Integrated Water Cycle Management Report

K-12 Education Campus Moama

For Clarke Hopkins Clarke

JN
Responsive Engineering

N0201396.04A

Revision History

REVISION	DATE	BY	CHECKED	COMMENTS
A	09.09.2022	DJA	LAM	ISSUED FOR DA

The recipient of the latest issue as noted above will be responsible for superseding/destroying all previous documents.

Contents

1. Introduction

Jones Nicholson have been commissioned by Clarke Hopkins Clarke to complete an engineering investigation and review of the existing infrastructure in the surrounding area to the proposed site.

This report outlines the Water Sensitive Urban Design (WSUD) measures and controls implemented in the design of the stormwater infrastructure servicing the proposed development to meet the requirements of Murray River Council Local Planning Policy – Water Sensitive Urban Design (2018).

The proposed development is intended to connect to the proposed stormwater system at the South of site as per North East Survey Design (NESD) design documentation for Westrock Subdivision St 1 & 2 (M7555 – Fullset – V1). The drawing set can be seen in Appendix A. The WSUD targets as outlined in the Murray River Council Local Planning Policy – Water Sensitive Urban Design (2018) are outlined below:

- At least 80% reduction of total suspended solids (TSS)
- At least 60% reduction of total phosphorus (TP)
- At least 45% reduction of total nitrogen (TN)
- At least 70% reduction of gross pollutants (GP)

JN has therefore completed MUSIC modelling of the proposed development and its associated integrated water cycle management measures to demonstrate that the design includes water conservation and management measures in accordance with the associated Murray River Council Local Planning Policy.

2. Existing Site

The site location for the development of a new K-12 Education Campus is well within Moama's future residential development area. The site is situated at Lot 76 DP 751159, comprising of 4.787 hectares and lies on the corner of Lignum Road and Kiely Road, Moama. The site is under the jurisdiction of Murray River Council.

Figure 1 Existing Site (Blue – Site Access)

3. Proposed Development

The proposed development consists of a school campus including sports field, carparking and landscape areas.

Figure 2 Proposed Development

4. Integrated Water Cycle Management

The following IWCM strategies have been implemented in design:

- Water collection and recycling system for capturing and reusing roof water.
- Control of the quantity of stormwater discharge though design of an adequate On-Site Detention (OSD) system
- Control of the quality of stormwater discharge through design of an adequate water quality treatment system

Stormwater drainage plans prepared by JN can be found in Appendix B of this report. These plans outline the extent and details of the above IWCM strategies including, but not limited to:

- Stormwater pits and pipes
- Subsoil drainage
- OSD system
- Rainwater tank
- Water quality treatment devices
- Basement pump-out system
- Roof drainage collection system
- Connection to Council's stormwater system

4.1. Water Collection and Reuse

The school infrastructure will also include two rainwater tanks so that all roof water drainage can be stored and reused for irrigation, sports fields and toilet flushing.

Analysing Moama's climate history, on average it rains approx. 93.2 days of the year for approx. 424.8mm of rainfall. Assuming 100% of the 6490 sq.m of roof water is stored within the rainwater tanks, the maximum water storage for the year is approx. 2757 kL/year.

The following re-use values were used within the MUSIC model.

Toilet Flushing:

- Reported approx. 500 students proposed for K-12 school.
- Assume 20 teachers (approx. 25 students per class).
- Assumed an average use of the toilet of 2 times per day.
- From Sydney Water – Modern toilets use approx. 4.5L per full flush and 3L per half flush. Have assumed approx. 3.5L per flush.
- Operating approx. 200 days a year.

Re-use Demand = (500 + 20) people x 2 flushes a day x 3.5 L per flush x 200 days per year

= 728000 L/yr

= 728 kL/yr

= 2kL/day

Irrigation:

- Table 5.1 in Using MUSIC in Sydney Drinking Water Catchment (Figure 3) for external use for Commercial / Industrial use – 20kL/yr/1000m2
- Approx. 2000m2 of lawn and assumed another 1000m2 of garden to be watered.

Re-use Demand = 20kL/yr/1000m2 x (2000m2 + 1000m2)

= 60 kL/yr

Sports Field:

- Approx. 6400m2 of sports field
- Assumed water demand of 1mm/day with seasonal increase in summer to 2mm/day.
- Rains approx. 93 days a year in Moama so sports field will need watering for remaining 272 days.

Re-use Demand = 6400m2 x 1.5mm/day x 272 days

= 2611 kL/yr

Total:

Annual Demand = 2671 kL/yr

Daily Demand = 2 kL/day

	Rural dwelling rainwater tank sole water supply				Urban dwelling reticulated water supply			
	Annual internal use in kilolitres (kL/yr/dwelling)							
No. of bedrooms[1]	**1 to 2**	**3**	**4**	**5**	**1 to 2**	**3**	**4**	**5**
Toilet (25%)	31	44	57	71	46	66	86	106
Toilet + laundry (50%)	60	88	115	142	91	131	172	212
Toilet + laundry + hot water (90%)	110	159	206	256	164	237	309	384
Toilet + laundry + hot water + other (100%)	122	175	230	283	183	263	343	424
	Daily internal use in kilolitres (kL/day/dwelling)							
No. of bedrooms[1]	**1**	**2**	**3**	**4**	**1 to 2**	**3**	**4**	**5**
Toilet (25%)	0.085	0.120	0.155	0.195	0.125	0.180	0.235	0.290
Toilet + laundry (50%)	0.165	0.240	0.315	0.390	0.250	0.360	0.470	0.580
Toilet + laundry + hot water (90%)	0.300	0.435	0.565	0.700	0.450	0.650	0.845	1.045
Toilet + laundry + hot water + other (100%)	0.335	0.480	0.630	0.775	0.500	0.720	0.940	1.160
	External and commercial / industrial use							
External residential use eg gardens	For a typical urban lot - 0.15 kL/day/dwelling or 55 kL/yr/dwelling							
Commercial / Industrial Use	Indicative 0.1 kL/day/1000 m^2 of roof area (internal use) & 20 kL/yr/1000 m^2 (external use) - Development-specific data may provide better reuse values							

Figure 3: NSW MUSIC MODELLING GUIDELINES – Rainwater Reuse

Due to the demands of water being higher than that of the average rainfall captured within Moama, the Table 1 and Table 2 have been supplied calculating the percentage re-use demand met by the Node Water Balance function within MUSIC for different rainwater tank sizes.

Table 1: Rainwater tank volume options for toilet flushing and, irrigation including sports field

RAINWATER TANK VOLUME OPTION	REUSE SUPPLIED (ML/YR)	REUSE REQUESTED (ML/YR)	% REUSE DEMAND MET	% LOAD REDUCTION
50kL	1.17	3.51	33.31	50.41
100kL	1.55	3.51	44.14	66.97
200kL	1.88	3.51	53.67	81.56
300kL	2.02	3.51	57.63	87.61

Table 2: Rainwater tank volume options for toilet flushing and, irrigation excluding sports field

RAINWATER TANK VOLUME OPTION	REUSE SUPPLIED (ML/YR)	REUSE REQUESTED (ML/YR)	% REUSE DEMAND MET	% LOAD REDUCTION
25kL	0.52	0.78	66.80	22.26
50kL	0.66	0.78	84.21	27.77
75kL	0.71	0.78	90.47	30.24
100kL	0.73	0.78	93.80	31.57

JN recommends the use of a 100kL tank if re-use is to be used for the sports field based of Table 1 re-use demand. The additional storage is to hold as much rainfall as possibly during the small amount of rain events throughout the year.

4.2. Stormwater Quality

The site roof water is collected into two separate rainwater tanks with an assumed total storage of 100kL. This rainwater tank is to have reuse used for irrigation (garden & sports field) and toilet flushing. All other stormwater quality devices are as per the proposed adjacent subdivision as per NESD Engineering Drawings. This includes a 3kL rainwater tank for each lot, a lawn buffer zone and a proposed detention basin.

Modelling of the proposed system has been undertaken in MUSIC. The results of this modelling are outlines in Figure 4 and Table 3 below.

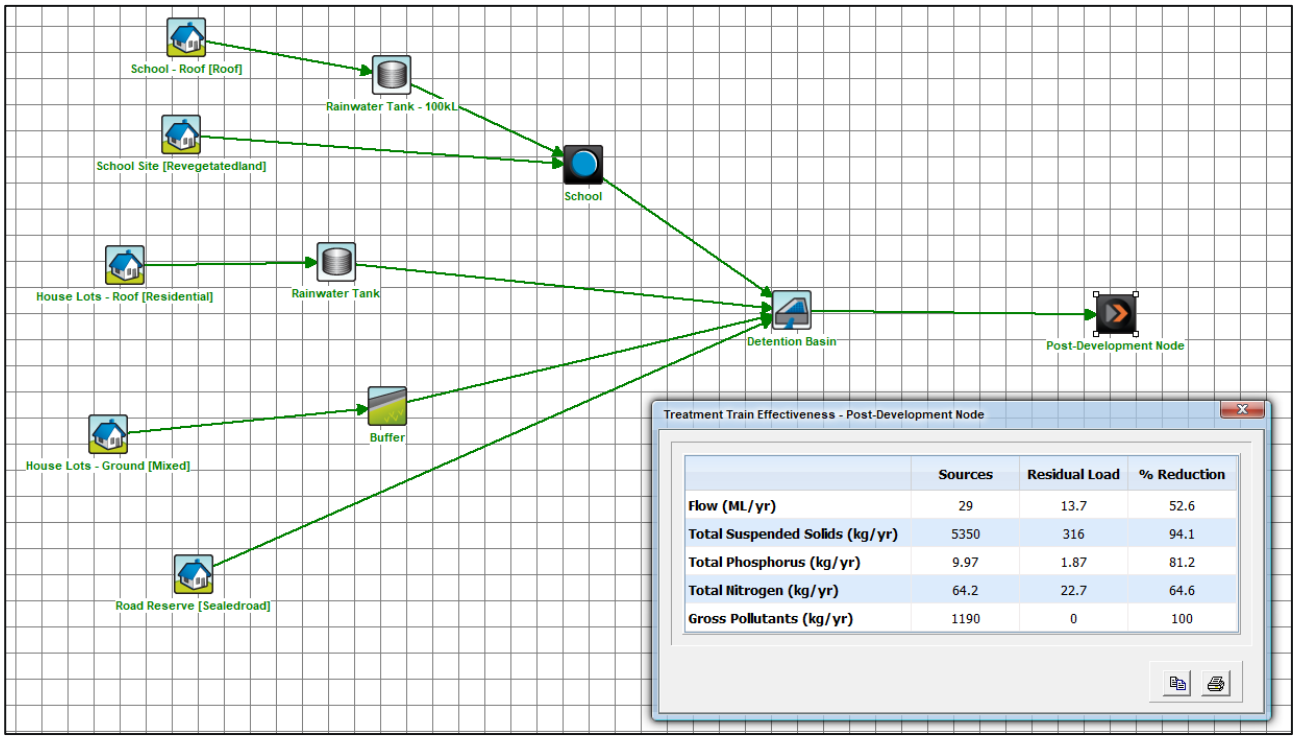


Figure 4: MUSIC Model

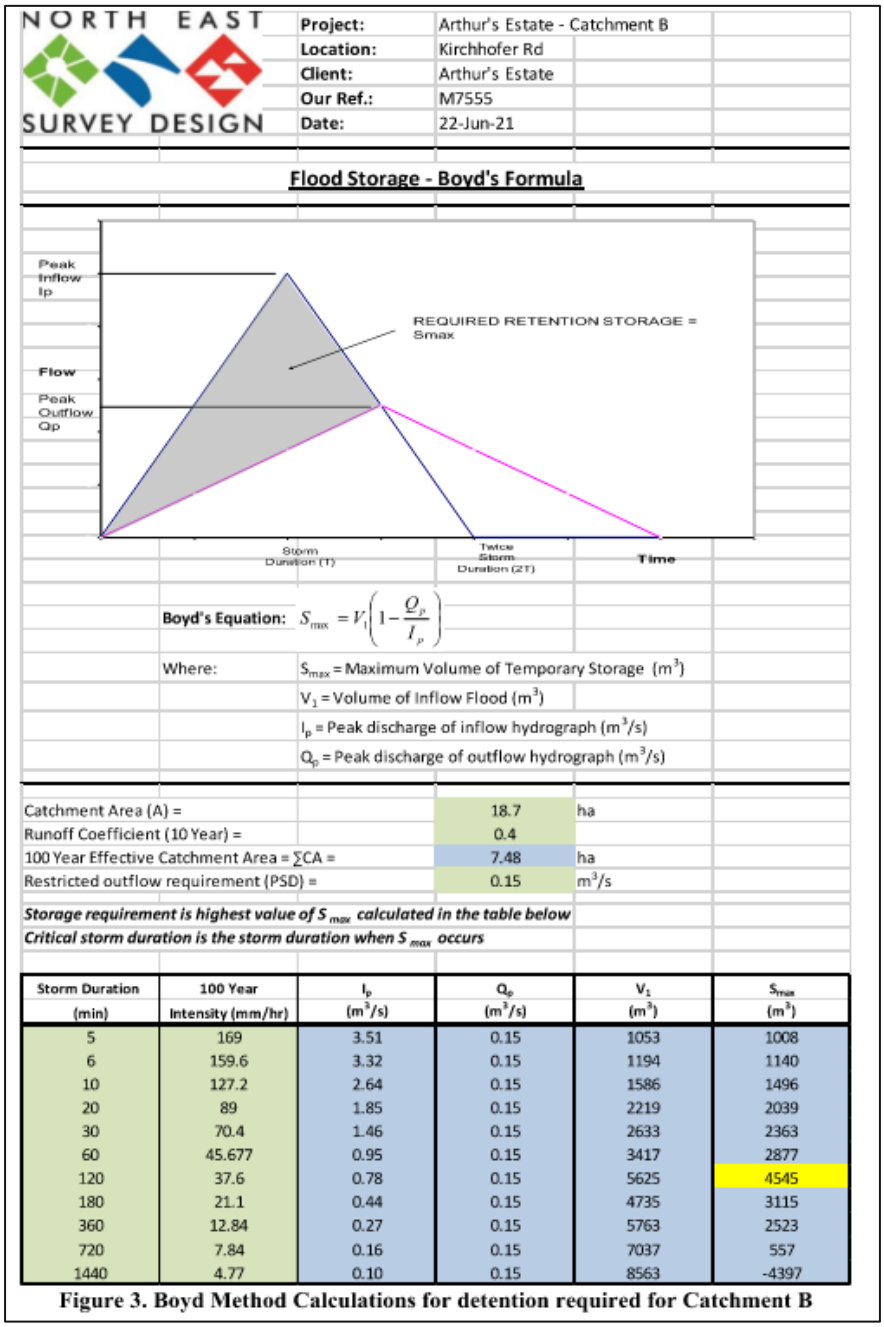
Table 3: MUSIC model results

POLLUTANT	SOURCE LOAD (KG/YR)	RESIDUAL LOAD (KG/YR)	% REDUCTION ACHIEVED	% REDUCTION REQUIRED	COMPLIANCE WITH TARGETS
TOTAL SUSPENDED SOLIDS	5350	316	94.1	80	YES
TOTAL PHOSPHOROUS	9.97	1.87	81.2	60	YES
TOTAL NITROGEN	64.2	22.7	64.6	45	YES
GROSS POLLUTANTS	1190	0	100	70	YES

4.3. Stormwater Quantity

NESD design drawings as seen in Appendix A, calculated the associated OSD volume required to reduce the flow rate before entering Council's stormwater system. The volume of the OSD was calculated using Boyd's Method. The OSD was calculated to be minimum 4545 m^3.

After a JN review of the proposed calculations, the proposed school impervious percentage was updated from an assumed 30% provided by NESD to 38.5% as per JN engineering drawings in Appendix B. The updated minimum OSD volume was 5037 m^3. The already proposed OSD provided by NESD had a total volume of 5223 m^3 satisfying the reviewed Boyd method calculations provided below.



NORTH EAST SURVEY DESIGN

Project:	Arthur's Estate - Catchment B
Location:	Kirchhofer Rd
Client:	Arthur's Estate
Our Ref.:	M7555
Date:	22-Jun-21

Flood Storage - Boyd's Formula

Boyd's Equation: $S_{max} = V_1\left(1-\frac{Q_p}{I_p}\right)$

Where:

S_{max} = Maximum Volume of Temporary Storage (m^3)

V_1 = Volume of Inflow Flood (m^3)

I_p = Peak discharge of inflow hydrograph (m^3/s)

Q_p = Peak discharge of outflow hydrograph (m^3/s)

Catchment Area (A) =	18.7	ha
Runoff Coefficient (10 Year) =	0.4	
100 Year Effective Catchment Area = ∑CA =	7.48	ha
Restricted outflow requirement (PSD) =	0.15	m^3/s

Storage requirement is highest value of S_{max} calculated in the table below

Critical storm duration is the storm duration when S_{max} occurs

Storm Duration (min)	100 Year Intensity (mm/hr)	I_p (m^3/s)	Q_p (m^3/s)	V_1 (m^3)	S_{max} (m^3)
5	169	3.51	0.15	1053	1008
6	159.6	3.32	0.15	1194	1140
10	127.2	2.64	0.15	1586	1496
20	89	1.85	0.15	2219	2039
30	70.4	1.46	0.15	2633	2363
60	45.677	0.95	0.15	3417	2877
120	37.6	0.78	0.15	5625	4545
180	21.1	0.44	0.15	4735	3115
360	12.84	0.27	0.15	5763	2523
720	7.84	0.16	0.15	7037	557
1440	4.77	0.10	0.15	8563	-4397

Figure 3. Boyd Method Calculations for detention required for Catchment B

Figure 5: NESD Boyd Method OSD Calculation

Catchment Area (A) =	18.7	ha	
Runoff coefficient (10 Year) =	0.435	<==	Revised based on 38.5% school impervious area compared to NESD 30%
100 Year Effective Catchment Area = ΣCA =	8.1345	ha	
Restricted outflow requirement (PSD) =	0.15	m3/s	

Storm Duration (min)	100 Year Intensity (mm/hr)	Ip (m3/s)	Qp (m3/s)	V1 (m3)	Smax (m3)
5	169	3.82	0.15	1146	1101
6	159.6	3.61	0.15	1298	1244
10	127.2	2.87	0.15	1725	1635
20	89	2.01	0.15	2413	2233
30	70.4	1.59	0.15	2863	2593
60	45.677	1.03	0.15	3716	3176
120	37.6	0.85	0.15	6117	5037
180	21.1	0.48	0.15	5149	3529
360	12.84	0.29	0.15	6267	3027
720	7.84	0.18	0.15	7653	1173
1440	4.77	0.11	0.15	9312	-3648

Figure 6: JN Reviewed Boyd Method OSD Calculation

5. Operation and Maintenance Plans

5.1. OSD Tank

OSD is provided by downstream subdivision, O&M to be documented as part of subdivision.

5.2. Rainwater Tank

The following schedule is to be followed by the Maintenance Contractor.

Monthly:

Check and clean tank inlet screens, outlet screens and leaf-shedding rain-heads.

Check and clean the first flush diverter.

6 monthly:

Check roofs and gutters and remove debris.

Annually:

Check filters annually and replace if necessary.

3–5 yearly:

Desludge your tank.

In the longer term, rainwater pumps typically need servicing or replacing after approx. 10 years of use. Generally, relevant components of OSD tank maintenance should also be conducted on the rainwater tank which sits directly adjacent.

5.3. General Site Stormwater System

MAINTENANCE SCHEDULE			
MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
INSPECT GRATE FOR DAMAGE OF BLOCKAGE	SIX MONTHLY	MAINTENANCE CONTRACTOR	CHECK BOTH SIDES OF GRATE FOR CORROSION, (ESPECIALLY CORNERS AND WELDS) DAMAGE OR BLOCKAGES.
INSPECT AND REMOVE DEBRIS / LITTER / MULCH ETC. BLOCKING GRATES OF PITS	SIX MONTHLY	MAINTENANCE CONTRACTOR	REMOVE BLOCKAGES FROM GRATES AND CHECK IF PIT BLOCKED.
INSPECT INTERNAL PIT WALLS (AND EXTERNAL, IF APPROPRIATE) FOR CRACKS OR SPALLING	ANNUALLY	MAINTENANCE CONTRACTOR	REMOVE GRATE TO INSPECT INTERNAL WALLS. REPAIR AS REQUIRED. CLEAR VEGETATION FROM EXTERNAL WALLS IF NECESSARY AND REPAIR AS REQUIRED.
INSPECT ROOF DRAINAGE OUTLETS	SIX MONTHLY	MAINTENANCE CONTRACTOR	INSPECT ROOF DRAINAGE OUTLETS AND REMOVE ANY BLOCKAGES. ENSURE OVERFLOWS AROUND ROOF ARE CLEAR OF DEBRIS.

6. Conclusion

Based on the information presented in this report, it has been demonstrated that the principles of integrated water cycle management have been incorporated into the design and operation of the proposed development at K-12 Education Campus, Moama. The development achieves reductions in water usage through the use of efficient rainwater tanks capturing and reusing rainwater on site. The development also achieves water quality targets through adequate stormwater treatment and sufficiently controls the discharge of stormwater into Councils system through an appropriately sized OSD in accordance with the requirements by Murray River Council. The proposed design was in accordance with the existing plans by NESD Engineering for the adjacent subdivision.

For and on behalf of JN,

Dylan Alexander

Civil Design Engineer

Luke Meredith

Senior Civil Design Engineer

Appendix A – NESD Engineering Drawings

BOTANICAL VIEWS DEVELOPMENT - STAGE 1&2

LIGNUM ROAD, MOAMA

ROAD & DRANAGE PLAN REVISION TABLE

SHT. No.	DATE	VER.	DESCRIPTION
A	12 NOV 2021	1	Cover Sheet
B	12 NOV 2021	1	Overall Layout Plan
1 - 2	12 NOV 2021	1	Layout Plan
3 - 6	12 NOV 2021	1	Drainage Long Sections
7	12 NOV 2021	1	Road Intersection Details
8 - 9	12 NOV 2021	1	Road Longitudinal Sections
10 - 18	12 NOV 2021	1	Road Cross Sections
S1-S5	12 NOV 2021	1	Sewer Main Plans / Pump Station
W1-W5	12 NOV 2021	1	Water Main Plans

ELECTRICITY & TELSTRA PLAN REVISION TABLE

SHT. No.	DATE	VER.	DESCRIPTION
1	TBA	-	Master Plan
1	TBA	-	Telstra Supply Plan - TBA

STANDARD DRAWINGS

SHT. No	DATE	VER	DESCRIPTION
COUNCIL IDM			
SD100	30/01/2013		Typical Kerb Profiles
SD110	30/11/2011		Typical Kerb Bedding Detail
SD145	04/03/2013		Subsoil Draiange
SD200	22/02/2012		Pedestrian Crossing
SD205	30/01/2013		Typical Footpath Detail
SD210	30/01/2013		Typical Footpath Joints
SD215	30/01/2013		Reinforced Concrete Pavement Sealant Details
SD220	30/01/2013		Reinforced Concrete Pavement Isolation Joint
SD225	25/08/2010		Reinforced Concrete Pavement Typical Joint Details
SD240	04/03/2013		New Residential Single Vehicle Crossing Detail
SD310	30/01/2013		Trenching Backfill (Trenches in 1m of Council Assets)
SD400	30/01/2013		Typical Pit Dimensioning & Setout Detail
SD405	30/01/2013		Unhaunched Pits (450ø Max. Pipe)
SD410	30/01/2013		Haunched Pits
SD415	30/01/2013		Wall Thickness Reinforcement Concrete Pits (In-Situ)
SD420	30/01/2013		Junction Pit in Road Reserve
SD425	30/01/2013		Junction Pit / Concrete Cover (Non Trafficable Areas)
SD440	30/01/2013		Side Entry Pit 900mm Inlet Cast Iron Cover 'SM2-M'
SD510	30/01/2013		House Drain Under Road Pavement
SD515	30/01/2013		Street Drain Connection
SD525	25/08/2010		Flushout Riser Detail
SD530	25/08/2010		Flushout Riser Cover Detail

SEWER & WATER RETICULATION PLAN REVISION TABLE

SHT. No.	DATE	VER.	DESCRIPTION

COUNCIL AUTHORIZED SIGNATURE 1

CONSULTANT SIGNATURE

LEGEND

EXISTING TREE

TREE TO BE REMOVED

TBM's

EXISTING SEWER

EXISTING SEWER RISING MAIN

PROPOSED SEWER

EXISTING WATER MAIN

PROPOSED WATER MAIN

PROPOSED WATER CONDUIT

EXISTING GAS MAIN

PROPOSED GAS MAIN

PROPOSED GAS CONDUIT

EXISTING TELSTRA LINE

EXISTING TELSTRA FIBRE OPTIC CABLE

PROPOSED TELSTRA LINE

PROPOSED TELSTRA CONDUIT

HOUSE DRAIN - IDM SD515

EXISTING UNDERGROUND ELECTRICITY SUPPLY

PROPOSED UNDERGROUND ELECTRICITY SUPPLY

PROPOSED ELECTRICITY CONDUIT

EXISTING DRAINAGE

PROPOSED DRAINAGE

PROPOSED AG DRAIN

TITLE BOUNDARY

EASEMENTS

EXISTING KERB & CHANNEL

PROPOSED KERB & CHANNEL

FENCES & GATES

TOP OF BANK

TOE OF BANK

PROPOSED TOP / TOE OF BANK

INVERT OPEN DRAIN

EXISTING GRAVEL TRACK

1 IN 100 YEAR ARI OVERLAND FLOODPATH

WATER NOTES

1. ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY MRC WATER.
2. MRC IS TO BE NOTIFIED IN WRITING A MINIMUM OF TWO (2) CLEAR DAYS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3. THE CONTRACTOR SHALL HAND PROVE ANY EXISTING WATER SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
4. WHERE WORKS ARE IN THE VACINITY OF AN AUTHORITIES EXISTING ASSETS, THESE ASSETS ARE TO BE LOCATED AND THE RELEVANT AUTHORITY NOTIFIED PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. MINIMUM COVER BELOW THE FINISHED SURFACE LEVEL SHALL BE 800mm TO THE TOP OF THE MAIN.
6. WHERE MAINS CROSS STORMWATER DRAINS, THERE SHALL BE A MINIMUM CLEARANCE OF 150mm BETWEEN THE MAIN AND THE STORMWATER DRAIN.
7. WHERE CONCRETE ANCHORAGES ARE USED, THE MAIN IS TO BE WRAPED IN A PLASTIC MEMBRANE. RAPID SET CONCRETE IS NOT ACCEPTABLE.
8. ALL TRENCHES CROSSING ROADS SHALL BE BACKFILLED WITH MECHANICALLY COMPACTED CLASS 3 FCR NO MORE THAN 150mm LAYERS 97% MODIFIED COMPACTION AND TO THE SATISFACTION OF THE ROAD OWNER. REFER TO STANDARD DRAWINGS WAT-1201 AND WAT-1202 FOR TRENCH, EMBEDMENT AND BACKFILL REQUIREMENTS.
9. ALL VALVES AND FIRE PLUGS ARE TO BE PLACED CLEAR OF ANY PROPOSED OR EXISTING VEHICLE CROSSING. REFER TO STANDARD DRAWINGS WAT-1301 AND WAT-1302 FOR INSTALLATION DETAILS.
10. ALL PIPELINE FITTINGS FOR JOINING DICL / UPVC PIPES SHALL BE CAST OR DUCTILE IRON, CEMENT LINED AND CONFORM TO AS2544 AND AS2280.
11. WHERE GIBAULT JOINTS ARE USED THEY ARE TO BE THE ELONGATED TYPE OR VARI GIB TYPE ONLY.
12. PROPERTY CONNECTIONS ARE SHOWN THUS AND ARE TO BE PLACED CENTRALLY ALONG LOT FRONTAGE UNLESS OTHERWISE SHOWN. REFER TO STANDARD DRAWING WAT-1108 FOR DETAILS.
13. PROPERTY CONNECTIONS ARE TO BE COPPER (CLASS A) PIPE OR PE (PN 12.5) PIPE WITH COPPER TRACE WIRE.
14. PROPERTY CONNECTIONS TO EXISTING MAINS ARE TO BE CARRIED OUT BY A LICENSED PLUMBER AFTER TAKING OUT THE APPROPRIATE APPLICATION FORM WITH MRC.
15. ALL PROPERTY CONNECTIONS CROSSING ROADS SHALL BE ENCLOSED IN A 100mm ø PVC CLASS 12 SLEEVE. SLEEVED PIPES ARE TO BE INSTALLED SO THAT WATER HAMMER AND PRESSURE FLUCTUATIONS DO NOT CAUSE PIPE MOVEMENT IN THE SLEEVE.
16. CONNECTION TO EXISTING MAINS IS TO BE CARRIED OUT BY MRC STAFF FOLLOWING TESTING BY THE CONTRACTOR TO COLIBAN STANDARDS. THE CONTRACTOR IS TO PROVIDE ALL MATERIALS AND LABOUR NECESSARY FOR THE CONNECTION. REFER TO MRC STANDARD DRAWING 12527 FOR DETAILS.
17. FOR CONNECTIONS TO EXISTING MAINS THE DEPTH OF THE EXISTING MAIN IS TO BE VERIFIED PRIOR TO COMMENCING WORKS ON THE MRC WATER MAIN.
18. AT THE END OF EACH DAY ALL MAINS ARE TO BE PLUGGED TO PREVENT SILT FROM GROUND WATER ENTERING ANY MAINS DURING THE CONSTRUCTION WORKS PERIOD.
19. ON THE COMPLETION OF THE WORKS THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND EXCESS SPOIL FROM THE SITE.
20. MARKER POSTS ARE TO BE PROVIDED FOR ALL FIRE PLUGS, SLUICE VALVES, BENDS ETC...

WATER STANDARD DRAWING REFERENCE LIST

STD. DRAWING NO.	STD. DRAWING NAME
WSA WAT-1108	PROPERTY SERVICES TO MAIN
WSA WAT-1201	EMBEDMENT & TRENCHFILL
WSA WAT-1202	STANDARD EMBEDMENT
WSA WAT-1205	THRUST BLOCK - CONCRETE
WSA WAT-1206	THRUST BLOCK - TIMBER/PLASTIC
WSA WAT-1301	VALVE INSTALLATION
WSA WAT-1302	HYDRANT INSTALLATION

Water Services Association of Australia - Water Supply Code (WSA 03-2011 Version 3.1)

CONSTRUCTION HOLDPOINTS

THE FOLLOWING HOLDPOINTS MUST BE CERTIFIED BY A PERSON QUALIFIED IN THE ASPECTS OF ROAD AND DRAINAGE CONSTRUCTION. THE WORKS MUST BE OBSERVED BY A COUNCIL REPRESENTATIVE AT DESIGNATED SITE MEETINGS BETWEEN 9am AND 5pm WEEKDAYS (A MINIMUM OF 48 HOURS NOTICE IS REQUIRED) AS SPECIFIED IN THE FOLLOWING HOLDPOINTS:

1. INSPECTION OF DRAINAGE PITS PRIOR TO PIT COVERS BEING PLACED.
2. INSPECTION AND TESTING OF THE COMPLETED FOUNDATION LAYER PRIOR TO THE PLACING OF ALL KERB AND CHANNEL (INCLUDES COMPACTION TESTS AS SPECIFIED).
3. INSPECTION OF WORKS PRIOR TO THE POURING OF FOOTPATH.
4. INSPECTION AND TESTING OF SUBGRADE (INCLUDES COMPACTION TESTS AS SPECIFIED).
5. INSPECTION AND TESTING OF EACH PAVEMENT COURSE (INCLUDES COMPACTION TESTS AS SPECIFIED).
6. INSPECTION AND TESTING OF THE COMPLETED ROAD PAVEMENT PRIOR TO APPLYING THE PRIMER COAT (INCLUDES COMPACTION TESTS AS SPECIFIED).
7. INSPECTION OF THE COMPLETED ROAD PAVEMENT PRIOR TO THE PLACEMENT OF THE ASPHALT COURSE OR FIRST SEALING.
8. INSPECTION PRIOR TO THE PLACEMENT OF CONCRETE ON LARGE REINFORCED CONCRETE STRUCTURES.
9. INSPECTION PRIOR TO THE PLACEMENT OF GPT'S, LITTER TRAPS AND PRECAST CONCRETE PUMPSTATIONS.
10. INSPECTION PRIOR TO THE PLANTING OF WETLANDS.
11. INSPECTION PRIOR TO THE REMOVAL OF NATIVE VEGETATION AND OTHER EXISTING VEGETATION.

NOTE: THE ABOVE HOLDPOINTS MUST BE WITNESSED AND CONFIRMED IN WRITING BY BOTH THE COUNCIL REPRESENTATIVE AND THE CONTRACT SUPERINTENDENT. FIALURE TO COMPLETE A HOLDPOINT WILL REQUIRE THOSE AND ANY SUBSEQUENT WORKS TO BE REMOVED AND PREPARED FOR THE HOLPOINT INSPECTION.

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY COUNCIL AND TO COUNCIL STANDARDS.
2. COUNCIL IS TO BE NOTIFIED TWO (2) CLEAR WORKING DAYS PRIOR TO COMMENCEMENT OF WORKS - IN WRITING.
3. WHERE WORKS ARE IN THE VICINITY OF EXISTING SERVICES, THESE SERVICES ARE TO BE LOCATED PRIOR TO COMMENCEMENT OF WORKS AND THE RELEVANT AUTHORITIES NOTIFIED.
4. ALL EXISTING ASSETS AFFECTED BY THE WORKS (SIGNS, VEHICLE CROSSINGS, FOOTPATHS KERB &CHANNEL ETC.,) SHALL BE REINSTATED BY THE CONTRACTOR PRIOR TO THE COMPLETION OF THE WORKS TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.
5. AREAS OF CUT AND FILL ARE TO BE STRIPPED OF TOPSOIL (100-300mm REFER SOIL REPORT) AND STORED AS SHOWN.CUT/FILLED AND THE TOPSOIL REPLACED TO OBTAIN FINAL SURFACE LEVELS AS SHOWN ON PLANS. ALL FILLING TO BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY VALUE DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH A.S.1289.5.1.1 - 2003.

CUT AREAS ARE SHOWN THUS

FILL AREAS ARE SHOWN THUS

FILL AREAS GREATER THAN 300mm ARE SHOWN THUS

LEVEL 1 COMPACTION TESTING IS TO BE CARRIED OUT ON ALL AREAS OF FILL WHERE THE DEPTH OF COMPACTED FILL EXCEEDS 300mm IN ACCORDANCE WITH AS3798-2007.

6. ALL NATURE STRIPS ARE TO BE FINISHED WITH WITH MINIMUM 100mm TOPSOIL.
7. BATTERS SHALL NOT BE GREATER THAN 1 IN 6 FOR CUT AND 1 IN 6 FOR FILL - UNLESS SPECIFIED.
8. AT THE COMPLETION OF THE WORKS ALL RUBBISH, DEBRIS AND SURPLUS SPOIL IS TO BE REMOVED AND THE SITE SHALL BE CLEARED TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.
9. ALL TREES AND SHRUBS TO BE RETAINED UNLESS ROAD CONSTRUCTION NECESSITATES THEIR REMOVAL,OR REMOVAL IS DIRECTED BY COUNCIL AND/OR THE SUPERINTENDENT. ANY TREES AND VEGETATION REMOVED OR OTHER MATERIALS ARE NOT TO BE BURNT ONSITE.
10. LEVELS ARE IN METRES TO AHD.
11. FINISHED SURFACE LEVELS SHOWN THUS: FS143.22

    EXISTING SURFACE LEVELS SHOWN THUS: 143.32
12. "NOTICE OF INTENTION TO COMMENCE OPERATIONS" IS TO BE SENT TO THE CHIEF MINING INSPECTOR AT LEAST 3 DAYS PRIOR TO COMMENCING EXCAVATION OF TRENCHES IN EXCESS OF 1.5m DEEP PURSUANT TO SECTION 385 (i) OF MINES ACT 1958. AN APPROPRIATELY TRAINED AND COMPETENT EXCAVATION SUPERVISOR IS TO BE IN ATTENDANCE AT ALL TIMES PERSUANT TO OCCUPATIONAL HEALTH AND SAFETY (OHS) ACT 2004.
13. DRAINAGE PIPES / PITS TO BE SET OUT FROM OFFSETS RATHER THAN FROM PIPE CHAINAGES.
14. ALL DRAINAGE PIPES BEHIND KERB & CHANNEL SHALL BE BACKFILLED TO MATCH PAVEMENT SUBGRADE LEVEL WITH 20mm CLASS 3 F.C.R. COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY VALUE DETERMINED BY THE MODIFIED COMPACTION TEST IN ACCORDANCE WITH A.S.1289.5.2.1 - 2003. ALTERNATIVELY CLEAN CLAY MATERIAL WITHIN 85% TO 115% OF STANDARD OPTIMUM MOISTURE CONTENT FROM SITE MAY BE USED WHERE COMPACTED IN 200mm LAYERS USING VIBRATING MECHANICAL EQUIPMENT WHERE APPROVED BY THE RESPONSIBLE AUTHORITY
15. AGRICULTURAL DRAINS ARE NOT REQUIRED.
16. HOUSE DRAINS SHOWN THUS AND ARE TO BE 100mm DIA. UPVC AND PLACED AT 6.00m OFFSET FROM THE LOWER BOUNDARY OF LOTS UNLESS OTHERWISE SHOWN. ALL LOTS TO DISCHARGE DIRECTLY TO THE UNDERGROUND DRAINAGE SYSTEM NOT KERB.
17. ELECTRICITY AUTHORITY CONDUITS SHOWN THUS ——— TO BE 63mm DIA. UPVC UNLESS OTHERWISE SHOWN.
18. ELECTRICITY AUTHORITY SERVICE PITS SHOWN THUS ⊖ ARE TO BE INSTALLED BY THE CONTRACTOR TO THE ELECTRICITY SUPPLIERS SPECIFICATIONS AND STANDARD DRAWINGS AND ENCASED IN A MINIMUM OF 150mm CONCRETE. PITS WILL BE SUPPLIED BY THE ELECTRICITY AUTHORITY.
19. TELSTRA TO BE NOTIFIED SEVEN (7) DAYS PRIOR TO CONCRETE WORKS BEING PLACED.
20. TELSTRA CONDUITS SHOWN THUS ——— TO BE SUPPLIED BY TELSTRA AUSTRALIA.
21. WATER CONDUITS SHOWN THUS ——— TO BE 100mm DIA. UPVC CLASS 12 AND PLACED AT THE CENTRE OF LOTS UNLESS OTHERWISE SHOWN.
22. GAS CONDUITS SHOWN THUS ——— TO BE 100mm DIA. UPVC AND PLACED AT THE CENTRE OF LOTS UNLESS OTHERWISE SHOWN.
23. ALL CONDUITS CROSSING ROADS TO BE BACKFILLED WITH COMPACTED FRC (CLASS 3).
23. ALL CONDUITS CROSSING ROADS TO BE CLEARLY MARKED IN THE KERBS WITH IDENTIFYING LETTER
26. ALL WORKS ARE TO BE CARRIED OUT WITH REFERENCE TO SEDIMENT CONTROL PRINCIPLES AS OUTLINED IN "DOING IT RIGHT ON SUBDIVISIONS" (EPA PUBLICATION 960, SEPTEMBER 2004) AND AS DIRECTED BY COUNCIL AND THE SUPERINTENDENT.
27. A TRAFFIC MANAGEMENT PLAN MUST BE PREPARED AND IMPLEMENTED IN ACCORDANCE WITH AS1742 PART 3 FOR ANY WORKS UNDERTAKEN ALONG THE ROAD RESERVE PRIOR TO COMMENCEMENT OF ANY WORKS.
28. IF IN DOUBT ASK !

