SOILCO
The Life-Giving Soil Company

CONTRIBUTIONS PAID PER TRUCK PER YEAR

YEARS	PERCENTAGE OF OPERATIONAL CAPACITY (Note 1)	CONTRIBUTION PAID ON CAPACITY	CONTRIBUTIONS (Column C x $2,018,427 Note 3)	TOTAL NUMBER OF TRUCKS (Column B x 42,900 Note 4)	CONTRIBUTION PER TRUCK
1 - 5	15%	0% Note 2	$ -	6435	$ -
6 - 10	40%	19%	$ 375,521.30	17160	$ 21.88
11 - 15	75%	35%	$ 704,102.44	32175	$ 21.88
16 - 20	100%	47%	$ 938,803.26	42900	$ 21.88
		100%	**$ 2,018,427.00**		

Contributions to be paid per truck per year noting trucks will be logged at the weighbridge

1) Processing volume as a percentage (refer Section 3.2 of the PIA)
2) Pavement contributions are not required for the first 5 years (refer Section 4.3 of the PIA)
3) Total cost of contributions over 20 years = $2,018,427 (refer Table 4.4 of the PIA)
4) Total number of trucks per year = 42,900 (refer Table 3.1 of the PIA)

STAV'S HYDRAULIC SERVICES
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SITE & SOIL EVALUATION REPORT
BROMELTON COMPOST MANUFACTURING FACILITY LOT 4 MITCHELL ROAD BROMELTON 4285

Prepared for:	SOILCO C/o ACS Engineers
Prepared by:	Stav's Hydraulic Services
Purpose:	Site & Soil Evaluation Report
Issue No:	A
Date Issued:	03-Oct-24
Author:	Stephen Stavrinou

1. Contents

2. Intro

Stav's Hydraulic Services have carried out a Site and Soil Evaluation for the On-Site waste water treatment and the effluent disposal for the proposed Bromelton Compost Manufacturing Facility at Lot 4 Mitchell Road Bromelton 4285.

The following report has been prepared in accordance with AS/NZS1547:2012, On-Site Domestic Waste Water Management and the Queensland Plumbing and Waste Water Code.

3. Executive summary

The recommendation and comments:

1. Use an Advanced Secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system.

2. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff.

3. Soil is a densely structured category 5 – Clayey Sand, Low Plasticity, Fine Grained, yellow - Design Irrigation Rate (DIR) = 21 mm / week

4. Total land application to be comprised of a land application area of 220m2 via drippers.

5. Have warning signs, complying with AS1319 at the boundaries of the designated area in two places and clearly visible to property users with wording such as "Recycled Water – Avoid Contact – DO NOT DRINK"

6. On-site sewage systems are not designed to cope with the flow from garbage grinders, fats, oils or chemicals and household cleaning products are to be used in accordance with their labels.

7. The land application area is an important area and has to be maintained e.g. regularly mowed, do not drive vehicles over the area or allow livestock to access the land application area Follow the maintenance requirements specified by the manufacturer and authorised service agent.

4. Site Investigation

Site Investigation	
Date of Investigation	8.7.2024
Address	Lot 4 Mitchell Road Bromelton 4285
Area of Site	1,192,790m2
Property Description	Lot 4 on RP85497
Local Council	Scenic Rim Regional Council
Weather	Fine
Ground Cover	Grass
Well/Bores	0
Waterways	Existing Dams and waterways
Water Table	Nill
Embankments	Nill
Buildings	Nill
Site Exposure	Full Sunlight
Boundaries	Sufficient
Landscape Description	Waxing Divergent
Diversion / Retention Mound	Nill
Ground Water Cut off drains	Nill
Intended Water Supply	Rain Water

Soil Characteristics	
Depth	0-600mm
Texture - structure - Colour	Silty Sand Loam in the top layers that increase in sand content with depth
Soil Category	5
Indicative permeability (Ksat) m/day	0.71
Design Loading Rate (DLR) mm/week	21

5. Effluent Quality and Control **Parameters**

Effluent Quality Parameters			
Parameter	Primary	Secondary	Advanced Secondary
Bod_5	120-240	20	10
Total Suspended Solids (mg/L)	65-180	30	10
Thermotolerant Coliforms (org/100mL)	N/A	200	10

6. Design Calculations

Design Loadings					
No. of Staff	22				
Desing Flow L/day	30	Tank Water Supply			
Daily flow / Weekly Flow	660	/	4620		
Design Loading Rate (DLR) mm/week	21				
Land Application Area (m²)	220	m²	Adopt	220	m²

Bod5 Applied		
Bod_5 Applied 10mg / litre/ day	2.409	kg/year
Soil Absorption Only	0.05kg / m² / year	
Minimum land Application Area	48.18	m²

The proposed wastewater system utilises an Advanced Secondary all-waste sewage treatment plant – Envirocycle 10EP advanced Secondary Wastewater treatment system.

