

Stormwater Strategy



Battery Energy Storage System

**280 Evans Road, Cranbourne West
Macquarie Corporate Holdings Pty Ltd**

September 2021

Rangebank Battery Energy Storage System (BESS)

Contents

1.0	Introduction	1
2.0	Site and Surrounds.....	2
3.0	Proposed Development	3
3.1.	Use and Development.....	3
4.0	Drainage Scheme.....	5
4.1.	Melbourne Water Drainage Scheme.....	5
4.2.	Council Infrastructure.....	6
5.0	Proposed Drainage System	7
5.1.	Minor Storm Event.....	8
5.2.	Major Drain Network	8
6.0	Water Quality	9
7.0	Conclusion.....	12
	Appendix A Proposed Layout	i
	Appendix B Melbourne Water Drainage Scheme	ii
	Appendix C Rangebank Overall Stormwater Management Strategy	iii
	Appendix D Rangebank Stage 2 Design Plans.....	iv

Document Control

Date Prepared	Version Number	Author	Reviewed	Distributed
22 September 2021	1	S,Young	M.O'Shea	Internal Client Council

1.0 Introduction

This report has been prepared by KLM Spatial on behalf of Macquarie Corporate Holdings Pty Ltd to assess stormwater management requirements for the proposed development of a Battery Energy Storage System in Cranbourne West on Evans Road immediately west of Ausnet's Cranbourne Terminal Station.

The assessment has been conducted by experienced engineers from KLM Spatial with consideration to the existing conditions, proposed site usage and layout, surrounding drainage scheme and relevant feedback/advice from catchment management authorities.

The report considers the following elements of stormwater management relevant to development of the site:

- Stormwater Catchments and Hydrology
- Stormwater Quantity & Quality Management
- Proposed Drainage Network and Hydraulics

2.0 Site and Surrounds

The subject site is commonly identified as 280 Evans Road, Cranbourne West and can be formally described as Lot 1 on Plan of Subdivision 823198L, and the BESS site is within Lot C on Plan of Subdivision 836956V (unregistered). The overall site is approximately 22.11ha in area and is of regular shape oriented in a north-south direction. The site is located on the south east corner of Thompsons Road and Evans Road, and extends southward to Breen's Road.

An easement (E-1) traverses the south-east corner of the site in a diagonal direction under PS836956V (unregistered). The easement will be in favour of Ausnet Transmission Group Pty Ltd for the purpose of powerlines.

The site was until recently occupied by a single storey brick 1970's residence located towards the centre of the property with driveway access from Evans Road, with associated shedding and planted trees. At the time of writing demolition of these works had recently occurred in accordance with the appropriate approvals. The balance of the property is pasture, predominantly cleared of vegetation, and grazed by cattle.

The subject site presents as relatively flat farm land. The property slopes gently from a low point of 23.2 AHD near the intersection of Evans and Thompsons Road towards a rise located near the eastern boundary of 29.6 AHD approximately 190m north of Breen's Road. It is noted that the paddock adjacent to the main intersection has been filled and a drain runs diagonal across the northern portion of the site.

The site is predominantly cleared of vegetation. The endorsed Streetscape Master Plan for the subdivision shows all vegetation on the site is to be removed.

Figure 1: Site and Surrounds



3.0 Proposed Development

The proposed Rangebank Battery Electrical Storage System (BESS) is defined as a Utility installation under the Casey Planning Scheme. It will occupy 3.983 hectares of land in the south-eastern quadrant of the site adjacent to the neighbouring Ausnet Terminal Station. The Rangebank BESS is to have a capacity of 200MW/400MWh which allows the battery to store 400MWh of energy from the Cranbourne Terminal and concurrently provide 200MW of energy into the grid for two hours as required.

3.1. Use and Development

The Rangebank BESS is modular in design and comprises a grid of equipment containing batteries, core transformers, inverters and a large transformer, along with several small service buildings located centrally within the site. The equipment will be located within a secure compound, mounted on concrete footings and surrounded by a crushed rock yard. Internal vehicle accessways are provided to enable access to all of the BESS equipment. The public road perimeters of the site, to the west and south, will be suitably landscaped.

The componentry of the Rangebank BESS can be generally described as follows:

- Battery storage units including battery cells, charge management and integrating electrical equipment,
- Inverter and MV Transformer Stations including inverters and medium voltage electrical transformers and switching,
- Underground 220kV high voltage reticulation connection to the eastern boundary, which ultimately connects the BESS to the neighbouring AusNet terminal station,
- 220kV-33kV site substation including electrical transformers, switchgear / switch room and incoming and outgoing transmission lines,
- Underground electrical cabling, earthing and associated infrastructure,
- Relay / switch room,
- Storeroom for spares storage,
- Three kiosks for switch gear,
- Site parking (4 spaces), internal access roads and drainage, and
- Security and safety fencing and lighting.

The battery storage units are configured within a series of rows in an east west direction throughout the site. Each row contains the lithium batteries within 'cube' storage units, light poles, an inverter and a core transformer at the end of each row.

Please refer to *Appendix A* for site development plan.

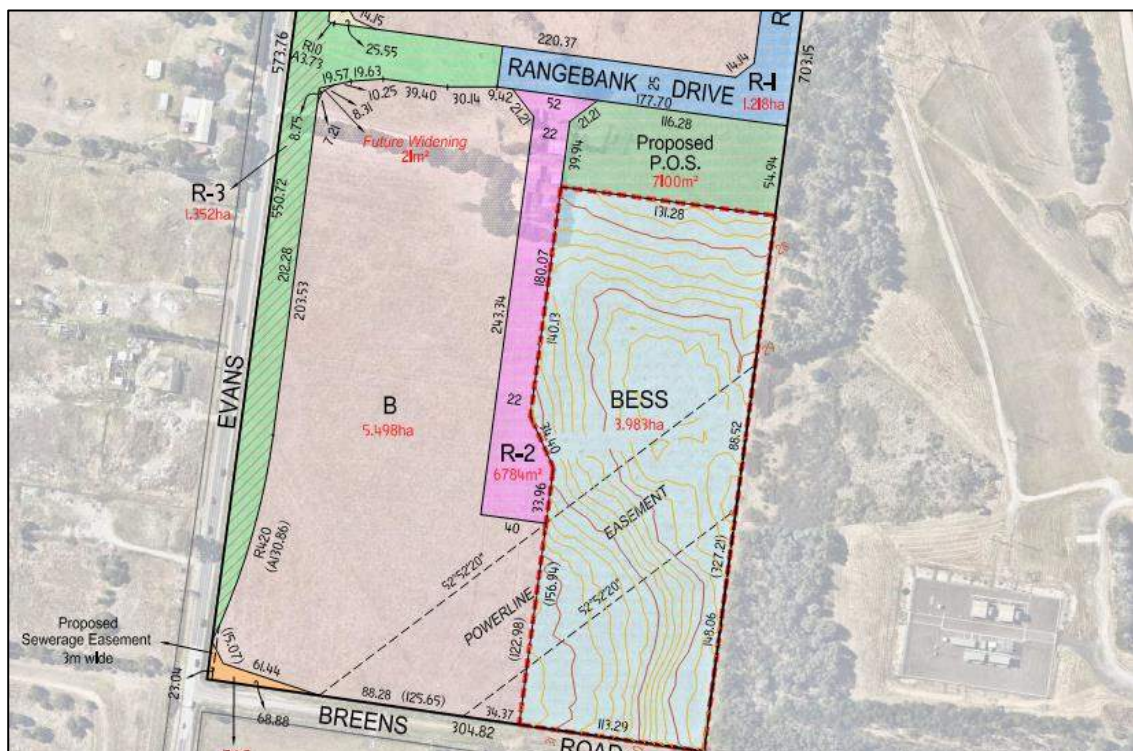
Figure 2: Battery Concept



The proposed development will be accessed via Rangebank Drive & Battery Court (proposed) from the existing signalised intersection on Thompsons Road. Rangebank Drive construction is expected to commence in late 2021.

The Rangebank BESS is proposed use to occupy 3.983 hectares of the site in the south eastern quadrant of the lot, south of Rangebank Drive. The BESS site has a north south depth of approximately 327 metres, and maximum east-west width of approximately 131 metres, narrowing to the south, as shown in Figure 6. The power line easement lies within the BESS site. No equipment associated with the battery will be located within the easement, although an access track will run through the easement adjacent to the eastern boundary. The easement will be fenced.

