

PERIMETER SUBSURFACE WATER DRAIN MANAGEMENT, - ULAB RECYCLING FACILITY HAZELWOOD NORTH Version 6.0 21/12/21

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 1 of 69 sheet(s)

Date:22/12/2021

1.0 Introduction

Ark Angel Pty Ltd has been employed to work on the proposed perimeter subsurface drainage system for Chunxing Corporation's battery recycling plant at Fourth Road, Hazelwood North. There are 2 subsurface drainage systems proposed for this facility.

Firstly there is the 2.0 m deep subsurface drainage system required for the storage ponds along the southern and western boundary of the facility. These normal engineering practice drains are designed to stop the storage ponds from floating out of the ground when they are near empty. These drains will be directed towards a pump sump located at the south western corner of the plant's outer perimeter. The collected water will then be pumped to Emergency Site Water Pond No. 1. Refer to Figures 1 & 2, WA Moore & Associates (2021), and Appendix A, B & C for details of this proposed system.

Secondly there is the shallow subsurface drainage system required at the base of the 1.3 m high bund walls. These normal engineering practice drains are designed to stop bund walls from toppling over from subsurface water pressure. This drainage system will also be directed towards the pump sump located at the south-western corner of the plant's outer perimeter. Refer to Appendix C and WA Moore & Associates (2021) for details of this proposed system.

4.0 Conclusions and Recommendations

It is proposed that 2 subsurface drainage systems be installed at this facility for the deep pond walls, and the shallow bund walls. The design of these systems are further detailed in this report, refer Figure 1-3 and Appendix A-C. In particular the pumping system required for the deep drainage system is designed in this report. The subsurface drains are designed by others, refer WA Moore & Associates (2021), and Appendix C.

It should be noted that at this stage in the plants design, this is considered to be a living document. As a consequence, some pipe lengths, pump sizes and management requirement discussed in this document may change due to availability and changing integrated design considerations; at which time this document will be reviewed. This document will be used as a basis for the next detailed design stage, which will be carried out by others. It is recommended that the proposed pump station and pipe designs, operation and management requirements discussed in this document be approved for use. Other references used for the design of various aspects of the proposed plant are shown in the References section at the end of this report.

Scott McFarlane Ark Angel P/L

References:
Ark Angel (2021): Basic Water Supply System

Ark Angel (2021): Black, Grey and Plant Water
Facility Hazelwood North

Pump and Pipe Management System - ULAB Recycling
Planning Scheme Amendment No.C129latr
Clause No. 6 20

Ark Angel (2021): Connection to Sewer System

- ULAB Recycling Facility Hazelwood North

Ark Angel (2021): Greywater Treatment System

- ULAB Recycling Facility Hazelwood North

Ark Angel (2021): Perimeter Subsurface Water

North

Council Delegate

Ark Angel (2021): Pump and Pipe Management System - ULAB Recycling Facility Hazelwood North

Ark Angel (2021): SP1 & SP2 Stormwater Pump Management System - ULAB Recycling Facility Hazelwood North

Beveridge Williams, (2021): Stormwater Management Design, Used Lead Acid Battery, Chunxing Corporation Pty Ltd.

Enstruct (2021): Stormwater Design Report for Grated Culvert, Battery Recycling Facility at Fourth Road, Hazelwood North,

WA Moore & Associates (2021): Proposed Bund Walls and Storage Ponds to Battery Recycling Facility, Hazelwood North

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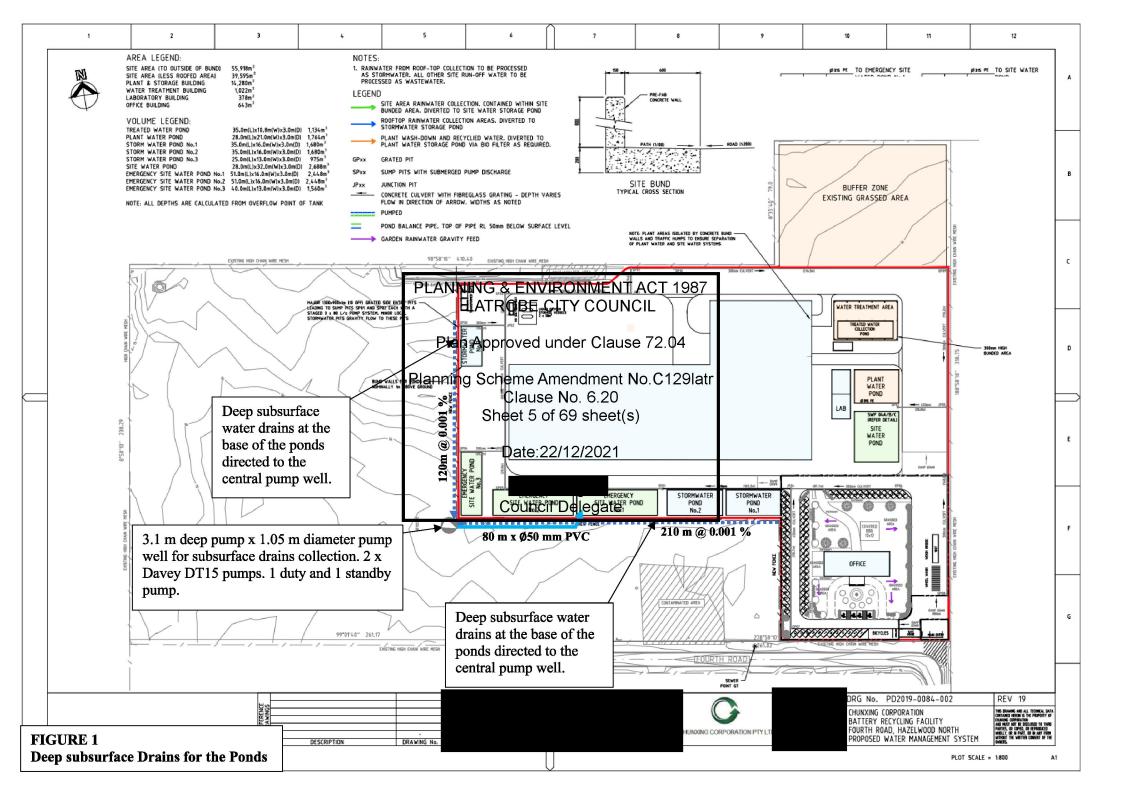
Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 3 of 69 sheet(s)

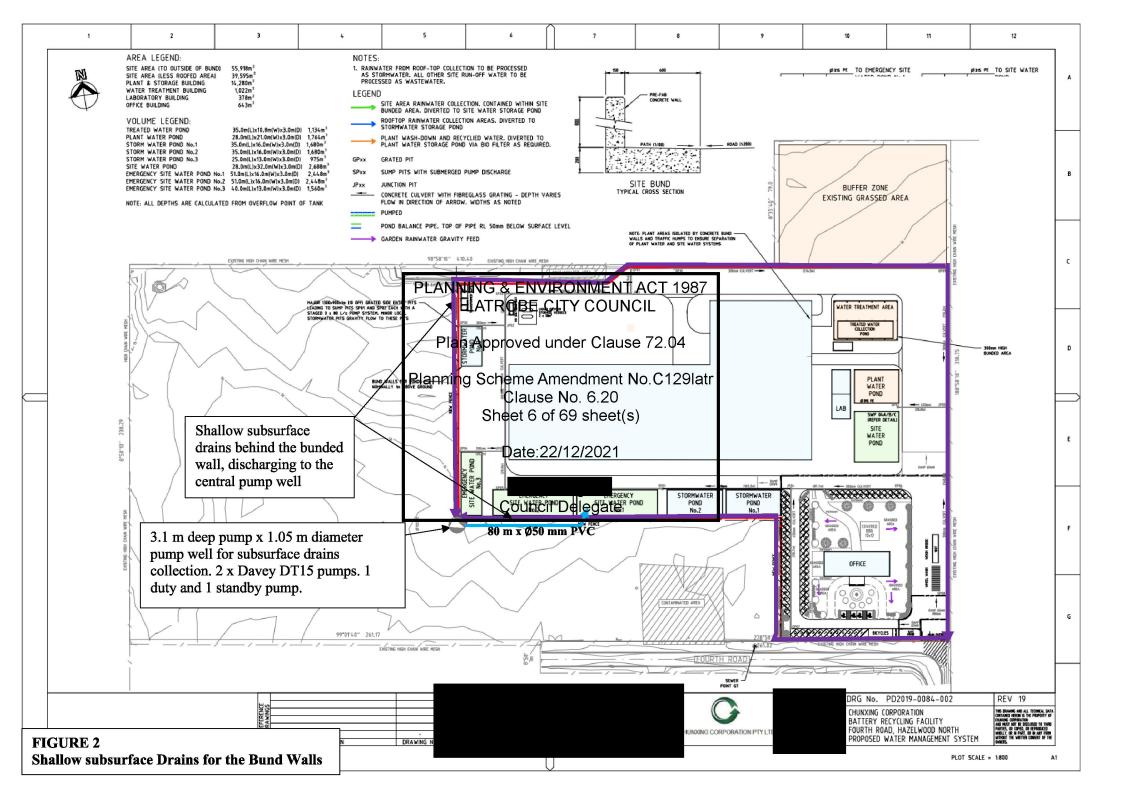
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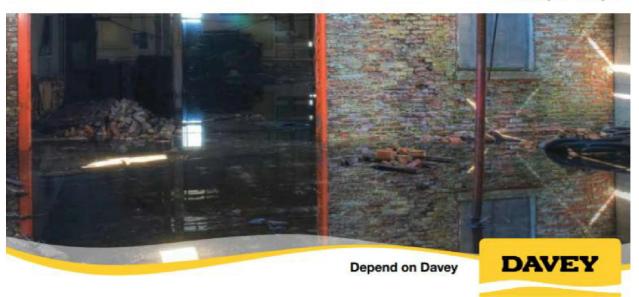
Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 4 of 69 sheet(s)

Date:22/12/2021





Sump Pumps



APPLICATIONS

- · Sump emptying
- Septic water disposal
- Water transfer
- Pumping of neutral, none factory waste water

PLANNING & ENVIRONMENTATE 987 LATROBE CITY OF SUNNERS Dewatering Pump?

Corrosion resistant 304 stainless steel shaft, motor shell

pgressiPlan Approved under Clause 72.04

Long service life

Planning Scheme Amendment No. C129latr

Clause No. 620, centrifugal design
Clause No. 620, centrifugal design
Sheet 7 of 69 sheet (s) to blockage

· Capable of higher heads/pressure

Date: 22/102/12021 anical shaft seal in oil tath with hard faced silicon carbide/ceramic seal on pump side

tor protection

Council Delegate

Davey

Submersible Dewatering Pump

Model Numbers:

D75A, D75M, D150, DT08, DT15, DT22 & DT37

Dewatering submersible sump pump with a choice of single or three phase models.

- Added protection
- Long service life

Automatic resetting thermal overload

· Protected against overloading

D75A model fitted with automatic float switch with a present float length

· Safe unattended operation

Low velocity inlet strainer fitted

- For a firm and stable positioning during installation and operation
- To restrict pumping of solids which may damage or block the pump

HO7RNF oil resistant leads with bare wire lead ends

- · Easy to connect to power supply terminations
- · Long life in dirty water



APPENXIX A: Proposed Subsurface Water Pump



Submersible Dewatering Pumps

OPERATING LIMITS							
Capacities to	1200 lpm						
Maximum total head	24m						
Maximum submergence	25m						
Maximum operating temperature	40°C						
Maximum soft solids	10mmm diameter						

Suitable Fluids: Clean or "grey water" of neutral pH containing up to 10% small soft solids or 1% fine solids. Some wear should be expected while pumping hard solids in suspension.

MATERI	ALS OF CONSTRUCTION	ON
Part	Mater	al
Model	Standard	316SS
Impeller	Cast iron	316SS
Pump casing	Cast iron	316SS
Outlet	Cast iron	316SS
Shaft seal – pump side – motor side	Silicon carbide/ceramic Carbon/ceramic Mechanical seal in captive	oil bath with oil sea
Shaft seal elastomer	Nitrile rubber	Viton
Pump shaft	304 stainless steel	316SS
Orings	Nitrile rubber	
Motor shell	304 stainless steel	316SS
Handle	304 stainless steel	316SS
Fasteners	304 stainless steel	316SS
Float & power supply leads	HO7RN-F oil	

į.	ELE	CTRIC	AL DATA						
Model	D75A/M	D150	DT08	DT15	DT22	DT37			
Speed		2 pole, 2850rpm							
Insulation class		Class F							
IP rating	X8								
Electrical lead		н	O7RNF x	10m leng	th				
Supply voltage (V)	220-	240	380-415						
Phase	Sin	gle	Three						
Output Power	0.75kW	1.5kW	0.75kW	1.5kW	2.2kW	3.7kW			
Full load current	7.5A	13A	1.7A	3.0A	4.5A	7.5A			
Locked rotor current	22.5A	65A	10.5A	22A	31.5A	49A			
Starting	CS	IR	DOL						

INSTALLATION & PRIMING

Use a rope to position and retrieve the pump. Do not lower or retrieve the pump using the power lead as this may damage the cable entry seals, causing water leaks and unsafe operation.

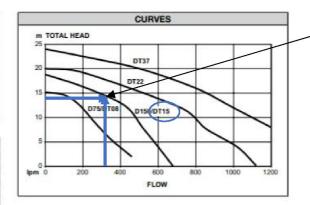
Don't use this product for recirculating or filtering swimming pools, spas, etc. While these pumps are built to high safety standards, they are not approved for installations where people will be in the water while they are operating.

Don't pump abrasive materials. Sand and grit in the water being pumped will accelerate wear, causing shortened pump life.

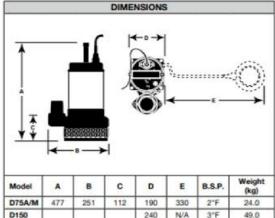
Keep your pump clean, particularly in situations where lint, hair or fibrous materials may get bound around the pump shaft. Regular inspection and cleaning will extend pump life.

Make room for the float switch to operate. Automatic models have a float switch to turn them on when the water level rises and turn them off again when it has been pumped down to the safe operating level of the pump. If the float switch is not free to rise and fall, correct pump operation may not be possible.

Don't run your pump dry. Non-automatic models must be switched off manually or by way of an external float/level switch when the water level is reduced to the top of the pump housing.



~Duty point for the irrigation pump



Model	A	В	С	D	E	B.S.P.	(kg)
D75A/M	477	251	112	190	330	2°F	24.0
D150			The state of the s	240	N/A	3°F	49.0
DT08	414	251	112	190	N/A	2°F	21.0
DT15	440	289	106	190	N/A	3°F	26.0
DT22	503	313	145	190	N/A	3°F	39.0
DT37	518	313	145	220	N/A	4°F	45.0

All dimensions in mm unless otherwise stated.

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Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 8 of 69 sheet(s)

Date: 22/12/2021

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Proposed Subsurface Water Pump APPENXIX A:

Sump Pumps





the series:

- > Single channel sewage (S)
- > Single channel cutter (K)
- > Grinder (G)

> Vortex (V)

WHY CHOOSE DAVEY SLIDE RAIL KITS?

stures and Renefits

PLANNING & ENVIRONMENT-ACT 4987 II required LATROBE CITY COLUMN Seals, simply add rail pipes, lifting hardware (rope, cable or chain) and mounting fasteners (e.g.: Dynabolts, etc) to complete the

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 Automatic alignment of the pump discharge to the lanning Scheme Amendment No. C129latr

Clause Non6.20e connection and lifting / lowering is Sheet 9 of 69 sheet(s) a accurately and easily.

Suitable Fluids

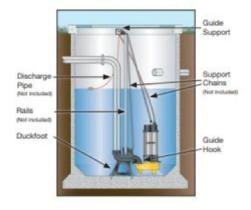
Date:22/12/2021er" or "black water" of neutral pH. Some wear should be expected while pumping hard

Council Delegate

correctly with

duckfoot when the pump is installed the rails must be vertical, parallel and square with the duckfoot mounting. The guide support at the top of the rails must therefore be installed in such a way to ensure the

rails and duckfoot are correctly aligned.



Submersible Pump Slide Rail Kits

Model Numbers: SR50, SR80, SR100

Slide rails allow for the easy installation and removal of sump pumps from pits, without the need to undo pipework or enter the pit.

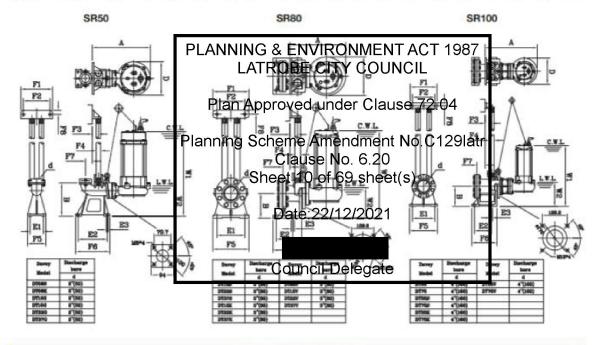


APPENXIX A: Typical Transfer pump for WP1

Sump Pumps



							DI	MENS	IONS	(MM)									
Pump	Discharge Bore	Rail	Foundation				Guide Rail Fitting Section								Operating Water Level				
Type	d	Model	E1	E2	E3	Α	8	D	н	F1	F2	F3	F4	F5	F6	F7	F8	W1	W2
D75 S/K	2*(50)	SR50	80	175	10	338	200	175	660	190	180	38	25A	110	205	40	25	500	185
D150 S/K	3*(80)	SR80	170	100	18	322	165	198	680	225	170	50	32A	220	185	43	20	515	200
DT08 S/K	2'(50)	SR50	80	175	10	338	200	175	600	190	160	38	25A	110	205	40	25	440	185
DT15 S/K	3*(80)	SR80	170	100	18	322	165	198	630	225	170	50	32A	220	185	43	20	465	215
DT22 S/K	3*(80)	SR80	170	100	18	357	165	218	695	225	170	50	32A	220	185	43	20	530	315
DT37 S/K	3*(80)	SR80	200	150	19	493	180	223	775	240	200	60	40A	250	225	73	18	605	255
DT55 S/K	4"(100)	SR100	200	150	19	442	180	265	B25	240	200	60	40A	250	225	73	18	660	280
DT75 S/K	4"(100)	SR100	200	150	19	442	180	265	935	240	200	60	40A	250	225	73	18	713	320
D120G	2"(50)	SR50	80	175	10	330	200	170	675	190	150	38	25A	110	205	36	25	510	180
D150G	2*(50)	SR50	80	175	10	330	200	170	735	190	150	38	25A	110	205	36	25	570	195
DT12G	2*(50)	SR50	80	175	10	330	200	170	615	190	150	38	25A	110	205	36	25	450	180
DT15G	2*(50)	SR50	80	175	10	330	200	170	655	190	150	38	25A	110	205	36	25	490	195
DT22G	2*(50)	SRSO	80	175	10	385	200	235	700	190	150	38	25A	110	205	36	25	535	195
DT37G	2"(50)	SR50	80	175	10	385	200	235	715	190	150	38	25A	110	205	36	25	550	195



INSTALLATION & PRIMING

Use a rope, cable or chain to position and retrieve the pump. Do not lower or retrieve the pump using the power lead as this may damage the cable entry seals, causing water leaks and unsafe operation.

Don't use this product for recirculating or filtering swimming pools, spas, etc. While these pumps are built to high safety standards, they are not approved for installations where people will be in the water while they are operating.

Don't pump abrasive materials. Sand and grit in the water being pumped will accelerate wear, causing shortened pump life.

Keep your pump clean, particularly in situations where lint, hair or fibrous materials may get bound around the pump shaft. Regular inspection and cleaning will extend pump life.

Make room for the float switch to operate. Automatic models have a float switch to turn them on when the water level rises and turn them off again when it has been pumped down to the safe operating level of the pump. If the float switch is not free to rise and fall, correct pump operation may not be possible.

Don't run your pump dry. Non-automatic models must be switched off manually or by way of an external float/level switch when the water level is reduced to the top of the pump housing.





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Rocla® Sewer Access System

The Rocia® Sewer Access System allows fast construction of high quality, wat ertight maintenance holes to a depth of 10 metres. The standard, modular components fit together easily to create a complete system.

Rocia* Sewer Access Systems are manufactured from high strength, high density and low absorption concrete. This factory-made product is considerably superior to concrete formed on site.

The Rocia Quality System ensures that a reliable product conforming to AS4198 will be delivered to site.

PRECASTBASE

Precast bases are available with pre-benched channels to suit the inlet and outlet configuration. Pre-benched bases are custom manufactured for each maintenance hole. The precast base is also available as a shell to suiton-site channel benching. The precast base has an effective depth of 535mm to invert level.



ROCLA*SEWER ACCESS SYSTEM



REDUCER OPTIONS



Conversion slab, spacerring and cast iron cover in concrete surround.

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr
Clause No. 6.20
Sheet 11 of 69 sheet(s)

Date: 22/12/2021

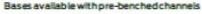
Council Delegate haft section with squat cone, tap

concrete surround.

PRECAST BASE









Victoria and Tasmania | Rocla

Rocla® Shafts

The shaft is the main trunk of the maintenance hole and provides ample space for inspection and maintenance of the structure. Standard heights reduce the number of variables on site. The shafts are available with or without step irons.



STEP IRONS

Step irons are plastic encapsulated steel, 375mm wide. Where step irons are used, ensure corrects tep alignment.

HANDLING GUIDELINES

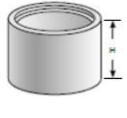
Maintenance hole components are provided with cast-in lifting attachments. The pit must be lifted using proprietary lifting attachments, available from specialist lifting equipment suppliers. Lifting should be undertaken strictly in accordance with the equipment supplier's instructions.

Contact Rocia for further information.

ROCLA® SEWER ACCESS SHAFT

	Product Code	Nominal Diameter	Nominal Height
No Steps	WithSteps	(mm)	H(mm)
X1015300	X1015300S	1050	300
X1015600	X101560 0S	1050	600
X1015900	X1015900S	1050	900
PLANNING	& ENVIRONMENT A	CT 1987	1200
	ROBE CITY COUNCI		1500
X10151800	X10151800S	1050	1800
X10152100	proved under Clause	72 04	2100
X10152400	proved under Clause	1204	2400
X1180300	X118 030 0S	1200	300
Planning So	cheme Amendment No	.C129latr	600
X1180900	Clause No. 6.20	1200	900
X1180120S	neet 12 of 69 sheet(s)	1200	1200
X11802400	X118024005	1200	Company and Company of the Company o
AHBU24UU		The state of the s	2400
X158300	Date:22/12/2021	1500	300
		1500	
XI58300	Date:22/12/2021		300
X1513300 X1513600	Date:22/12/2021	1500	300 600





Rocla Squat Cone

SQUAT CONE (FOR 1050MM DIA ONLY)

The squat cone is a concentric tapered cone that provides access to shallow maintenance holes where step irons or ladders are not required.

