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Quality Management Systems
Environmental Management Systems
Occupational Health and Safety Management Systems

Stormwater Management Plan
For
Proposed Battery Energy Storage
(BESS) at
6 Herbert Place, Smithfield
NSW 2164.



Nov 2024

Our Ref: 24219_Rev1

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1 Introduction

1.1 Background

This report has been prepared on behalf of ACLE Services Pty Ltd to support the drainage conditions of a development application for a proposed battery energy storage facility in Herbert Place, Smithfield.

The subject land has an approximate area of 13,817m². The subject land is in the General Industrial Zone (E4), as per Cumberland Council.

A proposal has been made to use approximately 2,339m² of the subject land (where the existing cooling towers are) as a battery energy storage facility as shown in Fig 1 and this report discusses the storm water management for the proposed project.

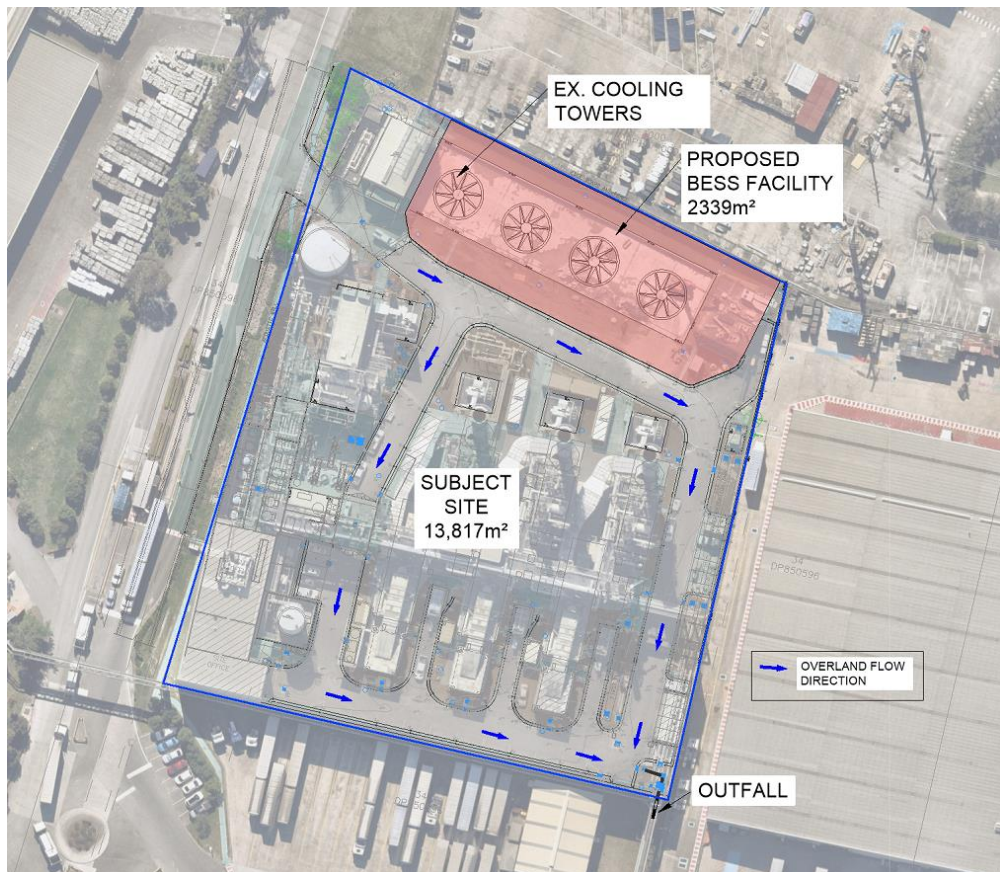


Figure 1- Aerial View of the Site

1.2 Aim of the Report

The purpose of this report is to provide a drainage strategy of the surface runoff for the proposed project, with consideration of the existing overland flow paths, stormwater retention, stormwater discharge and how the site is impacted in larger rainfall events.

2 Existing Site Drainage

2.1 Existing Site Conditions

The subject site is generally slopes in a north-eastern direction and discharging through a 600mm diameter pipe at the northeastern corner as shown in figure 1. Considering the existing contours the overland flow path will be along the internal road network as shown with flow arrows in figure 1.

