



Oakdale West Estate

Kemps Creek

Lot 4E Civil Report

CLIENT/ GOODMAN

DATE/ JULY 2021

CODE/ REP104-04-15-272

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APPENDIX

Appendix A – Proposed Site Plans, Staging and Catchment Plans

Appendix B – List of Civil Works & Erosion and Sediment Control Drawings

Abbreviations

OWE	Oakdale West Estate
WNSLR	Western North South Link Road
TfNSW	Transport for NSW
OEH	Office of Environment and Heritage
EP	Equivalent Persons
ET	Equivalent Tenancy
IWM	Integrated Water Management
GPS	Goodman Property Services (Aust) Pty Ltd
STP	Sewerage Treatment Plant
SWC	Sydney Water Corporation
WELS	Water Efficiency Labelling
EIS	Environmental Impact Statement
SSDA	State Significant Development Application
RMS	Roads and Maritime Service
EPLR	Erskine Park Link Road

1 Executive Summary

Goodman Property Services (Aust) Pty Ltd is developing the Oakdale West Estate for the purposes of providing a warehouse and distribution complex. The Oakdale West site is a precinct within the wider 'Oakdale' Estate development and forms part of a progressive development designed to make 'Oakdale' a regional distribution park of warehouses, distribution centres and freight logistics facilities.

The Oakdale West project is a staged development including bulk earthworks, civil works, and services infrastructure and stormwater disposal and management. All reports, drawings are approved under a separate application SSD 7348.

For the purpose of this report, it is assumed that the infrastructure stage works are approved and completed. This includes but not limited to; Bulk earthworks, Access Roads, Services, Stormwater Basins, Stormwater system and connection into each lot.

This development application encompasses the planned phase of civil works on the Oakdale West site Lot 4E which includes:

- Proposed detailed earthworks to accommodate the building and external levels
- Proposed stormwater (piped) system and connection to drainage stub provided in the infrastructure works.
- Proposed overland flow path to relevant basin, outlined in SSD 7348.
- Proposed hardstand and carpark pavement.
- Proposed Erosion and Sediment control

This report is prepared to satisfy condition C11 with SSD 7348. This report is to be read in conjunction with REP003 – Civil Report with application SSD 7348.

The site is located in the Penrith City Council Local Government area. Under SSD 7348 a Precinct based bio-retention basin will be provided as part of the infrastructure works. The basin is designed to both attenuate stormwater flows and treat the nutrients to Penrith City Council treatment rates. The Precinct based Site Detention is designed to mitigate post development flows to pre-developed flows for peak Average Recurrence Interval (ARI) events and has been sized to ensure that for all storm events up to and including the 1:100 ARI event.

2 Introduction

The aim of the report is to assess the potential impacts of the proposed development with respect to Stormwater and has been prepared in accordance with Penrith City Council current design guidelines and the relevant Australian Standards.

2.1 Scope of Report

This report generally discusses the design philosophy behind the following components of the Stormwater Management design for Oakdale West Estate (OWE):

- Stormwater Management
 - Infrastructure Biodiversity and Bioretention Basin
 - Piped and Overland Flows
 - Water Balance across the site
- Erosion and Sediment Control
- Pavement
- Site Services

The proposed Lot 4E is bound by Road No.7 to the north west, Lot 4F & 4G to the north, and Lot 44 DP708347 to the south.

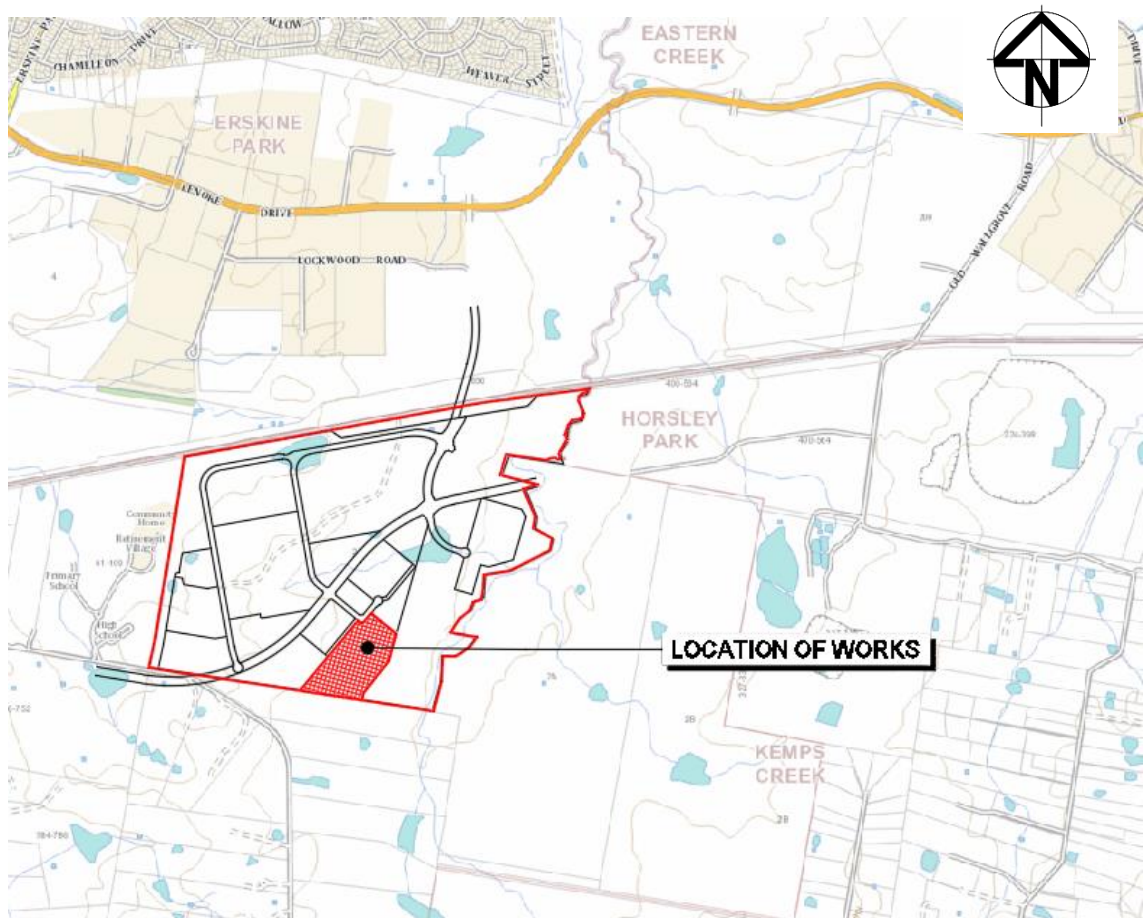


Figure 1 – Locality Plan

3 Stormwater Management

3.1 The Existing Site

For the purpose of this report, it is assumed the infrastructure stage works are approved and works completed. This includes but not limited to; Bulk earthworks, Access Roads, Services, Stormwater Basins, Stormwater system and connections into lots. The works are detailed in Stage 1 consent, SSD 7348.

Refer to Drawing C1087 within Appendix A for a post-development stormwater catchment plan indicating the location of basins and catchments provided in the infrastructure stage.

3.2 Proposed Site Stormwater Drainage

Lot 4E is a part of a larger catchment which ultimately discharges into Bio-Retention Basin No.4 as shown in Appendix A. For additional details on Basin 4, refer to REP003-15-272.

Lot 4E is approximately 7.48Ha with two stormwater discharge point to the northern of Lot 4E. An existing stormwater stub is provided into Lot 4E for connection into Road No.7 stormwater system. GPTs will be provided to capture the gross pollutants generated within Lot 4E before discharging into Road No.7.

Refer to the Civil Drawings for layout and details for the proposed stormwater network across the site.

3.3 Council Requirements, SSD Consent Conditions & Recommendations

This report is prepared to satisfy condition C11 with SSD 7348, which states:

- C11** *Future DAs shall demonstrate the design of the warehouses, offices and hardstand areas are consistent with (or the latest revision of) the:*
- (a) Civil, Stormwater and Infrastructure Services Report, prepared by At&L, dated October 2018; and*
 - (b) Flood Impact Assessment: Oakdale West Estate, prepared by Cardno, dated 27 March 2017.*

All estate level stormwater drainage for the OWE development is designed to comply with the following:

- Penrith City Council Design Guidelines for Engineering Works;
- Penrith City Council Water Sensitive Urban Design (WSUD) Policy December 2013; and
- C3 Water Management DCP.

A summary of the design requirements adopted is listed below:

- All stormwater drainage within the lot 4E will be the responsibility of Goodman;
- Finished Floor Levels (FFL) of proposed buildings within the precinct (separate approval) to have minimum 500mm freeboard to 100 year overland flows; and

- Gross pollutant trap (GPT) will be installed within Lot 4E on the final downstream stormwater pit prior to discharging. As these GPT's will be located on-lot they will be owned and maintained by Goodman. The GPT will capture 90% of Gross Pollutants from Lot 4E as per WSUD guidelines;

Rainwater tanks are desirable for re-use for irrigation, toilet and other non-potable water uses. Rainwater tank size is determined in accordance with the Penrith City Council C3 Water Management DCP to meet 80% of non-potable demand for irrigation and toilet flushing. Refer to Section 4 of this report for a more detailed description on rainwater harvest tanks.

3.3.1 Modelling Software

DRAINS modelling software has been used to calculate the Hydraulic Grade Line (HGL) of the estate level stormwater pipes. DRAINS is a computer program used for designing and analysing urban stormwater drainage systems and catchments. It is widely accepted by Council's across NSW as the basis for stormwater design and has been confirmed by Penrith City Council as the preferred stormwater software analysis package.

MUSIC modelling software will be used to evaluate the non-potable water from rainwater tanks once the tenant has confirmed the number to toilets. For a detailed description of the MUSIC modelling refer to Section 4 of this report.

3.3.2 Hydrology

- Pipe drainage shall be designed to accommodate the 20-year ARI storm event;
- The combined piped and overland flow paths shall be designed to accommodate the 100-year ARI storm event;
- Where trapped low points are unavoidable and potential for flooding private property is a concern, an overland flowpath capable of carrying the total 100-year ARI storm event shall be provided. Alternatively, the pipe and inlet system may be upgraded to accommodate the 100 year ARI storm event;
- Rainfall intensities shall be as per the Intensity-Frequency-Duration table in accordance with the Australian Rainfall and Runoff (AR&R) volume 2;
- Times of concentration for each sub catchment shall be determined using the kinematic wave equation;
- Runoff coefficients shall be calculated in accordance with AR&R. The fraction impervious shall be determined from analysis of the sub catchments;
- Flow width in gutter shall not exceed 2.5m for the minor design storm event;
- Velocity depth ratios shall not exceed 0.4 for all storms up to and including the 100-year ARI event;
- Inlet pits to be spaced so that flow width shall not exceed 80l/sec;
- Bypass from any pit on grade shall not exceed 15% of the total flow at the pit; and
- Blockage factors of 20% and 50% shall be adopted for pits on grade and at sags respectively, with these blockage factors in-built to each pit within the DRAINS model.

3.3.3 Hydraulics

- A hydraulic grade line HGL design method shall be adopted for all road pipe drainage design. The HGL shall be shown on all drainage long sections;
- The minimum pipe size shall be 375mm diameter RCP;

- Maximum spacing between pits shall not exceed 75m;
- The minimum pipe grade shall be 0.5%;
- All pipes shall be Rubber Ring Jointed unless noted otherwise;
- The minimum cover over pipes shall be 450mm in grassed areas and 600mm within carriageways;
- Where minimum cover cannot be achieved due to physical constraints the pipe class shall be suitably increased;
- All trafficable shall be Reinforced Concrete Pipes or Fibre Reinforced Cement equivalent;
- The pipe friction coefficients to adopted shall be:

Materials	Mannings – n	Colebrook-White – k	Min. Pipe Class
RCP	0.012	0.6	3
FRC	0.01	0.15	3

Table 1 – Pipe Details

- All pipes classes shall be designed for the ultimate service loads and where applicable, construction loads will be designed for;
- Pipes discharging to the overland flow path shall adopt a minimum tailwater level equivalent to respective overland flow level;
- Pit Loss coefficients shall be calculated in accordance with Missouri Charts;
- A minimum 150mm freeboard shall be maintained between pit HGL and pit surface levels for the minor storm event;
- Overland flowpaths shall maintain a minimum of 500mm freeboard to all habitable floor levels; and
- Pits deeper than 1.2m shall contain step irons at 300 mm centres.

3.3.4 Catchments

A Stormwater Catchment Plan for Lot 4E and flow paths into the Bio-retention Basins No. 4 are shown in Appendix A.

3.3.5 Overland Flows

Overland flows within the hardstand area and carpark have been designed to be safely conveyed to Road No.7 and Bio-retention Basin No.4 for storms above the 5% AEP. All flow widths and velocities are design in accordance with the Penrith City Council Design Guidelines for Engineering Works.

3.4 Conclusion

As highlighted in the above section all stormwater drainage within Lot 4E development has been designed in accordance with the Penrith City Council Engineering Guidelines. This includes design of the stormwater network (pits and pipes) and GPT.

Finished Floor Levels (FFL) to have minimum 500mm freeboard to 100-year overland flows.

4 Water Balance

4.1 General

The water balance was simulated using a water cycle management model as part of the MUSIC Model to allow the evaluation of various elements of the water cycle to be assessed at differing stages in the development.

Penrith City Council WSUD policy (July 2015) stipulates the rainwater tanks to meet 80% of non-potable demand including outdoor use, toilets and laundry.

4.2 Water Balance Objective

Potable water supplies in the Sydney area are in recognised short supply with projected population increases, potential climate change and periods of extended drought and any development in sources of the Sydney region places increasing demands on an already reduced water supply. As a result, government bodies, together with Sydney Water have encouraged sustainable development by the implementation of an integrated approach to water cycle management (potable water, sewage, stormwater and rainwater) to minimise demands of potable water supplies.

Whilst opportunities for Water Reuse include such initiatives as regional stormwater harvesting, black water recycling and recycled water, this development is limited to rainwater collection and reuse on an individual lot by lot basis.

Once the toilet numbers are confirmed we will use MUSIC to establish an estimated tank size for each lot within the development and demonstrate the volume of water reuse possible and provide a more sustainable servicing solution.

4.3 Water Balance End Uses

AT&L has identified the following water demand end uses to be required across the development:

- Toilet and urinal flushing; and
- Landscape watering (outdoor garden use).

The proportion of total water demands for irrigation and toilet flushing within the development could be met with the use of recycled roof water drained directly into a rainwater tank. The tank should be sized to ensure the site meets the requirement to meet the 80% non-potable reuse requirement. This is in accordance with Penrith City Council's WSUD policy.

4.4 Total Site Demands and Non-Potable Re-use Rates

The following rates were adopted from the Penrith City Council WSUD technical Guidelines for Industrial and Commercial developments (Section 4.5):

- 0.1 kL/day per toilet or urinal; and
- 0.4 kL/year/m² as PET-Rain for Sprinklers.

4.5 Rainwater Reuse

The use of rainwater collected in rainwater tanks from runoff on the roofs of the warehouse roofs provides a valuable alternative to potable water for a variety of non-potable end uses, such as vehicle washing, air conditioning cooling, and toilet flushing and watering.

We have assumed for this development, irrigation and toilet flushing will be plumbed to the rainwater tanks. Other uses such as truck washing maybe considered at the detailed design stage.