The Proposed system will discharge to drippers as per below calculations.

Compensating Dripper Calculations			
Compensation Dripper	220	30	m lateral length
No. of Laterals and Spacing's	7	1	m centres
Dripper Hole spacing	0.5	m dripper hole spacing	
Compensating dripper flow rate		2.5	l/hour dripper rate
Effluent Flow Rate		440	l/hour

AS1547 states that:

a. The effluent is required to be evenly distributed within the designated area.

b. Have warning, complying with AS1319 at the boundaries of the designated area in two places and clearly visible to property users with wording such as "Recycled Water – Avoid Contact – DO NOT DRINK"

c. Ensure that the effluent does not come into contact with people, domestic animals, fruit or vegetables for human consumption

7. Operation and Maintenance

Maintenance requirements specified by the manufacturer and authorized service agent are to be implemented. These include:

- Use low sodium biodegradable soaps and detergents
- No paints, solvents, chemicals, food scraps, fats, oils or any other solids are not to be disposed of ”down the drain”
- On-site sewage systems are not designed to cope with the flow from garbage grinders
- The land application area is an important area and has to be maintained e.g. regularly mowed or pruned also ensuring that there is no ponding of effluent in the disposal area
- Vehicles, livestock or general access is to be generally restricted with warning signs erected

8. Appendix A - Land application area Vegetation

Vegetation for Land Application Area		
Recommended Species: Callistemon, Melaleuca, Lomandra and Casuarina		
Vegetation Form	Botanical Name	Common Name
Ground cover / grasses / clumping	Belechnum SPP	Water ferns
	Lomandra Longiflora	Matt rush
	Theme Triandra	Kangaroo grass
	Viola Hederacea	Native violet
	Dianella Caurulea	Paroo lily
	Gahnia SPP	Sword grass
Vines	Cissus Antarctica	Kangaroo vine
	Cissus Hypoglauca	Water vine
	Hibberta Scandens	Guinea flower
Shrubs	Callistemon Pachyphylius	Swamp callistemon
	Callistemon Salignus	Pink tips
	Leptospernum Speciosum	Coastal tea tree
	Leptospernum Flavescens	Weeping tea tree
	Melastoma Affine	Native lasiandra
Small Trees	Melicope Elleryana	Corkwood
	Melaleuca Thymafolia	Pink or white lace
	Melaleuca Sheberi	Paperbark
	Melaleuca Nodosa	Paperbark
	Melaleuca Dealbata	White bolly gum
	Archontophoenix Cunninghamiana	Picabeen or Bangalow plam
	Eucalyptus Congiomerata	Swamp stringy bark
	Eucalyptus Intermedia	Pink bloodwood
	Glochidion Sumatranum	Umbrella cheese tree
	Hymenosporum Flavum	Native frangipani
	Livistonia Australis	Cabbage palm
	Lophostermon Suaveolens	Swamp turpentine
	Melaleuca Quinquenervia	Broadleaf paperbark
	Syzygium SPP	Lillypillies