SEWER STANDARD DRAWING REFERENCE LIST

STANDARD DRAWING NUMBER	STANDARD DRAWING NAME
MSC	SEWERAGE CONNECTION POINTS
WSAA SEW-1201	EMBEDMENT & TRENCHFILL
WSAA SEW-1202	STANDARD EMBEDMENT
WSAA SEW-1300	MAINTENANCE HOLES (MH) (PRECAST)
WSAA SEW-1301	MAINTENANCE HOLES (CAST INSITU)
WSAA SEW-1302	MH PIPE CONNECTION DETAILS
WSAA SEW-1304	MH TYPICAL CHANNEL ARRANGEMENTS
WSAA SEW-1305	MH TYPICAL CHANNEL DETAILS
WSAA SEW-1306	MH INTERNAL DROP CONNECTIONS
WSAA SEW-1307	MH STEP IRONS & LADDERS
WSAA SEW-1308	MH COVER ARRANGEMENTS
WSAA SEW-1316	MS TMS AND CONNECTIONS
WSAA SEW-1317	MS COVER ARRANGEMENTS

Water Services Association of Australia - Sewerage Code (WSAA 02-2002 Version 2.2)

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

DIAL BEFORE YOU DIG 1100 com.au

NOTE !
BEWARE OF EXISTING OVERHEAD POWER CABLES !

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES: DEVELOPMENT APPLICATION NUMBER 10/2020/59.2

SCALE 1:500 | SHEET A1 | DATUM LEVELS ARE IN METRES TO AHD PM 143 RL. 95.467.

10 0 10 20
LENGTHS ARE IN METRES

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

COVER SHEET

BOTANICAL VIEWS ESTATE - STAGE 1&2
LIGNUM RD, MOAMA
- SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT

REFERENCE M7555 | VER. 01 | SHEET A

BOTANICAL VIEWS ESTATE - MOAMA

STAGE 1 & 2 - FUNCTIONAL LAYOUTS

NOTE !
BEWARE OF EXISTING OVERHEAD POWER CABLES !

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www.1100.com.au

WARNING!!

BEWARE OF UNDERGROUND SERVICES

The locations type and depth of underground services shown are approximate only and are based on authority records. The exact position of these services is to be proven on site and site locations obtained from the relevant authorities before commencement of any works. No guarantee is given that all existing underground services are shown.

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	ISSUED FOR AUTHORITY COMMENTS

SCALE 1 : 2000 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 10 20 30 40 50
Scale: 1:4000 @ A1 / 1:2000 @ A3

NORTH EAST SURVEY DESIGN
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PO Box 2223
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BOTANICAL VIEWS ESTATE - MOAMA
OVERALL LAYOUT
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET B

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

LEGEND

- EXISTING TREE
- TBM's
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT (CLASS D COVER)
- WATER SLUICE VALVE
- PROPOSED THRUST BLOCK
- EXISTING RAW WATER MAIN
- PROPOSED RAW WATER MAIN
- EXISTING POT. WATER MAIN
- PROPOSED POT. WATER MAIN
- EXISTING SEWER
- EXISTING SEWER RISING MAIN
- PROPOSED SEWER
- PROPOSED HOUSE DRAIN - IDM SD515
- EXISTING GAS MAIN
- PROPOSED GAS MAIN
- PROPOSED GAS CONDUIT
- EXISTING TELSTRA LINE
- PROPOSED TELSTRA LINE
- PROPOSED TELSTRA CONDUIT
- EXISTING UNDERGROUND ELECTRICITY SUPPLY
- EXISTING OVERHEAD ELECTRICITY SUPPLY
- PROPOSED UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED ELECTRICITY CONDUIT
- PROPOSED DRAINAGE
- TITLE BOUNDARY
- EASEMENTS
- EXISTING EDGE OF SEAL
- PROPOSED PAVEMENT/S-SEAL
- CUT AREAS ARE SHOWN THUS
- FILL AREA SHOWN THUS
- FILL AREAS GREATER THAN 300mm SHOWN THUS

NOTE !
BEWARE OF EXISTING OVERHEAD POWER CABLES !

WARNING!!
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VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	ISSUED FOR AUTHORITY COMMENTS

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 3.75 7.5 11.25 15 18.75m
Scale: 1:1500 @ A1 / 1:750 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
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BOTANICAL VIEWS - MOAMA
LAYOUT - S1
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET 1 OF XX

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

LEGEND

- EXISTING TREE
- TBM's
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT (CLASS D COVER)
- WATER SLUICE VALVE
- PROPOSED THRUST BLOCK
- EXISTING RAW WATER MAIN
- PROPOSED RAW WATER MAIN
- EXISTING POT. WATER MAIN
- PROPOSED POT. WATER MAIN
- PROPOSED HOUSE DRAIN - IDM SD515
- EXISTING SEWER
- EXISTING SEWER RISING MAIN
- PROPOSED SEWER
- EXISTING GAS MAIN
- PROPOSED GAS MAIN
- PROPOSED GAS CONDUIT
- EXISTING TELSTRA LINE
- PROPOSED TELSTRA LINE
- PROPOSED TELSTRA CONDUIT
- EXISTING UNDERGROUND ELECTRICITY SUPPLY
- EXISTING OVERHEAD ELECTRICITY SUPPLY
- PROPOSED UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED ELECTRICITY CONDUIT
- PROPOSED DRAINAGE
- TITLE BOUNDARY
- EASEMENTS
- EXISTING EDGE OF SEAL
- PROPOSED PAVEMENT/S-SEAL

- CUT AREAS ARE SHOWN THUS
- FILL AREA SHOWN THUS
- FILL AREAS GREATER THAN 300mm SHOWN THUS

NOTE !
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WARNING!!
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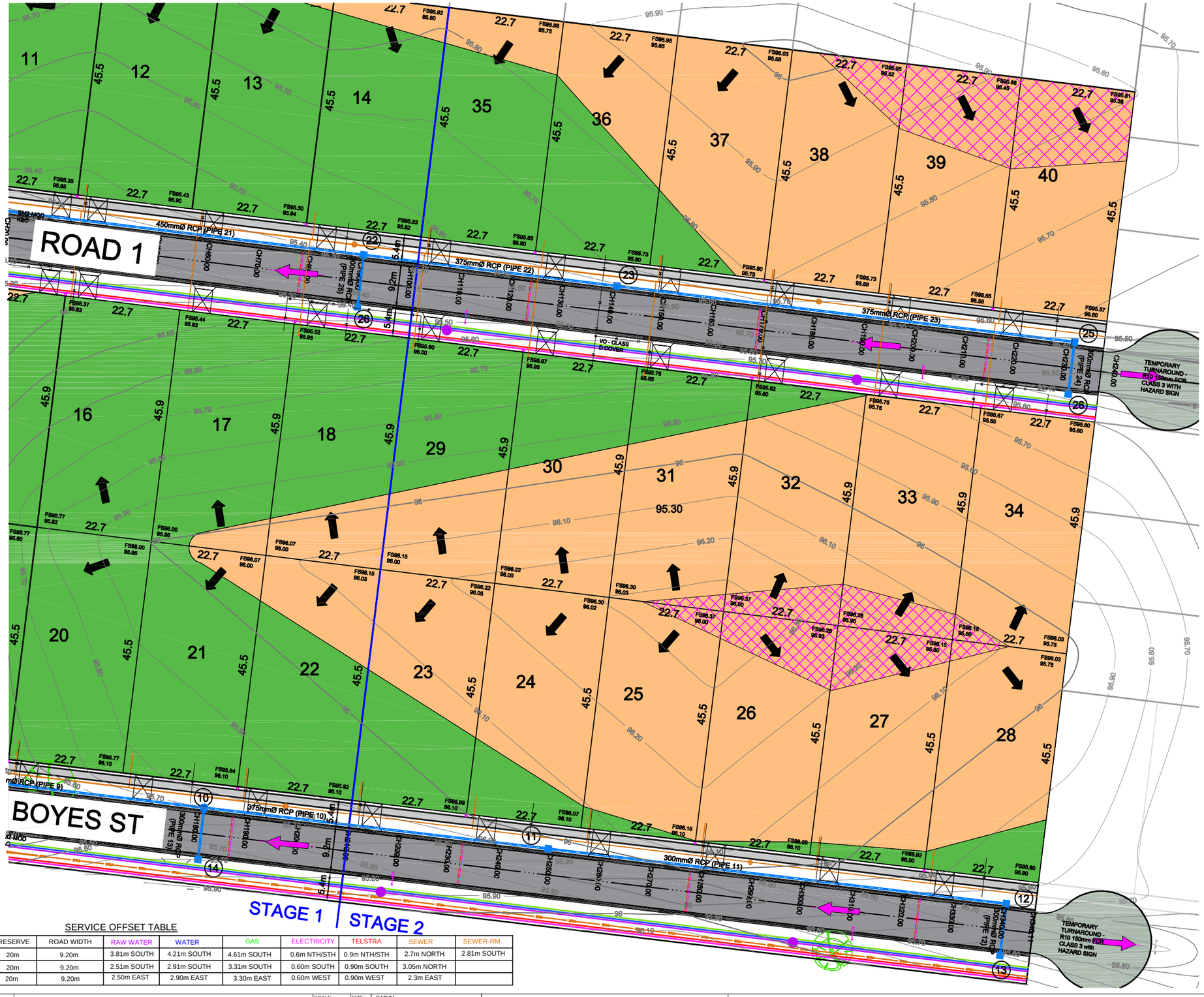
The locations type and depth of underground services shown are approximate only and are based on authority records. The exact position of these services is to be proven on site and site locations obtained from the relevant authorities before commencement of any works. No guarantee is given that all existing underground services are shown.

DIAL BEFORE YOU DIG www.1100.com.au



SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	ISSUED FOR AUTHORITY COMMENTS

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 3.75 7.5 11.25 15 18.75m
Scale: 1:1500 @ A1 / 1:750 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 387
PO Box 2223
Echuca VIC 3564
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BOTANICAL VIEWS - MOAMA
LAYOUT - S1
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET 2 OF XX

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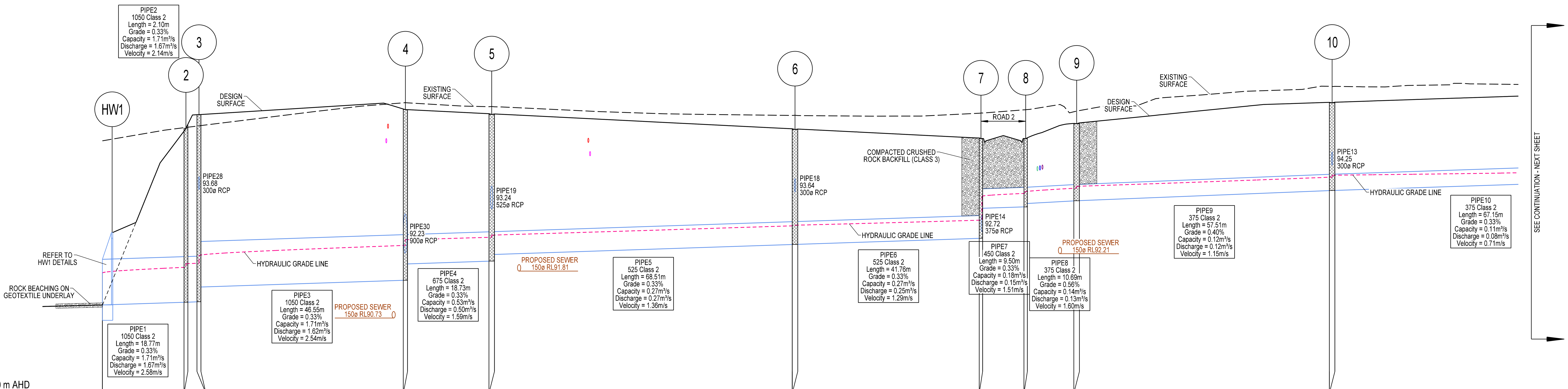

DATUM RL = 89.00 m AHD

HYDRAULIC GRADELINE	91.77 / 91.77		91.90 / 91.98		91.99	92.18	92.40 / 92.53		92.59 / 92.64		92.85 / 92.87		92.98 / 93.54		93.60 / 93.65		93.72 / 93.76		93.97 / 94.02	
GRADE						PIPE 1, 2, 3 - 1 IN 300 (0.33%) 1050ø RCP RRJ (CLASS 2)		PIPE 4 - 1 IN 300 (0.33%) 675ø RCP RRJ (CLASS 2)		PIPE 5, 6 - 1 IN 300 (0.33%) 525ø RCP RRJ (CLASS 2)				PIPE 7 1 IN 300 (0.33%) 450ø RCP RRJ (CLASS 2)		PIPE 8 1 IN 180 (0.56%) 375ø RCP RRJ (CLASS 2)		PIPE 9 - 1 IN 250 (0.40%) 375ø RCP RRJ (CLASS 2)		PIPE 10 - 1 IN 300 (0.33%) 375ø RCP RRJ (CLASS 2)
TOP OF PIT	91.03		95.10		95.41		95.51		95.42		95.07		94.86		94.86		95.20		95.68	
DEPTH TO INVERT	0.00		4.01		4.31 / 3.97		3.91 / 3.54		3.38 / 3.23		2.65		2.29 / 1.60		1.57 / 1.50		1.77		2.02	
DESIGN INVERT LEVEL	91.03		91.09		91.10 / 91.44		91.60 / 91.97		92.04 / 92.19		92.42		92.57 / 93.26		93.29 / 93.36		93.43		93.66	
EXISTING SURFACE	94.81		95.11		95.11		95.68		95.59		95.39		95.44		95.52		95.48		96.06	
CHAINAGE	0.00	18.77	18.77 / 19.67	2.10	21.77 / 22.67	46.55	69.22 / 70.19	18.73	88.92 / 90.19	68.51	158.70 / 159.97	41.76	201.73 / 202.52	9.50	212.02 / 212.80	10.69	223.50 / 224.77	57.51	282.28 / 283.55	67.15

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
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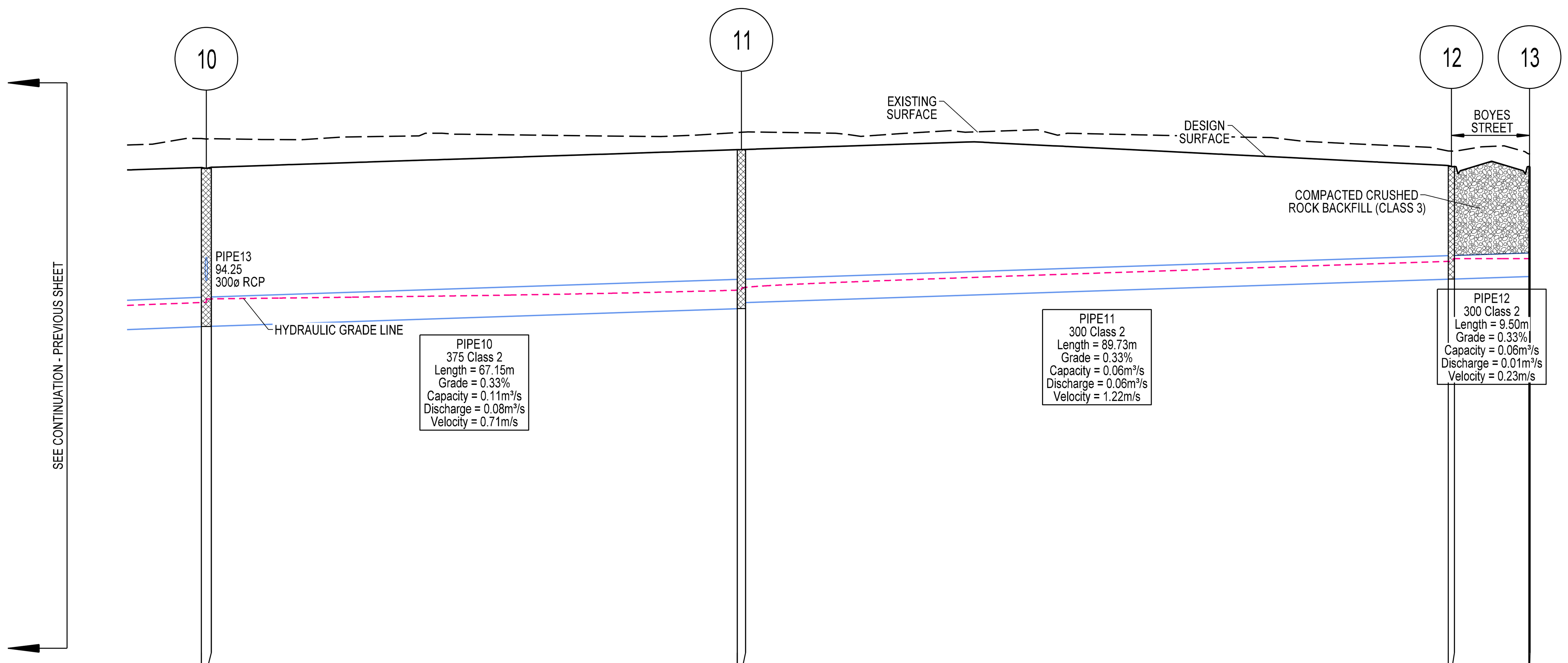
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

DRAINAGE LONGITUDINAL SECTIONS
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

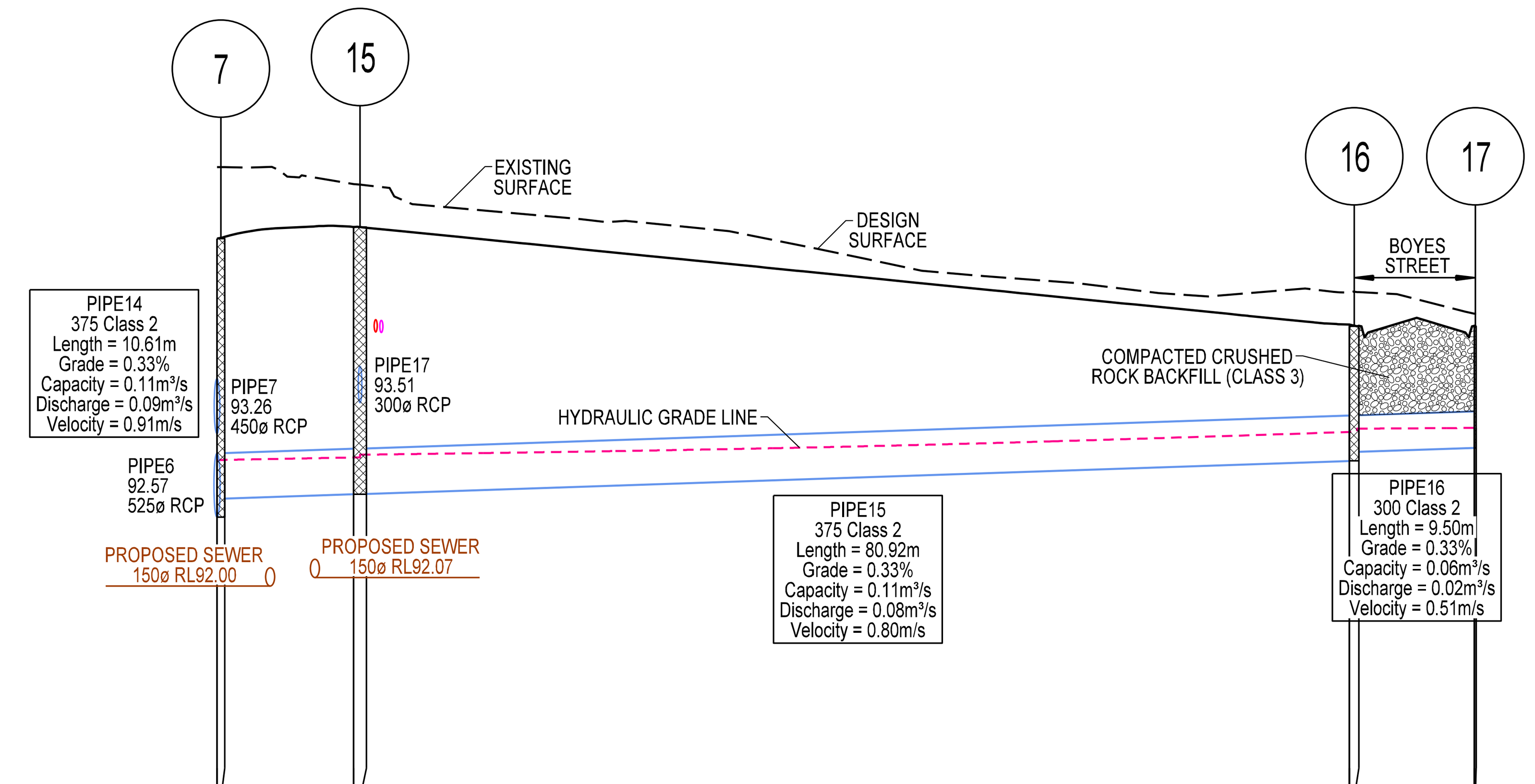
ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 3 OF 18

0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150mm



DATUM RL = 89.00 m AHD

HYDRAULIC GRADELINE	93.97	94.02		94.13	94.16		94.50	94.53		94.53	94.53
GRADE			PIPE 10 - 1 IN 300 (0.33%) 375ø RCP RRJ (CLASS 2)			PIPE 11, 12 - 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)					
TOP OF PIT	95.68			95.91			95.70			95.70	
DEPTH TO INVERT	2.02			2.02	1.94		1.43			1.40	
DESIGN INVERT LEVEL	93.66			93.89	93.97		94.27			94.30	
EXISTING SURFACE	96.06			96.14			95.90			95.87	
CHAINAGE	282.28	283.55	67.15	350.70	351.75	89.73	441.48	442.27	9.50	451.77	



DATUM RL = 90.00 m AHD

HYDRAULIC GRADELINE	93.04	93.04		93.06	93.08		93.27	93.29		93.30	93.30
GRADE			PIPE 14, 15 - 1 IN 300 (0.33%) 375ø RCP RRJ (CLASS 2)						PIPE 16 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	94.86			94.94			94.14			94.14	
DEPTH TO INVERT	2.29	2.14		2.18			1.11	1.04		1.00	
DESIGN INVERT LEVEL	92.57	92.72		92.76			93.03	93.10		93.14	
EXISTING SURFACE	95.44			95.31			94.41			94.24	
CHAINAGE	0.00	0.64	10.61	11.24	12.29	80.92	93.22	94.01	9.50	103.51	

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
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matt@nesd.com.au
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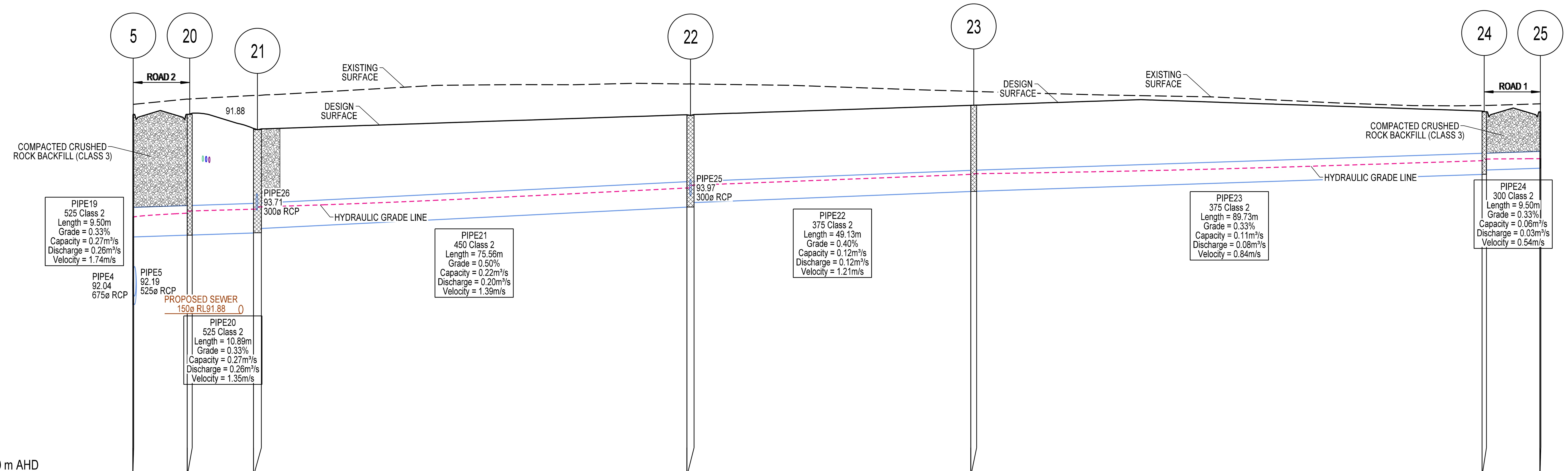
DRAINAGE LONGITUDINAL SECTIONS
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

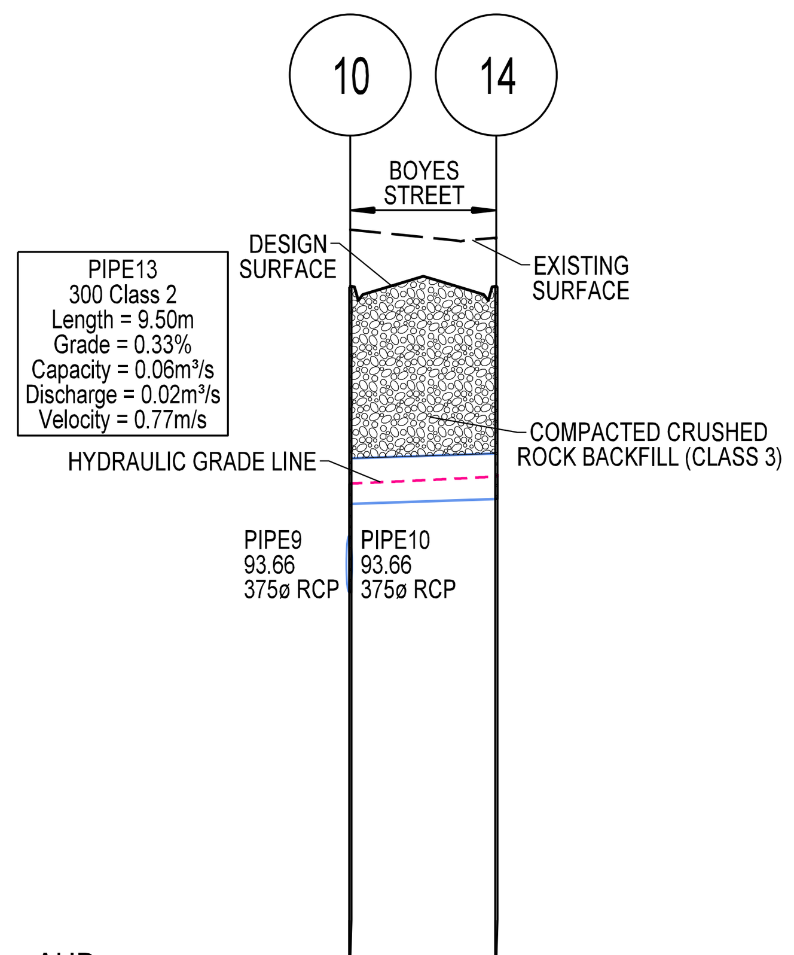
ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 4 OF 18

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



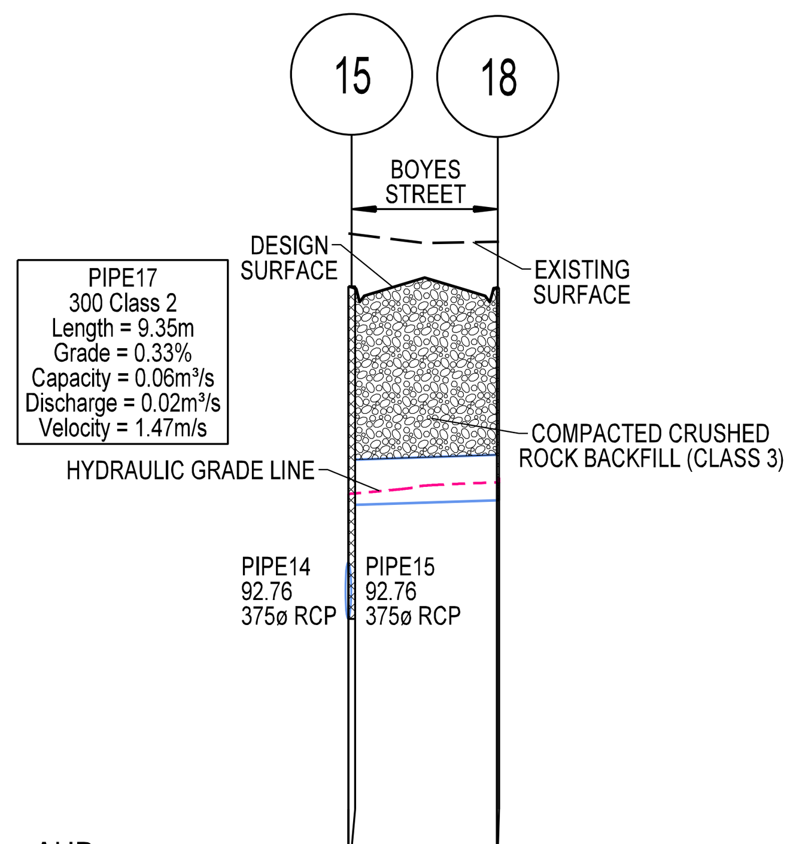
DATUM RL = 89.00 m AHD

HYDRAULIC GRADELINE	93.59	93.60	93.66	93.70	93.73	93.78	94.11	94.16	94.35	94.36	94.60	94.62	94.63
GRADE		PIPE 19, 20 - 1 IN 300 (0.33%) 525ø RCP RRJ (CLASS 2)				PIPE 21 - 1 IN 200 (0.50%) 450ø RCP RRJ (CLASS 2)		PIPE 22 - 1 IN 250 (0.40%) 375ø RCP RRJ (CLASS 2)		PIPE 23 - 1 IN 300 (0.33%) 375ø RCP RRJ (CLASS 2)		PIPE 24 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)	
TOP OF PIT	95.42		95.42		95.15		95.40		95.57		95.46		95.46
DEPTH TO INVERT	3.38	2.18	2.15		1.84	1.76	1.63	1.55	1.52		1.11	1.03	1.00
DESIGN INVERT LEVEL	92.04	93.24	93.27		93.31	93.39	93.77	93.85	94.05		94.35	94.43	94.46
EXISTING SURFACE	95.59		95.69		95.75		95.96		95.83		95.58		95.60
CHAINAGE	0.00	0.15	9.65	10.55	21.44	22.83	98.39	99.66	148.78	149.83	239.56	240.35	249.85
		9.50		10.89		75.56		49.13		89.73		9.50	



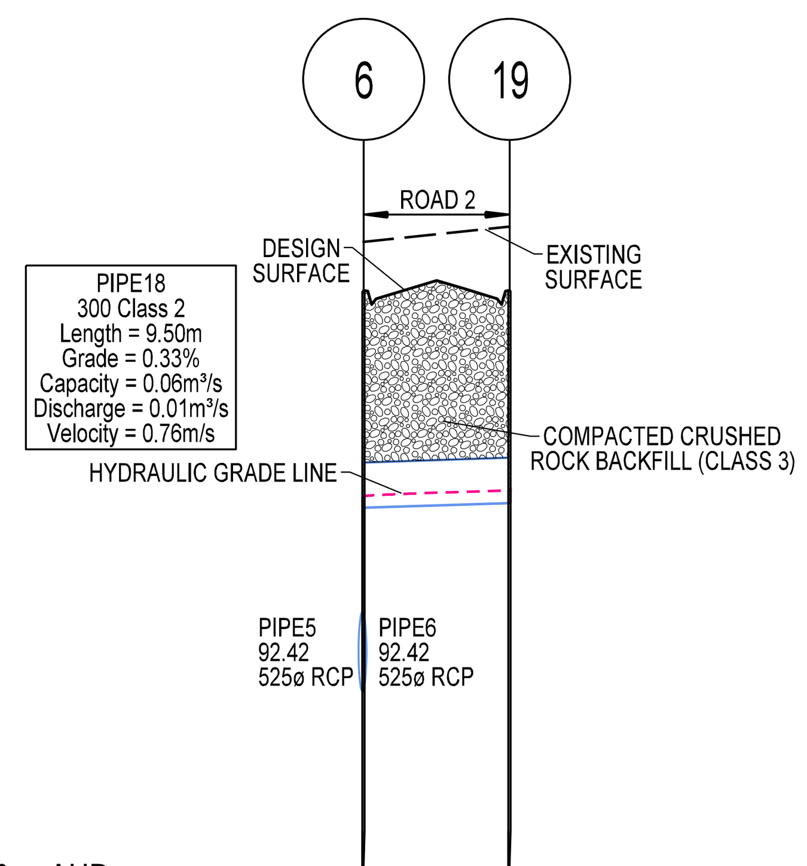
DATUM RL = 91.00 m AHD

HYDRAULIC GRADELINE	94.38	94.38	94.43	94.43
GRADE		PIPE 13 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	95.68		95.68	
DEPTH TO INVERT	2.02	1.43	1.40	
DESIGN INVERT LEVEL	93.66	94.25	94.28	
EXISTING SURFACE	96.06		96.01	
CHAINAGE	0.00	0.15	9.65	
		9.50		



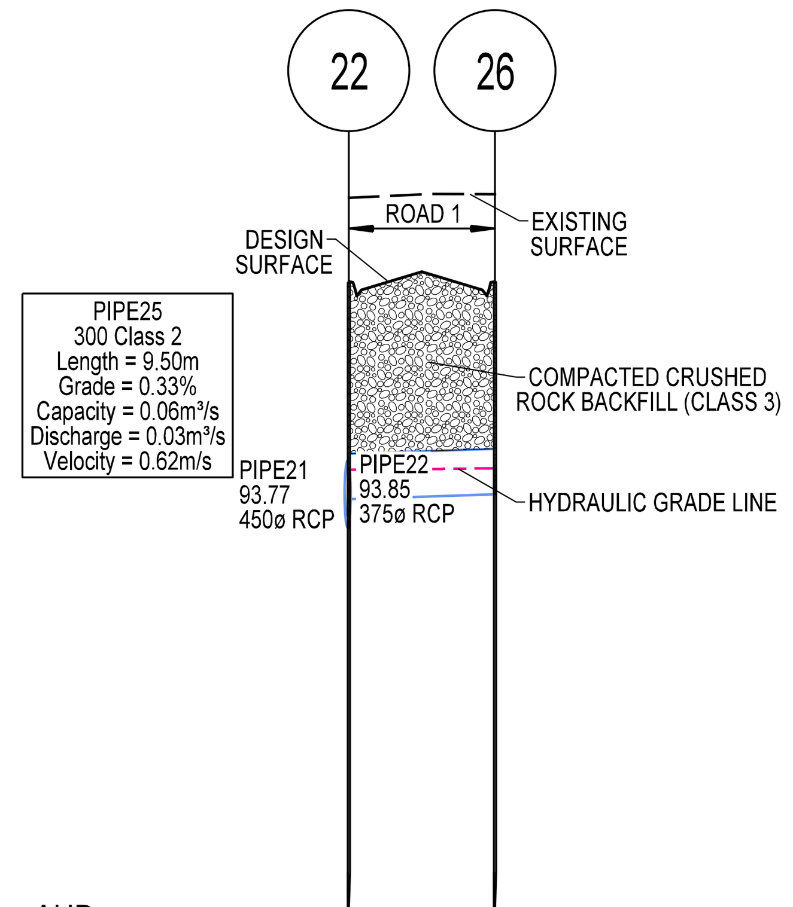
DATUM RL = 91.00 m AHD

HYDRAULIC GRADELINE	93.58	93.59	93.66	93.66
GRADE		PIPE 17 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	94.94		94.94	
DEPTH TO INVERT	2.18	1.43	1.40	
DESIGN INVERT LEVEL	92.76	93.51	93.54	
EXISTING SURFACE	95.31		95.25	
CHAINAGE	0.00	0.45	9.80	
		9.35		