Figure 3: BESS Site Plan



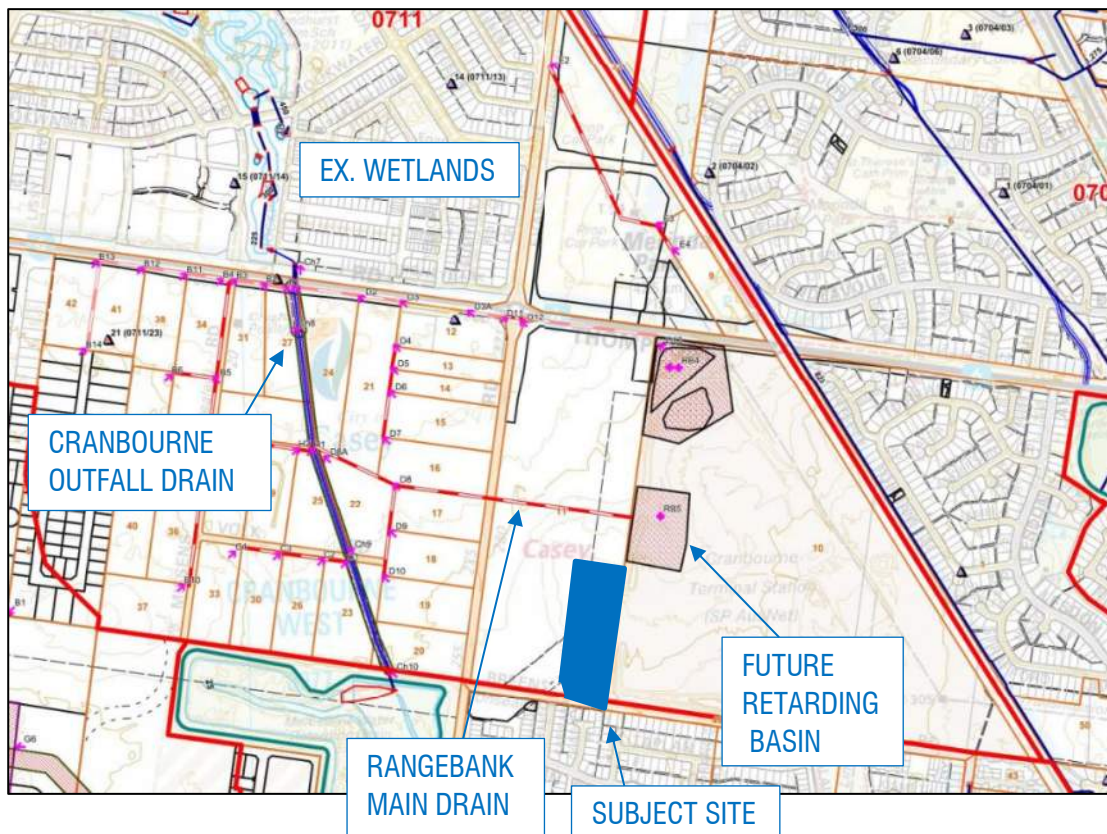
4.0 Drainage Scheme

4.1. Melbourne Water Drainage Scheme

The subject site falls within Melbourne Waters Lyndhurst Drainage Scheme (DSS 0711). Please find extract of the scheme below, with full scheme included within *Appendix B*.

The site ultimately drains to the wetland on the north of Thompsons Road within the Marriot Waters Estate. Construction of this wetland is completed and the wetland is well established.

Figure 4: Melbourne Water Scheme

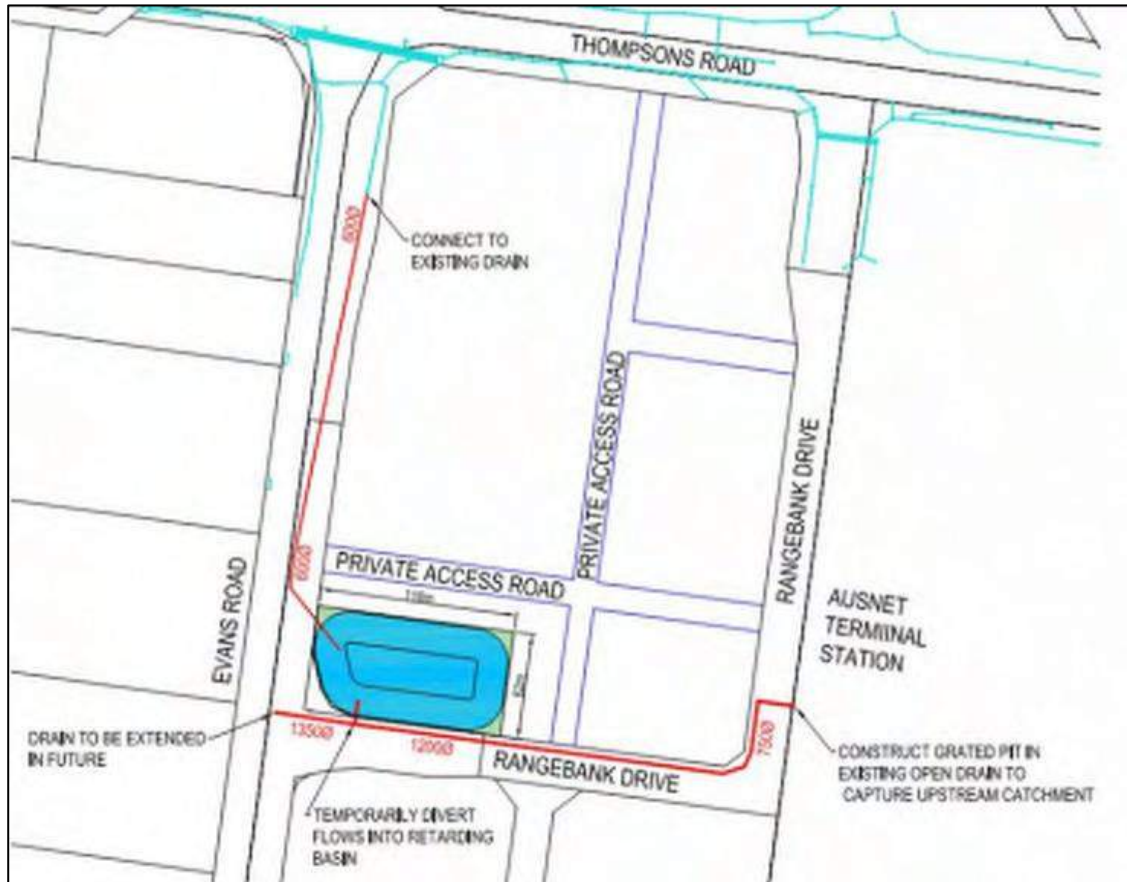


Stormwater from the subject site will ultimately be conveyed along the Rangebank Main Drain and Cranbourne Outfall Drain as depicted above. However, prior to this happening the Cranbourne Outfall Drain must be upgraded and the outfall of the Rangebank Outfall Drain must be constructed. This is not able to occur at this time.

Accordingly, an interim arrangement will be put in place to allow the scheme to function. The Rangebank Main Drain will terminate at Evans Road and connect to an interim retarding basin which will then outfall to Thompsons Road. These assets are currently under construction as part of Rangebank Drive construction works and will be readily available at the time of development of the subject site.

All Melbourne Water Scheme assets and the interim retarding basin have been sized to allow for the development of the subject site.

Figure 5: Interim Scheme Arrangement



Contributions toward the scheme are not required as part of this development as they will be paid prior with the Rangebank Drive/Battery Court subdivisions.

For further information, including hydrology and hydraulic calculations for the drainage scheme, please refer *Appendix C* for the overall stormwater strategy for the area.

4.2. Council Infrastructure

Drainage from the subject site will discharge at the Legal Point of Discharge into the council infrastructure which in turn connects into the greater Melbourne Water Scheme.

Battery Court adjacent the site is currently under construction and will be completed in time to be readily available for development of the subject site.

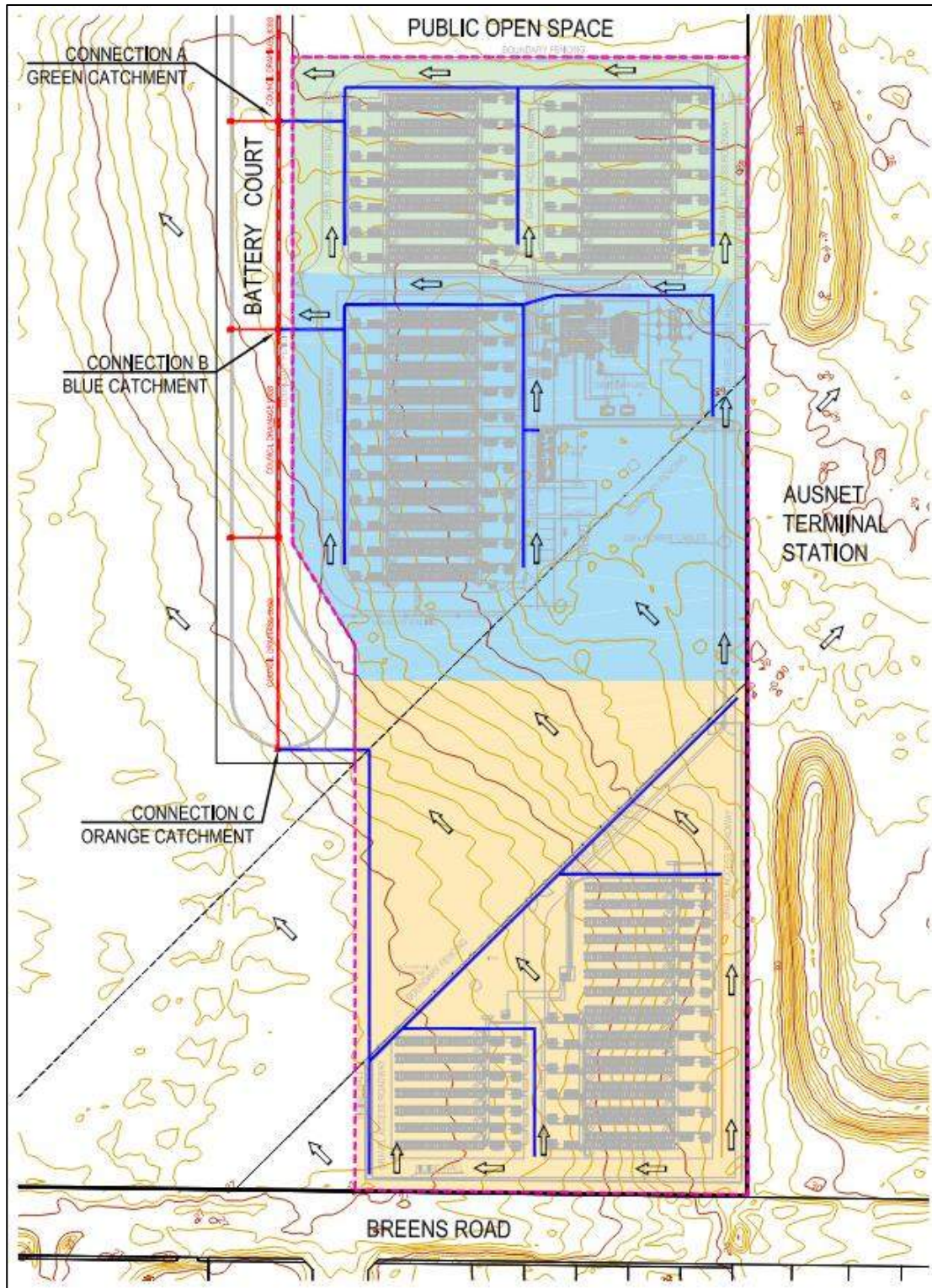
The road has been designed to allow for the proposed development. A 900mm dia. drain is located along the eastern side of the road which will act as an LPD for the proposed development.