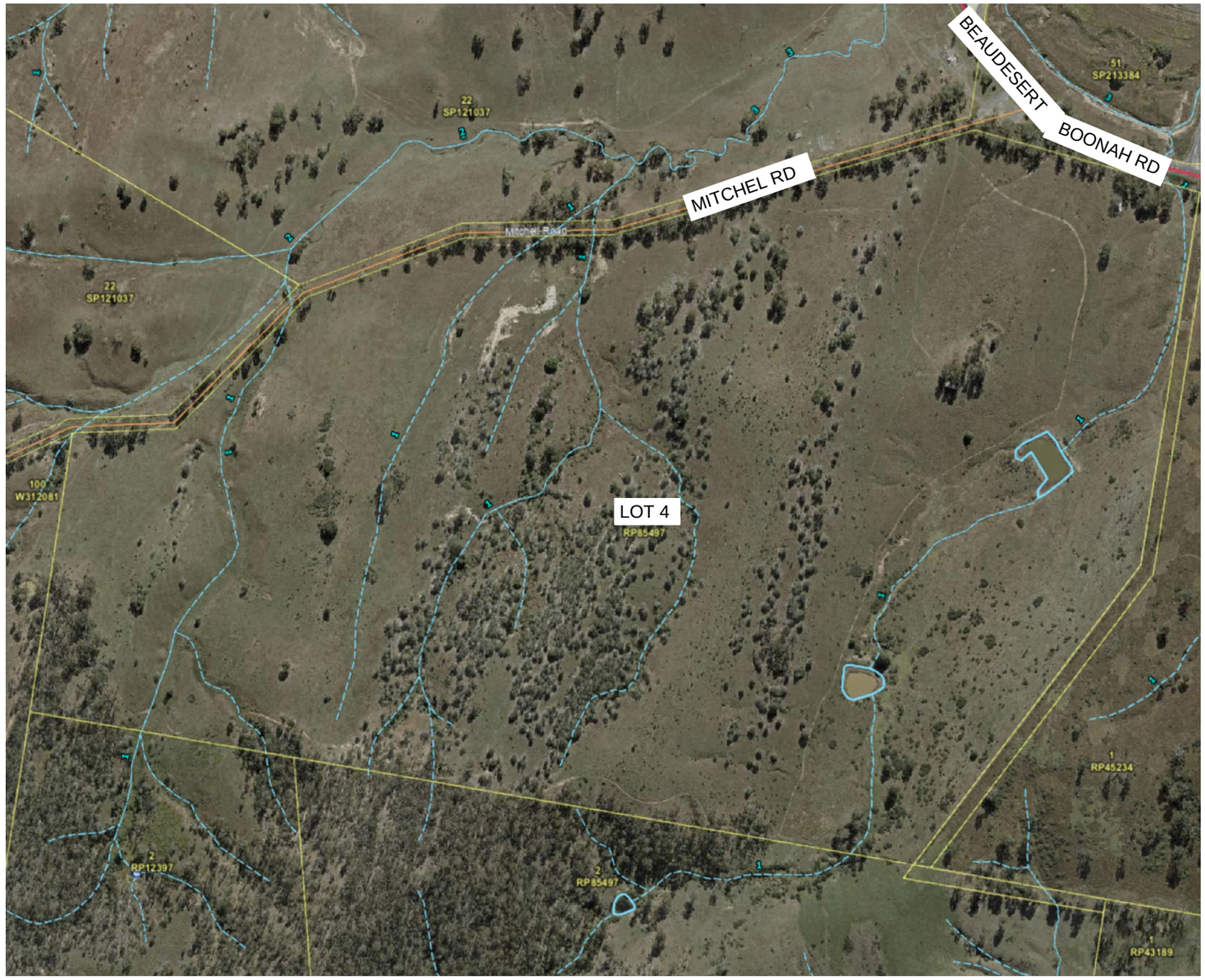
9. Appendix B - Land application area plan

EFFLUENT DISPOSAL

LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON QLD 4285

DRAWING LIST

H101 - COVER SHEET & LOCATION PLAN
H102 - LEGEND, NOTES & DETAILS
H103 - SITE PLAN
H104 - PART SITE PLAN EFFLUENT DISPOSAL LAYOUT



LOCATION PLAN

NOT TO SCALE

2m 0 2m 4m 6m 8m 10m

ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024
A	APPROVAL ISSUE	03.10.2024

DESIGNER: STEPHEN STAVRINOU QBCC 15061807

CLIENT:

SOILCO
C/o ACS ENGINEEERS

CONSULTANT:

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STAV'S HYDRAULIC SERVICES

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PO Box 529,
Jimboomba, Qld

PROJECT:

SITE & SOIL EVALUATION REPORT
LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON 4285

TITLE:

HYDRAULIC SERVICES
COVER SHEET & LOCATION PLAN

PROJECT No.	ACS31	DRAWING No.	ISSUE No.
SCALE / SIZE:	N.T.S @ A3	H101	A

GENERAL

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF AS3500, THE BUILDING CODE OF AUSTRALIA, RELEVANT AUSTRALIAN STANDARDS AND THE LOCAL AUTHORITY REQUIREMENTS.

2. THESE PLANS SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL AND RELEVANT SERVICES PLANS AND SPECIFICATIONS

3. LOCATION OF EXISTING SERVICES HAS BEEN DETERMINED FROM SITE VISITS AND EXISTING RECORD PLANS. NO PROVING OF SERVICES HAS BEEN UNDERTAKEN. THE CONTRACTOR SHALL PROVE ALL SERVICES PRIOR TO COMMENCING CONSTRUCTION AND ADVISE THE SUPERINTENDENT OF ANY DISCREPANCIES BEFORE PROCEEDING. THIS CONTRACTOR MUST CO-ORDINATE WITH ALL OTHER SERVICES. PIPEWORK SHOWN ON THIS DRAWING IS DIAGRAMMATIC ONLY. FINAL LOCATION OF SERVICES SHALL BE DETERMINED ON SITE.