SQUATCONE

Product	Nominal Diameter (mm)	Nominal Height (mm)
X5C1015	1050	300



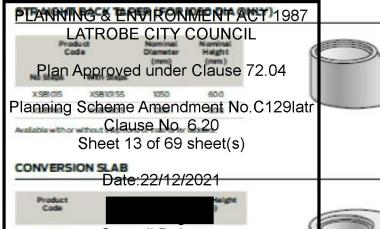
STRAIGHT BACK TAPER

The straight back taper is suitable for both shallow and deep maintenance hole structures. It has one vertical side suitable for stepirons or ladders.

CONVERSION SLAB

The conversion slab may be used in place of the squat cone or straight back taper to provide additional headroom.

The hole is offset to facilitate access.





SPACER RINGS

One or more spacer rings may be used to bring the cover and surround to the required level. Tapered spacer rings provide a grade for the surround and cover.

SPACER RINGS

Product Code	Component	Nominal height (mm)
KSRI 015075	Standard	75
X.SR1015100	Standard	100
XSR1015750	Standard	150
XSR1015200	Standard	200
XSR101STAP	Tapered	75-125





Victoria and Tasmania | Rocla

APPENDIX C: Typical Precast Concrete Manhole for the Irrigation Pump

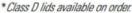
Grated Lids

Grated lids are also available with hinge and lock.

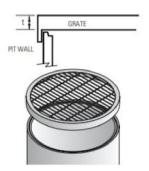


Circular Grated Lid

Product Code	CPO Pit Nom Dia (mm)	Load Class*	Overall Width (mm)	Effective Thickness (mm)
CPGL600DM	600	C	720	65
CPGL750DM	750	С	870	65
CPGL900DM	900	C	1030	75
CPGL1050DM	1050	С	1200	75
CPGL1200DM	1200	C	1360	75



23



Sales: 131 004 www.rocla.com.au

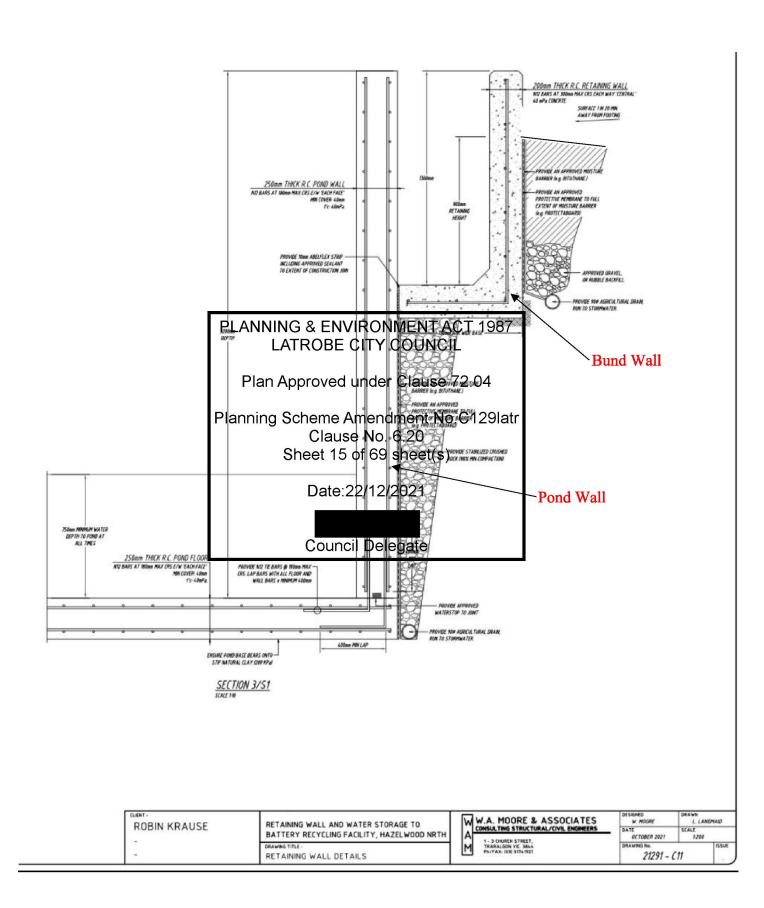
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Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 14 of 69 sheet(s)



Typical Details of the Proposed Surface and Subsurface Drains





21 December 2021

CEO/ Director, Chunxing Corporation Pty Ltd, Australia Level 1, 11 Lord St, Botany, NSW 2018

Job Number: 6626

enstruct group pty Itd

ABN 32 094 570 671 Tel: +61 2 8904 1444 www.enstruct.com.au Level 4, 2 Glen Street, Milsons Point, NSW, 2061, Australia



Battery Recycling Facility Culvert Capacity Analysis

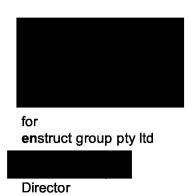
enstruct has developed a DRAINS model to assess the ability of the proposed culverts in capturing the stormwater runoff from the site at Fourth Road, Hazelwood North, Melbourne. The model was developed using Australian Rainfall & Runoff 2019 rainfall data and methods.

The DRAINS model was set up with channels representing the proposed culverts and a box culvert pipe to connect the channels to the pits representing a change in culvert direction. The channels were divided into 20m intervals to increase accuracy and steadiness when analysing the longer culverts. The analysis included the runoff from the impervious hardstand areas of the site and did not include the building roof area or the stormwater ponds. Refer Appendix A of Stormwater Design Report For Grated Culvert dated 12/11/2021.

The results of the DRAINS model indicate that all the proposed culverts lines are able to capture the stormwater runoff from the hardstand areas of the site in all storm events up to and including the 1% Annual Exceedance Probability (AEP) storm event. No culverts are anticipated to spill over during this event. Refer Appendix C of Stormwater Design Report for Grated Culvert dated 12/11/2021.

The water depth in the culverts during the 1% AEP storm event are shown in Appendix B of Stormwater Design Report for Grated Culvert dated 12/11/2021.

Yours Sincerely,



PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 16 of 69 sheet(s)

Date:22/12/2021



21 December 2021

CEO/ Director. Chunxing Corporation Pty Ltd, Australia Level 1, 11 Lord St, Botany, NSW 2018

Job Number: 6626

enstruct group pty ltd

ABN 32 094 570 671 Tel: +61 2 8904 1444 www.enstruct.com.au Level 4, 2 Glen Street, Milsons Point, NSW. 2061. Australia



Battery Recycling Facility Structural Certification of Perimeter Grated Drain

We hereby certify that the structural design for the perimeter grated drain for the above project as outlined in the attached drawing list, are in accordance with normal engineering practice, have been designed to withstand full flood conditions and have be completed to meet the structural requirements of the Building Code of Australia and relevant Australian Standards.

In particular, the civil design is in accordance with the relevant Australian Standards;

- AS/NZS3996:2006 Access covers and grates
- AS/NZS3500.3:2015 Plumbing and drainage Stormwater drainage
- AS/NZS3725:2007 Design for installation of buried concrete pipes
- AS3600:2018 Concrete structures

I am an appropriately qualified and competent person in this area and as such can certify that the design and performance of the design systems comply with the above and which are detailed on the attached document list.

The relevant drawings and calculations are listed below:

DRAWING NUMBER	Revision	Drawing Title
CV-0500	03	STORMWATER DETAIL SHEET 1
CV-0501	03	STORMWATER DETAIL SHEET 2

Full Name of Designer:

Qualifications:

BE Civil, CPEng (459495), NER, RPEQ, APEC Engineer IntPE(Aus), VBA (EC 61812)

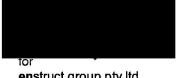
Address of Designer: **Business Telephone No:**

Email:

Name of Employer:

enstruct pty ltd

Yours Sincerely,



enstruct group pty ltd

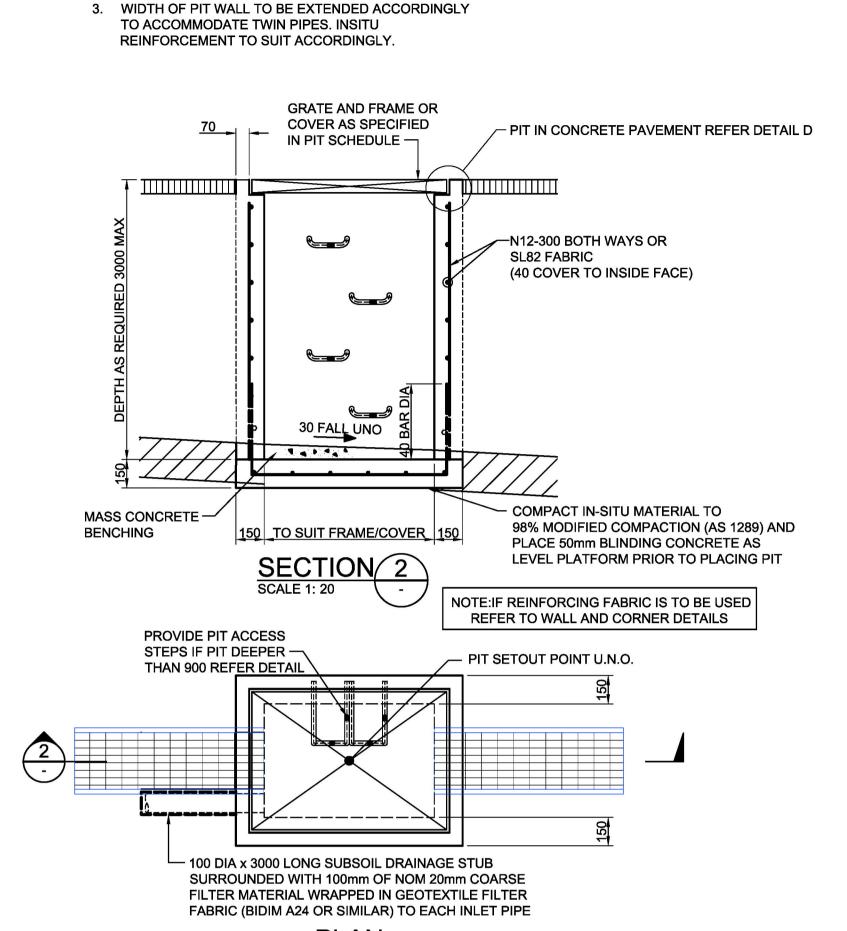
Director

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 17 of 69 sheet(s)





SCALE 1:20

JUNCTION PIT DETAIL

PIT TYPE A&B

NOTES FOR PITS:

1. HOLES BROKEN/FORMED IN PRE-CAST PITS FOR THE

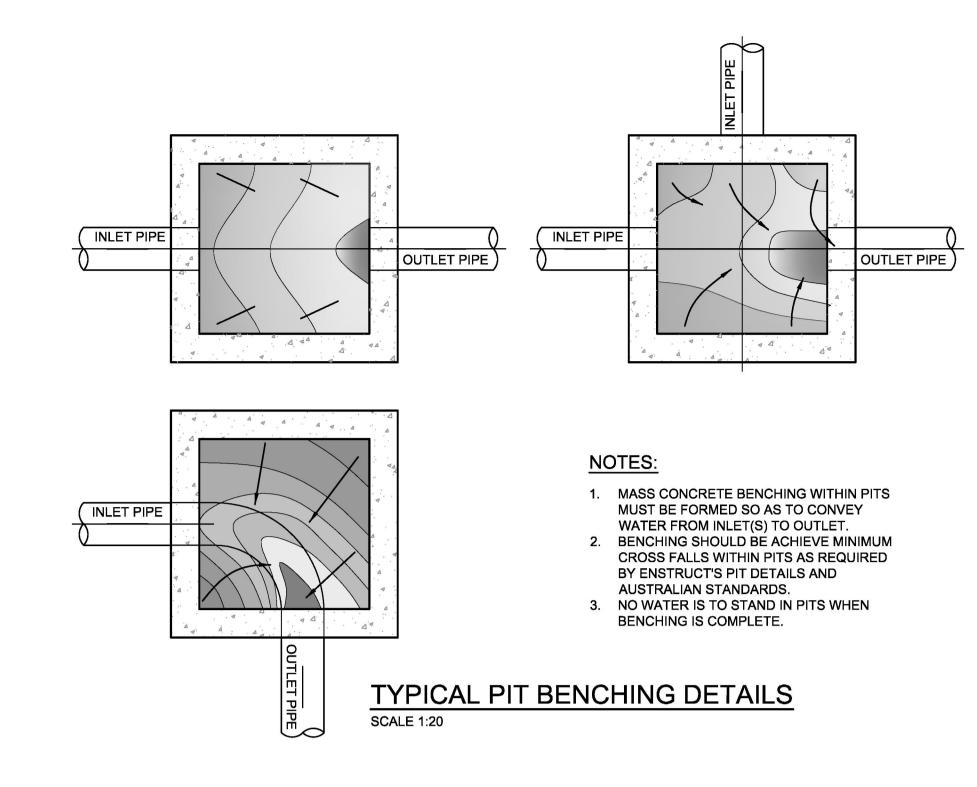
FINE AGGREGATE) OR EPOXY BASED SEALANT.

2. IF PIT DEPTH IS GREATER THAN 1500mm BUT LESS

INSERTION OF PIPES SHALL BE MADE WATERTIGHT

AND REINSTATED WITH A STIFF MORTAR (3 CEMENT:1

THAN 3000mm, INSITU REINFORCEMENT IS N16-150 EW.



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- RECESS TO SUIT

FRAME OR COVER

1.2m LONG MESH AS PER

TOP REINFORCEMENT

DETAIL D SCALE 1:10

PAVEMENT AS

- 2N12 TRIMMER BARS TO EXTEND

500 BEYOND PIT FOR EACH SIDE

SPECIFIED

GRATE AND FRAME OR COVER

AS SPECIFIED IN PIT SCHEDULE -

SLIP JOINT - TWO

LAYERS OF PLASTIC

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets Final internal pit dimensions are to comply with AS3500

		• 17		10 107 100 000 100 11 1 1 1 1 1 1 1 1 1	SHEET SHEET SHEET MAKE
Туре	Description	Size	Class	Material	Number
	Grated inlet pit	450x 450	E	Galvanised mild steel grate hinged to frame	GP01,GP04,GP05, GP07,GP012
	Grated inlet pit	900x 900	E	Galvanised mild steel grate hinged to frame	GP02,GP03,GP06, GP09,GP10
	Grated inlet pit	600x 900	E	Galvanised mild steel grate hinged to frame	GP11
	Grated inlet pit	600x 600	E	Galvanised mild steel grate hinged to frame	GP08
	Junction pit	900x 900	Е	Galvanised mild steel grate hinged to frame	JP01,JP02, JP03,JP04
	Pump pit	1200x 1200	Б	Cast iron cover with concrete infill	SP01,SP02

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria: (A) Average exceedance probability 1% AEP for roof drainage to first external pit

5% AEP for paved and landscaped areas (B) Rainfall intensities -Time of concentration: 5 minutes

1% AEP = 174mm/hr5% AEP =124.8 mm/hr (C) Rainfall losses -

Impervious areas: IL= 1.5 mm , CL = 0 mm/hr Pervious areas: IL=12.6mm, CL=1.68 mm/hr

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.

3. Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer 4. Equivalent strength VCP or FRP pipes may be used subject to approval.
5. Precast pits may be used external to the building

subject to approval by ENGINEER

6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia. 7. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.

8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements. 9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.

10. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without

11. All downpipe connections are to be 150mm DIA or the same size as the downpipe (whichever is larger) laid at 1% minimum fall connection to the nearest pit. Minimum cover 450mm in landscaped areas. 12. Subsoil drains to be slotted flexible uPVC U.N.O. 13. Adopt invert levels for pipe installation (grades shown are only nominal).

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished.

2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool. 3. Concrete pavements with grades greater than 10 % shall be

heavily broomed finished.

4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

CONCRETE NOTES

EXPOSURE CLASSIFICATION: External:B2

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379. AS 1379 f'c MPa | Specified | Nominal Location

	at 28 days	Slump	Agg. Size	
Grated Drain	S32	80	20	

- 1. Use Type 'GP' cement, unless otherwise specified.
- 2. All concrete shall be subject to project assessment and testing to AS 3. Consolidate by mechanical vibration. Cure all concrete surfaces as
- directed in the Specification. 4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to
- Architects drawings and specifications.
- 5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
- 6. No holes or chases shall be made in the slab without the approval o the Engineer.
- 7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
- 8. Slurry used to lubricate concrete pump lines is not to be used in any
- structural members. 9. All slabs cast on ground require sand blinding with a Concrete
- Underlay **FORMWORK**

1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

STORMWATER DETAIL



enstruct group pty Itd

Level 4, 2 Glen Street Milsons Point NSW 2061 Australia

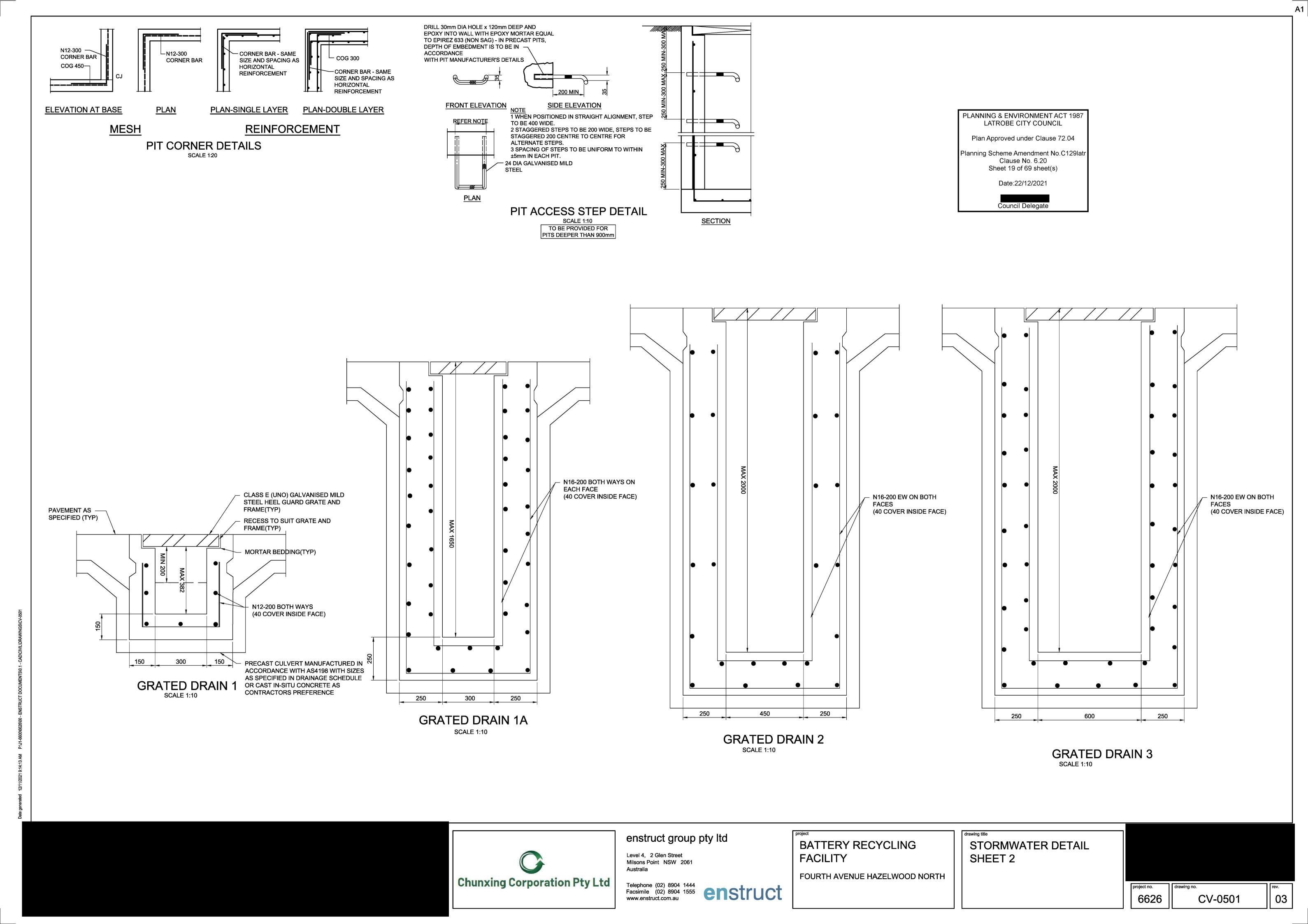
Telephone (02) 8904 1444 Facsimile (02) 8904 1555 www.enstruct.com.au

BATTERY RECYCLING FACILITY

FOURTH AVENUE HAZELWOOD NORTH

SHEET 1

6626 CV-0500







BATTERY RECYCLING FACILITY AT FOURTH ROAD, HAZELWOOD NORTH

STORMWATER DESIGN REPORT

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 20 of 69 sheet(s)

Date: 22/12/2021

Council Delegate

Prepared for: Chunxing Corporation Pty Ltd

By: enstruct group pty ltd



BATTERY RECYCLING FACILITY AT FOURTH ROAD, HAZELWOOD NORTH STORMWATER DESIGN REPORT

ISSUE AUTHORISATION

PROJECT: BATTERY RECYCLING FACILITY AT FOURTH ROAD HAZELWOOD NORTH

Project No: 6626

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorised by
01	28/10/21	Issue for Approval			
02	29/10/21	Issue for Approval			
03	06/11/21	Issue for Approval			
04	08/11/21	Issue for Approval			

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 21 of 69 sheet(s)

Date:22/12/2021



Executive Summary

enstruct have been engaged by Chunxing Corporation to assess the capacity of the proposed stormwater drainage system at the new Battery Recycling Facility at Fourth Road Hazelwood North. Due to the nature of use of the site which involves high risk materials, there is to be no overflow of stormwater discharging from the site as the proposed stormwater system must capture all the pavement stormwater runoff in the linear drains.

Hydraulic analysis of the proposed stormwater system was undertaken in DRAINS to ensure it can capture all stormwater runoff from the pavement areas of the site in all storm events up to and including the 1% Annual Exceedance Probability (AEP) storm event.

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 22 of 69 sheet(s)

Date: 22/12/2021



Contents

1	Introduction	5
2		
3	Proposed Stormwater	7
4	Hydraulic Calculations	9
	4.1 Results	. 10
5	Stormwater Infrastructure	. 12
6	Conclusion	12

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 23 of 69 sheet(s)

Date:22/12/2021



1 Introduction

The site at Fourth Road, Hazelwood North, Victoria is to manage all stormwater flows without any overflow discharging from the site. Due to the nature of the site usage involving harmful chemicals and materials, stormwater is not to freely discharge from the site.