A rainwater tank model was constructed to simulate the rainwater tank operations and select the optimal rainwater tank size, in doing so, the following considerations were made:

- Rainfall received;
- Roof area or runoff area;
- Roof Wetting;
- First Flush; and
- Rainwater demands (by end use).

4.6 Rainwater Tank Model Assumptions

The rainwater tank model assumptions built into the scenarios assumed the following:

4.6.1 Rainfall Received

The rainfall runoff that could potentially be captured by the rainfall tank from the roof of each building was simulated individually for the 'dry', 'wet' and 'average' rainfall year within each scenario run.

4.6.2 Roof Wetting, First Flush Diversions and Overflow

While it is assumed that rainfall runoff has the potential to runoff 100% of the area of the roof into the rainwater tank, the proportion of rainfall that actually reaches the rainwater tank is affected by four factors:

- It is assumed that the initial 2mm of rainfall that falls on the roof is considered 'wetting', that is, potential rainfall runoff that is not captured by the rainwater tank, but is rather 'lost runoff' as evaporation or other;
- To prevent sediment and other pollutants entering the rainwater tank, a portion of the initial runoff from the roof is transferred to stormwater, this is known as the 'first flush'. The portion of water diverted as part of the first flush differs for each facility depending on the amount of pollution each roof is susceptible to;
- As the development is located in a predominantly light industrial area, where there may be potential for some roof pollution, a standard first flush volume of 1mm of runoff from across the roof area has been adopted; and
- Any roof runoff that exceeds the rainwater tank capacity is 'overflow' and is directed to the stormwater drainage system.

4.7 Conclusion

The use of rainwater harvest tanks and the design basis to size the tanks to ensure as a minimum, 80% of all non-potable water on each lot can be sourced from the tank, demonstrates a commitment to water recycling and minimising the usage of mains water.

This is in line with the industry best practise and the NSW State Government's objective of reducing the amount of potable (drinking) water consumed for non-potable uses.

5 Sedimentation and Erosion Control

5.1 Sedimentation and Erosion Control (Construction)

A Soil and Water Management Plan (SWMP) will be prepared in accordance with the NSW Department of Housing Publication titled: Managing Urban Stormwater – Soils and Construction (2004) for Lot 4E.

The key objective of the SWMP are:

- Acknowledging the activities on a construction site which may contribute to erosion, sedimentation and water quality impacts;
- The implementation of industry best management practices to minimise adverse water quality and sedimentation impacts brought about through construction activities on waterbodies surrounding the work; and
- Establishment of processes that effectively manage erosion, sedimentation and water quality practices during the life of the project.

5.1.1 Design of Sediment and Erosion Control Measures

Suitable erosion and sediment controls shall be provided by the Contractor and maintained throughout all stages of works, including at completion of the bulk earthworks.

All design, documentation, installation and maintenance of sediment and erosion controls will be in accordance with the requirements of:

- Protection of the Environment Operations Act;
- Penrith City Council's specifications; and
- Office of Environment and Heritage's 'Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) (The "Blue Book") Volume 1 and Volume 2.

Temporary sediment basin in Lot 4E will be provided within the infrastructure stage associated with the SSD 7348 Stage 1 consent works. The basins are to be maintained throughout the construction phase of the on-lot works.

5.2 Site Inspection and Maintenance

The inspection and maintenance requirements outlined in this section must be carried out while either earthworks or quarrying is being conducted, and all areas re-established.

The Contractor will be required to inspect the site after every rainfall event and at least weekly, and will:

- Inspect and assess the effectiveness of the SWMP and identify any inadequacies that may arise during normal work activities or from a revised construction methodology;
- Construct additional erosion and sediment control works as necessary to ensure the desired protection is given to downstream lands and waterways;
- Ensure that drains operate properly and to affect any repairs;
- Remove spilled sand or other materials from hazard areas, including lands closer than 5 metres from areas of likely concentrated or high velocity flows especially waterways and paved areas;
- Remove trapped sediment whenever less than design capacity remains within the structure;
- Ensure rehabilitated lands have affectively reduced the erosion hazard and to initiate upgrading or repair as appropriate;
- Maintain erosion and sediment control measures in a fully functioning condition until all construction activity is completed and the site has been rehabilitated;
- Remove temporary soil conservation structures as the last activity in the rehabilitation.
- Inspect the sediment basin during the following periods:
 - During construction to determine whether machinery, falling trees, or construction activity has damaged and components of the sediment basin. If damage has occurred, repair it;
 - After each runoff event, inspect the erosion damage at flow entry and exit points. If damage has occurred, make the necessary repairs;
 - At least weekly during the nominated wet season (if any), otherwise at least fortnightly; and
 - Prior to, and immediately after, periods of 'stop work' or site shutdown.
- Clean out accumulated sediment when it reaches the marker board/post, and restore the original volume. Place sediment in a disposal area or, if appropriate, mix with dry soil on the site;
- Do not dispose of sediment in a manner that will create an erosion or pollution hazard;
- Check all visible pipe connections for leaks, and repair as necessary;
- Check all embankments for excessive settlement, slumping of the slopes or piping between the conduit and the embankment, make all necessary repairs;
- Remove the trash and other debris from the basin and riser; and
- Submerged inflow pipes must be inspected and de-silted (as required) after each inflow event.

5.2.1 Sediment Basin Maintenance

Stormwater within the settling zone should be drained or pumped out within 5 days (design time), if the nominated water quality targets can be met, to the satisfaction of the superintendent. Flocculation should be employed where extended settling is likely to fail to meet the objectives within the 5-day time period.

Flocculation is when flocculating agents are applied to the sediment basins causing the colloidal particles to clump into larger units or 'floc' that can either settle in a reasonable time or be filtered.

Refer to Appendix E4 of the Blue Book for flocculation methodologies and manufacturer's instructions for application rates, regarding the proposed sediment basins.

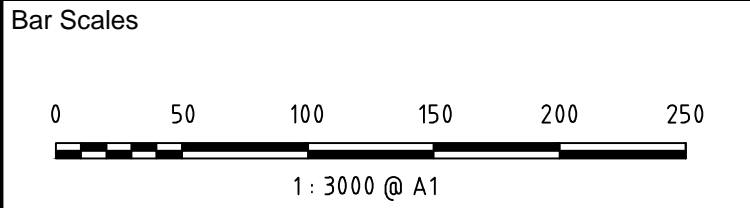
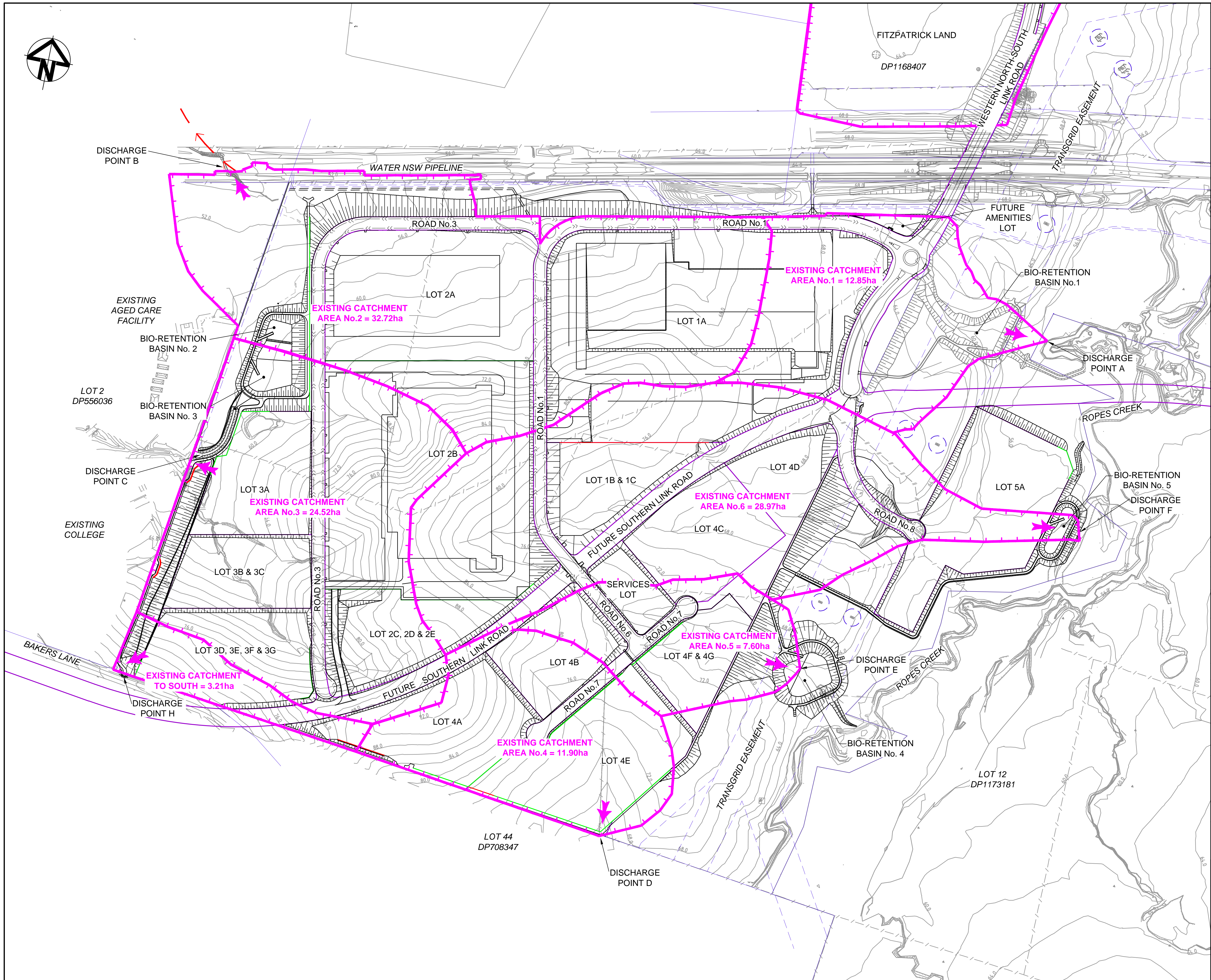
5.3 Conclusion

The erosion control measures proposed for the site will comply with the requirements of Penrith City Council Engineering Guidelines and in accordance with the latest revision AT&L infrastructure report.

A SWMP will ensure that the best management practice is applied to the development site in controlling and minimising the negative impacts of soil erosion.

Appendix A

Proposed Infrastructure Catchment Plans



A8	ISSUED FOR SSD APPROVAL MOD 3	06-12-19
A7	ISSUED FOR INFORMATION MOD 3	19-11-19
A6	ISSUED FOR INFORMATION MOD 3	12-11-19
A5	ISSUED FOR SSD APPROVAL MOD 2	18-09-19
A4	ISSUED FOR SSD APPROVAL MOD 2	24-07-19
A3	ISSUED FOR INFORMATION MOD 2	07-06-19

Issue	Description	Date
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Status	MOD 3 APPROVAL	A1
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Scales		15-272-C1086.dwg	
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Grid	MGA	Approved	AM



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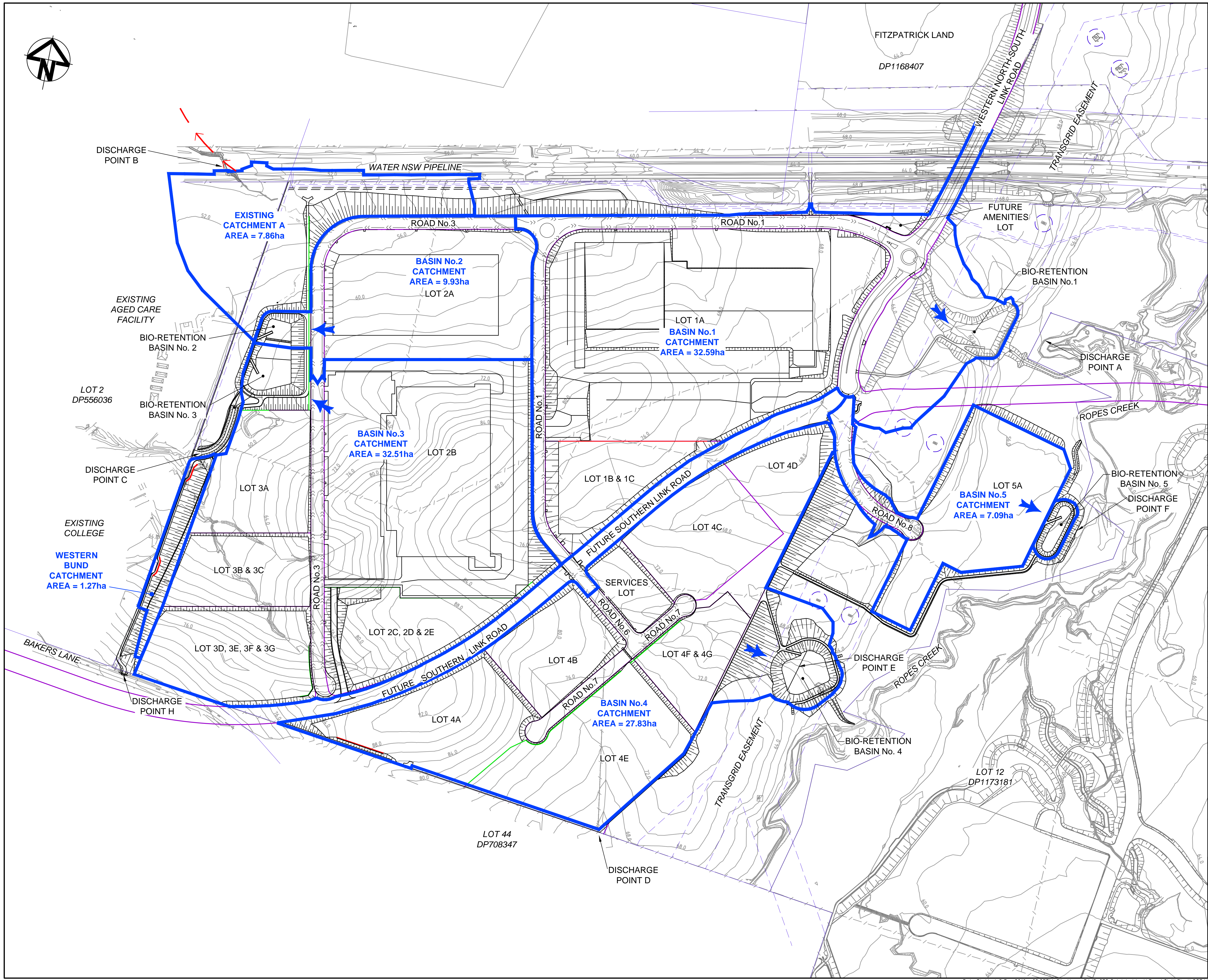
Project

PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST

Title

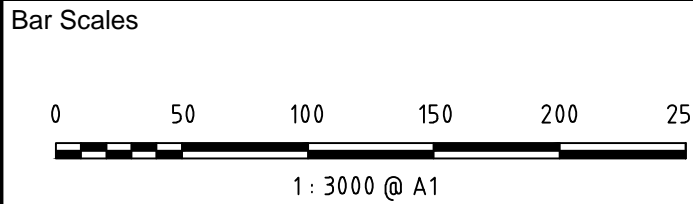
STORMWATER DRAINAGE CATCHMENT PLAN (PRE-DEVELOPED)