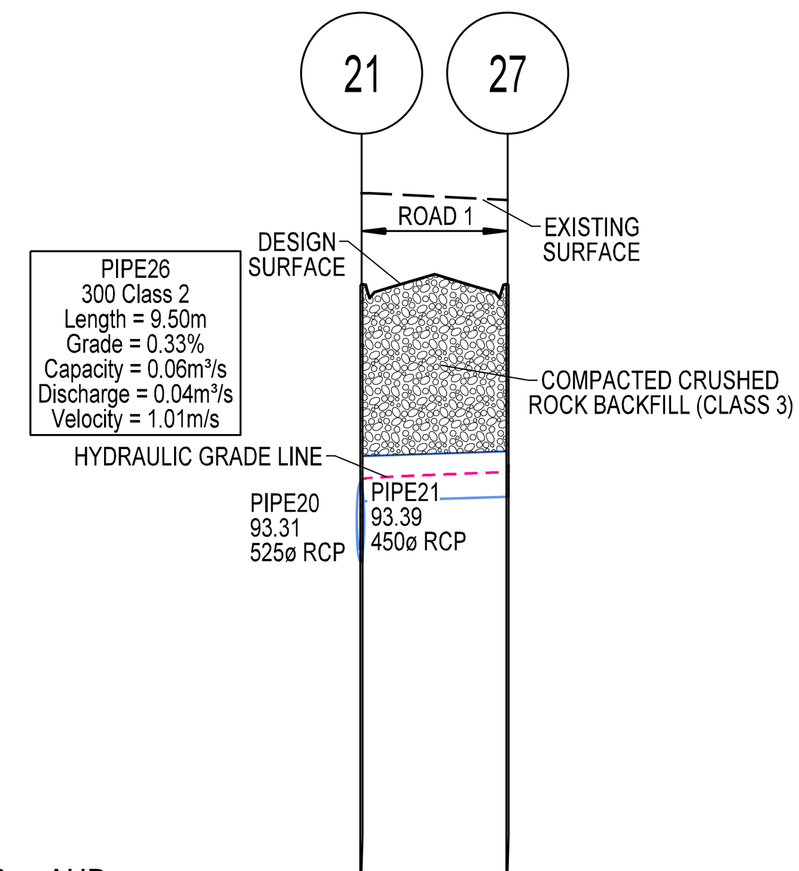
DATUM RL = 91.00 m AHD

HYDRAULIC GRADELINE	93.71	93.71	93.75	93.75
GRADE		PIPE 18 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	95.07		95.07	
DEPTH TO INVERT	2.65	1.43	1.40	
DESIGN INVERT LEVEL	92.42	93.64	93.67	
EXISTING SURFACE	95.39		95.49	
CHAINAGE	0.00	0.15	9.65	
		9.50		



DATUM RL = 91.00 m AHD

HYDRAULIC GRADELINE	94.16	94.16	94.17	94.17
GRADE		PIPE 25 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	95.40		95.40	
DEPTH TO INVERT	1.63	1.43	1.40	
DESIGN INVERT LEVEL	93.77	93.97	94.00	
EXISTING SURFACE	95.96		95.98	
CHAINAGE	0.00	0.15	9.65	
		9.50		



DATUM RL = 91.00 m AHD

HYDRAULIC GRADELINE	93.86	93.86	93.91	93.91
GRADE		PIPE 26 1 IN 300 (0.33%) 300ø RCP RRJ (CLASS 2)		
TOP OF PIT	95.15		95.15	
DEPTH TO INVERT	1.84	1.44	1.41	
DESIGN INVERT LEVEL	93.31	93.71	93.74	
EXISTING SURFACE	95.75		95.70	
CHAINAGE	0.15	0.15	9.65	
		9.50		

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

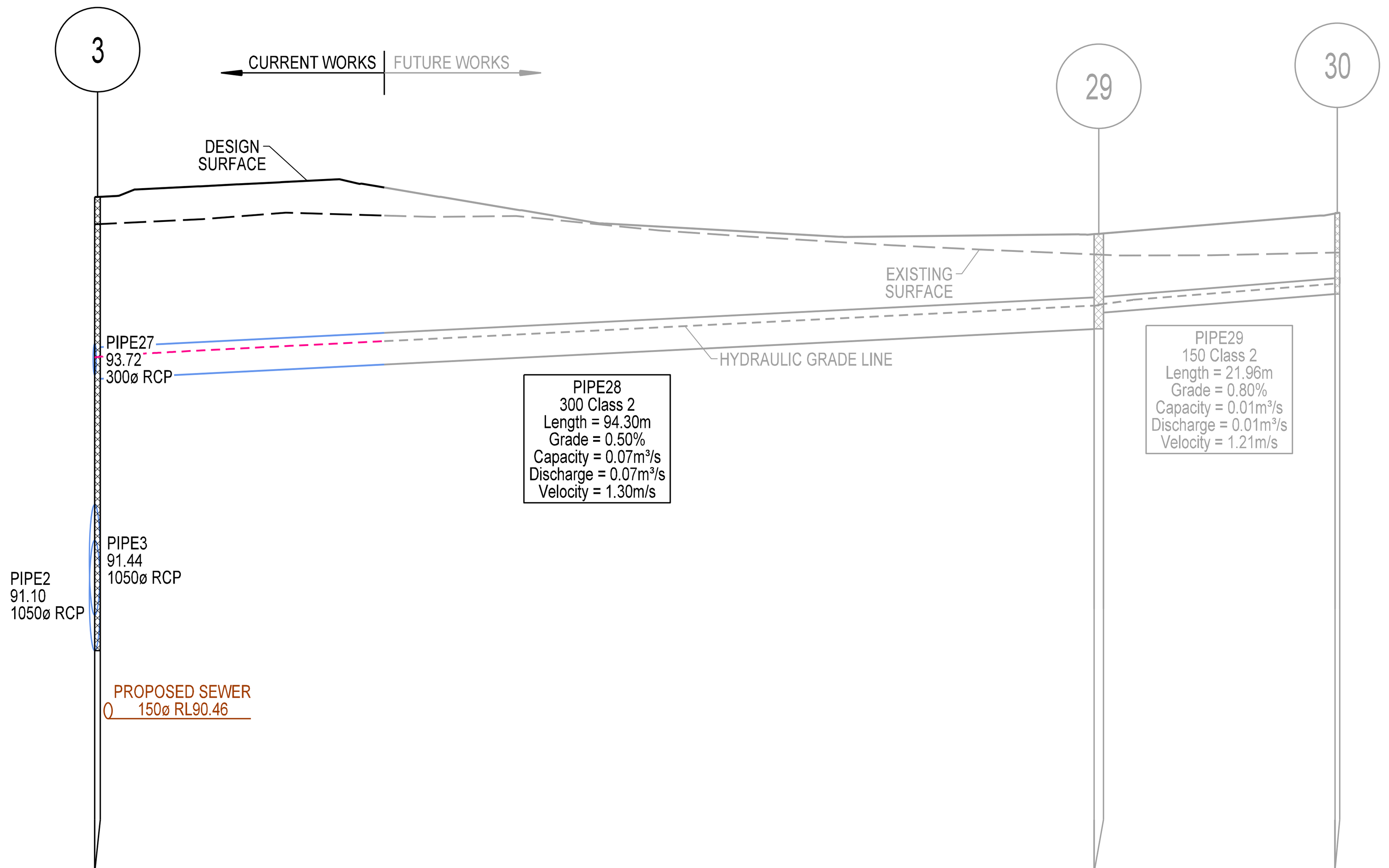
H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

DRAINAGE LONGITUDINAL SECTIONS
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

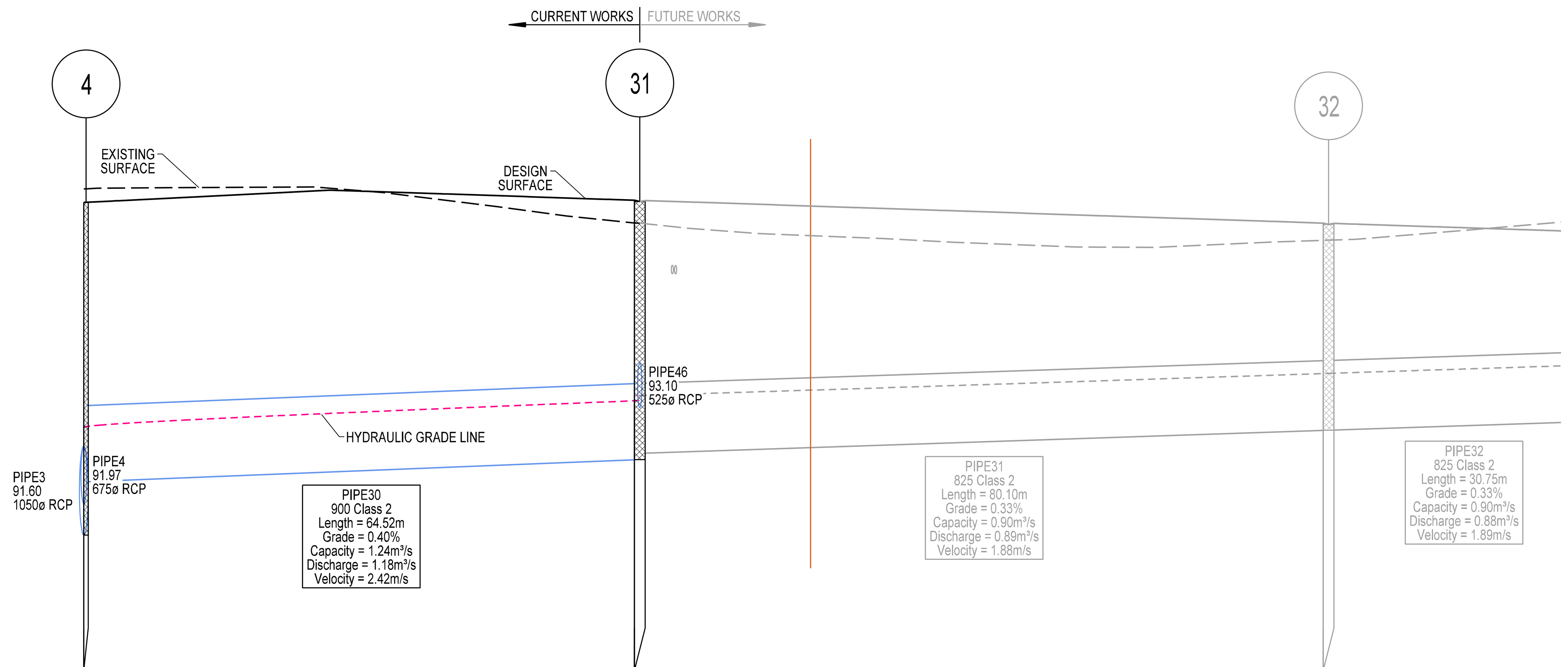
ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 5 OF 18

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM RL = 89.00 m AHD

HYDRAULIC GRADELINE	93.89	93.90		94.38	94.40		94.59	94.59
GRADE		PIPE 28 - 1 IN 200 (0.50%) 300ø RCP RRJ (CLASS 2)			PIPE 29 - 1 IN 300 (0.80%) 150ø PVC RRJ			
TOP OF PIT	95.41			95.06			95.26	
DEPTH TO INVERT	4.31	1.73		0.90	0.75		0.77	
DESIGN INVERT LEVEL	91.10	93.68		94.16	94.31		94.49	
EXISTING SURFACE	95.11			94.87			94.88	
CHAINAGE	0.00	0.53	94.30	94.83	95.73	21.96	117.69	



DATUM RL = 90.00 m AHD

HYDRAULIC GRADELINE	92.87	92.88		93.19	93.25		93.51	93.51	
GRADE		PIPE 30 - 1 IN 250 (0.04%) 900ø RCP RRJ (CLASS 2)			PIPE 31, 32 - 1 IN 300 (0.33%) 825ø RCP RRJ (CLASS 2)				
TOP OF PIT	95.51			95.54			95.27		
DEPTH TO INVERT	3.91	3.30		3.05	2.97		2.43		
DESIGN INVERT LEVEL	91.60	92.23		92.49	92.57		92.84		
EXISTING SURFACE	95.68			95.29			95.08		
CHAINAGE	0.00	0.52	64.52	65.05	66.32	80.10	146.42	147.69	30.75

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
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DRAINAGE LONGITUDINAL SECTIONS
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 6 OF 18

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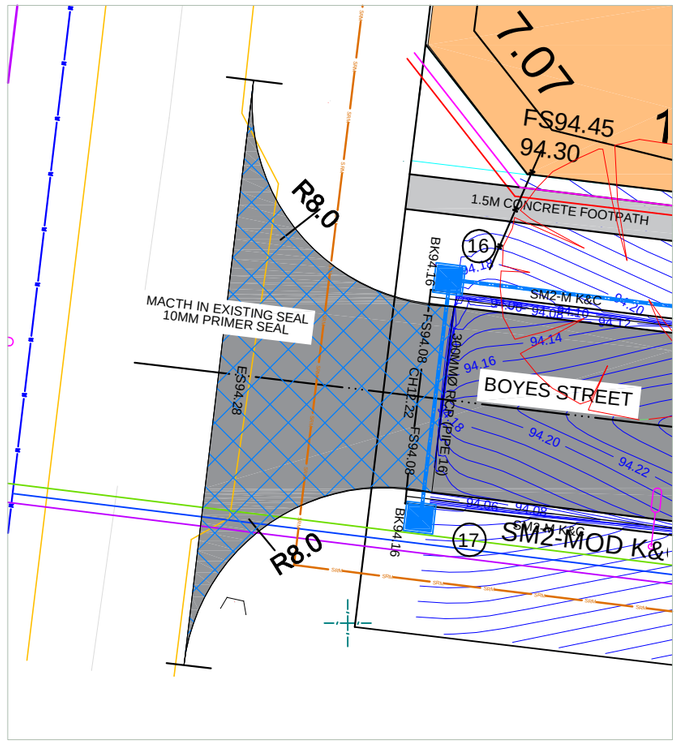
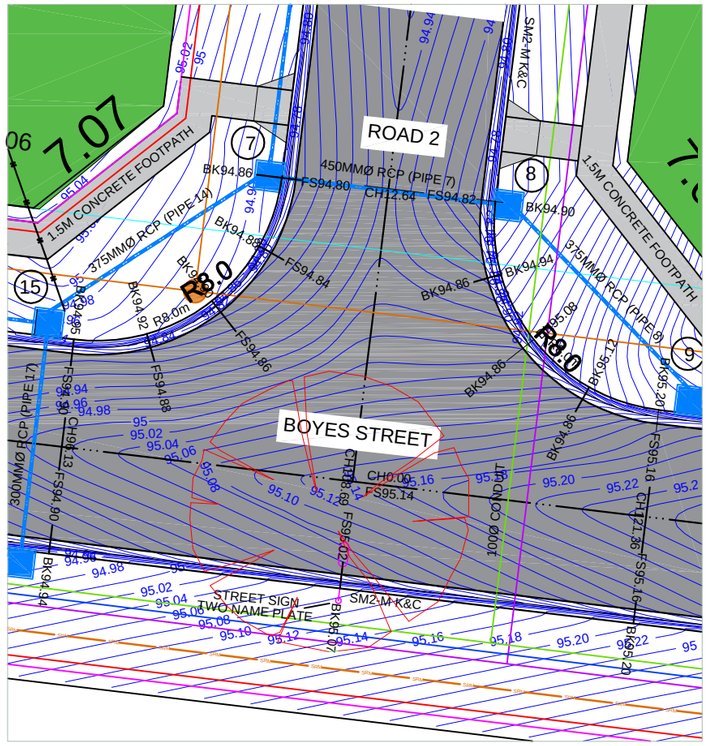
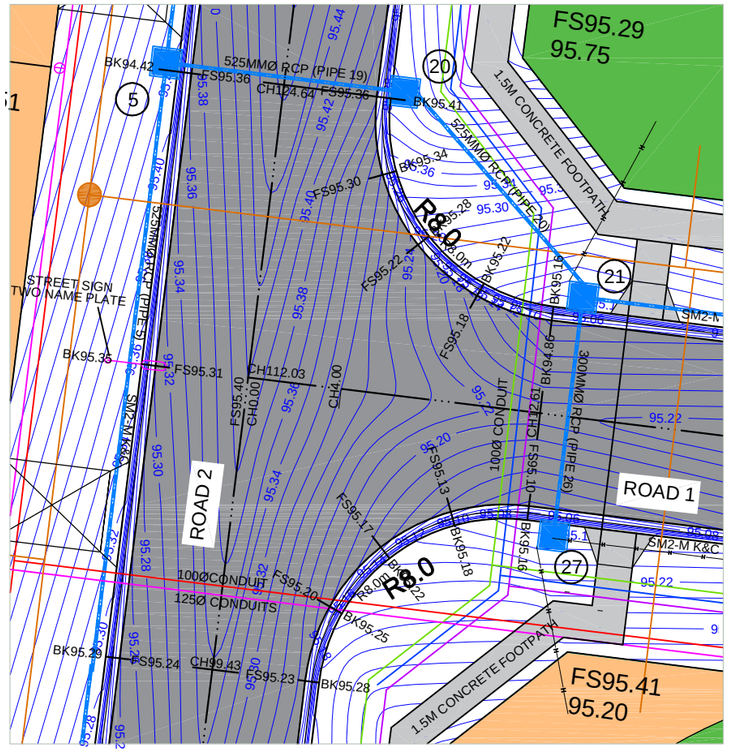






LEGEND

- EXISTING TREE
- TREE TO BE REMOVED
- TBM's
- EXISTING SEWER
- EXISTING SEWER RISING MAIN
- PROPOSED SEWER
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED WATER CONDUIT
- EXISTING GAS MAIN
- PROPOSED GAS MAIN
- PROPOSED GAS CONDUIT
- EXISTING TELSTRA LINE
- EXISTING TELSTRA FIBRE OPTIC CABLE
- PROPOSED TELSTRA LINE
- PROPOSED TELSTRA CONDUIT
- HOUSE DRAIN - IDM SD515
- EXISTING UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED ELECTRICITY CONDUIT
- EXISTING DRAINAGE
- PROPOSED DRAINAGE
- PROPOSED AG DRAIN
- TITLE BOUNDARY
- EASEMENTS
- EXISTING KERB & CHANNEL
- PROPOSED KERB & CHANNEL
- FENCES & GATES
- TOP OF BANK
- TOE OF BANK
- PROPOSED TOP / TOE OF BANK
- INVERT OPEN DRAIN
- EXISTING GRAVEL TRACK
- 1 IN 100 YEAR ARI OVERLAND FLOODPATH

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

CONSTRUCTION NOTES

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY COUNCIL AND TO COUNCIL STANDARDS.
2. COUNCIL IS TO BE NOTIFIED TWO (2) CLEAR WORKING DAYS PRIOR TO COMMENCEMENT OF WORKS - IN WRITING.
3. WHERE WORKS ARE IN THE VICINITY OF EXISTING SERVICES, THESE SERVICES ARE TO BE LOCATED PRIOR TO COMMENCEMENT OF WORKS AND THE RELEVANT AUTHORITIES NOTIFIED.
4. ALL EXISTING ASSETS AFFECTED BY THE WORKS (SIGNS, VEHICLE CROSSINGS, FOOTPATHS KERB &CHANNEL ETC.) SHALL BE REINSTATED BY THE CONTRACTOR PRIOR TO THE COMPLETION OF THE WORKS TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.
5. AREAS OF CUT AND FILL ARE TO BE STRIPPED OF TOPSOIL (100-300mm REFER SOIL REPORT) AND STORED AS SHOWN.CUT/FILLED AND THE TOPSOIL REPLACED TO OBTAIN FINAL SURFACE LEVELS AS SHOWN ON PLANS. ALL FILLING TO BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY VALUE DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH A.S.1289.5.1.1 - 2003.

CUT AREAS ARE SHOWN THUS

FILL AREAS ARE SHOWN THUS

FILL AREAS GREATER THAN 300mm ARE SHOWN THUS

LEVEL 1 COMPACTION TESTING IS TO BE CARRIED OUT ON ALL AREAS OF FILL WHERE THE DEPTH OF COMPACTED FILL EXCEEDS 3000mm IN ACCORDANCE WITH AS3798-2007.

6. ALL NATURE STRIPS ARE TO BE FINISHED WITH WITH MINIMUM 100mm TOPSOIL.
7. BATTERS SHALL NOT BE GREATER THAN 1 IN 6 FOR CUT AND 1 IN 6 FOR FILL - UNLESS SPECIFIED.
8. AT THE COMPLETION OF THE WORKS ALL RUBBISH, DEBRIS AND SURPLUS SPOIL IS TO BE REMOVED AND THE SITE SHALL BE CLEARED TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.
9. ALL TREES AND SHRUBS TO BE RETAINED UNLESS ROAD CONSTRUCTION NECESSITATES THEIR REMOVAL,OR REMOVAL IS DIRECTED BY COUNCIL AND/OR THE SUPERINTENDENT. ANY TREES AND VEGETATION REMOVED OR OTHER MATERIALS ARE NOT TO BE BURNT ONSITE.
10. LEVELS ARE IN METRES TO AHD.
11. FINISHED SURFACE LEVELS SHOWN THUS: FS143.22
    EXISTING SURFACE LEVELS SHOWN THUS: 143.32
12. "NOTICE OF INTENTION TO COMMENCE OPERATIONS" IS TO BE SENT TO THE CHIEF MINING INSPECTOR AT LEAST 3 DAYS PRIOR TO COMMENCING EXCAVATION OF TRENCHES IN EXCESS OF 1.5m DEEP PURSUANT TO SECTION 385 (i) OF MINES ACT 1958. AN APPROPRIATELY TRAINED AND COMPETENT EXCAVATION SUPERVISOR IS TO BE IN ATTENDANCE AT ALL TIMES PERSUANT TO OCCUPATIONAL HEALTH AND SAFETY (OHS) ACT 2004.
13. DRAINAGE PIPES / PITS TO BE SET OUT FROM OFFSETS RATHER THAN FROM PIPE CHAINAGES.
14. ALL DRAINAGE PIPES BEHIND KERB & CHANNEL SHALL BE BACKFILLED TO MATCH PAVEMENT SUBGRADE LEVEL WITH 20mm CLASS 3 F.C.R. COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY VALUE DETERMINED BY THE MODIFIED COMPACTION TEST IN ACCORDANCE WITH A.S.1289.5.2.1 - 2003. ALTERNATIVELY CLEAN CLAY MATERIAL WITHIN 85% TO 115% OF STANDARD OPTIMUM MOISTURE CONTENT FROM SITE MAY BE USED WHERE COMPACTED IN 200mm LAYERS USING VIBRATING MECHANICAL EQUIPMENT WHERE APPROVED BY THE RESPONSIBLE AUTHORITY
15. AGRICULTURAL DRAINS ARE NOT REQUIRED.
16. HOUSE DRAINS SHOWN THUS —H— AND ARE TO BE 100mm DIA. UPVC AND PLACED AT 6.00m OFFSET FROM THE LOWER BOUNDARY OF LOTS UNLESS OTHERWISE SHOWN. ALL LOTS TO DISCHARGE DIRECTLY TO THE UNDERGROUND DRAINAGE SYSTEM NOT KERB.
17. ELECTRICITY AUTHORITY CONDUITS SHOWN THUS TO BE 63mm DIA. UPVC UNLESS OTHERWISE SHOWN.
18. ELECTRICITY AUTHORITY SERVICE PITS SHOWN THUS ○ ARE TO BE INSTALLED BY THE CONTRACTOR TO THE ELECTRICITY SUPPLIERS SPECIFICATIONS AND STANDARD DRAWINGS AND ENCASED IN A MINIMUM OF 150mm CONCRETE. PITS WILL BE SUPPLIED BY THE ELECTRICITY AUTHORITY.
19. TELSTRA TO BE NOTIFIED SEVEN (7) DAYS PRIOR TO CONCRETE WORKS BEING PLACED.
20. TELSTRA CONDUITS SHOWN THUS TO BE SUPPLIED BY TELSTRA AUSTRALIA.
21. WATER CONDUITS SHOWN THUS TO BE 100mm DIA. UPVC CLASS 12 AND PLACED AT THE CENTRE OF LOTS UNLESS OTHERWISE SHOWN.
22. GAS CONDUITS SHOWN THUS TO BE 100mm DIA. UPVC AND PLACED AT THE CENTRE OF LOTS UNLESS OTHERWISE SHOWN.
23. ALL CONDUITS CROSSING ROADS TO BE BACKFILLED WITH COMPACTED FRC (CLASS 3).
23. ALL CONDUITS CROSSING ROADS TO BE CLEARLY MARKED IN THE KERBS WITH IDENTIFYING LETTER.
26. ALL WORKS ARE TO BE CARRIED OUT WITH REFERENCE TO SEDIMENT CONTROL PRINCIPLES AS OUTLINED IN "DOING IT RIGHT ON SUBDIVISIONS" (EPA PUBLICATION 960, SEPTEMBER 2004) AND AS DIRECTED BY COUNCIL AND THE SUPERINTENDENT.
27. A TRAFFIC MANAGEMENT PLAN MUST BE PREPARED AND IMPLEMENTED IN ACCORDANCE WITH AS1742 PART 3 FOR ANY WORKS UNDERTAKEN ALONG THE ROAD RESERVE PRIOR TO COMMENCEMENT OF ANY WORKS.
28. IF IN DOUBT ASK !

CONSTRUCTION HOLDPOINTS

THE FOLLOWING HOLDPOINTS MUST BE CERTIFIED BY A PERSON QUALIFIED IN THE ASPECTS OF ROAD AND DRAINAGE CONSTRUCTION. THE WORKS MUST BE OBSERVED BY A COUNCIL REPRESENTATIVE AT DESIGNATED SITE MEETINGS BETWEEN 9am AND 5pm WEEKDAYS (A MINIMUM OF 48 HOURS NOTICE IS REQUIRED) AS SPECIFIED IN THE FOLLOWING HOLDPOINTS:

1. INSPECTION OF DRAINAGE PITS PRIOR TO PIT COVERS BEING PLACED.
2. INSPECTION AND TESTING OF THE COMPLETED FOUNDATION LAYER PRIOR TO THE PLACING OF ALL KERB AND CHANNEL (INCLUDES COMPACTION TESTS AS SPECIFIED).
3. INSPECTION OF WORKS PRIOR TO THE POURING OF FOOTPATH.
4. INSPECTION AND TESTING OF SUBGRADE (INCLUDES COMPACTION TESTS AS SPECIFIED).
5. INSPECTION AND TESTING OF EACH PAVEMENT COURSE (INCLUDES COMPACTION TESTS AS SPECIFIED).
6. INSPECTION AND TESTING OF THE COMPLETED ROAD PAVEMENT PRIOR TO APPLYING THE PRIMER COAT (INCLUDES COMPACTION TESTS AS SPECIFIED).
7. INSPECTION OF THE COMPLETED ROAD PAVEMENT PRIOR TO THE PLACEMENT OF THE ASPHALT COURSE OR FIRST SEALING.
8. INSPECTION PRIOR TO THE PLACEMENT OF CONCRETE ON LARGE REINFORCED CONCRETE STRUCTURES.
9. INSPECTION PRIOR TO THE PLACEMENT OF GPT'S, LITTER TRAPS AND PRECAST CONCRETE PUMPSTATIONS.
10. INSPECTION PRIOR TO THE PLANTING OF WETLANDS.
11. INSPECTION PRIOR TO THE REMOVAL OF NATIVE VEGETATION AND OTHER EXISTING VEGETATION.

NOTE: THE ABOVE HOLDPOINTS MUST BE WITNESSED AND CONFIRMED IN WRITING BY BOTH THE COUNCIL REPRESENTATIVE AND THE CONTRACT SUPERINTENDENT. FIALURE TO COMPLETE A HOLDPOINT WILL REQUIRE THOSE AND ANY SUBSEQUENT WORKS TO BE REMOVED AND PREPARED FOR THE HOLPOINT INSPECTION.

WARNING!!

BEWARE OF UNDERGROUND SERVICES

The locations type and depth of underground services shown are approximate only and are based on authority records. The exact position of these services is to be proven on site and site locations obtained from the relevant authorities before commencement of any works. No guarantee is given that all existing underground services are shown.

NOTE !
BEWARE OF EXISTING
OVERHEAD POWER CABLES !

DIAL BEFORE YOU DIG
www.1100.com.au

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 250 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

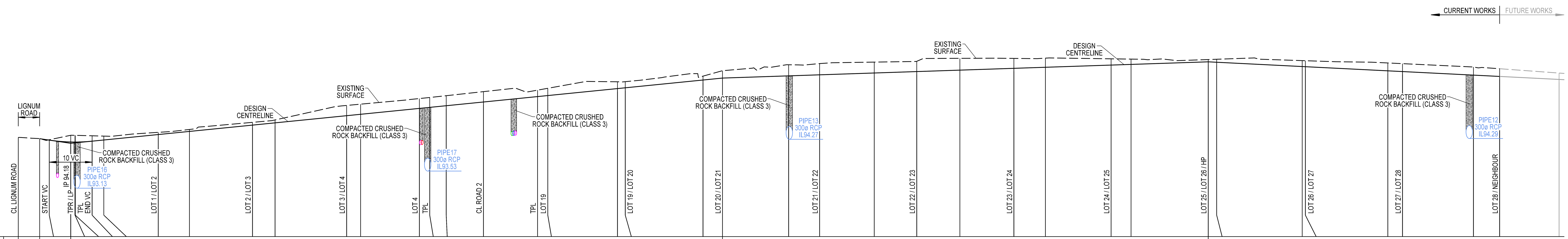
0 1.25 2.5 3.75 5 6.25m
Scale: 1:500 @ A1 / 1:250 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 387
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
INTERSECTION DETAIL
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET 9 OF 18

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

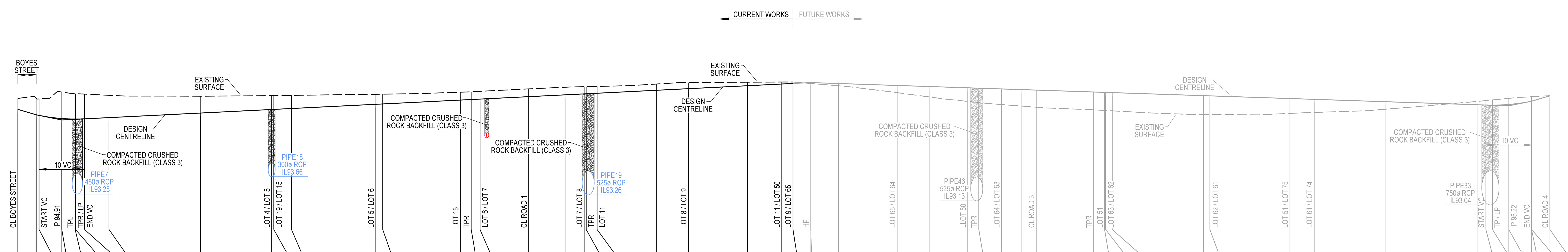


DATUM R.L. 92.00

GRADE: -0.59% 1 IN 170 | -1.50% 1 IN 66.7 | 1.00% 1 IN 100 | 0.33% 1 IN 300 | -0.50% 1 IN 200

CHAINAGE	DESIGN PROFILE	EXISTING SURFACE CL	BACK OF KERB (RIGHT)	BACK OF KERB (LEFT)
0.00	94.32	94.32		
5.00	94.29	94.29		
7.26	94.25	94.26		
12.26	94.21	94.36		
13.26	94.21	94.36	94.14	
13.33	94.21	94.36	94.14	94.14
17.26	94.23	94.35	94.16	94.16
20.00	94.25	94.34	94.18	94.18
32.72	94.38	94.43	94.31	94.31
40.00	94.45	94.50	94.38	94.38
54.72	94.60	94.67	94.53	94.53
60.00	94.65	94.72	94.58	94.58
76.72	94.82	95.06	94.75	94.75
80.00	94.85	95.09	94.78	94.78
93.73	94.99	95.22	94.92	94.92
96.13	95.02	95.25	94.95	94.95
100.00	95.05	95.29	94.98	
108.69	95.14	95.38	95.07	
121.33	95.27	95.42	95.20	95.20
123.72	95.29	95.46	95.22	95.22
140.00	95.45	95.61	95.38	95.38
141.83	95.47	95.62	95.40	95.40
160.00	95.65	95.74	95.58	95.58
164.53	95.70	95.87	95.63	95.63
180.00	95.75	96.01	95.68	95.68
187.23	95.78	96.04	95.71	95.71
200.00	95.82	96.07	95.75	95.75
209.93	95.85	96.09	95.78	95.78
220.00	95.88	96.16	95.81	95.81
232.63	95.93	96.16	95.86	95.86
240.00	95.95	96.16	95.88	95.88
255.33	96.00	96.15	95.93	95.93
260.00	96.02	96.14	95.95	95.95
278.03	96.08	96.13	96.01	96.01
280.00	96.07	96.14	96.00	96.00
300.00	95.97	96.11	95.90	95.90
300.73	95.96	96.10	95.89	95.89
320.00	95.87	96.05	95.80	95.80
323.43	95.85	96.03	95.78	95.78
340.00	95.77	95.96	95.70	95.70
346.11	95.74	95.92	95.67	95.67
360.00	95.67	95.82	95.60	95.60

BOYES STREET



DATUM R.L. 92.00

GRADE: -3.00% 1 IN 33 | -2.00% 1 IN 50 | 0.50% 1 IN 200 | -0.33% 1 IN 300 | 2.00% 1 IN 50 | 3.00% 1 IN 33

CHAINAGE	DESIGN PROFILE	EXISTING SURFACE CL	BACK OF KERB (RIGHT)	BACK OF KERB (LEFT)
0.00	95.14	95.38		
4.00	95.02	95.39		
4.64	95.01	95.37		
9.64	94.94	95.52		
12.56	94.93	95.49		94.86
12.64	94.93	95.49	94.86	94.86
14.64	94.93	95.48	94.86	94.86
20.00	94.96	95.45	94.89	94.89
40.00	95.06	95.43	94.99	94.99
55.67	95.14	95.44	95.07	95.07
56.13	95.14	95.44	95.07	95.07
60.00	95.16	95.45	95.09	95.09
78.51	95.25	95.47	95.18	95.18
80.00	95.26	95.48	95.19	95.19
97.03	95.35	95.52	95.28	95.28
99.43	95.36	95.53	95.29	95.29
101.35	95.37	95.54		95.30
112.03	95.42	95.59		95.35
120.00	95.46	95.63		95.39
124.19	95.48	95.64		95.41
124.63	95.48	95.64	95.41	95.41
127.03	95.50	95.65	95.43	95.43
140.00	95.56	95.70	95.49	95.49
147.03	95.60	95.73	95.53	95.53
160.00	95.66	95.74	95.59	95.59
167.53	95.70	95.74	95.63	95.63
169.97	95.71	95.74	95.64	95.64
173.90	95.73	95.71	95.66	95.66
180.00	95.71	95.66	95.64	95.64
192.83	95.67	95.51	95.60	95.60
200.00	95.64	95.41	95.57	95.57
208.33	95.61	95.32	95.54	95.54
210.73	95.61	95.29	95.54	95.54
215.69	95.59	95.25		95.52
220.00	95.58	95.21		95.51
223.33	95.56	95.19		95.49
235.93	95.52	95.13	95.45	95.45
238.33	95.51	95.12	95.44	95.44
238.56	95.51	95.12	95.44	95.44
240.00	95.51	95.11	95.44	95.44
260.00	95.44	95.03	95.37	95.37
261.42	95.44	95.03	95.37	95.37
278.97	95.38	95.05	95.31	95.31
284.28	95.36	95.07	95.29	95.29
300.00	95.31	95.14	95.24	95.24
320.00	95.24	95.32	95.17	95.17
321.95	95.24	95.33	95.17	95.17
323.38	95.23	95.35	95.16	95.16
326.95	95.25	95.38		
331.95	95.32	95.42		
331.98	95.32	95.42		
335.98	95.44	95.44		

ROAD 2

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

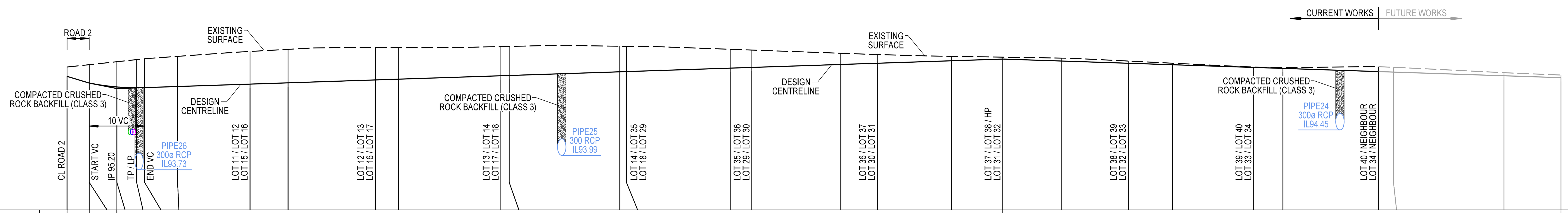
NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD LONGITUDINAL SECTIONS - BOYES STREET & ROAD 2

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 8 OF 18

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM R.L. 93.00

GRADE	-3.00% 1 IN 33		-2.00% 1 IN 50	0.33% 1 IN 300						
DESIGN PROFILE	95.42	95.30	95.30	95.23	95.21	95.22	95.24	95.28	95.30	95.36
EXISTING SURFACE CL	95.59	95.63	95.63	95.69	95.72	95.74	95.78	95.87	95.91	95.94
BACK OF KERB (RIGHT)					95.14	95.15	95.17	95.21	95.23	95.29
BACK OF KERB (LEFT)					95.14	95.15	95.17	95.21	95.23	95.29
CHAINAGE	0.00	4.00	4.03	9.03	12.60	14.03	20.00	33.11	40.00	55.81

GRADE										-0.33% 1 IN 300
DESIGN PROFILE	95.37	95.43	95.44	95.50	95.51	95.57	95.58	95.64	95.66	95.70
EXISTING SURFACE CL	95.94	95.96	95.96	95.97	95.97	95.91	95.90	95.84	95.82	95.78
BACK OF KERB (RIGHT)	95.30	95.36	95.37	95.43	95.44	95.50	95.51	95.57	95.59	95.63
BACK OF KERB (LEFT)	95.30	95.36	95.37	95.43	95.44	95.50	95.51	95.57	95.59	95.63
CHAINAGE	60.00	78.51	80.00	100.00	101.21	120.00	123.91	140.00	146.61	160.00