3 Proposed Drainage

3.1 Proposed Works

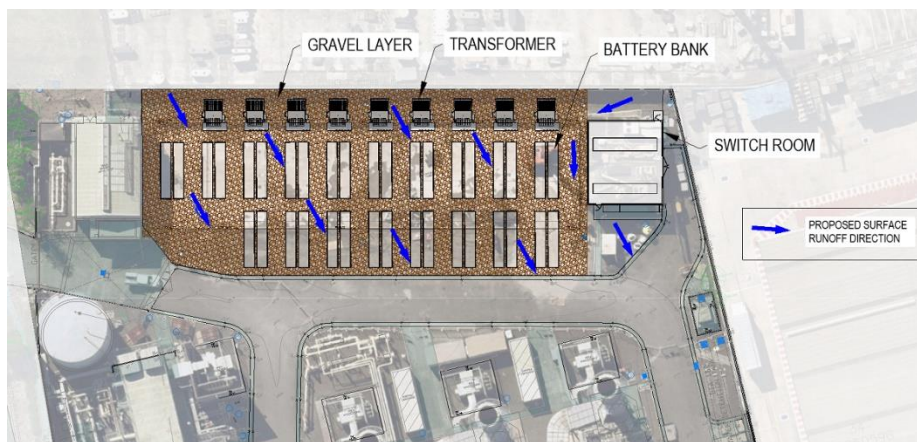


Figure 2 . Proposed Works

Proposed BESS mainly includes

- 9 x Transformers
- 18 x Twin Battery Bank Containers
- 1 x HV Switch Room

The balance area of the proposed area will have a gravel overlay. Refer Appendix 2 for proposed drainage works.

3.2 Catchment Analysis

Catchment comparison of the proposed BESS project area is shown in table 1. Impervious areas (such as roof areas, sealed surfaces) and semi-impervious areas (Blue Metal gravel layer) are compared between existing and proposed conditions.

Condition	Impervious (%) C = 0.95	Semi-Pervious (%) C = 0.5	Volumetric runoff coefficient
Existing (cooling Towers)	80	20	0.86
Proposed (BESS)	34	66	0.65

There is a significant reduction in impervious areas with the proposed conditions. As a result, the post development runoff of the site will have a 20% reduction compared to pre-development conditions.

3.3 Flood Levels

Flood levels related to a 1% AEP rainfall event from a TUFLOW hydrological model provided by Arcadis showing the current site conditions are given in figure 3. (Reference . FYFE Memorandum 53080-1 dated 26/02/2024)