Drawing No.	Project No.	Issue
15-272-C1086	15-272	A8



LEGEND

— CATCHMENT BOUNDARY



A8	ISSUED FOR SSD APPROVAL MOD 3	06-12-19
A7	ISSUED FOR INFORMATION MOD 3	19-11-19
A6	ISSUED FOR INFORMATION MOD 3	12-11-19
A5	ISSUED FOR SSD APPROVAL MOD 2	18-09-19
A4	ISSUED FOR SSD APPROVAL MOD 2	24-07-19
A3	ISSUED FOR INFORMATION MOD 2	07-06-19

Issue	Description	Date
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Project

PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST

Title

STORMWATER DRAINAGE CATCHMENT PLAN (POST-DEVELOPED)

Drawing No.	Project No.	Issue
15-272-C1087	15-272	A8

Appendix B

AT&L – Drawing List of Civil Works

OAKDALE WEST

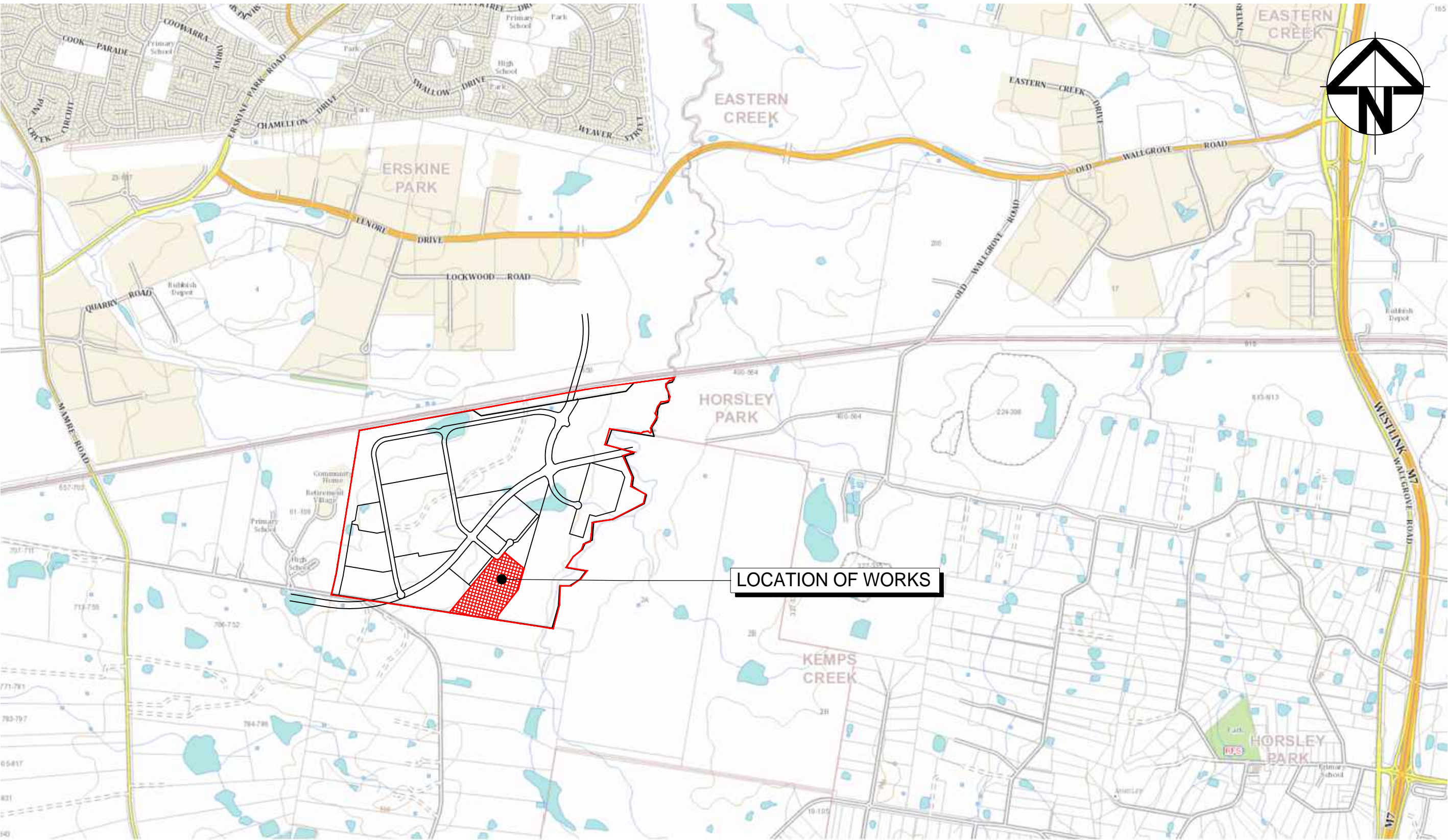
7500-SERIES LOT 4E

CIVIL WORKS PACKAGE

STAGE SIGNIFICANT DEVELOPMENT

APPLICATION

DRAWING No.	DRAWING TITLE
15-272-C7500	COVER SHEET DRAWING LIST LOCALITY PLAN
15-272-C7501	GENERAL NOTES
15-272-C7405	GENERAL ARRANGEMENT PLAN
15-272-C7510	TYPICAL SECTIONS SHEET 1
15-272-C7511	TYPICAL SECTIONS SHEET 2
15-272-C7515	BULK EARTHWORKS PLAN
15-272-C7520	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 1
15-272-C7521	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 2
15-272-C7522	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 3
15-272-C7523	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 4
15-272-C7524	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 5
15-272-C7525	SITEWORKS AND STORMWATER DRAINAGE PLAN SHEET 6
15-272-C7530	PAVEMENT PLAN
15-272-C7540	EROSION AND SEDIMENT CONTROL PLAN
15-272-C7541	EROSION AND SEDIMENT DETAILS



LOCALITY PLAN

NTS

Bar Scales

B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21
Issue	Description	Date

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		Designed	JC
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Grid	MGA	Approved	FX

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Project

PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E

Title

COVER SHEET
DRAWING LIST
LOCALITY PLAN

Drawing No.	Project No.	Issue
15-272-C7500	15-272	B

SITEWORKS NOTES

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO AT & L.
3. MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
4. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
5. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL. COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
6. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
7. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S SPECIFICATION R116.
8. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S FORM 3051 (UNBOUND), R.M.S FORM 3052 (BOUND) COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m OF BASECOURSE MATERIAL PLACED.
9. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m OF SUB-BASE COURSE MATERIAL PLACED.
10. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF AT & L.
11. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THE CONTRACTOR IS TO SEEK ACCEPTANCE OF THE PRODUCT FROM AT&L. THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
12. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY CARDNO HARD & FORESTER PTY LTD, BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. AT & L 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 AT & L.

THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS.

IMPORTANT NOTE:
THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY AND EXISTING RECORDS FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. THE TITLE BOUNDARIES SHOWN HEREON WERE NOT MARKED BY THE AUTHOR AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY AND NOT BY FIELD MEASUREMENT.

A SERVICES SEARCH OF THE AREA SURVEYED ABOVE HAS NOT BEEN UNDERTAKEN. VISIBLE SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN.

EXISTING UNDERGROUND SERVICES NOTES

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE.

AT & L CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY.

CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.

CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.



CONTRACTOR SHALL CALL:
DIAL BEFORE YOU DIG 1100
PRIOR TO COMMENCEMENT OF WORK TO OBTAIN ALL CURRENT SERVICE AUTHORITY PLANS

CONCRETE NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY
ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	AS 3600 F _c MPa AT 28 DAYS	SPECIFIED SLUMP	NOMINAL AGG. SIZE
VEHICULAR BASE	32	60	20
KERBS, PATHS, AND PITS	25	80	20

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.
3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY AT & L.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.M.S SPECIFICATION R83.
7. REINFORCEMENT SYMBOLS:
N DENOTES GRADE 450 N BARS TO AS 1302 GRADE N
R DENOTES 230 R HOT ROLLED PLAIN BARS TO AS 1302
SL DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304
- NUMBER OF BARS IN GROUP BAR GRADE AND TYPE
- NOMINAL BAR SIZE in mm SPACING in mm
- THE FIGURE FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304.
8. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:

KERBING NOTES

1. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O IN REINFORCED CONCRETE NOTES.
2. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON MIN. 100mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 95% MODIFIED DRY DENSITY (AS 1289 5.2.1).
3. EXPANSION JOINTS (E.J.) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
4. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5. BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
6. IN THE REPLACEMENT OF KERB AND GUTTER :-
EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm U.N.O FROM THE LIP OF GUTTER. UPON COMPLETION OF THE NEW KERB AND GUTTER NEW BASECOURSE AND SURFACE TO BE LAID 900mm WIDE U.N.O.

EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB AND GUTTER WITH 100mm DIA HOLE.

EXISTING KERB AND GUTTER IS TO BE COMPLETELY REMOVED WHERE NEW KERB AND GUTTER IS SHOWN.

FINISHED SURFACE LEVELS

1. ALL FINISHED SURFACE LEVELS ARE ±500mm U.N.O.

STORMWATER DRAINAGE NOTES

1. STORMWATER DESIGN CRITERIA:
(A) AVERAGE RECURRENCE INTERVAL:-
1:100 YEARS MAJOR STORM (OVERLAND FLOW)
1:20 YEARS MINOR STORM (PIPED NETWORK)
(B) RAINFALL INTENSITIES:
TIME OF CONCENTRATION: 5 MINUTES
1:100 YEARS= 219 mm/hr
1:20 YEARS= 167 mm/hr
(C) RUNOFF COEFFICIENTS:
ROOF AREAS: C 100 =1.0
EXTERNAL PAVEMENTS: C 100 =1.0
2. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES UP TO 300 DIA SHALL BE SEWER GRADE uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH VCP OR FRC PIPES MAY BE USED, SUBJECT TO THE APPROVAL OF PENRITH CITY COUNCIL.
5. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
6. PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (1998) AND AS/NZS 3500 3.2 (1998).
8. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY AT & L.
9. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
10. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
11. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
12. GRATES AND COVERS SHALL CONFORM TO AS 3996.
13. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
14. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
a. LOCAL AUTHORITY REQUIREMENTS
b. EPA REQUIREMENTS
c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
(A) INSTALL A WIND FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
(B) INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
(C) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
(D) INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
(E) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
(F) UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.

10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.

11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.

12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.

14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:

- (A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
- (B) ENSURING THAT NOTHING IS NAILED TO THEM
- (C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
(i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
(ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
(iii) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

STAGING

SUITABLE EROSION AND SEDIMENT CONTROLS SHALL BE DESIGNED, PROVIDED AND MAINTAINED BY THE CONTRACTOR THROUGHOUT ALL STAGES OF WORKS, INCLUDING AT COMPLETION OF THE BULK EARTHWORKS WHERE SHOWN ON AT&L DRAWINGS OR WHERE DIRECTED BY THE SUPERINTENDENT OR PENRITH CITY COUNCIL'S ENGINEERS.

SEDIMENT AND EROSION CONTROLS ARE TO BE DESIGNED AND DOCUMENTED BY A SUITABLY QUALIFIED EXPERT ENGAGED BY THE CONTRACTOR AND APPROVED AS PART OF THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH CONTROLS SHALL BE IN ACCORDANCE WITH THE RELEVANT REQUIREMENTS IN THE LATEST VERSION OF THE MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION GUIDELINE (LANDCOM).

Bar Scales

B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
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Status	FOR APPROVAL	A1
NOT TO BE USED FOR CONSTRUCTION		

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	Drawn	JC
	Designed	JC
Height Datum	AHD	Checked FX
Grid	MGA	Approved FX



Civil Engineers and Project Managers

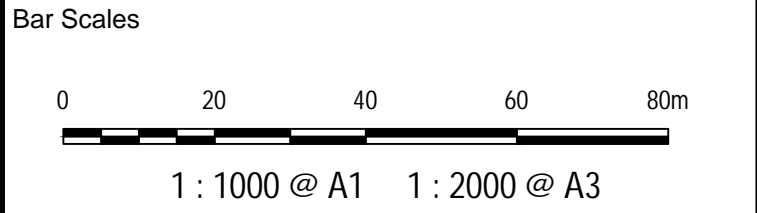
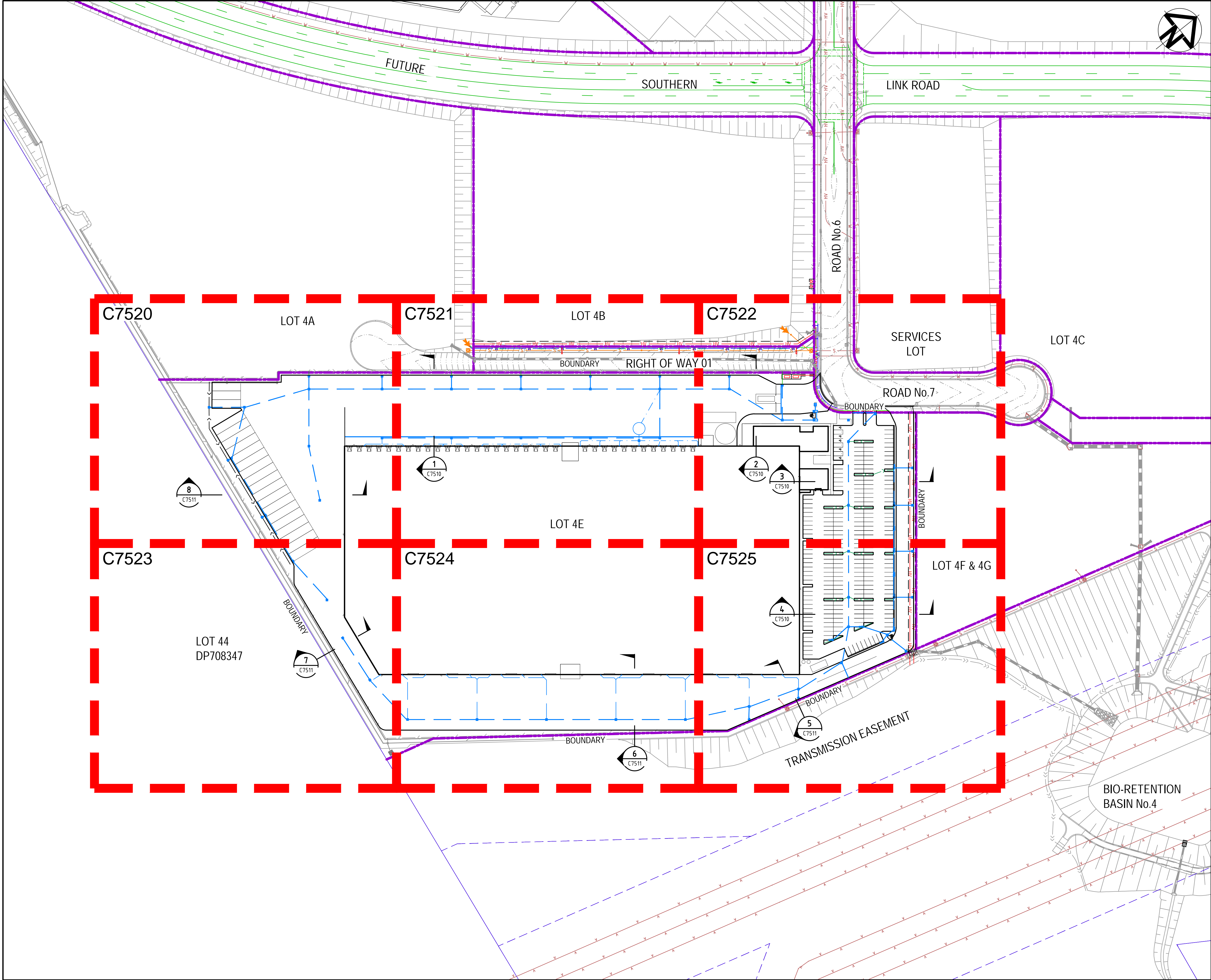
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PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST - LOT 4E