4. ARRANGE & APPLY TO THE LOCAL AUTHORITY FOR ALL NECESSARY PERMITS. PAY ALL PLUMBING INSPECTION FEES AND CHARGES, OBTAIN COMPLETION CERTIFICATE AND SUBMIT TO SUPERVISOR.

5. THE ENTIRE HYDRAULIC SERVICES INSTALLATION AND EQUIPMENT SHALL BE MAINTAINED UNDER WARRANTY FOR A PERIOD OF TWELVE (12) MONTHS AFTER PRACTICAL COMPLETION HAS BEEN ACHIEVED.

6. PROVIDE INSTRUCTIONS MANUALS AT PRACTICAL COMPLETION. CONTAINING THE FOLLOWING:

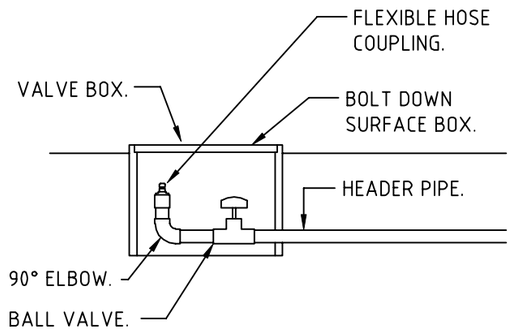
- GENERAL DESCRIPTION OF PROJECT

- LISTING OF EQUIPMENT, MANUFACTURERS NAMES, AGENTS ETC.

- OPERATING AND MAINTENANCE INSTRUCTIONS AND WARRANTY INFORMATION FOR EACH ITEM OF EQUIPMENT.

- "AS CONSTRUCTED" DRAWINGS.

- COUNCIL INSPECTION REPORTS AND FINAL COMPLETION CERTIFICATES FROM RELEVANT AUTHORITIES.



FLUSHING VALVE DETAIL

SCALE: NTS

WATER

1. ALL EXPOSED HW & CW PIPEWORK SHALL BE COPPER TUBE TYPE "B" TO AS1432. CONNECT COPPER PIPE WITH BRAZED JOINTS IN AS1645 OR COMPRESSION JOINTS AS1585. USE PRE-INSULATED PIPEWORK FOR HOT WATER SERVICES OR INSULATE WITH 'ARMAFLEX' INSULATION OR SIMILAR. DENSO WRAP ALL CW PIPEWORK IN-GROUND. PROVIDE INSULATION TO ALL HOT WATER PIPEWORK. PROVIDE ALL NECESSARY ALLOWANCES FOR THERMAL MOVEMENT OF PIPES.

2. WATER SUPPLY PIPEWORK CONCEALED IN WALLS AND EXTERNAL TO BUILDING IN-GROUND MAY BE POLYETHYLENE PIPE OF MIN. CLASS 12, AND SHALL COMPLY WITH AS 1159. INSTALLATION OF POLYETHYLENE PIPES SHALL BE IN ACCORDANCE WITH AS 2033 AND THE MANUFACTURERS SPECIFICATIONS.

3. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT WATER HAMMER AND RECTIFY SHOULD IT OCCUR.

4. EXTERNAL AND INTERNAL HOSE COCKS SHALL BE FITTED WITH HOSE TYPE VACUUM BREAKERS.

5. PROVIDE HW & CW STOPCOCKS TO ALL HW & CW FIXTURES.

6. ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.

7. ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

ON SITE DISPOSAL NOTES

1. IRRIGATION SYSTEM TO COMPLY WITH AS1547, QLD PLUMBING WASTE WATER CODE, ASSOCIATED DOCUMENTATION AND MANUFACTURERS SPECIFICATIONS.

2. MINIMUM COVER OVER RISING MAIN 450mm. RISING MAINS TO BE 32ϕ PIPES TO AS/NZS 1477. PIPE TO BE LILAC COLORED AND/OR INSTALLED WITH TAPE IDENTIFYING THE PIPES CONTENTS AS SEWAGE EFFLUENT.