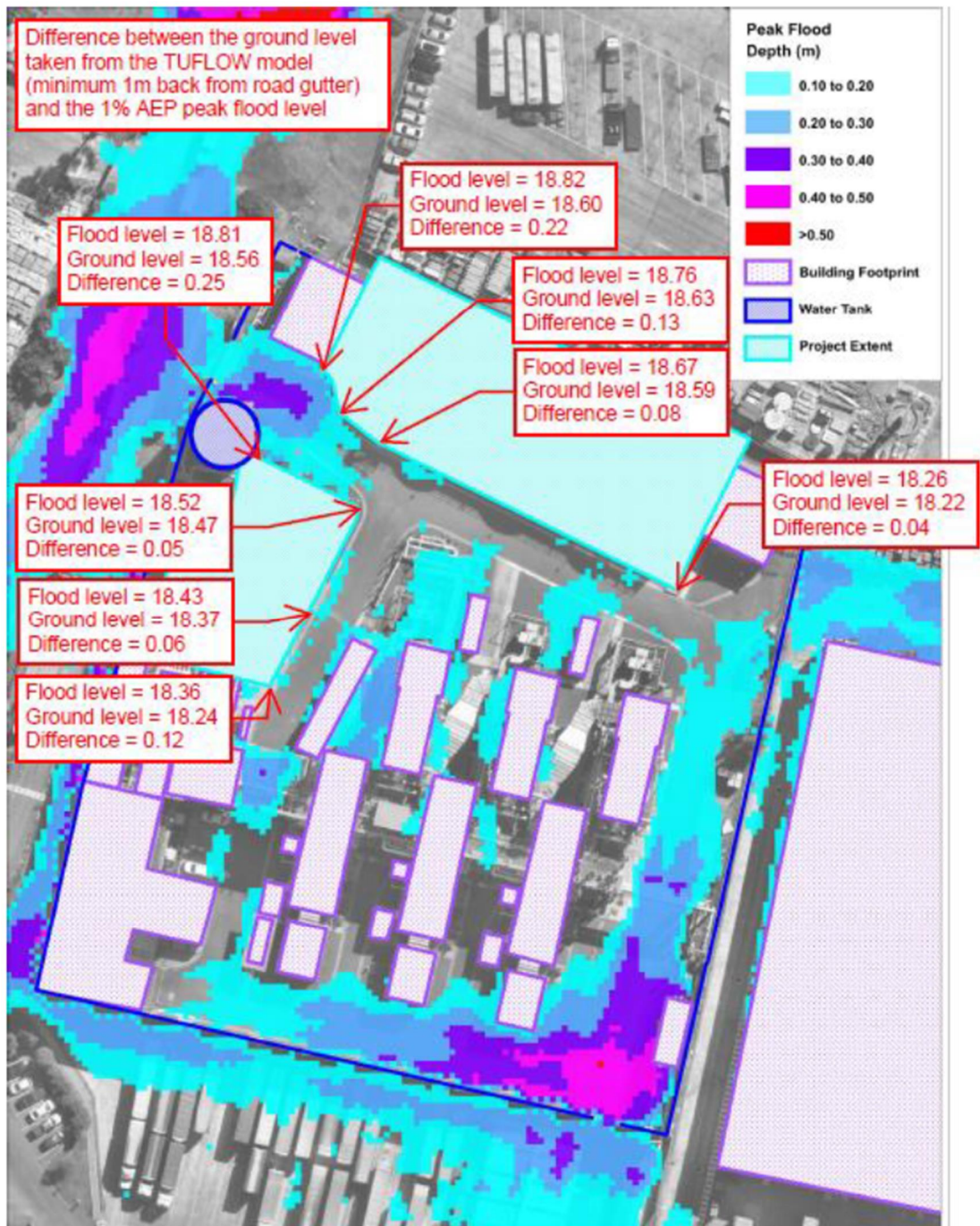


Figure 3 . Hydrological Model (Arcadis 2024)

The battery storage containers and transformers should be designed to be 150mm above the flood levels and the HV switch room should be 300mm above flood levels from the model shown in figure 3, maintaining safe clearance to the 1% AEP event.

3.4 Minor Flow System

Existing minor drainage system consist of underground drainage network safely conveying runoff to the legal point of discharge. As per catchment analysis discussed in section 3.2, post development runoff of the site will be significantly reduced compared to pre-development stage. Hence, Proposed project will have no impact on the existing runoff and the drainage network, and the existing conditions will prevail.

3.5 Major Flow System

Since the existing conditions of the rest of the site is not altered, the major overland flow path will remain unchanged.

Indicative flow paths are shown in Figure 1.

3.6 Water Quality

Existing drainage network incorporates several water quality measures to enhance the quality of water discharge from the site. As discussed previously, the proposed works will reduce the overall discharge rate, and it will not impede the performance of the existing water quality enhancing devices. Hence the existing water quality measures in site will prevail.

Contaminated water discharge . Contaminated water from the proposed transformers will be connected to a separate drainage line and pumped into the existing oil water separation system of the site. This will avoid any contaminated water entering directly into the stormwater network.

4 Conclusion

Comparison of the catchment characteristics in table 1 shows that the proposed project will decrease the runoff from the proposed catchment by 12%. Hence the existing drainage conditions will not be impacted by the proposed works.

Proposed transformers and Battery Storage Containers should be built 150mm above the flood level while the HV switch room should be built 300mm above the flood level.

Proposed gravel areas should be designed to allow surface runoff to be safely conveyed to the existing kerb line as shown in figure 2.