A stormwater drainage plan has been developed comprising of grated drains surrounding the site's perimeter, 300mm, 450mm, and 600mm in width and of various depths. This stormwater drainage is part of a site wide stormwater management strategy which includes several stormwater ponds, emergency site water ponds, and treatment ponds which all collect, store and treat the water to ensure no pollutant water leaves the site. The pavement runoff is part of the whole site Water Flow Strategy which can be seen in **Figure 1**. For the design of the ponds and other stormwater treatments, refer the relative report as they were not analysed as part of this study.

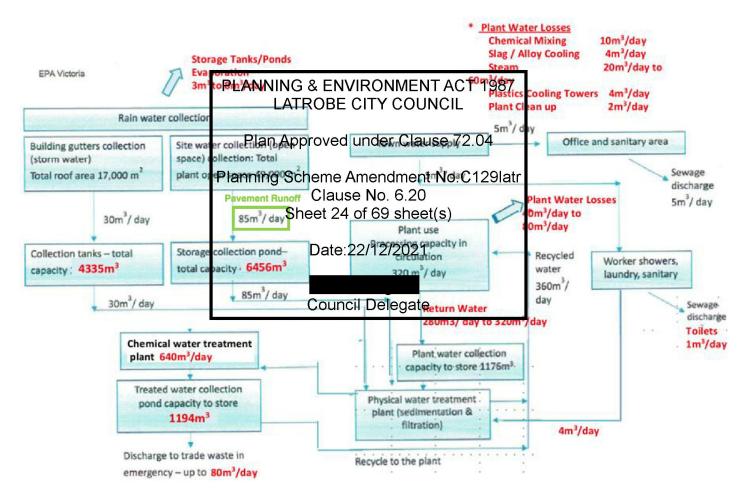


FIGURE 1 Schematic of Water Flow in the Battery Recycling Facility



2 Site

The site is located at Fourth Road, Hazelwood North, Victoria in the Latrobe City Council LGA as shown in **Figure 2**.



Figure 2 (Google Maps 2021)

The site is relatively level across its entirety, with a maximum surface level of RL 76m AHD in the south eastern corner of the site, grading to RL74.20m AHD to the north western side of the site.

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Planning Scheme Amendment No.C129latr
Clause No. 6.20
Sheet 25 of 69 sheet(s)

Date:22/12/2021



3 Proposed Stormwater

The proposed stormwater drainage plan is aimed at collecting all the pavement runoff up to an including the 1% AEP as per the requirements of the EPA and Latrobe City Council. In order to achieve this, the stormwater strategy is to collect the pavement runoff using grated drains surrounding the site which are connected by junction pits and discharged into the stormwater ponds. The grated drains ranged in width from 300mm, 450mm, and 600mm and of varying depths. The proposed stormwater layout is shown in **Figure 3**.

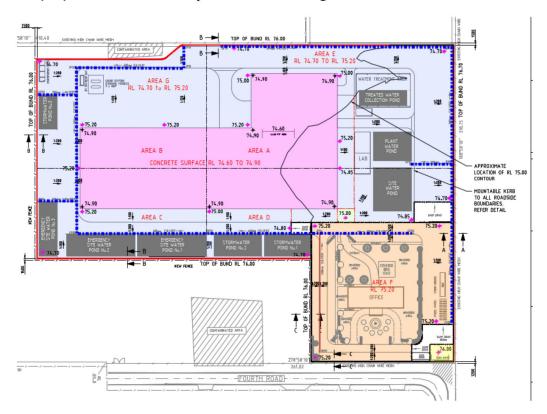
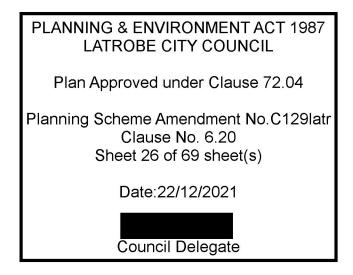


Figure 3: Stormwater Drainage Layout Plan

The stormwater layout was based on the layout proposed in Figure 1 and developed to have grated drains with an internal sloping base which were connected with pits. The grated drain sizes, inverts, grades, pit sizes and depths can be seen in **Figure 4**.





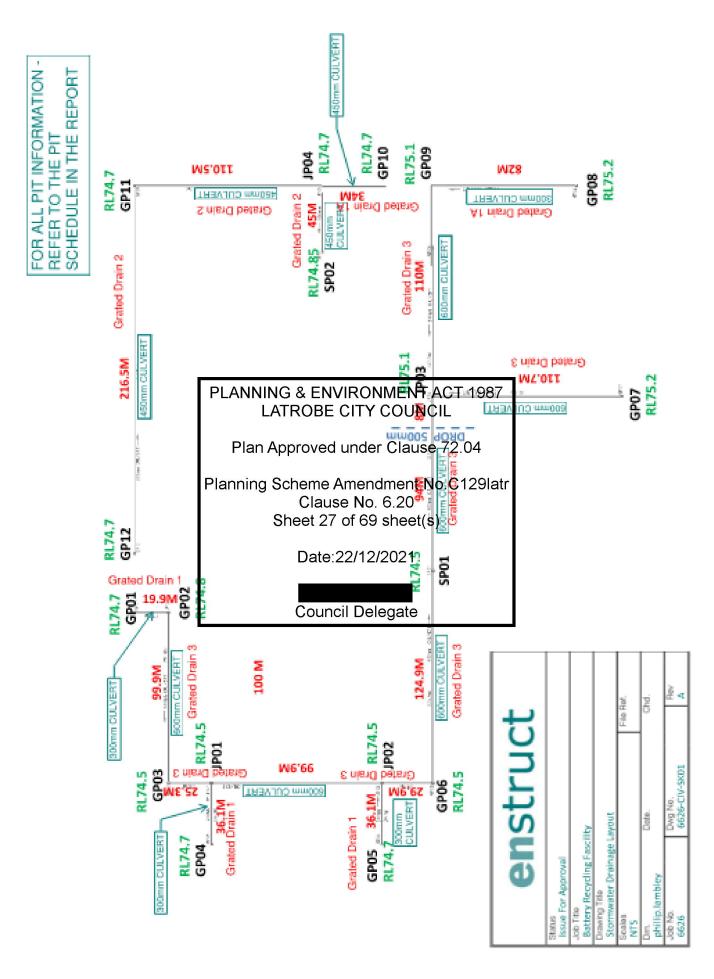


Figure 3: Stormwater Drainage Layout Plan with Pit and Grated Drain information



4 Hydraulic Calculations

To determine the hydraulic grade line of the stormwater system and the inlet capacity of the grated drains, enstruct developed a DRAINS model. The model rainfall data was based on the Australian Rainfall and Runoff 2019.

In order to model the grated drains, open channels were used to represent the proposed grated drains, and a box culvert pipe was used to connect the open channels to the pits representing a change in culvert direction. The channels were divided into 20m intervals to increase accuracy and steadiness when analysing the longer grated drains. Refer **Appendix A** for the DRAINS model layout.

The catchment areas used in the analysis included the pavement runoff from the impervious hardstand areas of the site and did not include the building roof area or the stormwater ponds (**Figure 4**).

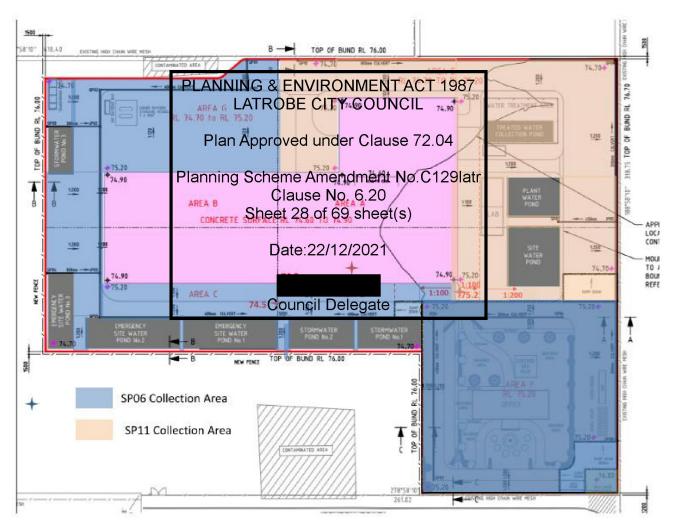


Figure 4: Catchment Plan



4.1 Results

The results of the DRAINS model indicate that all the proposed grated drains are able to capture the stormwater runoff from the pavement areas of the site in all storm events up to and including the 1% AEP storm event. No grated drains are anticipated to spill over during any of the storm events. This is shown by the water level at each node being below the ground surface level. Refer to the Pit Schedule below for details on the pavement runoff infrastructure. The schedule includes information such as surface levels, pit depths, pit dimensions, inverts of upstream and downstream culverts. Refer to stormwater long sections during the 1% AEP storm event in Appendix B.

Detailed DRAINS model inputs and stormwater volumes, velocities, depths, and heights can be seen in **Appendix C**.

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 29 of 69 sheet(s)

Date: 22/12/2021

enstruct

PIT SCHEDULE											
PIT NAME	PIT TYPE	SURFACE LEVEL	PIT DEPTH (m)	PIT DIMENSIONS (mm)	INLET INVERT LEVEL (m)	OUTLET INVERT LEVEL (m)	BOX CULVERT SIZE WIDTH x HEIGHT (mm)	LENGTH OF BOX CULVERT (m)			
GP01	Grated Inlet Pit	74.70	0.50	450 x 450	-	74.30	600 x 200	19.90			
GP02	Grated Inlet Pit	74.80	1.02	900 x 900	74.20	74.18	600 x 300	99.90			
GP03	Grated Inlet Pit	74.50	0.72	900 x 900	73.80	73.78	600 x 700	25.30			
GP04	Grated Inlet Pit	74.70	0.30	450 x 450	-	74.50	300 x 200	36.10			
JP01	Junction Pit	74.50	0.82	P920/90XINJONG & ENV			600 x 700	99.90			
JP02	Junction Pit	74.50	1.21	900 x 900	74.14	73.29	600 x 1000	29.90			
GP05	Grated Inlet Pit	74.70	0.30	450 A 450 pproved i	inder Clause 72	94.50	300 x 200	36.10			
GP06	Grated Inlet Pit	74.50	1.50	Planning Scheme A	73.18 mendment No.C	173918tr	600 x 1000	124.90			
SP01	Pump Pit	74.50	1.80	1200 x 1200 Clause	1368 6.20	-	600 x 1000 600 x 1000				
JP03	Junction Pit	75.10	1.10	900 x 900	ot 558 54.34 54.34 54.00	74.00	600 x 700 600 x 1000	94.0			
GP07	Grated Inlet Pit	75.20	0.40	450 x 450 Date:2	2 <u>/</u> 12/2021	74.90	450 x 200	110.7			
GP08	Grated Inlet Pit	75.20	0.50	600 x 600		74.783	300 x 200	82.0			
GP09	Grated Inlet Pit	75.10	0.70	900 x 900 Counci	l 73∉l€ gate	74.44	600 x 600	110.0			
GP10	Grated Inlet Pit	74.70	1.40	900 x900	-	73.306	300 x 1000	34.0			
JP04	Junction Pit	74.70	1.55	900 x 900	73.17 73.17	73.15	300 x 1000 450 x 1000	45.0			
SP02	Pump Pit	74.85	1.80	1200 x 1200	73.05	-	450 x 1500				
GP11	Grated Inlet Pit	74.70	1.09	600 x 900	73.63	73.61	450 x 1000	110.5			
GP12	Grated Inlet Pit	74.70	0.30	450 x 450	-	74.50	450 x 200	216.50			



5 Stormwater Infrastructure

The stormwater infrastructure consists of the grated drains, pits and grates and where possible, the design was aimed at meeting Latrobe City Council's Infrastructure Design Manual. The grated drains and pits have been design as cast insitu however they have been sized and dimensioned should the client consider precast elements as an option. The grated drains vary in width and depth depending on the stormwater flow within the drains. Due to the length and depth of the grated drains, thicker walls and bases are required to resist ground pressures against the long slender grated drain walls.

All grated drain and pit lids have been designed to be galvanised mild steel with a load class of E to cater for the heavy vehicles proposed to enter and exit the facility.

For details on the Stormwater Infrastructure refer to Appendix D.

6 Conclusion

The DRAINS model has indicated that the proposed stormwater drainage network at new Battery Recycling Facility is capable to manage and collect all the pavement runoff stormwater in all storm events up to and including the 1% AEP.

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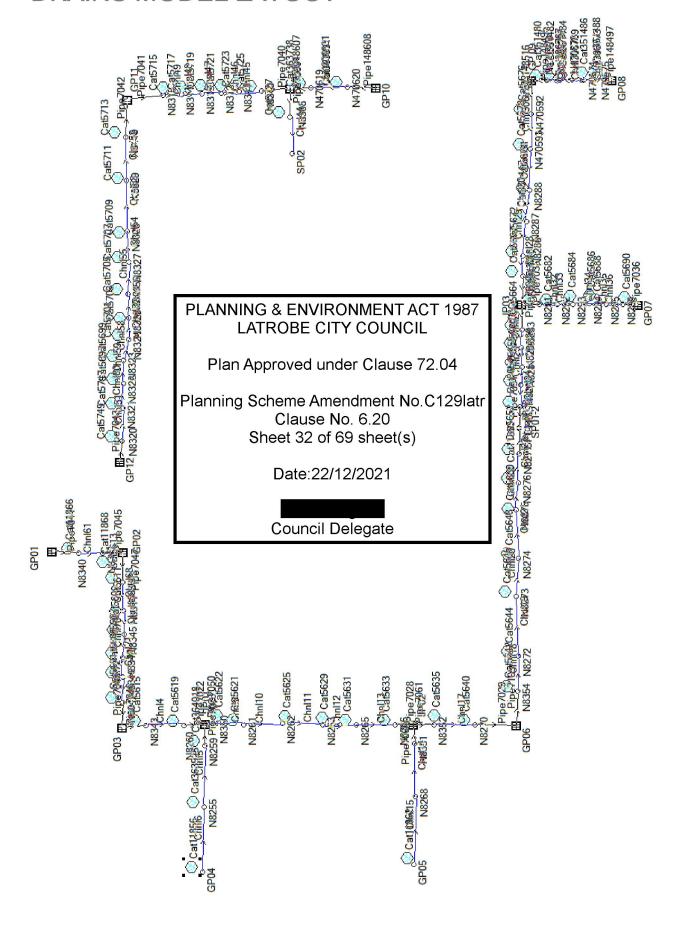
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Date: 22/12/2021



APPENDIX A DRAINS MODEL LAYOUT





APPENDIX B

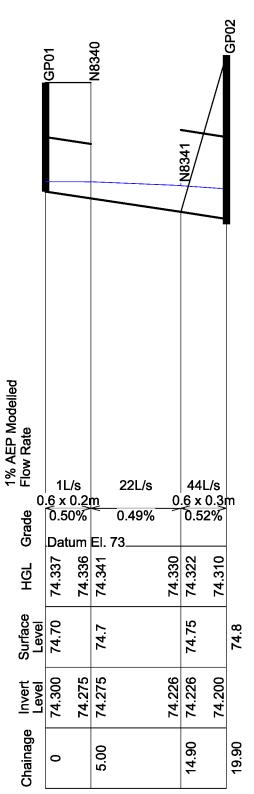
DRAINS MODEL LONG SECTIONS

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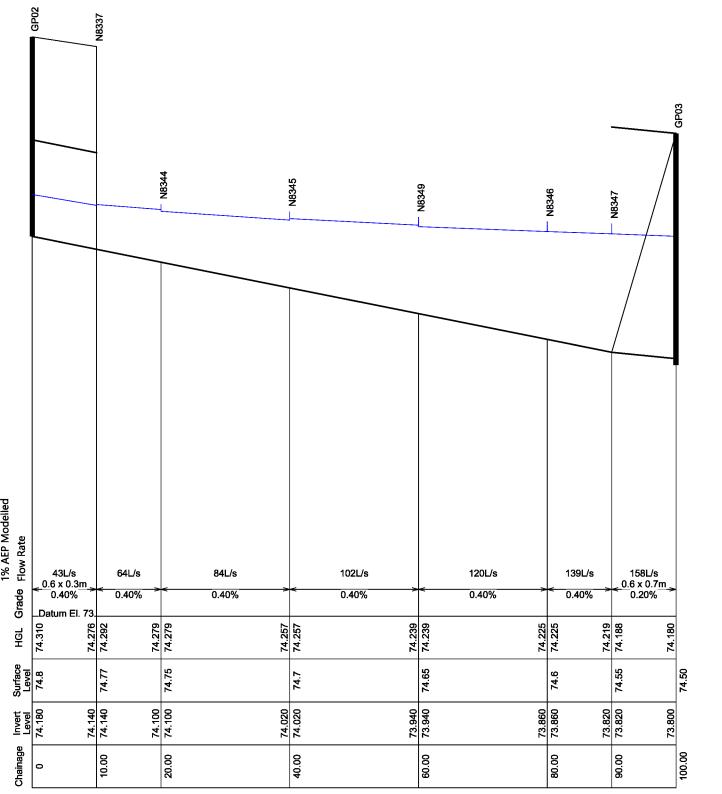
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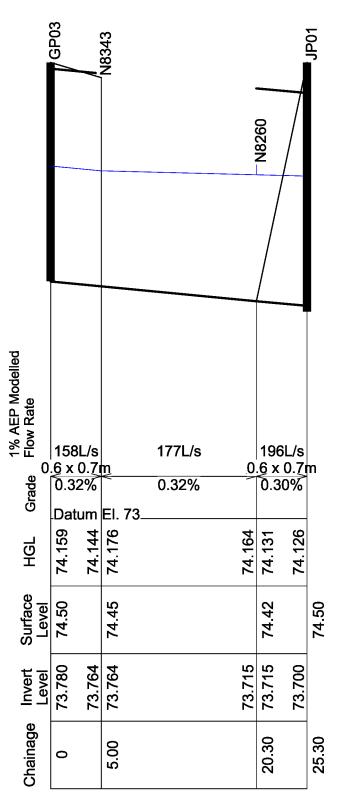




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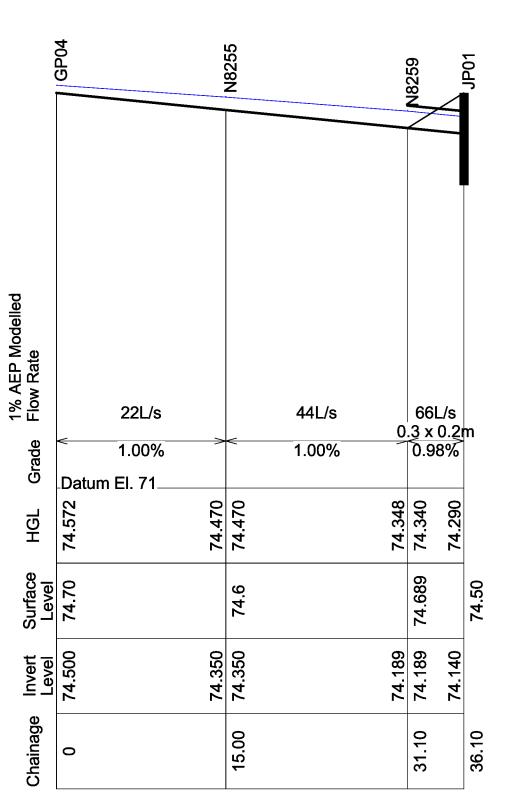




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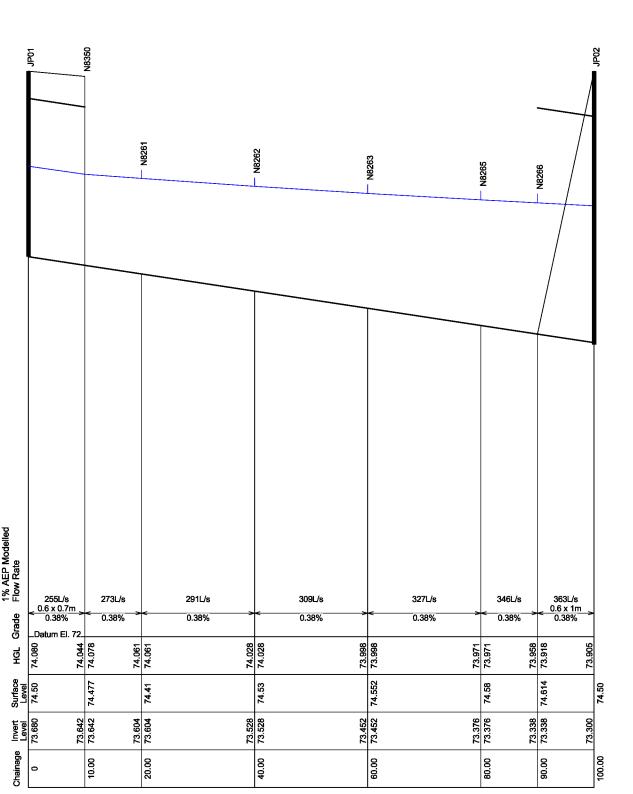


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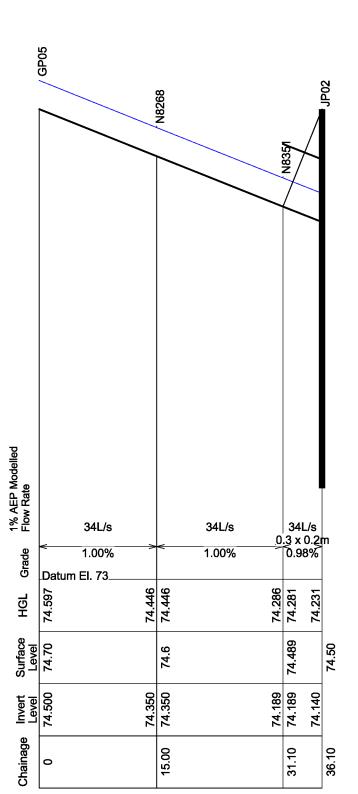




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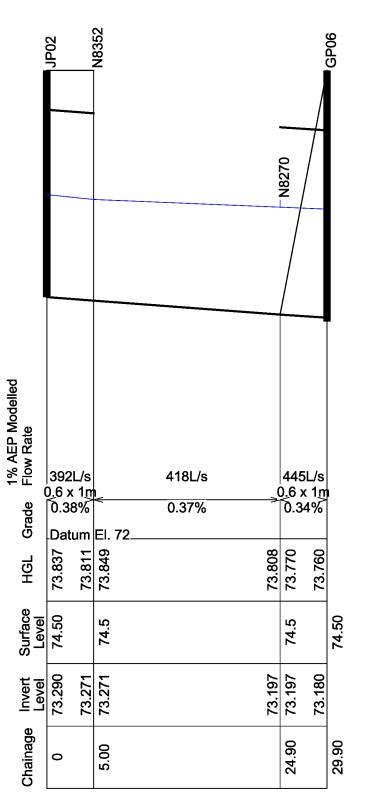