3. IRRIGATION SYSTEMS DISTRIBUTE EFFLUENT INTO THE TOPSOIL LAYERS TO PROVIDE IN-SOIL TREATMENT OF THE REMAINING EFFLUENT RESIDUALS AS WELL AS PROVIDE NUTRIENT UPTAKE AND EVAPOTRANSPIRATION BY GRASS, SHRUBS OR PLANTINGS. THE CHOSEN GRASS, SHRUBS OR PLANTINGS SHALL BE PLANTED/SEEDED PRIOR TO THE COMMISSIONING OF THE SYSTEM TO ALLOW FOR PROPER EFFLUENT DISPOSAL.

DRAINAGE

1. SANITARY DRAINAGE & VENT PIPEWORK IN UPVC IN ACCORDANCE WITH AS1260 AND THE MANUFACTURERS SPECIFICATIONS.

2. ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.

3. ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

LEGEND

——R——R——	PUMPED EFFLUENT
———————	SANITARY DRAINAGE PIPEWORK
– – – – – –	VENT PIPEWORK
— — — —	STORMWATER PIPEWORK
—·—·—·—	COLD WATER PIPEWORK
—··—··—··	HOT WATER PIPEWORK
⋈	VALVE

AFFL	ABOVE FINISHED FLOOR LEVEL
AHD	AUSTRALIAN HEIGHT DATUM
B	BASIN
CD	CONDENSATE DRAIN
COS	CLEAR OUT TO SURFACE
Cu	COPPER PIPE
CW	COLD WATER
CV	CONTROL VALVE
DP	DOWN PIPE
DW	DISHWASHER
e	EXISTING TO REMAIN
FFL	FINISHED FLOOR LEVEL
FW	FLOOR WASTE GULLY (c/w REMOVABLE CHROME GRATE)
H/L	HIGH LEVEL
HC	HOSE COCK c/w KEY OPERATED HAND
HW	HOT WATER
HWH	HOT WATER HEATER
IC	INSPECTION CHAMBER
IO	INSPECTION OPENING
L/L	LOW LEVEL
ORG	OVERFLOW RELIEF GULLY
SHR	SHOWER
SK	SINK
WC	WATER CLOSET
VB	VACUUM BREAKER

2m 0 2m 4m 6m 8m 10m

ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024
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DESIGNER: STEPHEN STAVRINOU QBCC 15061807

CLIENT:

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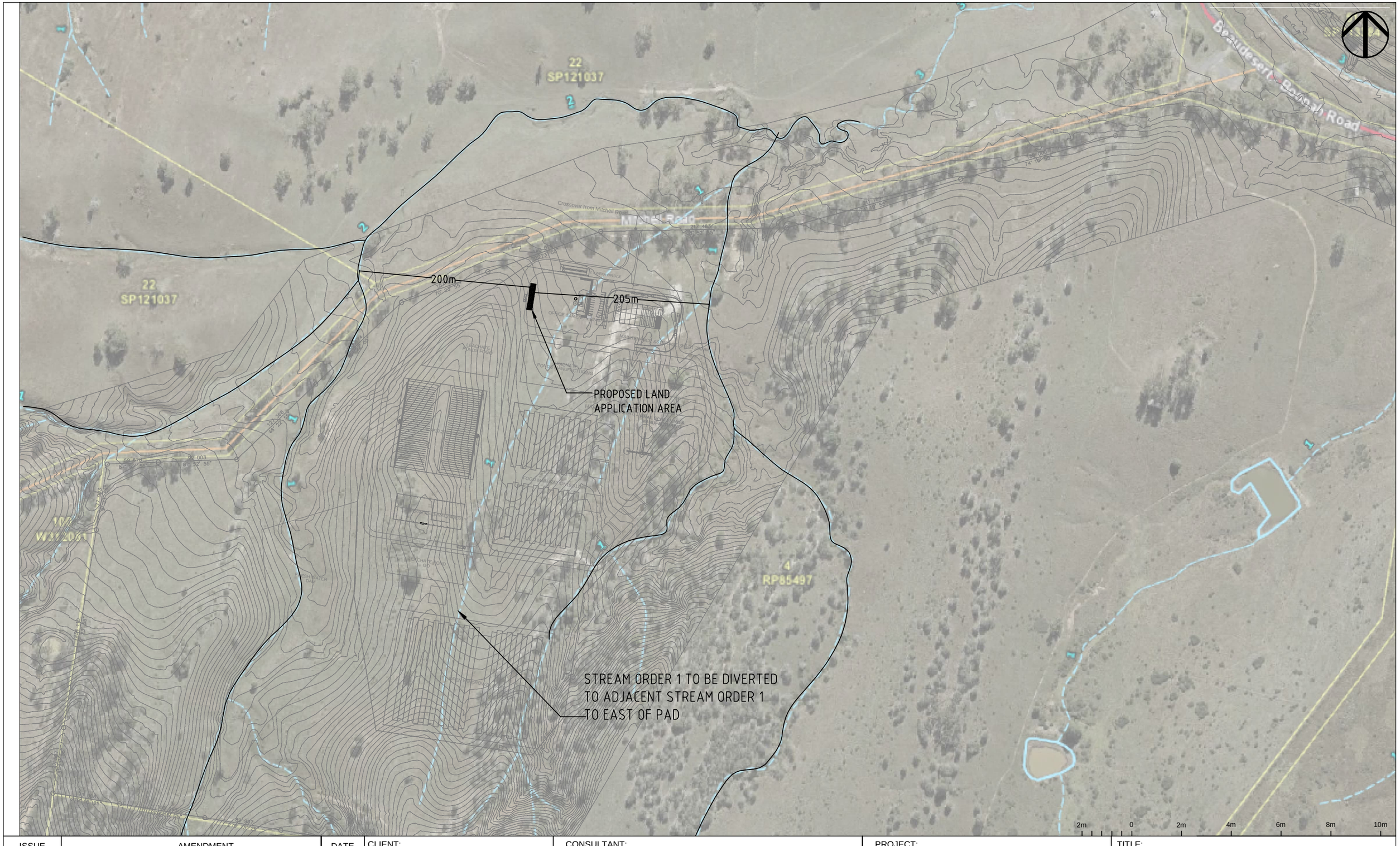
PROJECT:

SITE & SOIL EVALUATION REPORT
LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON 4285

TITLE:

HYDRAULIC SERVICES
LEGEND, NOTES & DETAILS

PROJECT No.	ACS31	DRAWING No.	ISSUE No.
SCALE / SIZE:	NTS @ A3	H102	A



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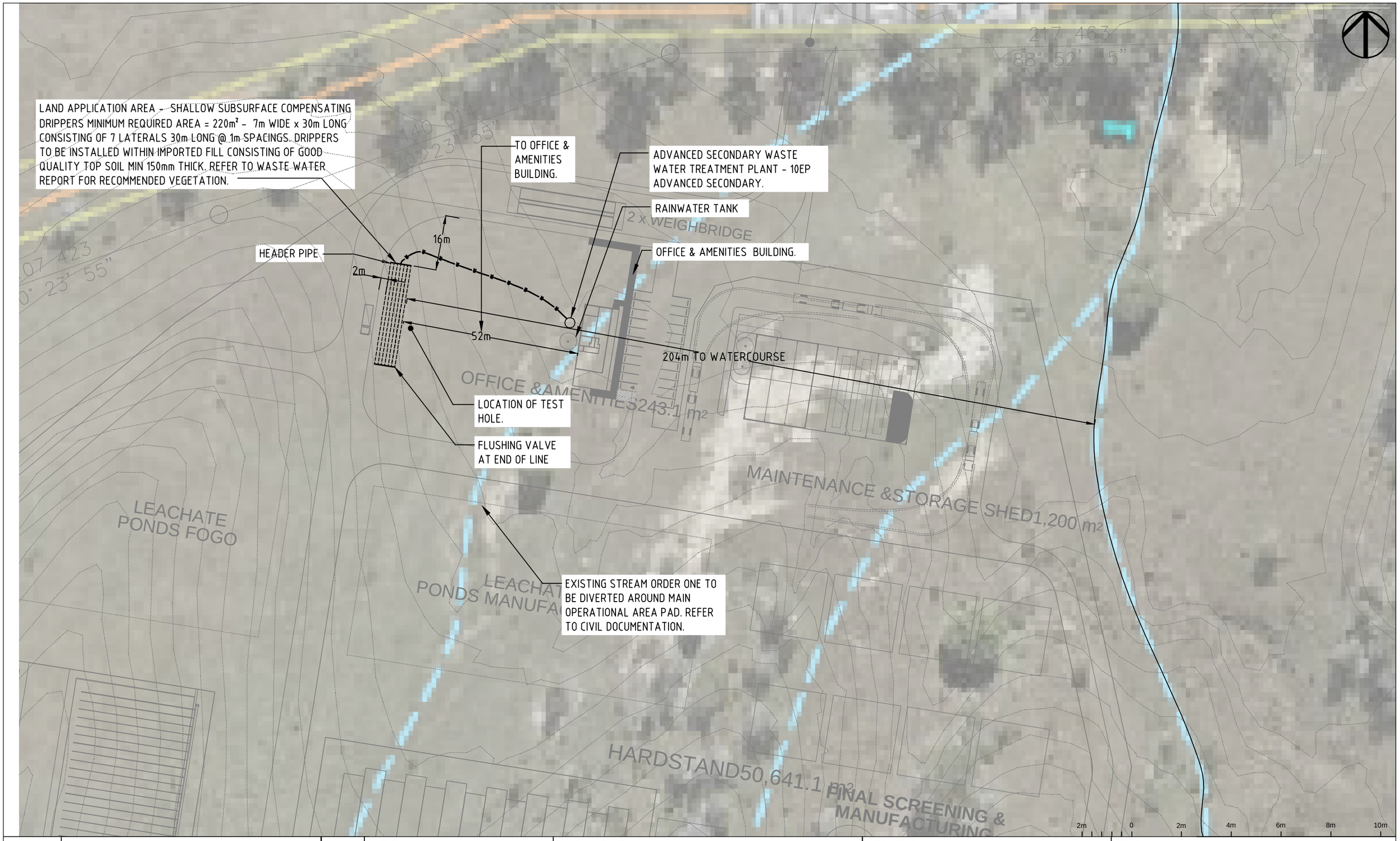
PROJECT:

SITE & SOIL EVALUATION REPORT
LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON 4285

TITLE:

HYDRAULIC SERVICES
SITE PLAN

PROJECT No.	ACS31	DRAWING No.	ISSUE No.
SCALE / SIZE:	1:4000 @ A3	H103	A



ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024
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DESIGNER: STEPHEN STAVRINOU QBCC 15061807

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PROJECT:

SITE & SOIL EVALUATION REPORT
LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON 4285

TITLE:

HYDRAULIC SERVICES
PART SITE PLAN
EFFLUENT DISPOSAL LAYOUT

PROJECT No.	ACS31	DRAWING No.	ISSUE No.
SCALE / SIZE:	1:1000 @ A3	H104	A

Rating Details

Property Owner Details

Property Owner:	"SOILCO c/o ACS Engineers (Aust) Pty Ltd"			
Postal Address:	"PO Box 554"	"Beaudesert"	"QLD"	"4285"
Phone Number:	"0755413500"	**Mobile Number:**	"0417782907"	
Email:	"susan@acsengineers.com.au"			

Property Details

Street Address:	"Mitchell Road"	"Bromelton"	"QLD"	"4285"
Latitude:	""	**Longitude:**	""	
Lot Number:	""	**Plan Number:**	""	
Area (m2):	"1192790"	**Local Government:**	"Scenic Rim Regional Council"	

Rating Risk Rating Questionnaire

Unimitigated Score 4	No further mitigation required	Mitigated Score 0
	VERY LOW	

Calculating Unmitigated Risk

1	Does the disposal area and wastewater treatment system maintain the following separation distances (AND): • At least 100m to the nearest watercourse (permanent and non-permanent)? • At least 400m from the full supply level of a potable water supply? Please note: Potable water supply includes any dam, bore, reservoir or conduit used for direct extraction of water for drinking water purposes.	Yes
2	Is the disposal area or the wastewater treatment system (OR): • Less than 50m to the nearest watercourse (permanent and non-permanent)? • Less than 200m from the nearest full supply level of a potable water supply? Please note: Potable water supply includes any dam, bore, reservoir or conduit used for direct extraction of water for drinking water purposes.	N/A
3	Is the disposal area of wastewater treatment system located inside of a defined flood event (Council or State mapping), at a minimum being 1% Annual Exceedance Probability (AEP)?	No
4	What is the maximum slope of the disposal area or wastewater treatment system location?	<5%
5	How many bedrooms are serviced by the proposed wastewater treatment system?	3 or more bedrooms
6	Is the indicative permeability range higher than 1m/day?	No
7	Is the separation distance to the water table/bedrock as specific for the type of system and at a minimum 1m below the disposal depth?	Yes
8	Is the dwelling a permanent or holiday residence?	Permanent Residence
9	Is the indicative drainage class either poorly drained (Soil Category 5) or very poorly drained (Soil Category 6), as defined in Australian Standard AS1547?	Yes
10	Does the proposal involve composting?	No composting
11	Please select an irrigation method.	Subsurface
12	Please select the proposed treatment method.	Aerated
13	Does the system propose the diversion or re-use of greywater?	No
	Mitigation Reduction:	**6**

Model Conditions

Here are your draft conditions!