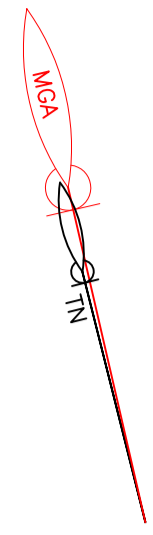
Development Condition B16 - Water pollution

As stated before, the proposed design will decrease the site runoff. Hence the performance of existing drainage infrastructure will not be impeded due to proposed works. Contaminated water discharge will also be treated independently as discussed in section 3.6 of the report. Hence the proposed project will satisfy the development condition B16.

5 Appendices

5.1 Appendix 1: Existing Conditions Plan (Rodon Associates Pty Ltd.)

A1



- HATCH LEGEND**
- CONCRETE AREA
 - BITUMEN AREA
 - GRASS AREA
 - GRAVEL AREA
 - MINIMAL/NO SURVEY CONDUCTED

- SYMBOLS**
- KERB OUTLET
 - TELECOMMUNICATION PIT
 - POWER POLE
 - LIGHT POLE
 - MANHOLE
 - WATER HYDRANT
 - GARBAGE BIN
 - SIGN
 - STOP VALVE
 - GAS MAIN
 - GAS PIT
 - ELECTRIC BOX
 - ELECTRIC PILLAR

- ABBREVIATIONS:**
- BOL BOLLARD
 - BM BENCHMARK
 - BK BACK OF ROLL KERB
 - EB EDGE OF BITUMEN
 - FL FLOOR LEVEL
 - KO KERB OUTLET
 - PC PRAM CROSSING
 - TK TOP OF KERB
 - TW TOP OF WALL
 - VC VEHICULAR CROSSING

I HEREBY CERTIFY THE BOUNDARIES SHOWN HEREON ARE NOT ACCURATE, HAVE NOT BEEN SURVEYED, AND ARE INDICATIVE ONLY.

T. Sigley

SIGNED: TIMOTHY J. SIGLEY
 REGISTERED LAND SURVEYOR: SU009054
 SURVEYING & SPATIAL INFORMATION ACT 2002

NOTES:
 MUST BE DEFINED PRIOR TO ANY CONSTRUCTION. APPROPRIATE AUTHORITIES MUST BE CONTACTED PRIOR TO CONSTRUCTION APPROXIMATE AREA SHOWN ONLY. ACCURACY OF FEATURES ON THIS PLAN MUST BE VERIFIED BY "RADON ASSOCIATES" PRIOR TO USE FOR ANY PURPOSE OTHER THAN SURVEY PURPOSE. FEATURES INCLUDE BUT NOT LIMITED TO TREES, PITS, BUILDINGS, SERVICES AND OTHER IMPROVEMENTS. ONLY VISIBLE SERVICES HAVE BEEN LOCATED. CONTOURS AND SPOT HEIGHTS INDICATE GENERAL TOPOGRAPHY ONLY. ONLY VISIBLE IMPROVEMENTS/SERVICES WILL BE SHOWN. SURVEY CORRECT TO DATE SHOWN AS "SURVEY DATE". INFORMATION CONTAINED IN THIS PLAN BELONGS TO "RADON ASSOCIATES" AND MAY NOT BE DISTRIBUTED IN ANY WAY OR FORM WITHOUT PRIOR PERMISSION FROM "RADON ASSOCIATES". THIS SURVEY IS SUPERVISED BY REGISTERED SURVEYOR TIMOTHY J. SIGLEY SU009054