GENERAL NOTES

Drawing No.	Project No.	Issue
15-272-C7501	15-272	B



C	REVISED STORMWATER	19/07/21
B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
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NOT TO BE USED FOR CONSTRUCTION		

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Height Datum	AHD	Designed	JC
		Checked	FX
Grid	MGA	Approved	FX

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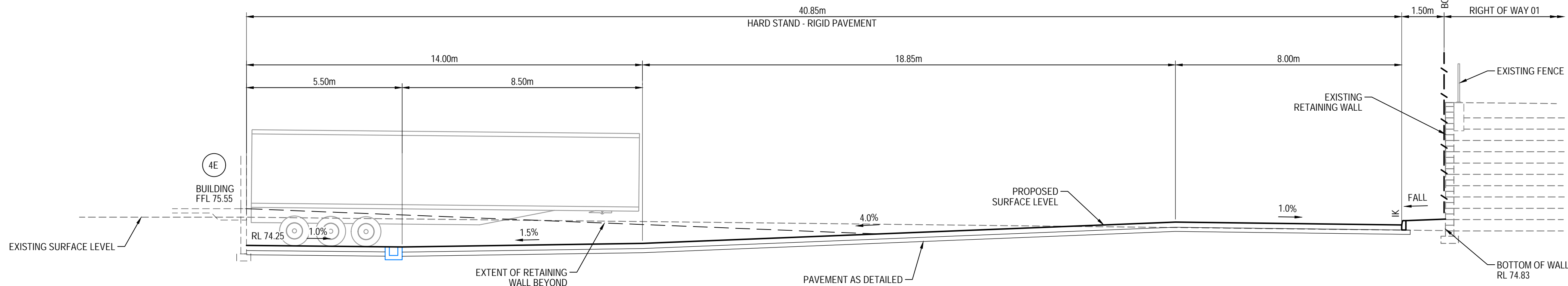
Project

PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E

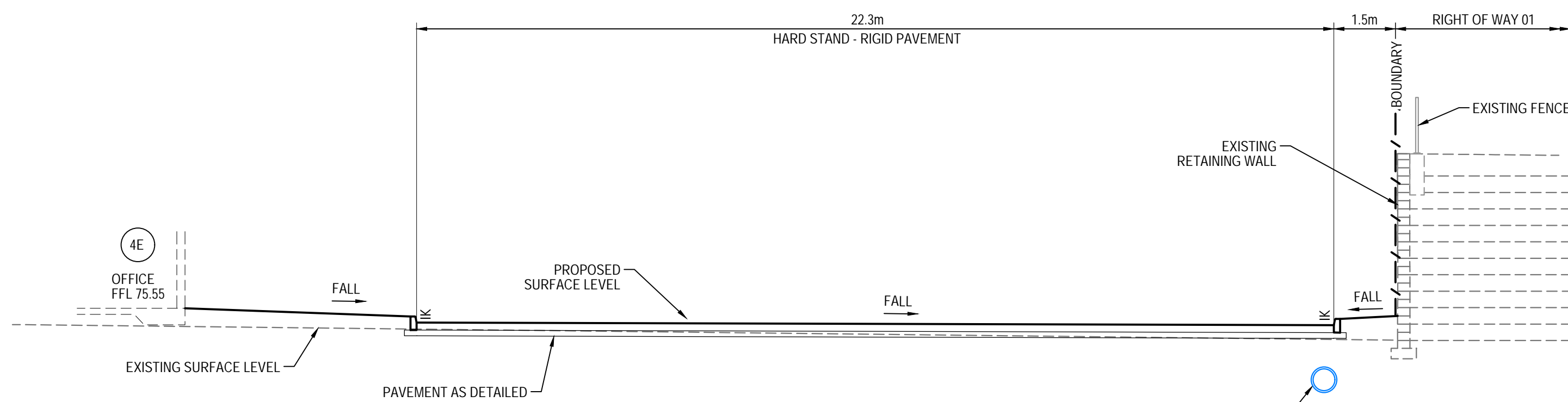
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GENERAL ARRANGEMENT PLAN

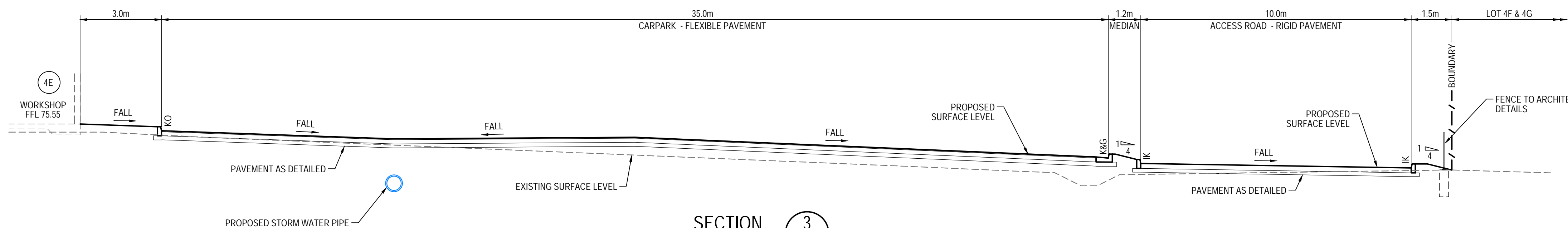
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15-272-C7505	15-272	C



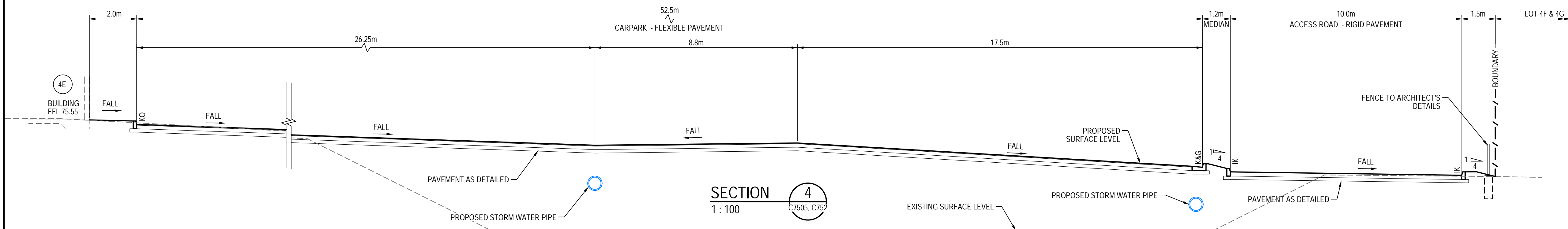
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SECTION 2
1 : 100

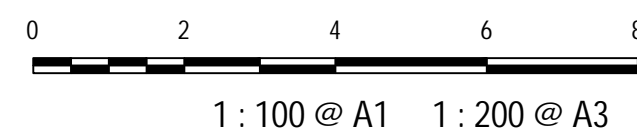


SECTION 3
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SECTION 4
1 : 100

Bar Scales



Status
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION **A1**

Issue	Description	Date
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A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

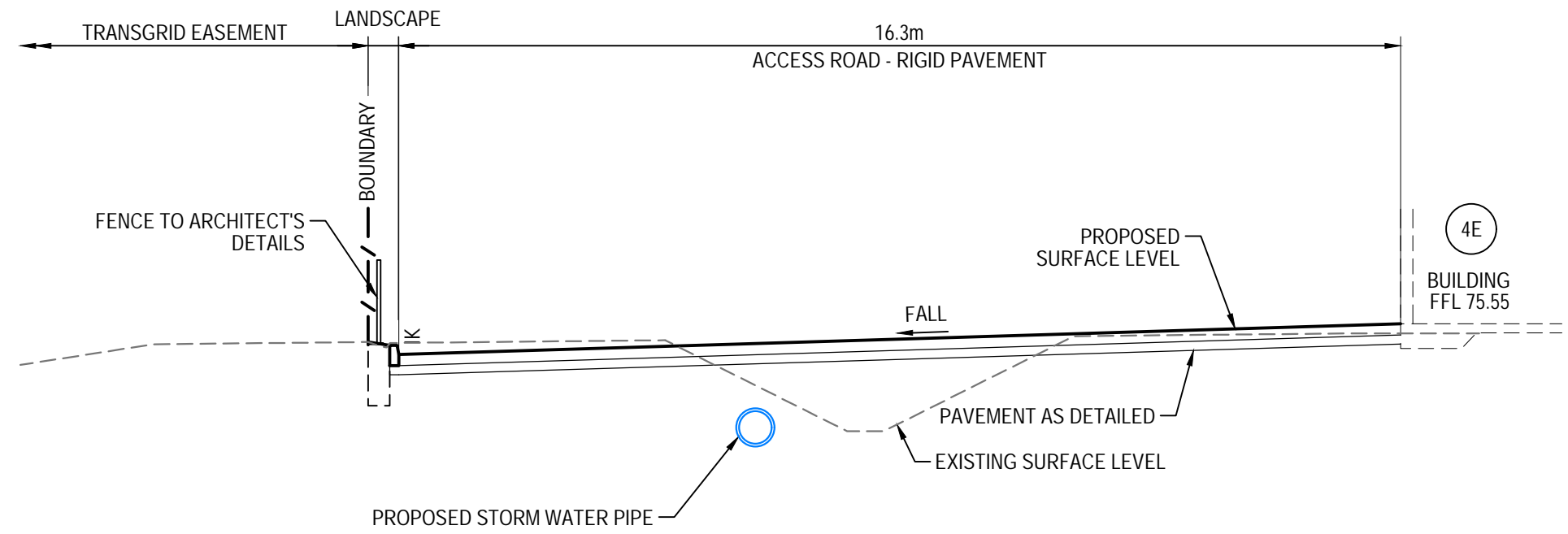
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Designed	JC	
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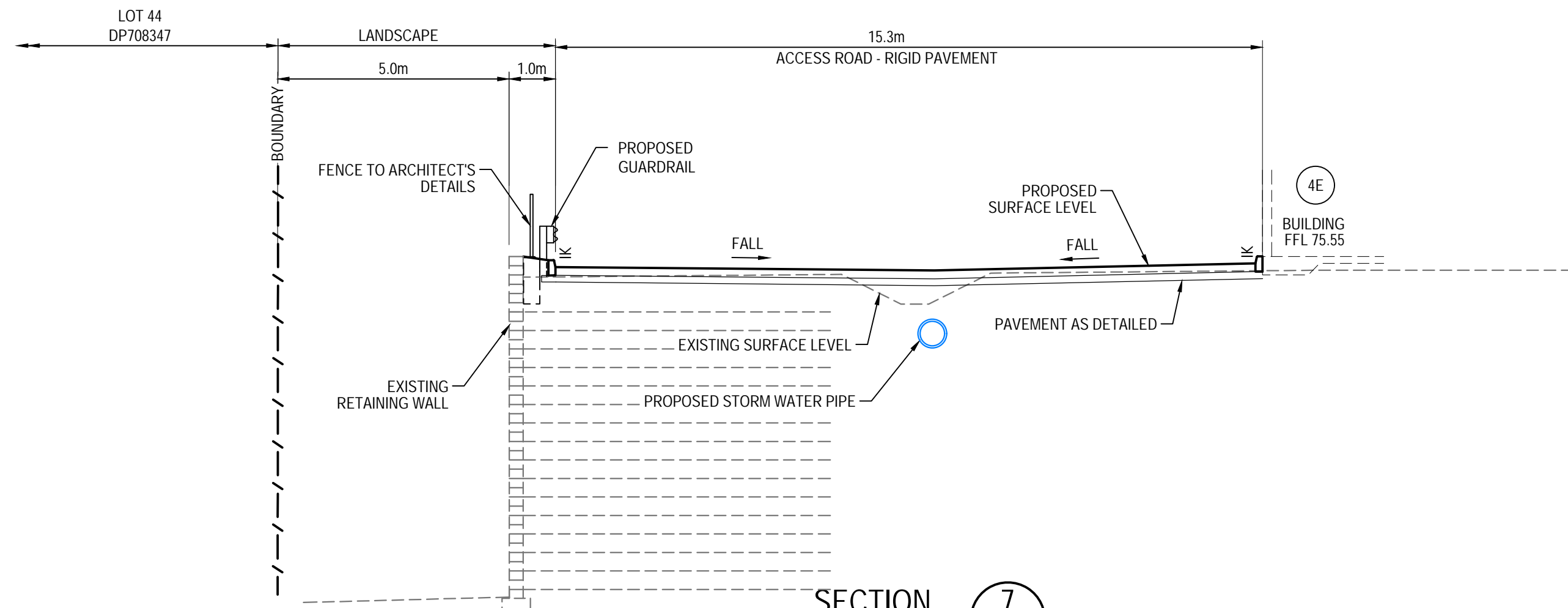
Project
PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E

Title
TYPICAL SECTIONS
SHEET 1

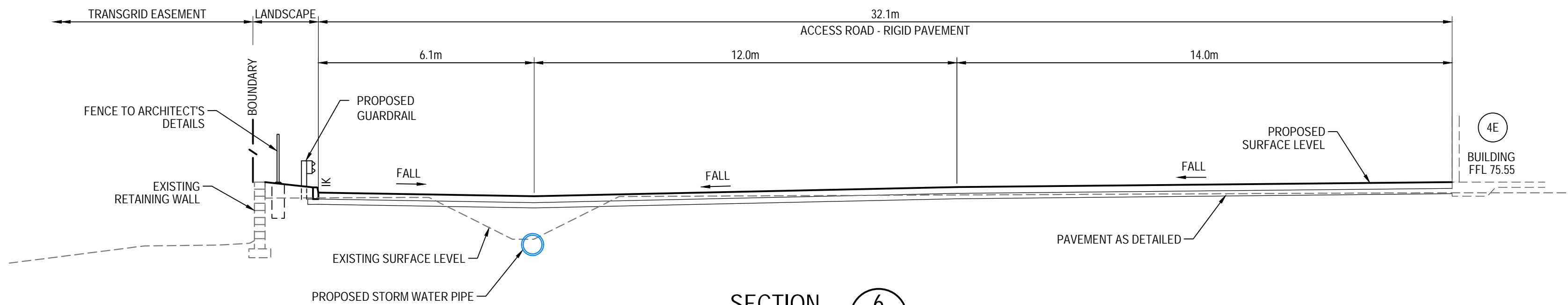
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15-272-C7510	15-272	B



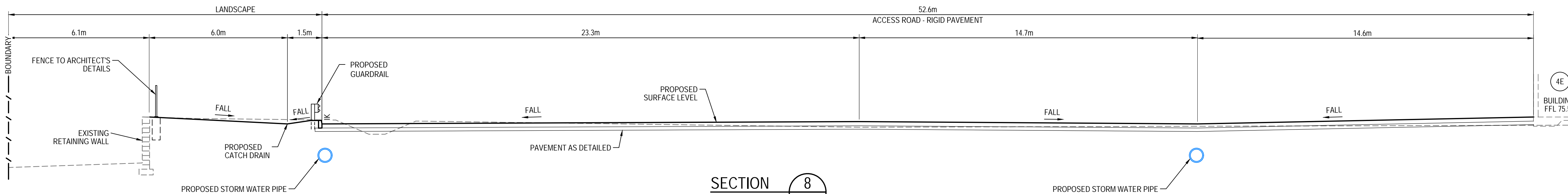
SECTION 5
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C7505, C7525