Please refer to *Appendix D* for detailed design of Battery Court.

5.0 Proposed Drainage System

The drainage system for the development will be designed to safely convey stormwater runoff and provide protection from flooding in a 1% AEP storm event.

Figure 6: Proposed Drainage System



5.1. Minor Storm Event

The minor drainage system will consist of a subsurface pipe network designed to capture and convey all stormwater runoff generated from the catchment for rainfall events up to and including the 10% AEP storm for industrial catchments. The system will be owned and maintained privately and designed in accordance with the AS3500 Plumbing Code.

An indicative layout of the proposed pipe network has been shown on the previous sketch plan in blue. Pipes will be extended through the site along the internal road network utilising grated pits to collect surface water.

The batteries themselves do not require a drainage connection. They site atop strip footings, keeping them elevated from the surrounding crushed rock hardstand.

The crushed rock hardstand will be graded to convey flows to the discharge location. Pits should be located intermittently to capture water and reduce the flow depth on the surface.

The site has been divided into 3 catchments to minimise pipe sizes and point flows. These 3 catchments will each make an individual connection into the council drainage system in the location shown. This aligns with the catchments allowed in the Battery Court design.

The adjacent areas all grade away from the subject site and no allowance is required for upstream catchments.

Figure 7: Typical Strip Footings for Battery Cube rows



5.2. Major Drain Network

The major drainage system will utilise a combination of pipelines and the road network to safely convey gap flows between the 10% and 1% AEP storm overland in accordance with DELWP Guidelines for Development in Flood Affected Areas.

Major flows will be conveyed across the hardstand to their discharge point at Battery Court. As opposed to localised connection points, the site will be graded to sheet the flow to the occur lower scour risk in major events.

6.0 Water Quality

It is required that stormwater quality measures are applied to this site in accordance with the Clause 44 of the State Environmental Protection Policy (SEPP). To meet minimum SEPP requirements, developments should meet the Best Practice Environmental Management Guidelines for Urban Stormwater, available from CSIRO Publishing. Best practice stipulates the following outcomes for both construction, and post-construction phases of the project:

Construction Phase

Pollutant type	Receiving water objective	Current best practice performance objective
Suspended solids	Comply with SEPP	Effective treatment of 90% of daily run-off events (e.g. <4 months ARI). Effective treatment equates to a 50 percentile suspended solids concentration of 50 mg/L. This can be achieved by installing a sediment ponds to remove 95% of sediment down to 125 µm for a 1 year ARI.
Litter	Comply with SEPP	Prevent litter from entering the stormwater system. This requirement extends until 95% of the lots are constructed or a period of two years has passed.
Other pollutants	Comply with SEPP	Limit the application, generation and migration of toxic substances to the maximum extent practicable.

Post-construction Phase

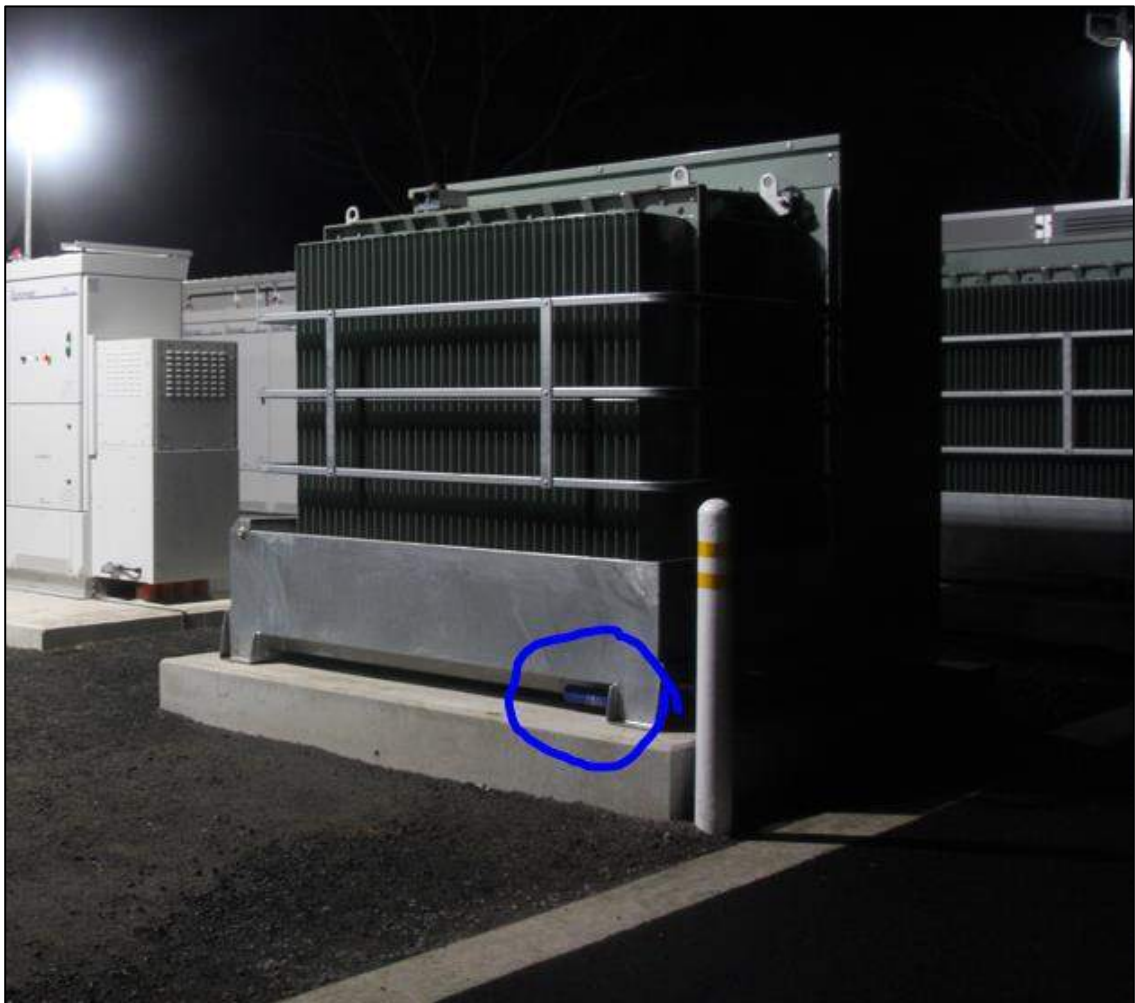
Pollutant type	Receiving water objective	Current best practice performance objective
Suspended solids (SS)	Comply with SEPP (not to exceed the 90th percentile of 80 mg/L) (1)	80% retention of the typical urban annual load
Total phosphorus (TP)	Comply with SEPP (base flow concentration not to exceed 0.08 mg/L) (2)	45% retention of the typical urban annual load
Total nitrogen (TN)	Comply with SEPP (base flow concentration not to exceed 0.9 mg/L) (2)	45% retention of the typical urban annual load
Litter	Comply with SEPP (No litter in waterways) (1)	70% reduction of typical urban annual load (3)
Flows	Maintain flows at pre-urbanisation levels	Maintain discharges for the 1.5 year ARI at pre-development levels

Treatment of stormwater runoff from the development will be treated to best practise standards by the treatment infrastructure constructed downstream under the Lyndhurst DSS (0711). As such, no further treatment is required on site in this respect.

The core transformers at the end of each battery are self-bunded. The bund will discharge to the adjacent hardstand surface via an outlet pipe. To prevent hydrocarbons discharging from the bund a “Petro-Plug” or approved equivalent will be installed on the outlet.

Designed to fit standard piped floor drains in boiler rooms, garages, warehouses, oil storage areas, and underground vaults, the Petro-Plug removes low levels of diesel, gasoline, and oils while allowing water to flow through as usual. If a spill occurs, the Petro-Plug seals off completely, shutting down any discharge into sewer lines, sump pits, oil/water separators, catch basins, etc., allowing spills to be cleaned up at the source.

Figure 8: Petro-Plug Installed on Core Transformer



The main power transformer is larger. The area will be bunded off and drain to the corner where stormwater will be collected and treated by a Class 1 Oil Water Separator before discharging into the internal pipe network.

An example of such separator is the GPS Environmental Oil Water Separator shown below.