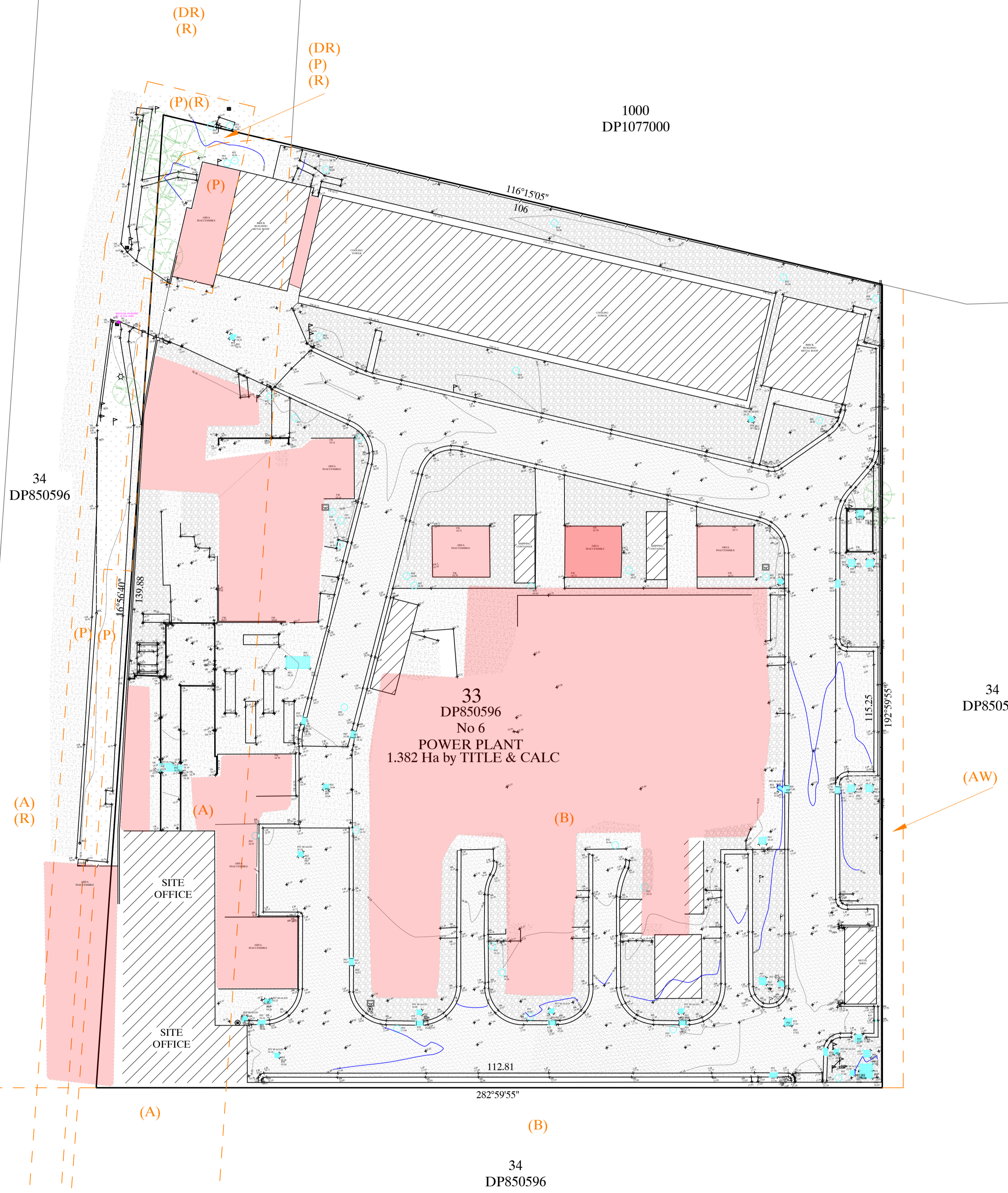
- (A) LAND EXCLUDES MINERALS (S141 PUBLIC WORKS ACT) (DP 850596)
- (AW) EASEMENT FOR ACOUSTIC WALL AND INTERCONNECTING PIPEWORK 3 WIDE (DP850596)
- (B) LAND EXCLUDES MINERALS (DP850596)
- (DR) EASEMENT TO DRAIN WATER 19 WIDE, 15 WIDE & VAR (VIDE DP849480)
- (P) PIPELINE EASEMENT 6 WIDE, 10 WIDE & VAR WIDTH (DP1040107)
- (R) RIGHT OF CARRIAGEWAY, EASEMENT TO DRAIN WATER AND EASEMENT FOR SERVICES 19 WIDE & VARIABLE (DP850596)