GRADE										
DESIGN PROFILE	95.73	95.70	95.66	95.63	95.58	95.56	95.51	95.50	95.43	95.40
EXISTING SURFACE CL	95.77	95.75	95.70	95.66	95.59	95.58	95.60	95.58	95.49	95.45
BACK OF KERB (RIGHT)	95.66	95.63	95.59	95.56	95.51	95.49	95.44	95.43	95.36	95.33
BACK OF KERB (LEFT)	95.66	95.63	95.59	95.56	95.51	95.49	95.44	95.43	95.36	95.33
CHAINAGE	169.31	180.00	192.01	200.00	214.71	220.00	237.30	240.00	260.00	270.30

ROAD 1

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:500 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

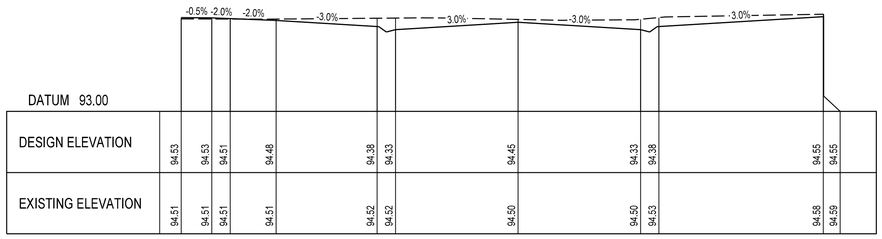
H 10 0 10 20
V 1 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

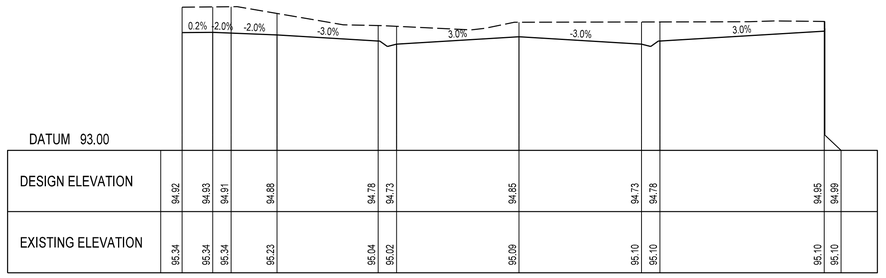
ROAD LONGITUDINAL SECTIONS - ROAD 1
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY APPROVAL
REFERENCE: M7555 | VERSION: 01 | SHEET 9 OF 18

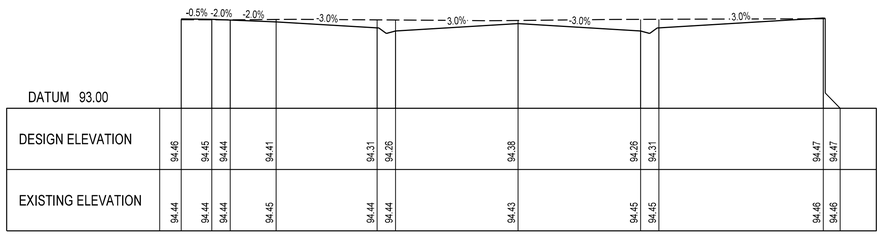
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



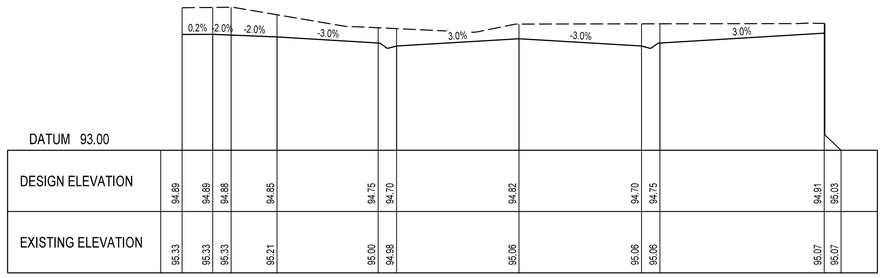
CH. 40.00



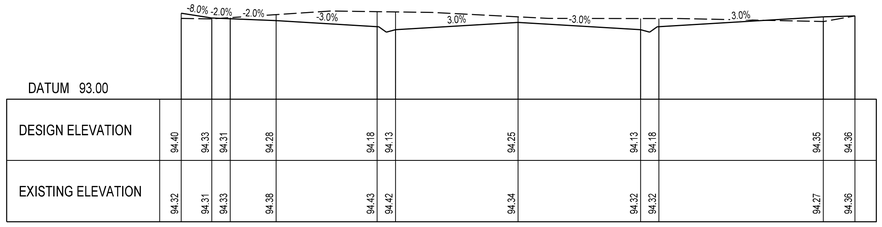
CH. 80.00



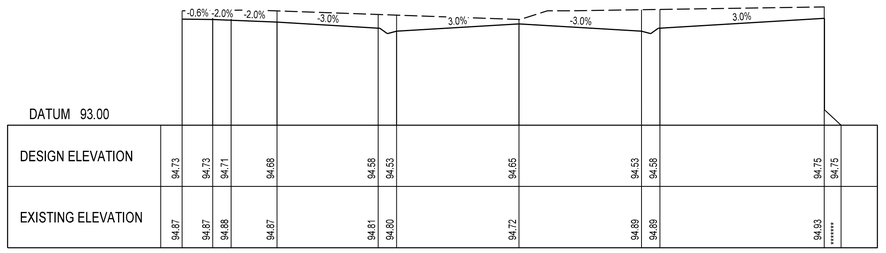
CH. 32.72 LOT 1 / LOT 2



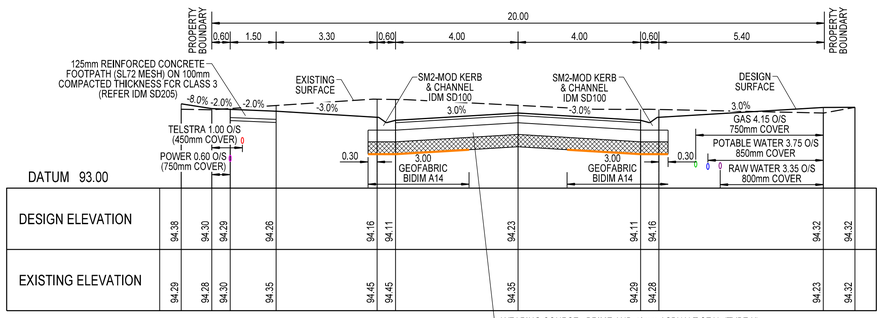
CH. 76.72 LOT 3 / LOT 4



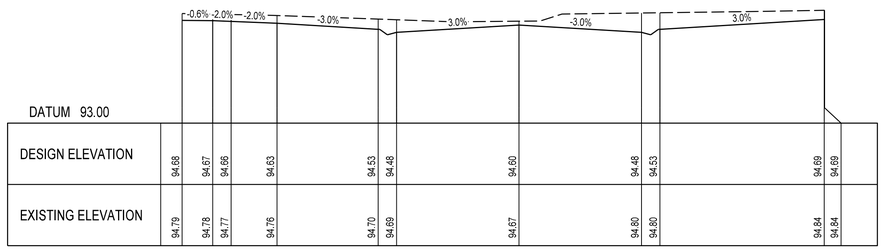
CH. 20.00



CH. 60.00



CH. 17.26 END VC



CH. 54.72 LOT 2 / LOT 3

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

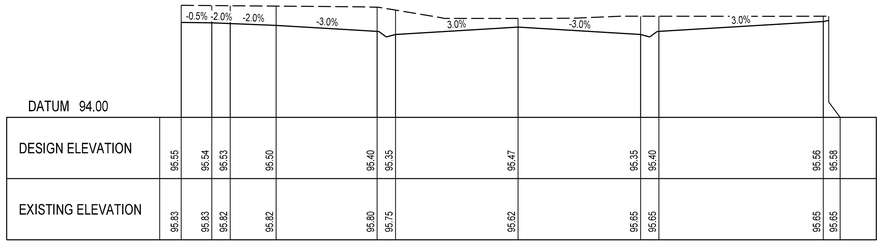
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (BOYES STREET CH17.26 - CH80.00)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

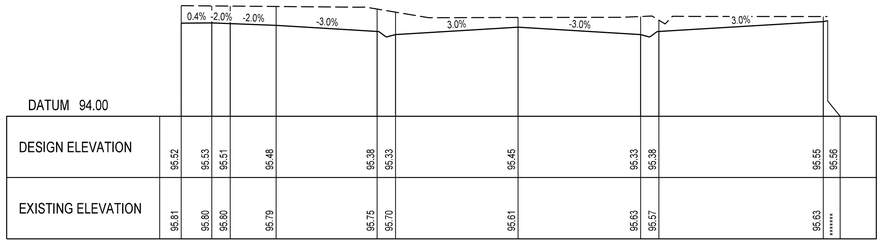
ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 10 OF 18



DATUM 94.00

DESIGN ELEVATION	95.55	95.54	95.53	95.50	95.40	95.35	95.47	95.35	95.40	95.56	95.58	
EXISTING ELEVATION	95.83	95.83	95.82	95.82	95.80	95.75	95.62	95.65	95.65	95.65	95.65	

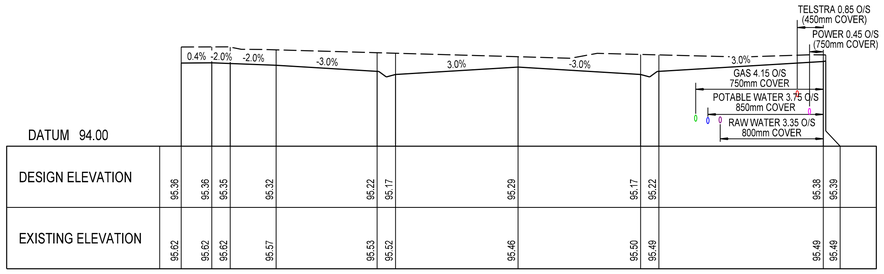
CH. 141.83 LOT 19 / LOT 20



DATUM 94.00

DESIGN ELEVATION	95.52	95.53	95.51	95.48	95.38	95.33	95.45	95.33	95.38	95.55	95.56	
EXISTING ELEVATION	95.81	95.80	95.80	95.79	95.75	95.70	95.61	95.63	95.57	95.63	*******	

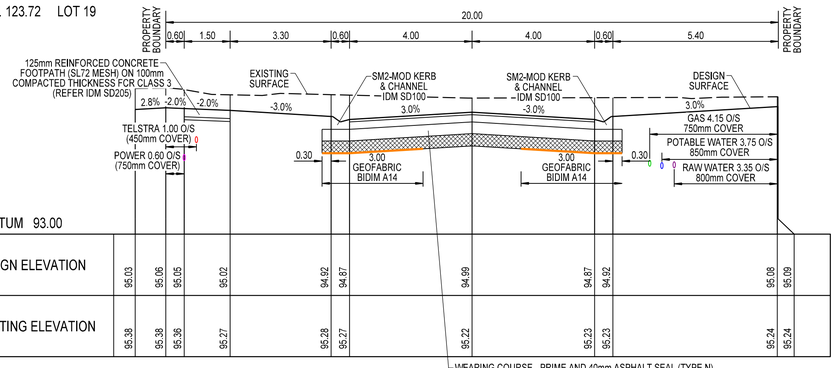
CH. 140.00



DATUM 94.00

DESIGN ELEVATION	95.38	95.36	95.35	95.32	95.22	95.17	95.29	95.17	95.22	95.38	95.39	
EXISTING ELEVATION	95.62	95.62	95.62	95.57	95.53	95.52	95.46	95.50	95.49	95.49	95.49	

CH. 123.72 LOT 19

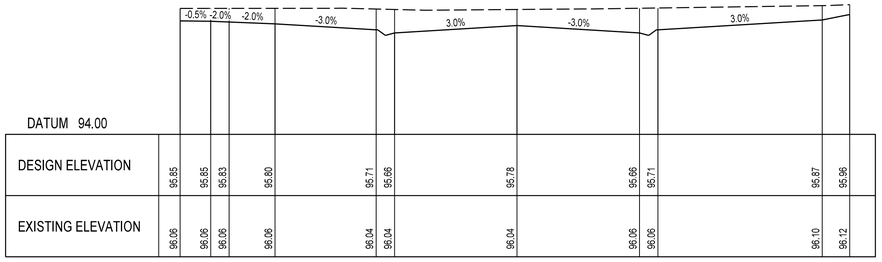


DATUM 93.00

DESIGN ELEVATION	95.03	95.06	95.05	95.02	94.92	94.87	94.99	94.87	94.92	95.08	95.09	
EXISTING ELEVATION	95.38	95.38	95.36	95.27	95.28	95.27	95.22	95.23	95.23	95.24	95.24	

CH. 93.73 LOT 4

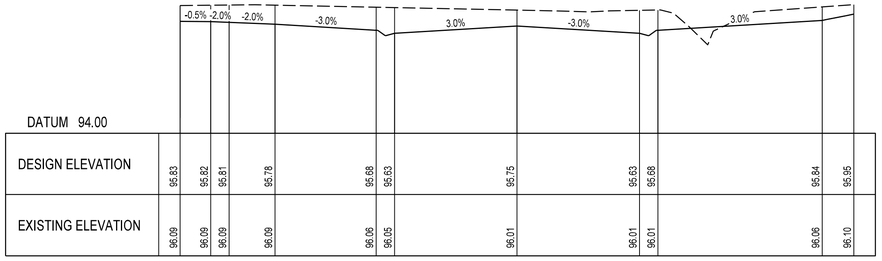
WEARING COURSE - PRIME AND 40mm ASPHALT SEAL (TYPE N).
BASECOURSE - 120mm MIN. CLASS 1 or 2 (20mm) FCR COMPACTED TO 98% MMDD (MIN CBR 80).
SUB-BASE - 140mm MIN. CLASS 3 (20mm) FCR TO 96% MMDD (MIN CBR 30).
GEOFABRIC BIDIM A14 - BEHIND AND UNDER K & C AND 2.1m FROM LIP OF KERB ONLY
STABILIZED SUBGRADE - TOP 200mm TO BE STABILIZED WITH 3% LIME MIXED THOROUGHLY AND COMPACTED TO 98% STANDARD



DATUM 94.00

DESIGN ELEVATION	95.85	95.85	95.83	95.80	95.71	95.66	95.78	95.66	95.71	95.87	95.96	
EXISTING ELEVATION	96.06	96.06	96.06	96.06	96.04	96.04	96.04	96.06	96.06	96.10	96.12	

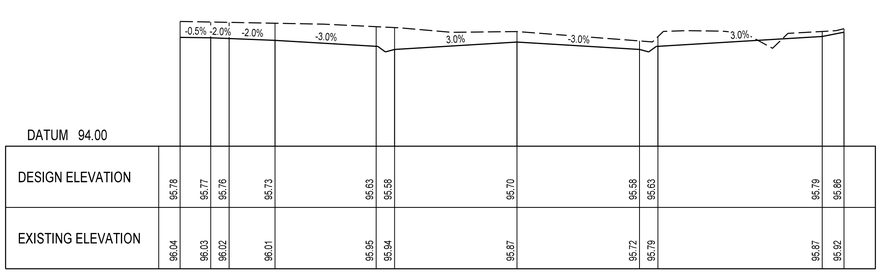
CH. 187.23 LOT 21 / LOT 22



DATUM 94.00

DESIGN ELEVATION	95.83	95.82	95.81	95.78	95.68	95.63	95.75	95.63	95.68	95.84	95.95	
EXISTING ELEVATION	96.09	96.09	96.09	96.09	96.06	96.05	96.01	96.01	96.01	96.08	96.10	

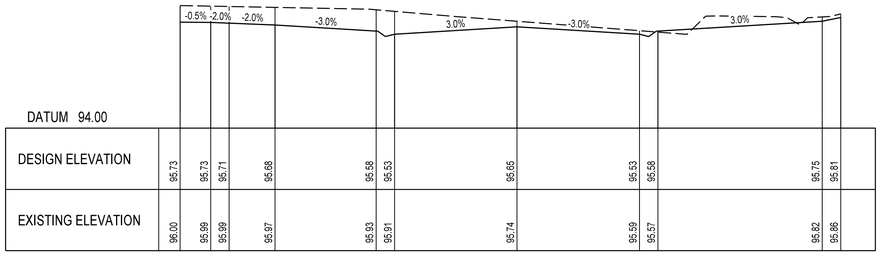
CH. 180.00



DATUM 94.00

DESIGN ELEVATION	95.78	95.77	95.76	95.73	95.63	95.58	95.70	95.58	95.63	95.79	95.86	
EXISTING ELEVATION	96.04	96.03	96.02	96.01	95.95	95.94	95.87	95.72	95.79	95.87	95.92	

CH. 164.53 LOT 20 / LOT 21



DATUM 94.00

DESIGN ELEVATION	95.73	95.73	95.71	95.68	95.58	95.53	95.65	95.53	95.58	95.75	95.81	
EXISTING ELEVATION	96.00	95.99	95.99	95.97	95.93	95.91	95.74	95.59	95.57	95.82	95.86	

CH. 160.00

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

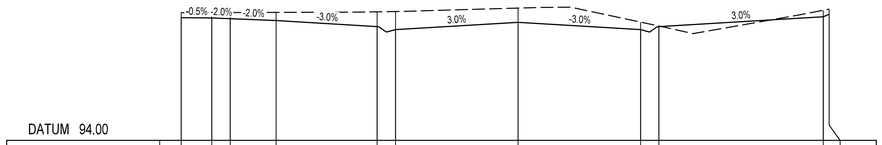
NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (BOYES STREET CH93.73 - CH187.23)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 11 OF 18

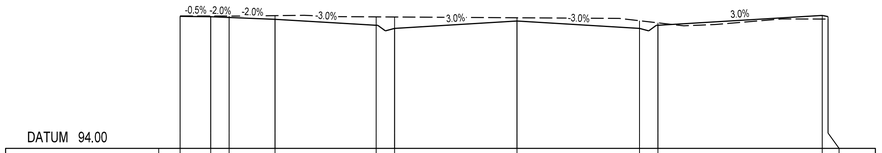
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM 94.00

DESIGN ELEVATION	96.00	96.00	95.99	95.96	95.86	95.81	95.93	95.81	95.86	96.02	96.06	
EXISTING ELEVATION	96.08	96.08	96.09	96.09	96.10	96.10	96.16	95.93	95.87	96.12	96.14	

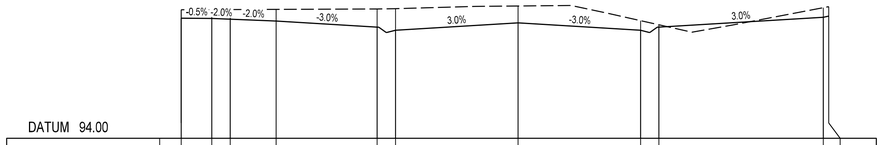
CH. 232.63 LOT 23 / LOT 24



DATUM 94.00

DESIGN ELEVATION	96.15	96.15	96.14	96.11	96.01	95.98	96.08	95.96	96.01	96.17	96.15	
EXISTING ELEVATION	96.16	96.16	96.16	96.17	96.15	96.14	96.13	96.08	96.05	96.11	96.11	

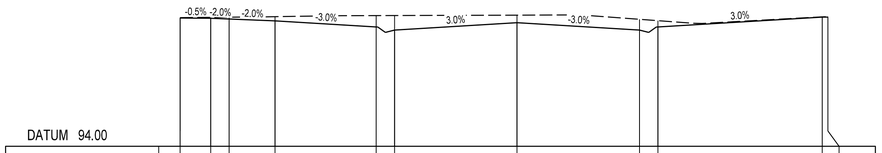
CH. 278.03 LOT 25 / LOT 26 / HP



DATUM 94.00

DESIGN ELEVATION	95.96	95.96	95.94	95.91	95.81	95.76	95.88	95.76	95.81	95.98	95.99	
EXISTING ELEVATION	96.10	96.10	96.10	96.10	96.11	96.12	96.16	95.92	95.85	96.13	96.15	

CH. 220.00



DATUM 94.00

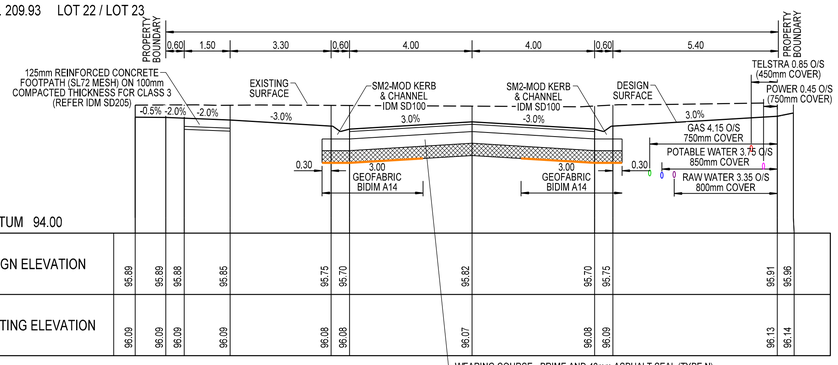
DESIGN ELEVATION	96.09	96.09	96.08	96.05	95.95	95.90	96.02	95.90	95.95	96.11	96.11	
EXISTING ELEVATION	96.10	96.10	96.11	96.11	96.13	96.13	96.14	96.07	96.05	96.11	96.12	

CH. 260.00

DATUM 94.00

DESIGN ELEVATION	95.93	95.92	95.91	95.88	95.78	95.73	95.85	95.73	95.78	95.94	95.97	
EXISTING ELEVATION	96.11	96.11	96.11	96.11	96.13	96.14	96.09	96.08	96.08	96.15	96.15	

CH. 209.93 LOT 22 / LOT 23

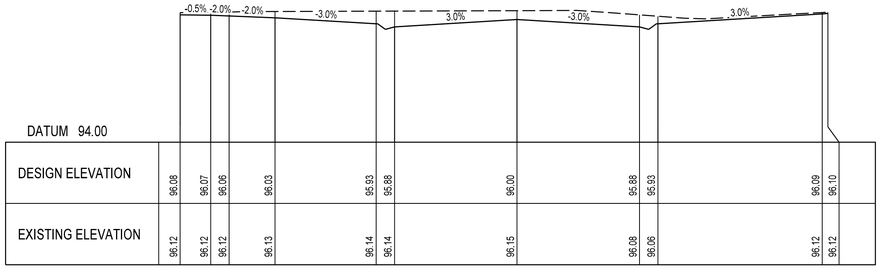


DATUM 94.00

DESIGN ELEVATION	95.89	95.89	95.88	95.85	95.75	95.70	95.82	95.70	95.75	95.91	95.96	
EXISTING ELEVATION	96.09	96.09	96.09	96.09	96.08	96.08	96.07	96.08	96.09	96.13	96.14	

CH. 200.00

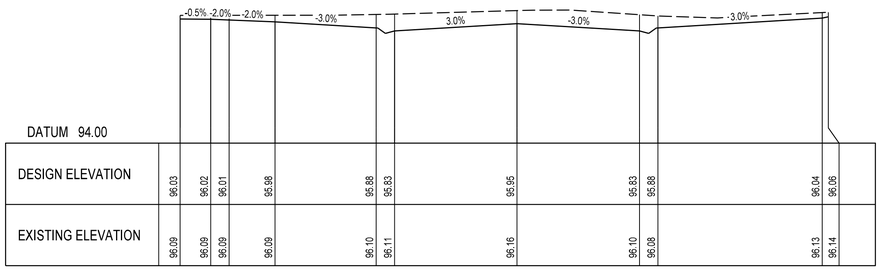
WEARING COURSE - PRIME AND 40mm ASPHALT SEAL (TYPE N).
BASECOURSE - 120mm MIN. CLASS 1 or 2 (20mm) FCR COMPACTED TO 98% MMDD (MIN CBR 80).
SUB-BASE - 140mm MIN. CLASS 3 (20mm) FCR TO 96% MMDD (MIN CBR 30).
GEOFABRIC BIDIM A14 - BEHIND AND UNDER K & C AND 2.1m FROM LIP OF KERB ONLY
STABILIZED SUBGRADE - TOP 200mm TO BE STABILIZED WITH 3% LIME MIXED THOROUGHLY AND COMPACTED TO 98% STANDARD



DATUM 94.00

DESIGN ELEVATION	96.08	96.07	96.06	96.03	95.93	95.88	96.00	95.88	95.93	96.09	96.10	
EXISTING ELEVATION	96.12	96.12	96.12	96.13	96.14	96.14	96.15	96.08	96.06	96.12	96.12	

CH. 255.33 LOT 24 / LOT 25



DATUM 94.00

DESIGN ELEVATION	96.03	96.02	96.01	95.98	95.88	95.83	95.95	95.83	95.88	96.04	96.06	
EXISTING ELEVATION	96.09	96.09	96.09	96.09	96.10	96.11	96.16	96.10	96.08	96.13	96.14	

CH. 240.00

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN

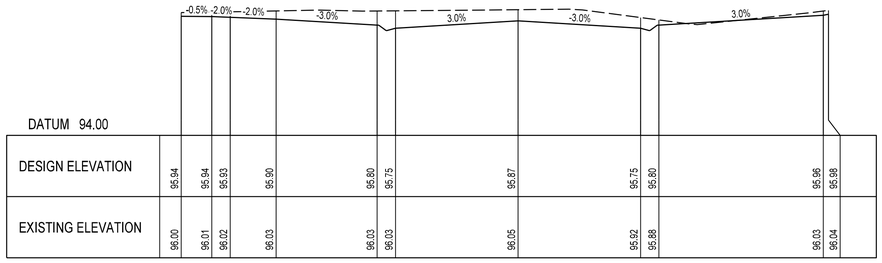
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (BOYES STREET CH200.00 - CH278.03)

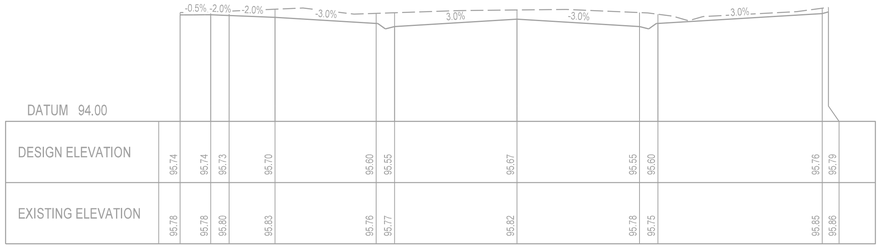
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 12 OF 18

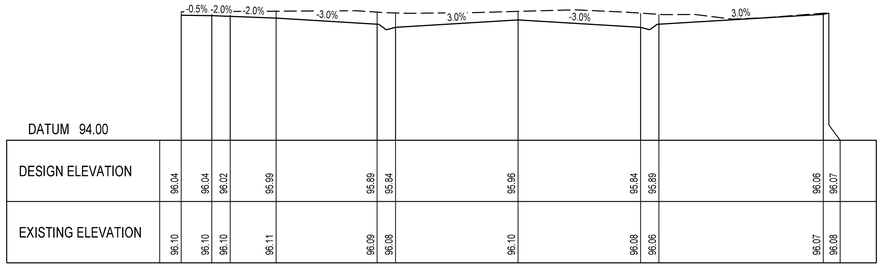
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



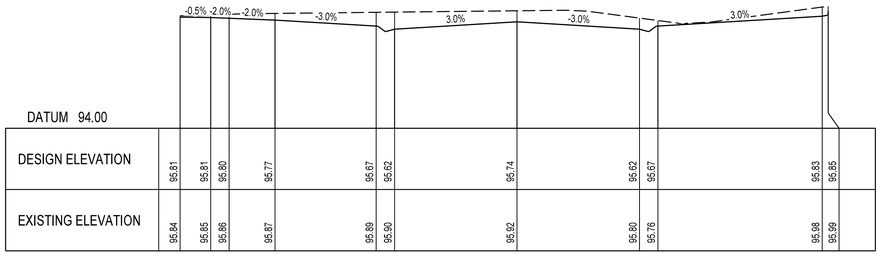
CH. 320.00



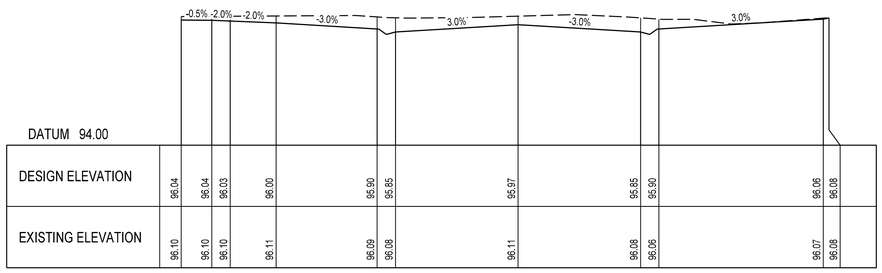
CH. 360.00 FUTURE



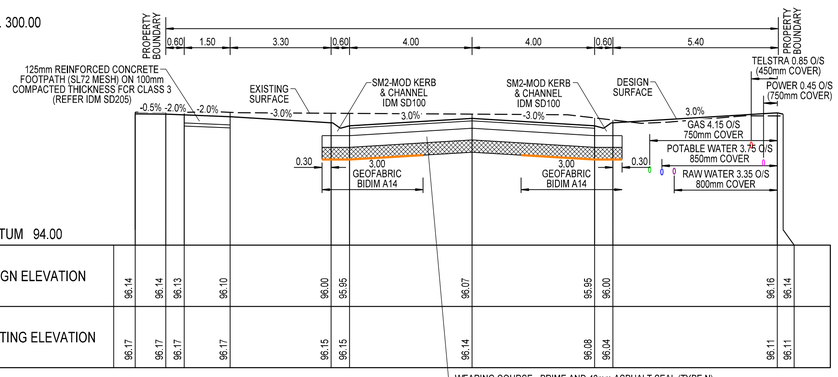
CH. 300.73 LOT 26 / LOT 27



CH. 346.11 LOT 28 / NEIGHBOUR

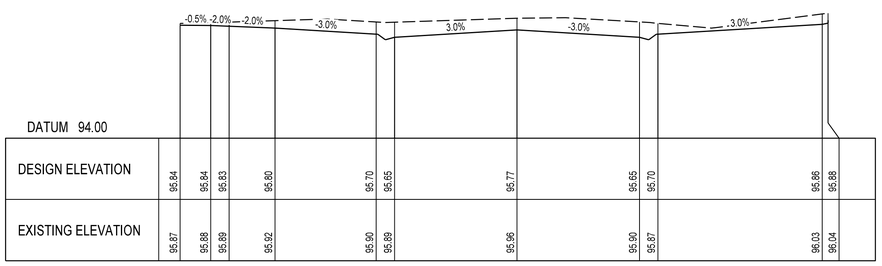


CH. 300.00

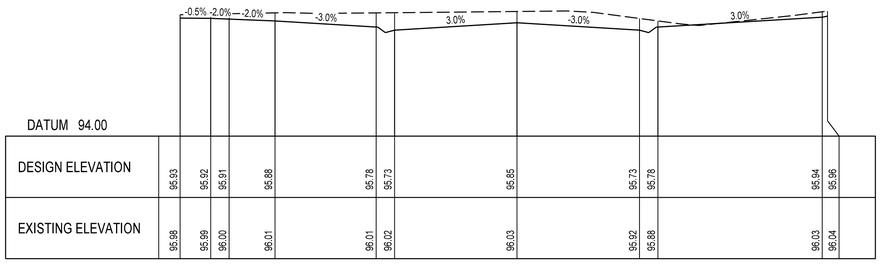


CH. 280.00

WEARING COURSE - PRIME AND 40mm ASPHALT SEAL (TYPE N).
BASECOURSE - 120mm MIN. CLASS 1 or 2 (20mm) FCR COMPACTED TO 98% MMDD (MIN CBR 80).
SUB-BASE - 140mm MIN. CLASS 3 (20mm) FCR TO 96% MMDD (MIN CBR 30).
GEOFABRIC BIDIM A14 - BEHIND AND UNDER K & C AND 2.1m FROM LIP OF KERB ONLY
STABILIZED SUBGRADE - TOP 200mm TO BE STABILIZED WITH 3% LIME MIXED THOROUGHLY AND COMPACTED TO 98% STANDARD



CH. 340.00



CH. 323.43 LOT 27 / LOT 28

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN

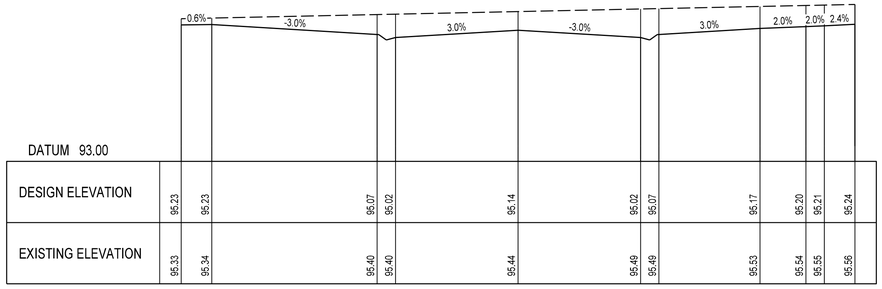
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (BOYES STREET CH280.00 - CH360.00)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 13 OF 18

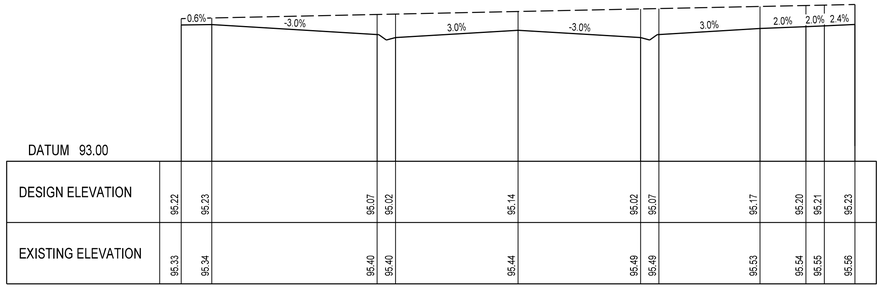
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM 93.00

DESIGN ELEVATION	95.23	95.23	95.07	95.02	95.14	95.02	95.07	95.17	95.20	95.21	95.24			
EXISTING ELEVATION	95.33	95.34	95.40	95.40	95.44	95.49	95.49	95.53	95.54	95.55	95.56			

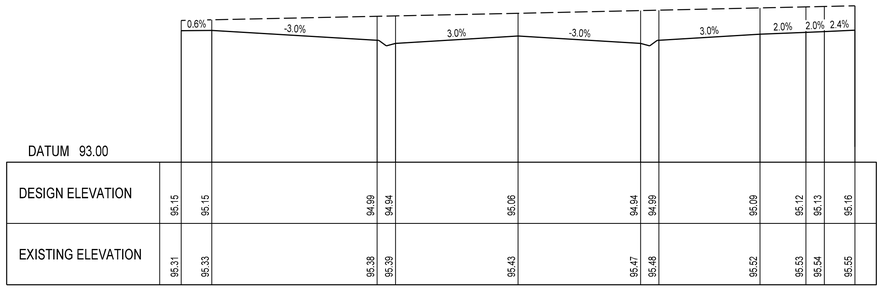
CH. 56.13 LOT 19 / LOT 15



DATUM 93.00

DESIGN ELEVATION	95.22	95.23	95.07	95.02	95.14	95.02	95.07	95.17	95.20	95.21	95.23			
EXISTING ELEVATION	95.33	95.34	95.40	95.40	95.44	95.49	95.49	95.53	95.54	95.55	95.56			

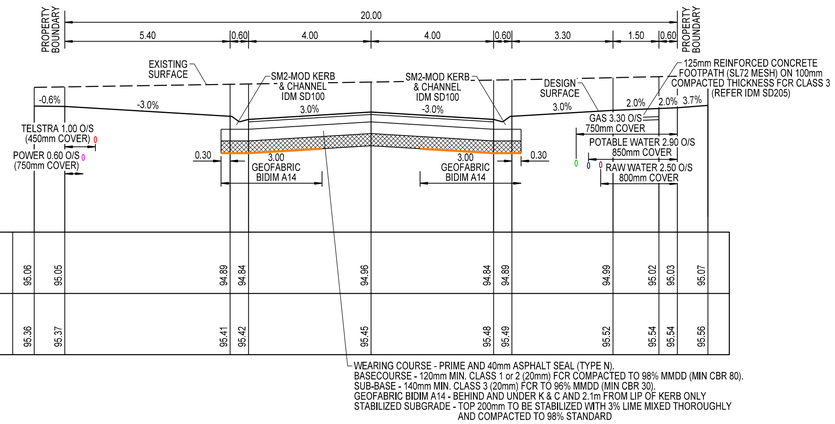
CH. 55.67 LOT 4 / LOT 5



DATUM 93.00

DESIGN ELEVATION	95.15	95.15	94.99	94.94	95.06	94.94	94.99	95.09	95.12	95.13	95.16			
EXISTING ELEVATION	95.31	95.33	95.38	95.39	95.43	95.47	95.48	95.52	95.53	95.54	95.55			

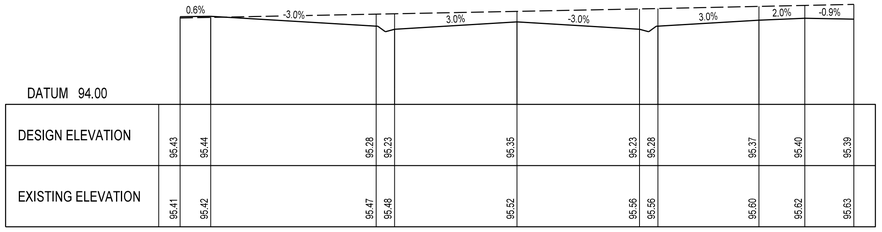
CH. 40.00



DATUM 93.00

DESIGN ELEVATION	95.06	95.05	94.89	94.84	94.96	94.84	94.89	94.99	95.02	95.03	95.07			
EXISTING ELEVATION	95.36	95.37	95.41	95.42	95.45	95.48	95.49	95.52	95.54	95.54	95.56			