Figure 9: GPS Environmental Oil Water Separator



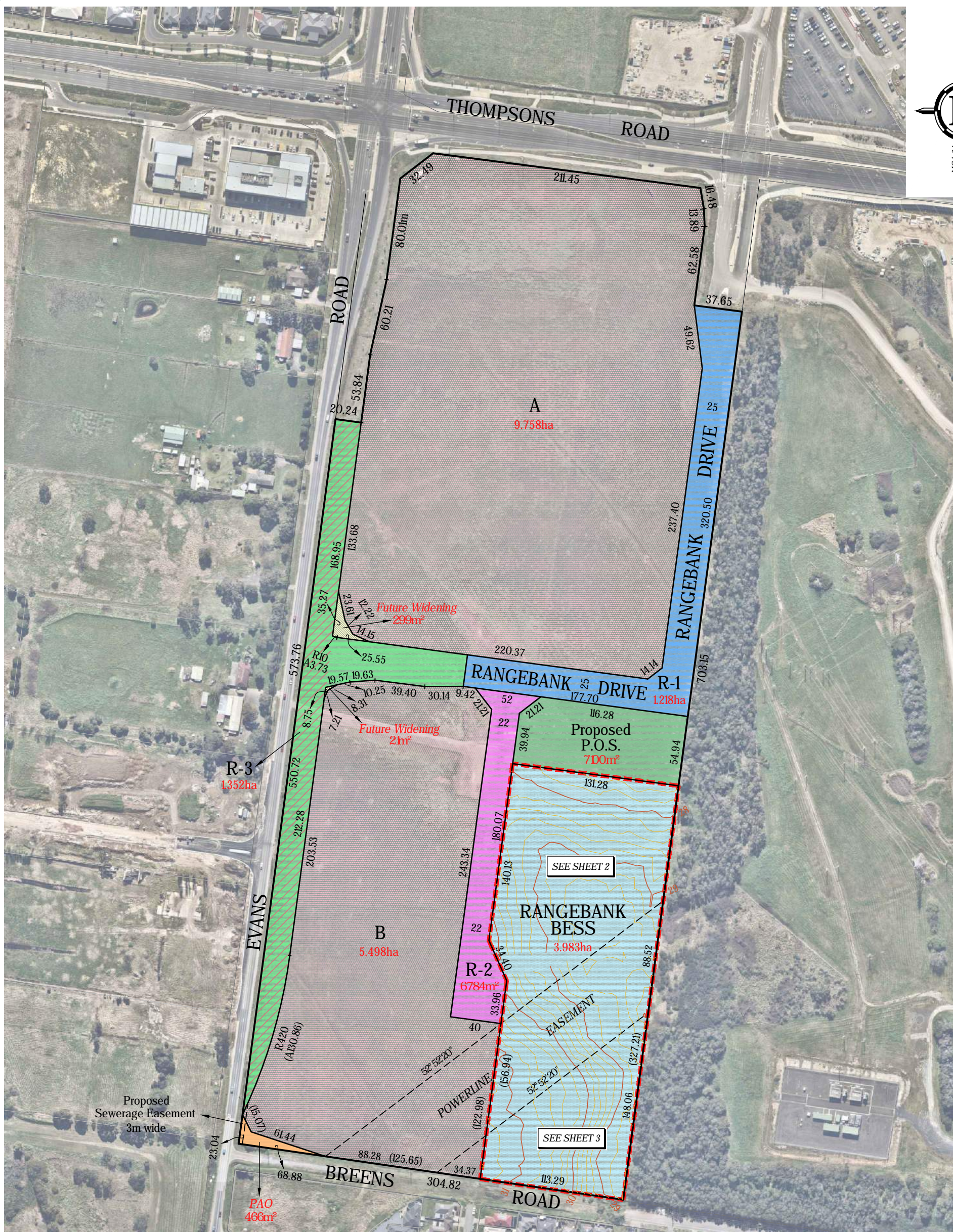
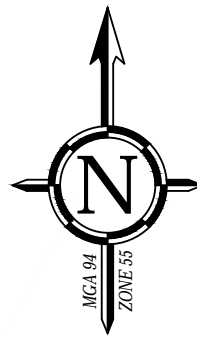
7.0 Conclusion

This report makes the following general conclusions:

- The proposed drainage strategy for the site will safely convey stormwater runoff and provide protection from flooding in a 1% AEP storm event.
- The adjacent Council and Melbourne Water infrastructure has been designed to allow capacity for the proposed development.
- Sufficient treatment is provided downstream of the subject site by the existing Marriot Waters Wetland under the Melbourne Water Drainage Scheme to treat flows from the development to best practise. Additional treatment has been provided on transformers to remove risk of hydrocarbon spill.

Appendix A

Proposed Layout



NOTE

Road linework indicative only and subject to engineering approval

IMPORTANT NOTE

Title has been re-established but not marked at time of survey, see title for full easement details.

The dimensions, areas and total number of lots shown hereon are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation that could cause a change to this plan.

KLM Spatial can therefore accept no responsibility for reliance on this plan for any financial dealings involving the land.

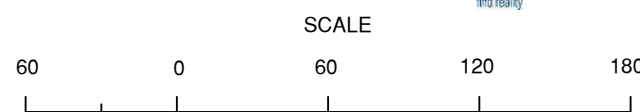
This note is an integral part of this plan.
This plan must not be passed on to any third party or reproduced in any documentation without the written approval of KLM Spatial.

LEGEND

- BESS (Battery Energy Storage System) SITE
- PROPOSED PUBLIC OPEN SPACE
- SITE SUBJECT TO PERMIT APPLICATION
- PROPOSED LOTS
- ROAD RESERVE R-1
- ROAD RESERVE R-2
- ROAD RESERVE R-3
- PUBLIC ACQUISITION OVERLAY (PAO)
- INDICATIVE ULTIMATE INTERSECTION FLARING
- PUBLIC ACQUISITION OVERLAY TO BE ACQUIRED (1028ha)
- MAJOR CONTOURS (1m INTERVAL)

Photomaps courtesy of Nearmap.

Photomap Flown: 01-09-2021



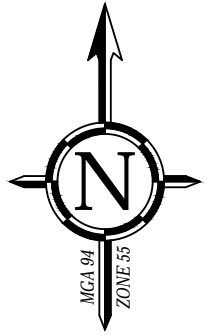
LENGTHS ARE IN METRES

Client:
Macquarie Corporate Holdings Pty Ltd
Title Details:
Vol. 12141 Fol. 517
Lot 1 on PS823198L
Reference: 5959.08 PE01
Plan Date: 27-09-2021
Version: 2
Scale: 1:3000
Sheet 1 of 4
Sheet Size: A3



280 Evans Road, Cranbourne West 3977

Rangebank BESS Site Plan



NOTE

Surface Treatment of Battery area is 20mm class B crushed rock.

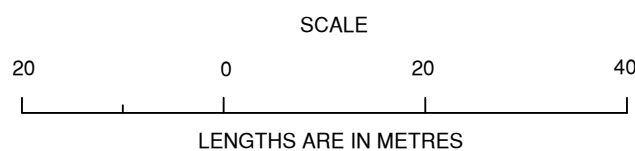
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Client:
Macquarie Corporate Holdings Pty Ltd.

Title Details:
Vol. 12141 Fol. 517
Lot 1 on PS823198L

Reference: 5959.08 PE01

Plan Date: 27-09-2021

Version: 2

Scale: 1:750

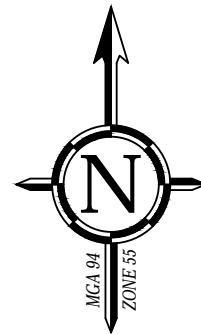
Sheet 2 of 4

Sheet Size: A3



280 Evans Road, Cranbourne West 3977

Rangebank BESS Plan



SEE SHEET 2



NOTE

Surface Treatment of Battery area is 20mm class B crushed rock.

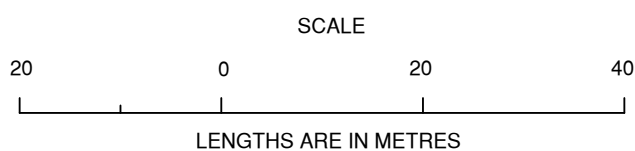
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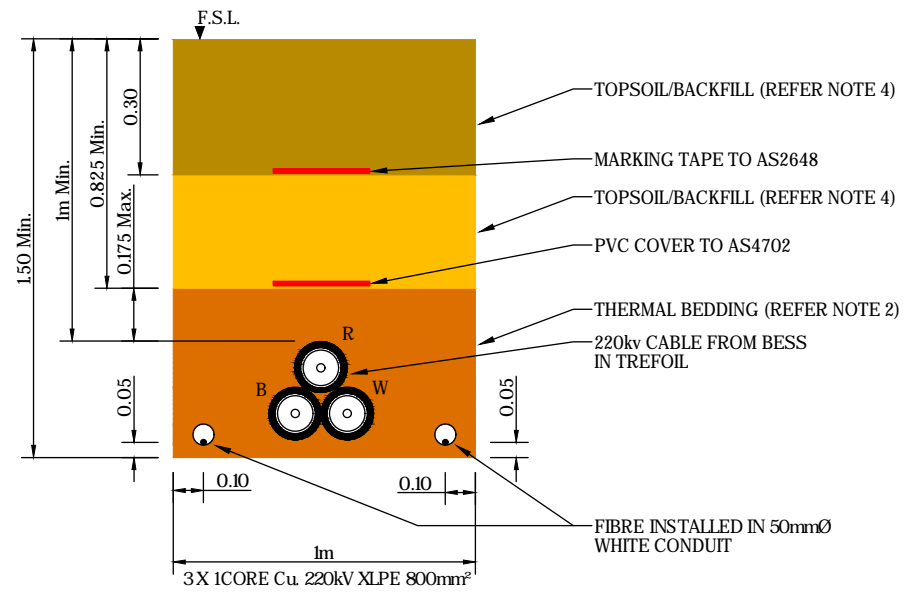
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Macquarie Corporate Holdings Pty Ltd.
Title Details:
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Plan Date: 27-09-2021
Version: 2
Scale: 1:750
Sheet 3 of 4
Sheet Size: A3



