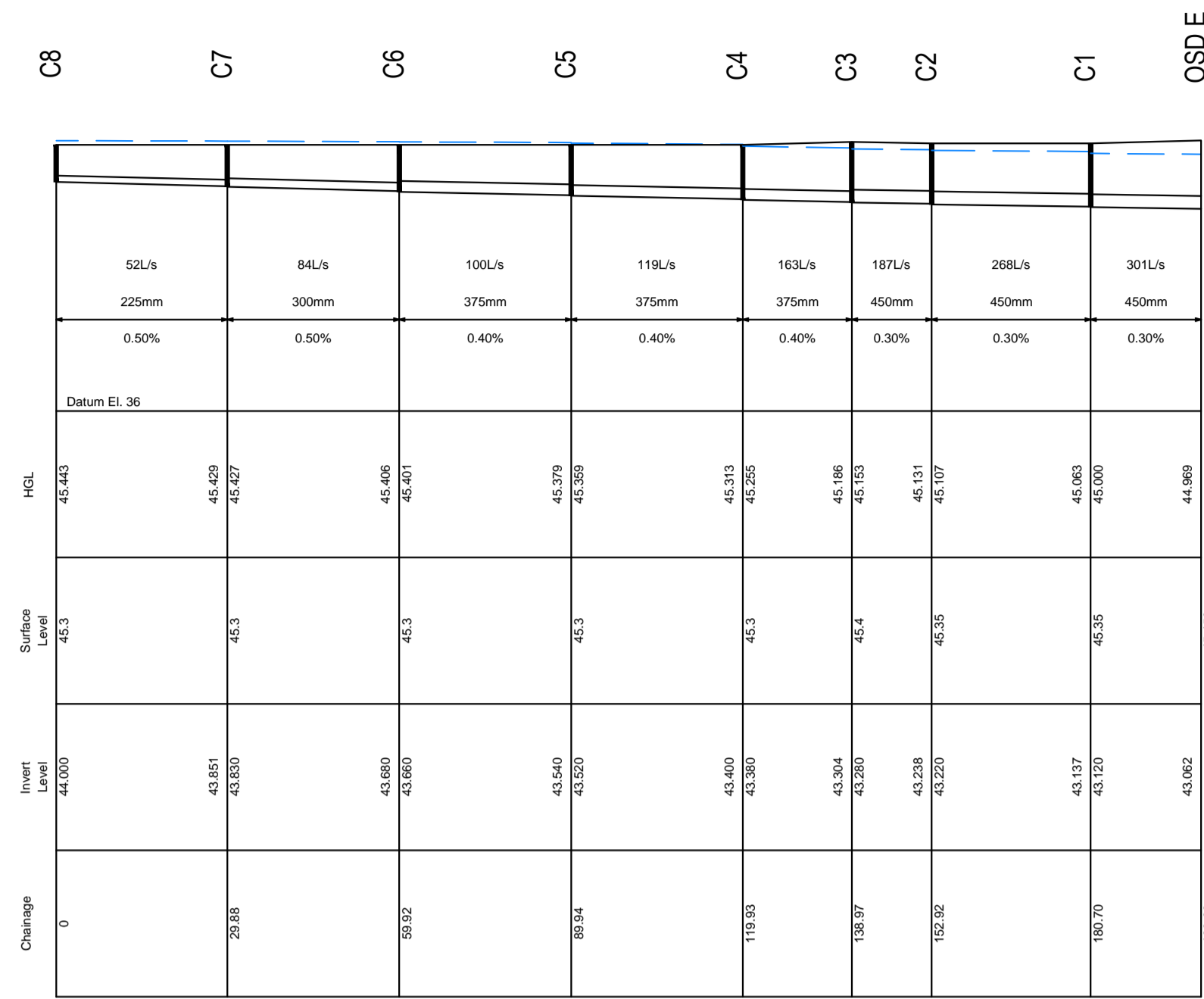
Station	Flow (L/s)	Pipe Size (mm)	Slope (%)	Datum El. 36	HCL	Surface	Invert	Change
B12	114L/s	300mm	0.50%		46.122	45.9	44.600	0
B11	188L/s	375mm	0.40%		46.120	45.9	44.650	30.04
B10	251L/s	450mm	0.40%		46.114	45.9	44.650	60.02
B9	324L/s	450mm	0.40%		46.105	45.9	44.370	90.02
B8	605L/s	600mm	0.30%		46.117	45.9	44.230	120.03
B7	594L/s	600mm	0.30%		46.279	45.9	44.100	150.02
B6	622L/s	750mm	0.30%		46.202	45.9	44.013	178.88
B5	681L/s	750mm	0.30%		46.218	45.9	43.822	208.93
B4	743L/s	750mm	0.30%		46.195	45.9	43.710	238.93
B3	775L/s	750mm	0.30%		46.205	45.9	43.605	268.92
B2	821L/s	750mm	0.30%		44.889	45.9	43.491	298.71
B1	882L/s	750mm	0.30%		44.795	45.9	43.376	328.50
OSDW					44.704	45.300	43.278	358.96

LINE B
1:500(H) 1:100(V)

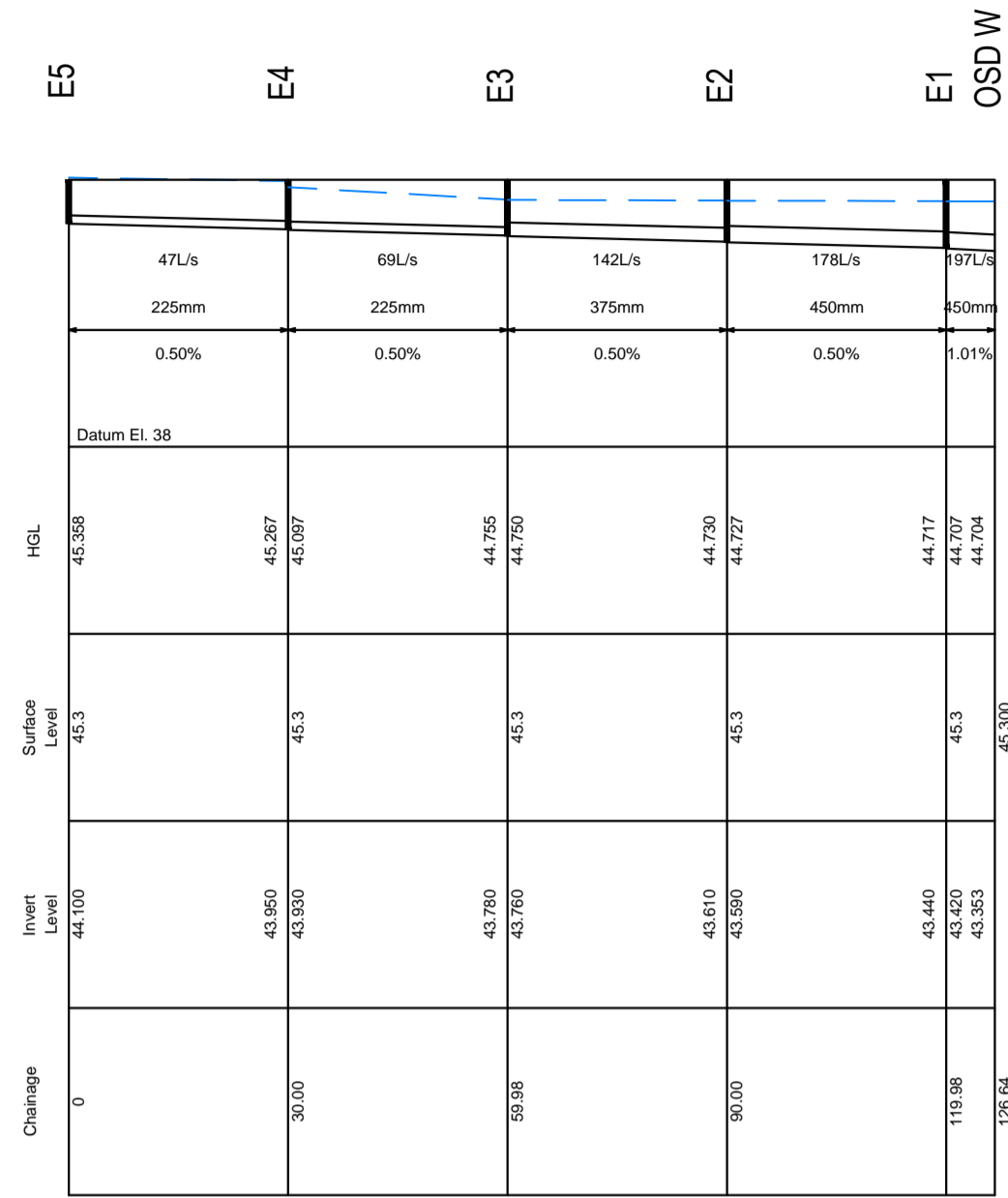


FOR DA ONLY

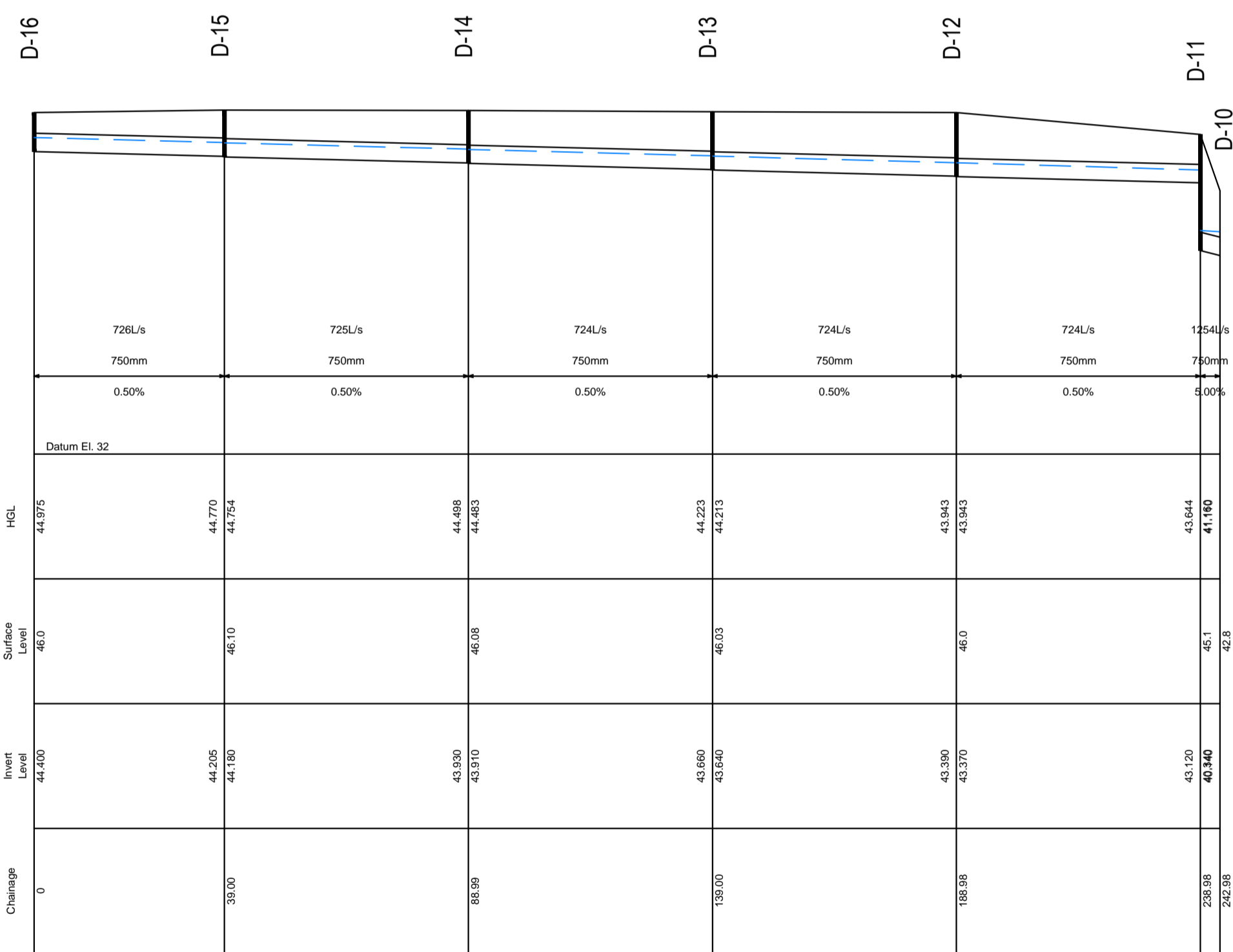
SURVEY INFORMATION				Client HB&B PROPERTY PTY LTD				Suite 2.01 828 Pacific Highway Gordon NSW 2072				Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hiconsult.com.au Web www.henryandhymas.com.au				Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW				Drawn E. Formadero		Designed S. Chen		Original issue date Feb 2025	
SURVEYED BY: WATSDON BUCHAN				Architect NETTLETONTRIBE												Checked N. Heazlewood		Approved T. Rozehnal		Scale @A1 NTS					
DATUM: A.H.D.				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR				Title STORMWATER LONGITUDINAL SECTIONS - SHEET 1 OF 2				Drawing number 241745_DA_C210		Revision 2							
ORIGIN OF LEVELS: SSM 22740 RL:41.10				REVISION				DRAWN				DESIGNED				DATE									



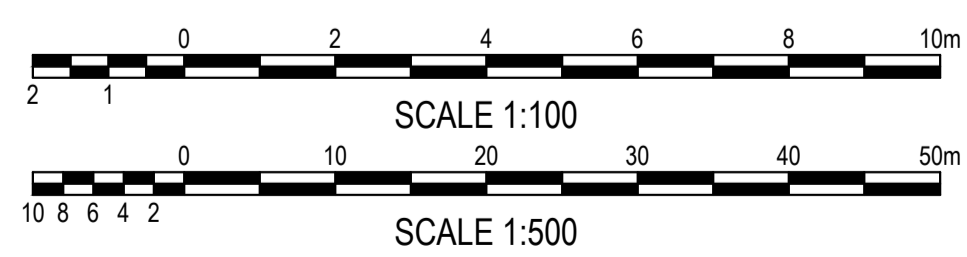
LINE C
1:500(H) 1:100(V)



LINE E
1:500(H) 1:100(V)



LINE D
1:500(H) 1:100(V)



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REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE					
2	ISSUED FOR DA ONLY	10.04.2025																							
1	ISSUED FOR DA ONLY	10.03.2025																							



DRAWING TO BE PRINTED IN COLOUR

WESTERN CATCHMENT TOTAL SITE =50,605m²

ROOF AREA TO WESTERN RWT
AREA = 18352m² (100% IMPERVIOUS)

ROOF AREA TO WESTERN OSD TANK
AREA = 9000m² (100% IMPERVIOUS)

EXTERNAL AREA TO WESTERN OSD TANK
AREA = 19166m² (100% IMPERVIOUS)

LANDSCAPING TO WESTERN OSD TANK
AREA = 539m² (0% IMPERVIOUS)

LANDSCAPING BYPASS
AREA = 3548m² (0% IMPERVIOUS)

TOTAL SITE =104, 959m²

EASTERN CATCHMENT TOTAL SITE =54,354m²

ROOF AREA TO EASTERN RWT
AREA = 15691m² (100% IMPERVIOUS)

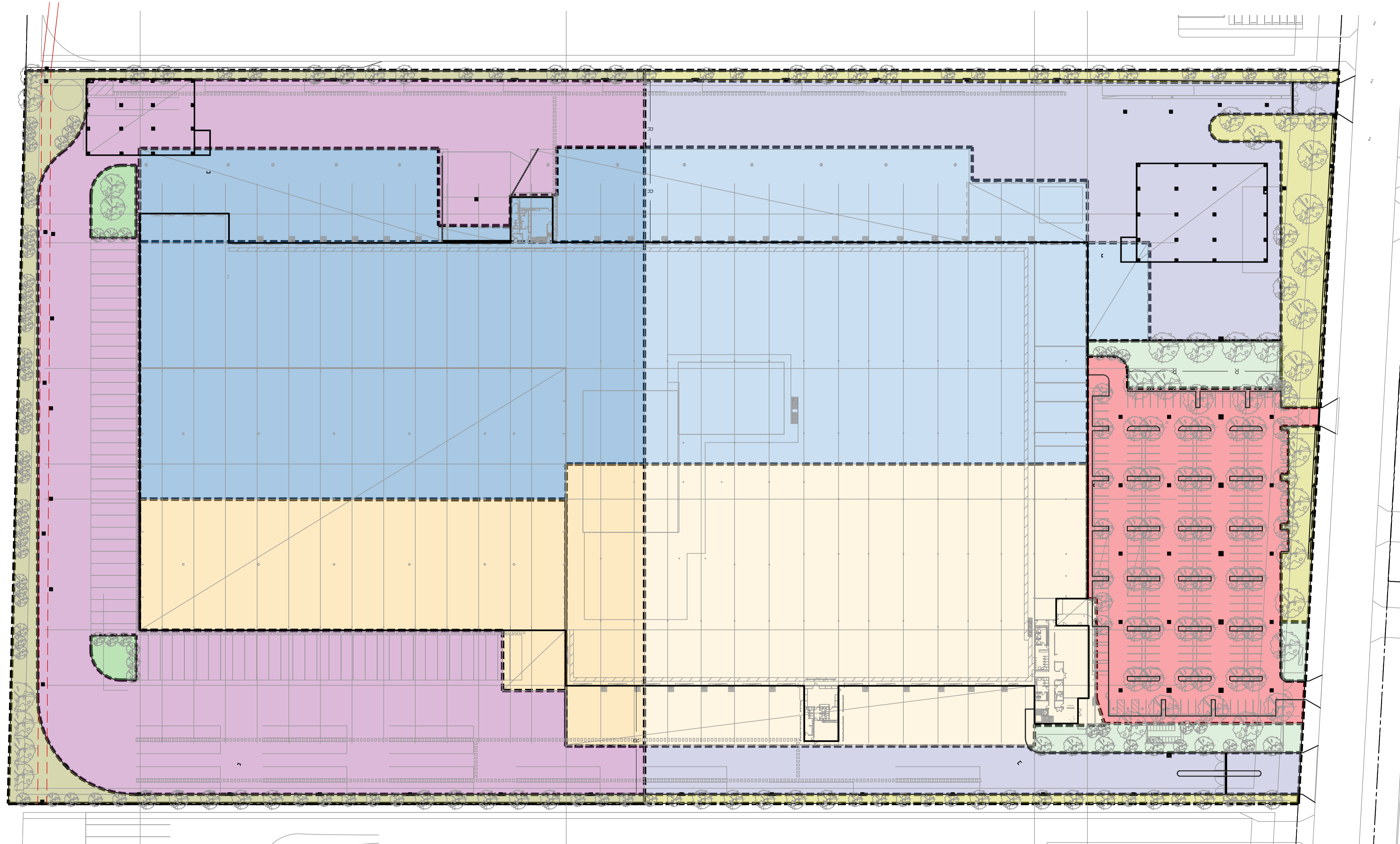
ROOF AREA TO EASTERN OSD TANK
AREA = 13755m² (100% IMPERVIOUS)