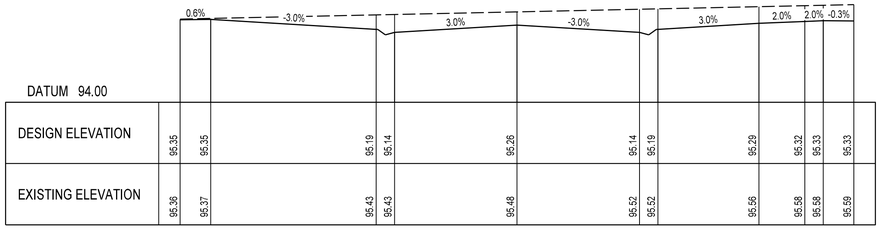
CH. 20.00



DATUM 94.00

DESIGN ELEVATION	95.43	95.44	95.28	95.23	95.35	95.23	95.28	95.37	95.40	95.39				
EXISTING ELEVATION	95.41	95.42	95.47	95.48	95.52	95.56	95.56	95.60	95.62	95.63				

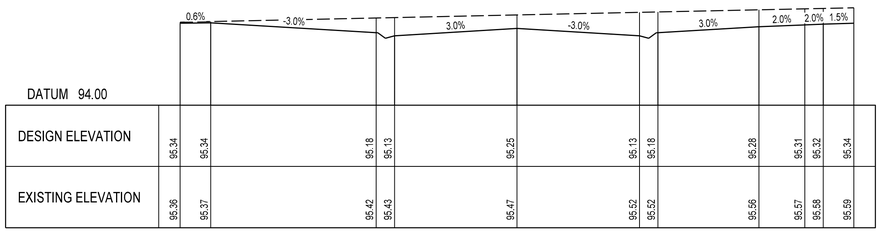
CH. 97.03 LOT 15



DATUM 94.00

DESIGN ELEVATION	95.35	95.35	95.19	95.14	95.26	95.14	95.19	95.29	95.32	95.33	95.33			
EXISTING ELEVATION	95.36	95.37	95.43	95.43	95.48	95.52	95.52	95.56	95.58	95.58	95.59			

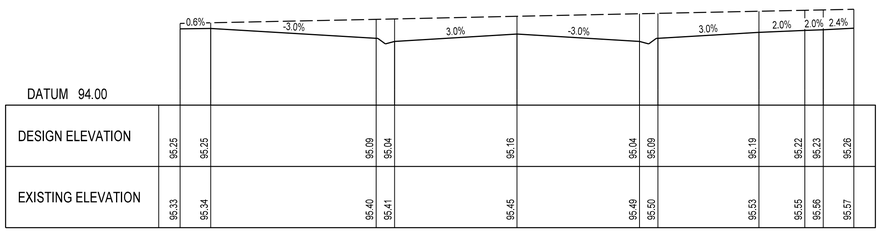
CH. 80.00



DATUM 94.00

DESIGN ELEVATION	95.34	95.34	95.18	95.13	95.25	95.13	95.18	95.28	95.31	95.32	95.34			
EXISTING ELEVATION	95.36	95.37	95.42	95.43	95.47	95.52	95.52	95.56	95.57	95.58	95.59			

CH. 78.51 LOT 5 / LOT 6



DATUM 94.00

DESIGN ELEVATION	95.25	95.25	95.09	95.04	95.16	95.04	95.09	95.19	95.22	95.23	95.26			
EXISTING ELEVATION	95.33	95.34	95.40	95.41	95.45	95.49	95.50	95.53	95.55	95.56	95.57			

CH. 60.00

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:

1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
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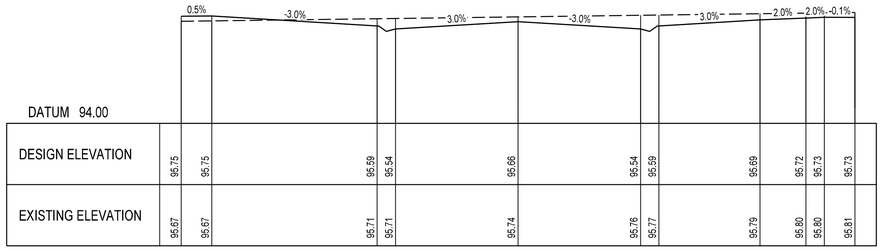
www.nesd.com.au

ROAD CROSS SECTIONS (ROAD 2 CH20.00 - CH97.03)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 14 OF 18

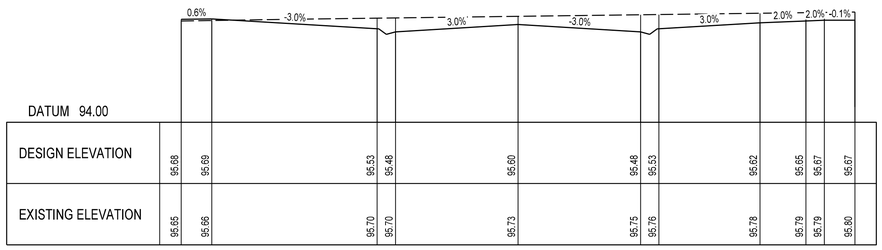
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM 94.00

DESIGN ELEVATION	95.75	95.75	95.59	95.54	95.66	95.54	95.59	95.69	95.72	95.73	95.73
EXISTING ELEVATION	95.67	95.67	95.71	95.71	95.74	95.76	95.77	95.79	95.80	95.80	95.81

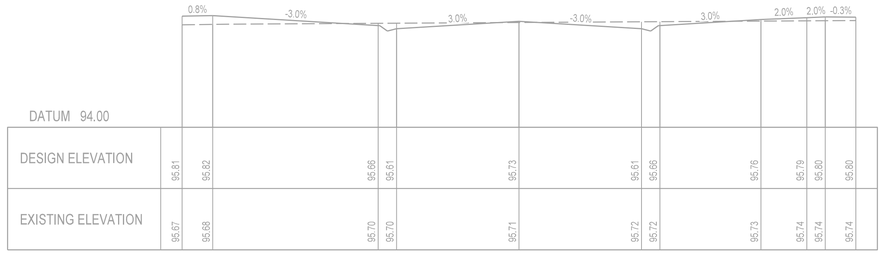
CH. 160.00



DATUM 94.00

DESIGN ELEVATION	95.68	95.69	95.53	95.48	95.60	95.48	95.53	95.62	95.65	95.67	95.67
EXISTING ELEVATION	95.65	95.66	95.70	95.70	95.73	95.75	95.76	95.78	95.79	95.79	95.80

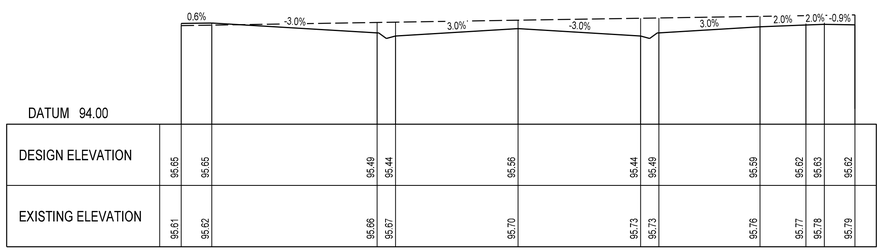
CH. 147.03 LOT 8 / LOT 9



DATUM 94.00

DESIGN ELEVATION	95.81	95.82	95.66	95.61	95.73	95.61	95.66	95.76	95.79	95.80	95.80
EXISTING ELEVATION	95.67	95.68	95.70	95.70	95.71	95.72	95.72	95.73	95.74	95.74	95.74

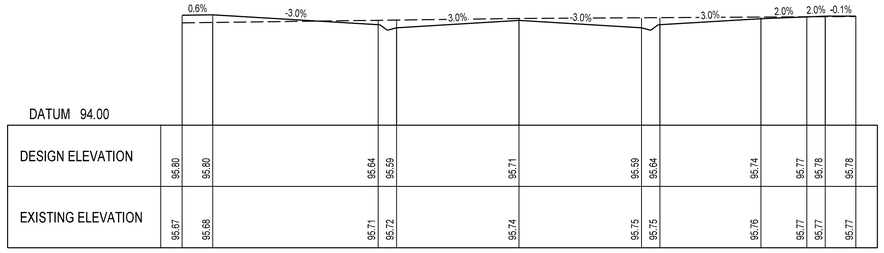
CH. 173.90 HP (FUTURE)



DATUM 94.00

DESIGN ELEVATION	95.65	95.65	95.49	95.44	95.56	95.44	95.49	95.59	95.62	95.63	95.62
EXISTING ELEVATION	95.61	95.62	95.66	95.67	95.70	95.73	95.73	95.76	95.77	95.78	95.79

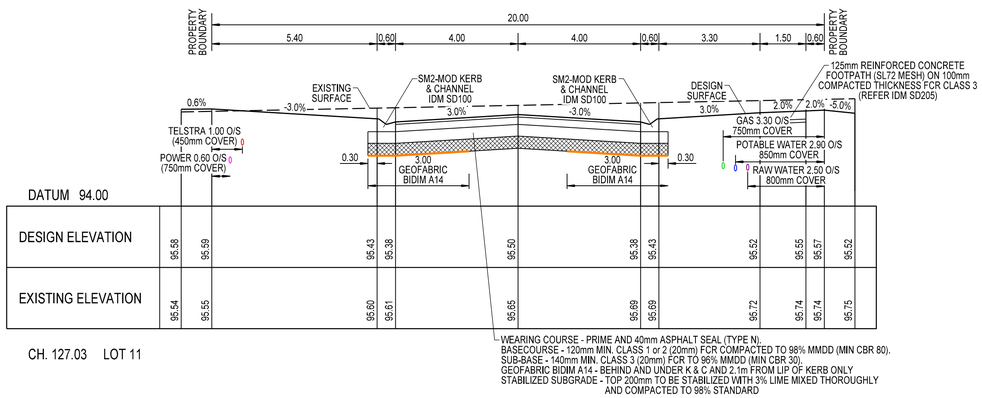
CH. 140.00



DATUM 94.00

DESIGN ELEVATION	95.80	95.80	95.64	95.59	95.71	95.59	95.64	95.74	95.77	95.78	95.78
EXISTING ELEVATION	95.67	95.68	95.71	95.72	95.74	95.75	95.75	95.76	95.77	95.77	95.77

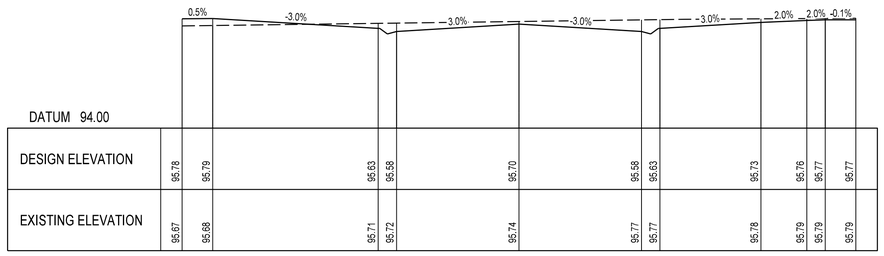
CH. 169.97 LOT 9 / LOT 65



DATUM 94.00

DESIGN ELEVATION	95.58	95.59	95.43	95.38	95.50	95.38	95.43	95.52	95.55	95.57	95.52
EXISTING ELEVATION	95.54	95.55	95.60	95.61	95.65	95.69	95.69	95.72	95.74	95.74	95.75

CH. 127.03 LOT 11



DATUM 94.00

DESIGN ELEVATION	95.78	95.79	95.63	95.58	95.70	95.58	95.63	95.73	95.76	95.77	95.77
EXISTING ELEVATION	95.67	95.68	95.71	95.72	95.74	95.77	95.77	95.78	95.79	95.79	95.79

CH. 167.53 LOT 11 / LOT 50

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
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Wangaratta VIC 3676
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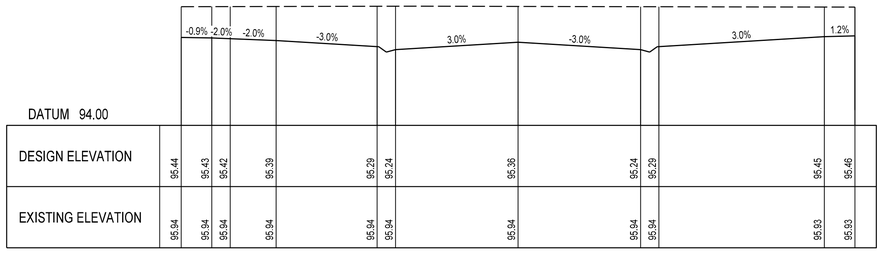
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

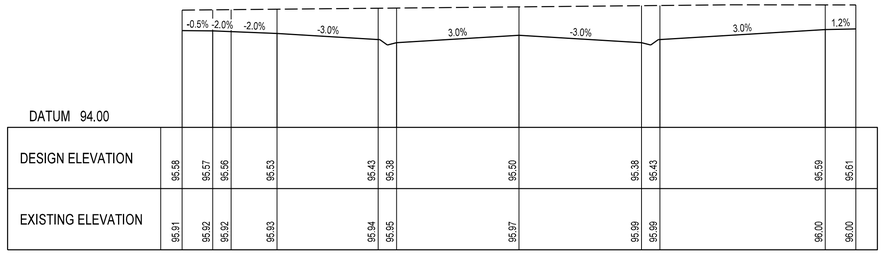
ROAD CROSS SECTIONS (ROAD 2 CH127.03 - CH169.97)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

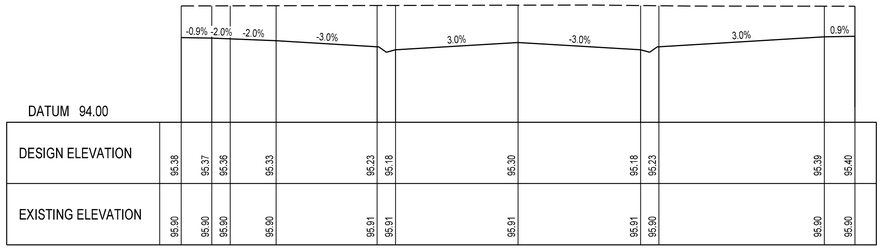
ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 15 OF 18



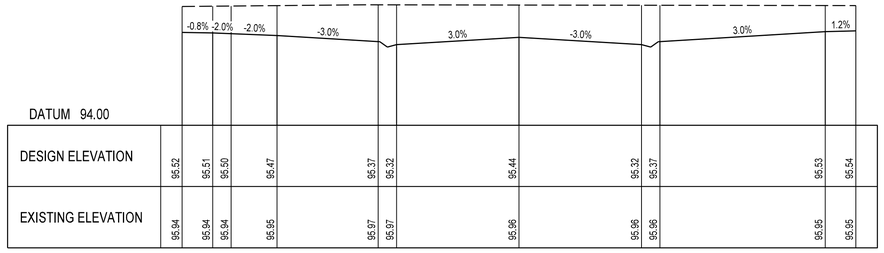
CH. 55.81 LOT 12 / LOT 13 & LOT 16 / LOT 17



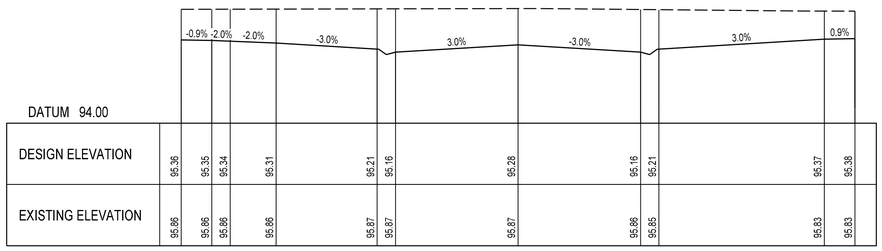
CH. 100.00



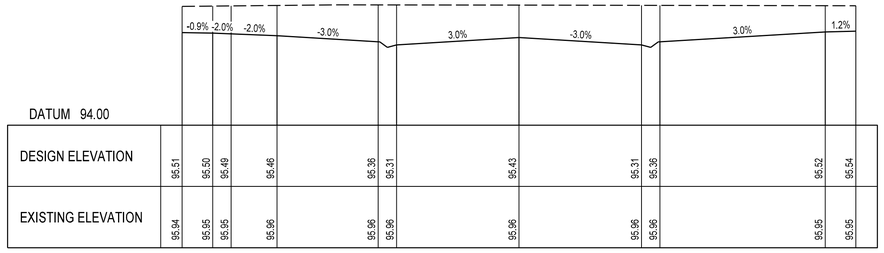
CH. 40.00



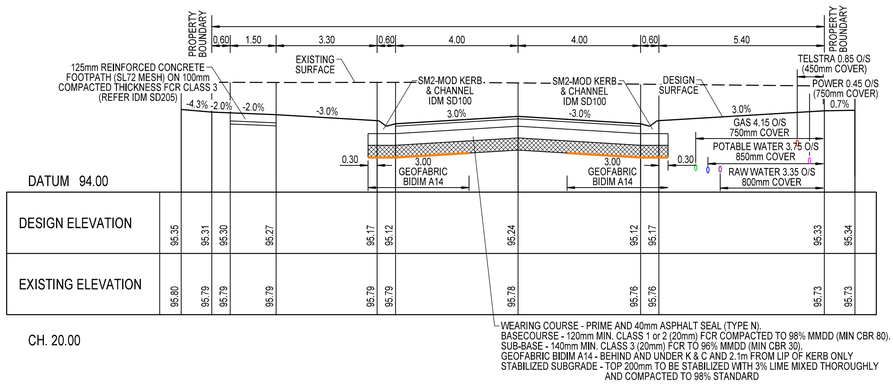
CH. 80.00



CH. 33.11 LOT 11 / LOT 12 & LOT 15 / LOT 16

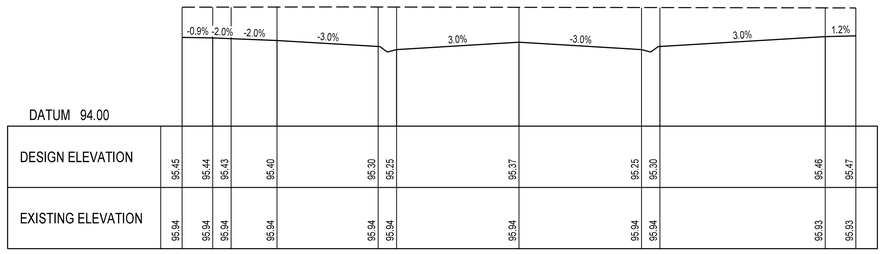


CH. 78.51 LOT 13 / LOT 14 & LOT 17 / LOT 18



CH. 20.00

WEARING COURSE - PRIME AND 40mm ASPHALT SEAL (TYPE N).
BASECOURSE - 120mm MIN. CLASS 1 or 2 (20mm) FCR COMPACTED TO 98% MMDD (MIN CBR 80).
SUB-BASE - 140mm MIN. CLASS 3 (20mm) FCR TO 96% MMDD (MIN CBR 30).
GEOFABRIC BIDIM A14 - BEHIND AND UNDER K & C AND 2.1m FROM LIP OF KERB ONLY
STABILIZED SUBGRADE - TOP 200mm TO BE STABILIZED WITH 3% LIME MIXED THOROUGHLY AND COMPACTED TO 98% STANDARD



CH. 60.00

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

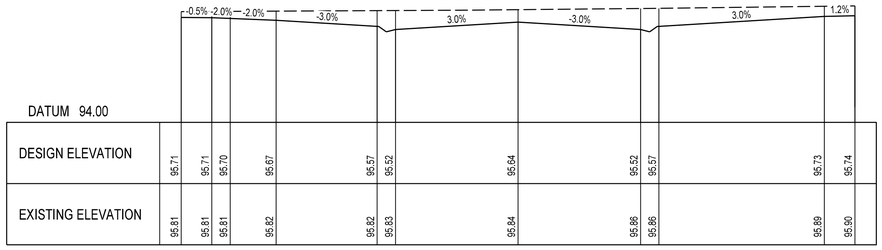
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (ROAD 1 CH20.00 - CH100.00)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

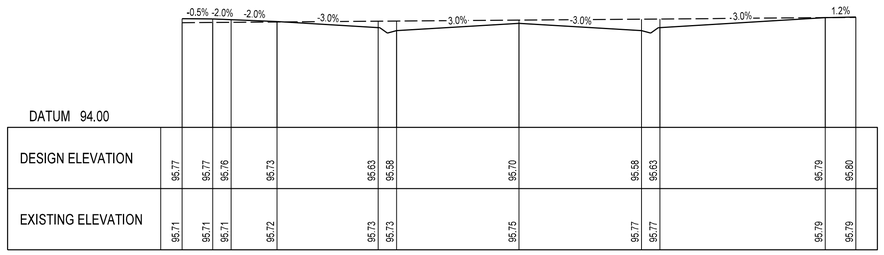
ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 16 OF 18



DATUM 94.00

DESIGN ELEVATION	95.71	95.71	95.70	95.67	95.57	95.52	95.64	95.52	95.57	95.73	95.74	
EXISTING ELEVATION	95.81	95.81	95.81	95.82	95.82	95.83	95.84	95.86	95.86	95.89	95.90	

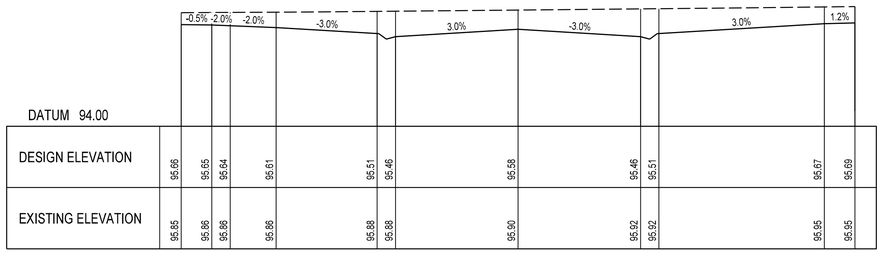
CH. 140.00



DATUM 94.00

DESIGN ELEVATION	95.77	95.77	95.76	95.73	95.63	95.58	95.70	95.58	95.63	95.79	95.80	
EXISTING ELEVATION	95.71	95.71	95.71	95.72	95.73	95.73	95.75	95.77	95.77	95.79	95.79	

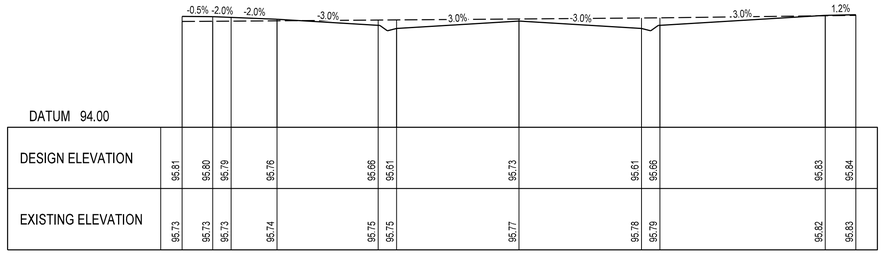
CH. 180.00



DATUM 94.00

DESIGN ELEVATION	95.66	95.65	95.64	95.61	95.51	95.46	95.58	95.46	95.51	95.67	95.69	
EXISTING ELEVATION	95.85	95.86	95.86	95.86	95.88	95.88	95.90	95.92	95.92	95.95	95.95	

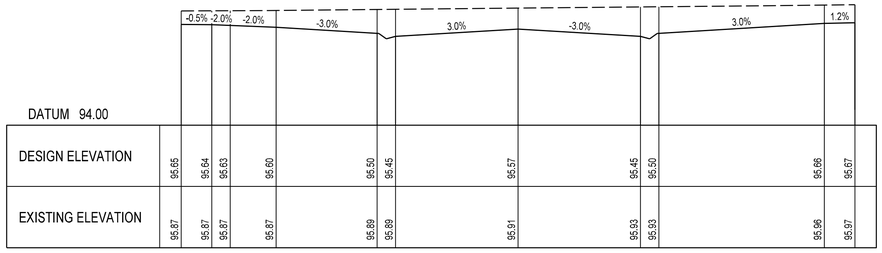
CH. 123.91 LOT 35 / LOT 36 & LOT 29 / LOT 30



DATUM 94.00

DESIGN ELEVATION	95.81	95.80	95.79	95.76	95.66	95.61	95.73	95.61	95.66	95.83	95.84	
EXISTING ELEVATION	95.73	95.73	95.73	95.74	95.75	95.75	95.77	95.78	95.79	95.82	95.83	

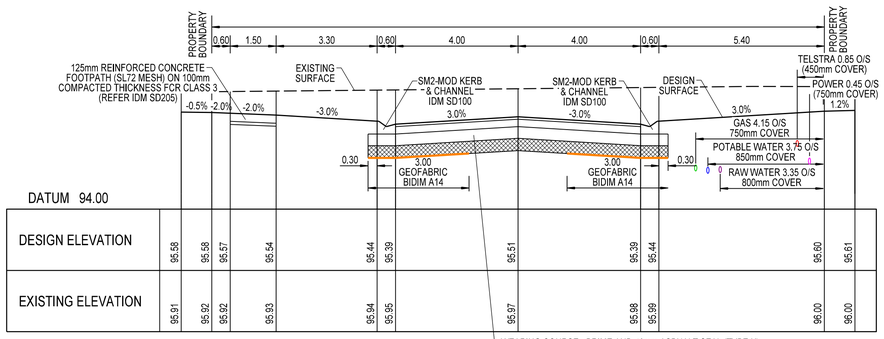
CH. 169.31 LOT 37 / LOT 38 & LOT 31 / LOT 32 & HP



DATUM 94.00

DESIGN ELEVATION	95.65	95.64	95.63	95.60	95.50	95.45	95.57	95.45	95.50	95.66	95.67	
EXISTING ELEVATION	95.87	95.87	95.87	95.87	95.89	95.89	95.91	95.93	95.93	95.96	95.97	

CH. 120.00

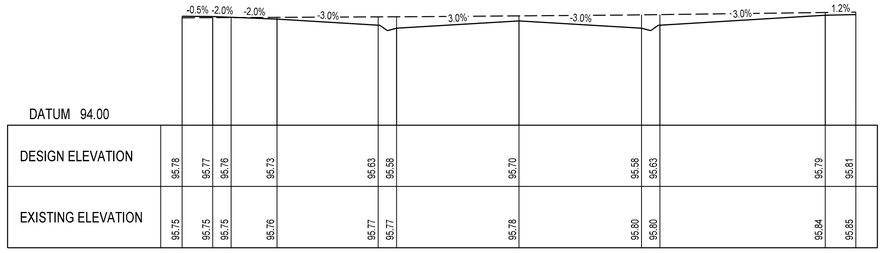


DATUM 94.00

DESIGN ELEVATION	95.58	95.58	95.57	95.54	95.44	95.39	95.51	95.39	95.44	95.60	95.61	
EXISTING ELEVATION	95.91	95.92	95.92	95.93	95.94	95.95	95.97	95.98	95.99	96.00	96.00	

CH. 101.21 LOT 14 / LOT 35 & LOT 18 / LOT 29

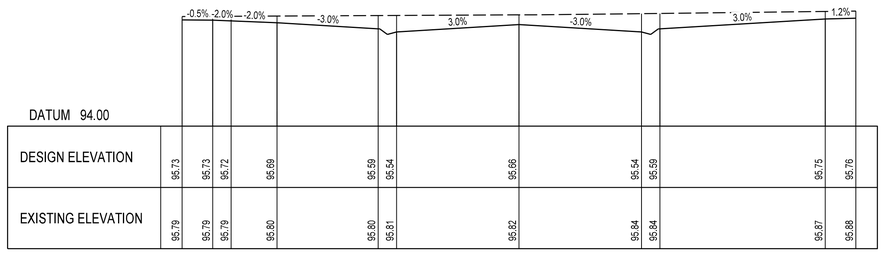
WEARING COURSE - PRIME AND 40mm ASPHALT SEAL (TYPE N).
BASECOURSE - 120mm MIN. CLASS 1 or 2 (20mm) FCR COMPACTED TO 98% MMDD (MIN CBR 80).
SUB-BASE - 140mm MIN. CLASS 3 (20mm) FCR TO 96% MMDD (MIN CBR 30).
GEOFABRIC BIDIM A14 - BEHIND AND UNDER K & C AND 2.1m FROM LIP OF KERB ONLY
STABILIZED SUBGRADE - TOP 200mm TO BE STABILIZED WITH 3% LIME MIXED THOROUGHLY AND COMPACTED TO 98% STANDARD



DATUM 94.00

DESIGN ELEVATION	95.78	95.77	95.76	95.73	95.63	95.58	95.70	95.58	95.63	95.79	95.81	
EXISTING ELEVATION	95.75	95.75	95.75	95.76	95.77	95.77	95.78	95.80	95.80	95.84	95.85	

CH. 160.00



DATUM 94.00

DESIGN ELEVATION	95.73	95.73	95.72	95.69	95.59	95.54	95.66	95.54	95.59	95.75	95.76	
EXISTING ELEVATION	95.79	95.79	95.79	95.80	95.80	95.81	95.82	95.84	95.84	95.87	95.88	

CH. 146.61 LOT 36 / LOT 37 & LOT 30/ LOT 31

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

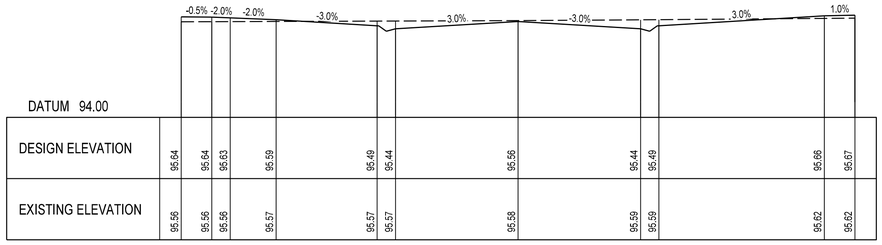
NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (ROAD 1 CH101.21 - CH180.00)

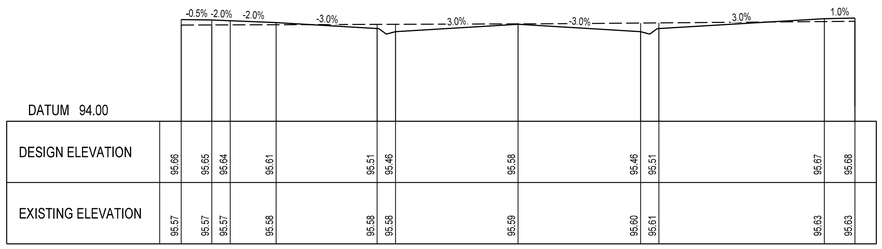
BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE: M7555 | VERSION: 01 | SHEET 17 OF 18

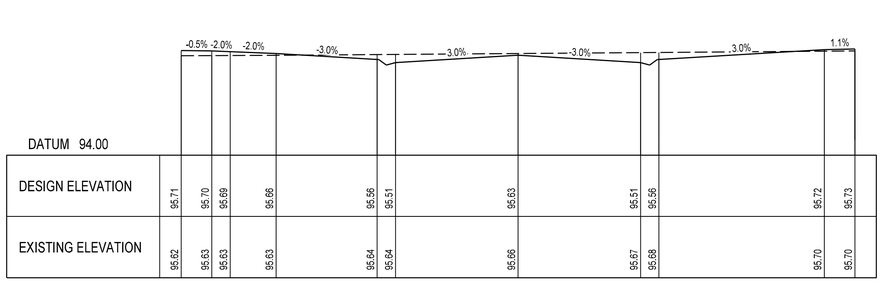
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



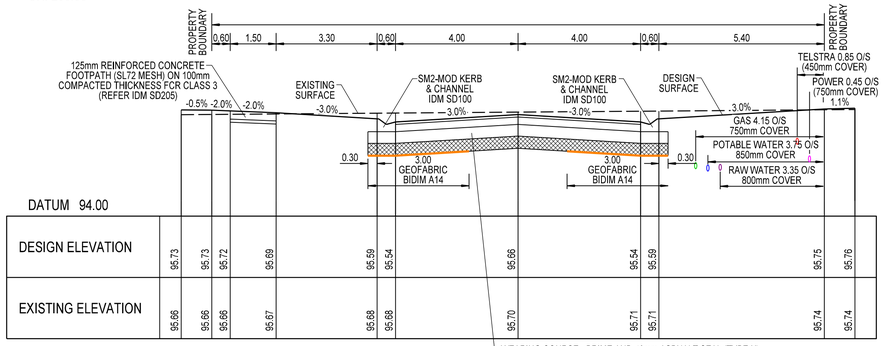
CH. 220.00



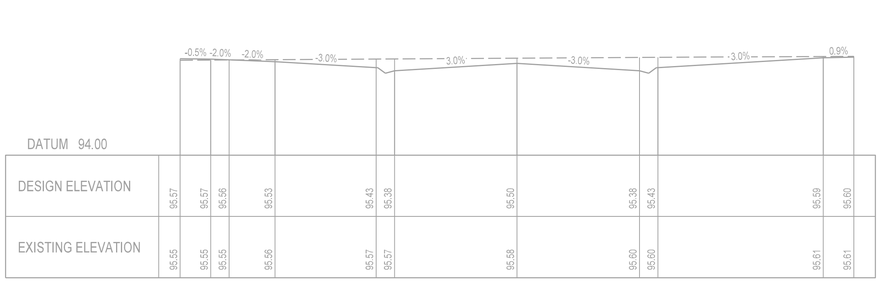
CH. 214.71 LOT 39 / LOT 40 & LOT 33 / LOT 34



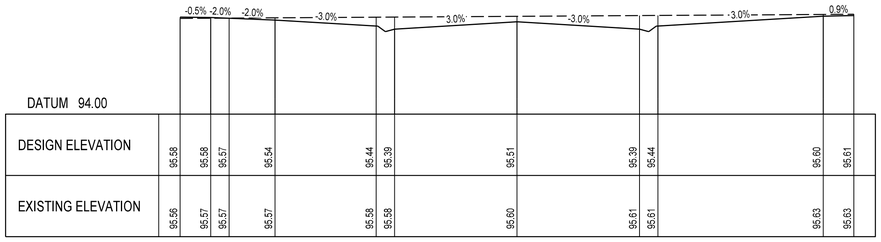
CH. 200.00



CH. 192.01 LOT 38 / LOT 39 & LOT 32 / LOT 33



CH. 240.00 (FUTURE)



CH. 237.30 LOT 40 / NEIGHBOUR & LOT 34 / NEIGHBOUR

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	26 OCTOBER 2021	ISSUED FOR AUTHORITY COMMENT

NOTES:
1. DEVELOPMENT APPLICATION No.: 10/2020/59.2

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE H1:100 V1:50 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

H 1 0 1 2 3 4 5
V 0.5 0 1 2
LENGTHS ARE IN METRES

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

ROAD CROSS SECTIONS (ROAD 1 CH192.01 - CH240.00)

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR AUTHORITY COMMENT
REFERENCE M7555 | VERSION 01 | SHEET 18 OF 18

BOTANICAL VIEWS ESTATE - MOAMA

STAGE 1 & 2 - SEWER LAYOUTS

LEGEND

- EXISTING TREE
- TBM's
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT (CLASS D COVER)
- WATER SLUICE VALVE
- PROPOSED THRUST BLOCK
- EXISTING RAW WATER MAIN
- PROPOSED RAW WATER MAIN
- EXISTING POT. WATER MAIN
- PROPOSED POT. WATER MAIN
- EXISTING GAS MAIN
- PROPOSED GAS MAIN
- PROPOSED GAS CONDUIT
- EXISTING TELSTRA LINE
- PROPOSED TELSTRA LINE
- PROPOSED TELSTRA CONDUIT
- EXISTING UNDERGROUND ELECTRICITY SUPPLY
- EXISTING OVERHEAD ELECTRICITY SUPPLY
- PROPOSED UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED ELECTRICITY CONDUIT
- PROPOSED DRAINAGE
- TITLE BOUNDARY
- EASEMENTS
- EXISTING EDGE OF SEAL
- PROPOSED PAVEMENT/S-SEAL

WARNING!!

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NOTE !