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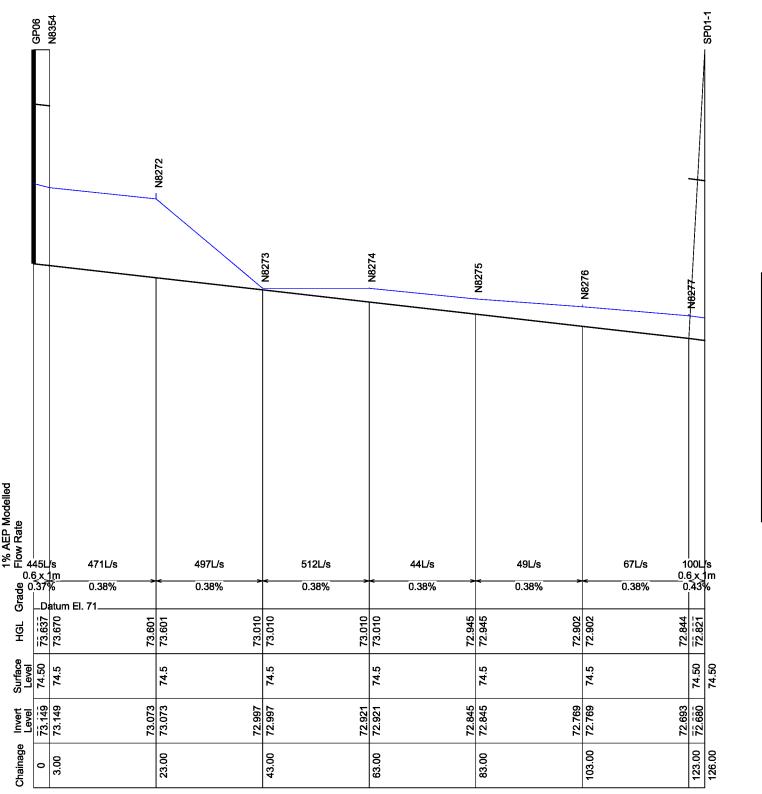


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Date: 22/12/2021

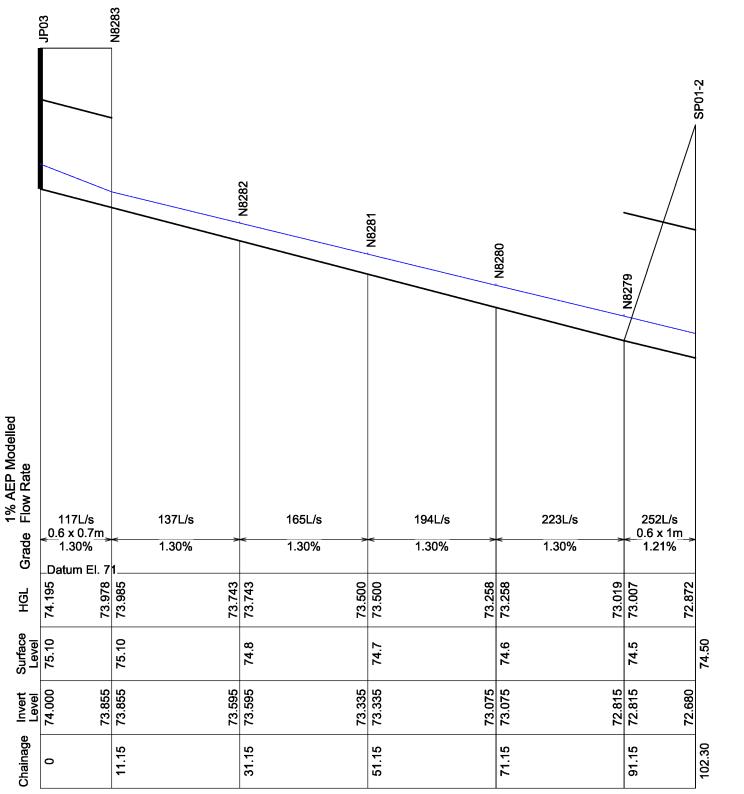




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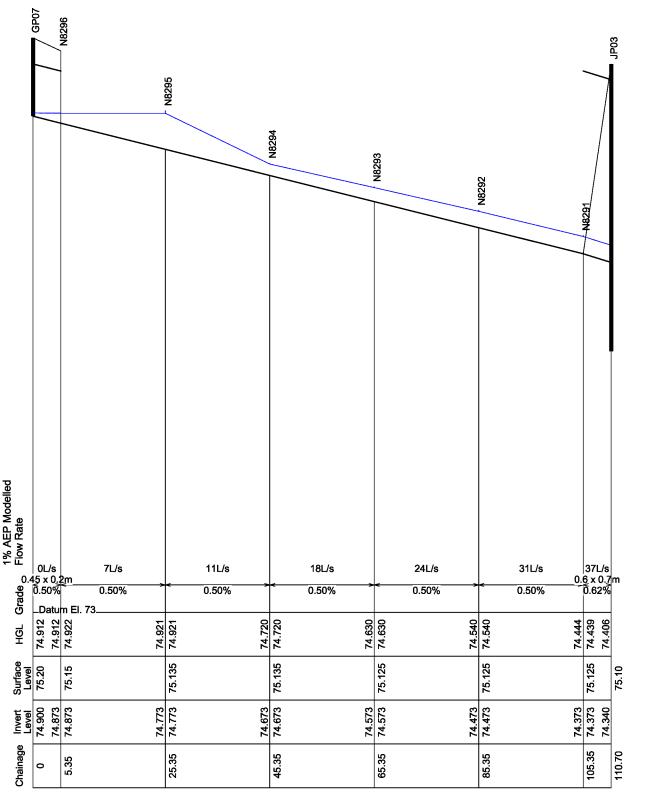


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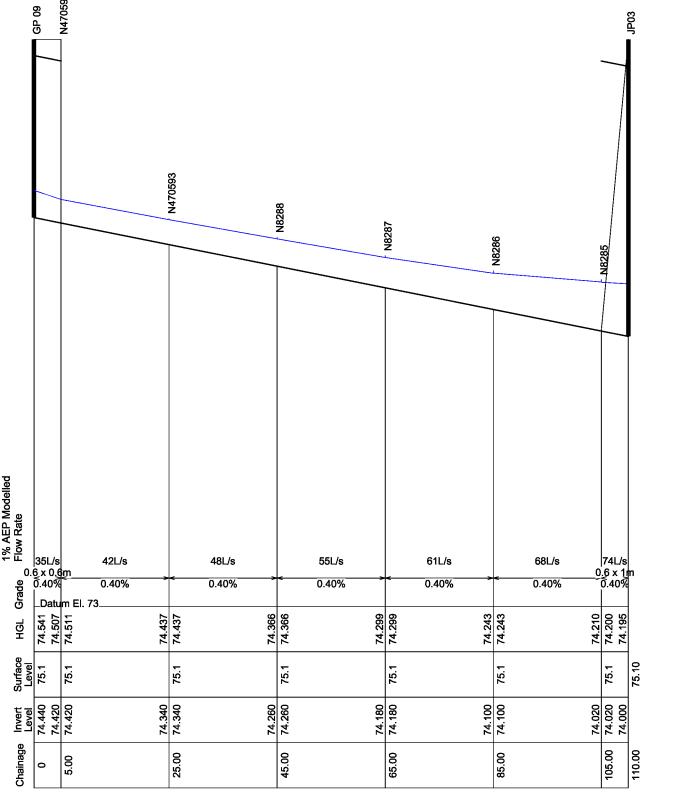


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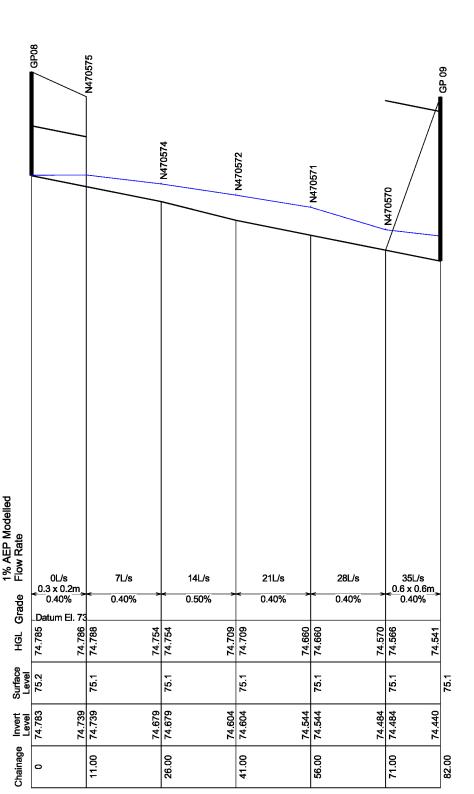


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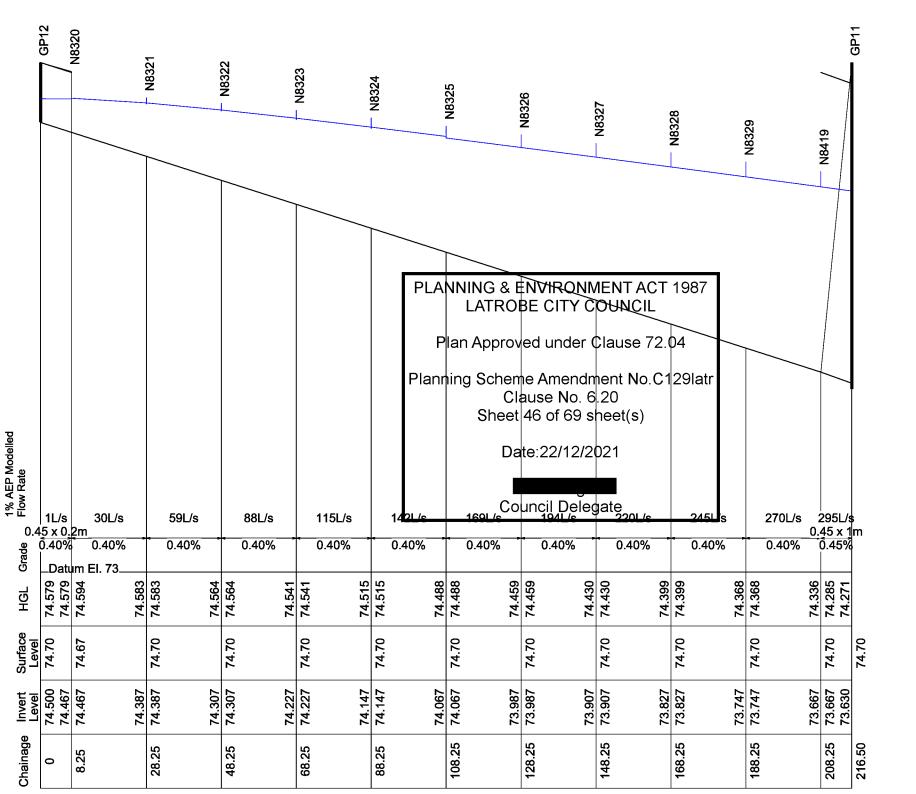


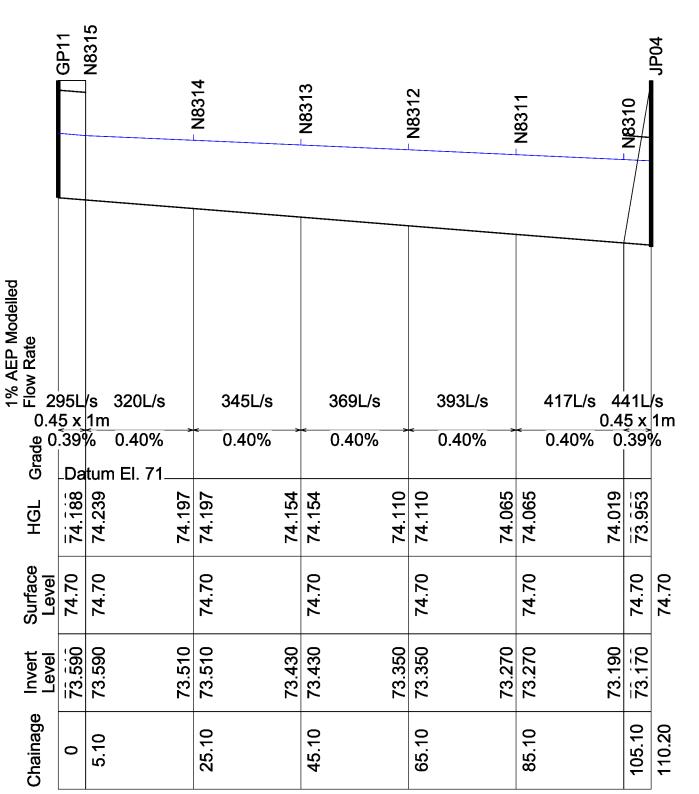


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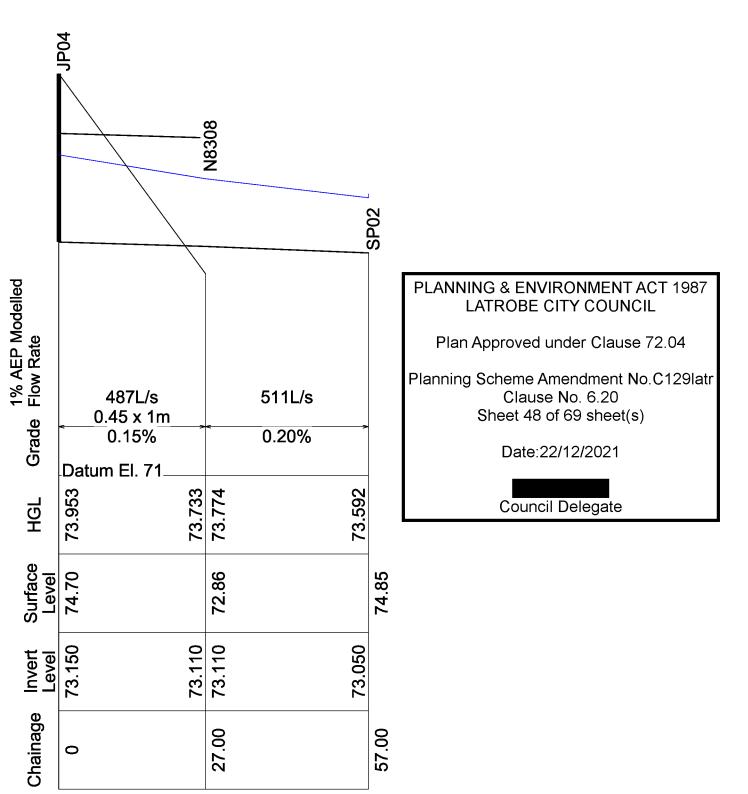


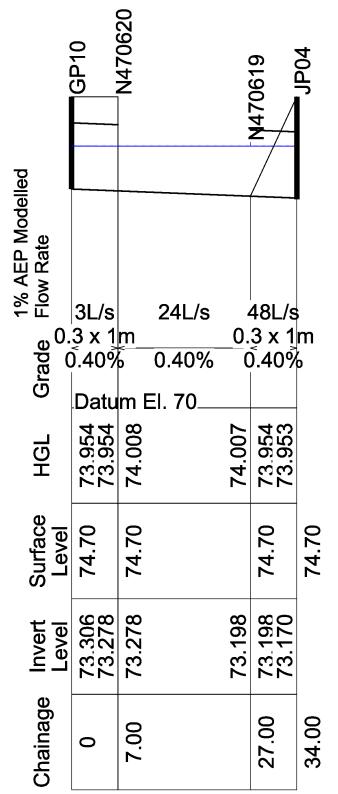


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Date:22/12/2021





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Date: 22/12/2021





APPENDIX C DRAINS MODEL RESULTS

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 50 of 69 sheet(s)

Date:22/12/2021

Job Battery Recycling Facility
Sydney
DRAINS Modelling
DRAINS Modelling
Date
Date
Date
Date
Date

Battery Recycling Facility DRAINS OUTPUTS



DRAINS OUTPUT

November 2021

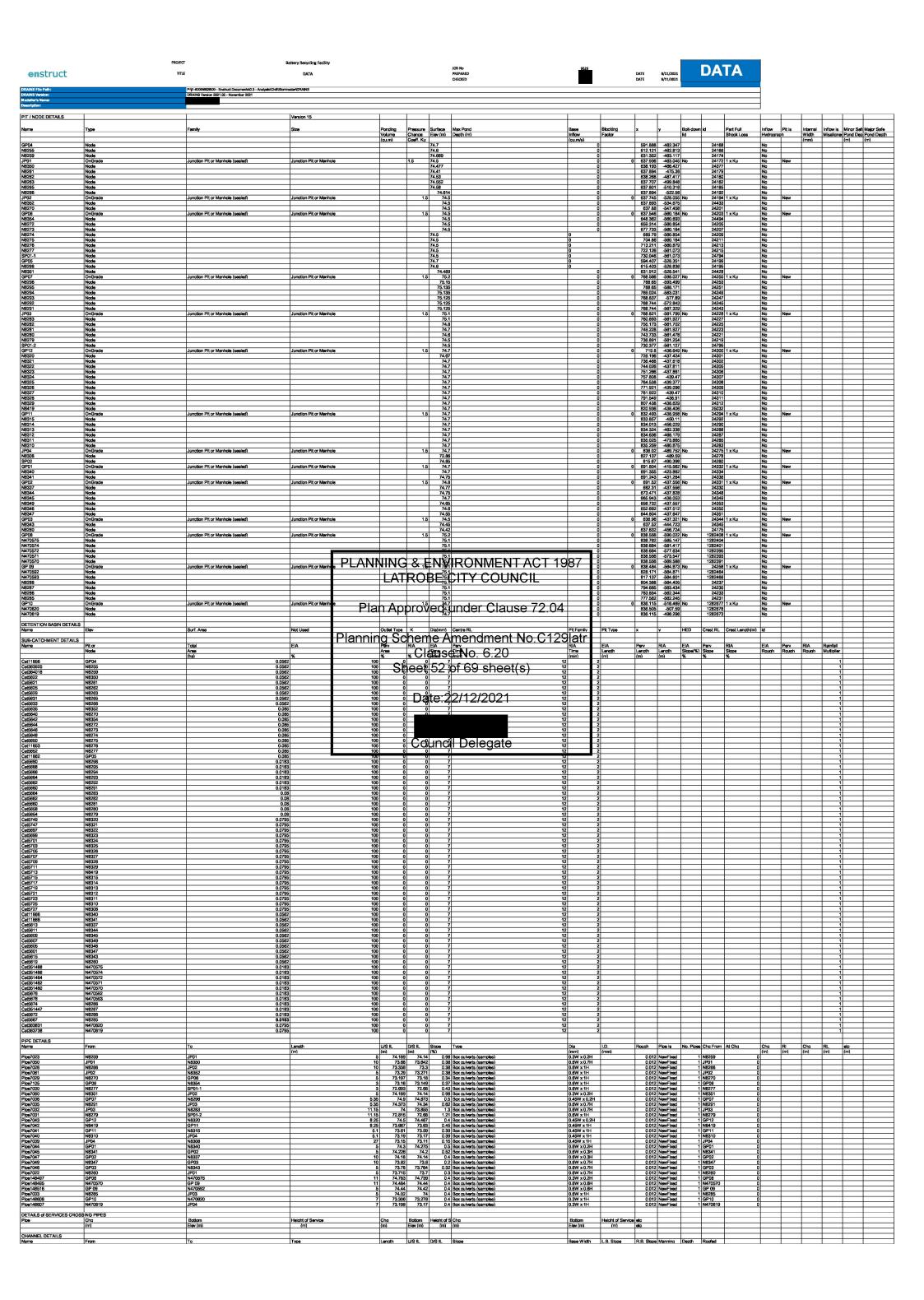
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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 51 of 69 sheet(s)