EXTERNAL AREA TO EASTERN OSD TANK
AREA = 11740m² (100% IMPERVIOUS)

LANDSCAPING TO EASTERN OSD TANK
AREA = 1884m² (0% IMPERVIOUS)

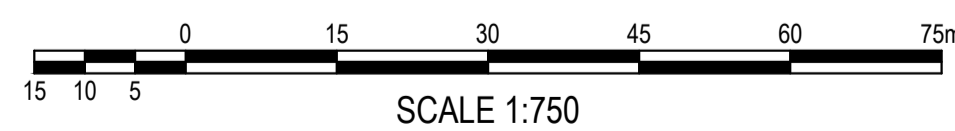
CARPARKING TO EASTERN OSD TANK
AREA = 7426m² (94% IMPERVIOUS)

LANDSCAPING BYPASS
AREA = 3860m² (0% IMPERVIOUS)


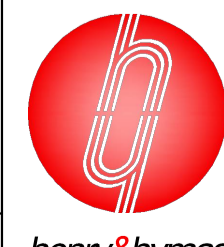


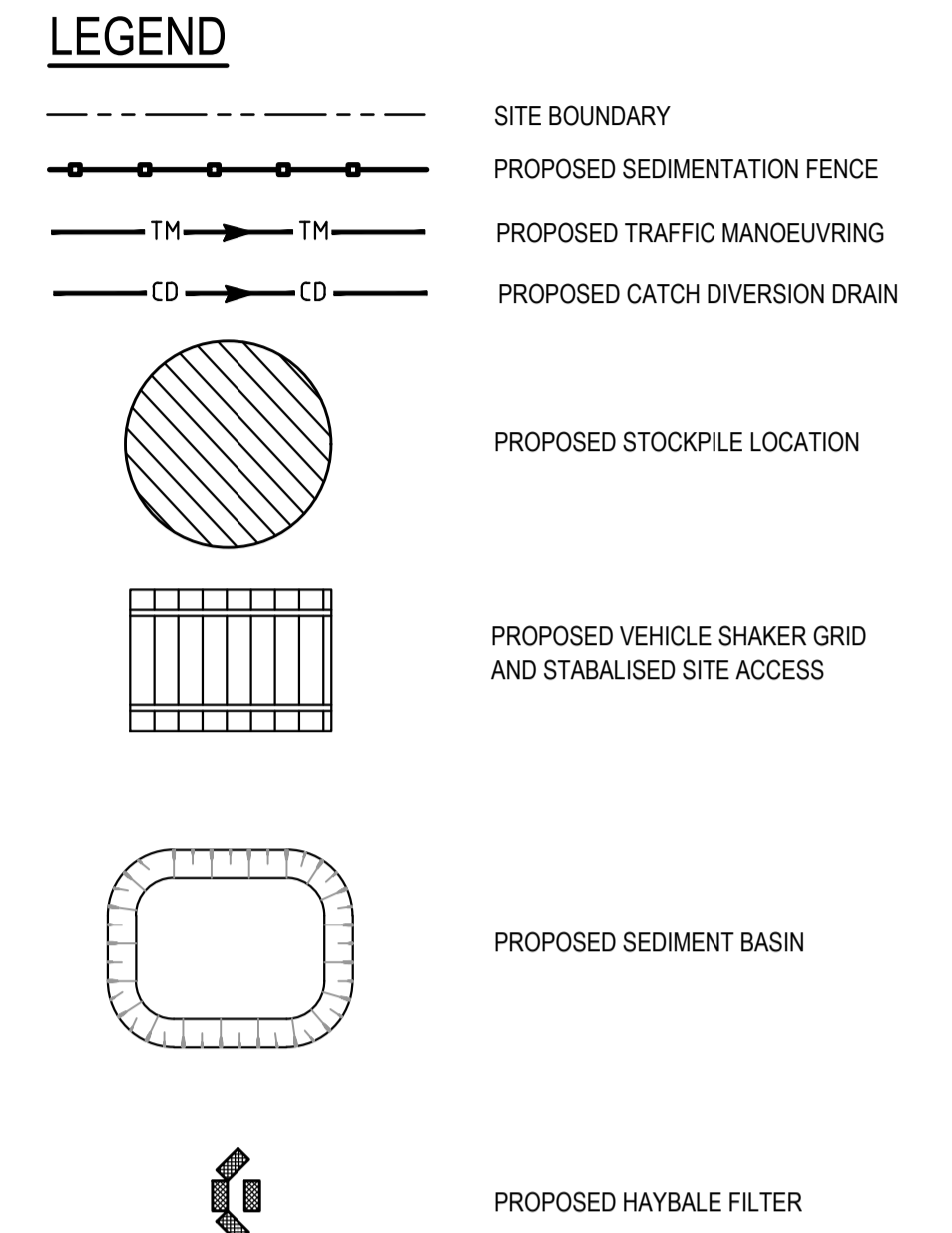
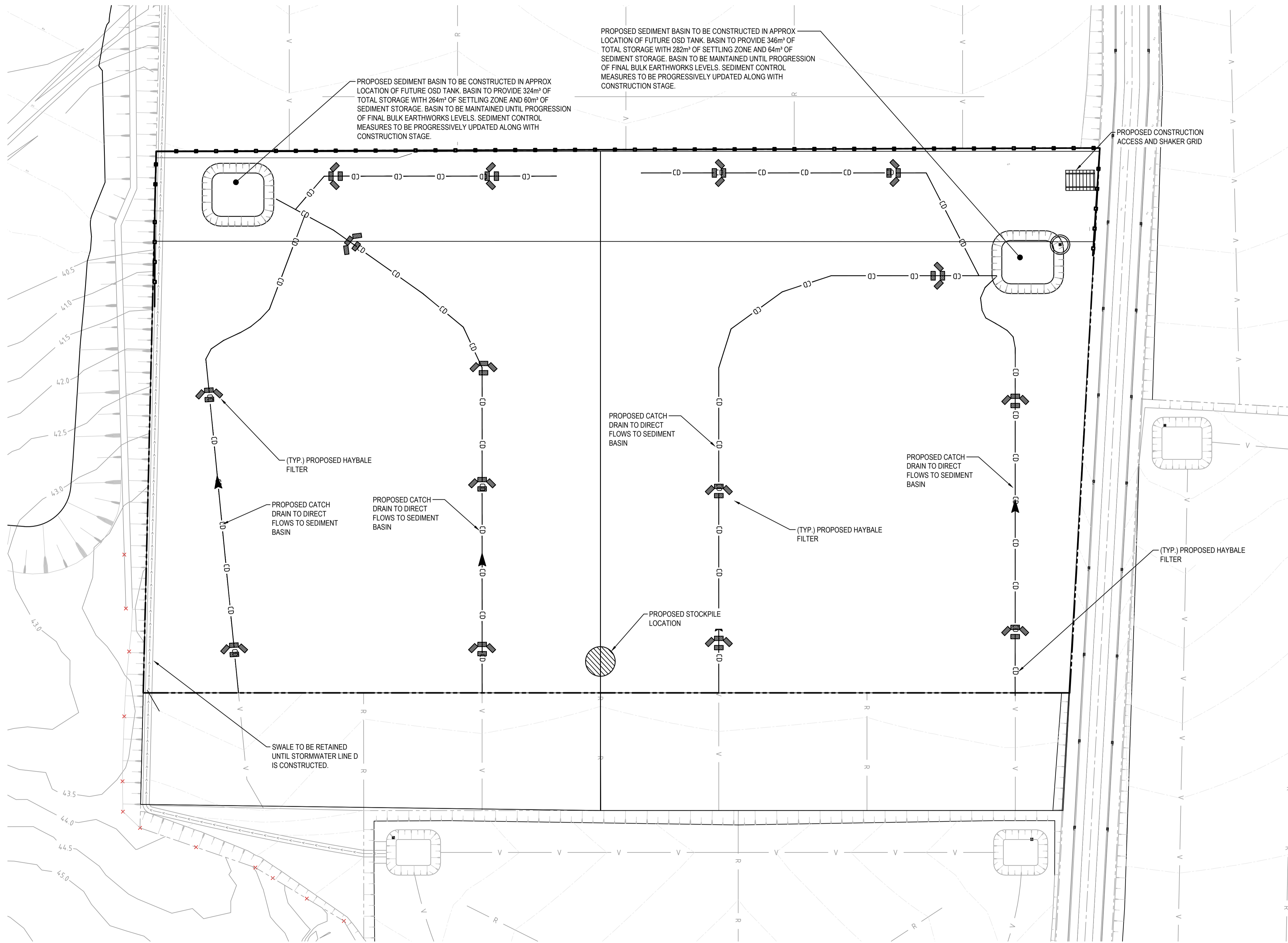
STORMWATER CATCHMENT PLAN

SCALE: 1:750



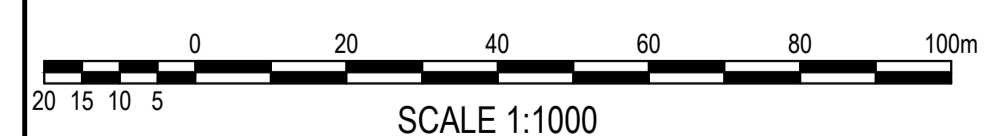
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SURVEY INFORMATION				Client HB&B PROPERTY PTY LTD				Suite 2.01 828 Pacific Highway Gordon NSW 2072				Tel/Facsimile +61 2 9417 8400 +61 2 9417 8337				Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW				Drawn E. Formadero				Designed S. Chen				Original issue date Feb 2025																					
SURVEYED BY: WATSDON BUCHAN				Architect NETTLETONTRIBE												Checked N. Heazlewood				Approved T. Rozehnal				Scale @A1 NTS																									
DATUM: A.H.D.				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR				Title STORMWATER CATCHMENT PLAN				Drawing number 241745_DA_C250				Revision 2																													
ORIGIN OF LEVELS: SSM 22740 RL:41.10				<table border="1"> <thead> <tr> <th>REVISION</th> <th>AMENDMENT</th> <th>DRAWN</th> <th>DESIGNED</th> <th>DATE</th> <th>REVISION</th> <th>AMENDMENT</th> <th>DRAWN</th> <th>DESIGNED</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>ISSUED FOR DA ONLY</td> <td>AFB</td> <td>NH</td> <td>10.04.2025</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td>ISSUED FOR DA ONLY</td> <td>EF</td> <td>NH</td> <td>10.03.2025</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	2	ISSUED FOR DA ONLY	AFB	NH	10.04.2025						1	ISSUED FOR DA ONLY	EF	NH	10.03.2025																	
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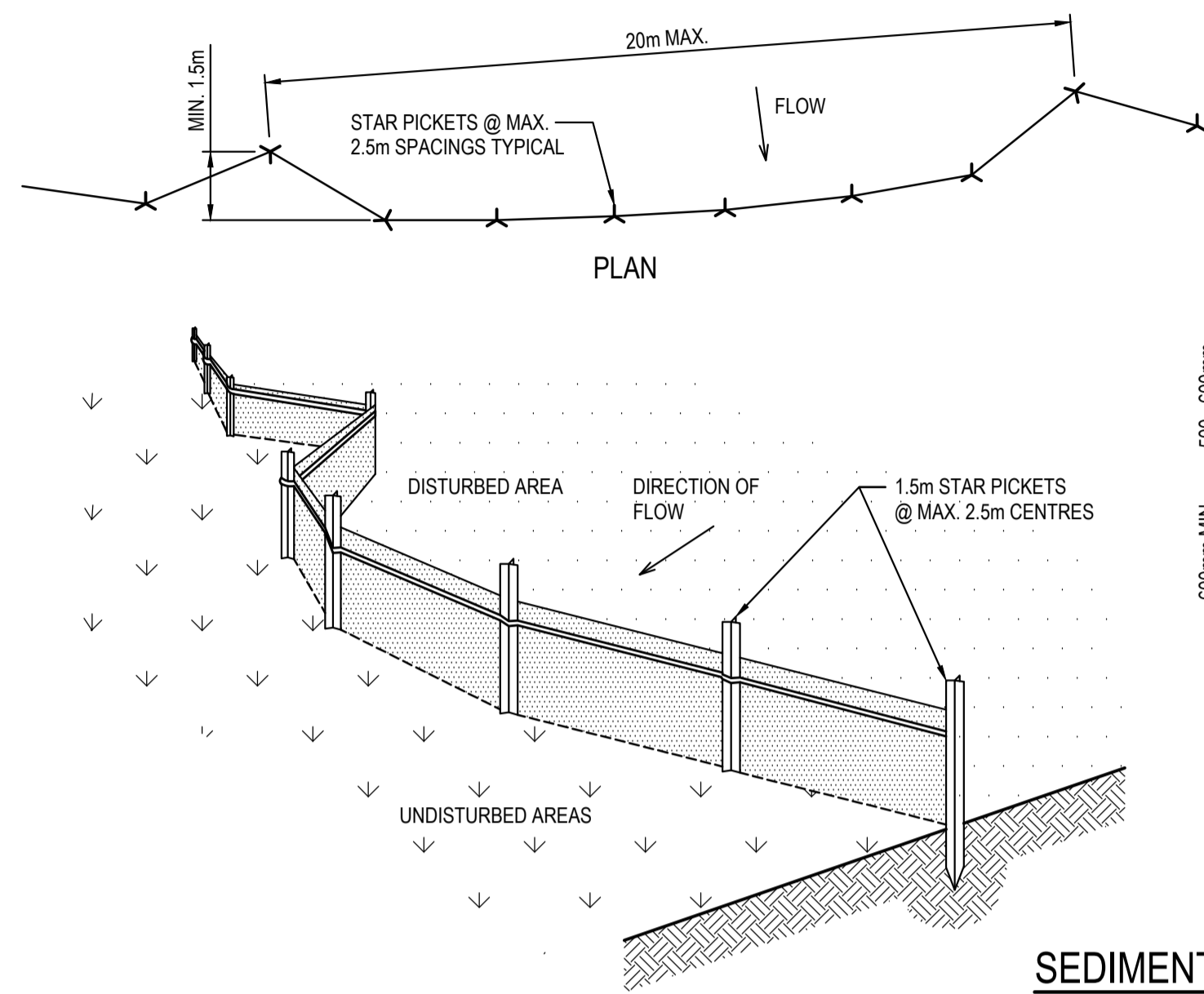
SEDIMENT & EROSION CONTROL NOTES

- ALL SEDIMENT CONTROL DEVICES ARE TO BE CONSTRUCTED, PLACED AND MAINTAINED IN ACCORDANCE WITH PENRITH CITY COUNCIL'S SPECIFICATIONS AND LANDCOM'S "SOIL AND CONSTRUCTION" MANUAL.
- ALL PERIMETER & SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO, OR AS THE FIRST STEP IN EARTH WORKS AND/OR CLEARING.
- THE SEDIMENT & EROSION CONTROL PLAN MAY REQUIRE FUTURE ADJUSTMENT TO REFLECT CONSTRUCTION STAGING. IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO PREPARE THEIR OWN SEDIMENT AND EROSION CONTROL PLAN WHICH SUITS THE DESIGNED CONSTRUCTION STAGING.
- FILTRATION BUFFER ZONES ARE TO BE FENCED OFF AND ACCESS PROHIBITED TO ALL PLANT AND MACHINERY.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS & SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED & MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE LOCATION.
- ALL TOPSOIL IS TO BE STOCKPILED ON SITE FOR REUSE (AWAY FROM TREES AND DRAINAGE LINES). MEASURES SHALL BE APPLIED TO PREVENT EROSION OF THE STOCKPILES.
- ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO SEAL THE EARTHWORKS.
- ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND STRAW MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION U.N.O. BY LANDSCAPE ARCHITECTS.
- UPON COMPLETION OF ALL EARTHWORKS OR AS DIRECTED BY COUNCIL SOIL CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.
- EROSION AND SILT PROTECTION MEASURES ARE TO BE MAINTAINED AT ALL TIMES.



FOR DA ONLY

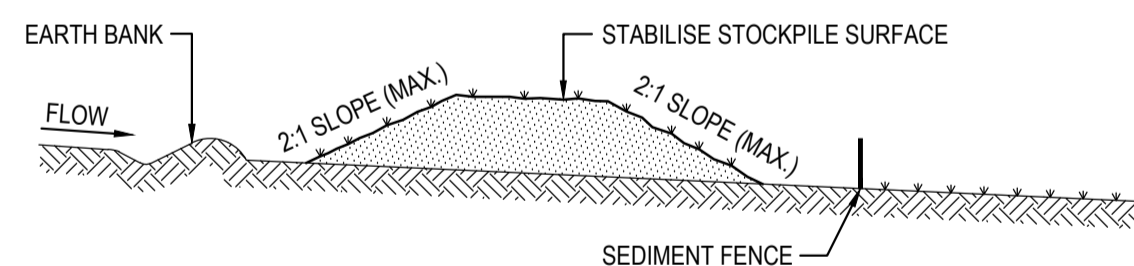
SURVEY INFORMATION		Client HB&B PROPERTY PTY LTD		Suite 2.01 828 Pacific Highway Gordon NSW 2072		Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@honsult.com.au Web www.henryandhymas.com.au		Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW		Drawn E. Formadero		Designed S. Chen		Original issue date Feb 2025	
SURVEYED BY: WATSDON BUCHAN		Architect NETTLETONTRIBE		Checked N. Heazlewood		Approved T. Rozehnal		Title SEDIMENT AND EROSION CONTROL PLAN		Drawing number 241745_DA_SE01		Scale @A1 NTS		Revision 2	
DATUM A.H.D.		This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.		DRAWING TO BE PRINTED IN COLOUR											
ORIGIN OF LEVELS: SSM 22740 RL+1.10															
REVISION	AMENDMENT	DRAWN	DESIGNED	DATE	REVISION	AMENDMENT	DRAWN	DESIGNED	DATE						
2	ISSUED FOR DA ONLY	Afe	NH	10.04.2025											
1	ISSUED FOR DA ONLY	EF	NH	10.03.2025											



SEDIMENT FENCE
SCALE N.T.S.