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DIAL BEFORE YOU DIG www.1100.com.au

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 2000 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 10 20 30 40 50
Scale: 1:4000 @ A1 / 1:2000 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS ESTATE - MOAMA
OVERALL LAYOUT
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET S1 OF 5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

SEWER NOTES

1. ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY MURRAY SHIRE COUNCIL
2. MURRAY SHIRE COUNCIL IS TO BE NOTIFIED IN WRITING FIVE (5) CLEAR DAYS PRIOR TO THE COMMENCEMENT OF WORKS.
3. WHERE THE WORKS ARE IN THE VICINITY OF EXISTING SERVICES THESE SERVICES ARE TO BE LOCATED PRIOR TO THE COMMENCEMENT OF WORKS AND THE RELEVANT AUTHORITIES NOTIFIED.
4. SEWERS ARE TO BE SETOUT FROM OFFSETS SHOWN AND BRANCHES ARE TO BE SETOUT FROM THE CHAINAGES SHOWN.
5. ON COMPLETION OF THE WORKS THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND EXCESS SPOIL FROM THE SITE.
6. "NOTICE OF INTENTION TO COMMENCE OPERATIONS" IS TO BE SENT TO THE CHIEF MINING INSPECTOR AT LEAST 3 DAYS PRIOR TO THE COMMENCEMENT OF EXCAVATING TRENCHES IN EXCESS OF 1.50m IN DEPTH PURSUANT TO SECTION 389(i) OF THE MINES ACT 1958. AN APPROPRIATELY TRAINED AND COMPETENT EXCAVATION SUPERVISOR IS TO BE IN ATTENDANCE AT ALL TIMES PERSUANT TO THE OCCUPATIONAL HEALTH AND SAFETY ACT 2004.
7. LEVELS ARE IN METRES TO AHD.
8. WHERE HOUSE DRAINS ARE DENOTED "RISER" CONSTRUCTION IS TO BE AS PER THE STANDARD DRAWINGS PROVIDED. REFER TO THE STANDARD DRAWINGS REFERNCE LIST FOR DETAILS.
9. ALL TRENCHES CROSSING ROADS, FOOTPATHS VEHICLE CROSSINGS AND ALL OTHER HARDSTAND AREAS SHALL BE BACKFILLED WITH MECHANICALLY COMPACTED CLASS 4 FCR OR TO THE SATISFACTION OF THE ROAD OWNER. REFER TO THE STANDARD DRAWINGS REFERENCE LIST FOR DETAILS.
10. ALL SEWER PIPES ARE TO BE RUBBER RING JOINT UPVC CLASS SN8.
11. SEWER WORKS ARE TO COMMENCE 3.00m FROM EXISTING ACCESS CHAMBERS. CONNECTIONS TO EXISTING ACCESS CHAMBERS ARE TO BE CARRIED OUT BY THE CONTRACTOR UNDER MSC SUPERVISION FOLLOWING PRESSURE TESTING BY THE CONTRACTOR UNDER MSC SUPERVISION REFER TO MSC DEVELOPMENT STANDARDS.
12. SEWER MAINS ARE TO BE PLUGGED AT THE END OF EACH SO AS TO AVOID GROUND WATER AND RUNOFF FROM ENTERING THE SEWER SYSTEM.
13. BLOCKOUTS / STUBS ARE TO BE PROVIDED IN THOSE MANHOLES WHERE A FUTURE EXTENSION IS SHOWN AT THE INVERT LEVEL PROVIDED.
14. ALL BORED SEWER MAINS ARE TO BE CCTV TESTED. A RECORDING OF THE TEST IS TO BE PROVIDED TO MSC FOR THEIR APPROVAL PRIOR TO ACCEPTANCE OF THE WORKS.
15. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF ALL PEOPLE ON AND ADJACENT TO THE WORKS SITE.
16. SHOULD SITE CONDITIONS CONFLICT WITH THE APPROVED DOCUMENTATION THE CONTRACTOR MUST CONTACT THE CONSULTANT FOR CLARIFICATION PRIOR TO PROCEEDING WITH ANY WORKS.
17. CONNECTION TO EXISTING SEWER ASSETS ARE TO BE CARRIED OUT UNDER MURRAY SHIRE COUNCIL SUPERVISION. MSC SEWER ASSETS ARE TO BE PLUGGED UNTIL A SUCCESSFUL PRESSURES TEST HAS BEEN COMPLETED.
18. WRITTEN NOTIFICATION OF 48 HRS IS TO BE PROVIDED IN ADVANCE OF THE INTENDED CONNECTION TO ARRANGE THE MURRAY SHIRE COUNCIL SUPERVISION.
19. ALL TMS TO HAVE 'GATIC TYPE' SEWER MAINTENANCE SHAFT COVERS.
20. ALL OH&S REQUIREMENTS ARE TO BE MET, CONFINED SPACE ENTRY TO MSC REQUIREMENTS - NOTIFY MSC AT COMMENCEMENT AND COMPLETION OF ENTRY.
21. CONTRACTOR TO HOLD CURRENT 'CONFINED SPACE ENTRY' CERTIFICATE AND ABIDE BY WORK SAFE'S COMPLIANCE CODE.
22. ALL TESTING AND TRENCHES TO BE COMPACTED PER MURRAY SHIRE COUNCIL STANDARDS AND SPECIFICATIONS
23. CONTRACTOR TO VERIFY LOCATION AND SUITABILITY OF EXISTING PROPERTY CONNECTIONS.
24. CONNECTIONS TO EXISTING SEWER TO BE UNDERTAKEN BY A CONTRACTOR ON 'MURRAY SHIRE COUNCIL'S ACCREDITED CONTRACTOR LIST'.

SEWER STANDARD DRAWING REFERENCE LIST

STANDARD DRAWING NUMBER	STANDARD DRAWING NAME
MSC	SEWERAGE CONNECTION POINTS
WSAA SEW-1201	EMBEDMENT & TRENCHFILL
WSAA SEW-1202	STANDARD EMBEDMENT
WSAA SEW-1300	MAINTENANCE HOLES (MH) (PRECAST)
WSAA SEW-1301	MAINTENANCE HOLES (CAST INSITU)
WSAA SEW-1302	MH PIPE CONNECTION DETAILS
WSAA SEW-1304	MH TYPICAL CHANNEL ARRANGEMENTS
WSAA SEW-1305	MH TYPICAL CHANNEL DETAILS
WSAA SEW-1306	MH INTERNAL DROP CONNECTIONS
~~WSAA SEW-1307~~	~~MH STEP IRONS & LADDERS~~
WSAA SEW-1308	MH COVER ARRANGEMENTS
WSAA SEW-1316	MS TMS AND CONNECTIONS
WSAA SEW-1317	MS COVER ARRANGEMENTS

Water Services Association of Australia - Sewerage Code (WSAA 02-2002 Version 2.2)

DIAL BEFORE YOU DIG www.1100.com.au

WARNING!!

BEWARE OF UNDERGROUND SERVICES

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SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
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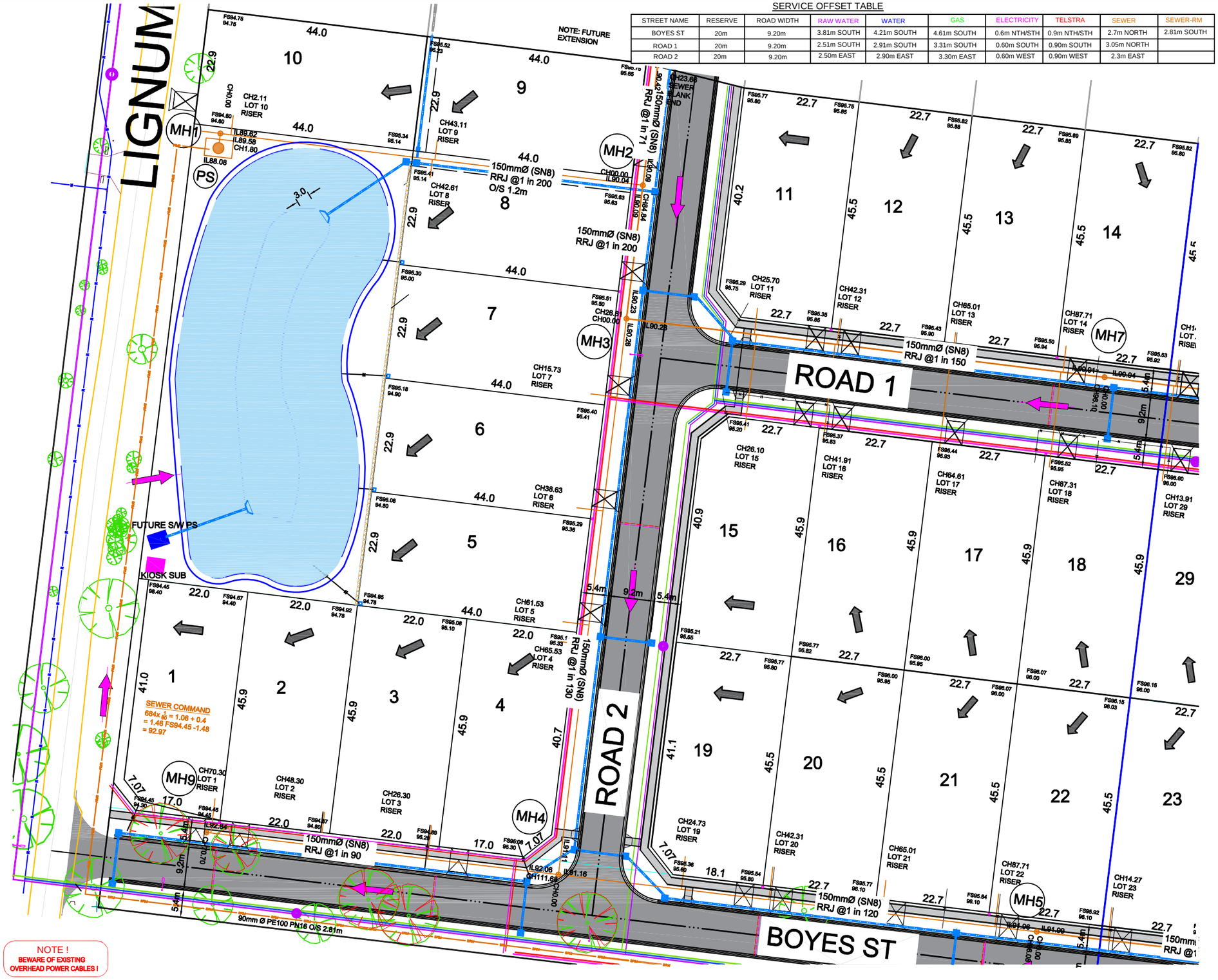
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	



VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 3.75 7.5 11.25 15 18.75m
Scale: 1:1500 @ A1 / 1:750 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
SEWER LAYOUTS
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET S2 OF 5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

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WSAA SEW-1304	MH TYPICAL CHANNEL ARRANGEMENTS
WSAA SEW-1305	MH TYPICAL CHANNEL DETAILS
WSAA SEW-1306	MH INTERNAL DROP CONNECTIONS
~~WSAA SEW-1307~~	~~MH STEP IRONS & LADDERS~~
WSAA SEW-1308	MH COVER ARRANGEMENTS
WSAA SEW-1316	MS TMS AND CONNECTIONS
WSAA SEW-1317	MS COVER ARRANGEMENTS

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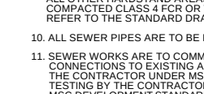

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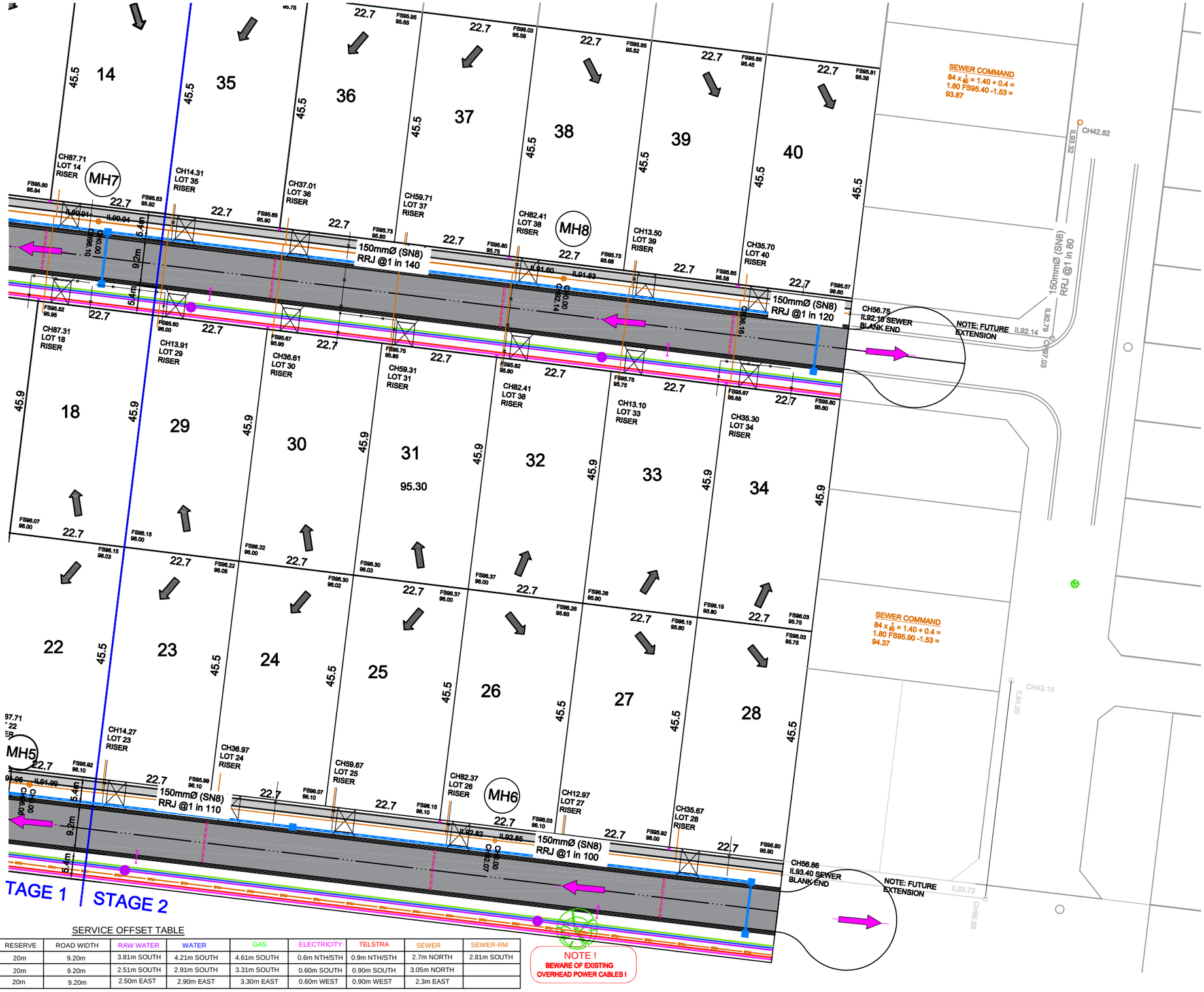


SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

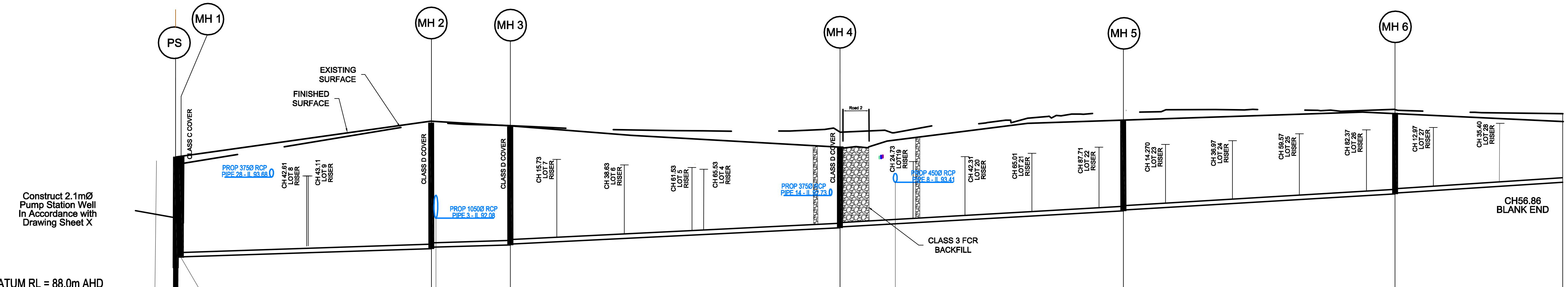
0 3.75 7.5 11.25 15 18.75m
Scale: 1:1500 @ A1 / 1:750 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
SEWER LAYOUTS
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET S3 OF 5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm



DATUM RL = 88.0m AHD

GRADE		0.50% 150 @ 1 in 200 (SN8) uPVC		0.50% 150 @ 1 in 200 (SN8) uPVC		0.83% 150 @ 1 in 130 (SN8) uPVC		0.91% 150 @ 1 in 110 (SN8) uPVC		1.00% 150 @ 1 in 100 (SN8) uPVC		1.25% 150 @ 1 in 80 (SN8) uPVC	
TOP OF MAN HOLE	94.50 94.60		95.70		95.55		95.00		95.80		96.00		95.80
DEPTH TO INVERT	6.44 4.94 5.03 4.98		5.66 5.61		5.32 5.29		3.89 3.84		3.84 3.81		3.18 3.15		2.39
DESIGN INVERT LEVEL	88.06 89.56 89.57 89.62		90.04 90.09		90.23 90.26		91.11 91.16		91.96 91.99		92.82 92.85		93.41
EXISTING SURFACE	94.30 94.30 92.00		95.66		95.54		95.40		96.10		96.10		96.02
CHAINAGE	0.00 1.80	84.84	86.64	26.81	113.46	111.68	225.14	96.08	321.22	92.07	413.29	56.86	470.15

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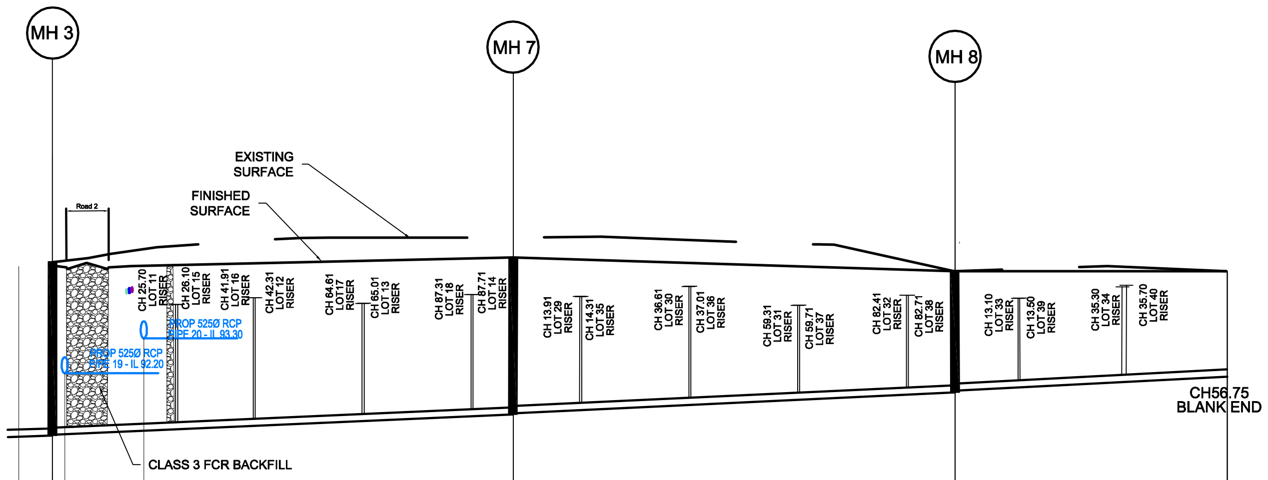
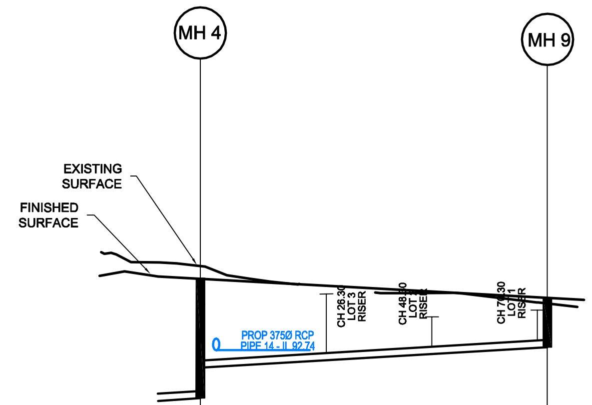
DIAL BEFORE YOU DIG



DATUM RL = 88.0m AHD

GRADE		0.66% 150 @ 1 in 150 (SN8) uPVC		0.71% 150 @ 1 in 140 (SN8) uPVC		1.11% 150 @ 1 in 120 (SN8) uPVC	
TOP OF MAN HOLE	95.55		95.53		95.72		95.55
DEPTH TO INVERT	5.32 5.27		4.62 4.59		4.12 4.09		3.45
DESIGN INVERT LEVEL	90.23 90.28		90.91 90.94		91.60 91.63		92.10
EXISTING SURFACE	95.54		95.95		95.72		95.58
CHAINAGE	0.00	96.10	96.10	92.14	188.24	56.75	244.99



DATUM RL = 88.0m AHD

GRADE		1.11% 150 @ 1 in 90 (SN8) uPVC	
TOP OF MAN HOLE	95.00		94.38
DEPTH TO INVERT	3.89 2.94		1.54
DESIGN INVERT LEVEL	91.11 92.06		92.84
EXISTING SURFACE	95.40		94.44
CHAINAGE	0.00	70.70	70.70

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE H 1 : 1000 V 1 : 150 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

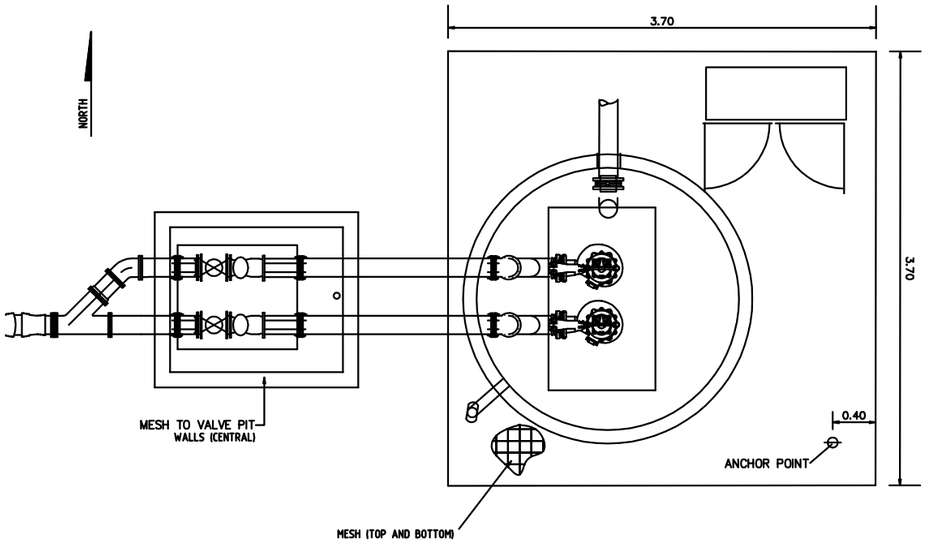
0 5 10 15 20 25m
Scale: 1:2000 @ A1 / 1:1000 @ A3

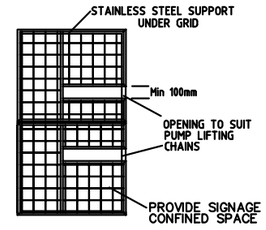
NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
SEWER LONG SECTIONS
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE: M7555 | VERSION: V01 | SHEET S4 OF 5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm





DETAIL A

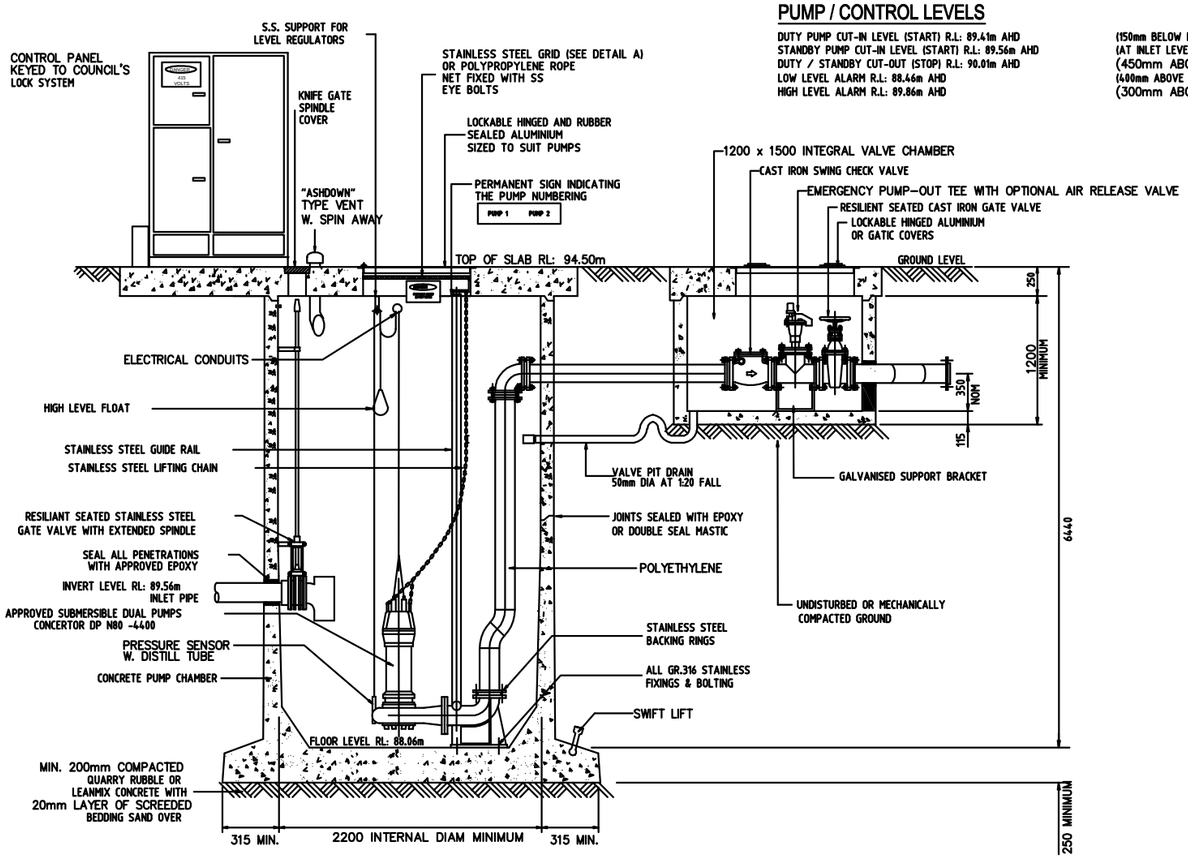
STAINLESS STEEL GRID

PUMPING STATION DETAILS

TOP OF SLAB R.L: 94.50m AHD
NATURAL SURFACE LEVEL R.L: 94.30m AHD
DELIVERY EXTERNAL PIPE DIAMETER: 100mm
INLET PIPE DIAMETER: 150mm
INLET PIPE I.L: 89.56m AHD
WET WELL FLOOR R.L: 88.06m AHD

PUMP / CONTROL LEVELS

DUTY PUMP CUT-IN LEVEL (START) R.L: 89.41m AHD	(150mm BELOW INLET)
STANDBY PUMP CUT-IN LEVEL (START) R.L: 89.56m AHD	(AT INLET LEVEL)
DUTY / STANDBY CUT-OUT (STOP) R.L: 90.01m AHD	(450mm ABOVE INLET)
LOW LEVEL ALARM R.L: 88.46m AHD	(400mm ABOVE BOTTOM WELL)
HIGH LEVEL ALARM R.L: 89.86m AHD	(300mm ABOVE INLET)



NOTE

PUMP CHAMBER: Based on the Xylem NP 3069 SH Other suppliers are subject to approval.
- INTERNAL DIAMETER – Minimum internal diameter of the pump chamber shall be 2.20m
- INVERT – The pump well invert shall be minimum of 1.5m below the inlet pipe invert
- MOULD – 130mm formed minimum wall thickness
- BASE – Based poured as one complete module
- CONCRETE – Sulphate resistant cement with calcareous aggregate for maximum station durability
- STRENGTH – 50MPa @ 28 days
- REINFORCEMENT COVER – internal faces 55mm min with 30mm min to external faces
- SIGNAGE – A 300mm x 225mm PVC "Danger – Confined Space – Dangerous Fumes" sign and Pump Numbering sign shall be installed.

DISCHARGE PIPEWORK: The discharge pipe shall be either cement lined Ductile Iron (Flanged), minimum PN12.5 High Density Polyethylene (Electrofusion Joints) or 1.6mm spiral wound stainless steel. Flanges to be Grade 316 stainless steel. Minimum diameter shall be 50mm, except in the case of grinder or cutter pumps where a smaller diameter is necessary to achieve self cleansing velocity.

WELL VENTILATION: Provide an "Ashdown" type vent adjacent to the switchboard or otherwise as directed by Murray River Councilr specific to the location.

ANCHOR POINTS: Provide anchor points at min. of 2.5m from wet well opening to Murray River Councils requirements.

ELECTRICAL CABINET: Refer to Murray River Councils Kerb Side Electrical Cabinet standard drawings for details.

ELECTRICAL DRAWINGS: Refer to Murray River Councils Kerb Side Electrical Scematic standard drawings for details.

INSTALLATION NOTES

1. SETOUT
Arrangement of pumping station to be in accordance with the details shown on the Layout Plan.

2. EXCAVATION
The walls and face of all excavations in which workers are exposed to danger from unstable ground shall be guarded against by a shoring system, sloping the excavation or some other acceptable method. The Contractor shall supply, install and maintain such shoring as necessary to protect workers and prevent any movement of earth which could cause injury or delay of work. The requirements of the Occupational Health and Welfare Act 1963 must be strictly adhered to

3. BASE PREPARATION
- The base of the excavation shall extend at least 200mm past the sump base slab. The base of the excavation shall be trimmed to horizontal and compacted to an even surface with approval compaction equipment to not less than 90% of the modified maximum dry density for a minimum of 150mm.
- Upon the prepared base a 200mm thick layer of Class 2 compacted crushed rock

4. INSTALLATION
- The station sump shall be placed in such a manner as not to damage the sump itself or the excavation.
- the first section of the sump shall be placed such that it is vertival. Additional wall sections are to be placed and jointed to the height required. the top section of the station is to be cut in the factory to suit the pit depth. The cut area of the station shall be coated with two coats of Megapoxy MC coating or approved equivalent.
- Wall construction is to be completed and approved prior to placement of the cover slab.

5. BACKFILLING
- No backfilling shall commence until the placement of the station sump has been approved by the Council representative.
- The backfill shall be sand in accordance with the VicRoads specifications.
- The sand shall be compacted to at least 90% modified maximum dry density.
- An alternative to sand is 7 – 10mm screenings in accordance with VicRoads specifications.
- Hydrostatic testing of chamber by works contractor.

6. PENETRATIONS
- Penetrations for the pipework shall be cored onsite.
- Penetrations are to be located in the positions and to the levels shown on the construction drawing for the site.
- Penetrations shall be cored 10mm oversize and sealed with Megapoxy P1 or approved equivalent.

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	ISSUED FOR AUTHORITY COMMENTS

NOTES:

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

SCALE 1:25 | SHEET SIZE A1 | DATUM LEVELS ARE IN METRES TO AHD

0.25 0 0.25 0.5 0.75 1.0 1.25
LENGTHS ARE IN METRES

NORTH EAST SURVEY DESIGN
ABN 83 127 459 347
PO Box 862
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

SEWER PUMP STATION DETAILS

BOTANICAL VIEWS ESTATE - STAGE 1 & 2
LIGNUM ROAD, MOAMA
- SUMSTYLE PTY LTD

ISSUE STATUS: FOR COMMENT
REFERENCE: M7555 | VERSION: 01 | SHEET S5 OF 5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

BOTANICAL VIEWS ESTATE - MOAMA

STAGE 1 & 2 - WATER LAYOUTS

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

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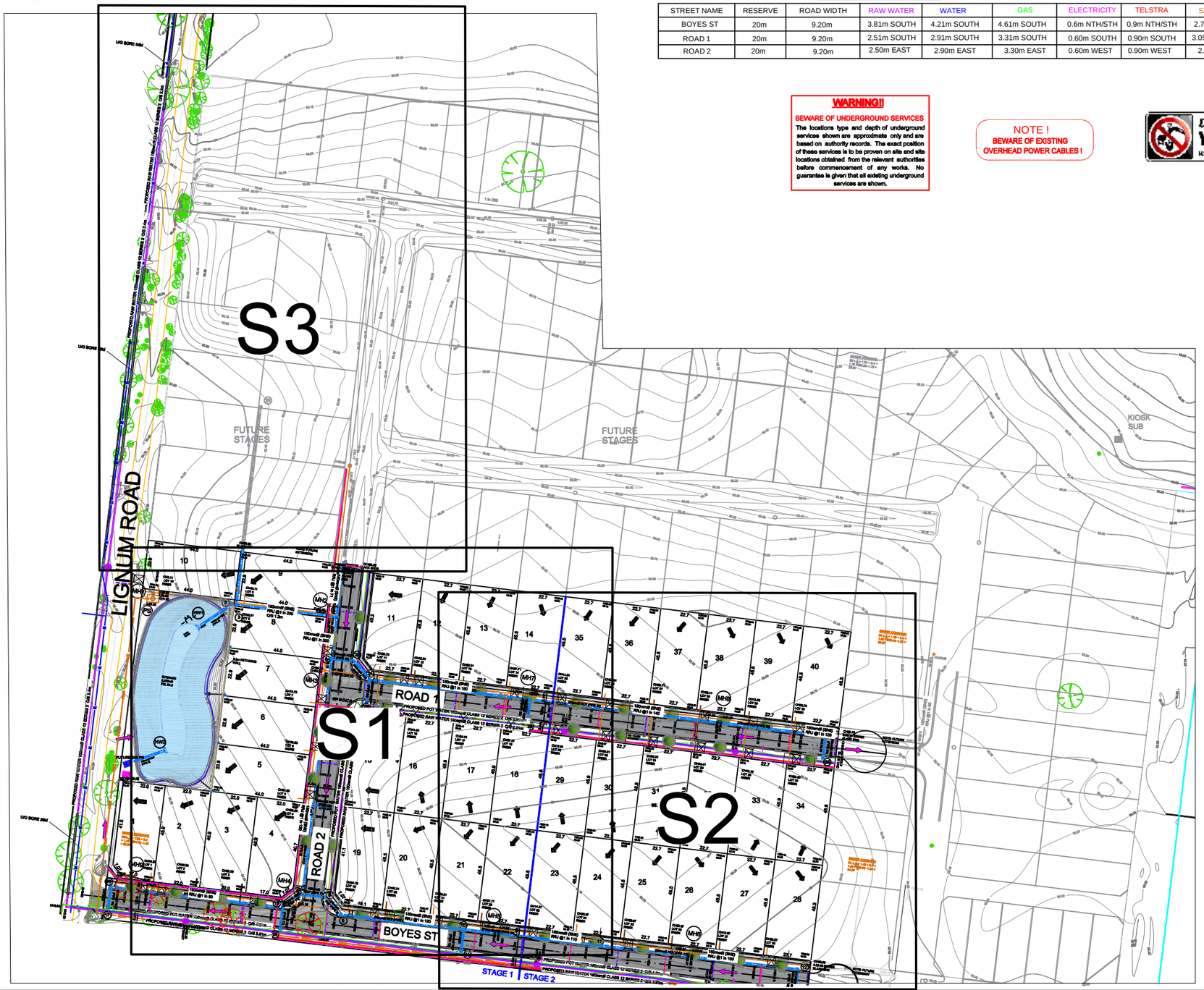
LEGEND

- EXISTING TREE
- TBM's
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT (CLASS D COVER)
- WATER SLUICE VALVE
- PROPOSED THRUST BLOCK
- EXISTING RAW WATER MAIN
- PROPOSED RAW WATER MAIN
- EXISTING POT. WATER MAIN
- PROPOSED POT. WATER MAIN
- EXISTING GAS MAIN
- PROPOSED GAS MAIN
- PROPOSED GAS CONDUIT
- EXISTING TELSTRA LINE
- PROPOSED TELSTRA LINE
- PROPOSED TELSTRA CONDUIT
- EXISTING UNDERGROUND ELECTRICITY SUPPLY
- EXISTING OVERHEAD ELECTRICITY SUPPLY
- PROPOSED UNDERGROUND ELECTRICITY SUPPLY
- PROPOSED ELECTRICITY CONDUIT
- PROPOSED DRAINAGE
- TITLE BOUNDARY
- EASEMENTS
- EXISTING EDGE OF SEAL
- PROPOSED PAVEMENT/S-SEAL

- CUT AREAS ARE SHOWN THUS
- FILL AREA SHOWN THUS
- FILL AREAS GREATER THAN 300mm SHOWN THUS



VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 2000 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 10 20 30 40 50
Scale: 1:4000 @ A1 / 1:2000 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS ESTATE - MOAMA
WATER OVERALL LAYOUT
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE: M7555 | VERSION: V01 | SHEET W1 OF W5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

WATER NOTES

1. ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY MRC WATER.
2. MRC IS TO BE NOTIFIED IN WRITING A MINIMUM OF TWO (2) CLEAR DAYS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3. THE CONTRACTOR SHALL HAND PROVE ANY EXISTING WATER SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
4. WHERE WORKS ARE IN THE VACINITY OF AN AUTHORITIES EXISTING ASSETS, THESE ASSETS ARE TO BE LOCATED AND THE RELEVANT AUTHORITY NOTIFIED PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. MINIMUM COVER BELOW THE FINISHED SURFACE LEVEL SHALL BE 800mm TO THE TOP OF THE MAIN.
6. WHERE MAINS CROSS STORMWATER DRAINS, THERE SHALL BE A MINIMUM CLEARANCE OF 150mm BETWEEN THE MAIN AND THE STORMWATER DRAIN.
7. WHERE CONCRETE ANCHORAGES ARE USED, THE MAIN IS TO BE WRAPED IN A PLASTIC MEMBRANE. RAPID SET CONCRETE IS NOT ACCEPTABLE.
8. ALL TRENCHES CROSSING ROADS SHALL BE BACKFILLED WITH MECHANICALLY COMPACTED CLASS 3 FCR NO MORE THAN 150mm LAYERS 97% MODIFIED COMPACTION AND TO THE SATISFACTION OF THE ROAD OWNER. REFER TO STANDARD DRAWINGS WAT-1201 AND WAT-1202 FOR TRENCH, EMBEDMENT AND BACKFILL REQUIREMENTS.
9. ALL VALVES AND FIRE PLUGS ARE TO BE PLACED CLEAR OF ANY PROPOSED OR EXISTING VEHICLE CROSSING. REFER TO STANDARD DRAWINGS WAT-1301 AND WAT-1302 FOR INSTALLATION DETAILS.
10. ALL PIPELINE FITTINGS FOR JOINING DICL / UPVC PIPES SHALL BE CAST OR DUCTILE IRON, CEMENT LINED AND CONFORM TO AS2544 AND AS2280.
11. WHERE GIBAULT JOINTS ARE USED THEY ARE TO BE THE ELONGATED TYPE OR VARI GIB TYPE ONLY.
12. PROPERTY CONNECTIONS ARE SHOWN THUS AND ARE TO BE PLACED CENTRALLY ALONG LOT FRONTAGE UNLESS OTHERWISE SHOWN. REFER TO STANDARD DRAWING WAT-1108 FOR DETAILS.
13. PROPERTY CONNECTIONS ARE TO BE COPPER (CLASS A) PIPE OR PE (PN 12.5) PIPE WITH COPPER TRACE WIRE.
14. PROPERTY CONNECTIONS TO EXISTING MAINS ARE TO BE CARRIED OUT BY A LICENSED PLUMBER AFTER TAKING OUT THE APPROPRIATE APPLICATION FORM WITH MRC.
15. ALL PROPERTY CONNECTIONS CROSSING ROADS SHALL BE ENCLOSED IN A 100mm ø PVC CLASS 12 SLEEVE. SLEEVED PIPES ARE TO BE INSTALLED SO THAT WATER HAMMER AND PRESSURE FLUCTUATIONS DO NOT CAUSE PIPE MOVEMENT IN THE SLEEVE.
16. CONNECTION TO EXISTING MAINS IS TO BE CARRIED OUT BY MRC STAFF FOLLOWING TESTING BY THE CONTRACTOR TO COLIBAN STANDARDS. THE CONTRACTOR IS TO PROVIDE ALL MATERIALS AND LABOUR NECESSARY FOR THE CONNECTION. REFER TO MRC STANDARD DRAWING 12527 FOR DETAILS.
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18. AT THE END OF EACH DAY ALL MAINS ARE TO BE PLUGGED TO PREVENT SILT FROM GROUND WATER ENTERING ANY MAINS DURING THE CONSTRUCTION WORKS PERIOD.
19. ON THE COMPLETION OF THE WORKS THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND EXCESS SPOIL FROM THE SITE.
20. MARKER POSTS ARE TO BE PROVIDED FOR ALL FIRE PLUGS, SLUICE VALVES, BENDS ETC...