SECTION 7
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C7505, C7523

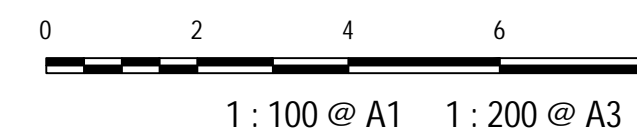


SECTION 6
1:100
C7505, C7524



SECTION 8
1:100
C7505, C7520

Bar Scales



B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
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Status	FOR APPROVAL	A1
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		Designed	JC
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Grid	MGA	Approved	FX

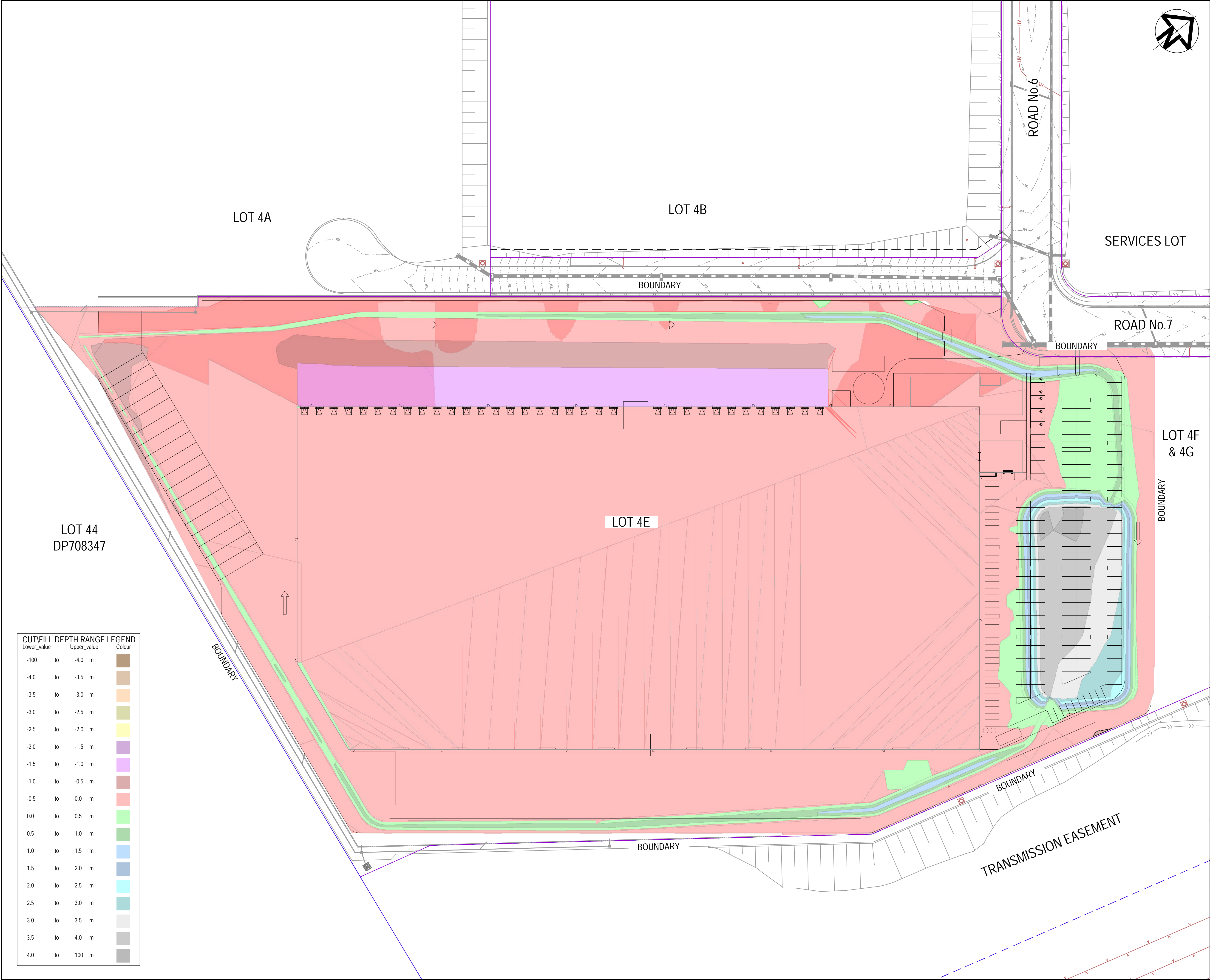


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Project
**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title
**TYPICAL SECTIONS
SHEET 2**

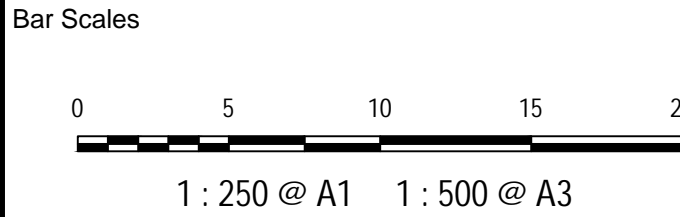
Drawing No. 15-272-C7511	Project No. 15-272	Issue B
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CUT/FILL DEPTH RANGE LEGEND		
Lower_value	Upper_value	Colour
-100	to -4.0	m
-4.0	to -3.5	m
-3.5	to -3.0	m
-3.0	to -2.5	m
-2.5	to -2.0	m
-2.0	to -1.5	m
-1.5	to -1.0	m
-1.0	to -0.5	m
-0.5	to 0.0	m
0.0	to 0.5	m
0.5	to 1.0	m
1.0	to 1.5	m
1.5	to 2.0	m
2.0	to 2.5	m
2.5	to 3.0	m
3.0	to 3.5	m
3.5	to 4.0	m
4.0	to 100	m

NET CUT (cu.m)	NET FILL (cu.m)	BALANCE (cu.m)
-9,440	11,740	2,300 IMPORT

- NOTES
1. THE ABOVE VOLUMES ARE CALCULATED WITH THE ASSUMPTION THAT THE INFRASTRUCTURE WORKS ARE COMPLETED.
 2. INFRASTRUCTURE EARTHWORKS ARE SUBJECTED TO CHANGE TO REDUCE THE EXPORT AMOUNT. WAE SURVEY TO CONFIRM VOLUMES PRIOR TO DETAILED DESIGN.
 3. NO ALLOWANCE FOR RETAINING WALL BACKFILL MATERIAL.
 4. ASSUMED ALL PAVEMENT AND LANDSCAPE DEPTH ARE 300mm.
 5. THE VOLUMES DO NOT TAKE INTO ACCOUNT THE FOLLOWING :
 - BULKING FACTORS OF REMOVED CUT
 - REMOVAL OF EXISTING BUILDING SLABS AND PAVEMENTS
 - REMOVAL AND/OR REMEDIATION OF ANY EXISTING UNCONTROLLED FILL
 - PROPOSED LANDSCAPING
 - STORMWATER AND UTILITY TRENCHING
 - EROSION AND SEDIMENTATION CONTROL SWALES AND BASINS
 6. OVER EXCAVATION OF EXISTING SEDIMENT BASIN DUE TO UNSTABLE MATERIAL



Issue	Description	Date
B	REVISED VOLUMES	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

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Status	FOR APPROVAL	A1
	NOT TO BE USED FOR CONSTRUCTION	

Scales	1 : 750	15-272-C7515.dwg	
		Drawn	JC
		Designed	JC
Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX



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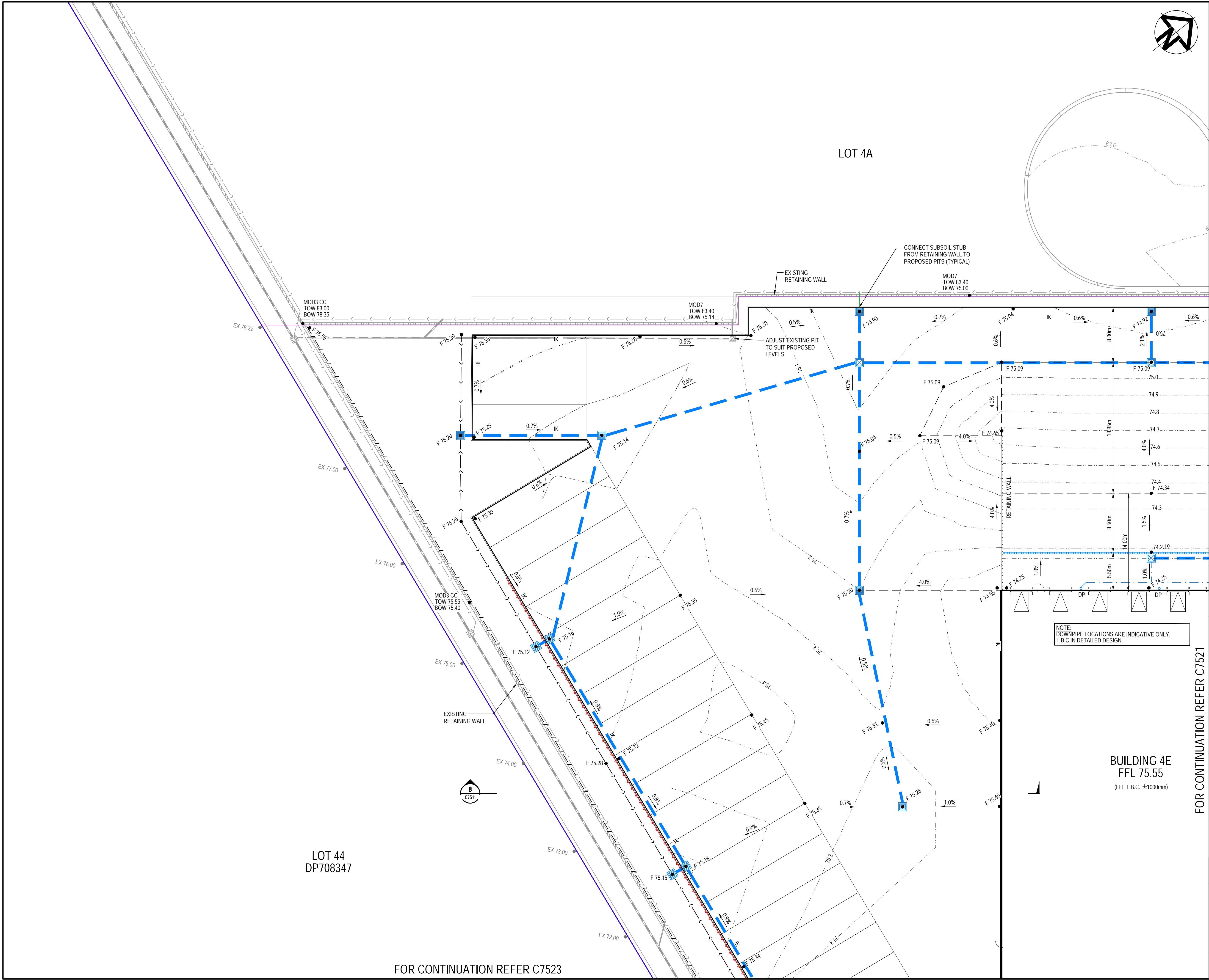
Project

**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title

BULK EARTHWORKS PLAN

Drawing No.	Project No.	Issue
15-272-C7515	15-272	B



LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- F74.00 FINISHED SURFACE LEVEL
- Q375 STORMWATER PIPE WITH SIZE
- GD STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- DP STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- S EXISTING SEWER MAIN
- V EXISTING WATER MAIN
- NBN EXISTING NBN
- LV/HV EXISTING ELECTRICAL
- G EXISTING GAS MAIN

Bar Scales

0 5 10 15 20

1 : 250 @ A1 1 : 500 @ A3

Issue	Description	Date
B	REVISED HARDSTAND LEVELS	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

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Status	FOR APPROVAL	A1
NOT TO BE USED FOR CONSTRUCTION		

Scales	1 : 250	15-272-C7520.dwg	
Height Datum	AHD	Drawn	JC
Grid	MGA	Designed	JC
		Checked	FX
		Approved	FX



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Project

PROPOSED INDUSTRIAL DEVELOPMENT

OAKDALE WEST - LOT 4E

Title

SITWORKS AND STORMWATER DRAINAGE PLAN

SHEET 1

Drawing No.	Project No.	Issue
15-272-C7520	15-272	B

FOR CONTINUATION REFER C7521

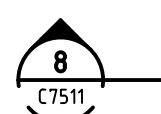
FOR CONTINUATION REFER C7523

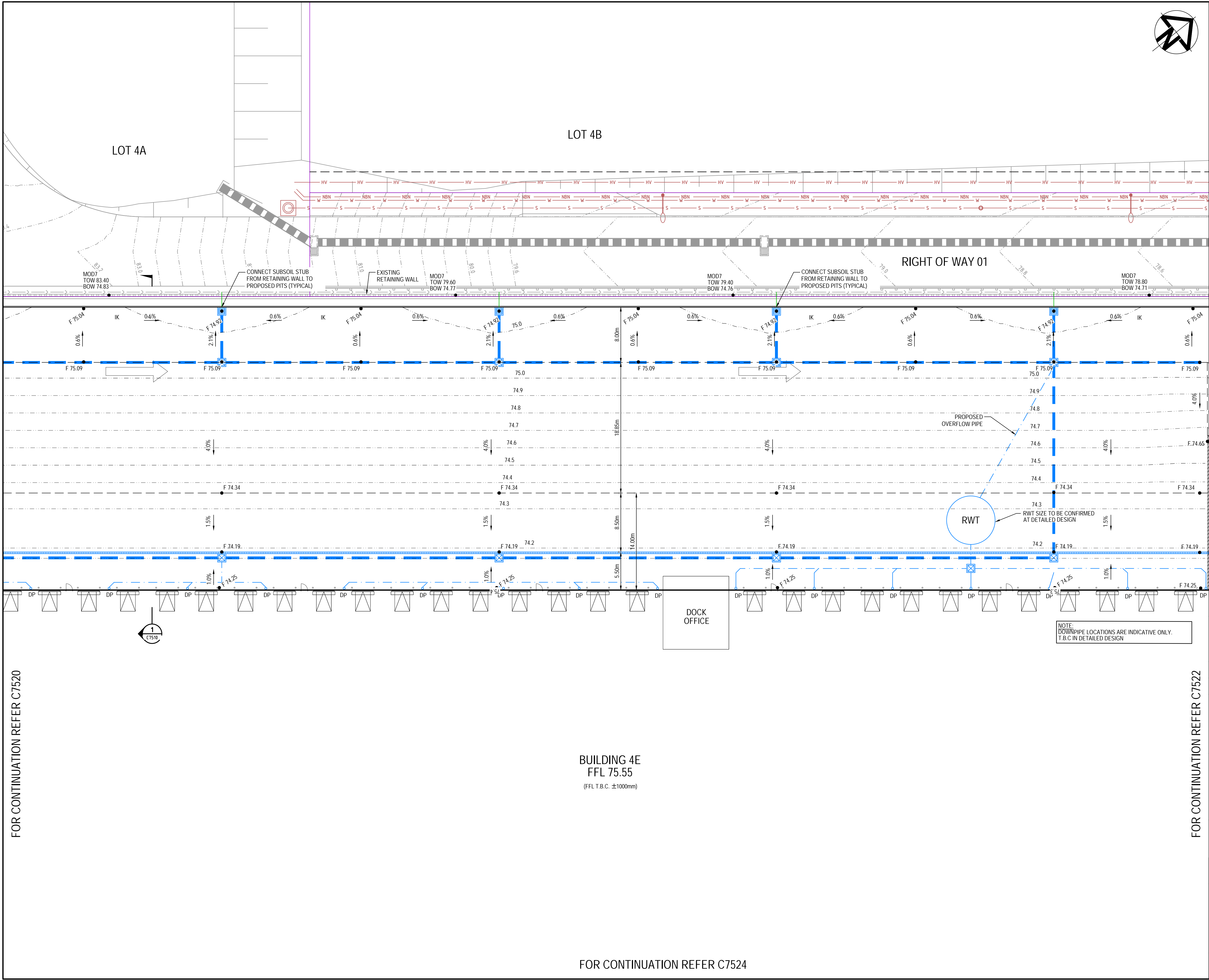
BUILDING 4E
FFL 75.55
(FFL T.B.C. ±100mm)