SEDIMENT FENCE CONSTRUCTION NOTES:

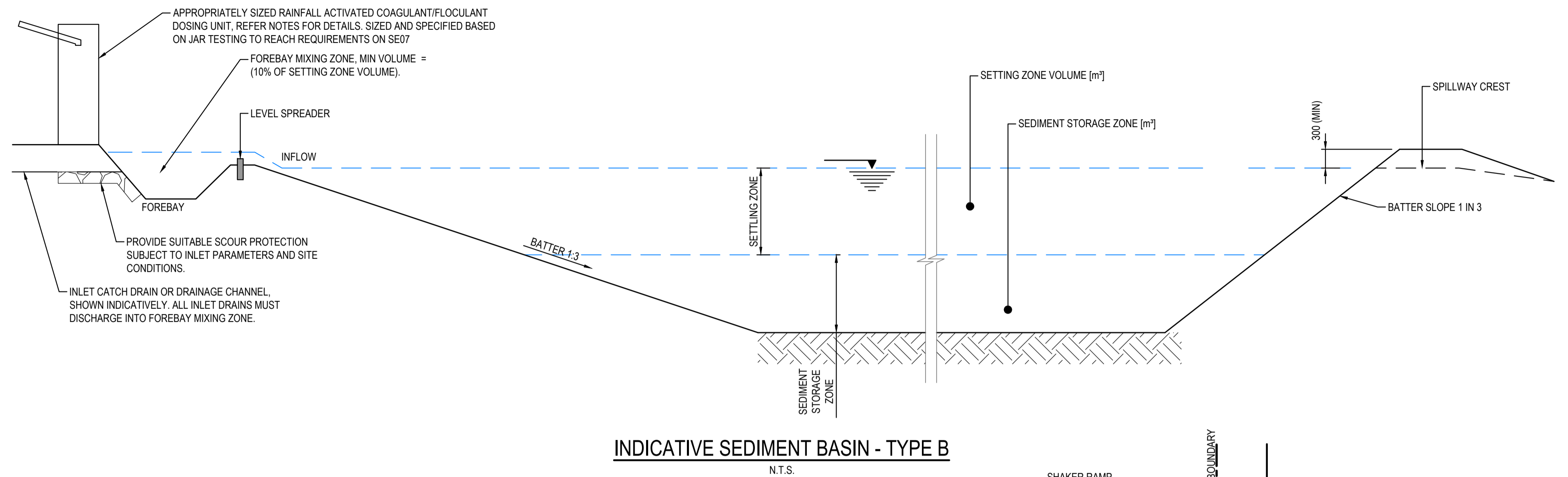
- CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND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



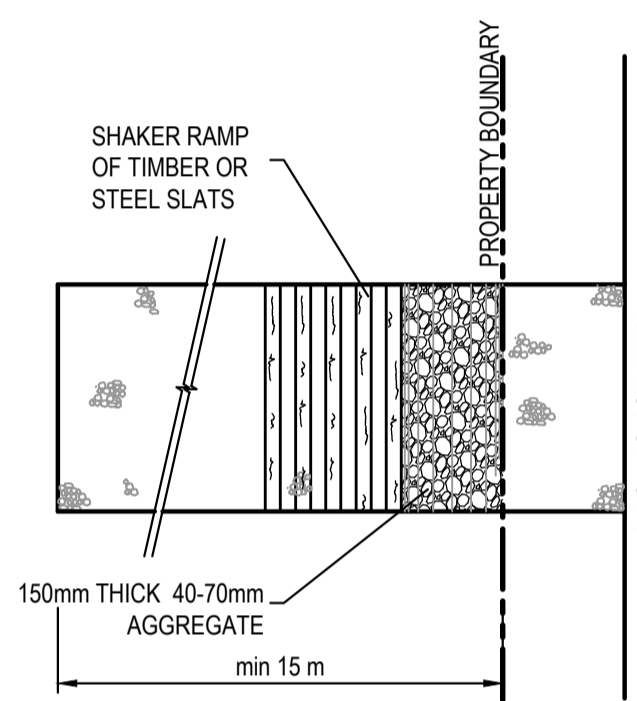
STOCKPILE CONSTRUCTION NOTES:

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

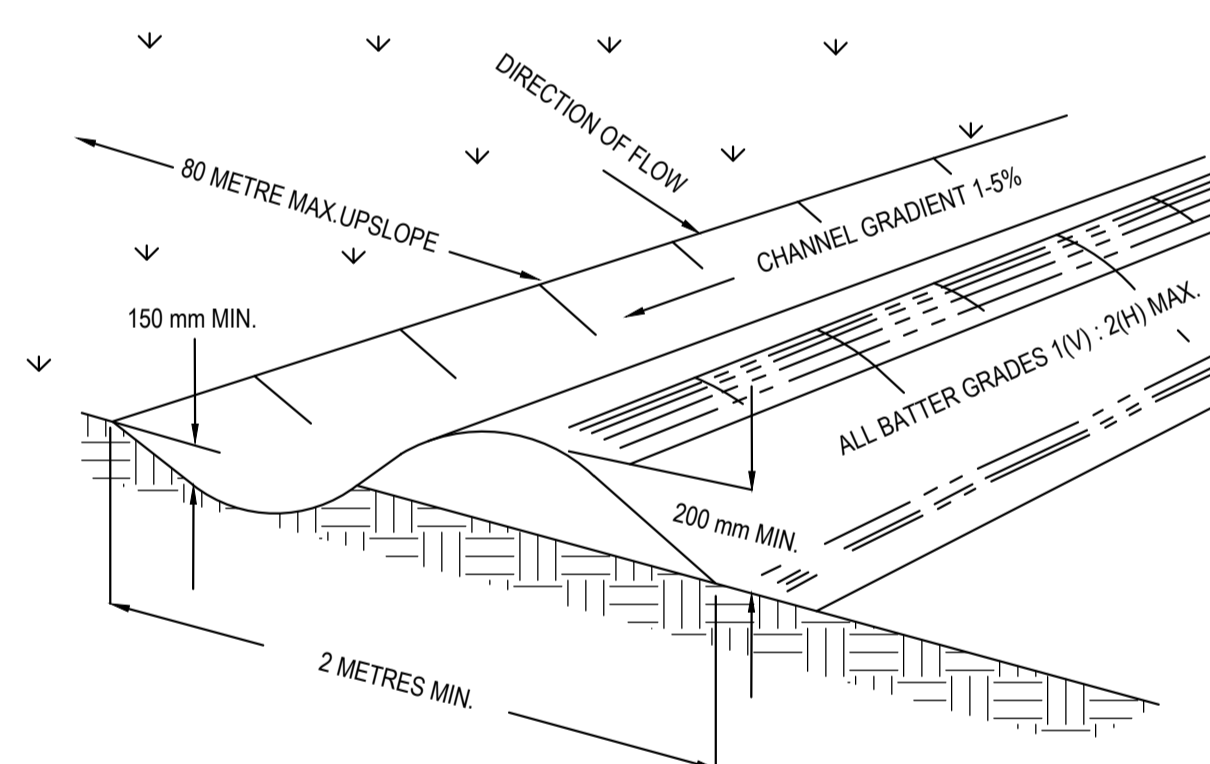
STOCKPILES
SCALE N.T.S.



INDICATIVE SEDIMENT BASIN - TYPE B
N.T.S.



STABILISED SITE ACCESS WITH SHAKER RAMP
N.T.S.



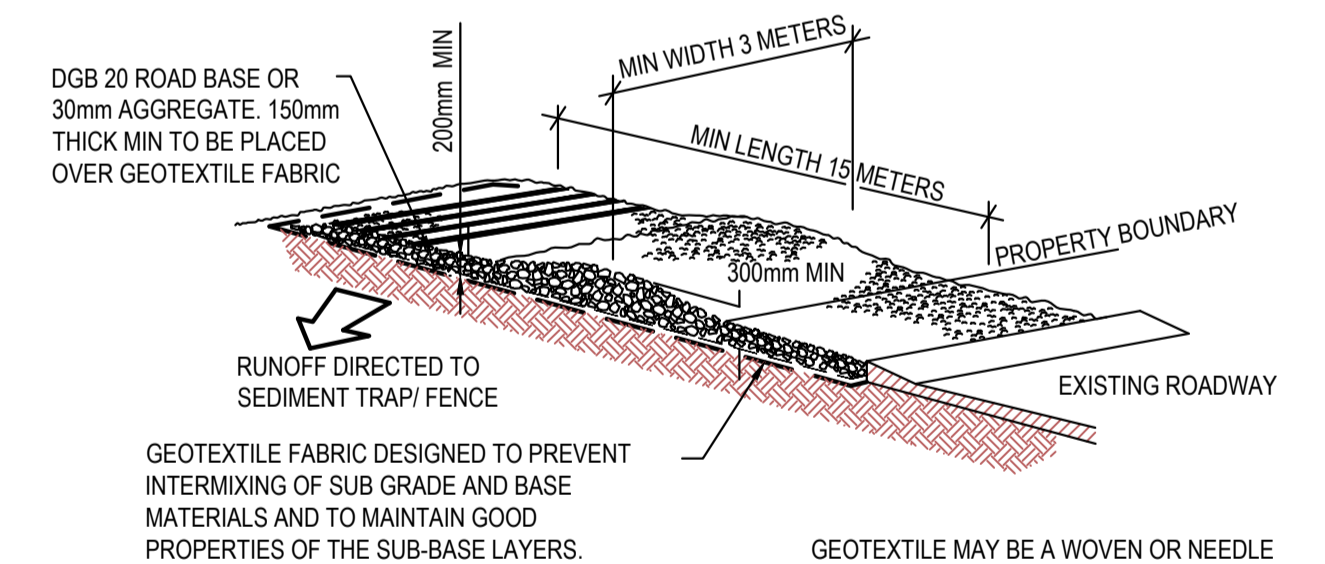
NOTE: ONLY TO BE USED AS TEMPORARY BANK WHERE MAX. UPSLOPE LENGTH IS 80 METERS.

CATCH DRAIN CONSTRUCTION NOTES:

- CONSTRUCT ALONG GRADIENT AS SPECIFIED.
- MAXIMUM SPACING BETWEEN BANKS SHALL BE 80 METRES.
- DRAINS TO BE OF PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
- EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
- CONSTRUCTION IS OF A TEMPORARY NATURE AND SHALL BE COMPACTED AT THE END A DAYS WORK OR IMMEDIATELY PRIOR RAIN.
- ALL OUTLETS FROM DISTURBED LANDS ARE TO FEED INTO SEDIMENT BASIN OR SIMILAR.
- DISCHARGE RUNOFF COLLECTED FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL AISTE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED.
- COMPACT WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
- EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

CATCH DRAINS SD 5-8
SCALE N.T.S.

CONSTRUCTION SITE



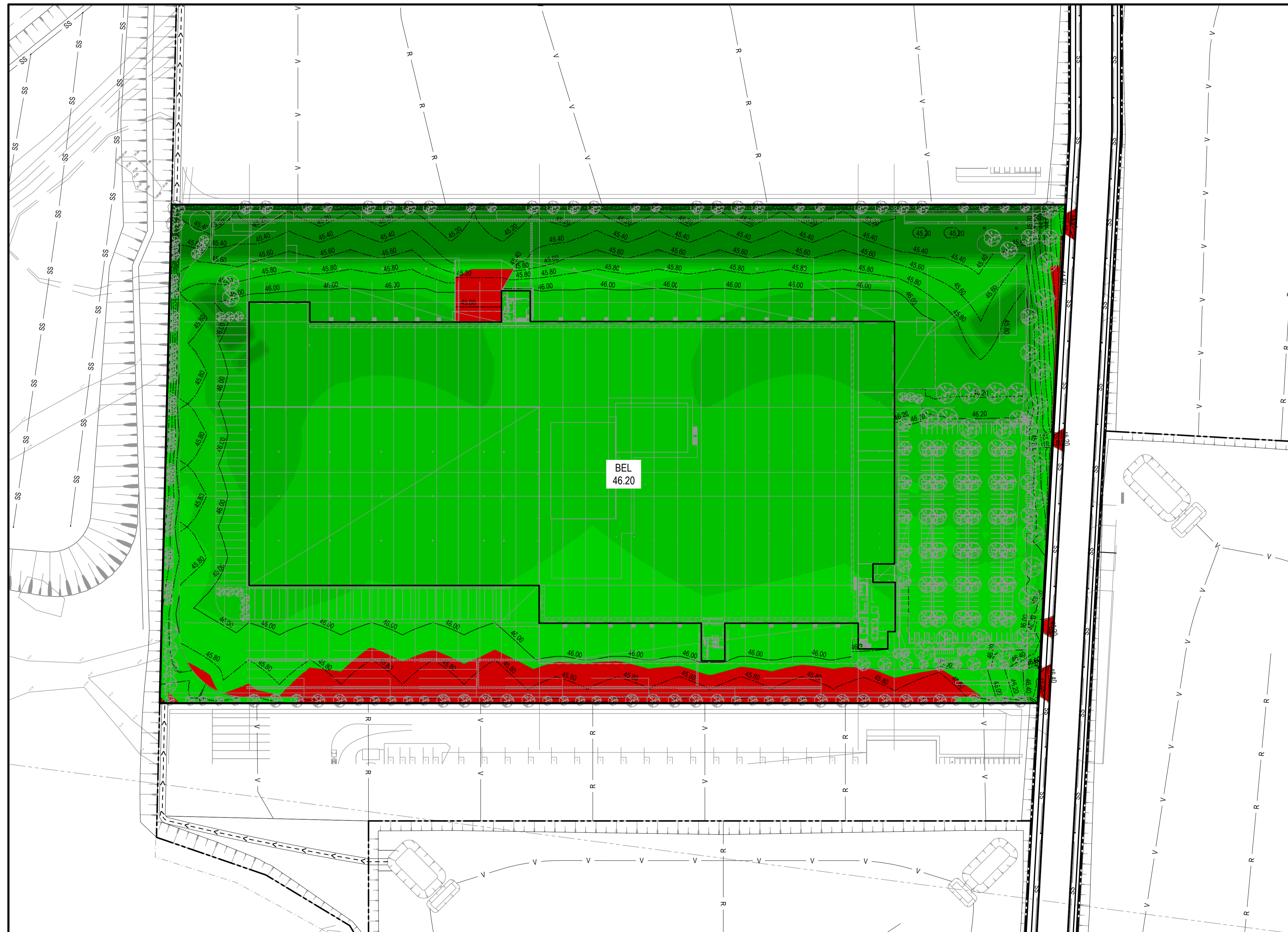
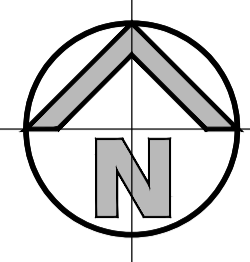
STABILISED SITE ACCESS WITH SHAKER RAMP
N.T.S.

NOTES:

- THIS DEVICE IS TO BE LOCATED AT ALL EXITS FROM CONSTRUCTION SITE.
- THIS DEVICE IS TO BE REGULARLY CLEANED OF DEPOSITED MATERIAL SO AS TO MAINTAIN A 50mm DEEP SPACE BETWEEN PLANKS.
- ANY UNSEALED ROAD BETWEEN THIS DEVICE AND NEAREST ROADWAY IS TO BE TOPPED WITH 100mm THICK 40-70mm SIZE AGGREGATE.
- ALTERNATIVELY, THREE(3) PRECAST CONCRETE CATTLE GRIDS (AS MANUFACTURED BY *HUMES CONCRETE MAY BE USED. 1, 2 & 3 ABOVE ALSO APPLY.

FOR DA ONLY

SURVEY INFORMATION				Client HB&B PROPERTY PTY LTD				Suite 2.01 828 Pacific Highway Gordon NSW 2072				Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hbsconsult.com.au Web www.henryandhymas.com.au				Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW				Drawn E. Formadero				Designed S. Chen				Original issue date Feb 2025			
SURVEYED BY: WATSDON BUCHAN				Architect NETTLETONTRIBE												Checked N. Heazlewood				Approved T. Rozehnal				Scale @A1 NTS							
DATUM A.H.D.				This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				DRAWING TO BE PRINTED IN COLOUR				Title SEDIMENT AND EROSION CONTROL DETAILS				Drawing number 241745_DA_SE02				Revision 2											
ORIGIN OF LEVELS: SSM 22740 RL+1.10				REVISION				AMENDMENT				DRAWN				DESIGNED				DATE											
2 ISSUED FOR DA ONLY				AFB NH 10.04.2025																											
1 ISSUED FOR DA ONLY				EF NH 10.03.2025																											



LEGEND

- EXISTING BOUNDARY
- 41.20 BE CONTOURS

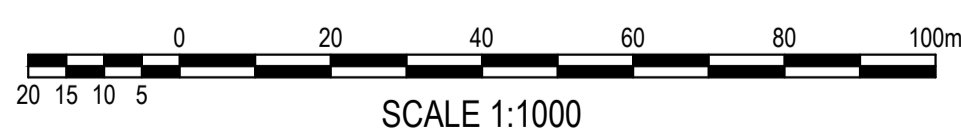
DEPTH RANGE				
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-6	to	-5	Meters	
-5	to	-4	Meters	
-4	to	-3	Meters	
-3	to	-2	Meters	
-2	to	-1	Meters	
-1	to	-1	Meters	
-1	to	-0.05	Meters	
-0.05	to	0	Meters	
0	to	.05	Meters	
.05	to	.1	Meters	
.1	to	.2	Meters	
.2	to	.4	Meters	
.4	to	.6	Meters	
.6	to	.8	Meters	
.8	to	1	Meters	
1	to	2	Meters	
2	to	4	Meters	
4	to	6	Meters	
6	to	10	Meters	
10	to	20	Meters	

EARTHWORKS QUANTITIES

(APPROXIMATE ONLY)
NOT TO BE USED FOR CONTRACTUAL PURPOSES. TENDERS TO DETERMINE VOLUMES USING THEIR OWN METHOD OF CALCULATION.