Date:22/12/2021





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Chni6 Chni5	N8255	N8259	Prismatic	16.1 74.35	74.189	1 0. 1 0.	3 0 0	0.012	0.3 No	_	
Chni9	N8350	N8261	Prismatic		73.604	0.38 0.	8I OI O	0.012	0.8 No		
Chnl10	N8261	N8282	Prismatic	20 73.604	73.528	0.38 0.	6 0 0	0.012	1 No		
Chnl11	N8262	N8263	Prismatic	20 73.528	73.452	0.38 0. 0.38 0.	8 0 0	0.012	1.1 No		
Chnl12	N8263	N8265	Prismatic	20 73.452	73.376	0.38 0.	8 0 0	0.012	1.2 No		
Chnl13 Chnl17	N8265	N8266	Prismatic	10 73.376 19.9 73.271 20 73.149 20 73.073 20 72.997	73.338	0.38 0. 0.37 0.	6 0 0	0.012 0.012	1.3 No 1.3 No		
Chnl17	N8352	N8270	Prismatic	19.9 73.271	73.197	0.37 0.		0.012	1.3 No		
Chnl18	N8354	N8272	Prismatic	20 73.149	73.073	0.38 0. 0.38 0.	6 0 0	0.012	1.3 No 1.4 No		
Chnl19	N8272	N8273	Prismatic	20 73.073	72.997	0.38 0.	8 0 0	0.012	1.4 No		
Chni18 Chni19 Chni20 Chni21	N8273	N8274	Prismatic	20 72.997	72.921	0.38 60 0.38 0.	0 0	0.012 0.012	1.5 No 1.6 No		
Chni21	N8274	N8275	Prismatic	20 /2921		0.38 0.	8 0 0	0.012	1.6 No		
Chni22	N8275	N8276 N8277	Prismatic			0.38 0. 0.38 0.	8 0 0	0.012	1.7 No		
Chni23	N8276	N8277 N8268	Prismatic Prismatic	20 72.789 15 74.5	74.35	0.38 0.	9 0 0	0.012	1.8 No	_	
Chnl15 Chnl14	GP05 N8268	N8351	Prismatic	16.1 74.35	74.189	1 0. 1 0.	3 0 0	0.012 0.012	0.2 No 0.3 No	_	
Chnl36	N8296	N8295	Prismatic	20 74.873	74.773	0.5 0.	8 0 0	0.012	0.2 No		- -
Chnl35	N8295	N8294	Prismatic	20 74.773	74.873	0.5 0. 0.5 0.	8 0 0	0.012	0.3 No		<u> </u>
Chnl34	N8294	N8293	Prismatic	20 74.673	74.573	0.5 0.	6 0 0	0.012	0.4 No		
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Chnl32	N8292	N8291	Prismatic	20 74 473	74.373	0.5 0.	6 0 0	0.012	0.6 No		
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Chnl24	N8280	N8279	Prismatic	20 73.335 20 73.075	72.815	1.3 0.	6 0 0	0.012	1.3 No		
Chnl51	N8320	N8321	Prismatic	20 74.487	74.387	0.4 0.4	5 0 0	0.012	0.2 No		
Chnl60	N8321	N8322	Prismatic	20 74.387		0.4 0.4	5 0 0	0.012	0.3 No		
Chnl59	N8322	N8323	Prismatic	20 74.307	74.227	0.4 0.4	0 0	0.012	0.4 No		
Chnl58	N8323	N8324	Prismatic		74.147	0.4 0.4	0 0	0.012	0.5 No		
Chnl57	N8324	N8325	Prismatic	20 74.147		0.4 0.4	0 0	0.012	0.5 No		
Chnl56	N8325	N8326 N8327	Prismatic	20 74.067	73.987	0.4 0.4	9 0 0	0.012	0.6 No		
Chnl55	N8326 N8327	N8327 N8328	Prismatic Prismatic	20 73.987	73.907	0.4 0.4 0.4 0.4	5 0 0	0.012	0.7 No 0.8 No	-	
Chnl54 Chnl53	N8327 N8328	N8328 N8329	Prismatic Prismatic	20 73.907 20 73.827	73.747	0.4 0.4	5 0 0	0.012 0.012	0.8 No 0.9 No	-	
Chnl52	N8329	N8329 N8419	Prismatic Prismatic	20 73.827 20 73.747	73.747 73.887	0.4 0.4	5 0 0	0.012	1 No	-	
Chnl49	N8315	N8314	Prismatic	20 73.747	73.51	0.4 0.4	5 0 0	0.012	1 No	_	
Chnl48	N8314	N8313	Prismatic	20 73.51	73.43	0.4 0.4	5 0 0	0.012	1.2 No		+
Chnl47	N8313	N8312	Prismatic	20 73.43	73.35	0.4 0.4	5 0 0	0.012	1.3 No		
Chnl46	N8312	N8311	Prismatic	20 73.35	73 27	0.4 0.4	5 0 0	0.012	1.3 No 1.4 No		
Chnl45	N8311	N8310	Prismatic	20 73.27	73.19	0.4 0.4	5 0 0	0.012	1.5 No		
Chnl44	N8308	N8310 SP02	Prismatic	30 73.11	73.19 73.05	0.2 0.4	5 0 0	0.012	1.5 No 1.5 No		
Chnl61	N8340	N8341	Prismatic	9.9 74.275	74.226	0.49 0.	6 0 0	0.012	0.2 No		
Chnl68	N8337	N8344	Prismatic	10 74.14	74.1	0.4 0.	6 0 0	0.012	0.3 No		
Chnl69	N8344	N8345	Prismatic	20 74.1	74.02	0.4 0.	8 0 0	0.012	0.4 No		
Chnl70	N8345	N8349	Prismatic	20 74.02	73.94	0.4 0.	8 0 0	0.012	0.5 No		
Chnl71 Chnl72	N8349 N8346	N8346 N8347	Prismatic	20 73.94 10 73.86	73.86 73.82	0.4 0. 0.4 0.	8 0 0	0.012 0.012	0.5 No 0.6 No	_	
Chnl/2 Chnl4	N8345 N8343	N8347 N8260	Prismatic Prismatic	15.3 73.784	73.82	0.4 0.	8 0 0	0.012	0.6 No 0.7 No	_	
Chni308773	N470575	N470574	Prismatic	15.3 73.764	73.710	0.32 0.	9 0 0	0.012	0.7 No 0.5 No	_	
Criticocrita									0.0 140		
Chnl308780	NA70574	NA70572		15 74 879	74 804	0.5	3 0 0		O B No		
Chnl306769 Chnl306768	N470574 N470572	N470572	Prismatic	15 74.679	74.604	0.5 0.	3 0 0	0.013	0.6 No		
Chnl306768	N470572	N470572 N470571	Prismatic Prismatic	15 74.679 15 74.604	74.604 74.544	0.5 0. 0.4 0.	3 0 0 3 0 0	0.013 0.013	0.7 No		
Chnl306769 Chnl306768 Chnl306767 Chnl306794	N470574 N470572 N470571 N470592	N470572	Prismatic	15 74.679 15 74.604 15 74.544 20 74.42	74.604 74.544 74.484 74.34	0.5 0.	3 0 0 3 0 0	0.013	0.6 No 0.7 No 0.8 No 0.6 No		
Chnt306768 Chnt306767 Chnt306794 Chnt31	N470572 N470571 N470592 N470593	N470572 N470571 N470570 N470533 N8288	Prismatic Prismatic Prismatic	15 74.679 15 74.604 15 74.544 20 74.42 20 74.34	74.604 74.544 74.484 74.34 74.26	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 3 0 0	0.013 0.013 0.013 0.013 0.012	0.7 No 0.8 No 0.6 No 0.7 No		
Chnl306768 Chnl306767 Chnl306794 Chnl31 Chnl31	N470572 N470571 N470592 N470593 N8288	NA70572 N470571 N470570 N470593 N8288 N8287	Prismatic Prismatic Prismatic Prismatic Prismatic Prismatic Prismatic Prismatic	15 74.679 15 74.604 15 74.544 20 74.42 20 74.32 20 74.28	74.604 74.544 74.484 74.34 74.26 74.18	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 3 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012	0.7 No 0.8 No 0.6 No 0.7 No 0.8 No		
Chnl306768 Chnl306767 Chnl306794 Chnl31 Chnl30 Chnl29	M470572 N470571 N470592 N470593 N8288 N8287	NAT0572 NAT0571 NAT0570 NAT0693 NA2588 NA2587 NA2586	Prismatic	15 74.679 15 74.604 15 74.544 20 74.42 20 74.34 20 74.34 20 74.76	74.604 74.544 74.484 74.34 74.26 74.18	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 3 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.6 No 0.7 No 0.8 No 0.7 No 0.8 No 0.9 No		
Chnl306768 Chnl306767 Chnl306794 Chnl31 Chnl30 Chnl20 Chnl29 Chnl28	M470572 M470571 M470592 M470593 M5298 M5288 N5287 M5286	N470572 N470571 N470570 N470570 N4288 N4288 N4287 N4286 N4286	Prismatio	15 74.679 15 74.004 15 74.544 20 74.42 20 74.34 20 74.26 20 74.18	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnl306768 Chnl306767 Chnl306794 Chnl31 Chnl30 Chnl29	M470572 N470571 N470592 N470593 N8288 N8287	NAT0572 NAT0571 NAT0570 NAT0693 NA2588 NA2587 NA2586	Prismatic	15 74.679 15 74.604 15 74.544 20 74.42 20 74.34 20 74.34 20 74.76	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.6 No 0.7 No 0.8 No 0.7 No 0.8 No 0.9 No		
Chni308768 Chni308767 Chni308794 Chni31 Chni30 Chni29 Chni29 Chni28 Chni308831	M470572 M470571 M470592 M470593 M5298 M5288 N5287 M5286	N470572 N470571 N470570 N470570 N4288 N4288 N4287 N4286 N4286	Prismatio	15 74.679 15 74.004 15 74.544 20 74.42 20 74.34 20 74.26 20 74.18	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris08768 Chris08767 Chris08794 Chris1 Chris1 Chris20 Chris29 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28	M470572 M470571 M470592 M470593 N8288 N8287 N8287 N8286 M470620	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic	15 74.679 15 74.694 15 74.544 20 74.42 20 74.34 20 74.36 20 74.18 20 74.1 20 73.278	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris08768 Chris08767 Chris08794 Chris1 Chris1 Chris20 Chris29 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28 Chris28	M470572 M470571 M470592 M470593 N8288 N8287 N8286 M470820	N470572 N470571 N470570 N470570 N4288 N4288 N4287 N4286 N4286	Prismatic Safe Cover (m)	15 74,679 15 74,004 15 74,544 20 74,42 20 74,42 20 74,28 20 74,18 20 73,278	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn306768 Chn3067797 Chn10067794 Chn10067794 Chn10067794 Chn1000 Chn1209 Chn1209 Chn1209 Chn1208 Chn1008631 PIPE COVER DETAILS Name Pipicar Cover	M470572 M470571 M470592 M470593 N8288 N8287 N8286 M470820 Troe Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Serior Cover (m) 0 0 0	15 74,879 15 74,904 20 74,42 20 74,34 20 74,34 20 74,36 20 74,16 20 74,17 20 73,278 Cover (m)	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris09788 Chris09797 Chris09794 Chris0 Chris	M470572 M470571 M470592 M470593 N8288 N8287 N8286 M470820	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Originatic Prismatic Originatic Safe Cover (m) O O O O O O O O O O O O O O O O O O O	15 74,879 15 74,804 15 74,544 20 74,42 20 74,34 20 74,26 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .8 0,04	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn306768 Chn3067797 Chn10067794 Chn10067794 Chn10067794 Chn1000 Chn1209 Chn1209 Chn1209 Chn1208 Chn1008631 PIPE COVER DETAILS Name Pipicar Cover	NAT0572 NAT0571 NAT0592 NAT0593 NE288 NE288 NE287 NE286 NAT0820 Type Box culverts (semplee) Box culverts (semplee)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,544 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .6 0.04 .6 0.07 .6 0.08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chis906768 Chis906767 Chis906767 Chis906764 Chis161 Chis16 Chis20 Chis28 Chis28 Chis28 Chis28 Piper COVER DETAILS Name Piper COVER DETAILS Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper	M470572 M470592 M470593 M8288 M8288 M8287 M8286 M470820 Troe Box culverts (samples) Box culverts (samples) Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,544 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .6 0.04 .6 0.07 .6 0.08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chis906768 Chis906767 Chis906767 Chis906764 Chis161 Chis16 Chis20 Chis28 Chis28 Chis28 Chis28 Piper COVER DETAILS Name Piper COVER DETAILS Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper Piper COVER Piper	M470572 M470592 M470593 M8288 M8288 M8287 M8286 M470820 Twoe Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,544 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .6 0.04 .6 0.07 .6 0.08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris096788 Chris096797 Chris096794 Chris096794 Chris10 Chris10 Chris20 Chris2	M470572 M470592 M470593 M8288 M8288 M8287 M8286 M470820 Twoe Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,544 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .6 0.04 .6 0.07 .6 0.08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris096788 Chris096787 Chris096794 Chris096794 Chris09 Chris0 Ch	NAT0572 NAT0571 NAT0592 NAT0593 N8288 N8288 N8287 N8286 Brit curvers (semoles)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,804 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .8 0,04 .9 0,07 .8 0,07 .8 0,08 .9 0,18 .9 0,	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnis00768 Chnis00778 Chnis00794 Chnis00794 Chnis0 Chnis1 Chnis0 Chnis2 Chnis2 Chnis2 Chnis2 Chnis2 Piper COVER DETAILS Name Piper/023 Piper/025 Piper/026 Piper/026 Piper/026 Piper/026 Piper/026 Piper/026 Piper/036 Piper/036 Piper/036 Piper/036 Piper/036	M470572 M470592 M470593 M8288 M8288 M8287 M8286 M470820 Twoe Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,804 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) .8 0,04 .9 0,07 .8 0,07 .8 0,08 .9 0,18 .9 0,	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris06768 Chris06767 Chris06777 Chris06774 Chris06774 Chris06774 Chris0 Chris0 Chris0 Chris0 Chris06831 PIPE COVER DETAILS Name Poer705	NAT 0572	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,904 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 73,278 Cover (m) 8 0,04 9 0,07 9 0,08 9 0,07 9 0,08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnis0d768 Chnis0d767 Chnis0d794 Chnis0d794 Chnis0 Chnis1 Chnis0 Chnis2 Chnis2 Chnis2 Chnis2 Chnis2 Chnis2 Piper COVER DETAILS Name Piper/023 Piper/050 Piper/050 Piper/061 Piper/061 Piper/061 Piper/063 Piper/063 Piper/061 Piper/063 Piper/063 Piper/063 Piper/063 Piper/063 Piper/063 Piper/063 Piper/063 Piper/063 Piper/065 Piper/063 Piper/065 Piper/065 Piper/065 Piper/065 Piper/065 Piper/065	M470572 M470592 M470593 M8288 M8288 M8288 M8288 M8286 M470820 Twoe Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74,879 15 74,804 15 74,904 20 74,42 20 74,34 20 74,28 20 74,18 20 74,18 20 73,278 Cover (m) 8 0,04 9 0,07 9 0,08 9 0,07 9 0,08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chris06768 Chris06767 Chris06777 Chris06774 Chris06774 Chris06774 Chris06831 Chris0 Chris2 Ch	MAT0572	NAT0672 NAT0671 NAT0670 NAT0670 NA2083 N8288 N8287 N8287 N8288 N8288 N8288 N8288 N8288 N8288 N8288	Prismatic Pris	15 74.679 15 74.694 20 74.42 20 74.34 20 74.39 20 74.39 20 74.30 20 74.30 20 74.20 20 74.30 20 74.20 20 74.30 20 74.20 20 74.21 20 74.21 20 73.278 Cover (m) 0.6 0,04 0.6 0,07 0.6 0,08 0.18 0.18 0.8 0.21 0.8 0.21 0.8 0.21 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnis00768 Chnis00778 Chnis00779 Chnis00779 Chnis00794 Chnis0 Chnis1 Chnis0 Chnis2 Chnis2 Chnis2 Chnis2 Piper COVER DETAILS Name Piper/023 Piper/023 Piper/028 Piper/028 Piper/029 Piper/030 Piper/0301 Piper/031 Piper/031	M470572 M470592 M470593 M8288 M8288 M8288 M8288 M8286 M470820 Twoe Box culverts (samples)	NAT0072 NAT0071 NAT0070 NAT0083 NA208 NA208 NA208 NA208 NA209 NA20	Prismatic Pris	15 74,879 15 74,904 15 74,904 20 74,42 20 74,34 20 74,36 20 74,36 20 74,18 20 74,18 20 73,278 Cover (m) 0 0,04 0 0,07 0 0,08 0 0,07 0 0,08 0 0,07 0 0,08 0 0,07 0 0,08 0 0,07 0 0,08 0 0,09 0	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn980768 Chn980778 Chn980777 Chn980777 Chn980774 Chn980 Chn180 C	NAT0572 NAT0573 NAT0593 NAT0593 NAT0593 NAE288 NAE288 NAE286 NAT0520 Type Box culverts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,604 20 74,42 20 74,42 20 74,34 20 74,25 20 74,26 20 74,27 20 74,10 20 74,10 20 73,278 Cover (m) 6 0 04 6 0 07 6 0.09 6 0.09 6 0.01 6 0.07 6 0.09	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn1906768 Chn1906767 Chn1906767 Chn1906767 Chn1906794 Chn190 Chn	NAT0572 NAT0562 NAT0562 NAT0563 NE288 NE288 NE288 NE288 NE288 NE288 Box cuherts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic	15 74,879 15 74,904 16 74,544 20 74,42 20 74,42 20 74,29 20 74,29 20 74,18 20 74,18 20 73,278 Cover (m) Cove	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn980768 Chn980778 Chn980777 Chn980777 Chn9807794 Chn980 Chn980 Chn980 Chn980 Chn980 Chn980 Piper COVER DETAILS Name Piper COVER DETAILS Name Piper 7023 Piper 7028 Piper 7029 Piper 7029 Piper 7029 Piper 7039 Piper 7049 Piper 7049 Piper 7049 Piper 7049 Piper 7049 Piper 7041	NAT0572 NAT0573 NAT0592 NAT0593 N8288 N8288 N8287 N8286 NAT0520 NAT052	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,694 20 74,42 20 74,34 20 74,36 20 74,36 20 74,26 20 74,16 20 74,16 20 70,278 20	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn1906768 Chn1906767 Chn1906767 Chn1906767 Chn1906767 Chn190 Chn	NAT0572 NAT0572 NAT0592 NAT0593 NE288 NE288 NE288 NE288 NE288 NE288 Box cuherts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,904 15 74,904 20 74,42 20 74,34 20 74,36 20 74,28 20 74,18 20 74,18 20 73,278 Cover (m) Cover (m) 0.6 0.04 0.7 0.04 0.7 0.04 0.7 0.06 0.07 0.06 0.09 0.0 0.01 0.0 0.	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnisor768 Chnisor768 Chnisor777 Chnisor777 Chnisor777 Chnisor774	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2288 IM 2288 IM 2286 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic O	15 74,679 15 74,694 15 74,594 20 74,42 20 74,34 20 74,18 20 74,18 20 74,19 20 73,278 20 74,18 20 74,19 20 73,278 20 74,19 20 73,278 20 74,19 20 73,278 20 74,19 20 73,278 20 74,19 20 73,278 20 74,19 20 73,278 20 74,19 20 74,19 20 74,19 20 74,19 20 74,19 20 74,19 20 0,04 20 1,08	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn1906768 Chn1906767 Chn1906767 Chn1906767 Chn1906794 Chn190 Chn	NAT0572 NAT0572 NAT0592 NAT0593 NAT0593 NE288 NE288 NE288 NE287 NE286 Box cuberts (samples)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,904 15 74,904 20 74,42 20 74,34 20 74,36 20 74,28 20 74,18 20 74,18 20 73,278 Cover (m) 20 70,04 20 70,	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnisor768 Chnisor768 Chnisor777 Chnisor77 Chnisor777 Chnisor77	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2288 IM 2288 IM 2286 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 15 74,904 16 74,544 20 74,42 20 74,34 20 74,18 20 74,18 20 74,18 20 74,18 20 73,17 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 74,18 20 74,18 20 78,18 20 10,18 20 1	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn590708 Chn590708 Chn590707 Chn590707 Chn590707 Chn590 Chn59 Chn	NAT0572 NAT0572 NAT0592 NAT0593 NE288 NE288 NE288 NE287 NE286 Box cuherts (semoles)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,34 20 74,36 20 74,36 20 74,16 20 74,16 20 73,278 20 74,18 20 74,18 20 78,17 20 73,278 20 74,18 20 78,17 20 78,17 20 78,17 20 78,17 20 18,18 20 18,18 20 19,18 20 20 20 20 20 20 20 20 20 20 20 20 20 2	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn1906768 Chn1906767 Chn1906767 Chn1906767 Chn1906794 Chn190 Chn	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2288 IM 2288 IM 2286 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,694 20 74,42 20 74,34 20 74,34 20 74,36 20 74,36 20 74,37 2	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn980768 Chn980778 Chn980777 Chn980777 Chn9807794 Chn810 Chn80 Chn810 Chn810 Chn820 Chn828 Chn828 Chn828 PIPE COVER DETAILS Name Piper/023 Piper/023 Piper/026 Piper/029 Piper/049 Piper/048	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2083 IM 2288 IM 2286 IM 2085 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic O	15 74,879 15 74,804 16 74,944 20 74,42 20 74,34 20 74,36 20 74,36 20 74,16 20 73,278 20 74,18 20 74,18 20 73,278 20 74,18 20 78,17 20 73,278 20 74,18 20 78,17 20 78,17 20 78,17 20 18,18 20 19,	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnisor788 Chnisor788 Chnisor787 Chnisor797	NAT0572 NAT0572 NAT0592 NAT0593 NE288 NE288 NE288 NE287 NE286 Box cutverts (semoles)	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,694 20 74,42 20 74,42 20 74,42 20 74,42 20 74,34 20 74,26 20 74,10 20 74,10 20 74,10 20 74,10 20 74,10 20 74,10 20 78,278 Cover (m) 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn590788 Chn590787 Chn590797 Chn590797 Chn590797 Chn590797 Chn590 Chn59	NAT0572 NAT0562 NAT0562 NAT0563 NE288 NE2888 NE2888 NE2888 NE2888 NE2888 NE28888 NE28888 NE288888 NE28888888888	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic O	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,48 20 74,18 20 74,18 20 74,18 20 73,278 Cover (m) 1,6 0,04 1,6 0,04 1,6 0,04 1,6 0,07 1,8 0,07 1,8 0,07 1,8 0,07 1,8 0,08 1,9 0,09 1,9 0,	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chnisor788 Chnisor788 Chnisor787 Chnisor794 Chnisor795	NAT0572 NAT0572 NAT0592 NAT0593 NAT0593 NAE288 NAE2888 NAE2888 NAE2888 NAE28888 NAE28888 NAE28888 NAE288888 NAE288888 NAE288888 NAE2888888888888888888888888888888888888	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,694 20 74,42 20 74,42 20 74,34 20 74,36 20 74,36 20 74,27 20 74,10 2	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn500788 Chn500784 Chn500797 Chn500797 Chn500797 Chn5000794 Chn500 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn6	NAT0572 NAT0562 NAT0562 NAT0563 NE288 NE2888 NE2888 NE2888 NE2888 NE2888 NE2888 NE28888 NE28888 NE28888888888	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn500788 Chn500784 Chn500797 Chn500797 Chn500797 Chn5000794 Chn500 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn6	NAT0572 NAT0572 NAT0592 NAT0593 NAT0593 NAE288 NAE2888 NAE2888 NAE2888 NAE28888 NAE28888 NAE28888 NAE288888 NAE288888 NAE288888 NAE2888888888888888888888888888888888888	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,679 15 74,694 20 74,42 20 74,42 20 74,34 20 74,36 20 74,36 20 74,27 20 74,10 2	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn500788 Chn500784 Chn500797 Chn500797 Chn500797 Chn5000794 Chn500 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn50 Chn60 Chn6	NAT0572 NAT0562 NAT0562 NAT0563 NE288 NE2888 NE2888 NE2888 NE2888 NE2888 NE2888 NE28888 NE28888 NE28888888888	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.804 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn590768 Chn590778 Chn590777 Chn590777 Chn590777 Chn590777 Chn590831 PIPE COVER DETAILS Name PIPE/COVER DETAILS Name PIPE/COVER DETAILS PIPE/COVER DETAILS PIPE/COVER PIPE/COV	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2588 IM 2588 IM 2586 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.604 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Childegras	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2588 IM 2588 IM 2586 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.604 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Chn090768 Chn1909767 Chn1909777 Chn1909794 Chn190197 Chn190 Chn19	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2588 IM 2588 IM 2586 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.604 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		
Christogres Christ	IM 70572 IM 70572 IM 70592 IM 70592 IM 70593 IM 2588 IM 2588 IM 2586 I	NAT0672 NAT0671 NAT0670 NAT0670 NAT0670 NA2688 NA268 NA268 NA268 NA268 NA70819	Prismatic Pris	15 74,879 15 74,804 16 74,944 20 74,42 20 74,42 20 74,34 20 74,36 20 74,16 20 73,278 20 74,18 20 73,278 20 74,18 20 73,278 20 74,18 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 78,17 20 78,278 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20,18 20 20 20 20,18 20	74.604 74.544 74.484 74.34 74.26 74.18 74.1	0.5 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0. 0.4 0.	3 0 0 3 0 0 6 0 0 6 0 0 6 0 0	0.013 0.013 0.013 0.013 0.012 0.012 0.012	0.7 No 0.8 No 0.8 No 0.7 No 0.8 No 0.8 No 0.9 No 1 No		