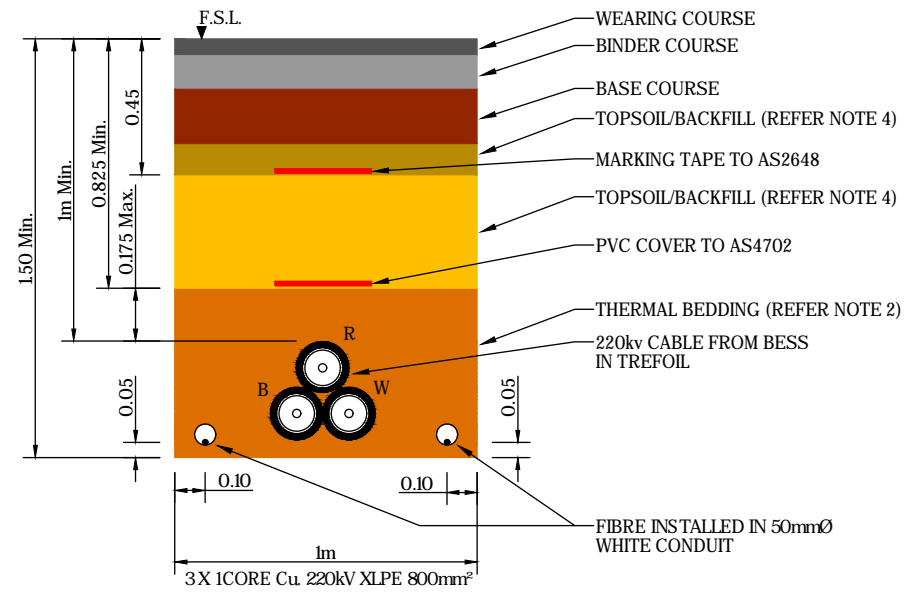
280 Evans Road, Cranbourne West 3977

Rangebank BESS Plan

TYPICAL CABLE SECTIONS 220kv CONNECTION



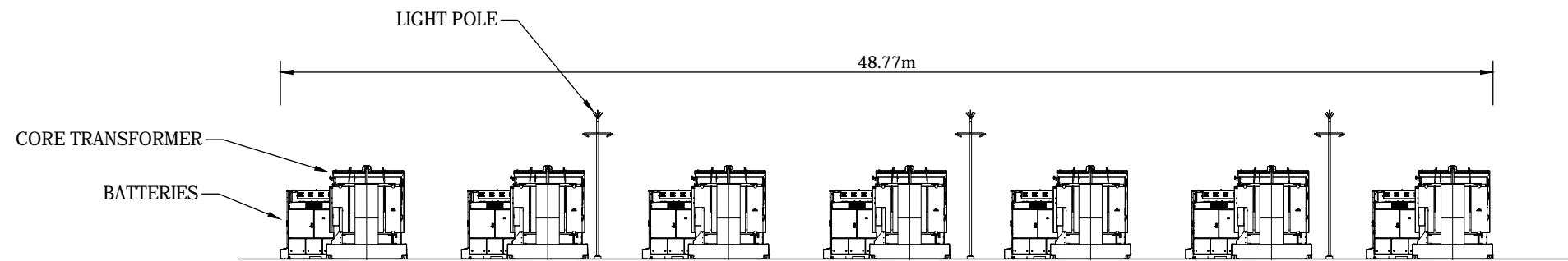
SECTION B TRENCH UNDER EASEMENT



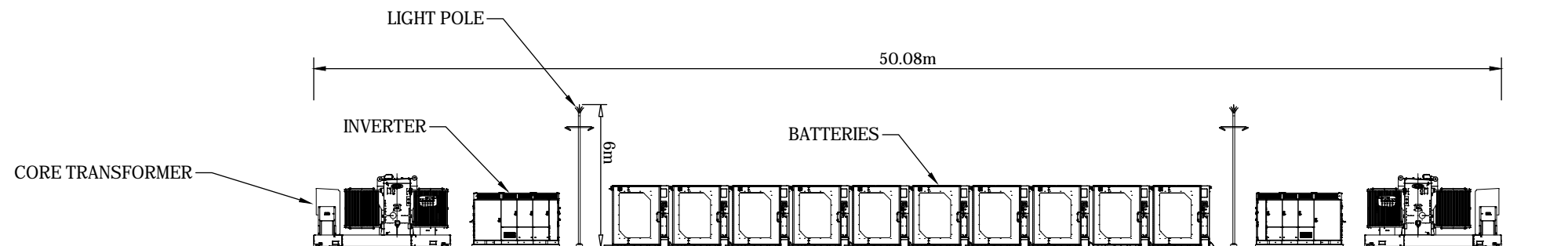
SECTION B TRENCH UNDER ROAD

NOTE

1. Trenches excavated for the direct burial of cables shall be carefully cleared of rocks prior to the laying of the cable. Cables shall be bedded in thermal bedding of not less than 50mm thick. After laying the cable, the same thermal bedding material shall be installed over the cable to a minimum thickness of 75mm above the cable (note bedding requirements)
2. Thermal bedding shall have a minimum fully dried out TR value of 12km/W at minimum 85% compaction, care shall be taken when compacting bedding so that the cable is not damaged.
3. Sand shall be a well-graded mixture with no particle size greater than 5mm. A grading curve shall be supplied from the quarry which should indicate an even grading of particle sizes down to very fine.
4. Washed or graded sands shall not be used.
5. Rocks and sharp objects shall be removed from sub soil prior to backfill.
6. The dry thermal resistivity of the proposed mixture shall be measured prior to use.
7. The backfill shall have a dry density of approximately 800kg/m³.
8. Backfilling to 85% shall be done in layers not exceeding 200mm and each layer shall be compacted before next layer is applied.
9. Cut cables that are not immediately joined shall be capped to prevent moisture ingress.
10. The cable & FOC manufacturers specified maximum bending radii and pulling tensions shall be adhered to at all times.
11. Cable crossings must be avoided, however if a crossing is practically unavoidable, cables shall be crossed perpendicular to each other with sufficient gap between them to prevent derating.



ELEVATION A-A'
SCALE 1:250



ELEVATION B-B'
SCALE 1:250

Appendix B

Melbourne Water Drainage Scheme

DSCM Legend

- DSS Boundary
- DS Strategy Boundary
- DSCM Property
- Stage (Allocated)
- Stage (Works in Progress)
- Stage (Finalised)
- Nodes
- Bio-Retention Swale

- Channel
- Cleanout works
- Culvert
- Grassed Swale
- Low flow pipe with Channel
- Overland flow path
- Pipeline
- Soft Engineering

- Bio-Retention Basin
- Buffer Strip
- Inlet/Outlet Structure
- Junction Pit
- Litter trap
- Retarding Basin
- Sediment trap
- Wetland