- EARTHWORKS QUANTITIES -	
TOTAL AREA (105,217 m²)	
CUT	4,488 m ³
FILL	66,768 m ³
EXCESS OF FILL OF OVER CUT	62,280m ³
EXCAVATION FOR SERVICE TRENCHES NOT INCLUDED IN CALCULATION	
EXCAVATION FOR RETAINING WALLS NOT INCLUDED IN CALCULATION	
EXCAVATION FOR OSD AND RW TANKS NOT INCLUDED IN CALCULATION	
NO TOPSOIL STRIPPING. BULK EARTHWORKS VOLUME CALCULATED AGAINST THE DESIGN BULK SURFACE FOR THE SUBDIVISION WORKS CC DESIGN.	

PAVEMENT THICKNESS "INCLUDING BEDDING THICKNESS"		
ALL AREAS	300	mm



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SURVEY INFORMATION SURVEYED BY: WATSDON BUCHAN DATUM: A.H.D. ORIGIN OF LEVELS: SSM 22740 RL:41.10				Client HB&B PROPERTY PTY LTD Architect NETTLETONTRIBE This drawing and design remains the property of Henry & Hymas and may not be copied in whole or in part without the prior written approval of Henry & Hymas.				Suite 2.01 828 Pacific Highway Gordon NSW 2072 Telephone +61 2 9417 8400 Facsimile +61 2 9417 8337 Email email@hhconsult.com.au Web www.henryandhymas.com.au				Project STORAGE AND DISTRIBUTION WAREHOUSE LUDDENHAM ROAD, ORCHARD HILLS, NSW Title BULK EARTHWORKS CUT FILL PLAN				Drawn E. Formadero Checked N. Heazlewood		Designed S. Chen Approved T. Rozehnal		Original issue date Feb 2025 Scale @A1 NTS	
REVISION 2 ISSUED FOR DA ONLY 1 ISSUED FOR DA ONLY		AMENDMENT AFe NH 10.04.2025 EF NH 10.03.2025		DRAWN DESIGNED DATE REVISION		AMENDMENT DRAWN DESIGNED DATE		Drawing number 241745_DA_BE01		Revision 2											

APPENDIX B – Arcadis Concept Utilities Plans

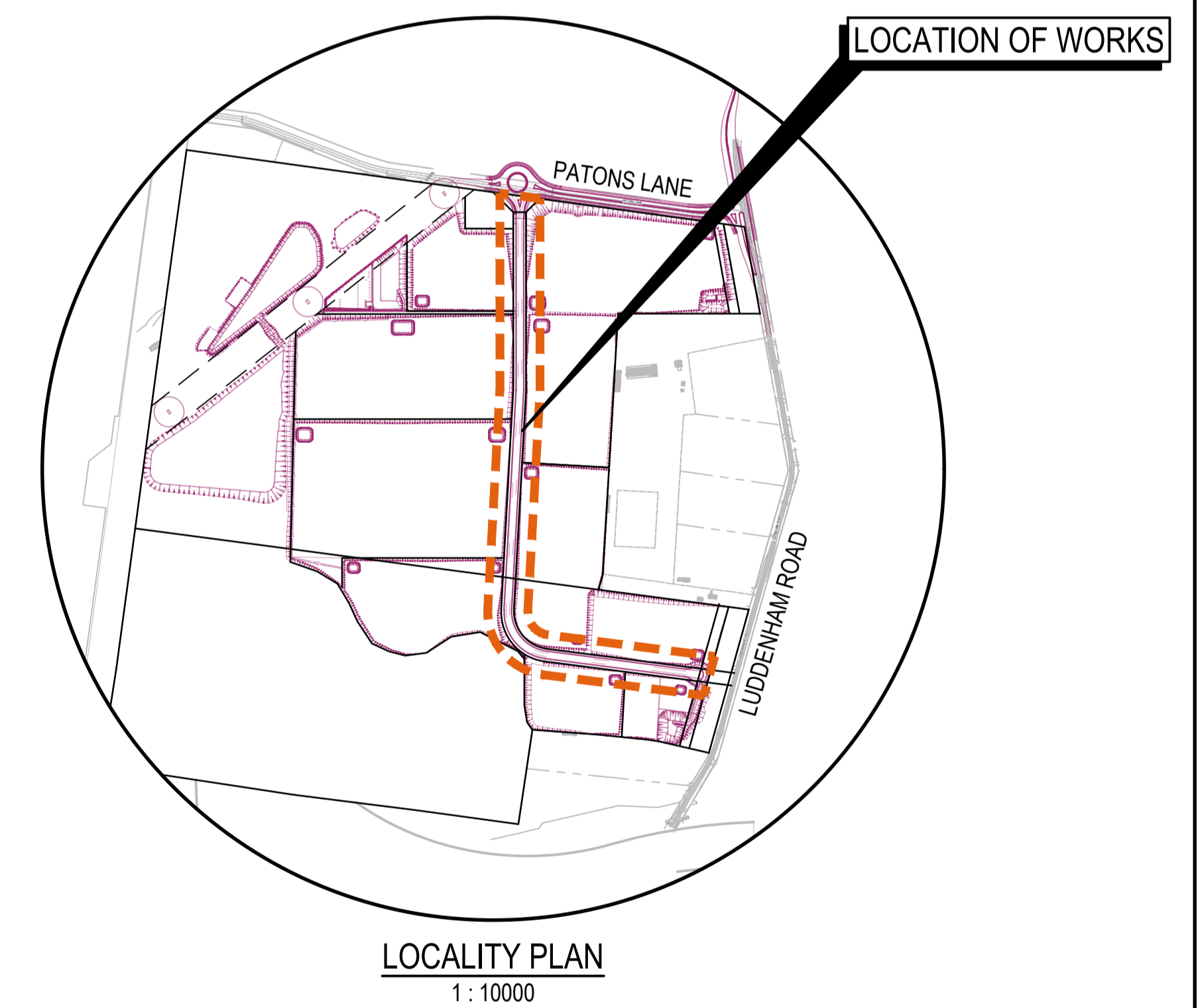
ALSPEC INDUSTRIAL BUSINESS PARK

CONCEPT UTILITY SERVICING PLANS

221 LUDDENHAM ROAD ORCHARD HILLS

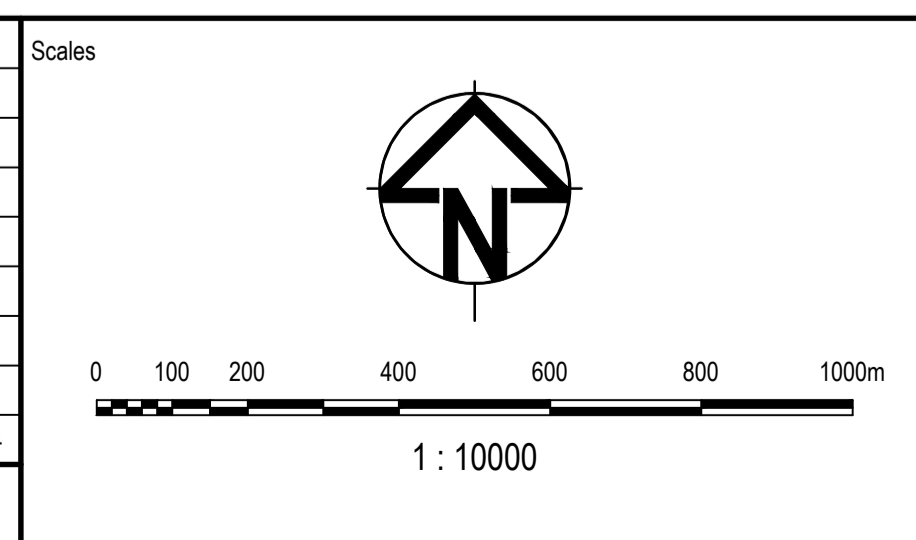
DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
GENERAL	
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IBP-AAP-DA-00-DRG-CI-0061	GENERAL ARRANGEMENT PLAN
UTILITIES	
IBP-AAP-DA-00-DRG-CI-0501	ELECTRICAL AND TELECOMMUNICATION RETICULATION PLAN SHEET 1
IBP-AAP-DA-00-DRG-CI-0502	ELECTRICAL AND TELECOMMUNICATION RETICULATION PLAN SHEET 2
IBP-AAP-DA-00-DRG-CI-0503	ELECTRICAL AND TELECOMMUNICATION RETICULATION PLAN SHEET 3
IBP-AAP-DA-00-DRG-CI-0521	SEWER RETICULATION PLAN SHEET 1
IBP-AAP-DA-00-DRG-CI-0522	SEWER RETICULATION PLAN SHEET 2
IBP-AAP-DA-00-DRG-CI-0523	SEWER RETICULATION PLAN SHEET 3
IBP-AAP-DA-00-DRG-CI-0621	POTABLE AND RECYCLED WATER RETICULATION PLAN SHEET 1
IBP-AAP-DA-00-DRG-CI-0622	POTABLE AND RECYCLED WATER RETICULATION PLAN SHEET 2
IBP-AAP-DA-00-DRG-CI-0623	POTABLE AND RECYCLED WATER RETICULATION PLAN SHEET 3



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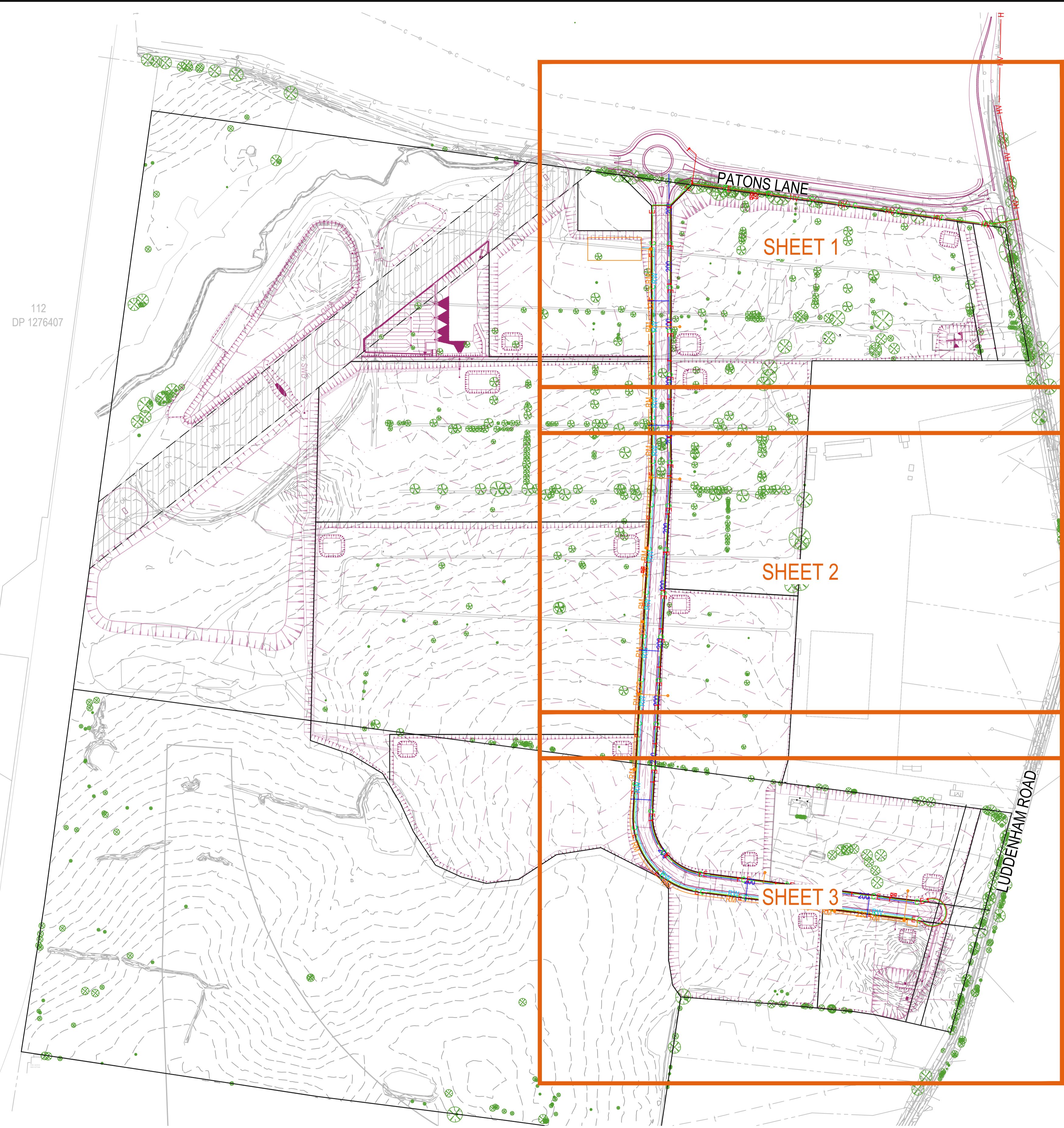
ALSPEC INDUSTRIAL BUSINESS PARK UTILITIES

Title

COVER SHEET AND DRAWING LIST

Arcadis Australia Pacific Pty Limited
 Level 16, 580 George Street
 SYDNEY NSW 2000
 ABN 76 104 485 289
 Tel No: +61 2 8907 9000
 www.arcadis.com/au

Project Number	30088823
Drawing No.	IBP-AAP-DA-00-DRG-CI-0001
Issue	01



LEGEND

	-5.0-	DESIGN SURFACE CONTOUR (BY OTHERS)
	-5.0-	EXISTING SURFACE CONTOUR
		DESIGN BY OTHERS
		PROPERTY BOUNDARY LINE
	225	PROPOSED DN225 SEWER RETICULATION AND MANHOLE STRUCTURE
	RM	PROPOSED SEWER RISING MAIN RETICULATION
	SWD	PROPOSED STORMWATER DRAINAGE RETICULATION (BY OTHERS)
	200	PROPOSED WATER RETICULATION
	RW	PROPOSED RECYCLED WATER RETICULATION
	C	PROPOSED COMMUNICATION RETICULATION
	E	PROPOSED INTERNAL ELECTRICAL RETICULATION
	HV	PROPOSED EXTERNAL ELECTRICAL RETICULATION
		PROPOSED ELECTRICAL LIGHT POST
	s	EXISTING SEWER RETICULATION
	swd	EXISTING STORMWATER DRAINAGE RETICULATION
	w	EXISTING WATER RETICULATION
	rw	EXISTING RECYCLED WATER RETICULATION
	e	EXISTING UNDERGROUND ELECTRICAL RETICULATION
	oh	EXISTING OVERHEAD ELECTRICAL RETICULATION (TRANSMISSION LINE)
	c	EXISTING COMMUNICATION RETICULATION
	t	EXISTING TELSTRA COMMUNICATION RETICULATION
		330kV TRANSGRID TRANSMISSION LINE
		EXISTING TREES
		SHEET LAYOUT

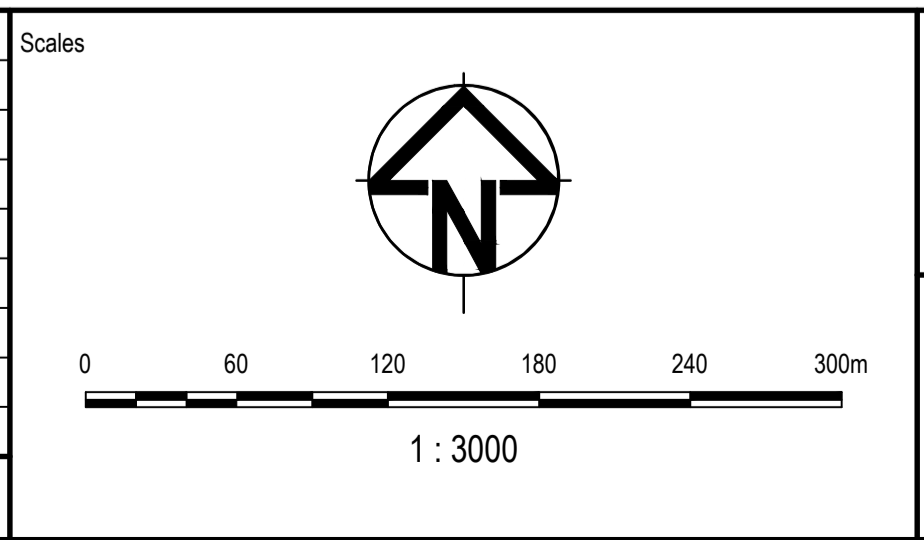
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IMPORTANT NOTE
CONTRACTOR MUST PROVE AND VERIFY EXISTING UNDERGROUND SERVICES LOCATIONS PRIOR COMMENCEMENT OF CIVIL WORKS

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Issue	Description	DR	CH	VE	Date



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Designed	C.RHEAULT
Project Manager	S.HAYCOCK
Verified	