NOTE:
DOWNPIPE LOCATIONS ARE INDICATIVE ONLY.
T.B.C IN DETAILED DESIGN

LOT 4A

LOT 44
DP708347





LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- FINISHED SURFACE LEVEL
- STORMWATER PIPE WITH SIZE
- STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING NBN
- EXISTING ELECTRICAL
- EXISTING GAS MAIN

Bar Scales

0 5 10 15 20

1 : 250 @ A1 1 : 500 @ A3

Issue	Description	Date
B	REVISED HARDSTAND LEVELS	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

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Status	FOR APPROVAL		A1
Scales	15-272-C7521.dwg		
1 : 250	Drawn	JC	
	Designed	JC	
Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX

Client

Goodman

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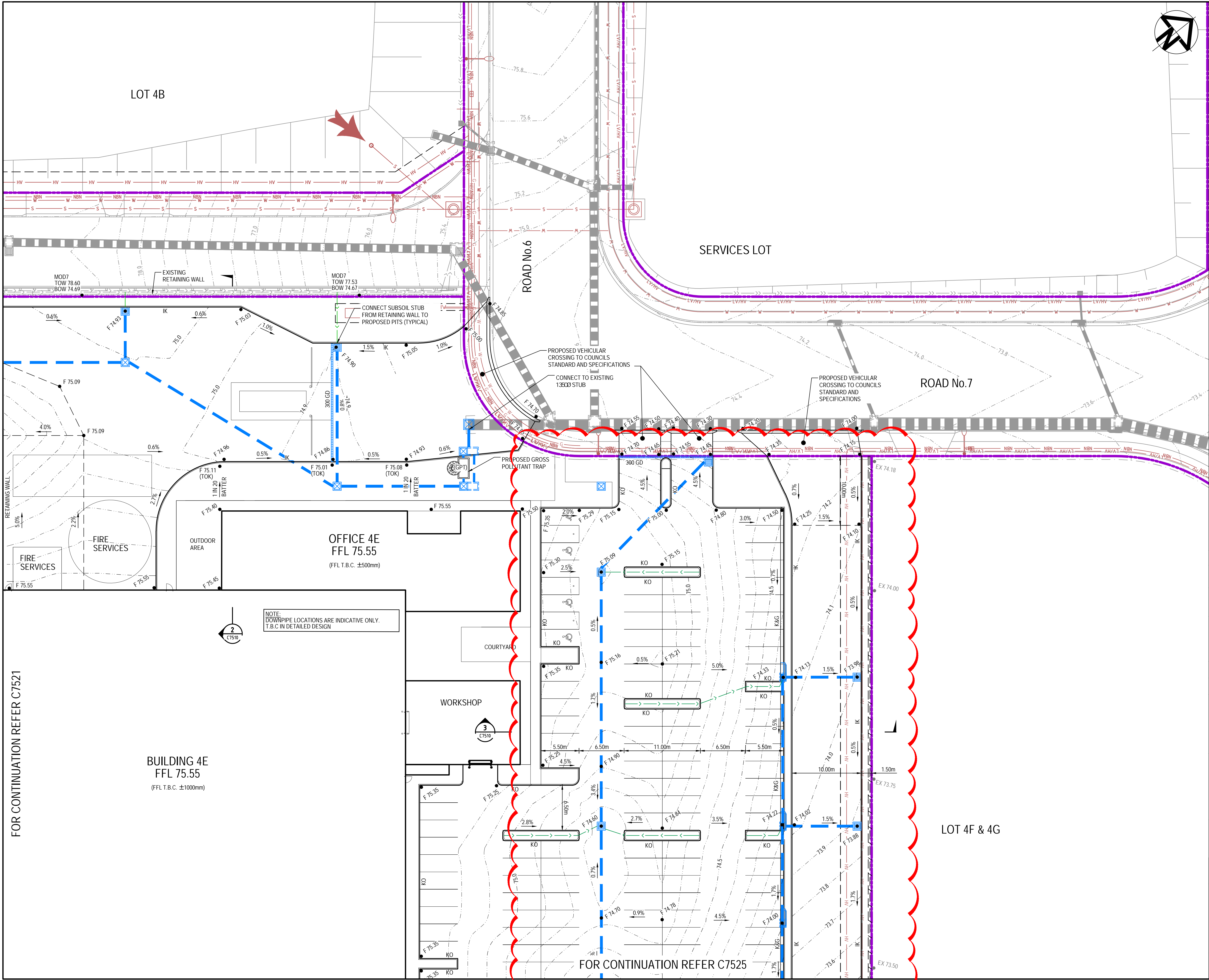
Project	PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST - LOT 4E	
Title	SITWORKS AND STORMWATER DRAINAGE PLAN SHEET 2	
Drawing No.	Project No.	Issue
15-272-C7521	15-272	B

FOR CONTINUATION REFER C7520

FOR CONTINUATION REFER C7522

BUILDING 4E
FFL 75.55
(FFL T.B.C. ±1000mm)

FOR CONTINUATION REFER C7524



LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- F74.00 FINISHED SURFACE LEVEL
- Q375 STORMWATER PIPE WITH SIZE
- GD STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- DP STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- S EXISTING SEWER MAIN
- W EXISTING WATER MAIN
- NBN EXISTING NBN
- LV/HV EXISTING ELECTRICAL
- G EXISTING GAS MAIN

Bar Scales

0 5 10 15 20

1 : 250 @ A1 1 : 500 @ A3

C	REVISED STORMWATER	19/07/21
B	REVISED HARDSTAND LEVELS	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21
Issue	Description	Date

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Status

FOR APPROVAL

NOT TO BE USED FOR CONSTRUCTION

A1

Scales

1 : 250

15-272-C7522.dwg

Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX

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Project

PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E

Title

SITEWORKS AND STORMWATER DRAINAGE PLAN
SHEET 3

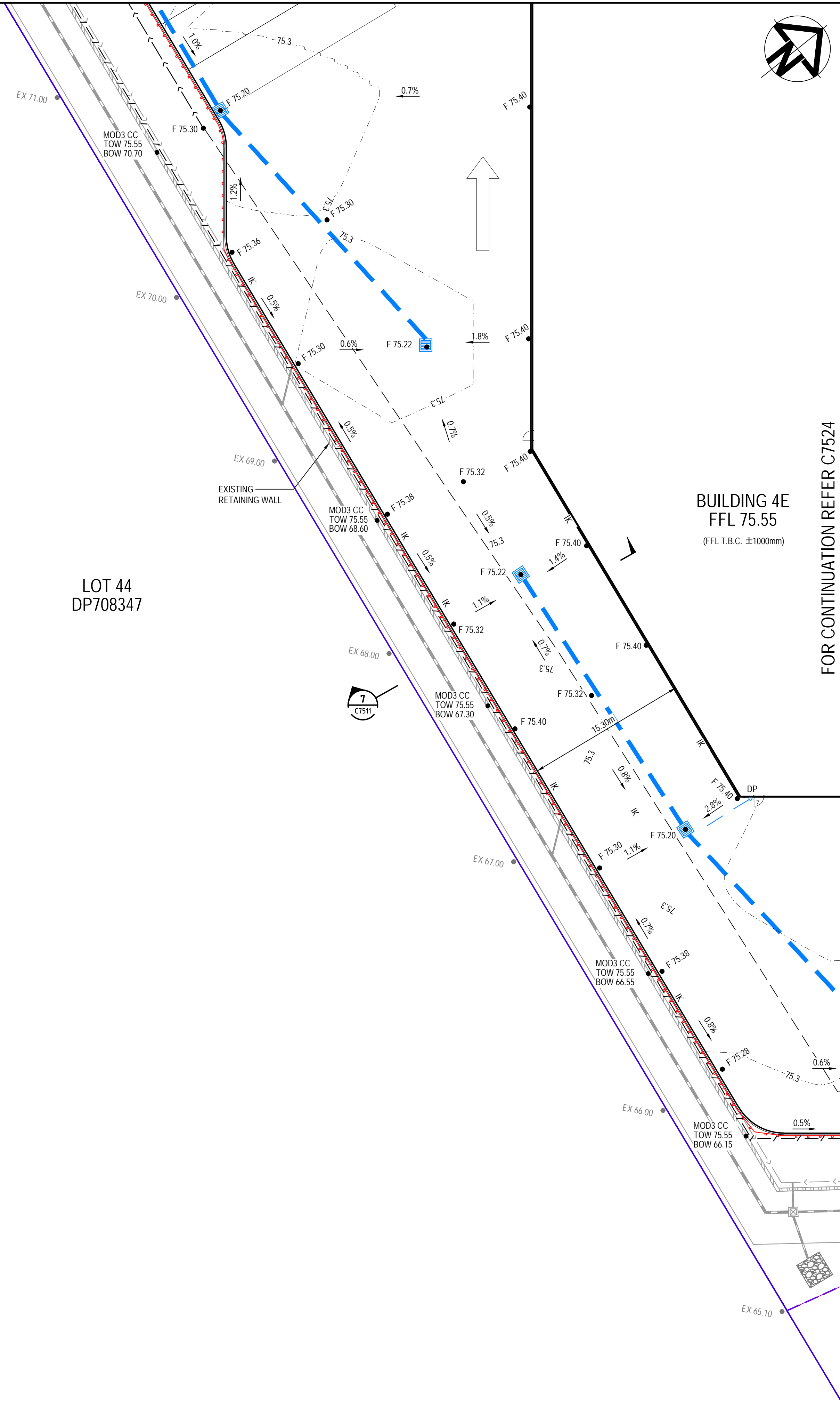
Drawing No.	Project No.	Issue
15-272-C7522	15-272	C

FOR CONTINUATION REFER C7521

FOR CONTINUATION REFER C7525

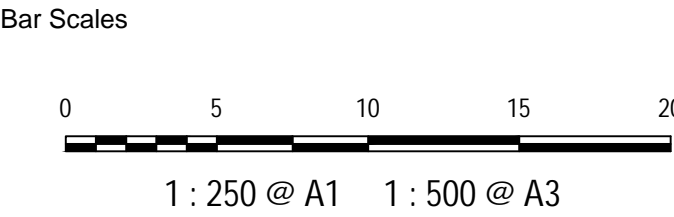
LOT 4F & 4G

FOR CONTINUATION REFER C7520



LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- F74.00 FINISHED SURFACE LEVEL
- Ø375 STORMWATER PIPE WITH SIZE
- GD STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- DP STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- S EXISTING SEWER MAIN
- V EXISTING WATER MAIN
- NBN EXISTING NBN
- LV/HV EXISTING ELECTRICAL
- G EXISTING GAS MAIN



B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
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Status	FOR APPROVAL	A1
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Scales	1 : 250	15-272-C7523.dwg	
		Drawn	JC
Height Datum	AHD	Checked	FX
		Approved	FX
Grid	MGA	Approved	FX



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Project

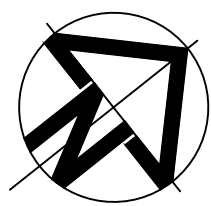
**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title

**SITEWORKS AND STORMWATER DRAINAGE PLAN
SHEET 4**

Drawing No.	Project No.	Issue
15-272-C7523	15-272	B

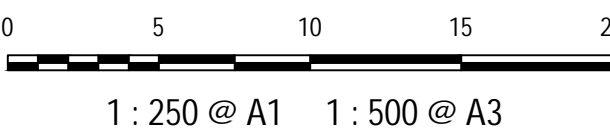
FOR CONTINUATION REFER C7521



LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- F74.00 FINISHED SURFACE LEVEL
- 0375 STORMWATER PIPE WITH SIZE
- GD STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- DP STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- S EXISTING SEWER MAIN
- V EXISTING WATER MAIN
- NBN EXISTING NBN
- LV/HV EXISTING ELECTRICAL
- G EXISTING GAS MAIN

Bar Scales



B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21
Issue	Description	Date

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Status	FOR APPROVAL	A1
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Scales	1 : 250	15-272-C7524.dwg	
		Drawn	JC
		Designed	JC
Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX



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Project
**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title
**SITEWORKS AND STORMWATER DRAINAGE
PLAN
SHEET 5**

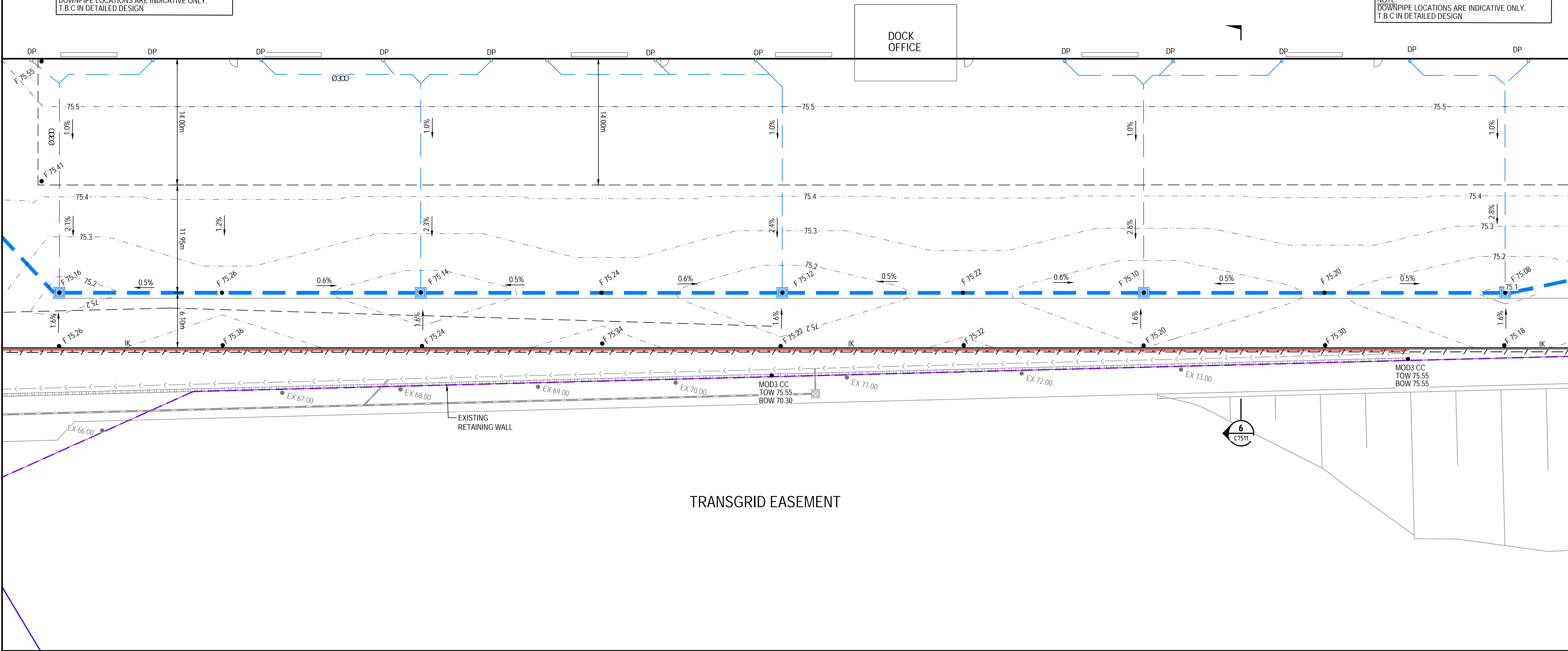
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FOR CONTINUATION REFER C7523