HERBERT PLACE

2 DP849480
 34 DP850596

1000 DP1077000

34 DP850596



PROJECT No:
23198

PLAN OF DETAIL OVER
 LOT 33 IN DP850596 AT
 No 6 HERBERT PLACE
 SMITHFIELD 2164
 LGA: CUMBERLAND

FIELD: RH
 DRAFT: RH
 APPROVED: TJS
 SURVEY DATE: 27.12.23
 DATUM: AHD
 ORIGIN: SS26235 RL 20.787 (GNSS)

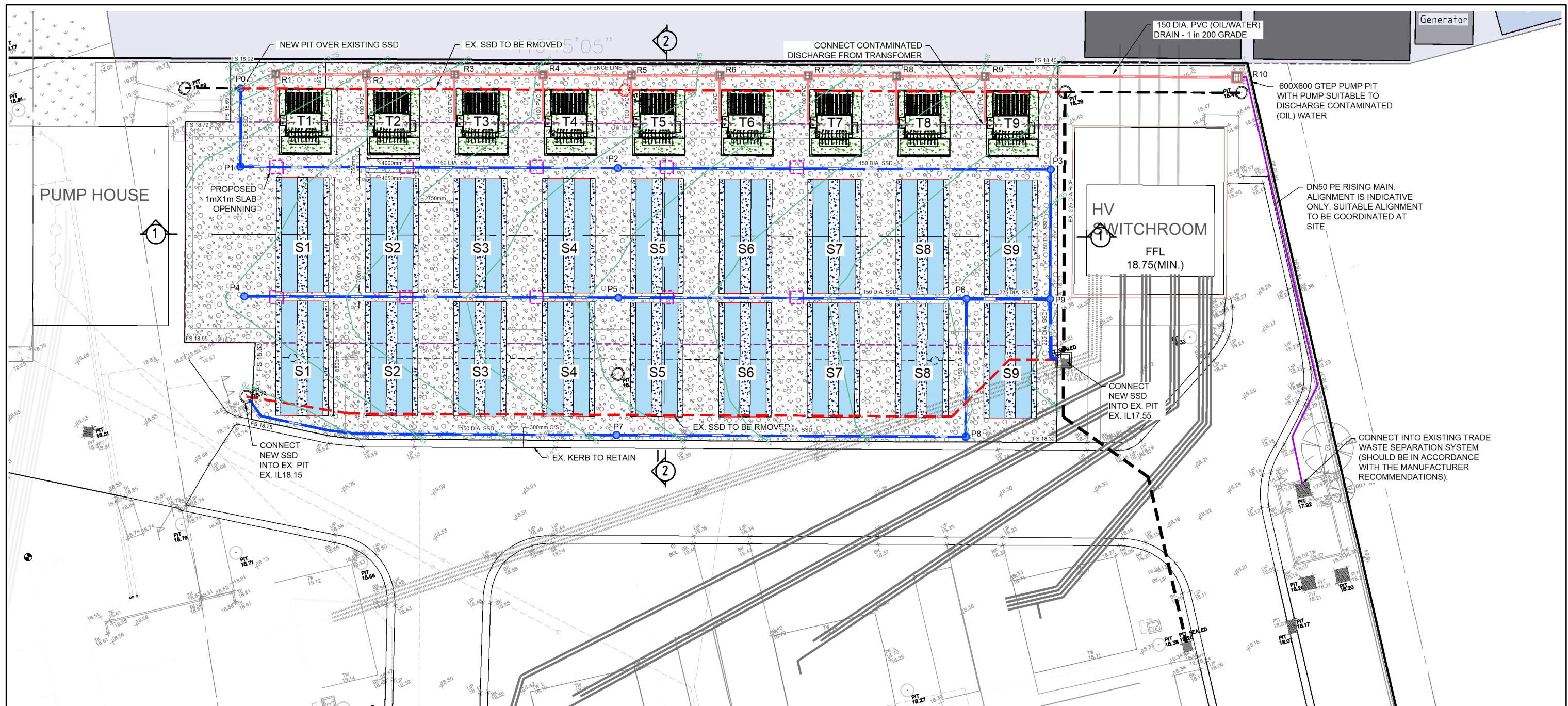
SURVEY PURPOSE:
 DEVELOPMENT
 CONTOURS: 0.25
 SCALE: 1:400
 SHEET: 1 of 7