Original Size	A1
Height Datum	AHD
Grid	

Project

ALSPEC INDUSTRIAL BUSINESS PARK
CONCEPT UTILITY SERVICING PLANS

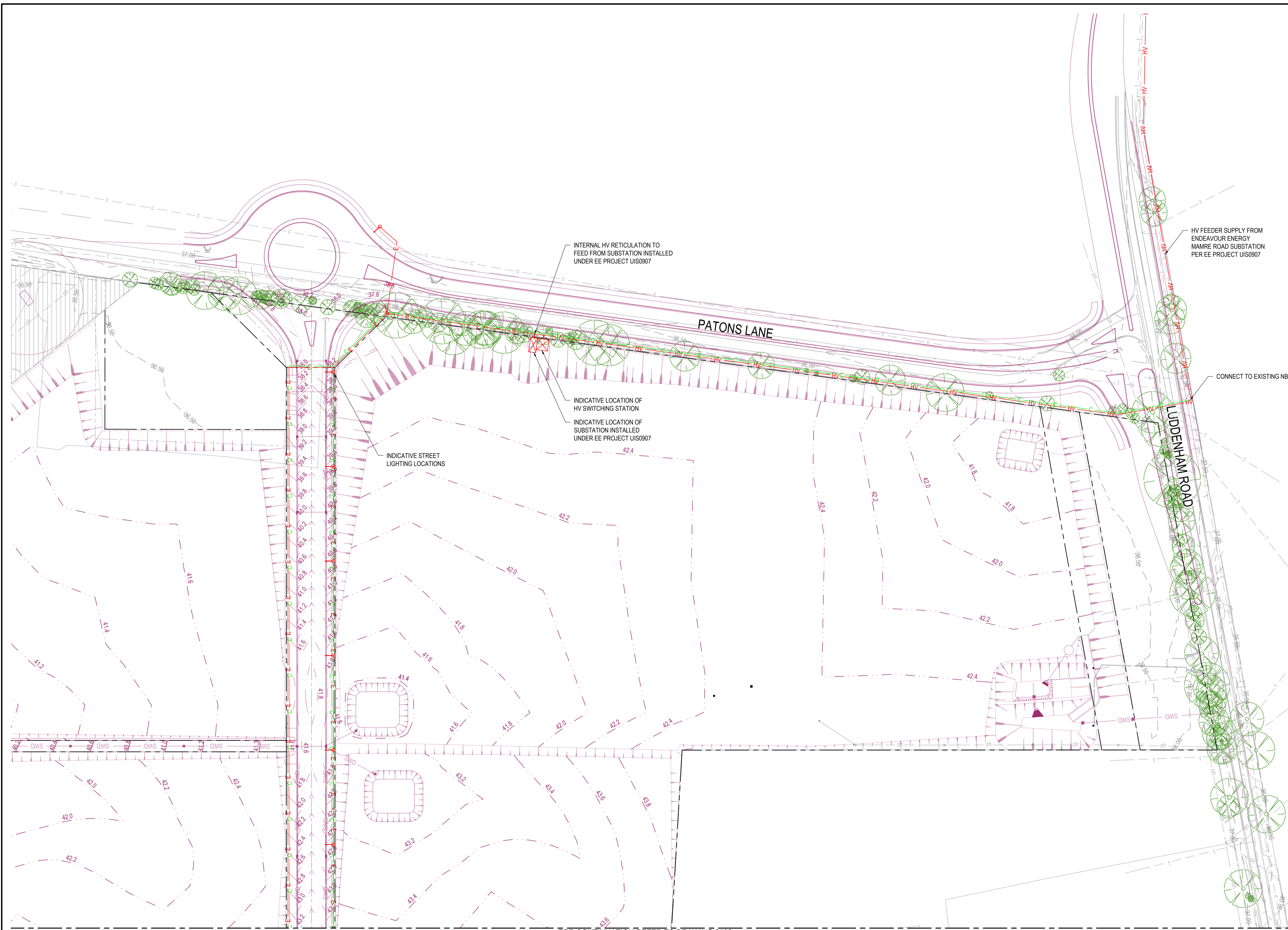
Title

GENERAL ARRANGEMENT PLAN

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Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel No: +61 2 8907 9000
www.arcadis.com/au

Project Number	30088823
Issue	01

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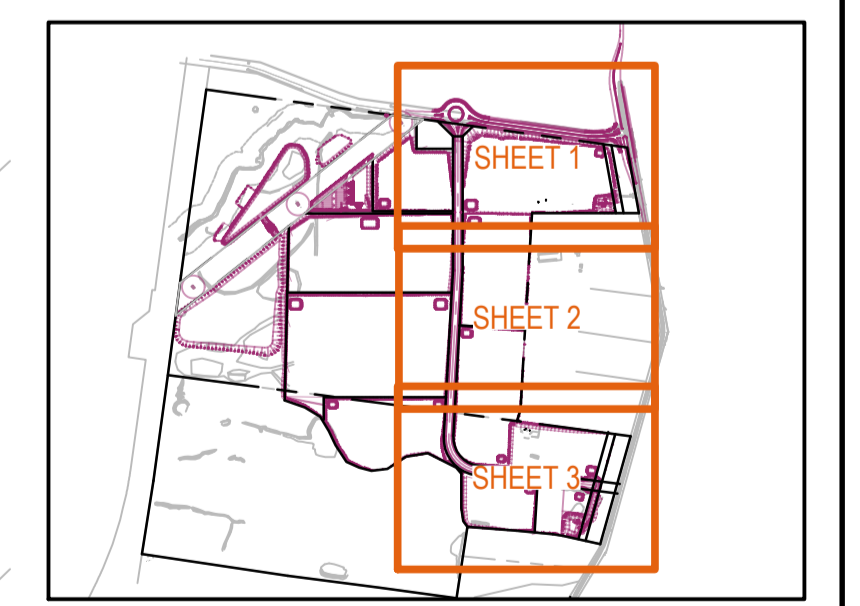
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		DESIGN BY OTHERS
		PROPERTY BOUNDARY LINE
	SWD	PROPOSED STORMWATER DRAINAGE RETICULATION (BY OTHERS)
	C	PROPOSED COMMUNICATIONS RETICULATION
	E	PROPOSED INTERNAL ELECTRICAL RETICULATION
	HV	PROPOSED EXTERNAL ELECTRICAL RETICULATION
		PROPOSED ELECTRICAL LIGHT POST
	S	EXISTING SEWER RETICULATION
	swd	EXISTING STORMWATER DRAINAGE RETICULATION
	W	EXISTING WATER RETICULATION
	RW	EXISTING RECYCLED WATER RETICULATION
	E	EXISTING OVERHEAD ELECTRICAL RETICULATION (TRANSMISSION LINE)
	OH	EXISTING OVERHEAD ELECTRICAL RETICULATION
	C	EXISTING COMMUNICATION RETICULATION
	T	EXISTING TELSTRA COMMUNICATION RETICULATION
		330kV TRANSGRID TRANSMISSION LINE
		EXISTING TREES

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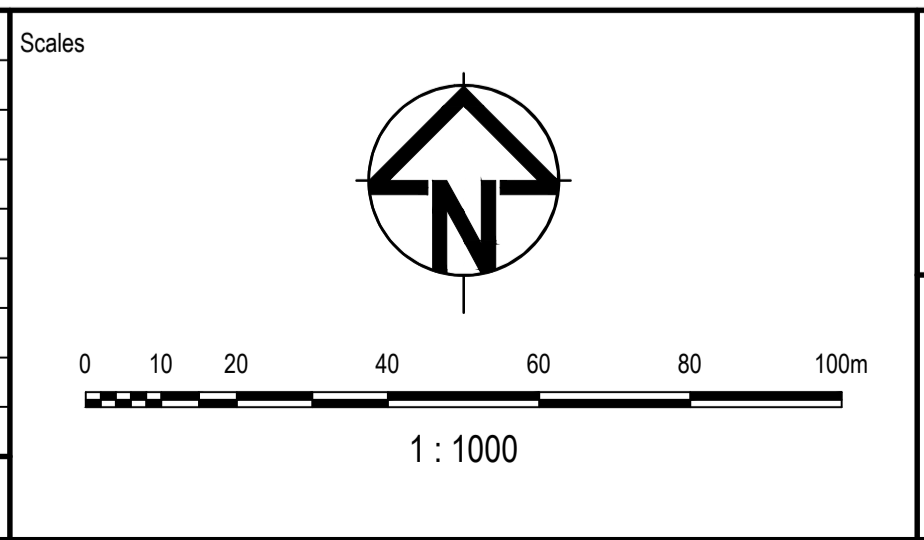
IMPORTANT NOTE
CONTRACTOR MUST PROVE AND VERIFY EXISTING UNDERGROUND SERVICES LOCATIONS PRIOR COMMENCEMENT OF CIVIL WORKS



KEYPLAN

FOR CONTINUATION REFER TO DRAWING 0502

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Project Manager	S.HAYCOCK
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Original Size	A1
Height Datum	AHD
Grid	

Project

ALSPEC INDUSTRIAL BUSINESS PARK
CONCEPT UTILITY SERVICING PLANS

Title

ELECTRICAL AND TELECOMMUNICATION RETICULATION PLAN
SHEET 1

Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
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ABN 76 104 485 289
Tel No: +61 2 8907 9000
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Project Number	30088823
Issue	01

Drawing No: IBP-AAP-DA-00-DRG-CI-0501

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FOR CONTINUATION REFER TO DRAWING 0503

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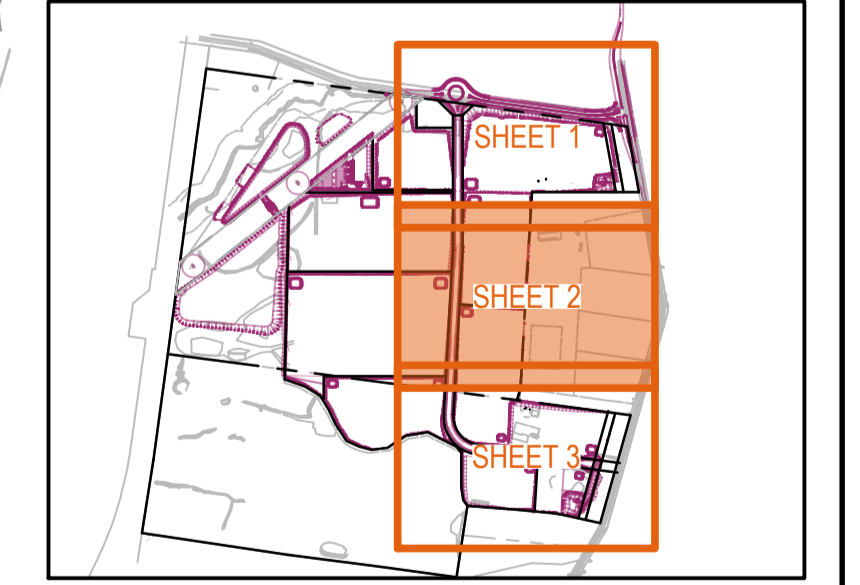
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- 5.0 EXISTING SURFACE CONTOUR
- DESIGN BY OTHERS
- PROPERTY BOUNDARY LINE
- PROPOSED STORMWATER DRAINAGE RETICULATION (BY OTHERS)
- PROPOSED COMMUNICATIONS RETICULATION
- PROPOSED INTERNAL ELECTRICAL RETICULATION
- PROPOSED EXTERNAL ELECTRICAL RETICULATION
- PROPOSED ELECTRICAL LIGHT POST
- EXISTING SEWER RETICULATION
- EXISTING STORMWATER DRAINAGE RETICULATION
- EXISTING WATER RETICULATION
- EXISTING RECYCLED WATER RETICULATION
- EXISTING OVERHEAD ELECTRICAL RETICULATION (TRANSMISSION LINE)
- EXISTING OVERHEAD ELECTRICAL RETICULATION
- EXISTING COMMUNICATION RETICULATION
- EXISTING TELSTRA COMMUNICATION RETICULATION
- 330KV TRANSGRID TRANSMISSION LINE
- EXISTING TREES

NOTE
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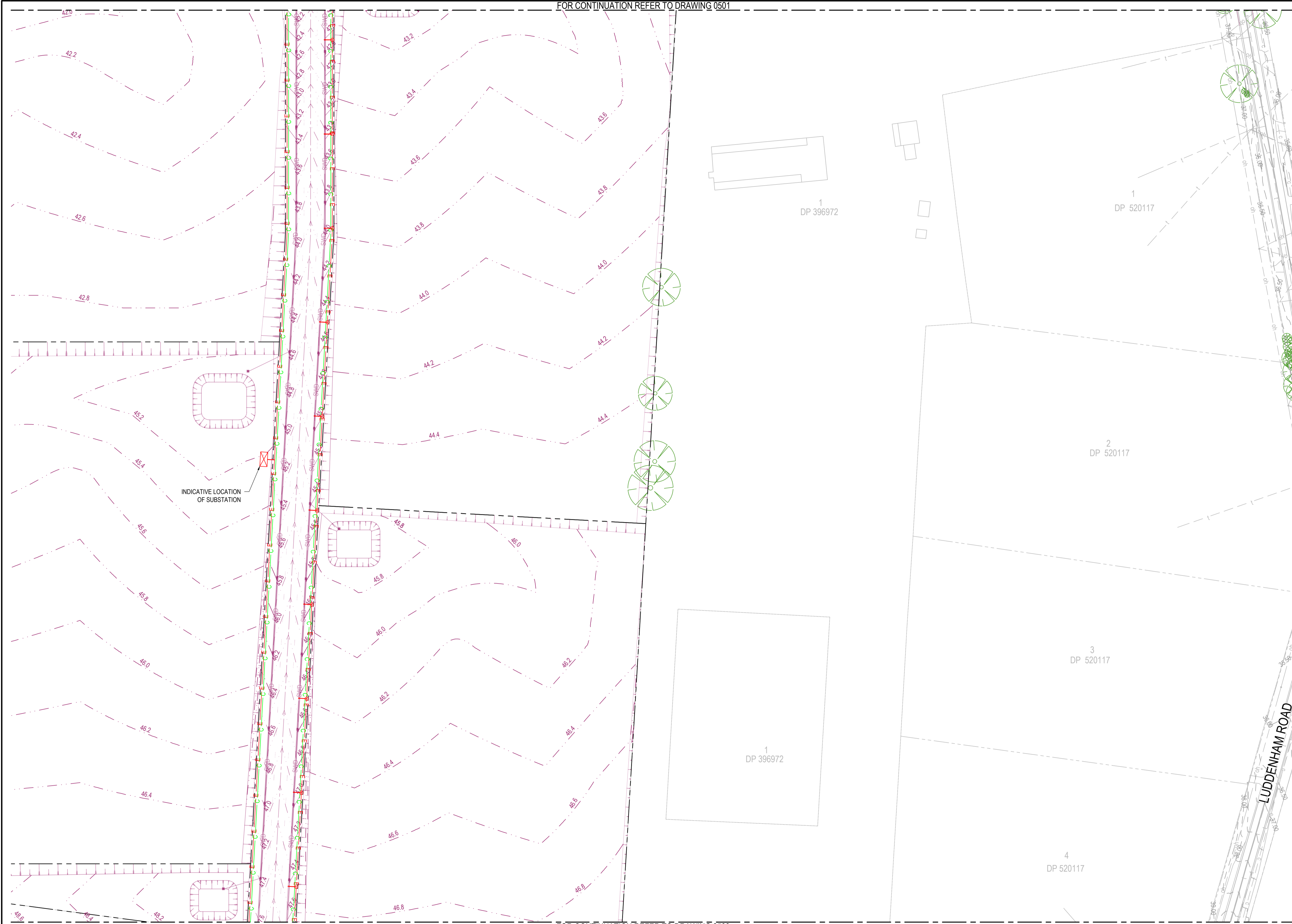
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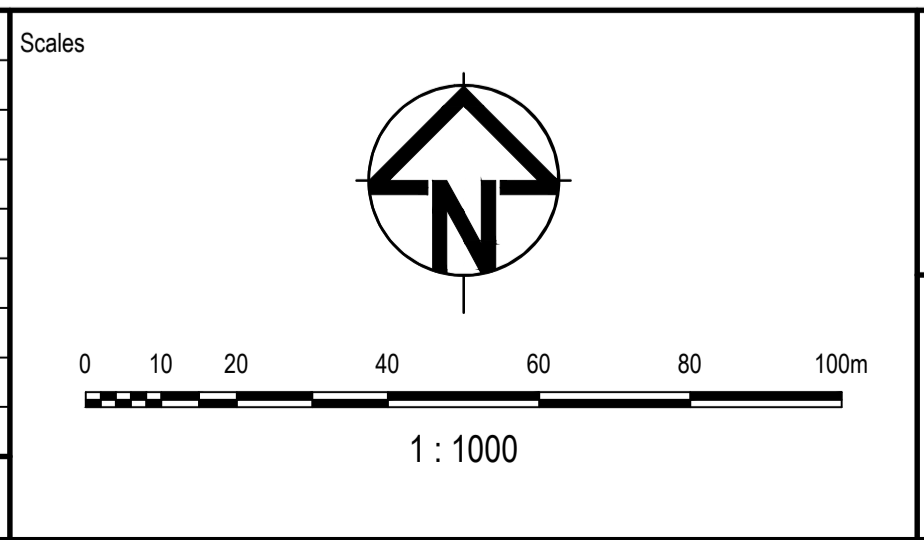
IMPORTANT NOTE
CONTRACTOR MUST PROVE AND VERIFY EXISTING UNDERGROUND SERVICES LOCATIONS PRIOR COMMENCEMENT OF CIVIL WORKS



KEYPLAN



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Verified	

Original Size	A1
Height Datum	AHD
Grid	

Project

ALSPEC INDUSTRIAL BUSINESS PARK
CONCEPT UTILITY SERVICING PLANS

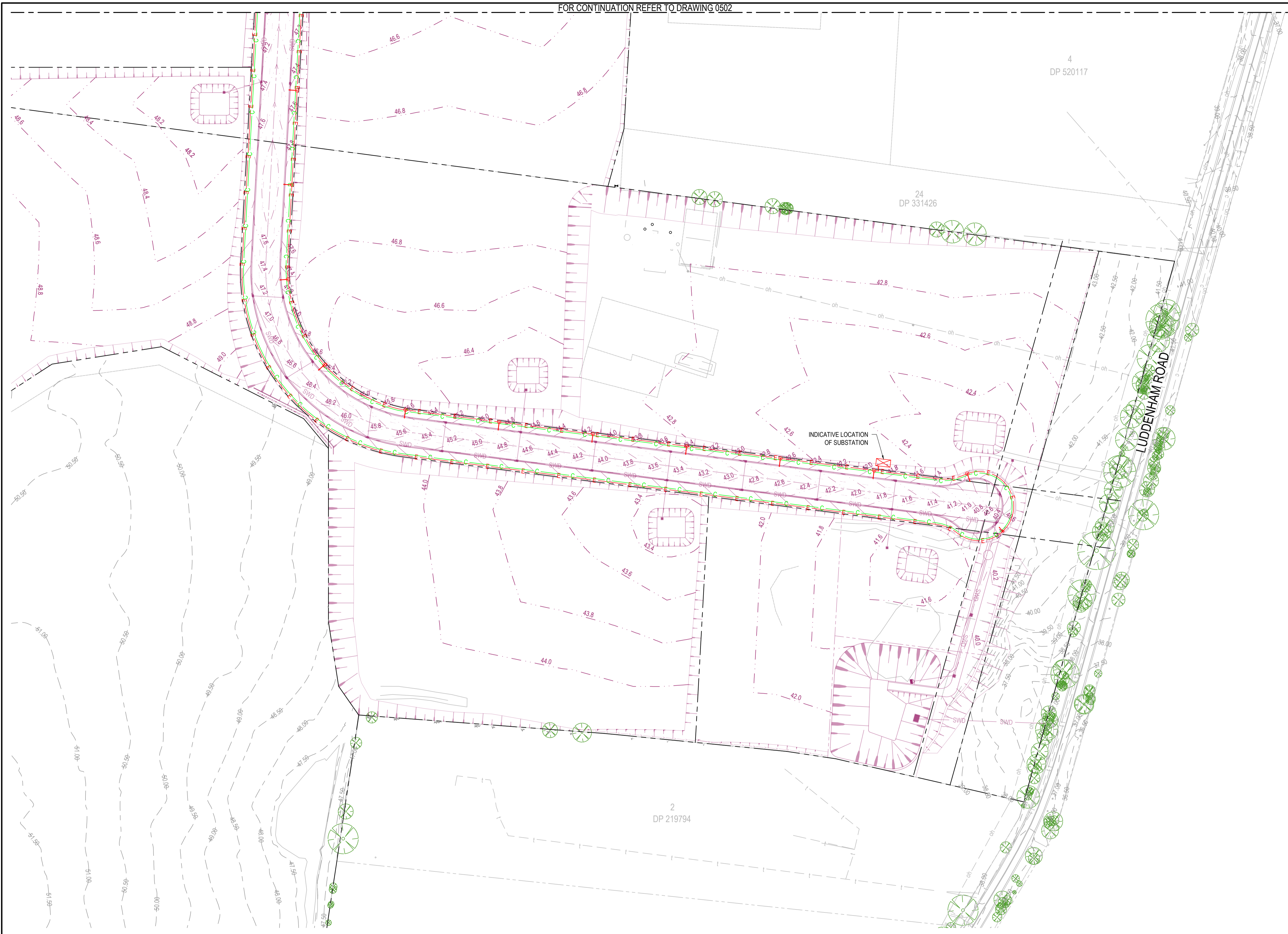
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ELECTRICAL AND TELECOMMUNICATION RETICULATION PLAN
SHEET 2

Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
SYDNEY NSW 2000
ABN 76 104 485 289
Tel No: +61 2 8907 9000
www.arcadis.com/au

Project Number	30088823
Issue	01

IBP-AAP-DA-00-DRG-CI-0502



LEGEND

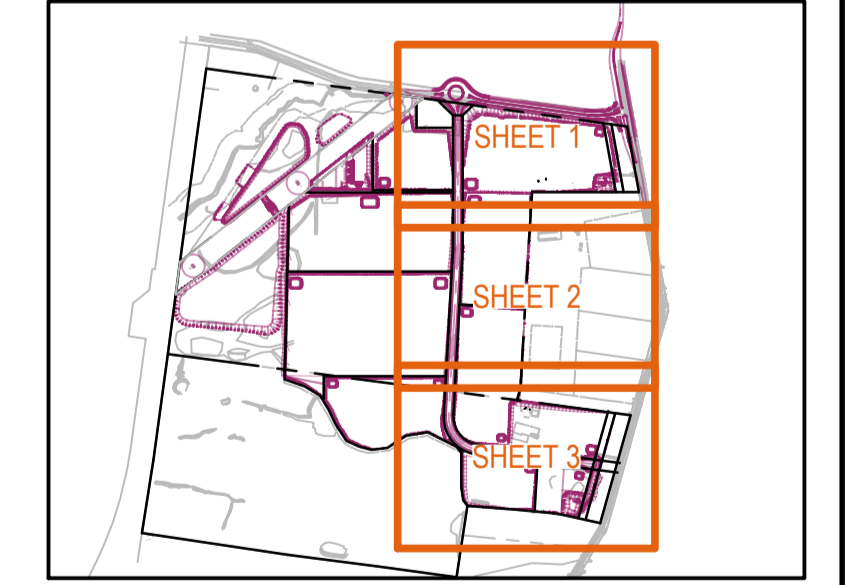
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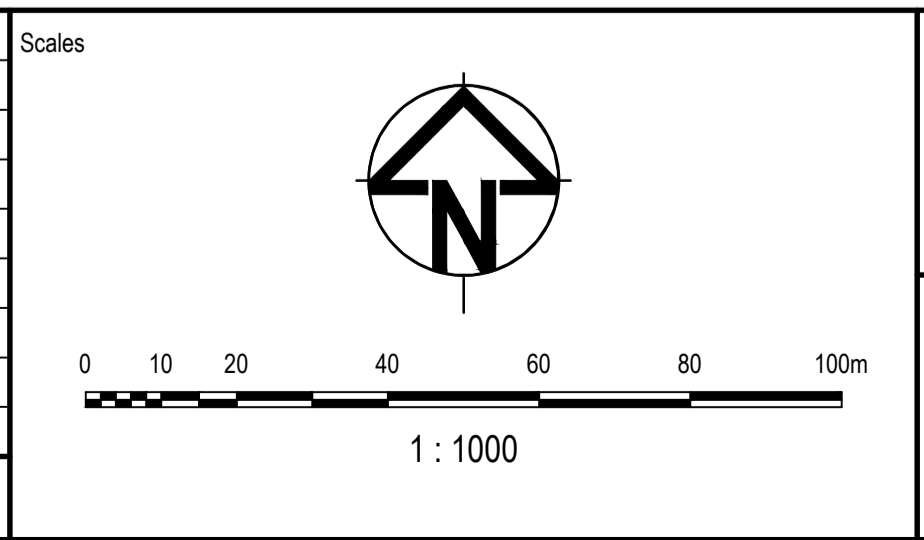


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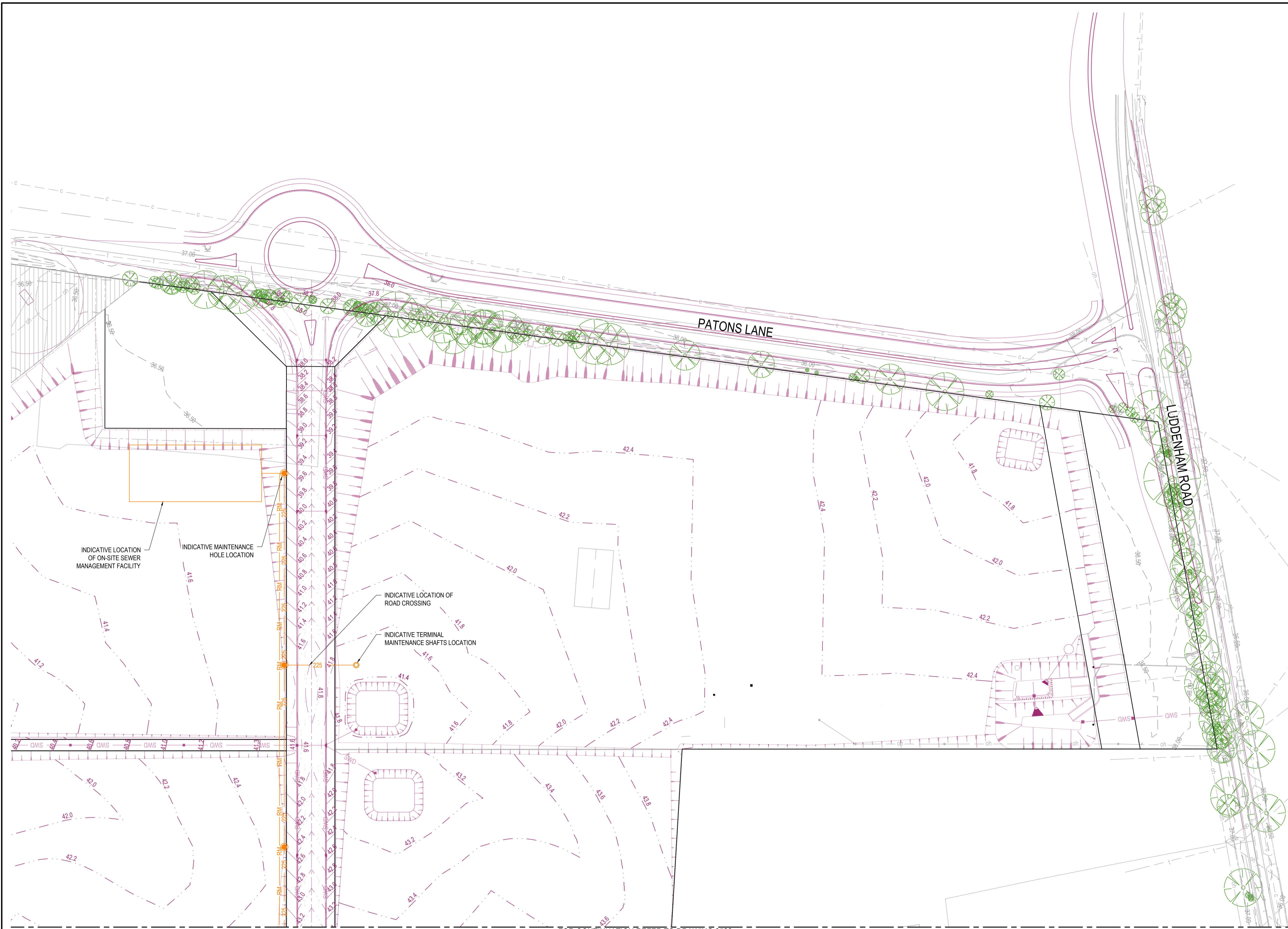
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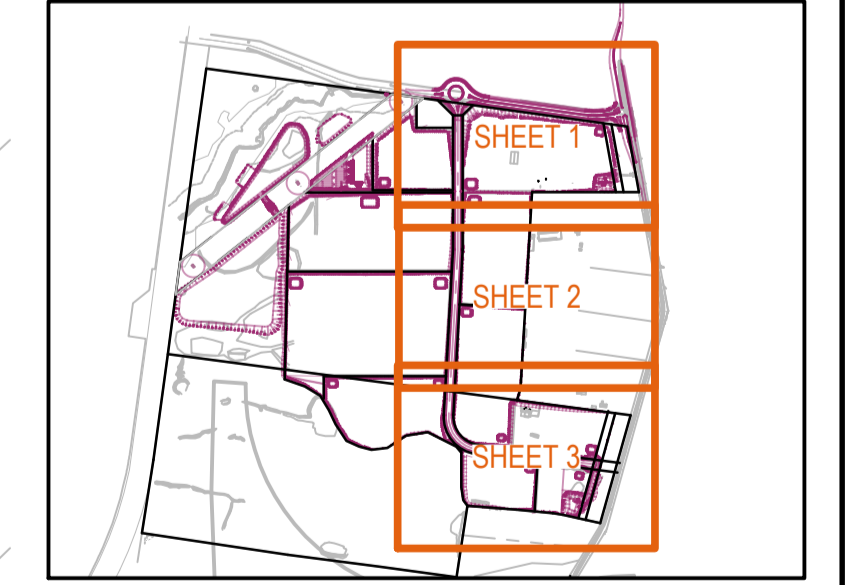
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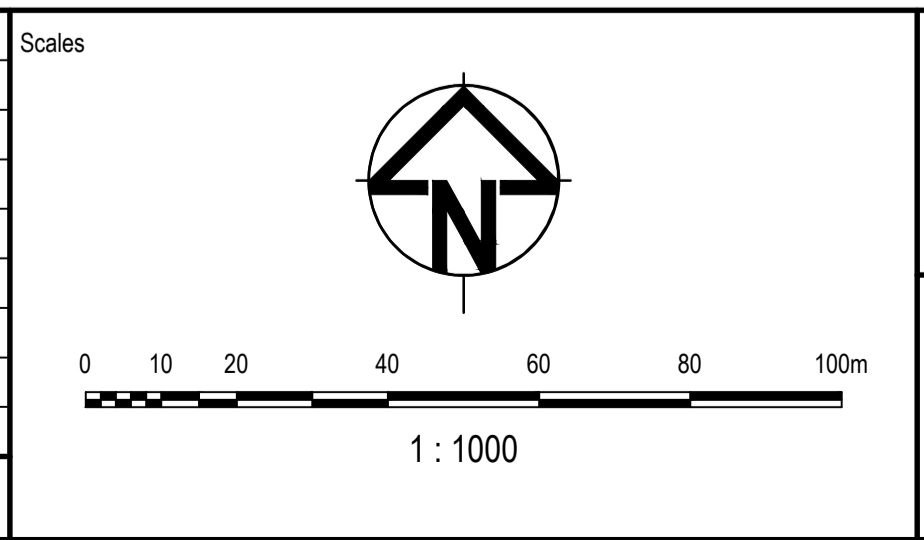
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SEWER RETICULATION PLAN
SHEET 1

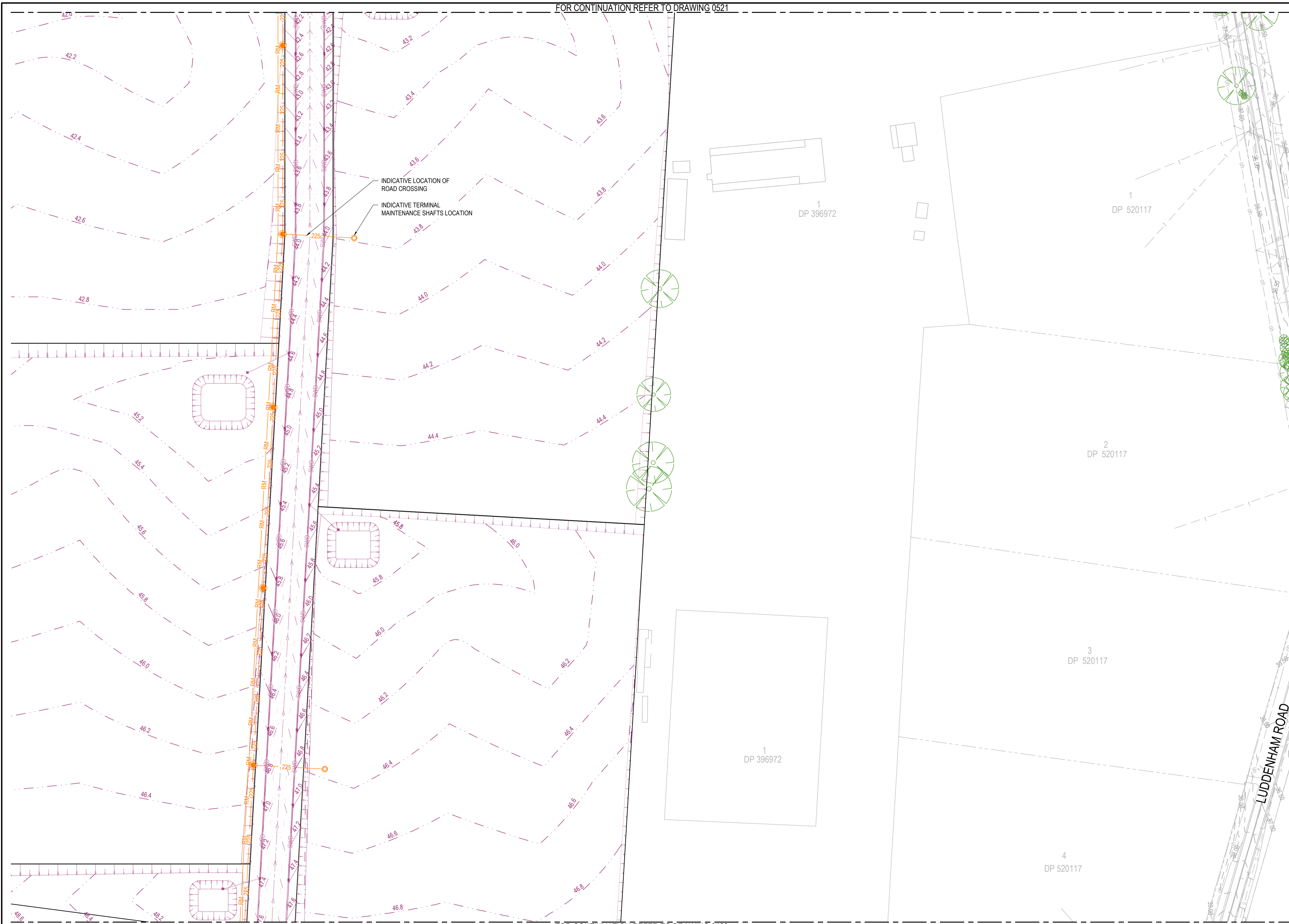
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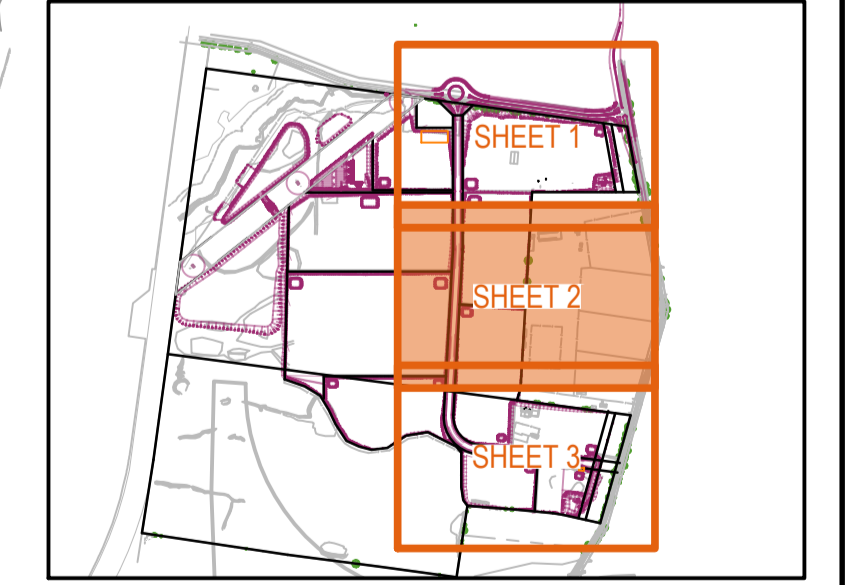
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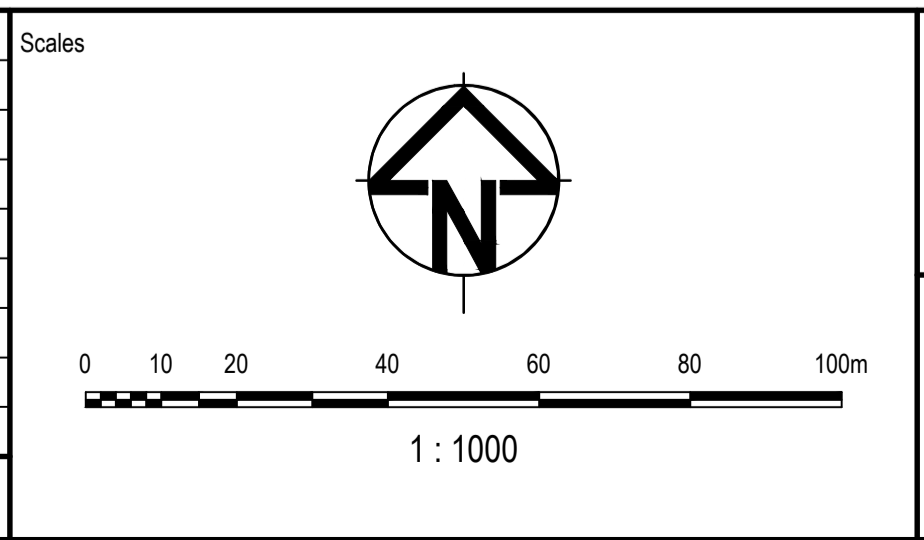