WATER STANDARD DRAWING REFERENCE LIST

STD. DRAWING NO.	STD. DRAWING NAME
WSA WAT-1108	PROPERTY SERVICES TO MAIN
WSA WAT-1201	EMBEDMENT & TRENCHFILL
WSA WAT-1202	STANDARD EMBEDMENT
WSA WAT-1205	THRUST BLOCK - CONCRETE
WSA WAT-1206	THRUST BLOCK - TIMBER/PLASTIC
WSA WAT-1301	VALVE INSTALLATION
WSA WAT-1302	HYDRANT INSTALLATION

Water Services Association of Australia - Water Supply Code (WSA 03-2011 Version 3.1)

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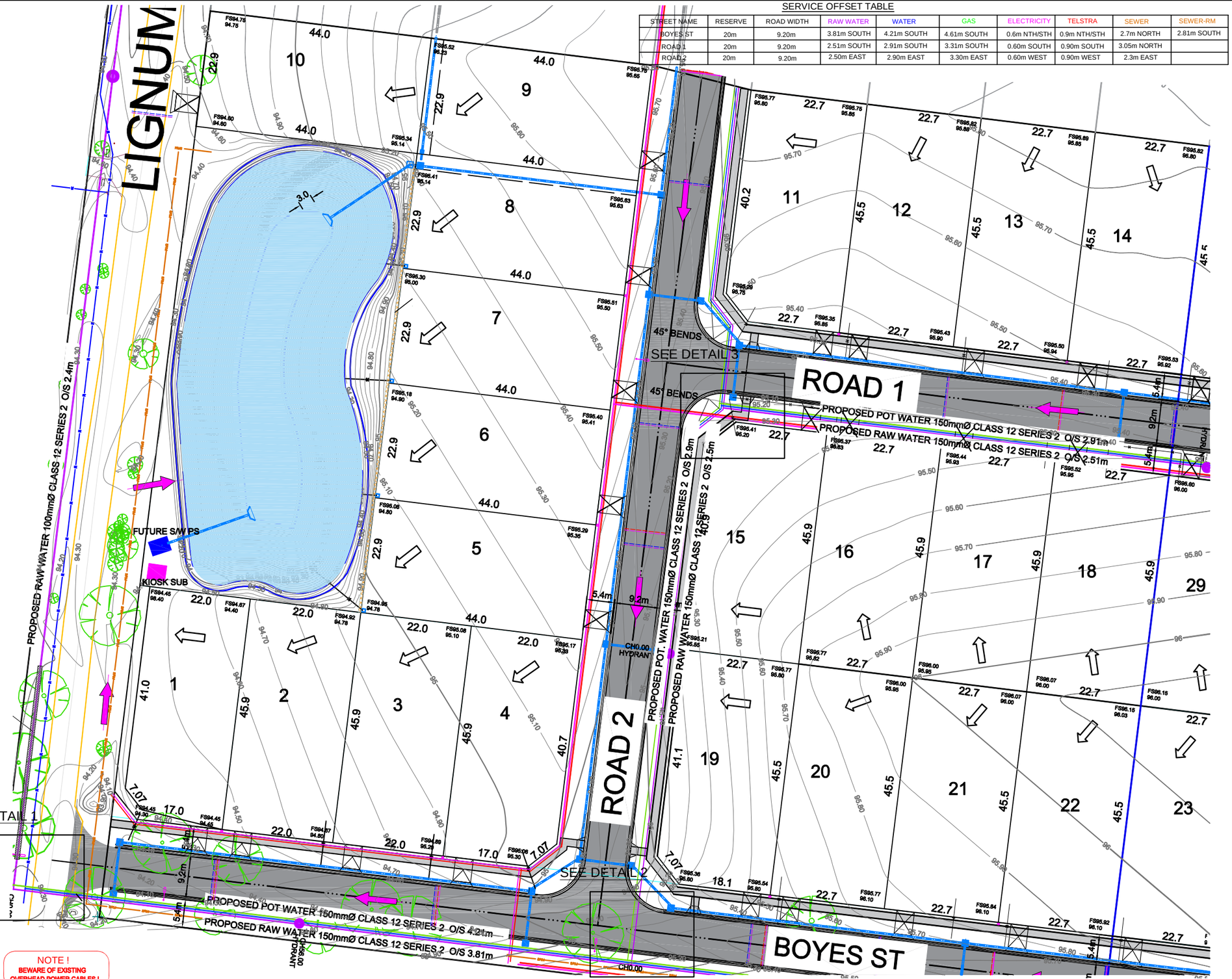
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	



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VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 3.75 7.5 11.25 15 18.75m
Scale: 1:1500 @ A1 / 1:750 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
WATER LAYOUTS
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET W2 OF W5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

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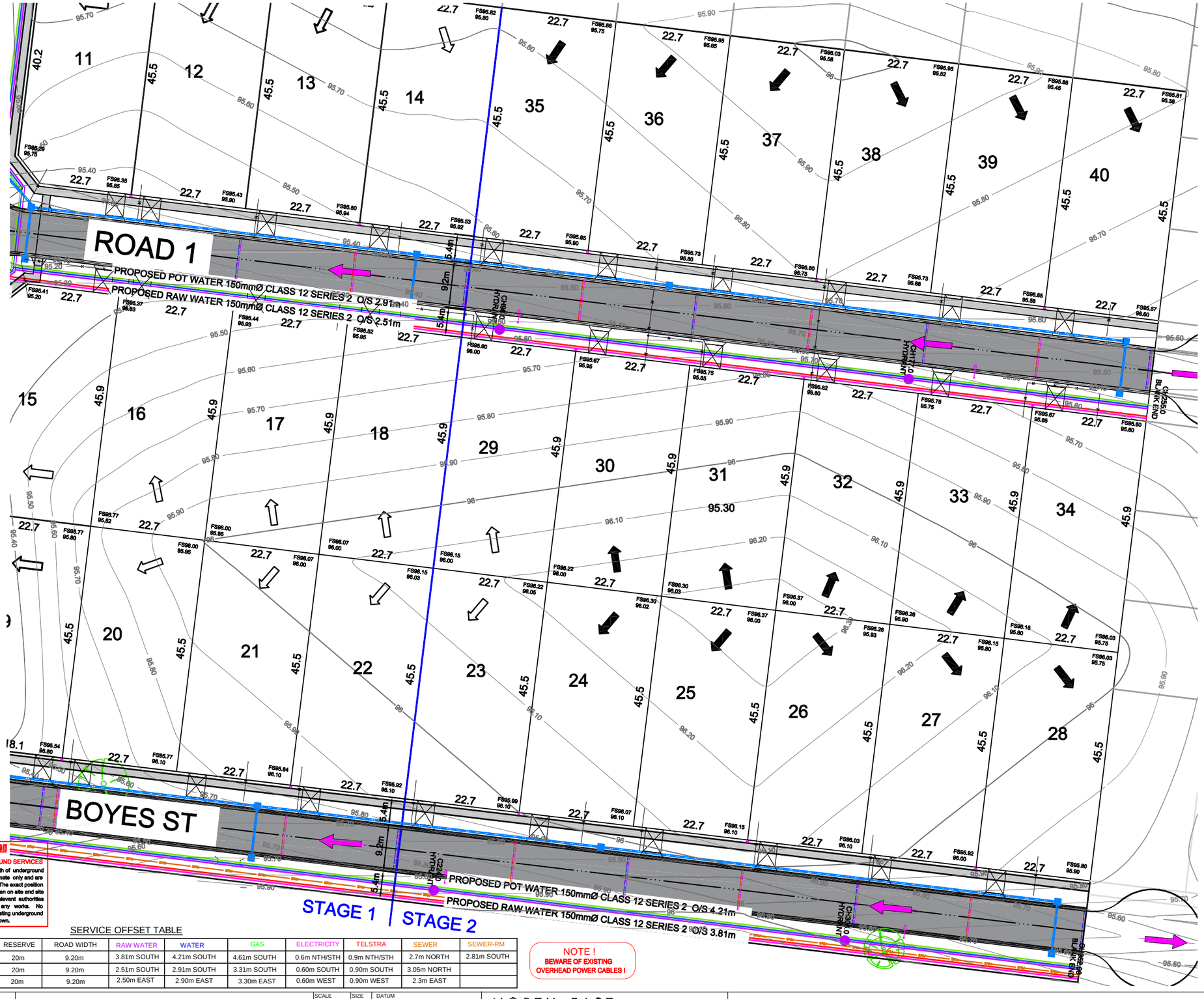
WSA WAT-1302	HYDRANT INSTALLATION

Water Services Association of Australia - Water Supply Code (WSA 03-2011 Version 3.1)



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ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

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01	12 NOVEMBER 2021	FOR COMMENT

SCALE 1 : 750 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 3.75 7.5 11.25 15 18.75m
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BOTANICAL VIEWS - MOAMA
WATER LAYOUTS
SUMSTYLE P/L

ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET W3 OF W5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

SERVICE OFFSET TABLE

STREET NAME	RESERVE	ROAD WIDTH	RAW WATER	WATER	GAS	ELECTRICITY	TELSTRA	SEWER	SEWER-RM
BOYES ST	20m	9.20m	3.81m SOUTH	4.21m SOUTH	4.61m SOUTH	0.6m NTH/STH	0.9m NTH/STH	2.7m NORTH	2.81m SOUTH
ROAD 1	20m	9.20m	2.51m SOUTH	2.91m SOUTH	3.31m SOUTH	0.60m SOUTH	0.90m SOUTH	3.05m NORTH	
ROAD 2	20m	9.20m	2.50m EAST	2.90m EAST	3.30m EAST	0.60m WEST	0.90m WEST	2.3m EAST	

WATER NOTES

1. ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY MRC WATER.
2. MRC IS TO BE NOTIFIED IN WRITING A MINIMUM OF TWO (2) CLEAR DAYS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3. THE CONTRACTOR SHALL HAND PROVE ANY EXISTING WATER SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
4. WHERE WORKS ARE IN THE VACINITY OF AN AUTHORITIES EXISTING ASSETS, THESE ASSETS ARE TO BE LOCATED AND THE RELEVANT AUTHORITY NOTIFIED PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. MINIMUM COVER BELOW THE FINISHED SURFACE LEVEL SHALL BE 800mm TO THE TOP OF THE MAIN.
6. WHERE MAINS CROSS STORMWATER DRAINS, THERE SHALL BE A MINIMUM CLEARANCE OF 150mm BETWEEN THE MAIN AND THE STORMWATER DRAIN.
7. WHERE CONCRETE ANCHORAGES ARE USED, THE MAIN IS TO BE WRAPED IN A PLASTIC MEMBRANE. RAPID SET CONCRETE IS NOT ACCEPTABLE.
8. ALL TRENCHES CROSSING ROADS SHALL BE BACKFILLED WITH MECHANICALLY COMPACTED CLASS 3 FCR NO MORE THAN 150mm LAYERS 97% MODIFIED COMPACTION AND TO THE SATISFACTION OF THE ROAD OWNER. REFER TO STANDARD DRAWINGS WAT-1201 AND WAT-1202 FOR TRENCH, EMBEDMENT AND BACKFILL REQUIREMENTS.
9. ALL VALVES AND FIRE PLUGS ARE TO BE PLACED CLEAR OF ANY PROPOSED OR EXISTING VEHICLE CROSSING. REFER TO STANDARD DRAWINGS WAT-1301 AND WAT-1302 FOR INSTALLATION DETAILS.
10. ALL PIPELINE FITTINGS FOR JOINING DICL / UPVC PIPES SHALL BE CAST OR DUCTILE IRON, CEMENT LINED AND CONFORM TO AS2544 AND AS2280.
11. WHERE GIBAULT JOINTS ARE USED THEY ARE TO BE THE ELONGATED TYPE OR VARI GIB TYPE ONLY.
12. PROPERTY CONNECTIONS ARE SHOWN THUS AND ARE TO BE PLACED CENTRALLY ALONG LOT FRONTAGE UNLESS OTHERWISE SHOWN. REFER TO STANDARD DRAWING WAT-1108 FOR DETAILS.
13. PROPERTY CONNECTIONS ARE TO BE COPPER (CLASS A) PIPE OR PE (PN 12.5) PIPE WITH COPPER TRACE WIRE.
14. PROPERTY CONNECTIONS TO EXISTING MAINS ARE TO BE CARRIED OUT BY A LICENSED PLUMBER AFTER TAKING OUT THE APPROPRIATE APPLICATION FORM WITH MRC.
15. ALL PROPERTY CONNECTIONS CROSSING ROADS SHALL BE ENCLOSED IN A 100mm ø PVC CLASS 12 SLEEVE. SLEEVED PIPES ARE TO BE INSTALLED SO THAT WATER HAMMER AND PRESSURE FLUCTUATIONS DO NOT CAUSE PIPE MOVEMENT IN THE SLEEVE.
16. CONNECTION TO EXISTING MAINS IS TO BE CARRIED OUT BY MRC STAFF FOLLOWING TESTING BY THE CONTRACTOR TO COLIBAN STANDARDS. THE CONTRACTOR IS TO PROVIDE ALL MATERIALS AND LABOUR NECESSARY FOR THE CONNECTION. REFER TO MRC STANDARD DRAWING 12527 FOR DETAILS.
17. FOR CONNECTIONS TO EXISTING MAINS THE DEPTH OF THE EXISTING MAIN IS TO BE VERIFIED PRIOR TO COMMENCING WORKS ON THE MRC WATER MAIN.
18. AT THE END OF EACH DAY ALL MAINS ARE TO BE PLUGGED TO PREVENT SILT FROM GROUND WATER ENTERING ANY MAINS DURING THE CONSTRUCTION WORKS PERIOD.
19. ON THE COMPLETION OF THE WORKS THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND EXCESS SPOIL FROM THE SITE.
20. MARKER POSTS ARE TO BE PROVIDED FOR ALL FIRE PLUGS, SLUICE VALVES, BENDS ETC...

WATER STANDARD DRAWING REFERENCE LIST

STD. DRAWING NO.	STD. DRAWING NAME
WSA WAT-1108	PROPERTY SERVICES TO MAIN
WSA WAT-1201	EMBEDMENT & TRENCHFILL
WSA WAT-1202	STANDARD EMBEDMENT
WSA WAT-1205	THRUST BLOCK - CONCRETE
WSA WAT-1206	THRUST BLOCK - TIMBER/PLASTIC
WSA WAT-1301	VALVE INSTALLATION
WSA WAT-1302	HYDRANT INSTALLATION

Water Services Association of Australia - Water Supply Code (WSA 03-2011 Version 3.1)

SEE DETAIL 5

SEE DETAIL 4

WARNING!!

BEWARE OF UNDERGROUND SERVICES

The locations type and depth of underground services shown are approximate only and are based on authority records. The exact position of these services is to be proven on site and site locations obtained from the relevant authorities before commencement of any works. No guarantee is given that all existing underground services are shown.

NOTE !
BEWARE OF EXISTING OVERHEAD POWER CABLES !

DIAL BEFORE YOU DIG www.1100.com.au

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOV 2021	FOR COMMENTS

NOTES:

SCALE 1:1000 | SHEET SIZE A3 | DATUM METRES TO AHD

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

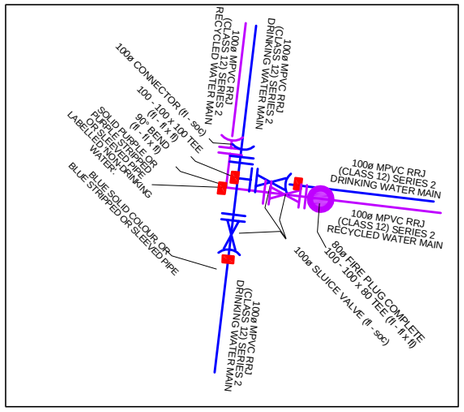
NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 8701
matt@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
WATER LAYOUTS
SUMSTYLE P/L

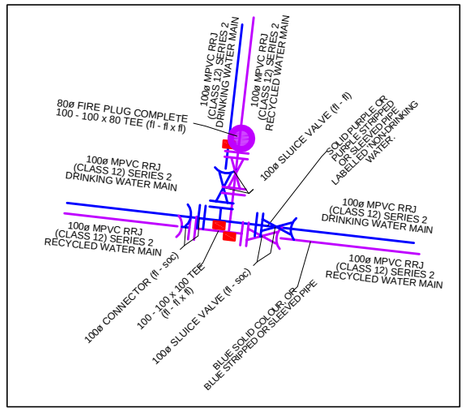
ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION 01 | SHEET W4 OF W5

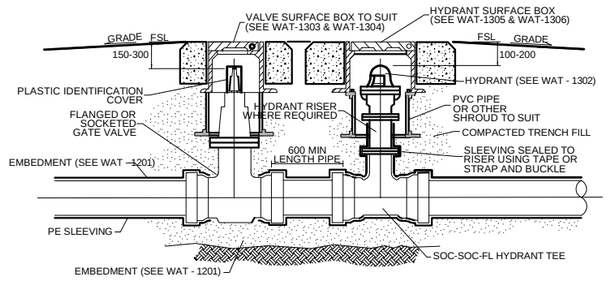
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

DETAIL 1

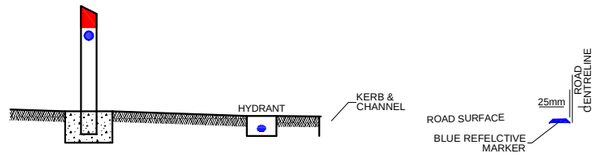


DETAIL 2



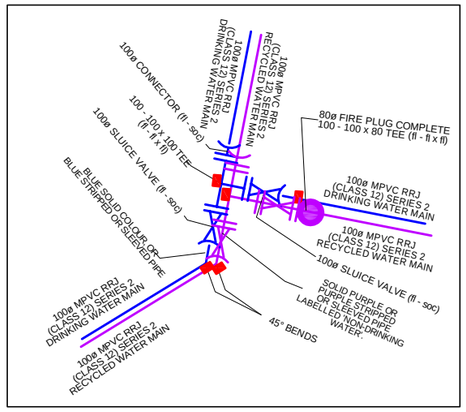


VALVES & HYDRANTS AT STANDARD DEPTHS



RFS HYDRANTS AND MARKER POST DETAILS

DETAIL 3



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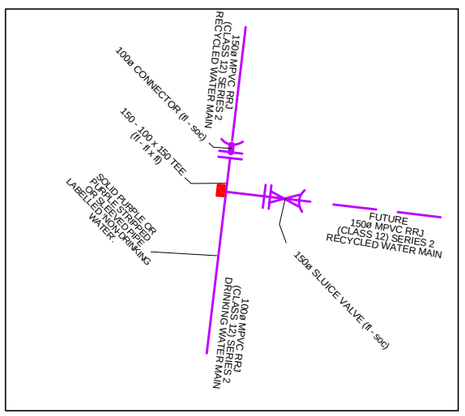
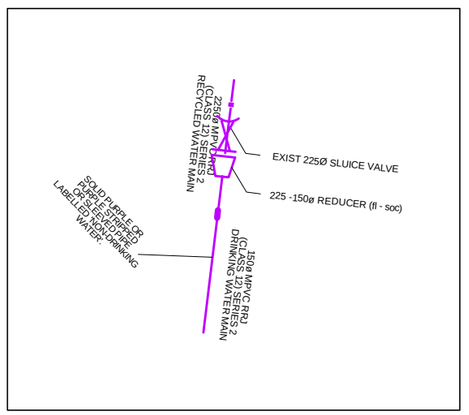


DETAIL 5



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DIAL BEFORE YOU DIG www.1100.com.au

VERSION	DATE	AMENDMENT / VERSION DESCRIPTION
01	12 NOVEMBER 2021	FOR COMMENT

SCALE H 1 : 1500 V 1 : 150 | SIZE A3 | DATUM LEVELS ARE IN METRES TO AHD

0 7.5 15 22.5 30 37.5m
Scale: 1:3000 @ A1 / 1:1500 @ A3

NORTH EAST SURVEY DESIGN
ABN 83 127 459 357
PO Box 2223
Echuca VIC 3564
Mobile 0429 819 322
nick@nesd.com.au
www.nesd.com.au

BOTANICAL VIEWS - MOAMA
WATER DETAILS
SUMSTYLE P/L

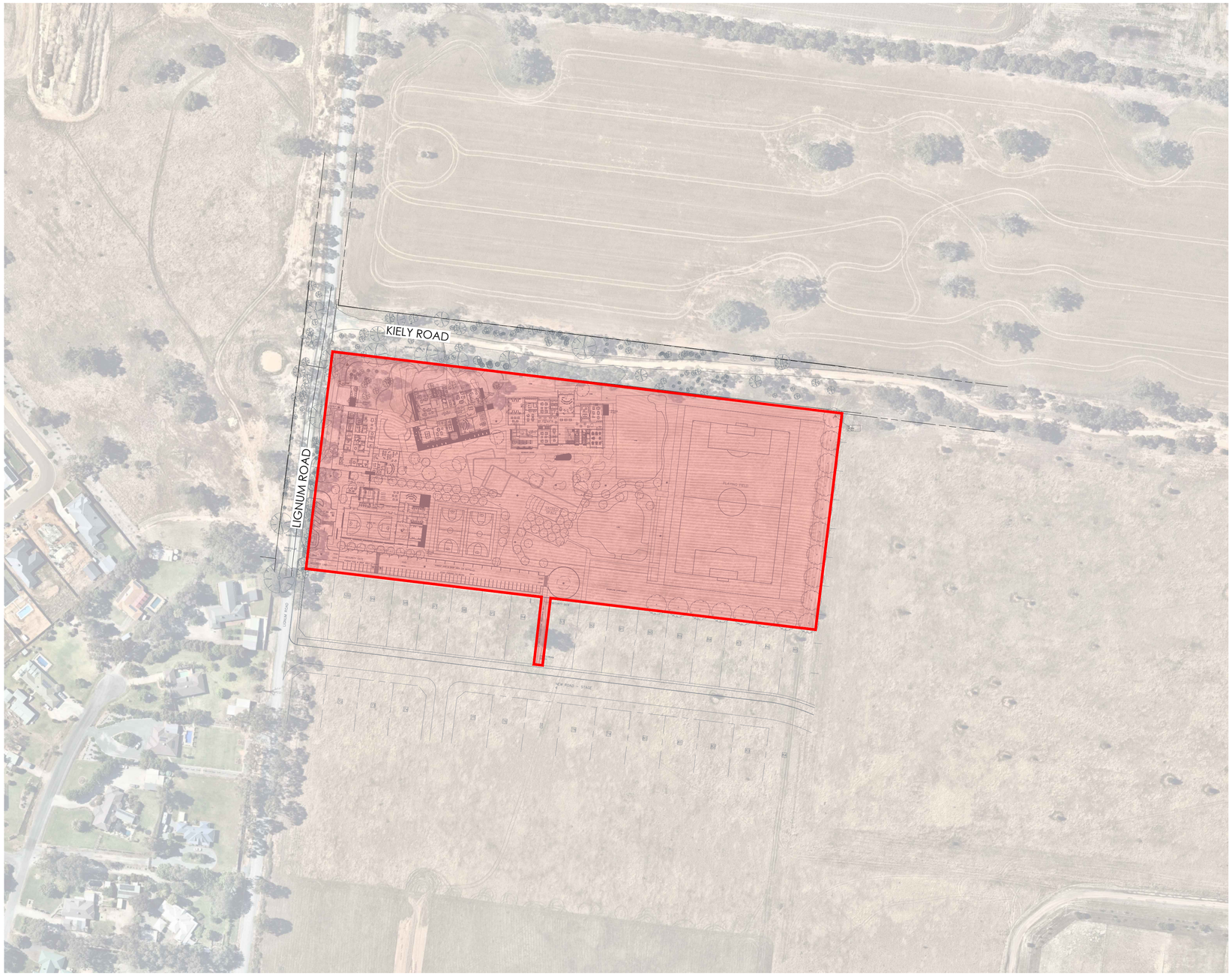
ISSUE STATUS: FOR COMMENT
REFERENCE M7555 | VERSION V01 | SHEET W5 OF W5

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

Appendix B – JN Civil Drawings

BLESSED CARLO COLLEGE

LIGNUM ROAD & KIELY ROAD, MOAMA, NSW, 2731



LOCALITY PLAN

SCALE 1:1500

DRAWING LIST

No.	DRAWING TITLE
C001	COVER SHEET AND LOCALITY PLAN
C002	GENERAL NOTES AND LEGENDS
C100	SITEWORKS AND STORMWATER PLAN
C110	TYPICAL DETAILS - SHEET 1
C111	TYPICAL DETAILS - SHEET 2
C200	EROSION AND SEDIMENT CONTROL PLAN
C210	EROSION AND SEDIMENT CONTROL DETAILS - SHEET 1
C211	EROSION AND SEDIMENT CONTROL DETAILS - SHEET 2

LOCALITY PLAN LEGEND

EXTENT OF WORKS

0 40 80 120 160 200m

40 30 20 10

SCALE 1:2000

NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	DESCRIPTION	BY
2	20.12.21	RE-ISSUED FOR SSDA CONCEPT	DM
1	17.12.21	ISSUED FOR SSDA CONCEPT	DM

JN Responsive Engineering

CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
COVER SHEET AND LOCALITY PLAN

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

WWW.JN.COM.AU

N0201396

C001 2

BLESSED CARLO COLLEGE

LIGNUM ROAD & KIELY ROAD, MOAMA, NSW, 2731

STANDARD SYMBOLS & NOTATIONS

SYMBOL	DESCRIPTION
	BOUNDARY LINE
SW	PROPOSED STORMWATER DRAINAGE LINE (IN THE GROUND) Ø100 @ 1.0% MIN GRADE UNO.
RW	PROPOSED RAINWATER DRAINAGE LINE Ø100 @ 1.0% MIN GRADE UNO. USE PRESSURE GRADE PIPES FOR CHARGED SYSTEM
ExSW	EXISTING STORMWATER DRAINAGE PIT AND PIPE
RM	PUMP RISING MAIN
S/S S/S	90Ø SUBSOIL LINE CONNECT TO STORMWATER OUTLET OR VERTICAL SLOT DRAIN
	SPOON / SWALE DRAIN
##	GRATED SURFACE INLET PIT WITH (OVERLAND FLOW DIRECTION). PIT DIMENSIONS ARE GOVERNED BY DEPTH REFER DETAIL
##	SEALED JUNCTION PIT
	GRATED DRAIN
	KERB INLET PIT WITH LINTEL
RWO	RAINWATER DRAINAGE OUTLET
22m² R→ ←44 m² P	CATCHMENT AREA TO STORMWATER PIT
P	DRAINAGE CELL PLANTER OUTLET
DP-100Ø	INDICATIVE DOWNPIPE - LOCATION AND MINIMUM SIZE
RHO	DOWNPIPE WITH RAINWATER HEAD OVERFLOW
SHO	DOWNPIPE WITH SUMP HIGH CAPACITY OVERFLOW
SSO	DOWNPIPE WITH SUMP-SIDE OVERFLOW
	GUTTER
IO	INSPECTION OPENING
VD-150Ø	VERTICAL DROP IN STORMWATER LINE (FROM ABOVE)
VD-150Ø	VERTICAL DROP IN STORMWATER LINE (TO BELOW)
DPS	DOWNPIPES WITH SPREADER
RWT	PROPOSED RAINWATER TANK
+ 35.11	EXISTING SURFACE LEVEL
36.00	EXISTING SURVEY CONTOUR
* RL35.40	FINISHED SURFACE LEVEL
* P35.85	FINISHED PAVEMENT LEVEL
* TK35.55	TOP OF NEW KERB LEVEL
* TOW35.55	TOP OF NEW RETAINING WALL LEVEL
GL 35.05	PROPOSED PIT SURFACE LEVEL
IL 34.75	PROPOSED PIT INVERT LEVEL
FFL23.56	PROPOSED FINISHED FLOOR LEVEL
225Ø uPVC @ 1.0% MIN	PIPE SIZE, TYPE AND GRADE < > DENOTES DIRECTION OF FLOW
uPVC	RIGID PVC PIPE
RCP	REINFORCED CONCRETE PIPE
RKG	ROLL KERB & GUTTER
K&G	KERB & GUTTER
150 KO	150 HIGH KERB ONLY
	OVERLAND FLOW PATH
FALL FALL	FALL DIRECTION
TOW (X.XXm)	RETAINING WALL WITH HEIGHT
S S	EXISTING SEWER LINE
T T	EXISTING TELSTRA LINE
G G	EXISTING GAS LINE
E E	EXISTING ELECTRICITY LINE
W W	EXISTING WATER MAIN

ALL EXISTING LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS.

DEPTH AND LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED BY BUILDER ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

GENERAL

1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE NOMINATED OR APPLICABLE COUNCIL SPECIFICATION. WHERE A SPECIFICATION HAS NOT BEEN NOMINATED THEN THE CURRENT NSW DEPARTMENT OF HOUSING CONSTRUCTION SPECIFICATION IS TO BE USED. THE NOMINATED SPECIFICATION SHALL TAKE PRECEDENCE TO THESE NOTES.
2. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS & DRAWINGS FROM OTHER CONSULTANTS.
3. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
4. THE CONTRACTOR SHOULD LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
5. CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
6. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
7. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
8. ALL DRAINAGE LINES THOUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
9. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES AND DEBRIS ETC. TO THE EXTENT SPECIFIED.
10. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A TRAFFIC MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS, FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS.

SURVEY

1. JN ARE NOT RESPONSIBLE FOR THE ACCURACY OF ANY 3RD PARTY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. SET OUT COORDINATES ARE BASED ON SURVEY DRAWINGS PROVIDED FOR THE PURPOSE OF CARRYING OUT THE ENGINEERING DESIGN.
5. CONTRACTOR SHALL VERIFY ALL SET OUT COORDINATES SHOWN ON THE PLANS WITH A REGISTERED SURVEYOR.
6. CONTRACTOR SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.
7. ANY DISCREPANCIES SHOULD BE CLARIFIED IN WRITING WITH THE ENGINEER PRIOR TO COMENCEMENT OF THE WORK FOR CONFIRMATION OF THE SURVEY.

EARTHWORKS

1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
2. OVER FULL AREA OF EARTHWORKS, CLEAR VEGETATION, RUBBISH, SLABS ETC. AND STRIP TOP SOIL. AVERAGE 200mm THICK. REMOVE FROM SITE, EXCEPT TOP SOIL FOR RE-USE.
3. CUT AND FILL OVER THE SITE TO LEVELS REQUIRED.
4. PRIOR TO ANY FILLING IN AREAS OF CUT OR IN EXISTING GROUND, PROOF ROLL THE EXPOSED SURFACE WITH A ROLLER OF MINIMUM WEIGHT OF 5 TONNES WITH A MINIMUM OF 10 PASSES.
5. EXCAVATE AND REMOVE ANY SOFT SPOTS ENCOUNTERED DURING PROOF ROLLING AND REPLACE WITH APPROVED FILL COMPACTED IN LAYERS. THE WHOLE OF THE EXPOSED SUBGRADE AND FILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%.
6. FOR ON SITE FILLING AREAS, THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
7. WHERE HARD ROCK IS EXPOSED IN THE EXCAVATED SUB-GRADE, THIS WILL BE INSPECTED AND A DECISION MADE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
8. FILL IN 200mm MAXIMUM (LOOSE THICKNESS) LAYERS TO UNDERSIDE OF BASECOURSE USING THE EXCAVATED MATERIAL AND COMPACTED TO 98% STANDARD (AS 1289 5.1.1). MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2% SHOULD THERE BE INSUFFICIENT MATERIAL FROM SITE EXCAVATIONS, IMPORT AS NECESSARY CLEAN GRANULAR FILL TO APPROVAL.
9. COMPACTION TESTING SHALL BE CARRIED OUT AT THE RATE OF 2 TESTS PER 1000SQ METRES PER LAYER BY A REGISTERED NATA LABORATORY. THE COSTS OF TESTING AND RE-TESTING ARE TO BE ALLOWED FOR BY THE BUILDER.
10. BATTERS TO BE AS SHOWN, OR MAXIMUM 1 VERT : 4 HORIZ. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL PAVEMENT.
11. ALL BATTERS AND FOOTPATHS ADJACENT TO ROADS SHALL BE TOP SOILED WITH 150mm APPROVED LOAM AND SEEDED UNLESS OTHERWISE SPECIFIED.

DRAWING STATUS

PRELIMINARY

PRELIMINARY DRAWINGS ARE NOT TO BE USED FOR TENDER OR CONSTRUCTION PURPOSES.

TENDER

TENDER DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES AND ARE INTENDED FOR AN EXTENT OF WORKS. ALL OTHER CONSULTANT DRAWINGS AND CONTRACT DOCUMENTS SHOULD BE READ IN CONJUNCTION WITH THESE DOCUMENTS TO DETERMINE THE FULL EXTENT OF WORKS.

CONSTRUCTION CERTIFICATE

CONSTRUCTION CERTIFICATE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNLESS APPROVED & STAMPED BY THE PCA.

CONSTRUCTION

CONSTRUCTION DRAWINGS CAN BE USED FOR CONSTRUCTION PURPOSES AND/OR FOR THE CREATION OF FABRICATION DRAWINGS.

PROJECT INFORMATION TABLE

THE TABLES BELOW ARE TO BE READ IN CONJUNCTION WITH THE ADJACENT NOTES.

GEOTECHNICAL INFORMATION

COMPANY	REPORT No.	DATED

SURVEY INFORMATION

COMPANY	DATED
NORTH EAST SURVEY DESIGN	MAY 2021

PROOF ROLLING

PROOF ROLLING SPECIFICATION

(min) ROLLER WEIGHT	(min) NUMBER OF PASSES
5 TONNE	10

COMPACTION TESTING

RATE OF TESTS	TEST AREA PER LAYER
2	1000m²

- TESTING SHALL BE CARRIED OUT BY A REGISTERED NATA LABORATORY

RIGID PAVEMENT DESIGN

- DESIGN LIFE 40 YEARS

DESIGN VEHICLE	DESIGN CBR	DESIGN TRAFFIC
MRV	-------	____ ESA

FLEXIBLE PAVEMENT DESIGN

- DESIGN LIFE 20 YEARS

DESIGN VEHICLE	DESIGN CBR	DESIGN TRAFFIC
MRV	-------	____ ESA

STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC
3. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
4. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O.
5. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
6. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY.
10. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS.
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1000mm TO HAVE CLIMB IRONS.
12. BUILD INTO UPSTREAM FACE OF ALL PITS A 3.0m SUBSOIL LINE FALLING TO PITS TO MATCH PIT INVERTS.
13. ALL COURTYARD & LANDSCAPED PITS TO BE 450 SQUARE, LOAD CLASS A, UNLESS NOTED OTHERWISE.
14. ALL DRIVEWAY & OSD PITS TO BE 600 SQUARE, LOAD CLASS D, UNLESS NOTED OTHERWISE.
15. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
16. PITS & DOWNPIPE LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
17. DOWNPIPES SHOWN ARE INDICATIVE ONLY, ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS.
18. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
19. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
20. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS.
21. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
22. ALL BASES OF PITS TO BE BENCHED TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO GRATE.
23. SUBSOIL LINE:
    PIPES AND FITTINGS SHALL BE PERFORATED PLASTIC TO CURRENT AUSTRALIAN STANDARDS. LAY PIPES ON FLOOR OF TRENCH GRADED AT 1% MIN. AND OVERLAY WITH FILTER MATERIAL EXTENDING TO WITHIN 200mm OF SURFACE. PROVIDE FILTER FABRIC OF PERMEABLE POLYPROPYLENE BETWEEN FILTER MATERIAL AND TOPSOIL. PROVIDE FLUSHING EYE'S AT HIGH POINTS OR TO COUNCILS REQUIREMENTS.
24. SHOULD THE CONTRACTOR ELECT TO INSTALL PRECAST STORMWATER PITS AND THEY ARE PERMITTED BY COUNCIL AND THE CLIENT, THE PRECAST PITS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS STANDARDS INCLUDING:
    a. SEAL THE SEGMENTS TOGETHER USING A SITE-APPROVED NON-SHRINK GROUT OR MASTIC-TYPE PRODUCT. APPLY THE SEALANT IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S REQUIREMENTS.
    b. ENSURE THAT NO GAPS REMAIN AND THAT A SMOOTH FACE EXISTS BETWEEN MULTIPLE UNITS.
    c. LEAVE THE SEGMENTS UNDISTURBED UNTIL THE PERIOD OF CURING IS COMPLETED IN ACCORDANCE WITH THE GROUT OR SEALANT PRODUCT MANUFACTURER'S REQUIREMENTS.