FOR CONTINUATION REFER C7525

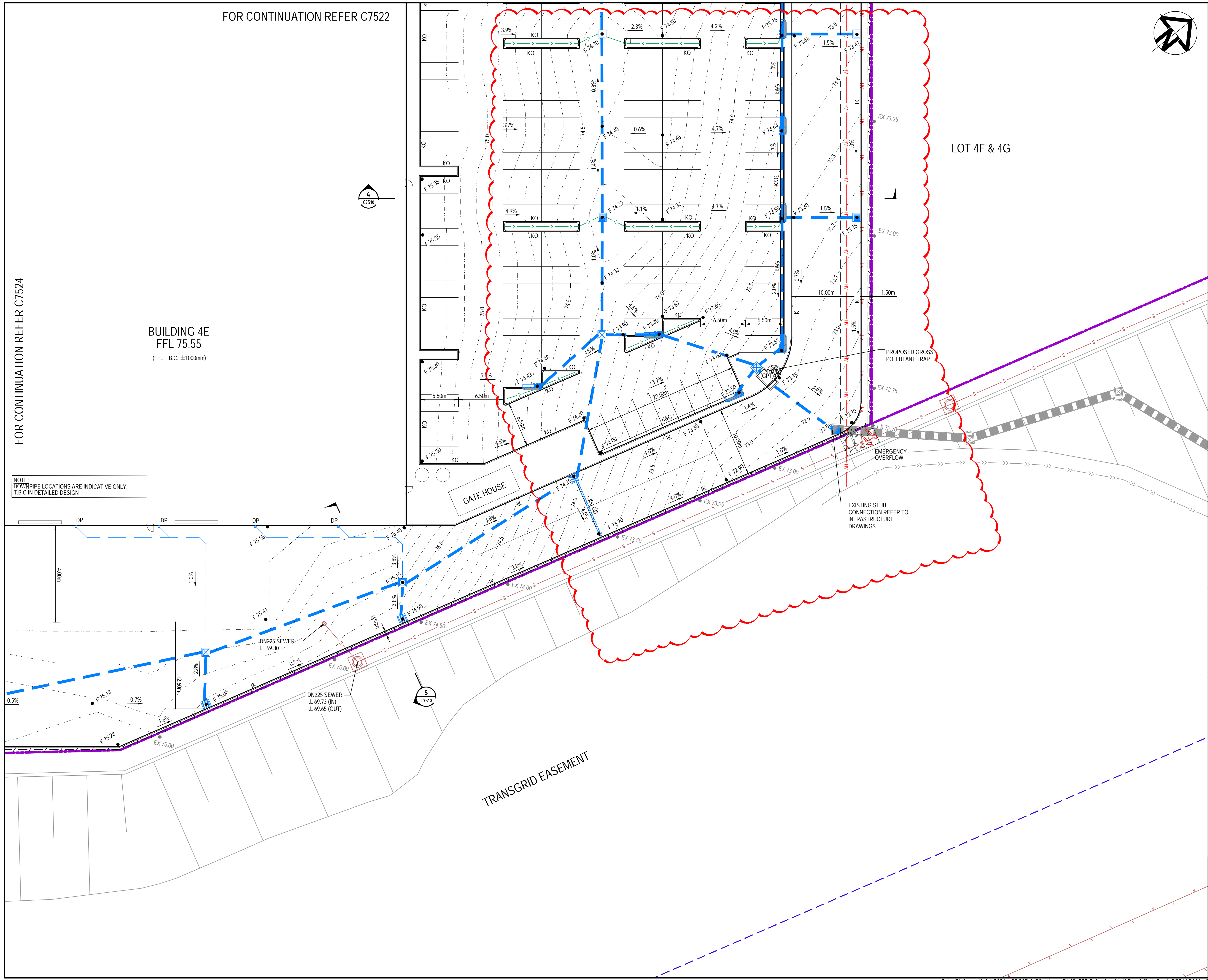
NOTE:
DOWNPIPE LOCATIONS ARE INDICATIVE ONLY.
T.B.C IN DETAILED DESIGN

NOTE:
DOWNPIPE LOCATIONS ARE INDICATIVE ONLY.
T.B.C IN DETAILED DESIGN



TRANSGRID EASEMENT

6
C7511



LEGEND

- EXISTING BOUNDARY
- PROPOSED BOUNDARY
- 65.0 PROPOSED CONTOUR
- K&G KERB AND GUTTER
- KO KERB ONLY
- IK INTEGRAL KERB ONLY
- F74.00 FINISHED SURFACE LEVEL
- Q375 STORMWATER PIPE WITH SIZE
- GD STORMWATER GRATED DRAIN WITH CLASS 'D' COVER
- DP STORMWATER DOWNPIPE
- GUARD RAIL SAFETY BARRIER
- SUBSOIL DRAINAGE (100mmØ)
- KERB INLET PIT
- SURFACE INLET PIT
- JUNCTION PIT
- EXISTING STORMWATER PIPE
- EXISTING RETAINING WALL
- S EXISTING SEWER MAIN
- V EXISTING WATER MAIN
- NBN EXISTING NBN
- LV/HV EXISTING ELECTRICAL
- G EXISTING GAS MAIN

Bar Scales

0 5 10 15 20

1 : 250 @ A1 1 : 500 @ A3

Issue	Description	Date
D	REVISED STORMWATER	19/07/21
C	REVISED STORMWATER	15/07/21
B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

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Status	FOR APPROVAL		A1
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Scales	15-272-C7525.dwg		
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Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX

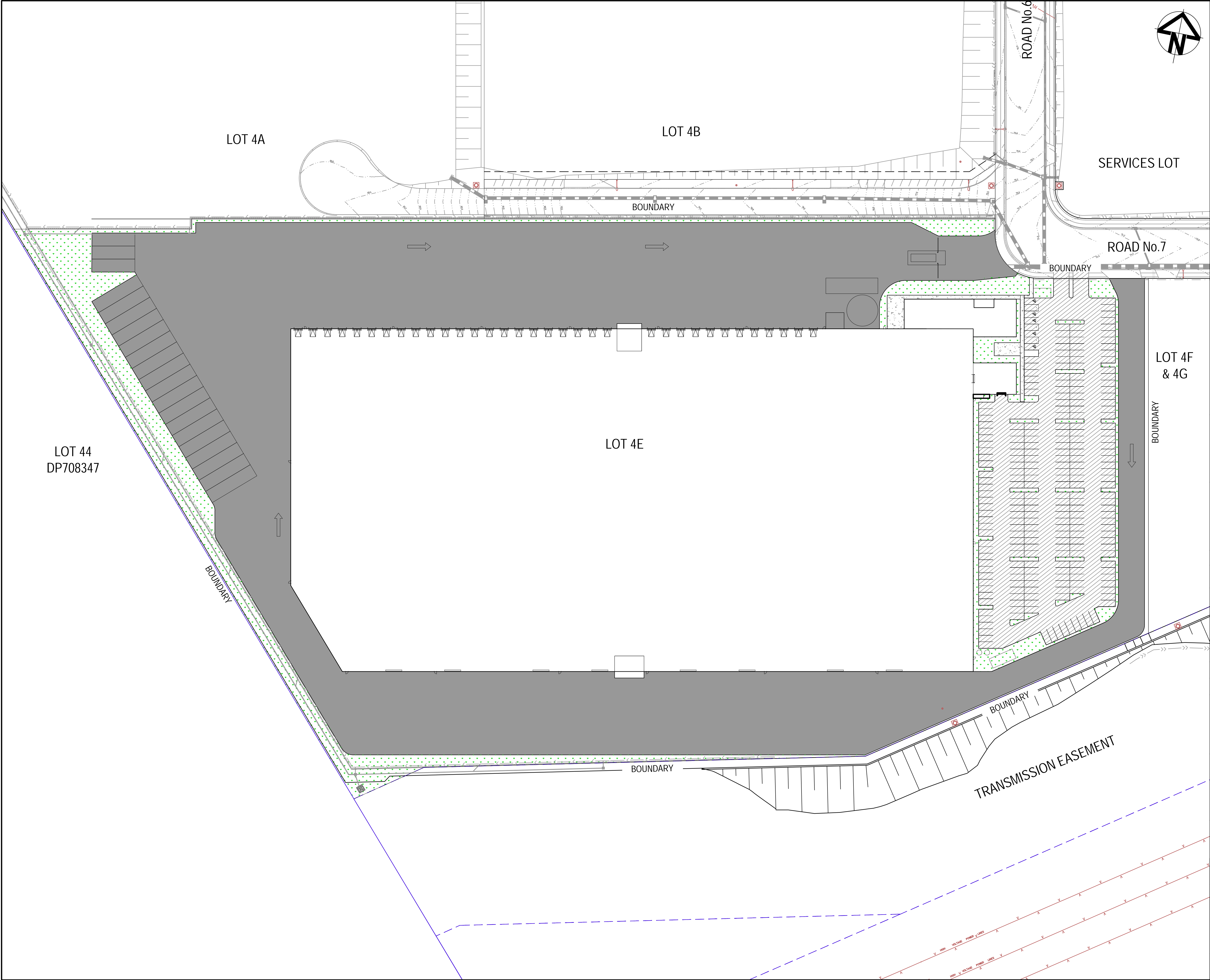
Client

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Project		
PROPOSED INDUSTRIAL DEVELOPMENT OAKDALE WEST - LOT 4E		
Title		
SITWORKS AND STORMWATER DRAINAGE PLAN SHEET 6		
Drawing No.	Project No.	Issue
15-272-C7525	15-272	D

Date Plotted: 19 Jul 2021 - 03:29PM File Name: F:\15-272 Oakdale West\Draws\Civil\Final\SSDA\17000_On-Lot Works Packages\7500_Lot 4E\15-272-C7525.dwg V1



LEGEND

- HEAVY DUTY RIGID PAVEMENT
- ASPHALT PAVEMENT
CARPARK AISLES
- LANDSCAPE
- FOOTPATH
- FIRE ACCESS TRACK

NOTE: PAVEMENT THICKNESS SUBJECT TO DETAILED DESIGN

Bar Scales

0 15 30 45 60

1 : 750 @ A1 1 : 1500 @ A3

B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
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Status		FOR APPROVAL		A1	
Scales		15-272-C7530.dwg			
1 : 750	Drawn	JC			
	Designed	JC			
Height Datum	AHD	Checked	FX		
Grid	MGA	Approved	FX		

Client

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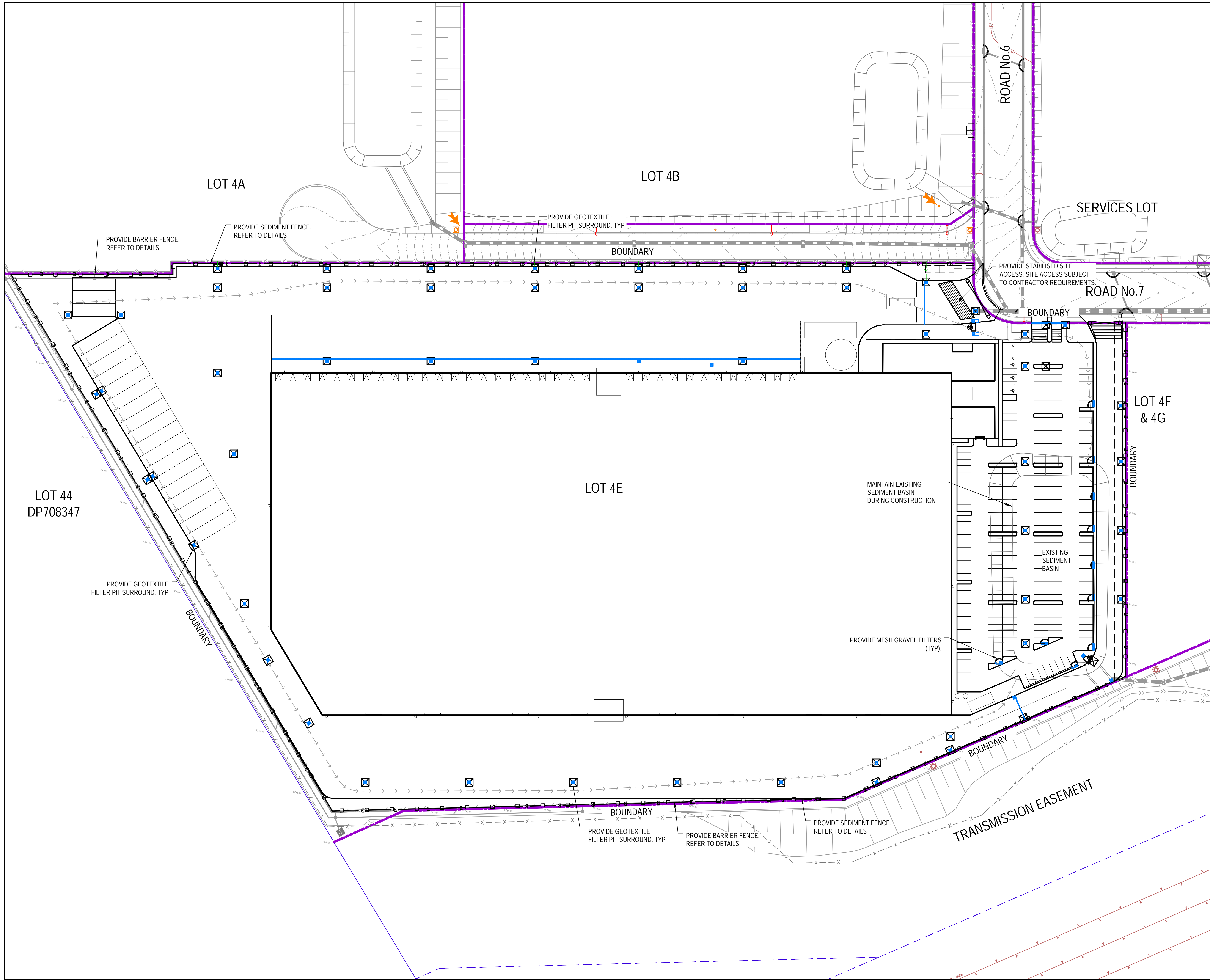
Project