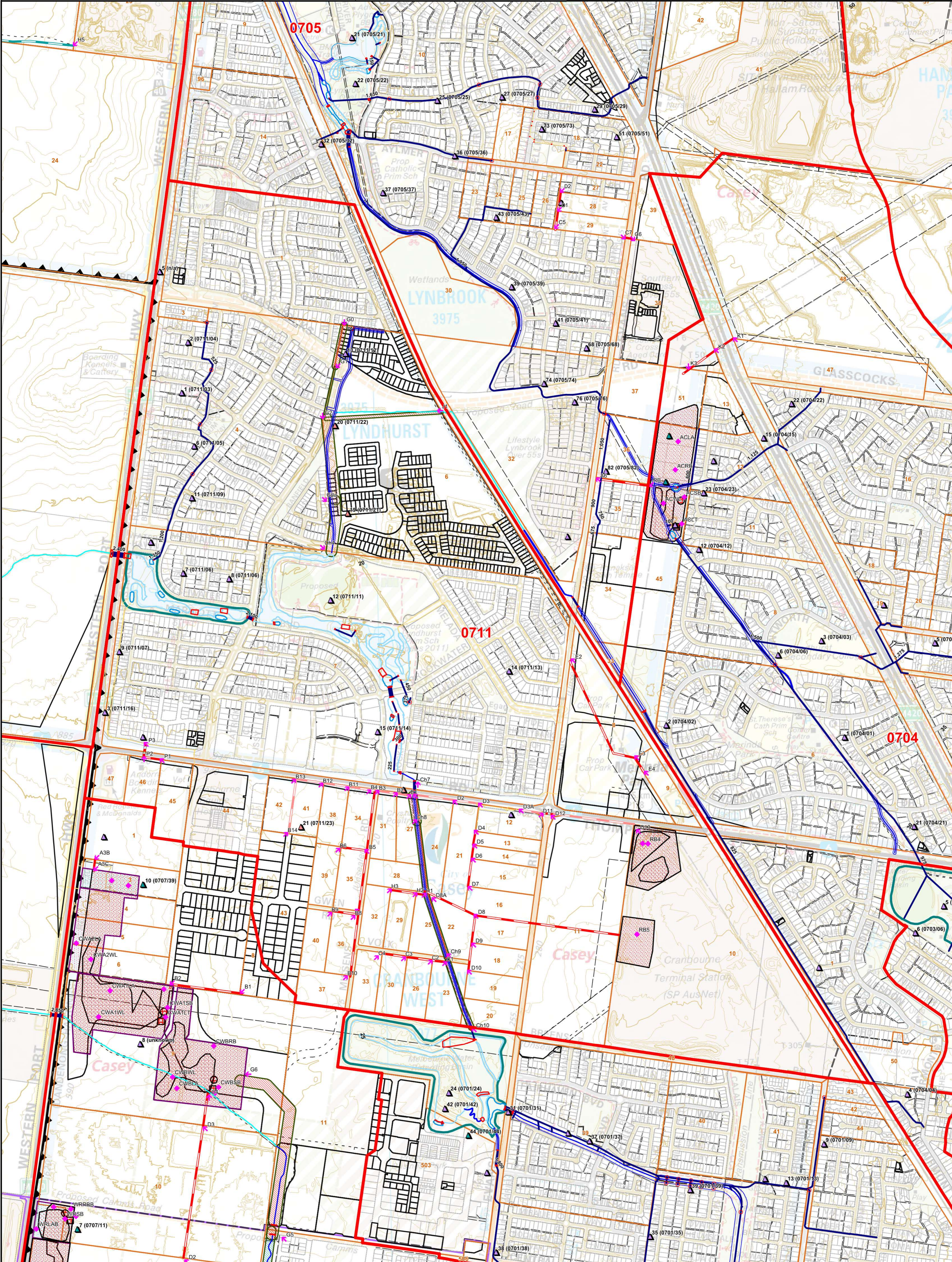
As Constructed Legend

- Channel
- Natural Waterway
- Sewer Main
- Underground Drain
- Water Main
- Flood Extents
- Lake
- Retarding Basin
- Sediment Trap
- Wetland

Plan Date: August 2017

Melbourne Water is providing this indicative asset information and is not to be used as the basis of future design and aspects that the appointed engineering consultant will perform their own calculations as part of requirements for their development. This site plan shows schemes developed and Melbourne Water receives additional information, the conceptual/indicative advice you have been provided as part of the feasibility request may require or change. Under the CA process it is the responsibility of the consultant to ensure that Melbourne Water's health/safety advice is correct and to verify that all information obtained is correct. Melbourne Water is not responsible for any errors or omissions in this plan.

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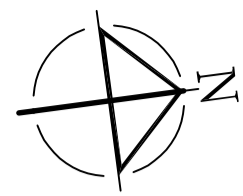
Appendix C

Rangebank Overall Stormwater Management Strategy

(Provided Separately)

Appendix D

Rangebank Stage 2 Design Plans



IMPORTANT CONCRETE WORKS NOTE

THE CONTRACTOR RESPONSIBLE FOR CONCRETE PAVEMENT CONSTRUCTION IS TO ENSURE THAT SEWER MAINTENANCE HOLE/SHAFT AND INSPECTION SHAFT SURROUNDS HAVE EXPANSION JOINT MATERIAL FIXED IN PLACE PRIOR TO PLACING CONCRETE PAVEMENTS. FAILURE TO INSTALL THE EXPANSION JOINT WILL RESULT IN THE ISSUE OF A NON-COMFORMANCE BY THE WATER AUTHORITY, AND POSSIBLY DELAY ISSUE OF AN ACCEPTANCE OF WORKS CERTIFICATE AND OR A STATEMENT OF COMPLIANCE REQUIRED FOR SUBDIVISIONAL RELEASE.

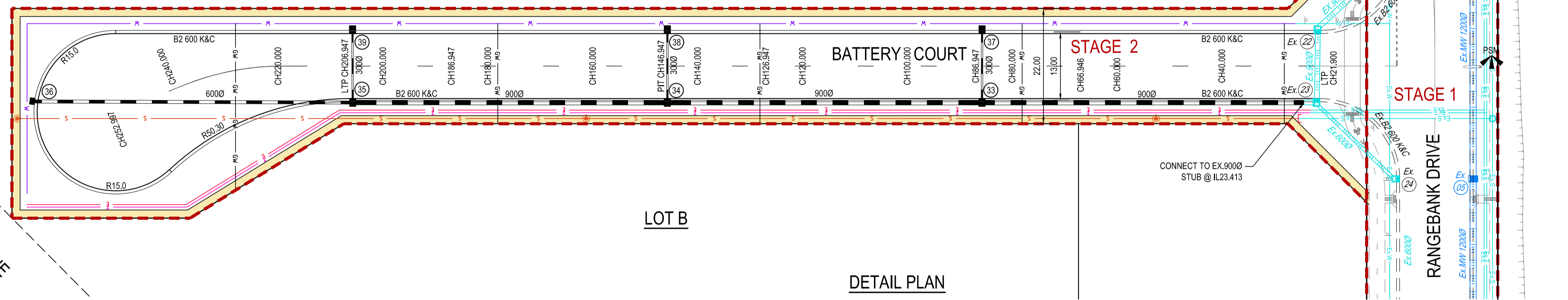
NOTE:
PIPELINES SHOWN IN ROAD RESERVES ARE INDICATIVE TO REPRESENT INTENT. PIPELINES AND PITS SHALL NOT BE SET-OUT FROM DIGITAL INFORMATION UNLESS DOCUMENTED EASTINGS AND NORTHINGS ARE PROVIDED SPECIFICALLY FOR THAT INTENT. DRAINAGE PIPELINES BEHIND BACK OF KERB SHALL BE OFFSET SUCH THAT TRENCH EXCAVATION IS NOT WITHIN 150mm OF BACK OF KERB. WHERE THIS CANNOT BE SATISFIED THE TRENCH SHALL BE BACKFILLED WITH SELECT GRANULAR MATERIAL APPROVED BY THE ENGINEER.

DRAINAGE TRENCH BACKFILL SHALL BE COMPACTED TO COUNCIL'S SPECIFICATIONS.

WARNING - ELECTRICITY
OVERHEAD ELECTRICITY LINES EXIST WITHIN THE VICINITY OF PROPOSED WORKS ALONG POWERLINE EASEMENT. CONTRACTOR IS TO ENSURE ALL WORK CONFORMS TO SP AUSNET REQUIREMENTS, INCLUDING SAFETY REQUIREMENTS. CONTRACTOR IS TO CONTACT SP AUSNET AT LEAST 2 WORKING DAYS PRIOR TO ANY WORKS. CONTRACTOR TO OBTAIN WORK PERMIT UNDER POWER LINES PRIOR TO COMMENCEMENT OF WORKS.

LOT B

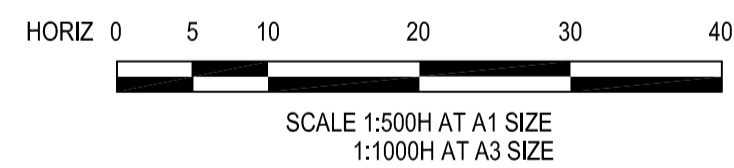
AT CONNECTION POINT NEW PAVEMENT, KERB & CHANNEL AND FOOTPATH TO NEATLY MATCH INTO EXISTING ROAD TO PROVIDE, WITHOUT DISCONTINUITY, A SMOOTH CONNECTION IN ACCORDANCE WITH DESIGN LEVELS AND GRADES TO THE SATISFACTION OF THE INFRASTRUCTURE MANAGER.