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 53 of 69 sheet(s)

Date:22/12/2021

en struct		PROJECT		Battery Recycling Fo				JOB No PREPARED			6626 DATE	B/11/2 B/11/2
ORANS Filo P≘th: ORANS Version:			struct Documents/0.3 -	Analysis/CMRStormuster				CHECKED			DATE	8/11/2
lodeller's Name: Description: DRANS results prepared from Version 2021.02		1% AEP STORM										
PIT / NODE DETALS	Max HGI.	Msx Pond HGL	Mex Surface Flow Arriving	Version 8 Max Pond Volume	Min Freeboard	Overflow (cumb)	Constraint			1% A	EP ST	ORI
3P04 8955	74.1	7	(cu.m/s) 0.024 0.048	(cum)	(m)							
R2259 PO1 R8350 R8261	74.1 74.1 74.1	4 3 4	0.071 0.024 0.024		0.37		None					
18263 18263	73.5 73.5 73.5	6	0.333 0.362 0.372									
18266 P02 18362	73.5 73 73.6	2 9 1	0.392		0.8		None					
18270 1P08 18354	73.1 73.1 73.1	6	0.482 0.036		0.74		None					
18272 18273 18274	73.0	1	0.56 0.569 0.691									
18275 18276 18277	72.1 72.1 72.1 72.1	3	0.052 0.076 0.11									
8268 8268	74.3 74.4 74.4	4	0.036 0.036 0.036									
997 18296 18295	74.5 74.5 74.5	1	0.006 0.016		0.29		None					
18294 18293 18292	74.1 74.1 74.1	2 3 4	0.027 0.034									
18291 POS 18283	74./ 74.: 73.: 73.:	8	0.041 0.034 0.18		0.91		None					
18282 18281 18290 18279	73.4 73.2 73.1	5	0.16 0.21 0.242 0.274									
9201-2 1P12 18320	72.1 74.1 74.1	7 8 8	0.034		0.12		None					
18921 18922 18929	74.1 74.1 74.1	4	0.086 0.094 0.124									
18324 18325 18326	74./ 74./ 74./	5	0.152 0.18 0.206 0.236									
18327 18328 18329	74.1 74.1 74.1	5	0.263									
86419 IP11 8315	74.3 74.3 74.1	7	0.316 0.034		0.43	1	None					
18314 18313 18312	74.1 74.1	1	0.374 0.401 0.428									
8311 8310 P04 8308	74.1 73.1 73.1 73.1	7 6	0.456 0.482 0 0.084		0.75		None					
IP02 3P01 18340	73.1 74.1 74.1	8 4 4	0.563 0.024		0.36		None					
18941 SP02 18937	74.1 74.1 74.1	2 1 8	0.047		0.49		None					E
8345 8349	74.3 74.3 74.3	8 3 1	0.091 0.112 0.129 0.148									E
18346 18347 3P03	74 74.1	2 9	0.166		0.32		None					
16343 16260 1670575	74.1 74.1 74.1	4 3 9	0.024 0.209 0 0.008		0.41		None					
1470578 1470574 1470572 1470571	74.1 74.1 74.7	5 7 8	0.015 0.027 0.03	il								
1470570 P 09 1470502	74.1 74.1 74.1	7 4 1	0.037 0 0.008		0.58		None					
1470563 18288 18287	74.4 74.1 74.3	3 6 9	0.059 0.069 0.069									
18296 18285 3P10	74.3 74 73.1	3 2 6	0.072 0.079 0.034		0.76		None					
1470620 1470619	73.5 73.5	6	0.034									
	Max Flow Q (cu.m/s)	EIA Msx Q (cumhi)	Remaining Mex Q (cu.m/e)	To	Tc	PA To (min)	Due to Storm (min)					
Cat1 1866 Cat383825 Cat384018	0.03 0.03	2 0.022 2 0.022 2 0.023		7	2 2	12	1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8 burst, Storm 9				
Pari5822 Sari6921 Cari5825	0.03 0.03 0.03	2 0.022 2 0.022 2 0.022		7	2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	buret, Storm 8 buret, Storm 8				
	0.03	2 0.022 2 0.022 2 0.022		7	2 2 2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	buret, Storm 8 buret, Storm 8				
net5836 345640 net5842 345644	0.01 0.01 0.01	4 0.034 4 0.034		7 7	2	12	1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
et5848 >+16448	0.01	4 0.034		7	2 2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP 10 min	burst, Storm 8 burst, Storm 8 burst, Storm 8				
Tar(5850) 24(1168) 24(1168) 24(1168)	0.01 0.01 0.01	4 0.034 4 0.034 4 0.034 4 0.034		7	2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8 burst, Storm 8				
241 1962 2415990 2415688	0.0	7 0.007		7	2 2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
zemsee 2416684 2415882 2416680	0.01 0.01 0.01			7	2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8	ıl l			
2et5884 2et6682	0.01 0.01 0.01	2 0.032 2 0.032 2 0.032		7	2	12	1% AEP, 10 min	burat, Storm 8 burat, Storm 8				
Tel:5900 34(5658 24(5658 24(5749	0.01 0.01 0.01	2 0.032		7	2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burat, Storm 8 buret, Storm 8				
Zet5747 Zet5897 Zet5898	0.03	2 0.032 2 0.032 2 0.032	0	7	2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
246701 245703 245706	0.01 0.01 0.01	2 0.032		7	2 2 2 2	12	1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
Del5707 Del5709 Del5711	0.01 0.01 0.01	2 0.032 2 0.033		7	2 2 2 2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	buret, Storm 8				
Nation 13 Nation 13 Nation 15 Nation 17 Nation 18	0.61 0.61 0.61	2 0.032		7	2	12	1% AEP, 10 min	burat, Storm 8 burst, Storm 8				
265721	0.01	2 0.032		7	2	12 12 12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm & burst, Storm & burst, Storm &				
au5725 zu5727 zu5727 zuf11886	0.01 0.01 0.02	2 0.022		7	2 2 2	12 12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	buret, Storm 8 buret, Storm 8				
2a(5613 Za(5811 2a(5800 Za(5807	0.03 0.03	2 0.022 2 0.022 2 0.022		7	2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
2a(5605 2a(5801	0.03 0.03 0.03	2 0.022 2 0.022 2 0.023	9	7	2 2	12	1% AEP, 10 min	buret, Storm 8 buret, Storm 8				
Dat(6616 Dat(5819 Dat(361488	0.03 0.03 0.01	2 0.022 7 0.007		7	2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8				
2xt351488 2xt351484 2xt351482 2xt351480	0.01 0.01 0.01	7 0.007	9	7	2 2	12	1% AEP, 10 min	buret, Storm 8 buret, Storm 8				
2et5878	0.0i 0.0i	7 0.007	1 0	7	2	12 12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	burst, Storm 8 burst, Storm 8 burst, Storm 8				
httS874 httS874 htts872 htts872 htts872	0.0	7 0.007 7 0.007 7 0.007		7	2	12	1% AEP, 10 min 1% AEP, 10 min 1% AEP, 10 min	buret, Storm 8 buret, Storm 8 buret, Storm 8				
Tar(383831 Car(363738	0.0	2 0.032 2 0.032	: 0	7	2 2	12	1% AEP, 10 min 1% AEP, 10 min	burat, Storm 8				
PPEDETALS	Max Q	Max V	Max U/S	Max D/9	Due to Storm							
Npe7028	(cu.m/e) 0.00 0.21	(m/s) 6 1.47 5 1.06	HGL (m) 74.34	HGL (m) 74.29	1% AEP, 10 n 1% AEP, 10 n	min buret, Storm min buret, Storm	2					
Spe7028 Spe7081 Spe7029	0.96 0.96 0.44	2 1.21 5 1.26	73.837	73,811	1% AEP, 10 n 1% AEP, 10 n	min buret, Storm min buret, Storm min buret. Storm	2 2					
Ppe7105 1pe7000 1pe7090 1pe7096	0.44	5 1.52 1 1.18 4 1.22	73.862 72.836 74.281 74.912	74.231	1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm min burat, Storm	8					
7pe7035 Noe7032	0.01 0.11 0.21	7 1.66	74.439	74.406	1% AEP, 10 n	nin burat, Storm nin burat, Storm	4					
Tpe7031 19e7048 1pe7042 1pe7041	0.01 0.21 0.21	1 0.08		74.271	1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm min burat, Storm	2					
1pe7040 1pe7039	0.44	7 1.74	73,953	73.953	1% AEP, 10 n	nin burst, Storm nin burst, Storm in burst, Storm nin burst, Storm	2					
Tpe7044 1pe7045 1pe7047 1pe7049 1pe7048	0.04 0.04 0.18 0.11	3 0.55 8 0.72 8 0.81	74.31 74.188 74.156	74.276 74.18 74.144	1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm	8 2 2					
[pe7049 tpe7046 pp7022 tpe149497 pp149486	0.11	6 0.79	74.131	74.126	1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm min burat, Storm	2					
5pe148516 5pe7038 5pe148608	0.01 0.01 0.01	4 0,68 9 0.02	74.541 74.2 73.854	74.507 74.195 73.954	1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm	2 2 6					
Spe148807	0.04	8 0.21	73,954	73,963	1% AEP, 10 n	nin buret, Slorm	2					E
lame Xm8	Max Q (cu.m/s) 0.03	Mex.V (m/e) 2 1.08			Due to Storm	nin burat, Storm	8					
hints hints hints	0.04 0.21 0.21	4 1.31 3 1.13 1 1.18			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min buret, Storm min buret, Storm min buret, Storm	8 2 2					
Red1 Hel12 Hel13 Hel17	0.94 0.34 0.4*	7 1.07			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm	2 2 2					
hel7 Hel8 Hel9 Hel20	0.41 0.41 0.51	1 1.81 7 163.28	1		1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min buret, Storm min buret, Storm min buret, Storm min buret, Storm	2 2 2 2					
hri21 hri22	0.04	4 0.85 9 0.65 7 0.92			1% AEP, 2 ho 1% AEP, 2 ho 1% AEP, 10 n	sur burst, Storm sur burst, Storm min burst. Storm	8 5 2					
hr23 hr15 hr166	0.03 0.01 0.01	4 1.25 4 1.25			1% AEP, 10 n	nin burst, Storm nin burst, Storm nin burst, Storm nin burst, Storm nin burst, Storm	8 7					
hriss hriss hriss hriss	0.0	1 0.44 8 0.67 4 0.75			1% AEP, 10 n	nin burat, Storm nin burat, Storm	8					
7m32 7m27 7m26	0.01 0.11 0.14 0.11	1 0.82			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm	6 2 6					
hn25 hn24 hn51	0.11 0.21 0.0	3 2.15			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	nin buret, Slorm nin buret, Slorm nin buret, Slorm	6 6 8					
17160 17169 17168 17167	0.00 0.11 0.14	8 0.74 8 0.85 5 0.66 2 0.94			1% AEP, 10 n	nin burat, Storm nin burat, Storm nin burat, Storm nin burat, Storm	8 8 8					
hri56 hri65 hri64	0.16 0.11	9 0.98 4 1.01 2 1.02			1% AEP, 10 n 1% AEP, 10 n	min buret, Storm min buret, Storm min buret. Storm	8 2 2					
7m63 7m62 7m49	0.24 0.1 0.1	5 1.04 7 1.05 2 1.15			1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm min burat, Storm	2					
XY148	0.34	5 1.21 9 1.22 3 1.24			1% AEP, 10 n 1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm	2 2 2					
3146	0.41 0.51 0.01	7 1.26 1 2.23 2 0.6			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	min burst, Storm min burst, Storm min burst, Storm	2 2 8					
trode 17665 17667 17661	0.0	4 0.77 4 0.89 2 0.79			1% AEP, 10 n	min burat, Storm min burat, Storm min burat, Storm min burat, Storm	8 7					
Traves Traves Traves Traves Traves Traves Traves	0.00	0.74			1% AEP, 10 n	nin burat, Storm nin buret, Storm	2					
79946 79946 79949 7998 7998 7998 7998 7999 7970 7977 7977	0.16 0.1 0.13				154 4000							
20-1477	0.16 0.13 0.13 0.00 0.00 0.00	8 0.85 7 0.78 7 0.51 4 0.67			1% AEP, 10 n 1% AEP, 10 n 1% AEP, 10 n	nin burst, Storm nin burst, Storm	8					
27-164 27-	0.14 0.1 0.11 0.01 0.01 0.01 0.02 0.02 0.02	8 0.85 7 0.75 7 0.75 4 0.67 4 0.67 1 0.7 8 1.14 2 0.75 8 0.97 5 0.99			1% AEP, 10 m 1% AEP, 10 m	nin burst, Storm nin burst, Storm nin burst, Storm nin burst, Storm nin burst, Storm nin burst, Storm	8 8 8 2 2 2					
Printed Printe	0.16 0.1 0.11 0.11 0.01 0.01 0.01 0.01	9 0.85 7 0.75 7 0.57 7 0.65 1 0.60 1 0.75 8 1.14 2 0.75 8 0.97 6 0.99 6 0.99			1% AEP, 10 m 1% AEP, 10 m	nin buret, Storm nin buret, Storm nin buret, Storm nin buret, Storm nin buret, Storm nin buret, Storm nin buret, Storm	8 8 8 2 2 2 2 2					
Redd	0.14 0.1 0.11 0.01 0.01 0.02 0.03 0.03 0.04 0.04	9 0.85 7 0.75 7 0.57 7 0.65 1 0.60 1 0.75 8 1.14 2 0.75 8 0.97 6 0.99 6 0.99		Max Q Low Lovel	1% AEP, 10 m 1% AEP, 10 m	min burst, Storm min burst, Storm min burst, Storm min burst, Storm min burst, Storm min burst, Storm min burst, Storm	8 8 8 2 2 2 2 2					

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Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 54 of 69 sheet(s)

Date:22/12/2021



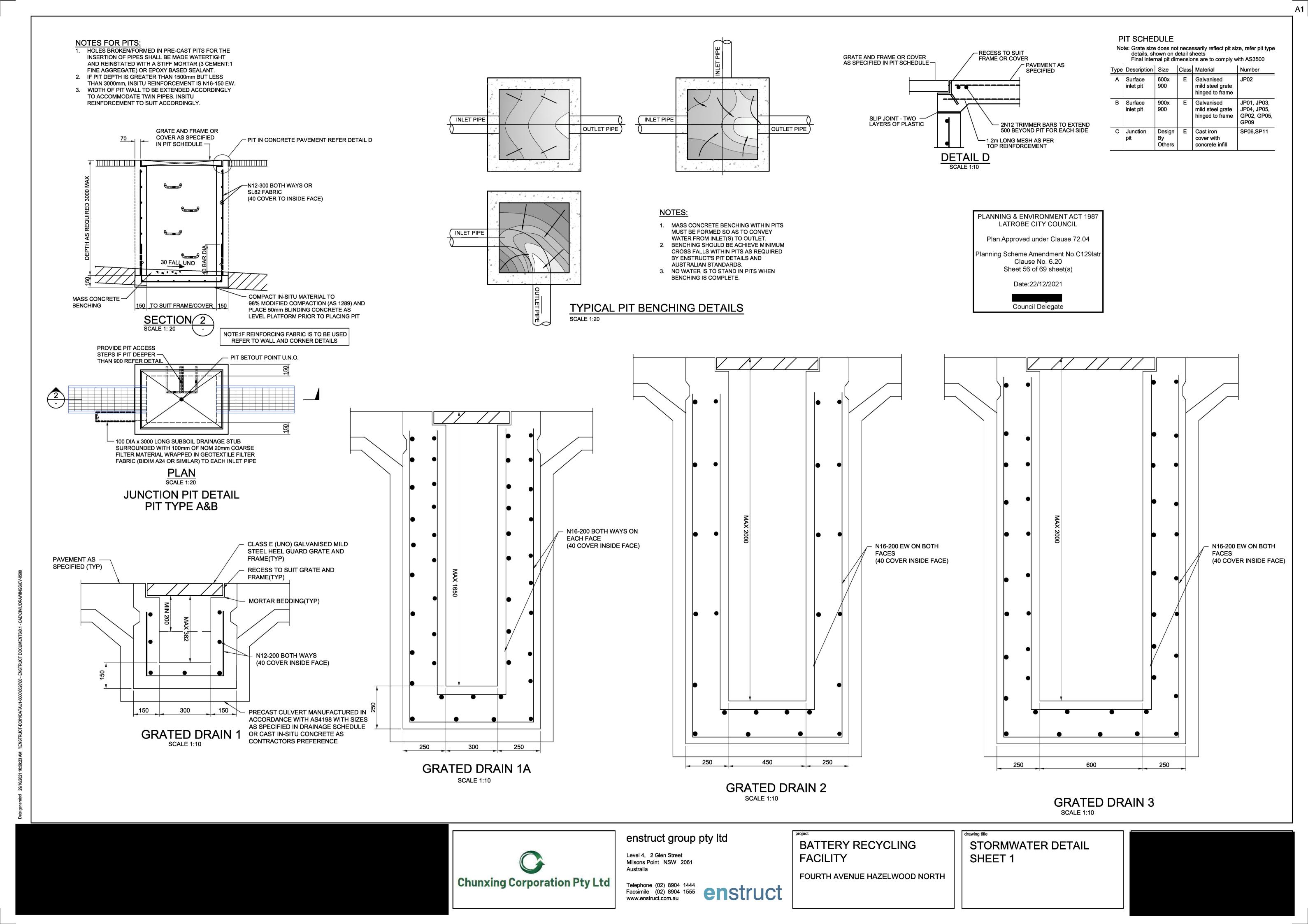
APPENDIX D STORMWATER DETAILS

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 55 of 69 sheet(s)

Date:22/12/2021



ELEVATION AT BASE

<u>PLAN</u>

PLAN-SINGLE LAYER

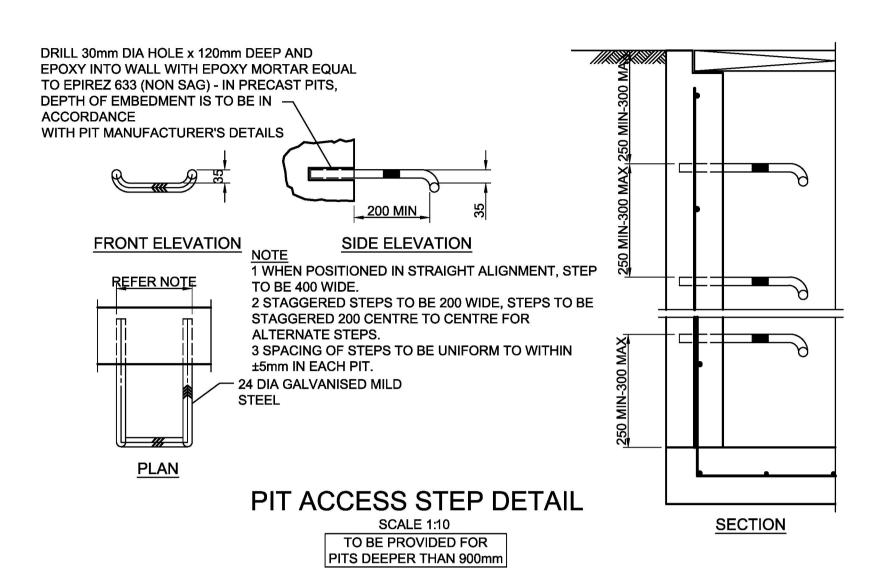
PLAN-DOUBLE LAYER

MESH

REINFORCEMENT

PIT CORNER DETAILS

SCALE 120



PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 57 of 69 sheet(s)

Date:22/12/2021

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enstruct group pty Itd

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Enstruct

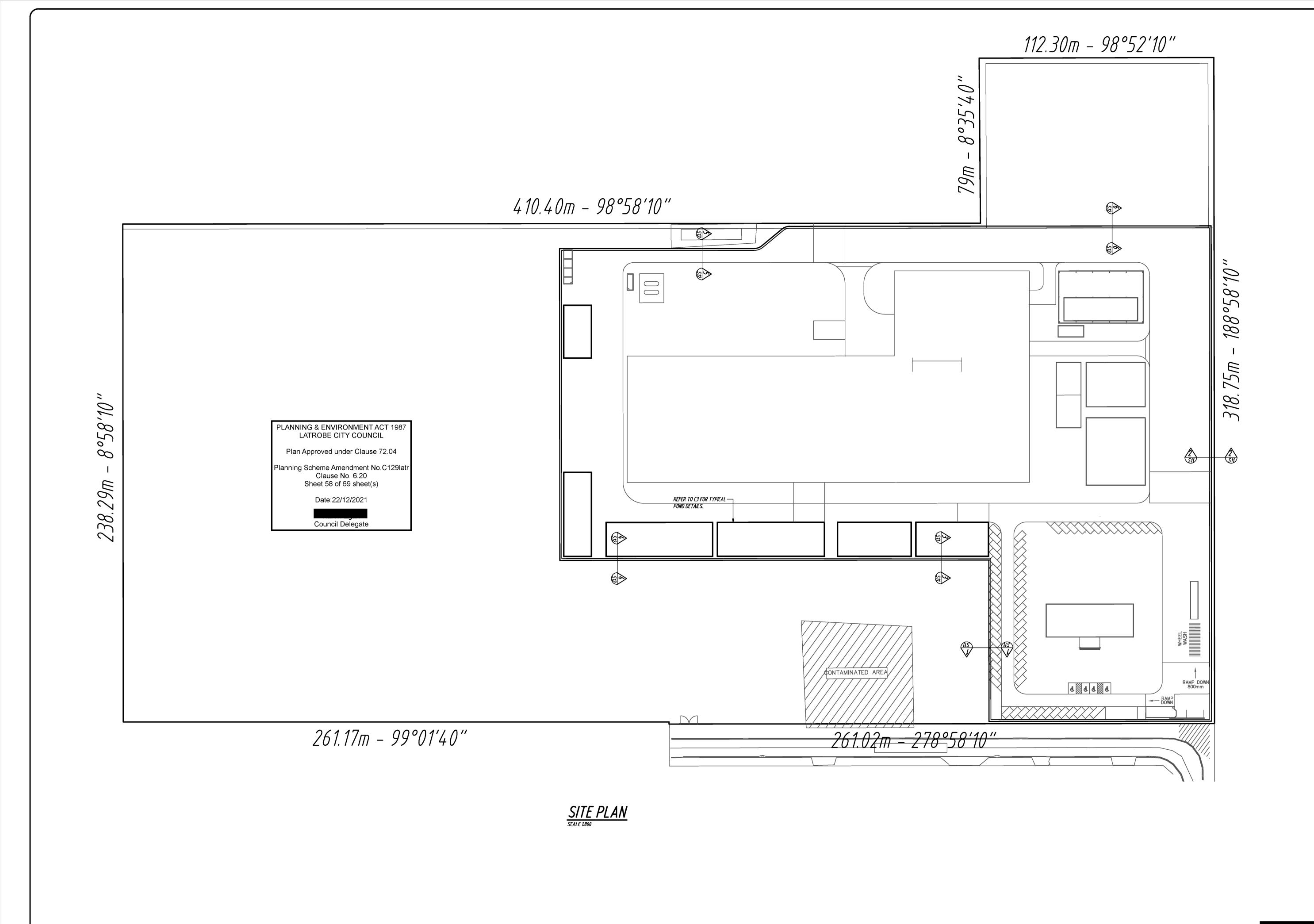
BATTERY RECYCLING **FACILITY**

FOURTH AVENUE HAZELWOOD NORTH

STORMWATER DETAIL

SHEET 2





DRA WING NOTES:

ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

NOTES:

INDIVIDUAL UNITS TO BE DRAINED TO
STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.

BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
DRAINAGE LAYOUT PLAN.



N12 BARS AT 180mm MAX CRS E/W 'EACH FACE'
MIN COVER: 40mm
f'c: 40mPa. EXPANSION JOINT - REFER TO DETAIL

250mm THICK R.C. POND FLOOR

TREATED WATER POND PLAN

SCALE 1:100

COVER. INCLUDING 10mm CORK. PROVIDE 20x20 GALVANIZED SQUARE DOWELLS x 500mm LONG @ 300mm CRS. INCLUDING DOWELL SLEEVES WITH EXPANSION LUGS TO SIDE AND REAR WITH 300mm MIN LAP 25mm COMPRESSIBLE FOAM IN END OF SLEEVES. PROVIDE N12 LIGS AT 300mm CRS. BENT AS SHOWN. PROVIDE 250mm WIDE REARGUARD WATERSTOP CENTRAL TO EXPANSION TYPICAL EXPANSION JOINT DETAIL NATURAL SURFACE LEVEL 250mm THICK R.C. POND WALL N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. DEPTH 750mm MINIMUM WATER DEPTH TO POND AT ALL TIMES 250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' PROVIDE N12 TIE BARS @ 180mm MAX CRS. LAP BARS WITH ALL FLOOR AND MIN COVER: 40mm WALL BARS x MINIMUM 400mm f'c: 40mPa. PROVIDE APPROVED -WATERSTOP TO JOINT 400mm MIN LAP LENSURE POND BASE BEARS ONTO STIF NATURAL CLAY (200 KPa)

TYPICAL POND BASE AND WALL DETAIL
NOT TO SCALE

PROVIDE HYDROTITE 1020 ——— WATERSTOP WITH 50mm MIN

DRAWING NOTES:

ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

PLANNING & ENVIRONMENT ACT 1987

LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

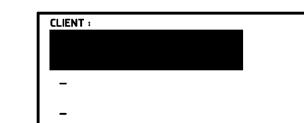
Planning Scheme Amendment No.C129latr Clause No. 6.20

Sheet 59 of 69 sheet(s)

Date:22/12/2021

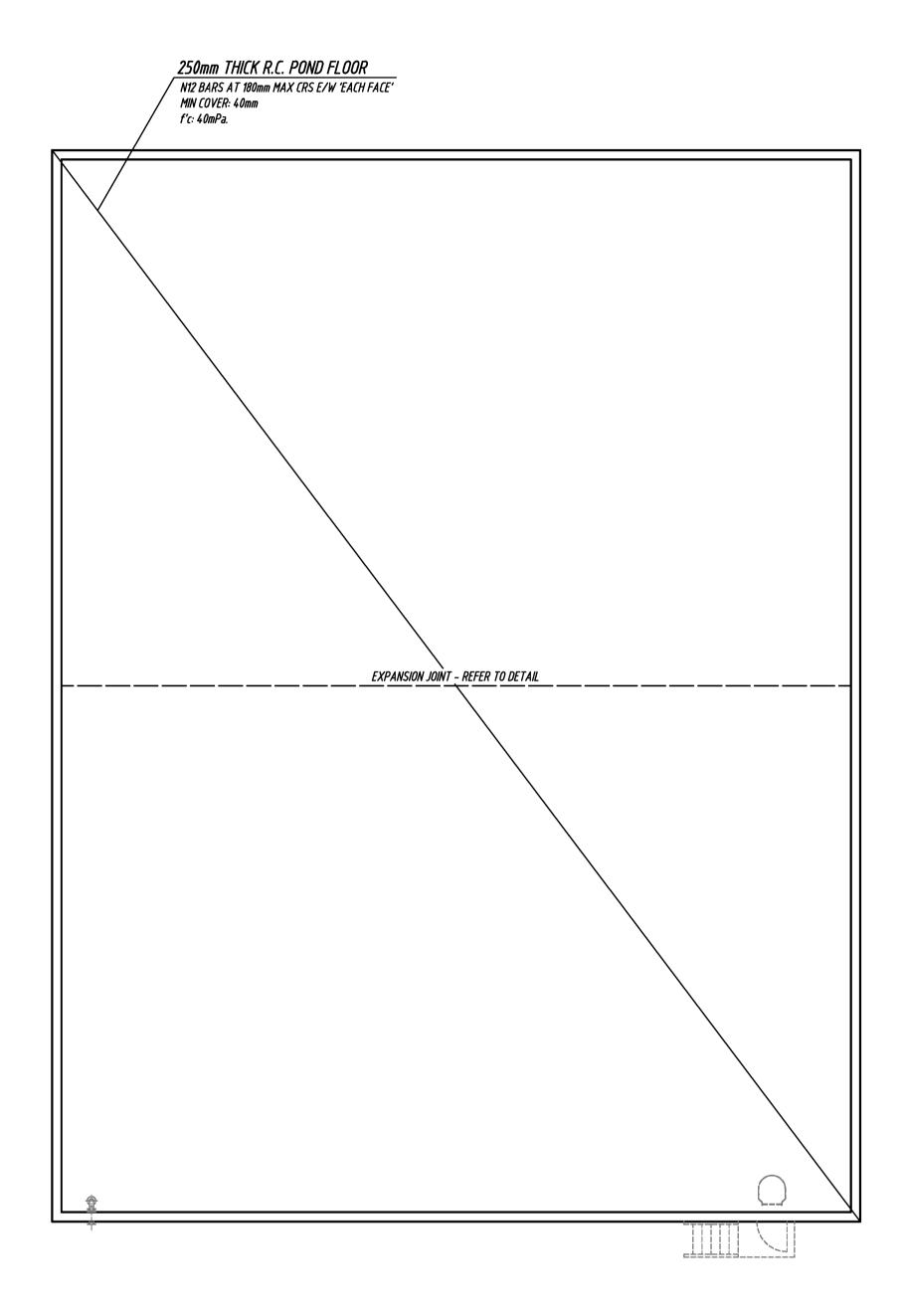
Council Delegate

NOTES:
INDIVIDUAL UNITS TO BE DRAINED TO
STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.

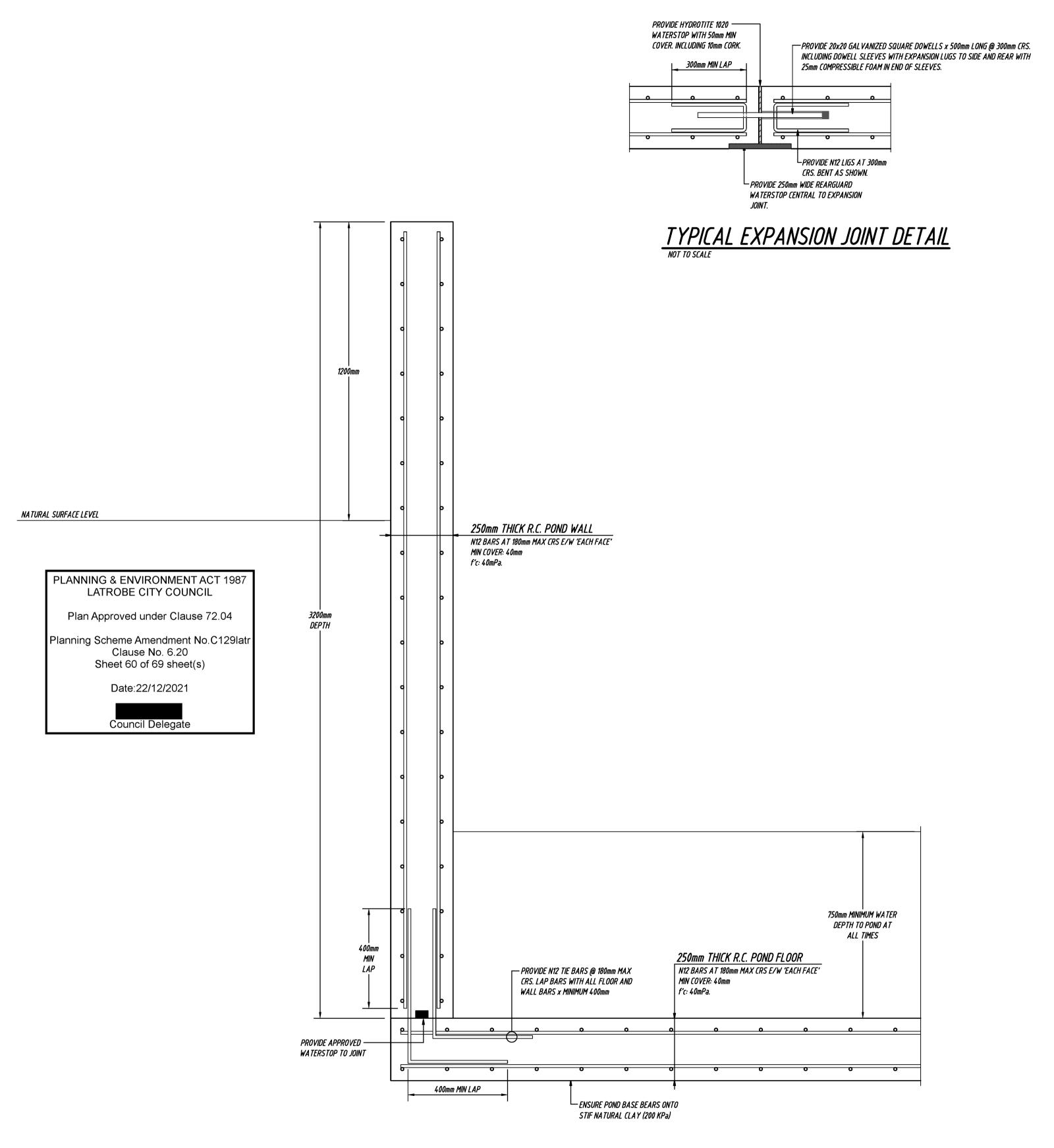


BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
TREATED WATER POND



PLANT WATER POND PLAN
SCALE 1:100



TYPICAL POND BASE AND WALL DETAIL
NOT TO SCALE

DRA WING NOTES:

ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

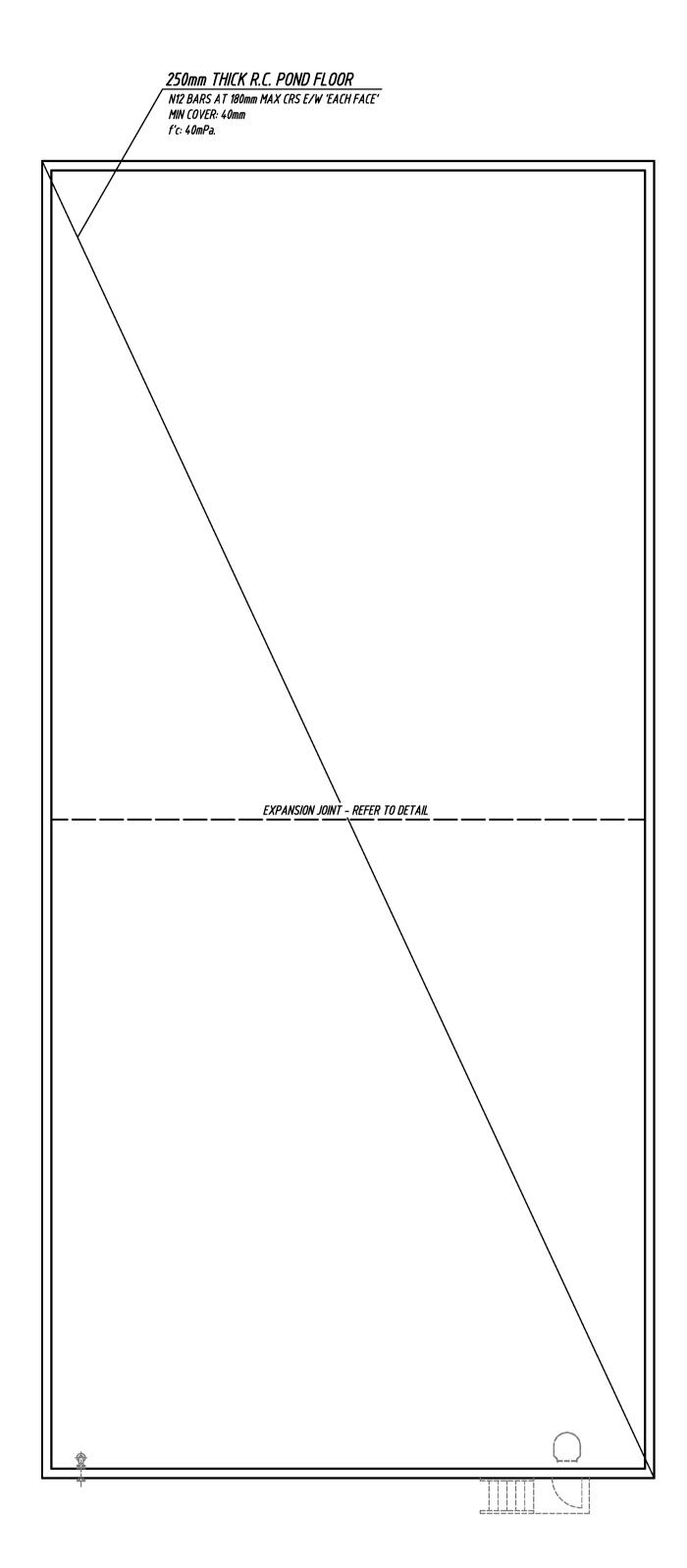
NOTES:

INDIVIDUAL UNITS TO BE DRAINED TO
STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.

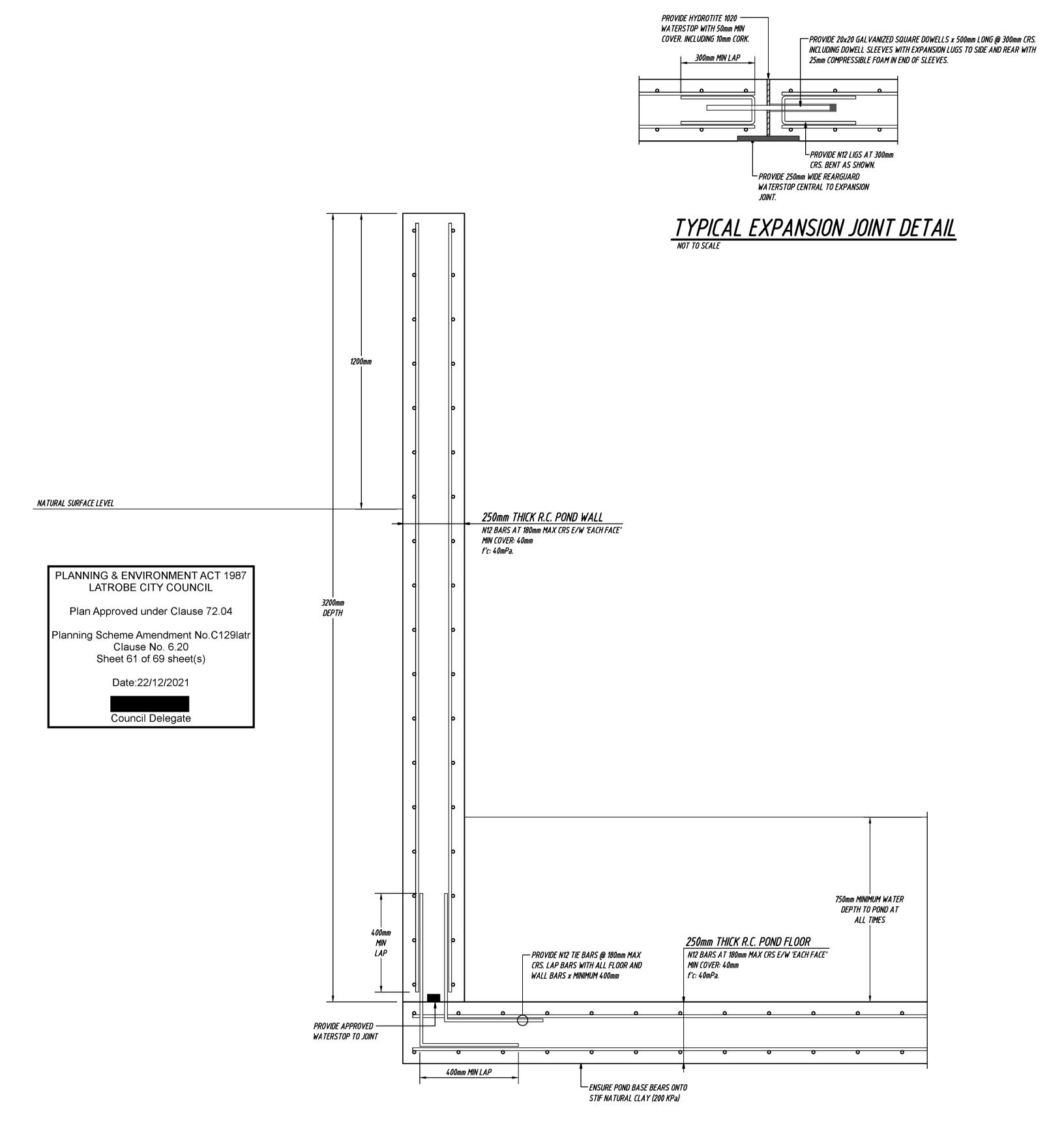


BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
PLANT WATER POND



STORMWATER POND no.1 PLAN
SCALE 1:100



TYPICAL POND BASE AND WALL DETAIL NOT TO SCALE

DRA WING NOTES:

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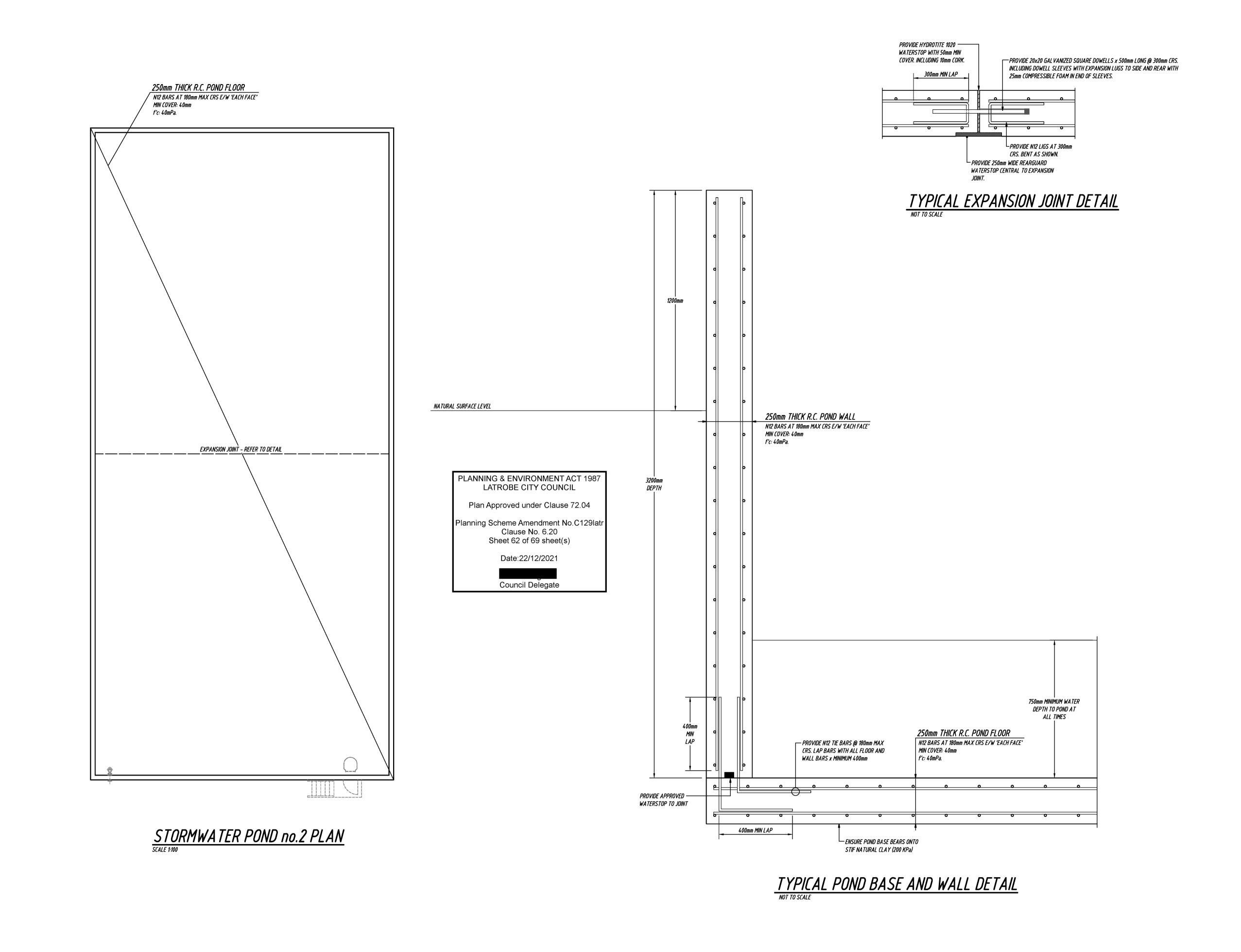
DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

NOTES:

INDIVIDUAL UNITS TO BE DRAINED TO
STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.

BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
STORM WATER POND 1

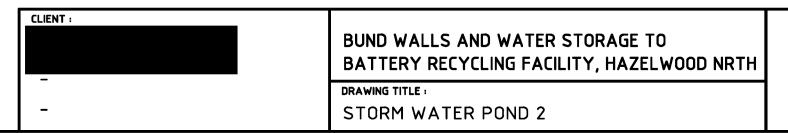


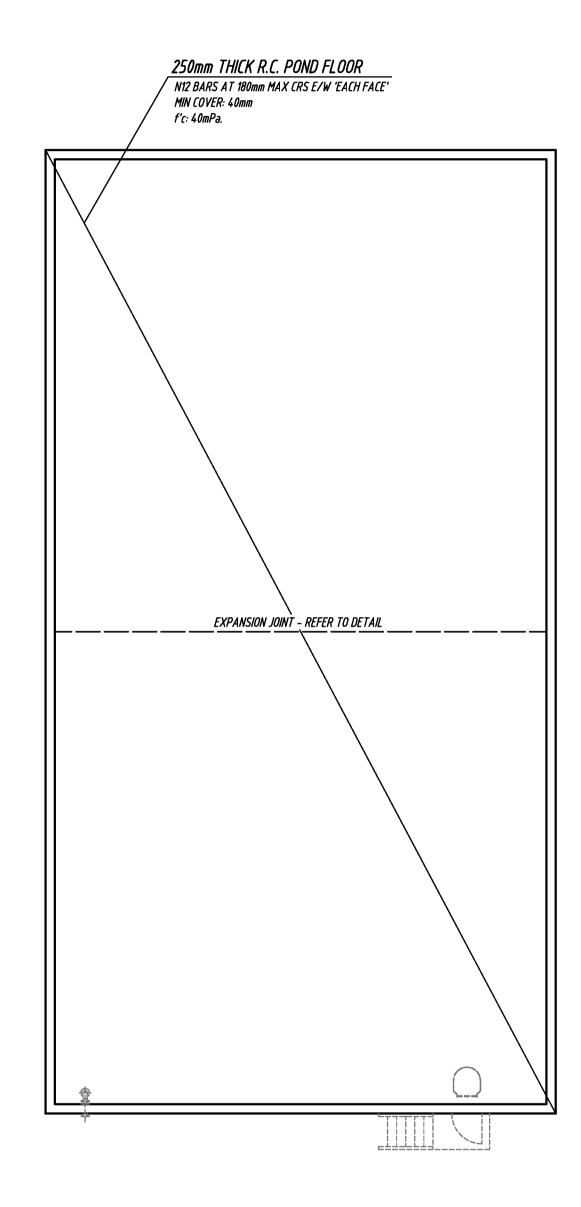
DRAWING NOTES:

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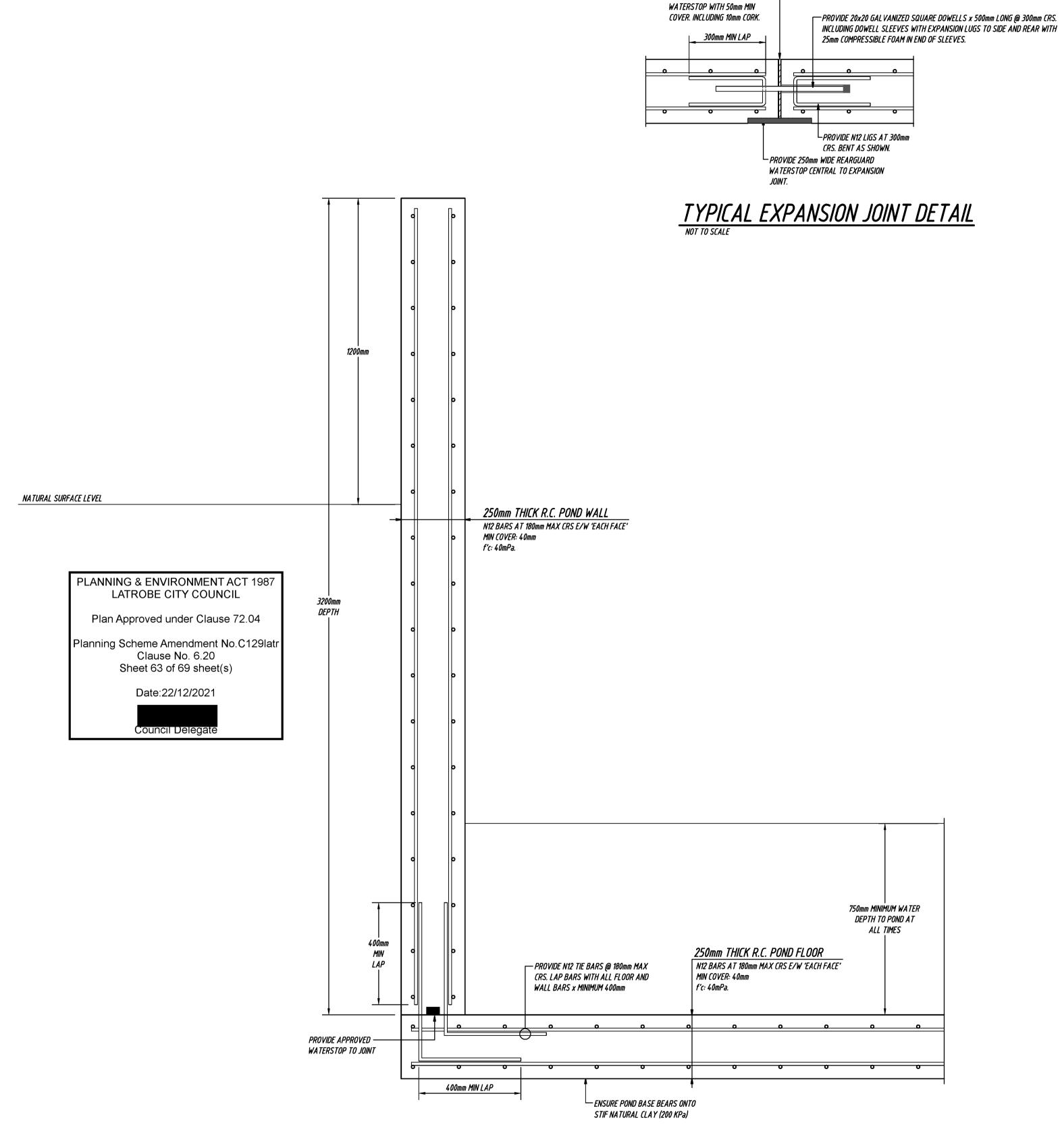
DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

NOTES:
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STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.





STORMWATER POND no.3 PLAN
SCALE 1:100



TYPICAL POND BASE AND WALL DETAIL
NOT TO SCALE

PROVIDE HYDROTITE 1020 ----

DRAWING NOTES:

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DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

NOTES:
INDIVIDUAL UNITS TO BE DRAINED TO
STORMWATER PITS IN ACCORDANCE
WITH AS3500 - NATIONAL PLUMBING AND
DRAINAGE CODE.

BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
STORM WATER POND 3

250mm THICK R.C. POND FLOOR

N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa.

SITE WATER POND PLAN
SCALE 1:100

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL Plan Approved under Clause 72.04 Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 64 of 69 sheet(s) Date:22/12/2021

Council Delegate

PROVIDE N12 LIGS AT 300mm CRS. BENT AS SHOWN. PROVIDE 250mm WIDE REARGUARD
WATERSTOP CENTRAL TO EXPANSION TYPICAL EXPANSION JOINT DETAIL
NOT TO SCALE 1200mm NATURAL SURFACE LEVEL 250mm THICK R.C. POND WALL N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. DEPTH 750mm MINIMUM WATER DEPTH TO POND AT ALL TIMES 250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' PROVIDE N12 TIE BARS @ 180mm MAX CRS. LAP BARS WITH ALL FLOOR AND MIN COVER: 40mm f'c: 40mPa. WALL BARS x MINIMUM 400mm PROVIDE APPROVED -WATERSTOP TO JOINT 400mm MIN LAP **□ ENSURE POND BASE BEARS ONTO**

TYPICAL POND BASE AND WALL DETAIL
NOT TO SCALE

STIF NATURAL CLAY (200 KPa)

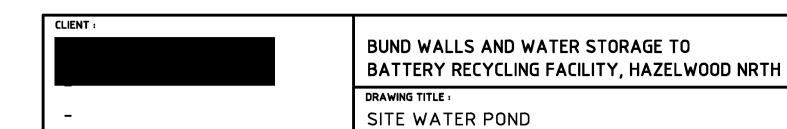
PROVIDE HYDROTITE 1020 —— WA TERSTOP WITH 50mm MIN COVER. INCLUDING 10mm CORK.

PROVIDE 20x20 GAL VANIZED SQUARE DOWELLS x 500mm LONG @ 300mm CRS. INCLUDING DOWELL SLEEVES WITH EXPANSION LUGS TO SIDE AND REAR WITH

25mm COMPRESSIBLE FOAM IN END OF SLEEVES.

DRAWING NOTES: ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

NOTES: INDIVIDUAL UNITS TO BE DRAINED TO STORMWATER PITS IN ACCORDANCE WITH AS3500 - NATIONAL PLUMBING AND DRAINAGE CODE. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.



250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. PROVIDE HYDROTITE 1020 ----WATERSTOP WITH 50mm MIN COVER. INCLUDING 10mm CORK. PROVIDE 20x20 GAL VANIZED SQUARE DOWELLS x 500mm LONG @ 300mm CRS. INCLUDING DOWELL SLEEVES WITH EXPANSION LUGS TO SIDE AND REAR WITH 25mm COMPRESSIBLE FOAM IN END OF SLEEVES. LPROVIDE N12 LIGS AT 300mm CRS. BENT AS SHOWN. PROVIDE 250mm WIDE REARGUARD WATERSTOP CENTRAL TO EXPANSION TYPICAL EXPANSION JOINT DETAIL

NOT TO SCALE NATURAL SURFACE LEVEL 250mm THICK R.C. POND WALL N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. EXPANSION JOINT - REFER TO DETAIL 750mm MINIMUM WATER DEPTH TO POND AT ALL TIMES 250mm THICK R.C. POND FLOOR

N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' PROVIDE N12 TIE BARS @ 180mm MAX CRS. LAP BARS WITH ALL FLOOR AND MIN COVER: 40mm f'c: 40mPa. WALL BARS x MINIMUM 400mm PROVIDE APPROVED — WATERSTOP TO JOINT 400mm MIN LAP ENSURE POND BASE BEARS ONTO STIF NATURAL CLAY (200 KPa) TYPICAL POND BASE AND WALL DETAIL W.A. MOORE & ASSOCIATES CONSULTING STRUCTURAL/CIVIL ENGINEERS BUND WALLS AND WATER STORAGE TO BATTERY RECYCLING FACILITY, HAZELWOOD NRTH 1 – 3 CHURCH STREET, TRARALGON VIC. 3844 Ph/FAX: (03) 51741921

EMERGENCY SITE WATER POND 1

Planning Scheme Amendment No.C129latr Clause No. 6.20 Sheet 65 of 69 sheet(s) Date:22/12/2021

PLANNING & ENVIRONMENT ACT 1987 LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Council Delegate

DRAWING NOTES: ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS.

NOTES: INDIVIDUAL UNITS TO BE DRAINED TO STORMWATER PITS IN ACCORDANCE WITH AS3500 - NATIONAL PLUMBING AND DRAINAGE CODE.

EMERGENCY SITE WATER POND no.1 PLAN
SCALE 1:100

250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. PROVIDE HYDROTITE 1020 ----WATERSTOP WITH 50mm MIN COVER. INCLUDING 10mm CORK. PROVIDE 20x20 GAL VANIZED SQUARE DOWELLS x 500mm LONG @ 300mm CRS. INCLUDING DOWELL SLEEVES WITH EXPANSION LUGS TO SIDE AND REAR WITH 25mm COMPRESSIBLE FOAM IN END OF SLEEVES. -PROVIDE N12 LIGS AT 300mm CRS. BENT AS SHOWN. PROVIDE 250mm WIDE REARGUARD WATERSTOP CENTRAL TO EXPANSION TYPICAL EXPANSION JOINT DETAIL NATURAL SURFACE LEVEL 250mm THICK R.C. POND WALL N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. DEPTH 750mm MINIMUM WATER DEPTH TO POND AT ALL TIMES 250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm — PROVIDE N12 TIE BARS @ 180mm MAX CRS. LAP BARS WITH ALL FLOOR AND WALL BARS x MINIMUM 400mm f'c: 40mPa. PROVIDE APPROVED — WATERSTOP TO JOINT 400mm MIN LAP ENSURE POND BASE BEARS ONTO STIF NATURAL CLAY (200 KPa) TYPICAL POND BASE AND WALL DETAIL

NOT TO SCALE W.A. MOORE & ASSOCIATES CONSULTING STRUCTURAL/CIVIL ENGINEERS BUND WALLS AND WATER STORAGE TO EMERGENCY SITE WATER POND no.2 PLAN
SCALE 1:100 BATTERY RECYCLING FACILITY, HAZELWOOD NRTH 1 – 3 CHURCH STREET, TRARALGON VIC. 3844 Ph/FAX: (03) 51741921 EMERGENCY SITE WATER POND 2

PLANNING & ENVIRONMENT ACT 1987
LATROBE CITY COUNCIL

Plan Approved under Clause 72.04

Planning Scheme Amendment No.C129latr
Clause No. 6.20
Sheet 66 of 69 sheet(s)

Date:22/12/2021

Council Delegate

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NOTES:
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DRAINAGE CODE.

250mm THICK R.C. POND FLOOR N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm f'c: 40mPa. PROVIDE HYDROTITE 1020 —— WATERSTOP WITH 50mm MIN COVER. INCLUDING 10mm CORK. PROVIDE 20x20 GALVANIZED SQUARE DOWELLS x 500mm LONG @ 300mm CRS. INCLUDING DOWELL SLEEVES WITH EXPANSION LUGS TO SIDE AND REAR WITH 300mm MIN LAP 25mm COMPRESSIBLE FOAM IN END OF SLEEVES. PROVIDE N12 LIGS AT 300mm CRS. BENT AS SHOWN. L PROVIDE 250mm WIDE REARGUARD WATERSTOP CENTRAL TO EXPANSION TYPICAL EXPANSION JOINT DETAIL

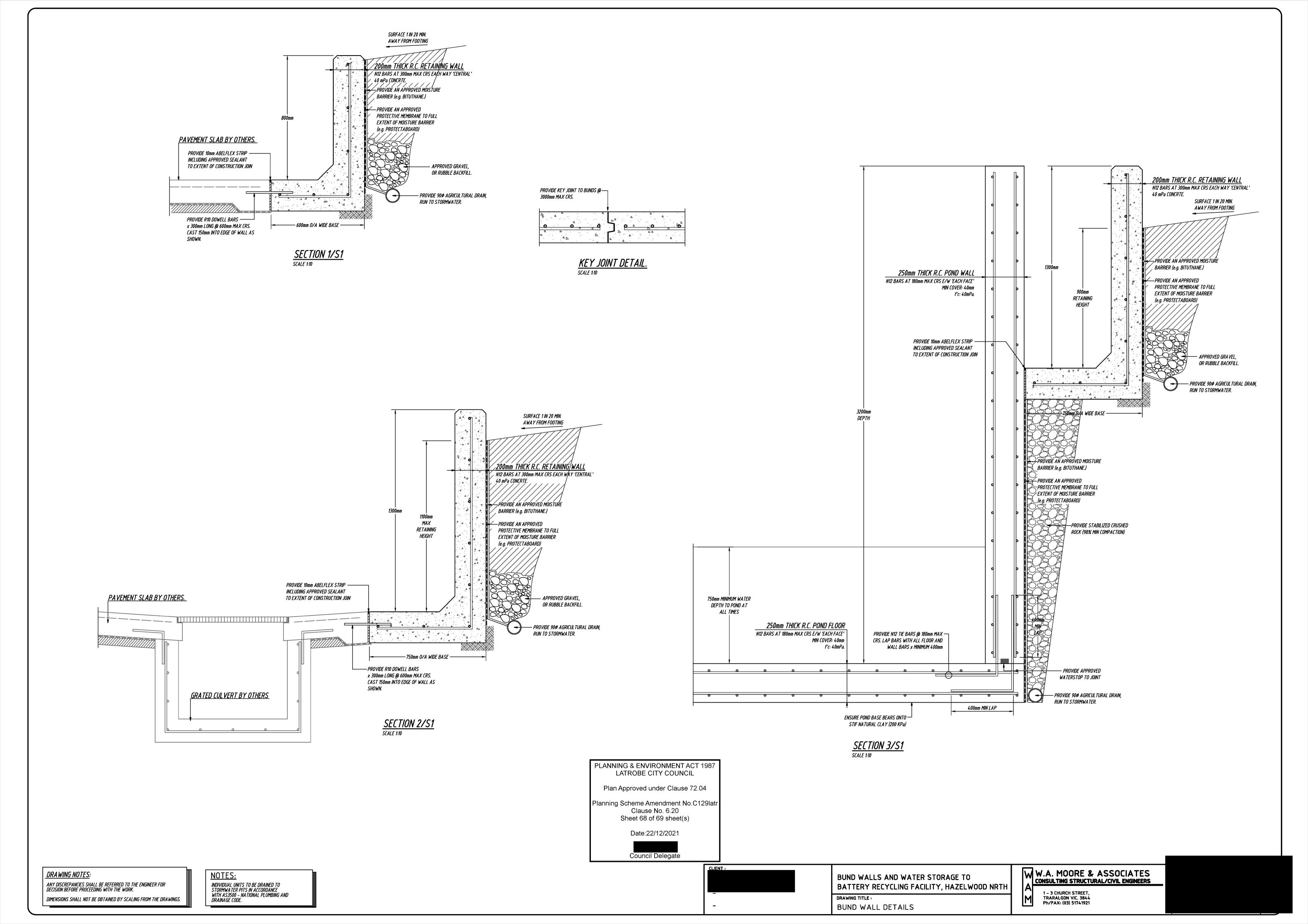
NOT TO SCALE NATURAL SURFACE LEVEL 250mm THICK R.C. POND WALL EXPANSION JOINT - REFER TO DETAIL N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' MIN COVER: 40mm PLANNING & ENVIRONMENT ACT 1987 f'c: 40mPa. LATROBE CITY COUNCIL Plan Approved under Clause 72.04 Planning Scheme Amendment No.C129latr DEPTH Clause No. 6.20 Sheet 67 of 69 sheet(s) Date:22/12/2021 Council Delegate 750mm MINIMUM WATER DEPTH TO POND AT ALL TIMES 250mm THICK R.C. POND FLOOR

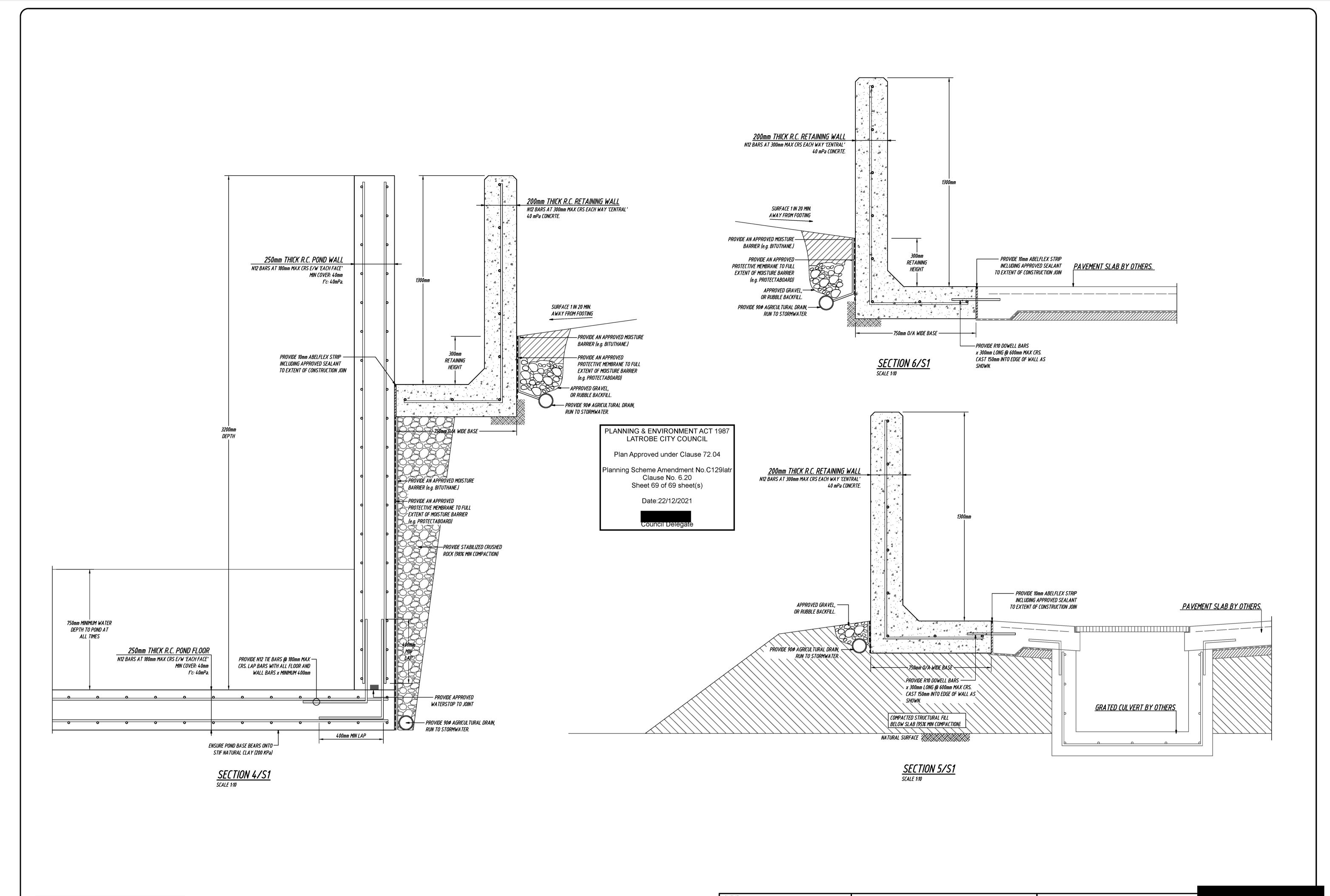
N12 BARS AT 180mm MAX CRS E/W 'EACH FACE' PROVIDE N12 TIE BARS @ 180mm MAX CRS. LAP BARS WITH ALL FLOOR AND MIN COVER: 40mm f'c: 40mPa. WALL BARS x MINIMUM 400mm PROVIDE APPROVED — WATERSTOP TO JOINT 400mm MIN LAP - ENSURE POND BASE BEARS ONTO STIF NATURAL CLAY (200 KPa) EMERGENCY SITE WATER POND no.3 PLAN
SCALE 1:100

TYPICAL POND BASE AND WALL DETAIL
NOT TO SCALE

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NOTES: INDIVIDUAL UNITS TO BE DRAINED TO STORMWATER PITS IN ACCORDANCE WITH AS3500 - NATIONAL PLUMBING AND DRAINAGE CODE. BUND WALLS AND WATER STORAGE TO BATTERY RECYCLING FACILITY, HAZELWOOD NRTH EMERGENCY SITE WATER POND 3





DRAWING NOTES:

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BUND WALLS AND WATER STORAGE TO
BATTERY RECYCLING FACILITY, HAZELWOOD NRTH

DRAWING TITLE:
BUND WALL DETAILS