**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title

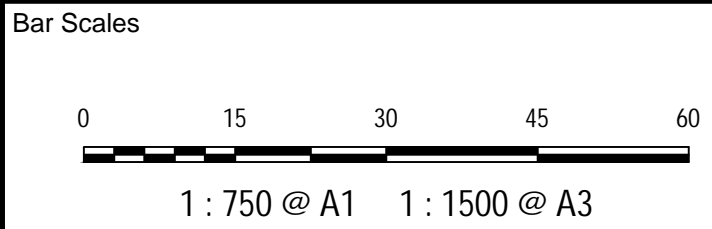
PAVEMENT PLAN

Drawing No.	Project No.	Issue
15-272-C7530	15-272	B



LEGEND

- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- BARRIER FENCE
- STRAW BALE FILTER (SD 6-7)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE



C	REVISED STORMWATER	19/07/21
B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21
Issue	Description	Date

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Status	FOR APPROVAL	A1
NOT TO BE USED FOR CONSTRUCTION		

Scales	1 : 750	15-272-C7540.dwg	
		Drawn	JC
Height Datum	AHD	Designed	JC
		Checked	FX
Grid	MGA	Approved	FX



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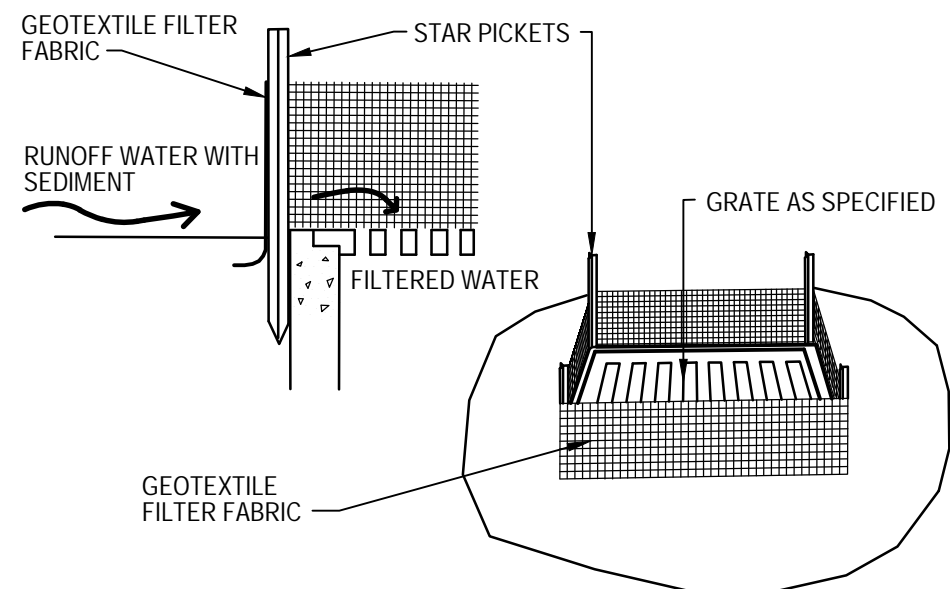
Project

**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title

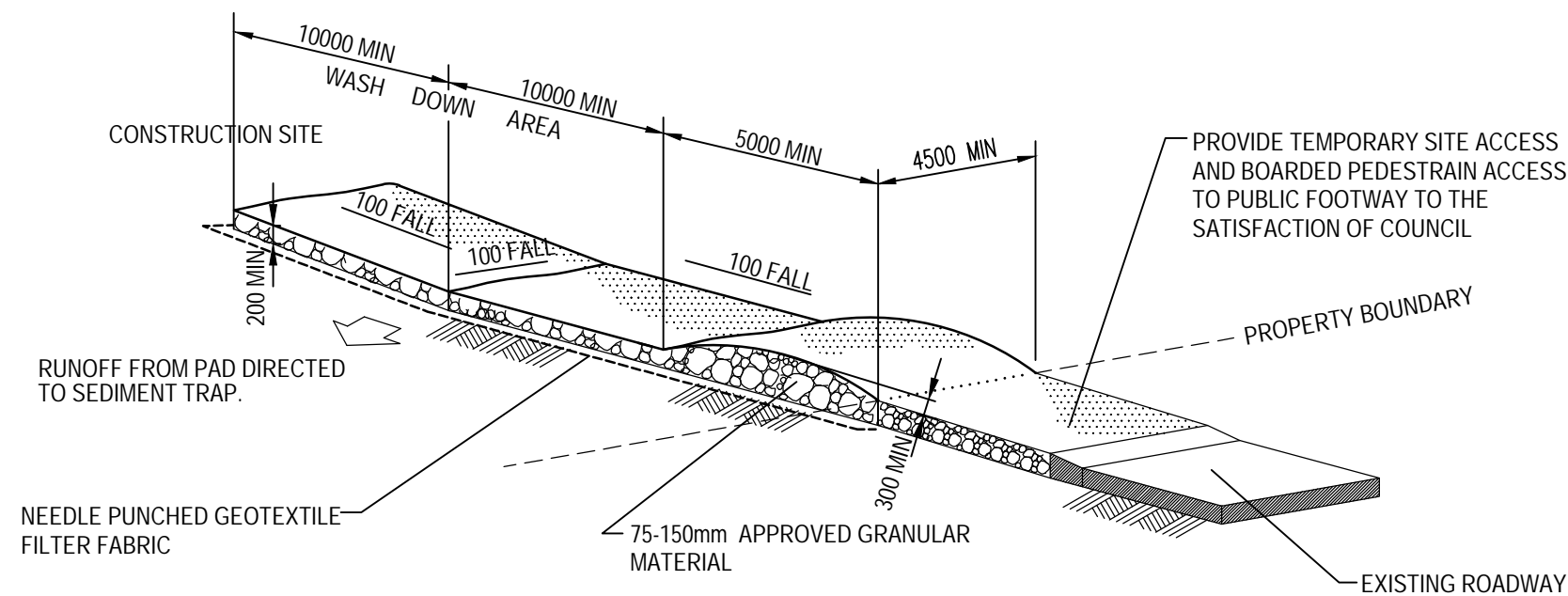
EROSION AND SEDIMENT CONTROL PLAN

Drawing No.	Project No.	Issue
15-272-C7540	15-272	C



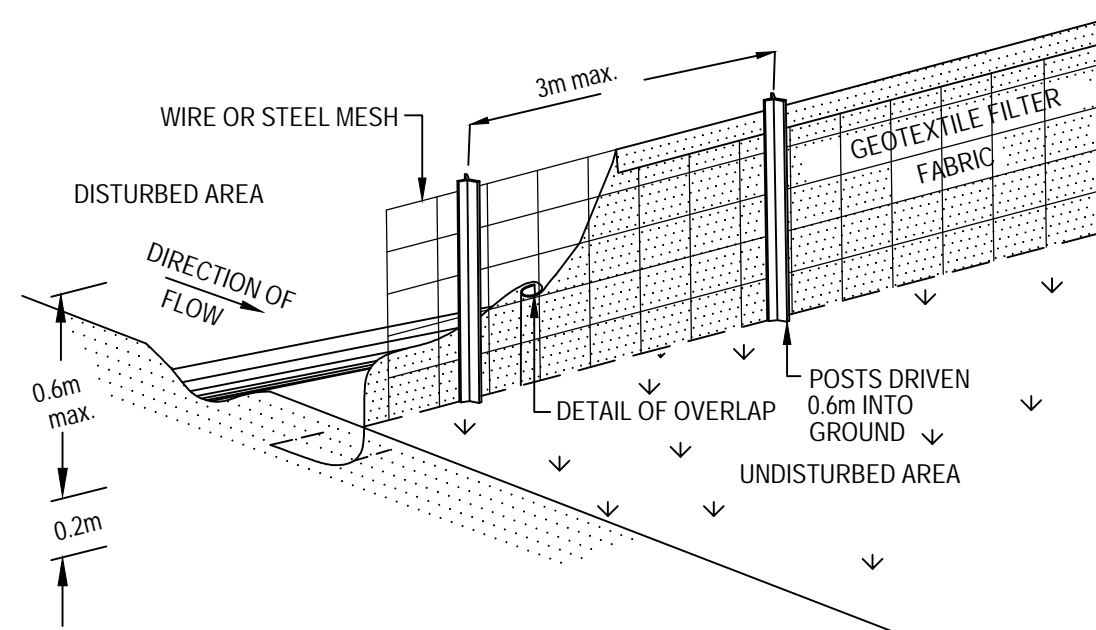
GEOTEXTILE FILTER PIT SURROUND

NTS



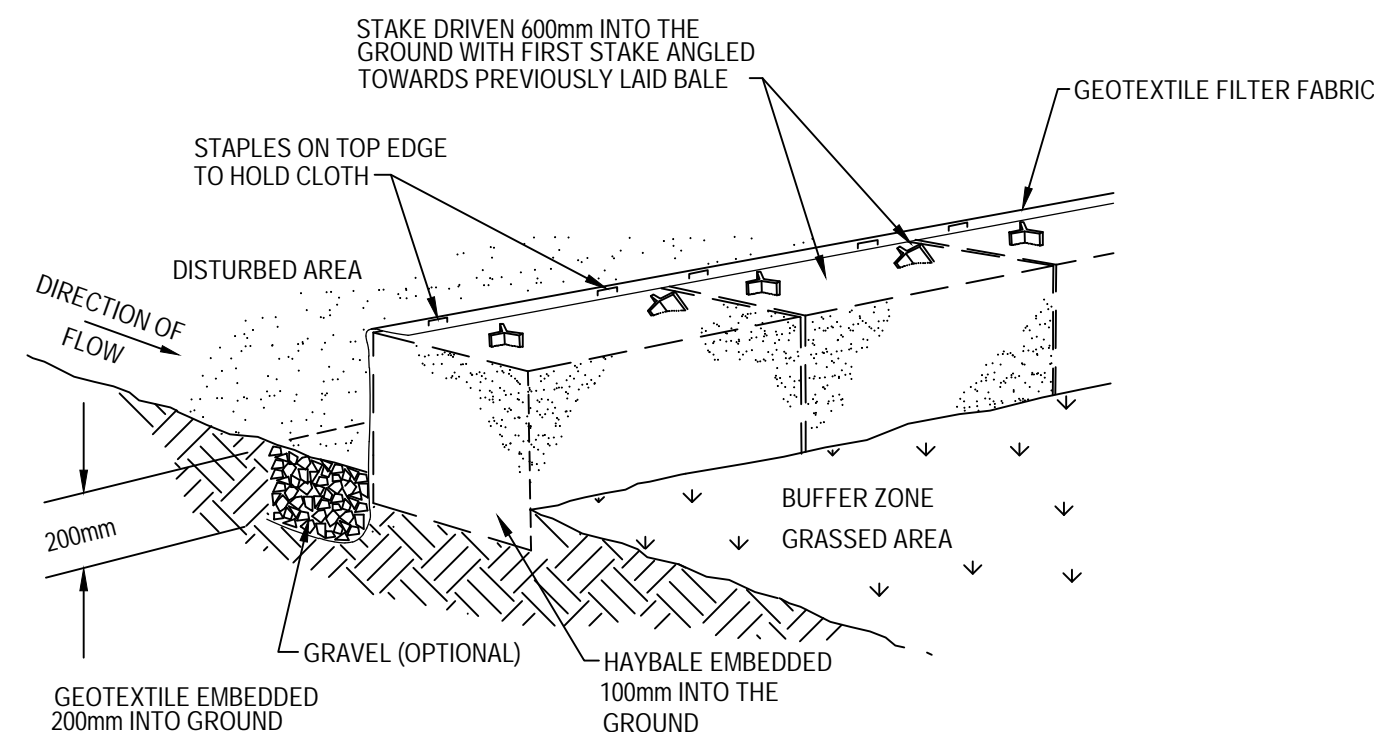
STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA

NTS



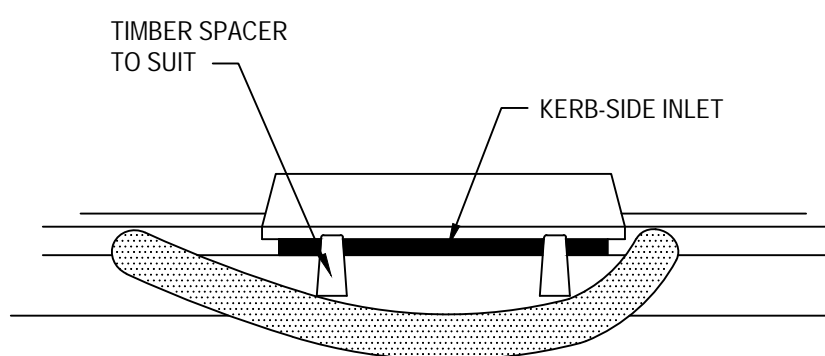
SEDIMENT FENCE

NTS



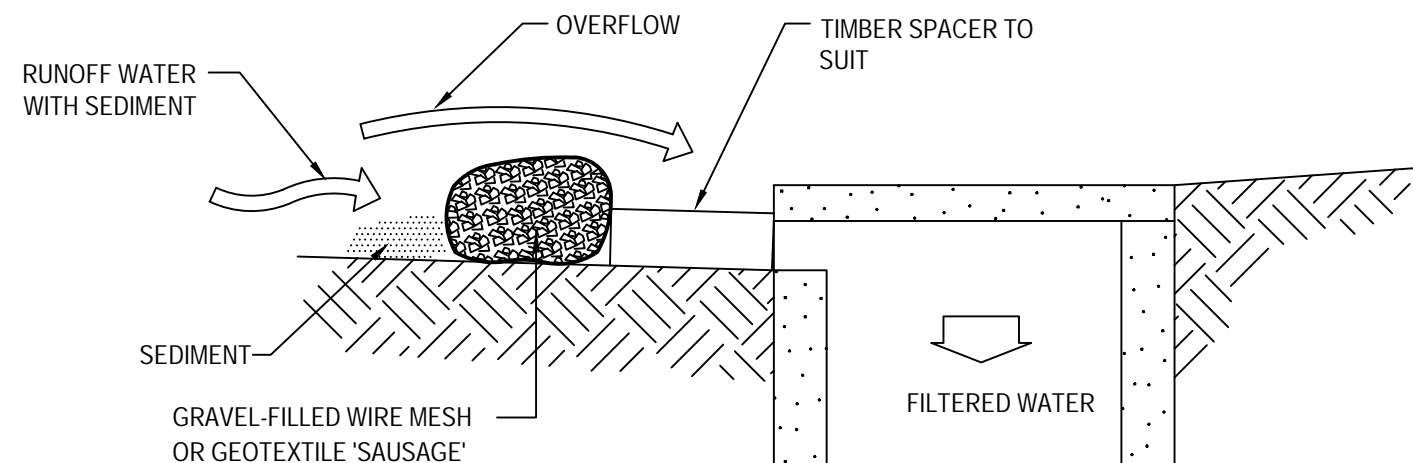
HAYBALE AND GEOTEXTILE SEDIMENT FILTER

NTS



MESH AND GRAVEL INLET FILTER

NTS



Bar Scales

B	ISSUED FOR APPROVAL	05/07/21
A	ISSUED FOR APPROVAL	24/06/21
P1	ISSUED FOR DRAFT	08/06/21

Issue	Description	Date
-------	-------------	------

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Status	FOR APPROVAL	A1
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Scales	NTS	15-272-C7541.dwg	
		Drawn	JC
		Designed	JC
Height Datum	AHD	Checked	FX
Grid	MGA	Approved	FX



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Project
**PROPOSED INDUSTRIAL DEVELOPMENT
OAKDALE WEST - LOT 4E**

Title
EROSION AND SEDIMENT DETAILS

Drawing No.	Project No.	Issue
15-272-C7541	15-272	B