CLIENT:
 IBERDOLA AUSTRALIA

REVISION	DATE	COMMENT
00	04.01.2024	ORIGINAL

RADON ASSOCIATES
 PTY LTD
 ABN: 48 646 664 324
 E: info@radonassociates.com.au
 M: 0406 768 242

5.2 Appendix 2: Proposed Drainage Plan



LEGEND

- TITLE BOUNDARY
- EASEMENT LINE
- PROPOSED SUBSOIL DRAINAGE (SSD)
- PROPOSED GRAVITY DRAIN (CONTAMINATED/OIL WATER)
- PROPOSED RISING MAIN (CONTAMINATED/OIL WATER)
- PROPOSED GRATED TOP ENTRY PIT
- PROPOSED INSPECTION OPENING
- EXISTING DRAINAGE
- EXISTING DRAINAGE TO BE REMOVED / ABANDONED.
- PROPOSED FOUNDATIONS (TRANSFORMER / CONTAINERS) (REFER STRUCTURAL DRAWINGS BY OTHERS)
- BLUE METAL GRAVEL FILL
- 1mX1m SLAB OPENING IN EXISTING COOLING TOWER CONCRETE SLAB @ 10m SPACING.

GENERAL NOTES

1. THIS PLAN IS TO BE USED FOR CIVIL WORKS ONLY.
2. DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS.
 - DRAINAGE AND BENCHING INVESTIGATIONS MEMORANDUM- REV 1 (PREPARED BY FYFE)
 - FOUNDATION DESIGN DRAWINGS (PREPARED BY EBULEN CONSULT)
 - STRUCTURAL BACKFILL BY SUITABLY QUALIFIED GEOTECHNICAL ENGINEER
4. ALL LEVELS ARE BASED ON THE FEATURE SURVEY DATA RECEIVED FROM CLIENT.
5. DRAINAGE DESIGN IS BASED ON THE EXISTING DESIGN PLANS PROVIDED BY THE CLIENT. CONTRACTOR TO CONFIRM THE EXISTING LEVELS PRIOR TO CONSTRUCTION. CS&A TO BE CONTACTED FOR FURTHER ADVICE IF THE LEVELS ARE FOUND TO BE INCORRECT.
6. CONTRACTOR TO DETERMINE LOCATION OF ALL EXISTING SERVICES ONSITE PRIOR TO COMMENCEMENT OF ANY WORK.
7. CLIENT TO ARRANGE CONSTRUCTION AND SUPERVISE WORKS.
8. UNLESS SPECIFIED ALL DRAINAGE PIPES TO BE OF SEWER GRADE AND LAYED IN A 1 in 200 MINIMUM GRADE.

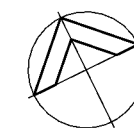
PIT DETAILS

PIT R1 TO R9
 450X450mm GRATED TOP ENTRY PIT WITH CLASS B HEEL-SAFE GRATE. DEPTH AS REQUIRED. CONNECT CONTAMINATED WATER FROM EACH TRANSFORMER INTO THE PIT.

PIT R10
 600X600mm GRATED TOP ENTRY PIT WITH CLASS B HEEL-SAFE GRATE. PUMP TO BE INSTALLED INSIDE THE PIT. DEPTH AS REQUIRED.



1	CONTAMINATED WATER DRAIN	29-11-24	ZONE
REVISION		DATE	ZONE



Scale 1 in 150 @ A1

Chris Smith & ASSOCIATES
 PTY LTD

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 URBAN & REGIONAL PLANNERS
 LAND SURVEYORS
 PROJECT MANAGERS

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Designed Tom Kerrins Oct 2024
 Drawn Sahar Dinesh Oct 2024
 Checked Tom Kerrins Oct 2024
 Approved

ACLE Services P/L
Proposed Battery Energy Storage
 6 Herbert Place
 Smithfield NSW 2164.

Civil Design
 Layout Plan
 Drawing No. 24219 - CW01 Rev. 1
 Sheet No. 1 of 3 24219_CW01.dwg

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