DRAINAGE INSTALLATION

RCP CONVENTIONAL INSTALLATIONS & ROAD CROSSINGS

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCE WITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. BEDDING OF THE PIPELINES IS TO BE TYPE 'HS2' IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
   a. COMPACTED GRANULAR MATERIAL IS TO COMPLY WITH THE FOLLOWING GRADINGS:

SIEVE SIZE (mm)	19	2.36	0.60	0.30	0.15	0.075
% MASS PASSING	100	50-100	20-90	10-60	0-25	0-10

   - AND THE MATERIAL PASSING THE 0.075 SIEVE HAVING LOW PLASTICITY AS DESCRIBED IN APPENDIX D OF AS1726.
   b. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
   c. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE 'HAUNCH ZONE.'
   d. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND 95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIONLESS MATERIAL.
   e. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
3. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. A GRANULAR GRAVEL AGGREGATE MATERIAL (<10mm) BACKFILL IS RECOMMENDED FOR THE BEDDING, HAUNCH SUPPORT AND SIDE ZONE DUE TO IT'S SELF COMPACTING ABILITY.
4. A MINIMUM OF 150mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL FOR PIPES < 600 DIA. 200mm CLEARANCE FOR PIPES 600 TO 1200 DIA AND D/6 CLEARANCE FOR PIPES > 1200 DIA.

SAFETY IN DESIGN

1. THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS. AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.
2. REFER TO THE JN SAFETY IN DESIGN REPORT FOR UNIQUE RISKS ASSOCIATED WITH THE DESIGN. OR
3. JN'S ASSESSMENT DID NOT IDENTIFY ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN.

PAVEMENT LEGEND

SYMBOL	DESCRIPTION
	EXTENT OF CONCRETE PAVEMENT
DJ	DOWELLED JOINT
KJ	KEYED JOINT
SC	SAW CUT JOINT
BJ	BUTT JOINT
TR	2N12 TRIMMERS x 1500 LONG (TIED UNDER TOP MESH)
150 K&G	150mm HIGH KERB & GUTTER
150 KO	150mm HIGH KERB ONLY
	EXTENT OF BITUMEN PAVEMENT
	PAVEMENT TYPE 1 - CONCRETE
	PAVEMENT TYPE 2 - BITUMEN
	PAVEMENT TYPE 3 - CONCRETE FOOTPATH
	PAVEMENT TYPE 4 - GRAVEL
	PAVEMENT TYPE 5 - PAVERS
	LANDSCAPE PLANTING AREA
	LANDSCAPE TILED AREA
	LANDSCAPE WATER AREA

PAVEMENT - FLEXIBLE

1. THE PAVEMENT DESIGN AS DETAILED ASSUMES A PROPERLY PREPARED UNIFORM AND STABLE SUBGRADE. CONFIRMATION OF DESIGN CBR RATIO IS REQUIRED BY A GEOTEHCNICAL ENGINEER PRIOR TO WORKS COMMENCING.
2. ASSUMED DESIGN CBR TO BE CONFIRMED ONSITE DURING CONSTRUCTION PRIOR TO PLACEMENT OF PAVEMENT MATERIALS. THE CONTRACTOR IS TO UNDERTAKE SUFFICIENT CBR TESTING TO CONFIRM THE ASSUMED VALUE. WHERE LESSER VALUE HAS BEEN DETERMINED, THE SUPERVISING ENGINEER IS TO BE NOTIFIED TO DETERMINE A REVISED PAVEMENT DESIGN.
3. PAVEMENT TO BE CONSTRUCTED AS FOLLOWS:
   SURFACE COURSE - DENSE GRADED ASPHALT
   PRIMERSEAL - EMULSION BASED HOT BITUMEN
   BASE COURSE - DGB 20
   SUB BASE - DGS 40
4. SUBGRADE SHALL BE COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY RATIO AT OPTIMUM MOISTURE CONTENT ±2%. IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS.
5. SUBBASE COURSE SHALL BE COMPACTED TO 95% MODIFIED MAXIMUM DRY DENSITY.
6. BASECOURSE SHALL BE COMPACTED TO 98% MODIFIED MAXIMUM DRY DENSITY.
7. PRIOR TO THE PLACEMENT OF THE PRIMERSEAL AND AFTER THE REQUIRED DENSITY IS ACHIEVED, THE PAVEMENT IS TO BE ALLOWED TO DRY BACK TO APPROXIMATELY 60% TO 70% OPTIMUM MOISTURE CONTENT.
8. ALL SUBGRADES TO BE ROOF ROLLED & APPROVED BY SUPERVISING ENGINEER.
9. COMPACTION TESTS ARE TO BE UNDERTAKEN FOR ALL PAVEMENT LAYERS INCLUDING SUBGRADE AT A RATE TO BE DETERMINED BY THE SUPERVISING ENGINEER & THE RESULTS TO BE SUPPLIED TO THE ENGINEER PRIOR TO PLACEMENT OF THE NEXT PAVEMENT LAYER.

PAVEMENT - RIGID

1. PREPARATION FOR PAVEMENT: CLEAR SITE, STRIP TOPSOIL, CUT AND FILL AND PREPARATION OF SUBGRADE SHALL BE AS DESCRIBED IN "EARTHWORKS" NOTES.
2. SUBGRADE SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2% IN ACCORDANCE WITH AS 1289 5.1.1.
3. BASE COURSE SHALL BE CONSTRUCTED FROM FINE CRUSHED ROCK DGB20 COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2% IN ACCORDANCE WITH AS 1289 5.1.11
4. CONCRETE PAVEMENT SLABS SHALL BE AS DETAILED ON THE DRAWINGS.
5. ALL WORKMANSHIP AND MATERIALS FOR CONCRETE WORK SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
6. CONCRETE QUALITY ALL CEMENT SHALL BE TYPE SL SHRINKAGE LIMITED CEMENT IN ACCORDANCE WITH AS3972

ELEMENT	STRENGTH GRADE (MPa)	SLUMP	MAXIMUM AGGREG. SIZE (mm)
PAVEMENT	32	80	20

7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3600.
8. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
9. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm.
10. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
11. THE FINISHED CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS. COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. CONCRETE SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
12. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF THREE DAYS, AND THE PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT.
13. REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.

PAVEMENT - SEGMENTAL

1. PREPARATION FOR PAVEMENT: CLEAR SITE, STRIP TOPSOIL, CUT AND FILL AND PREPARATION OF SUBGRADE SHALL BE AS DESCRIBED IN "EARTHWORKS".
2. SUBGRADE SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ±2% IN ACCORDANCE WITH AS 1289.5.1.1.
3. BASECOURSE SHALL BE CONSTRUCTED FROM FINE CRUSHED ROCK DGB20 COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ±2% IN ACCORDANCE WITH AS 1289.5.1.1.
4. PROVIDE CONCRETE WORKING SLAB 20MPa MIN 100mm THICK AS DETAILED ON DRAWING.
5. SEGMENTAL PAVING SHALL BE AS DETAILED ON THE DRAWINGS, AND ARE TO BE SUPPLIED WITH UNITS OF MAXIMUM GROSS PLAN AREA <0.1m². WHERE THIS AREA IS EXCEEDED REFER CONCRETE FLAG PAVEMENT SPECIFICATION.
6. ALL WORKMANSHIP AND MATERIALS FOR PAVER WORK SHALL BE IN ACCORDANCE WITH ALL AS 4455, AS4456, AS4459, T44, T45, T46. CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENT.
7. PAVER QUALITY:

APPLICATIONS	CHARACTERISTIC BREAKING LOAD (kN)	CHARACTERISTIC FLEXURAL STRENGTH (MPa)
RESIDENTIAL PEDESTRIAN	2	2
RESIDENTIAL DRIVEWAYS	5	3
PUBLIC FOOTPATHS	5	3
ROADS	5	3
INDUSTRIAL PAVEMENTS	10	4

   PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 4456.4 AND AS 4456.5.
8. PAVERS TO BE BEDDED AND SOUND EDGE RESTRAINTS ARE TO BE PROVIDED.
9. JOINTS TO BE FULLY GROUTED.

ENVIRONMENTAL SITE MANAGEMENT LEGEND

SYMBOL	DESCRIPTION
	PROPOSED BUILDING LINE
	PROPOSED BUILDING ROOF OUTLINE
	PROPRIETARY SILT FENCE
	PROVIDE TEMPORARY CHAIN WIRE FENCING (HOARDING) ALONG THE SITE BOUNDARY
	TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT. (SHAKER PAD)
	TEMPORARY FILTER TUBE WITH SAFETY BARRICADE TO KERB INLET PITS.
	TEMPORARY MASS CONCRETE FOOTPATH CROSSING.
	DIRECTION OF FLOW
	DIVERSION BANK
	SURFACE INLET DRAINAGE PIT WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)
	TEMPORARY GEOTEXTILE WRAPPED HAY BALES/SAND BAGS
	SANDBAG SEDIMENT INLET TRAP
	SANDBAG KERB SEDIMENT TRAP

ENVIRONMENTAL SITE MANAGEMENT

1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD"
2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM, SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.
4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. THE SUPERVISING ENGINEER MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.
6. ALL DISTURBED AREAS ARE TO BE SEEDED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.
7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.
9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.
10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
18. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
19. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. (NO SEMITRAILERS)
20. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM THE ENGINEER.
21. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
22. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH THE SUPERINTENDENTS REQUIREMENT.
23. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.
24. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY THE SUPERINTENDENT AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
25. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH 'R.T.A. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'
26. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'

NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	DESCRIPTION	BY
2	30.03.22	RE-ISSUED FOR SSDA CONCEPT	DM
1	17.12.21	ISSUED FOR SSDA CONCEPT	DM

JN Responsive Engineering

CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
GENERAL NOTES AND LEGENDS

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA NSW, 2731

PROJECT DETAILS
DESIGN LM
DRAWN DM
DATE DEC 2021
DRG SIZE A1
SCALE AS SHOWN
PROJECT MGR LM
WWW.JN.COM.AU

N0201396

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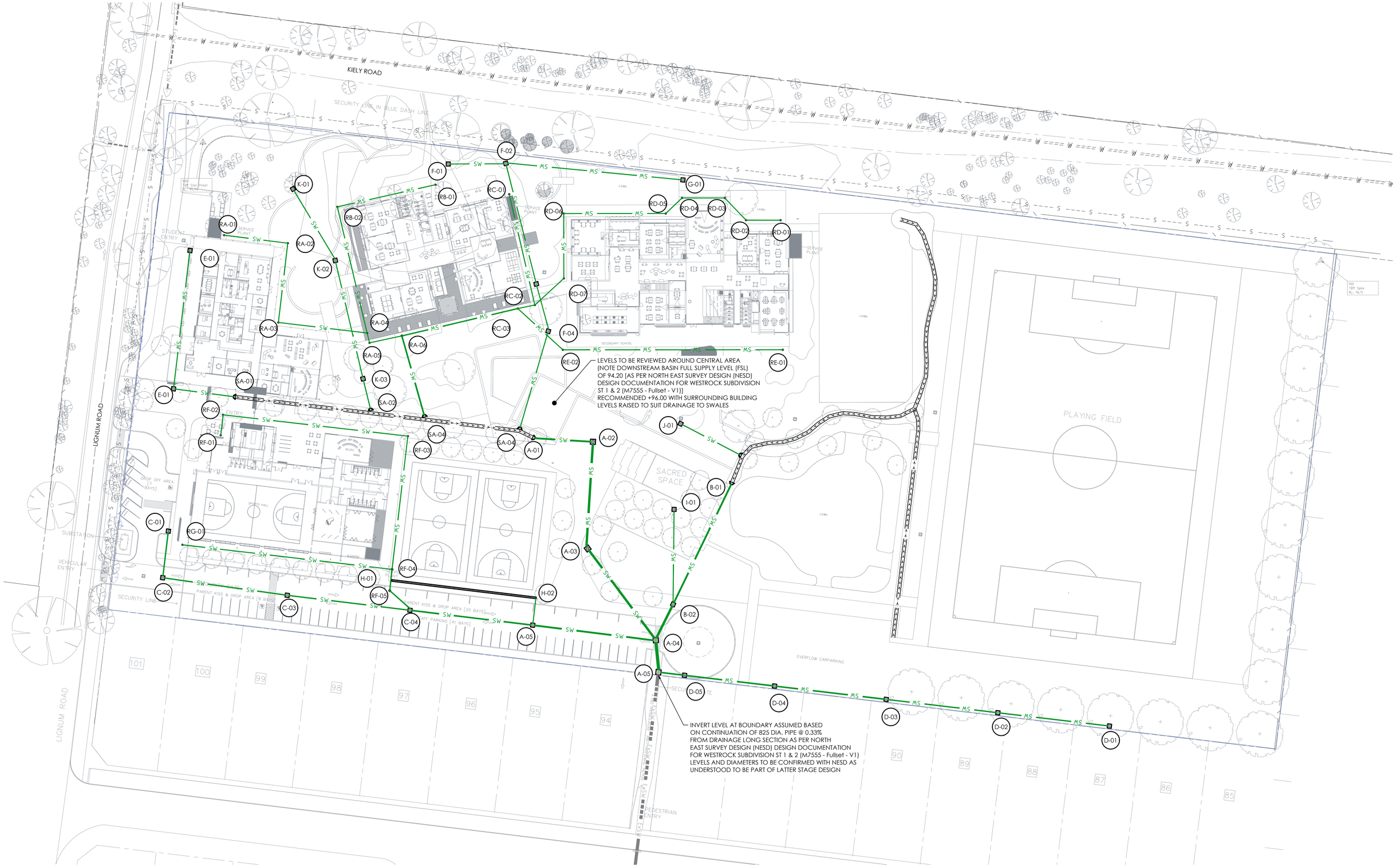

SITEWORKS AND STORMWATER PLAN

SCALE 1:500

0 10 20 30 40 50m

10 8 6 4 2

SCALE 1:500

NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	DESCRIPTION	BY
1	17.12.21	ISSUED FOR SSDA CONCEPT	DM

JN Responsive Engineering

CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
SITEWORKS AND STORMWATER PLAN

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA
NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

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N0201396

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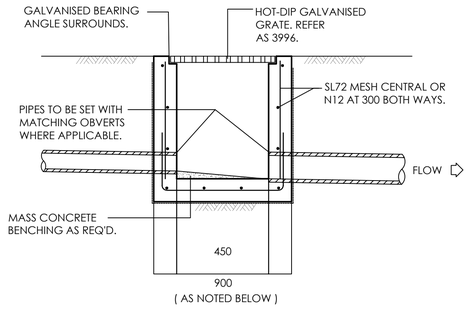


(AS NOTED BELOW)

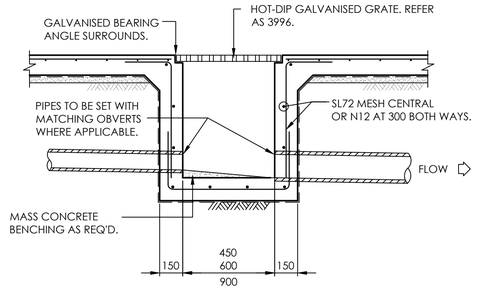
TYPICAL GRATED INLET PIT - NATURAL SURFACE

N.T.S

MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH TO INVERT OF OUTLET		PIT MINIMUM INTERNAL DIMENSIONS (mm)	
		WIDTH	LENGTH
	< 600	450	450
> 600		600	600
> 900		600	900
> 1200		900	900
STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1200mm			

NOTES

1. REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
2. PROVIDE 90Ø x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC. (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
3. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
4. CONCRETE STRENGTH F'c = 32 MPa



(AS NOTED BELOW)

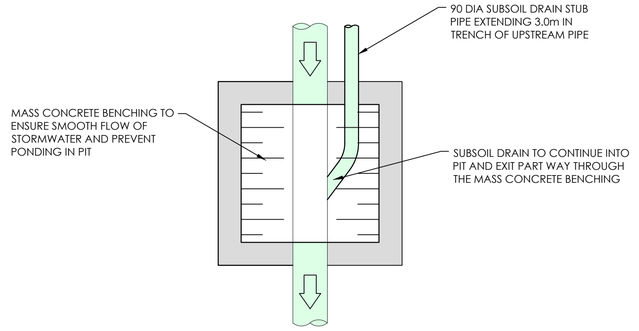
TYPICAL GRATED INLET PIT - CONCRETE SURFACE

N.T.S

MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS			
DEPTH TO INVERT OF OUTLET		PIT MINIMUM INTERNAL DIMENSIONS (mm)	
		WIDTH	LENGTH
	< 600	450	450
> 600		600	600
> 900		600	900
> 1200		900	900
STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1200mm			

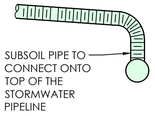
NOTES

1. REINFORCEMENT NOTED IS ONLY REQUIRED FOR PITS EXCEEDING 900 DEEP, SUBJECT TO COUNCIL REQUIREMENTS. PITS GREATER THAN 3000 DEEP WILL REQUIRE STRUCTURAL ENGINEERS DESIGN.
2. PROVIDE 90Ø x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC. (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
3. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
4. CONCRETE STRENGTH F'c = 32 MPa



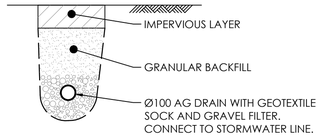
TYPICAL SUBSOIL PIPE/PIT BENCHING

SCALE 1:20



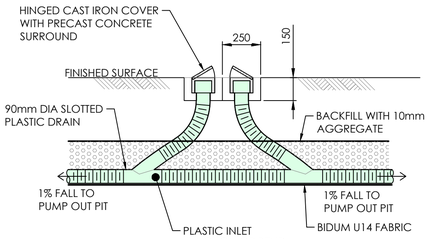
SUBSOIL PIPE CONNECTION

N.T.S



TYPICAL SUBSOIL LINE

N.T.S

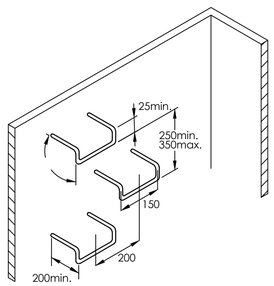


NOTES :

- MINIMUM GRADE OF SUBSOIL DRAINAGE PIPES IS TO BE 1.0%. JOINTS IN FILTER FABRIC TO BE LAPPED A MINIMUM 300mm.

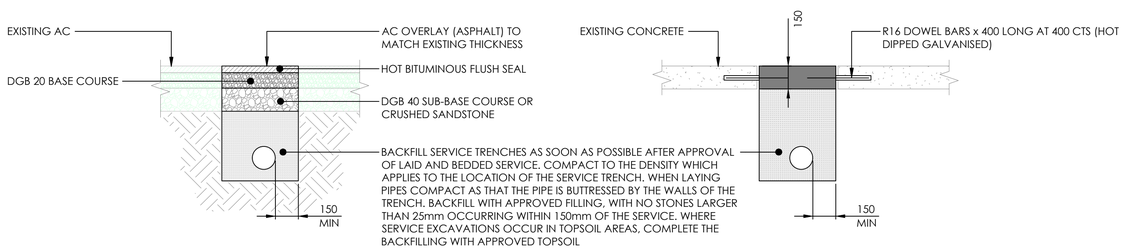
SUBSOIL PIPE FLUSHING POINT

N.T.S



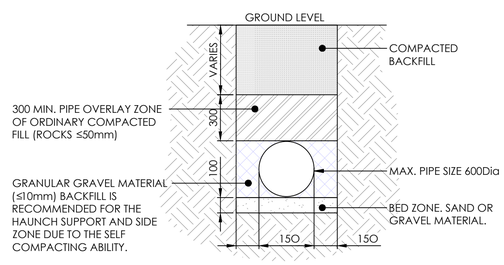
STEP IRON DETAIL

N.T.S



TYPICAL SERVICE TRENCH DETAIL

SCALE 1 : 20



TYPICAL SCHEMATIC PIPE TRENCH DETAIL

SCALE 1 : 20

0 400 800 1200 1600 2000mm
400 200

SCALE 1:20

NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	DESCRIPTION	BY

JN Responsive Engineering

CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
TYPICAL DETAILS
SHEET 1

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA
NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

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N0201396
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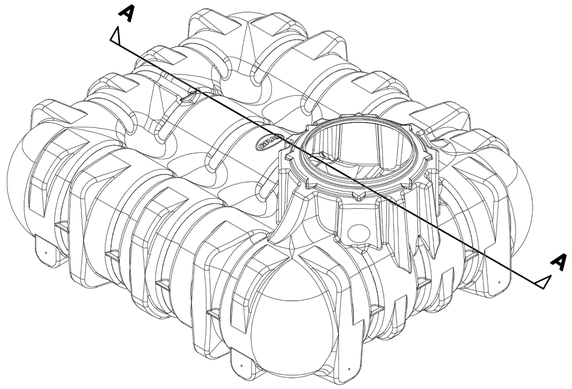

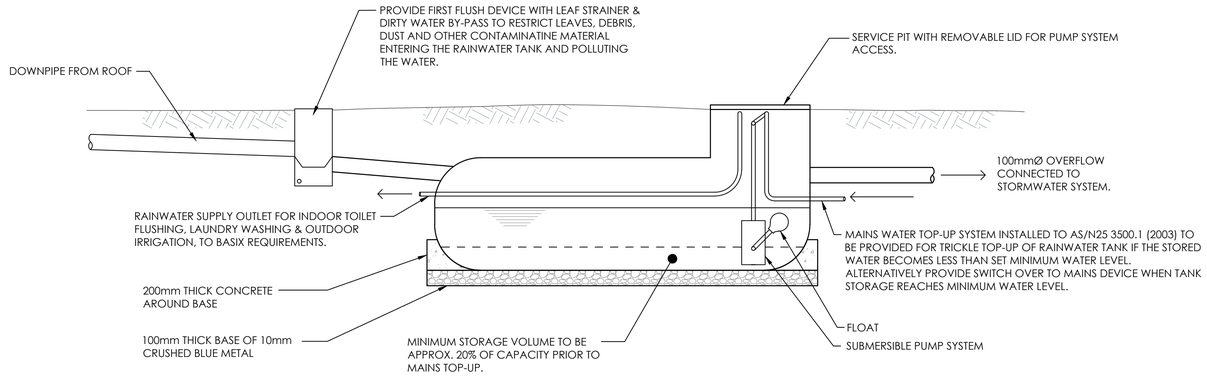

SECTION A-A
UNDERGROUND RAINWATER TANK DETAIL

4 x 3,000 LITRE CAPACITY UNDERGROUND RAINWATER TANKS.

0 400 800 1200 1600 2000mm
400 200
SCALE 1:20

NOT TO BE USED FOR CONSTRUCTION

AMDT	DATE	DESCRIPTION	BY
1	17.12.21	ISSUED FOR SSDA CONCEPT	DM

JN
Responsive Engineering

CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
TYPICAL DETAILS
SHEET 2

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA
NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

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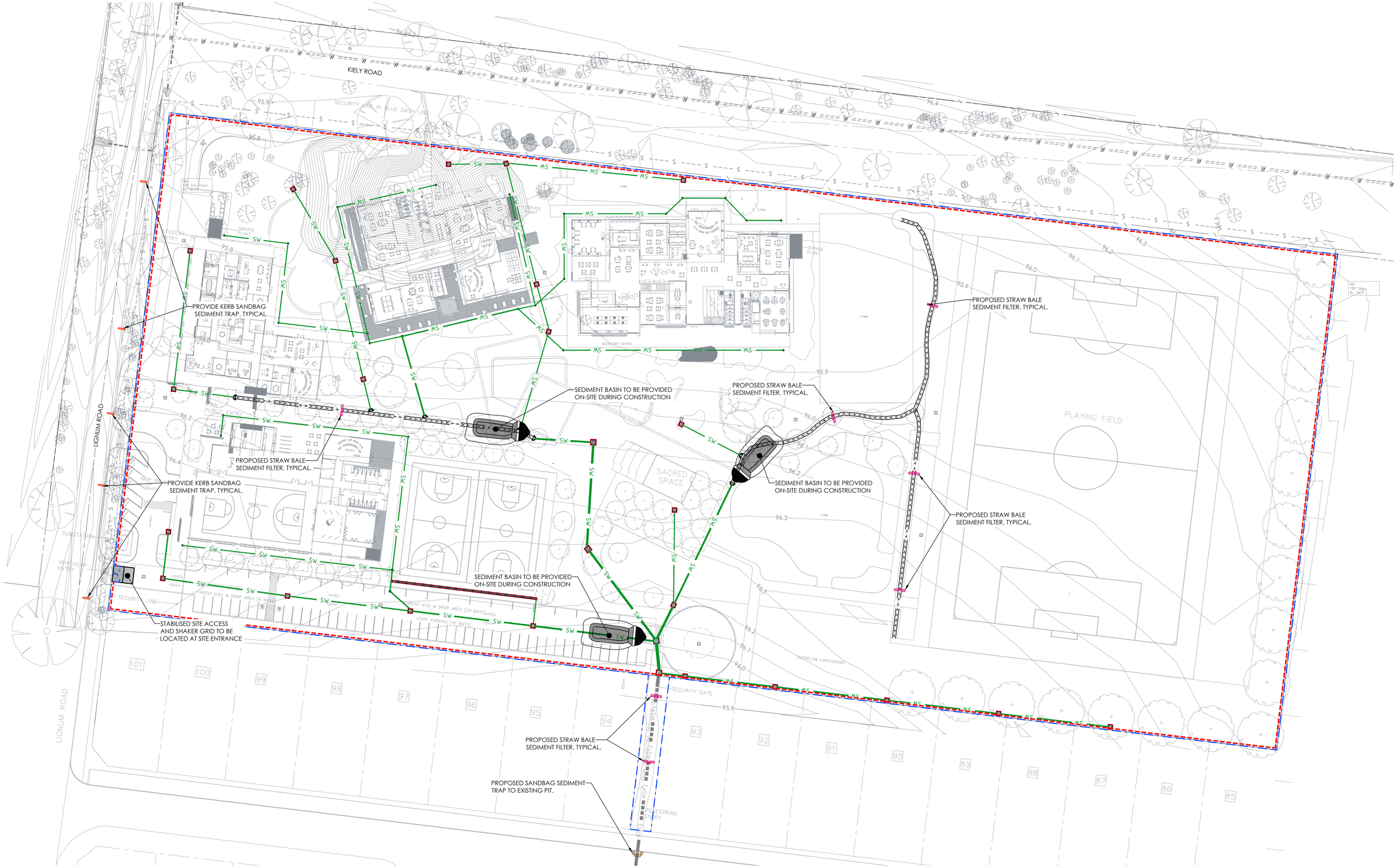
C111 1



EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:500

0 10 20 30 40 50m

10 8 6 4 2

SCALE 1:500

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AMDT	DATE	DESCRIPTION	BY
1	20.12.21	ISSUED FOR SSDA CONCEPT	DM

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CLIENT
CLARKE HOPKINS CLARKE

STATUS
PRELIMINARY

DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA
NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

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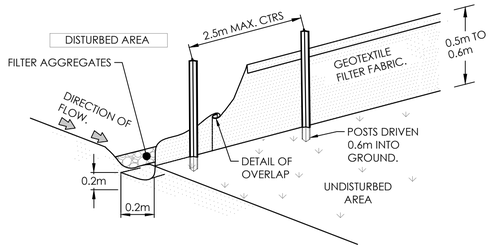


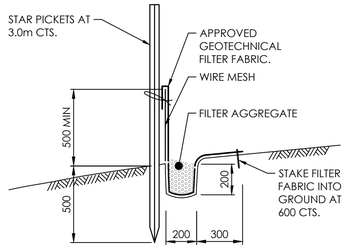
NOTE: DRAINAGE AREA 0.6HA. MAX.
SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 60M MAX.

SEDIMENT FENCE

N.T.S

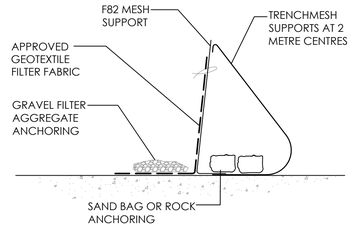
GENERAL CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS IN GROUND 3m APART.
3. DIG A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.



SILT FENCE DETAIL

N.T.S

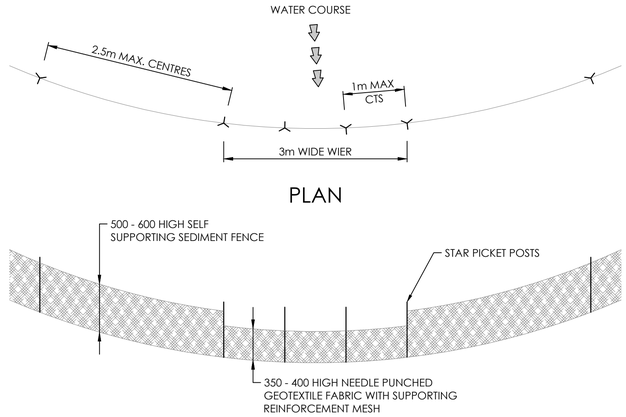


ALTERNATIVE SEDIMENT FENCE (ON CONCRETE)

N.T.S.

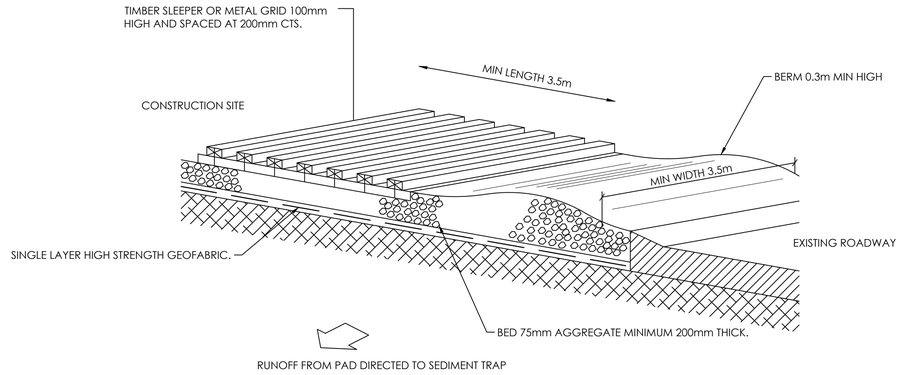
GENERAL CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
3. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.
4. REFER TO DETAIL SD 6-9 "BLUE BOOK"



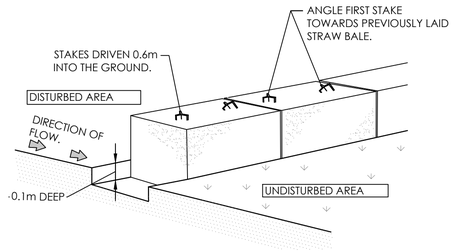
SEDIMENT FENCE WEIR AT CONCENTRATED FLOW LOCATIONS

N.T.S



STABLISED SITE ACCESS

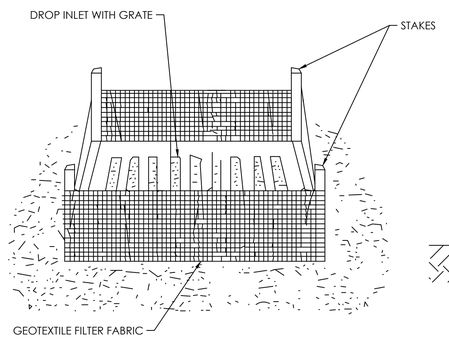
N.T.S



* DRAINAGE AREA 0.4HA MAX. SLOPE GRADIENT 1:2 MAX. SLOPE LENGTH 40m MAX.

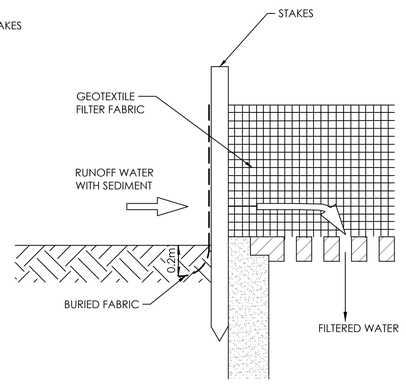
STRAW BALE SEDIMENT FILTER

STRAW BALE CONSTRUCTION NOTES
1. CONSTRUCT STRAW BALE FILTER AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE OR THE TOE OF A SLOPE. 2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS TO BE PLACED PARALLEL TO GROUND.
3. MAXIMUM HEIGHT OF FILTER IS ONE BALE.
4. ON SOFT MATERIALS EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2m STAR PICKETS. ANGLE THE FIRST STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE STAKES 600mm INTO THE GROUND AND FLUSH WITH THE TOP OF THE BALES.
5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER THE BALES SHOULD BE LOCATED 1.5 TO 2m DOWNSLOPE FROM THE TOE OF THE BATTER.
6. STRAW BALES TO BE WRAPPED IN APPROVED GEOTEXTILE FABRIC.



GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP

N.T.S



GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP DETAIL

N.T.S

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1	20.12.21	ISSUED FOR SSDA CONCEPT	DM

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EROSION AND SEDIMENT CONTROL DETAILS - SHEET 1

PROJECT
BLESSED CARLO COLLEGE

ADDRESS
LIGNUM ROAD & KIELY ROAD, MOAMA
NSW, 2731

PROJECT DETAILS

DESIGN	LM
DRAWN	DM
DATE	DEC 2021
DRG SIZE	A1
SCALE	AS SHOWN
PROJECT MGR	LM

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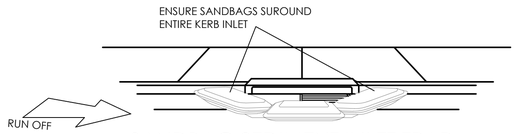
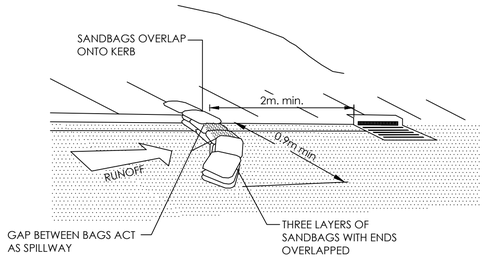


SANDBAG SEDIMENT INLET TRAP

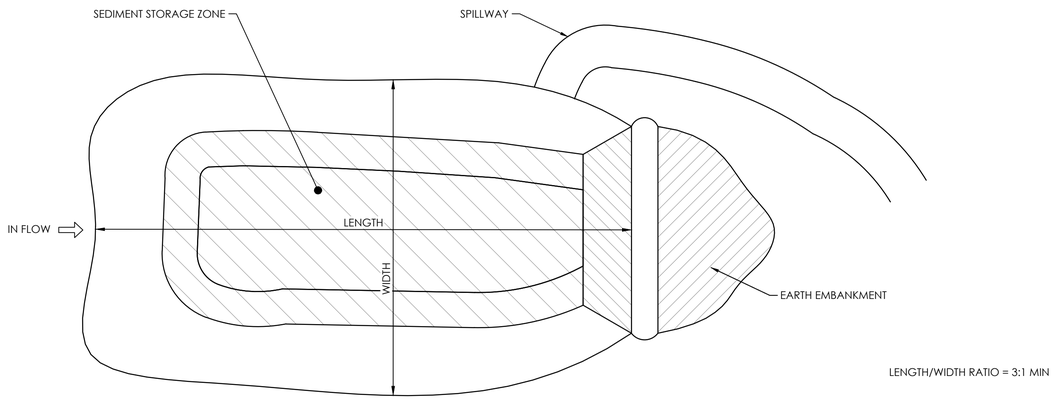
N.T.S.

1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50MM GRAVEL.
3. FORM AN ELIPTICAL CROSS SECTION ABOUT 150mm HIGH X 400mm WIDE.
4. PLACE THE FILTER AT THE OPNEING OF THE KERB INLET LEAVING A 100MM GAP AT THE TOP TO ACT AS AN EMERGENCY SPILL WAY.
5. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.
6. FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER.
7. FIT TO ALL KERB INLETS AS SHOWN.

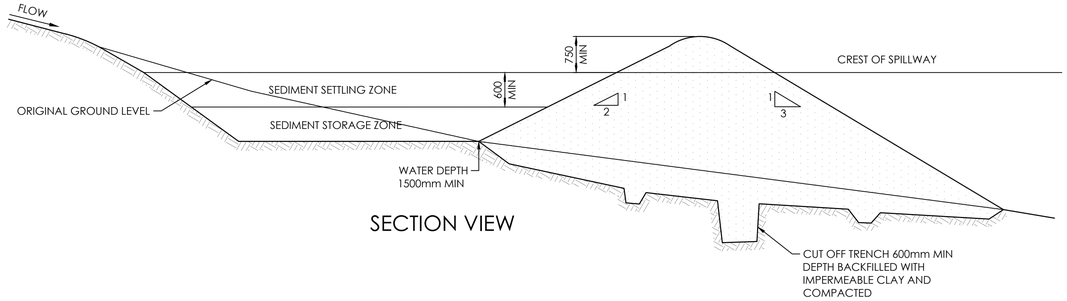


SANDBAG KERB SEDIMENT TRAP

N.T.S.



PLAN VIEW



SECTION VIEW

EARTH BASIN - WET

N.T.S

GENERAL CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 600mm DEEP AND 1200mm WIDE ALONG THE CENTERLINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY.
4. SELECT FILL ACCORDING TO THE DIRECTIONS OF THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100mm DEEP TO HELP BOND COMPACT FILL TO EXISTING SUBSTRATE
6. SPREAD FILL IN 100mm TO 150mm LAYERS AND COMPACT AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH SWMP.
7. CONSTRUCT EMERGENCY SPILLWAY.
8. REHABILITATE STRUCTURE IN ACCORDANCE WITH THE SWMP.
9. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED.
10. BASIN MUST BE FULLY DRAINED BETWEEN STORM EVENTS TO ENSURE THE BASINS HAVE THE REQUIRED STORAGE VOLUME PRIOR TO THE START OF THE NEXT STORM.
11. THIS SOIL IS HIGHLY SUSCEPTIBLE TO TUNNELING OR PIPING FAILURE. IT MUST BE WELL COMPACTED THROUGHOUT TO REDUCE PERMEABILITY AND SATURATION SETTLEMENT. THE SOIL SHOULD BE COMPACTED TO AT LEAST 90% MDD BY ENSURING ADEQUATE MOISTURE CONTENT. IF DRIER THAN OPTIMUM, GYPSUM OR HYDRATED LINE SHOULD BE INCORPORATED INTO THE SOIL AT RATES BASED ON LABORATORY TESTING - THE METHOD TO BE DETERMINED BY SITE AND EQUIPMENT CONSTRAINTS. FOR ADDITIONAL STABILITY, THE STRUCTURE SHOULD BE DESIGNED TO HOLD NO MORE THAN 1.0m OF WATER AGAINST THE WALL AND BATTER GRADES SHOULD BE DECREASED TO 3.5:1 (H:V) UPSTREAM AND 3:1 (H:V) DOWNSTREAM.

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