LOT B

LOT A

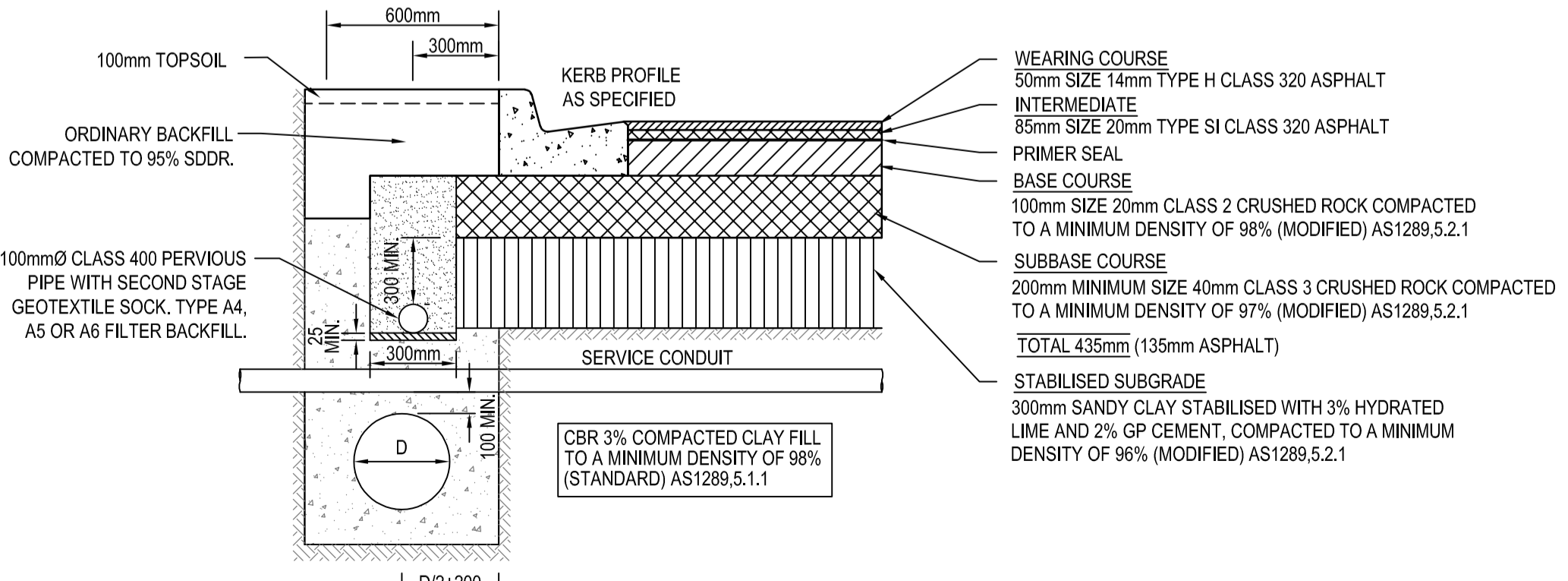
DETAIL PLAN



LEGEND

- FALL OF LAND
- EXISTING KERB AND CHANNEL
- EXISTING SEWER
- EXISTING TELECOMMUNICATIONS
- EXISTING UNDERGROUND ELECTRICITY
- EXISTING DRINKING WATER MAIN
- EXISTING NON-DRINKING WATER MAIN
- PROPOSED KERB & CHANNEL
- PROPOSED SEWER
- EXISTING DRAINAGE
- PROPOSED R.C.P DRAINAGE
- PROPOSED MELBOURNE WATER R.C.P DRAINAGE
- LINEMARKING
- EXISTING LINEMARKING TO BE MAINTAINED
- PROPOSED WATER & GAS CONDUIT
- PROPOSED TELECOMMUNICATIONS
- PROPOSED UNDERGROUND ELECTRICITY
- PROPOSED NON- DRINKING WATER MAIN
- PROPOSED WATER MAIN
- DENOTES CONCRETE FOOTPATH
- PERMANENT SURVEY MARK
- TACTILE GROUND SURFACE INDICATOR - HAZARD
- TACTILE GROUND SURFACE INDICATOR - DIRECTION
- TACTILE GROUND SURFACE INDICATORS ARE TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 1428.4.1:2009 DESIGN FOR ACCESS AND MOBILITY

TGSI LEGEND



PAVEMENT DETAILS (BATTERY COURT)
NOT TO SCALE



0	ISSUED FOR CONSTRUCTION	P.D	S.Y	R.F	16/08/21
A	PRELIMINARY ISSUE	P.D	S.Y	S.Y	26/04/21
Rev	Reason	Drawn.	Des.	Chk.	Date

FOR CONSTRUCTION

CLIENT:
MURPHY TRUST NO.1

PROJECT:
280 EVANS ROAD, CRANBOURNE WEST INDUSTRIAL SUBDIVISION - STAGE 2

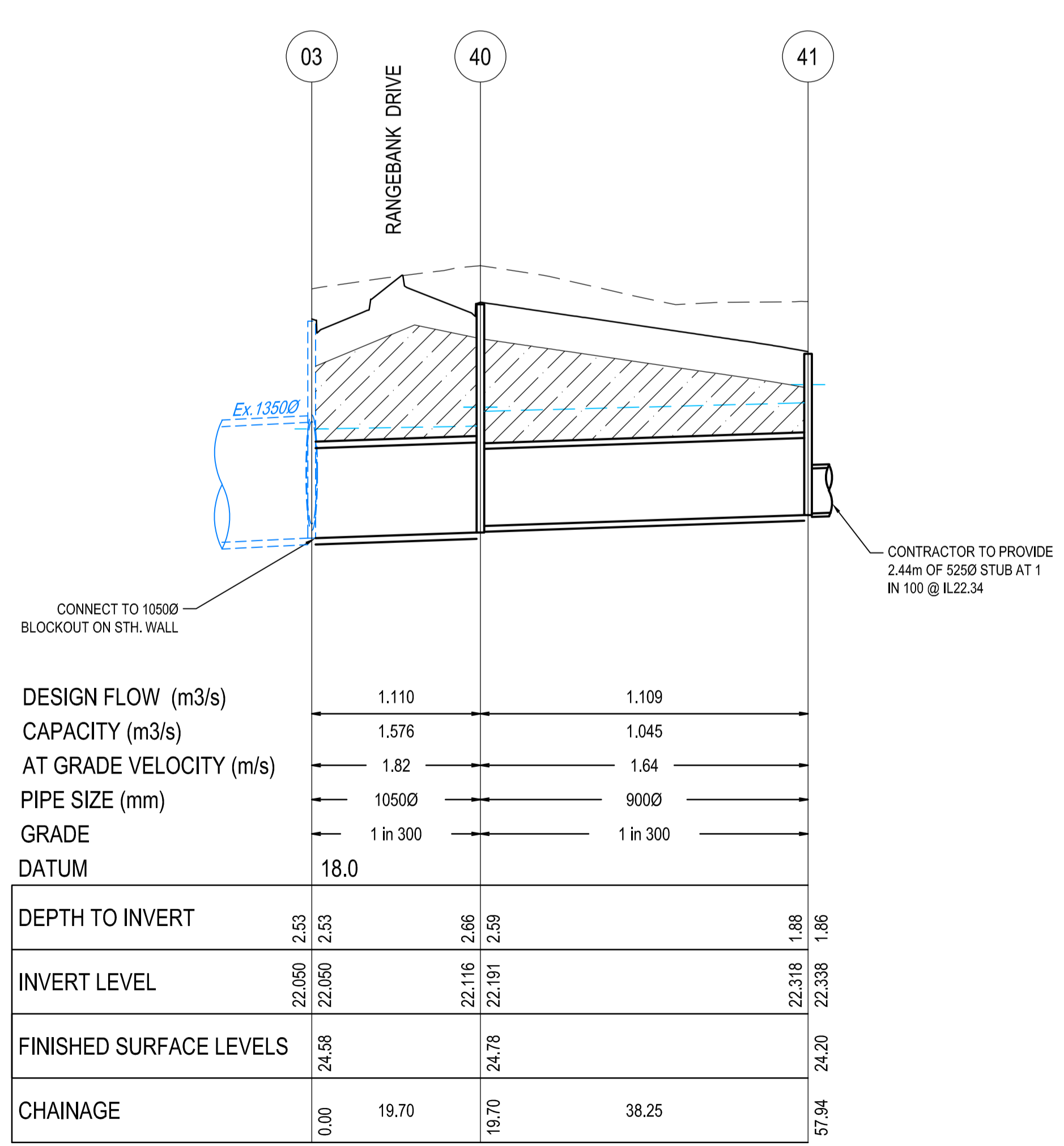
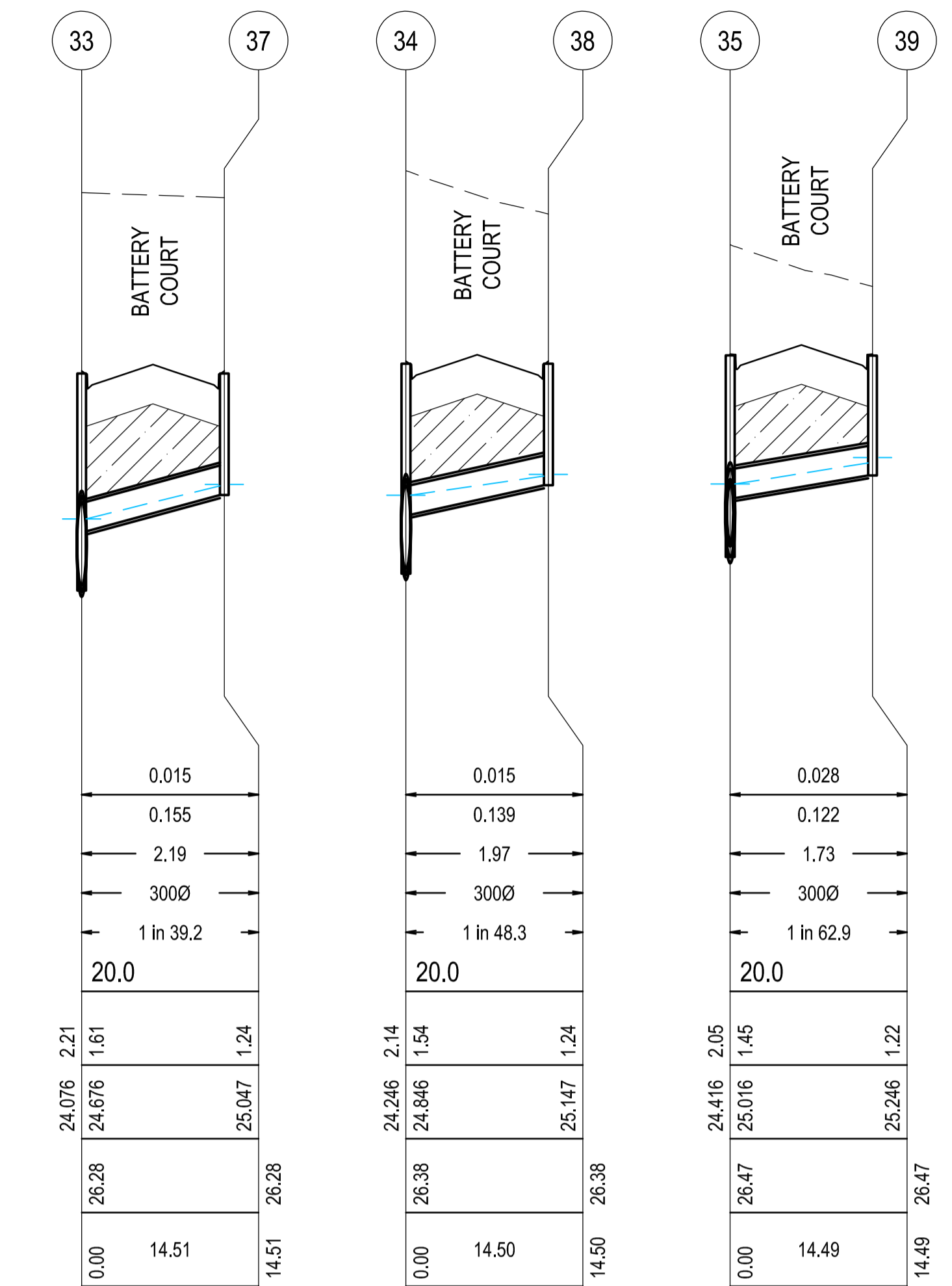
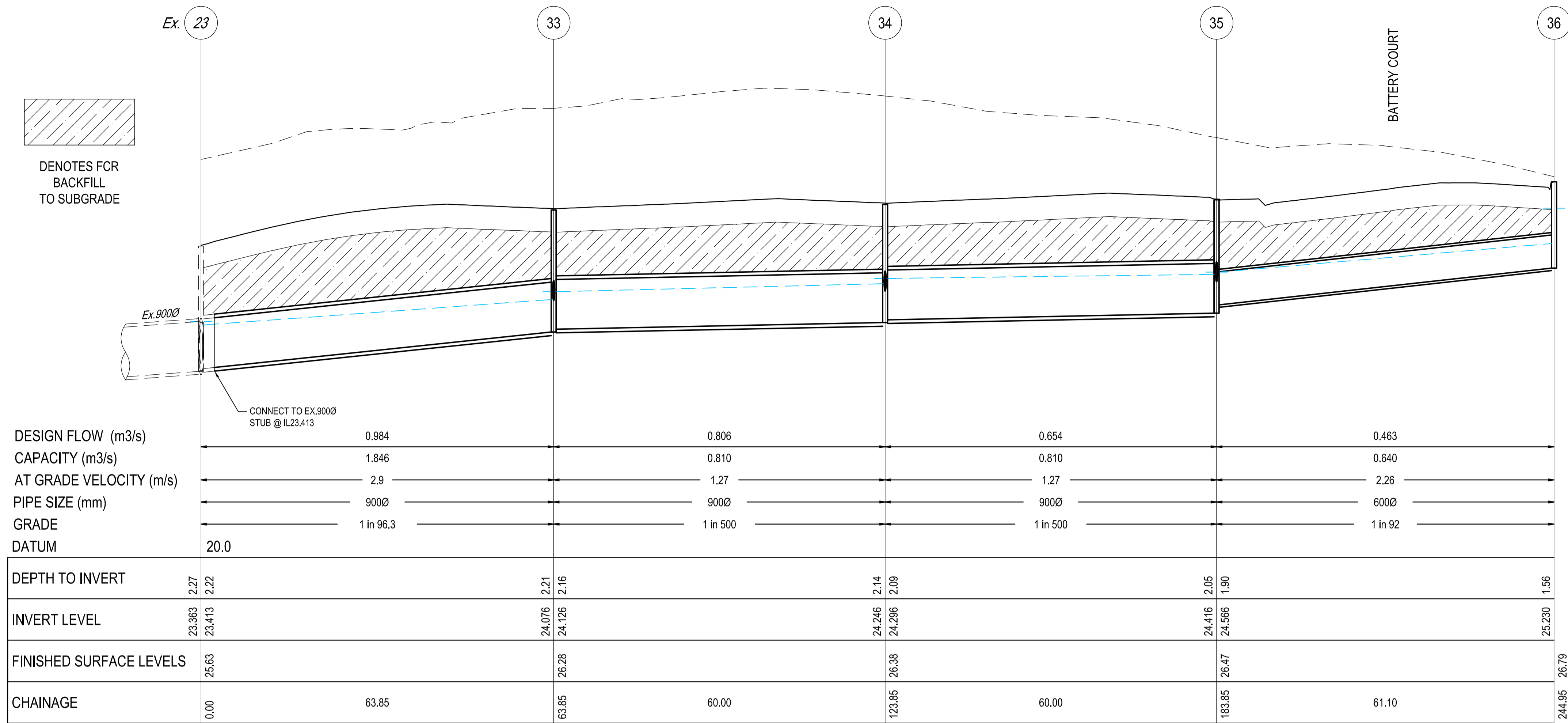
DETAIL PLAN AND PAVEMENT DETAIL