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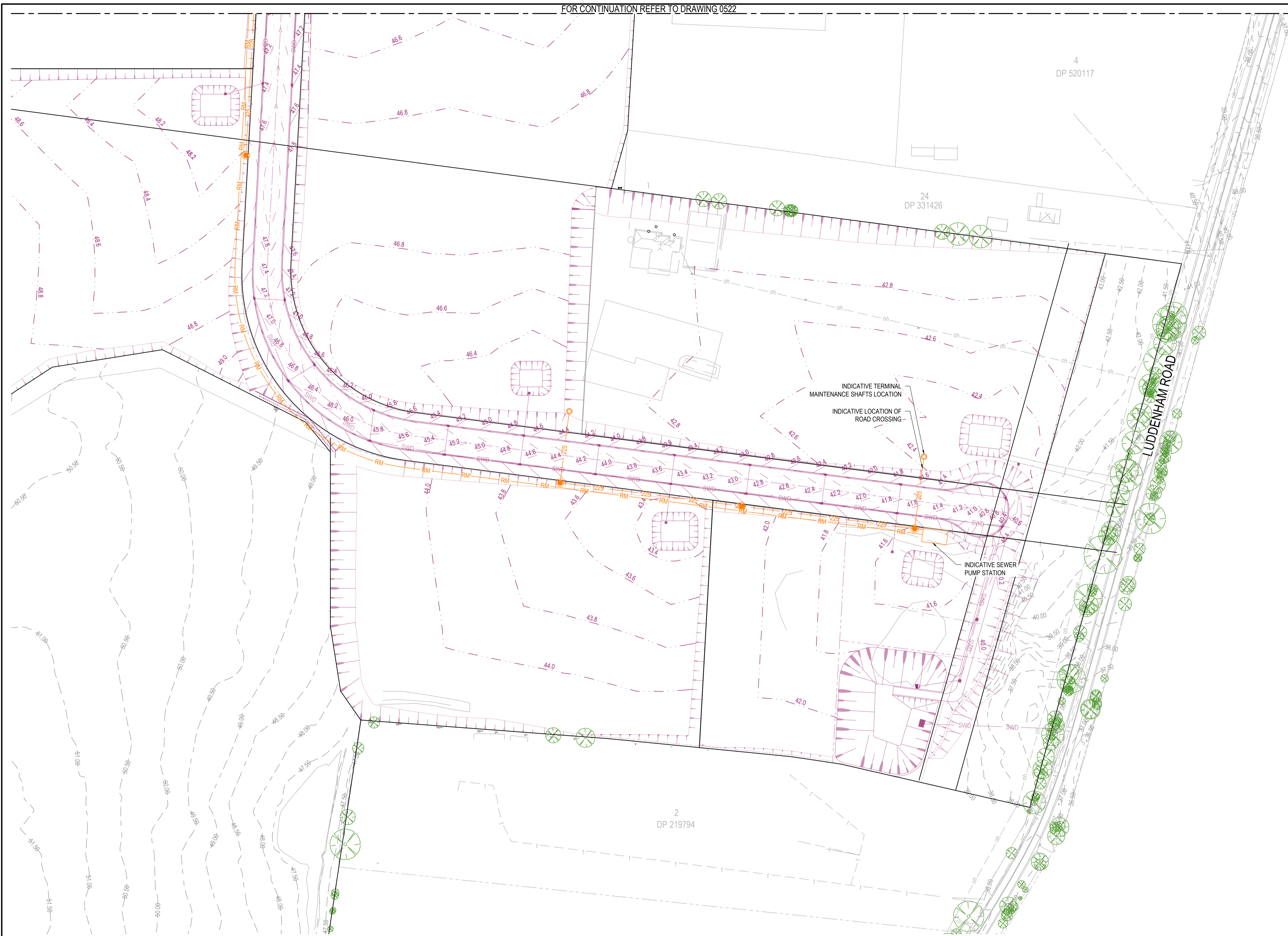
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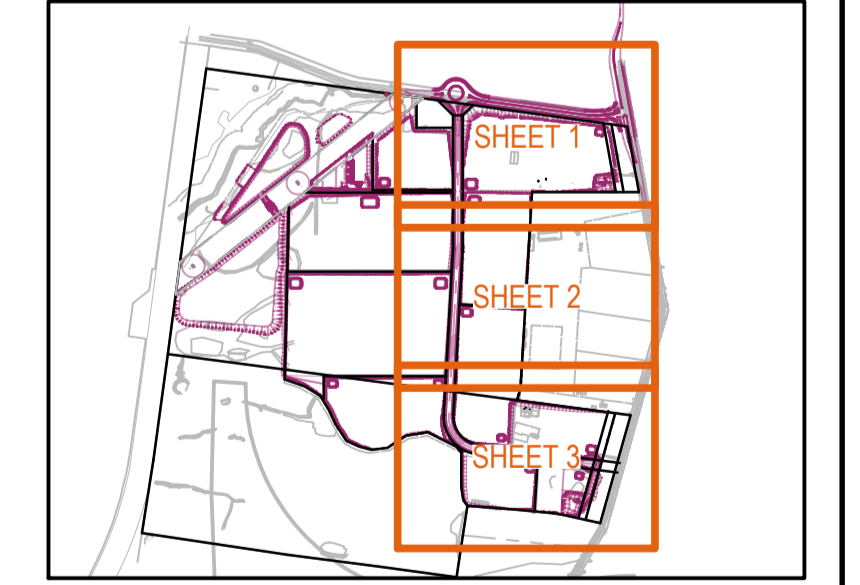
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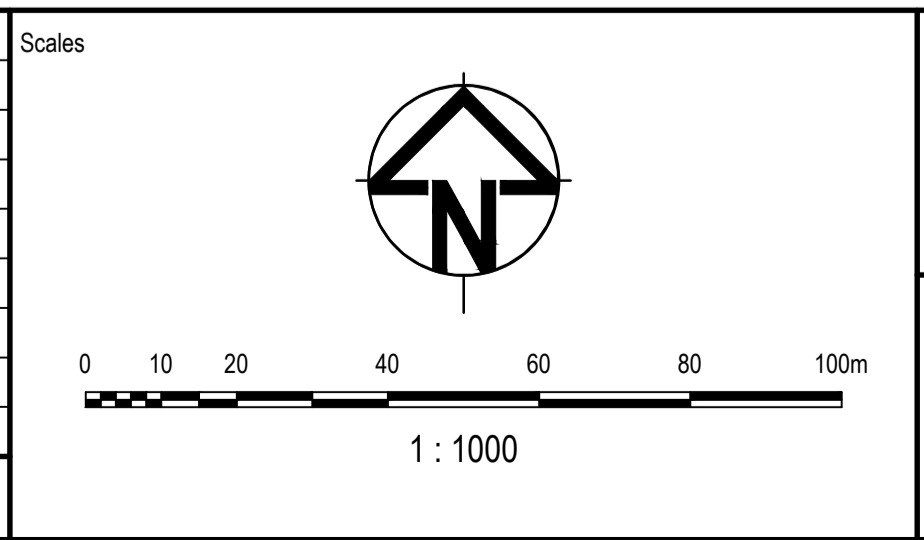


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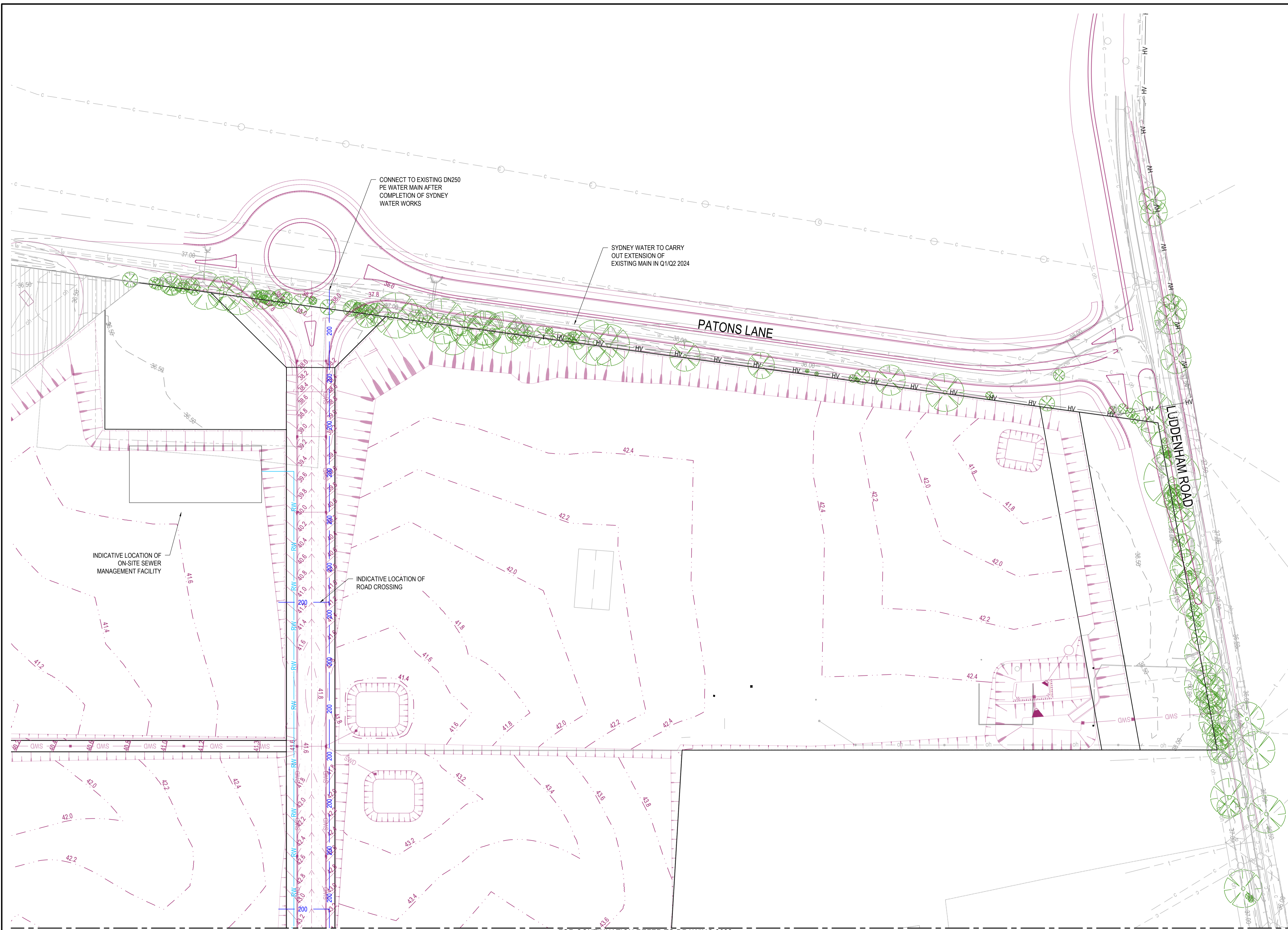
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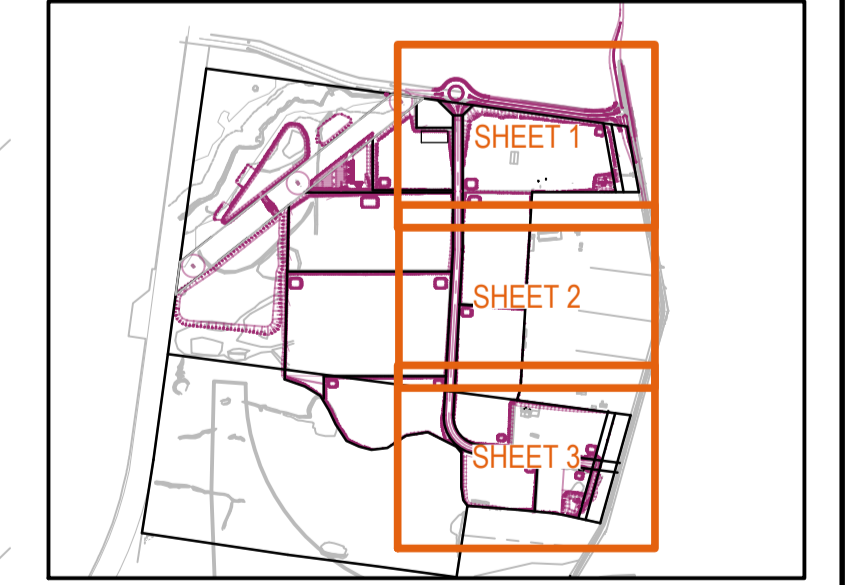
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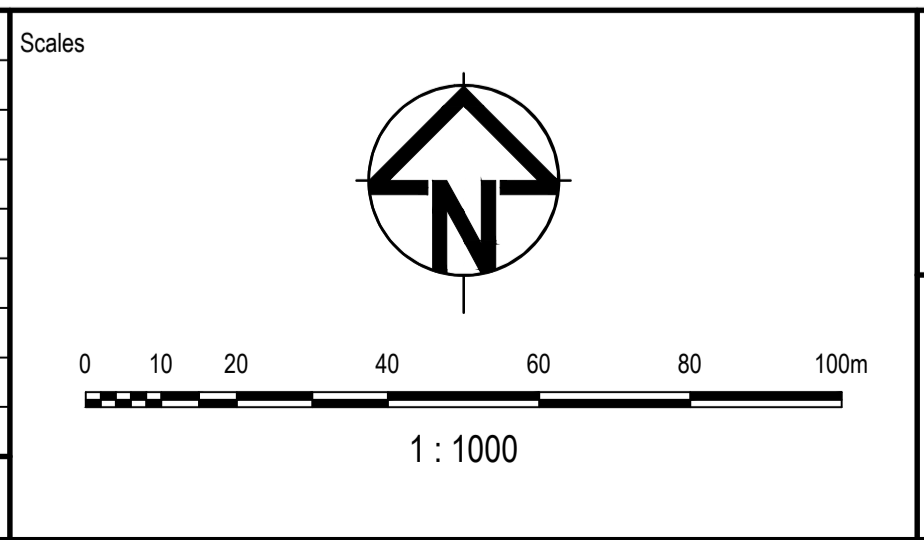
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Title: POTABLE AND RECYCLED WATER RETICULATION PLAN
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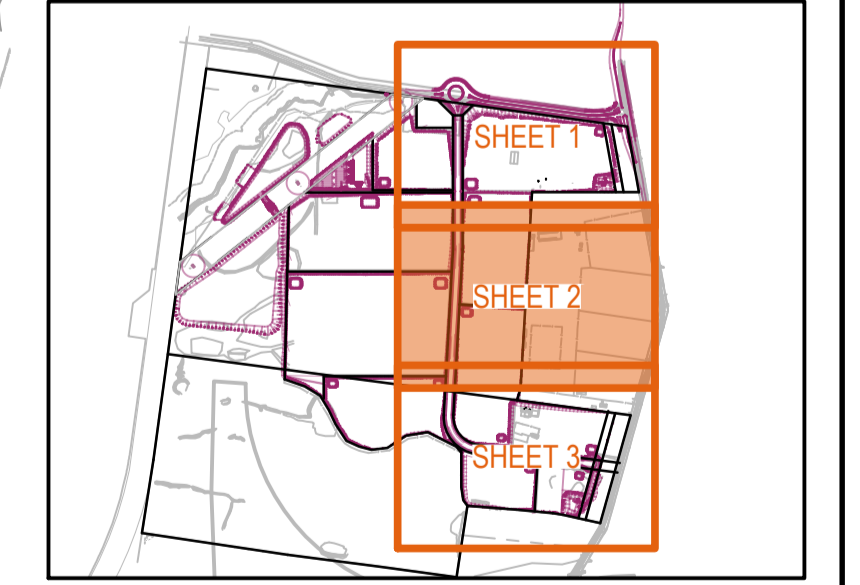
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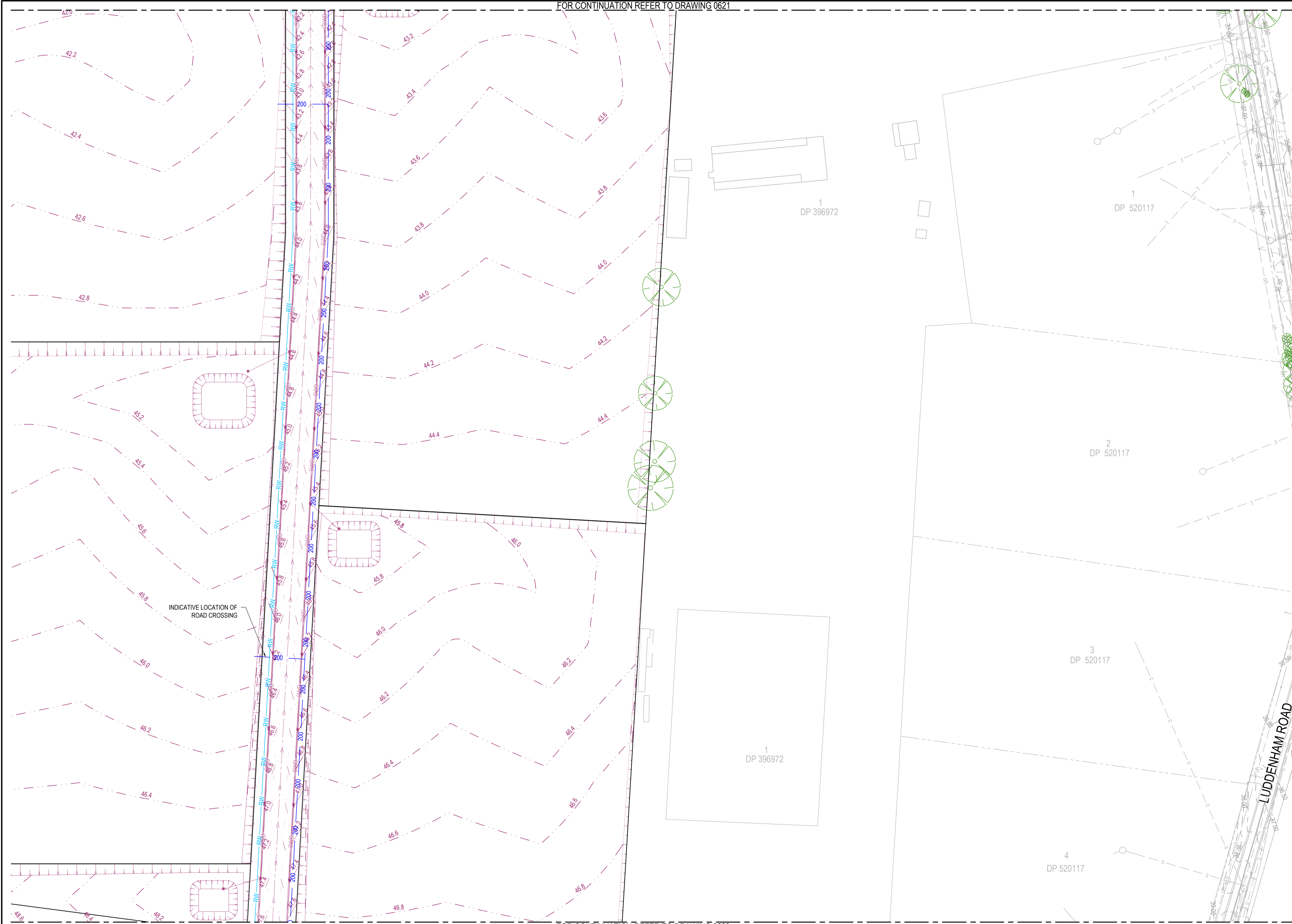
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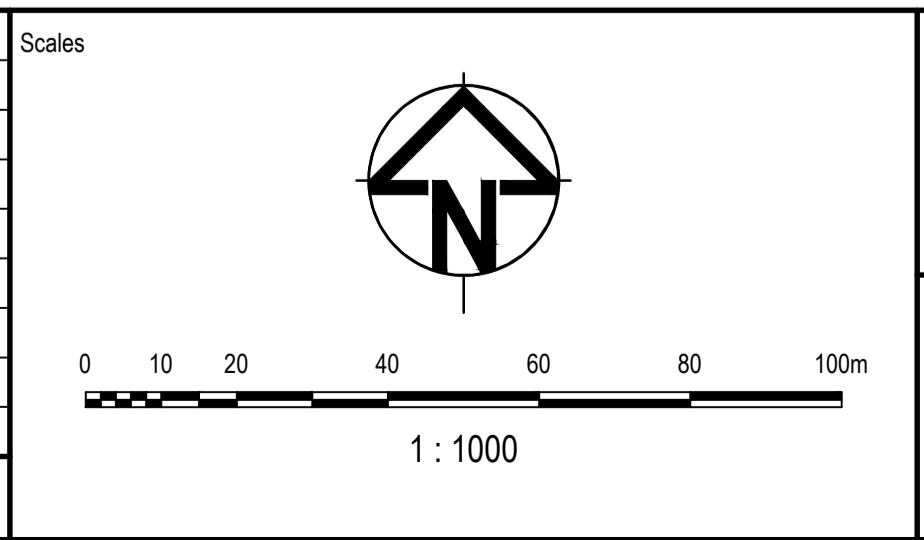
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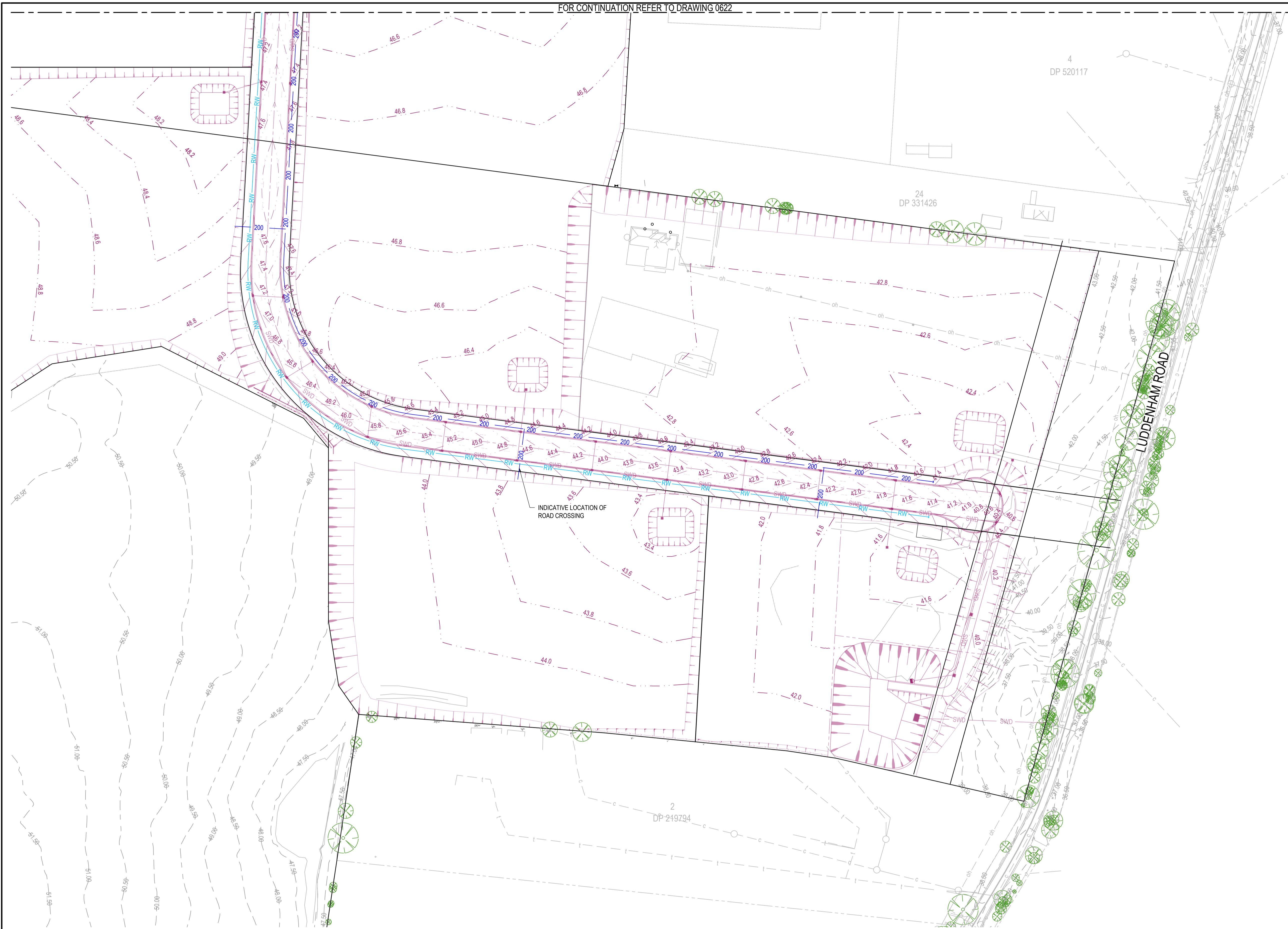
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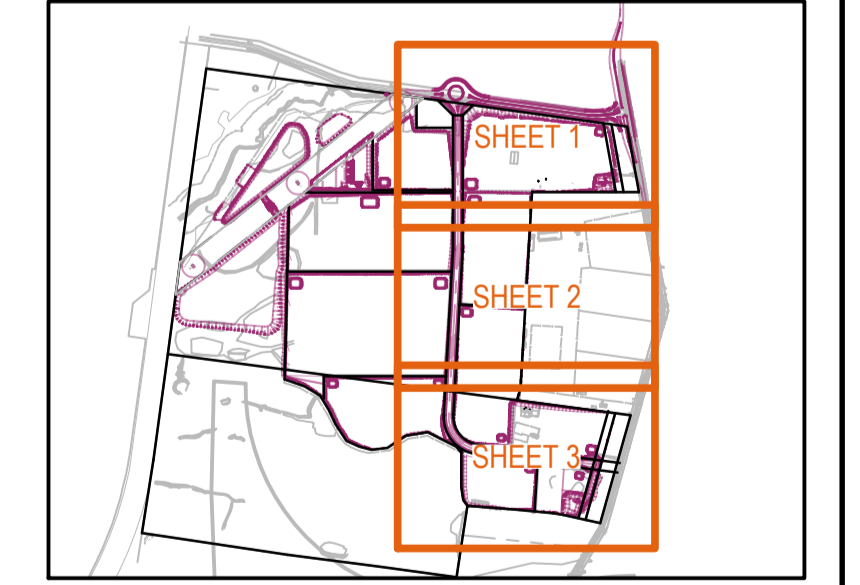
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APPENDIX C – WSUD Maintenance Manuals



OceanGuard™

Operations & Maintenance Manual

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Introduction

The primary purpose of stormwater treatment devices is to capture and prevent pollutants from entering waterways, maintenance is a critical component of ensuring the ongoing effectiveness of this process. The specific requirements and frequency for maintenance depends on the treatment device and pollutant load characteristics of each site. This manual has been designed to provide details on the cleaning and maintenance processes as recommended by the manufacturer.

The OceanGuard technology is a gully pit basket designed to fit within new and existing gully pits to remove pollution from stormwater runoff. The system has a choice of Filtration liners, designed to remove gross pollutants, total suspended solids and attached pollutants as either a standalone technology or as part of a treatment train with our StormFilter or Jellyfish Filtration products. OceanGuard pit baskets are highly effective, easy to install and simple to maintain.

Why do I need to perform maintenance?

Adhering to the maintenance schedule of each stormwater treatment device is essential to ensuring that it functions properly throughout its design life.

During each inspection and clean, details of the mass, volume and type of material that has been collected by the device should be recorded. This data will assist with the revision of future management plans and help determine maintenance interval frequency. It is also essential that qualified and experienced personnel carry out all maintenance (including inspections, recording and reporting) in a systematic manner.

Maintenance of your stormwater management system is essential to ensuring ongoing at-source control of stormwater pollution. Maintenance also helps prevent structural failures (e.g. prevents blocked outlets) and aesthetic failures (e.g. debris build up), but most of all ensures the long term effective operation of the OceanGuard.

Health and Safety

Access to pits containing an OceanGuard typically requires removing (heavy) access covers/grates, but typically it is not necessary to enter into a confined space. Pollutants collected by the OceanGuard will vary depending on the nature of your site. There is potential for these materials to be harmful. For example, sediments may contain heavy metals, carcinogenic substances or sharp objects such as broken glass and syringes. For these reasons, there should be no primary contact with the waste collect and all aspects of maintaining and cleaning your OceanGuard require careful adherence to Occupational Health and Safety (OH&S) guidelines.

It is important to note that the same level of care needs to be taken to ensure the safety of non-work personnel, as a result it may be necessary to employ traffic/pedestrian control measures when the device is situated in, or near areas with high vehicular/pedestrian activity.

Personnel health and safety

Whilst performing maintenance on the OceanGuard pit insert, precautions should be taken in order to minimise (or when possible prevent) contact with sediment and other captured pollutants by maintenance personnel. In order to achieve this the following personal protective equipment (PPE) is recommended:

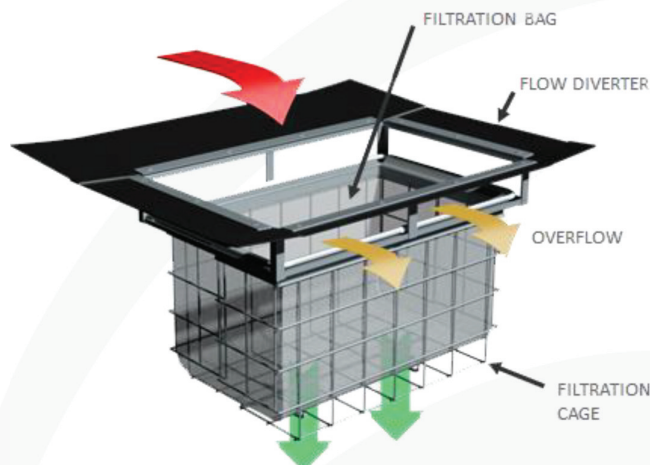
- Puncture resistant gloves
- Steel capped safety boots,
- Long sleeve clothing, overalls or similar skin protection
- Eye protection
- High visibility clothing or vest

During maintenance activities it may be necessary to implement traffic control measures. Ocean Protect recommend that a separate site specific traffic control plan is implemented as required to meet the relevant governing authority guidelines.

The OceanGuard pit insert is designed to be maintained from surface level, without the need to enter the pit. However depending on the installation configuration, location and site specific maintenance requirements it may be necessary to enter a confined space occasionally. It is recommended that all maintenance personnel evaluate their own needs for confined space entry and compliance with relevant industry regulations and guidelines. Ocean Protect maintenance personnel are fully trained and carry certification for confined space entry.

How does it Work?

OceanGuard is designed to intercept stormwater as it enters the stormwater pits throughout a site. The OceanGuard has diversion panels that sit flush with the pit walls, this ensures that as stormwater enters at the top of the pit it is directed to the middle of the insert where the Filtration bag is situated. The filtration bag allows for screening to occur removing 100% of pollutants greater than the opening of the filtration material (200micron, 1600micron bags available).



During larger rain events the large flows overflow slots in the flow diverter of the OceanGuard ensure that the conveyance of stormwater is not impeded thus eliminating the potential for surface flooding. As the flow subsides, the captured pollutants are held in the OceanGuard Filtration bag dry. The waste then starts to dry which reduces the magnitude of organic material decomposition transitioning between maintenance intervals.

Maintenance Procedures

To ensure that each OceanGuard pit insert achieves optimal performance, it is advisable that regular maintenance is performed. Typically the OceanGuard requires 2-4 minor services annually, pending the outcome of these inspections additional maintenance servicing may be required.

Primary Types of Maintenance

The table below outlines the primary types of maintenance activities that typically take place as part of an ongoing maintenance schedule for the OceanGuard.

	Description of Typical Activities	Frequency
Minor Service	Filter bag inspection and evaluation Removal of capture pollutants Disposal of material	2-4 Times Annually
Major Service	Filter Bag Replacement Support frame rectification	As required

Maintenance requirements and frequencies are dependent on the pollutant load characteristics of each site. The frequencies provided in this document represent what the manufacturer considers to be best practice to ensure the continuing operation of the device is in line with the original design specification.

Minor Service

This service is designed to return the OceanGuard device back to optimal operating performance. This type of service can be undertaken either by hand or with the assistance of a Vacuum unit.

Hand Maintenance

1. Establish a safe working area around the pit insert
2. Remove access cover/grate
3. Use two lifting hooks to remove the filtration bag
4. Empty the contents of the filtration bag into a disposal container
5. Inspect and evaluate the filtration bag
6. Inspect and evaluate remaining OceanGuard components (i.e. flow diverter, filtration cage and supporting frame)
7. Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
8. Re-install filtration bag and replace access cover/grate

Vacuum Maintenance

1. Establish a safe working area around the pit insert
2. Remove access cover/grate
3. Vacuum captured pollutants from the filtration bag
4. Remove filtration bag
5. Inspect and evaluate the filtration bag
6. Inspect and evaluate remaining OceanGuard components (i.e. flow diverter, filtration cage and supporting frame)
7. Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
8. Re-install filtration bag and replace access cover/grate

Major Service (Filter Bag Replacement)

For the OceanGuard system, a major service is a reactionary process based on the outcomes from the minor service.

Trigger Event from Minor Service	Maintenance Action
Filtration bag inspection reveals damage	Replace the filtration bag ^[1]
Component inspection reveals damage	Perform rectification works and if necessary replace components ^[1]

[1] Replacement filtration bags and components are available for purchase from Ocean Protect.

Additional Reasons of Maintenance

Occasionally, events on site can make it necessary to perform additional maintenance to ensure the continuing performance of the device.

Hazardous Material Spill

If there is a spill event on site, all OceanGuard pits that potentially received flow should be inspected and cleaned. Specifically all captured pollutants from within the filtration bag should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. All filtration bags should be rejuvenated (replaced if required) and re-installed.

Blockages

The OceanGuards internal high flow bypass functionality is designed to minimise the potential of blockages/flooding. In the unlikely event that flooding occurs around the stormwater pit the following steps should be undertaken to assist in diagnosing the issue and implementing the appropriate response.

1. Inspect the OceanGuard flow diverter, ensuring that they are free of debris and pollutants
2. Perform a minor service on the OceanGuard
3. Remove the OceanGuard insert to access the pit and inspect both the inlet and outlet pipes, ensuring they are free of debris and pollutants

Major Storms and Flooding

In addition to the scheduled activities, it is important to inspect the condition of the OceanGuard pit insert after a major storm event. The inspection should focus on checking for damage and higher than normal sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants disposed.

Disposal of Waste Materials

The accumulated pollutants found in the OceanGuard must be handled and disposed of in a manner that is in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. If the filtration bag has been contaminated with any unusual substance, there may be additional special handling and disposal methods required to comply with relevant government/authority/industry regulations.

Maintenance Services

With over a decade and a half of maintenance experience Ocean Protect has developed a systematic approach to inspecting, cleaning and maintaining a wide variety of stormwater treatment devices. Our fully trained and professional staff are familiar with the characteristics of each type of system, and the processes required to ensure its optimal performance.

Ocean Protect has several stormwater maintenance service options available to help ensure that your stormwater device functions properly throughout its design life. In the case of our OceanGuard system we offer long term pay-as-you-go contracts, pre-paid once off servicing and replacement filter bags.

For more information please visit www.OceanProtect.com.au