Job	Drawing	Revision
E5959.07.1	R_02	0
Sheet: 2 of 7	Municipality: CASEY	Melway Ref. 129 D10



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NOTE:
 WHERE CRUSHED ROCK BACKFILL IS SPECIFIED, IT SHALL BE AS FOLLOWS:
 UNDER ROAD PAVEMENT - CLASS 2
 UNDER FOOTPATHS & DRIVEWAYS - CLASS 3
 ELSEWHERE (> 450Ø) - CLASS 4

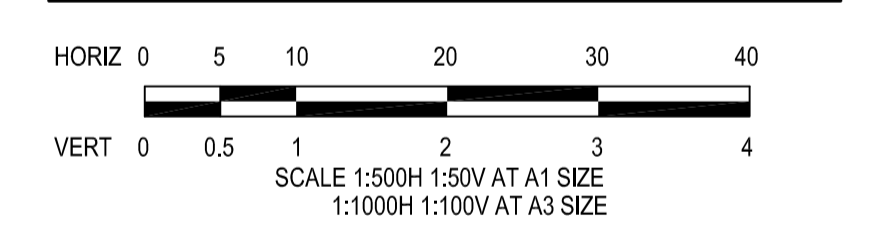
ONLY BACKFILL UNDER ROAD PAVEMENT ARE SHOWN ON DRAINAGE LONGITUDINAL SECTION. CONTRACTOR IS TO ENSURE BACKFILL BEHIND BACK OF KERB, UNDER CONCRETE FOOTPATHS, DRIVEWAYS AND PIPES GREATER THAN 600mm LOCATED PARALLEL BEHIND / UNDER THE KERB TO BE PROVIDED AS REQUIRED.

ALL TRENCHES & BACKFILL MATERIAL TO BE COMPACTED TO MINIMUM STANDARD DENSITY OF 95% IN ACCORDANCE TO COUNCIL'S SPECIFICATIONS.

PIT SCHEDULE										
NAME	PIT TYPE	INTERNAL		INLET		OUTLET		PIT		REMARKS
		WD	LEN	DIA	INV LEV	DIA	INV LEV	SETOUT RL	DEPTH	
Ex.23	EX. GRATED SIDE ENTRY PIT	1200	1200	900(2)	23.413	900(2)	23.363	25.629	2.266	CONNECT TO EX.900Ø STUB @ IL23.413
				600	23.513					
33	HAUNCHED GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603 & 607	1200	900	900(2)	24.126	900(2)	24.076	26.282	2.206	HAUNCHED UNDER KERB
				300(2)	24.676					
34	HAUNCHED GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603 & 607	1200	900	900(2)	24.296	900(2)	24.246	26.382	2.136	HAUNCHED UNDER KERB
				300(2)	24.846					
35	HAUNCHED GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603 & 607	1200	900	600(2)	24.566	900(2)	24.416	26.466	2.050	HAUNCHED UNDER KERB
				300(2)	25.016					
36	JUNCTION PIT REFER TO STD DWG EDCM 605	900	900	-	-	600(2)	25.230	26.794	1.564	
37	GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603	600	900	-	-	300(2)	25.047	26.283	1.236	
38	GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603	600	900	-	-	300(2)	25.147	26.382	1.236	
39	GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603	600	900	-	-	300(2)	25.246	26.466	1.219	
40	DOUBLE HAUNCHED GRATED SIDE ENTRY PIT REFER TO MW STD DWG 725108/408 & 409	1350	1200	900(2)	22.191	1050(2)	22.116	24.777	2.661	
41	HAUNCHED GRATED SIDE ENTRY PIT REFER TO STD DWG EDCM 603 & 607	1200	1200	525(2)	22.338	900(2)	22.318	24.200	1.882	HAUNCHED UNDER KERB PROVIDE 2.44m OF 525Ø STUB AT 1 IN 100 @ IL22.34

ALL PITS TO BE CONSTRUCTED AND INTERNALLY SHAPED IN ACCORDANCE WITH CASEY COUNCIL SPECIFICATIONS AND STANDARD DRAWINGS.
 ALL PITS GREATER THAN 0.9m IN DEPTH TO BE PROVIDED WITH STEP IRONS IN ACCORDANCE WITH CASEY COUNCIL SPECIFICATIONS AND STANDARD DRAWINGS.

DRAINAGE LONGITUDINAL SECTIONS



0	ISSUED FOR CONSTRUCTION	P.D	S.Y	R.F	16/08/21
A	PRELIMINARY ISSUE	P.D	S.Y	S.Y	26/04/21
Rev	Reason	Drawn	Des.	Chk.	Date

FOR CONSTRUCTION

CLIENT:
MURPHY TRUST NO.1

PROJECT:
**280 EVANS ROAD, CRANBOURNE WEST
 INDUSTRIAL SUBDIVISION - STAGE 2
 DRAINAGE LONGITUDINAL SECTIONS**

Job: E5959.07.1 R_07
 Drawing: 0
 Sheet: 7 of 7
 Scale: AS SHOWN @ A1 Municipality: CASEY Metway Ref. 129 D10

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