1	The poor drainage of the soil necessitates an appropriate depth of topsoil over the proposed effluent disposal area. Either soil remediation (gypsum / scarification) or clean imported topsoil must be provided to a depth of 150mm – 250mm over the disposal area and scarified into soils over the entire disposal area to ensure adequate drainage and reduction of nutrients.
2	The wastewater treatment system must be an advanced secondary wastewater treatment system with Chief Executive approval from the Department of Energy and Public Works and incorporate chlorination. The wastewater treatment system and disposal area must be designed operated and maintained in accordance with manufacturers specifications and the submitted Wastewater Design Report.
3	The disposal area must be planted with kikuyu grass or other native vegetation which provides a high uptake of nitrogen and phosphorus and prevents erosion.
4	The disposal area must incorporate appropriate diversion drainage above the disposal area (to prevent stormwater inundation) and bunds below the disposal area to reduce the risk of waterway contamination.
5	To minimise the risk of failure or inefficiency, the wastewater treatment system and disposal area must be inspected and serviced by an appropriately qualified professional in accordance with the manufacturer’s recommendations and at least annually.
6	Ensure that larger deep-rooting plants and trees which may block sunlight are not planted near the disposal area to reduce the chance of root intrusion and clogging and maximise sun exposure.
7	A 100% reserve area is reserved and maintained on-site to allow for an alternative disposal location in case of land application area failure, malfunction or loss of soil uptake capacity. The reserve area must be kept clear of buildings, structures, vehicular movement paths or other activities which may otherwise affect its use for effluent disposal in the future.
8	No vehicular, machinery or domestic animal traffic movement is to occur over the disposal area, to maintain the integrity and function of sub-surface pipelines. Barriers such as fencing or shrubs are to be used when necessary.
9	The design must incorporate a warning system to notify of pump failure and/or high water level comprising of a highly visible strobe warning light at the tank and an internal alarm mounted in the house comprising of an audible and visual. A licenced plumber/service provider must be contacted as soon as practical after an alarm activates to rectify the issue.
10	The treatment system must incorporate contingency components including a backup pump stored appropriately on the site.

EAST COAST GEOTECHNICAL PTY LTD

CONSULTING ENGINEERS

ABN 66-382-660-160

REPORT ON GEOTECHNICAL INVESTIGATION

260 Mitchell Road
Bromelton QLD 4285

Bromelton Pty Ltd
C/o McPhee Distribution Services

Ref No G21/109
Issue1
27th July 2021

EAST COAST GEOTECHNICAL PTY LTD

CONSULTING ENGINEERS

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WEB SITE: www.eastcoast-geotech.com.au

Document Details

Project No	G21/109	Document No: 1
Project Details	Design of a future development.	
Site Address	260 Mitchell Rd, Bromelton	
Report prepared for	Bromelton Pty Ltd C/o McPhee Distribution Services	

Document Review

Issue	Prepared By	Reviewed By	Date Issued
1	MV	Julian Lockwood	27/07/2021

Distribution of Copies

Issue	Electronic	Paper	Issued to
1	X		Bromelton Pty Ltd C/o McPhee Distribution Services

Table of Contents

1.0 INTRODUCTION

The following geotechnical investigation was prepared by East Coast Geotechnical Pty Ltd for the proposed design of a future development at 260 Mitchell Rd, Bromelton.

This report was undertaken at the request of Bromelton Pty Ltd C/o McPhee Distribution Services

The scope of our services was outlined in our Quotation Ref JL1296 dated 15/06/2021 which would address the following in a geotechnical report.

- Safe bearing pressure and skin friction of strata encountered in accordance with AS2870 and AS1726.
- Classification of soils according to AS2870.
- Excavatability.
- Trafficability.

2.0 COMMISSION

Conduct preliminary geotechnical testing aimed at providing parameters for the design of a future development.

3.0 SITE CLASSIFICATION

After considering the results of our limited site investigation (recorded elsewhere in the report) at the time of our testing we have classified this site as:

Class " P " due to trees.

In accordance with Section 2 of AS 2870.

The design engineer must consider the effects of any proposed earthworks, tree growth or removal on the site classification.

4.0 SITE DESCRIPTION

The construction area is on the south side of the street.
The construction area is gently sloping to steeply sloping.
Vegetation on the construction area (and nearby surrounds) is mainly grasses, trees and scrub.
Site drainage is poor to fair.

5.0 SITE PHOTOGRAPHS


Job #40777
Lot 4 #260 Mitchell Rd Bromelton
7th July 2021
The Soiltesters
East Coast Geotechnical Pty Ltd


Job #40777
Lot 4 #260 Mitchell Rd Bromelton
7th July 2021
The Soiltesters
East Coast Geotechnical Pty Ltd

6.0 UNDERGROUND SERVICES

At the time of writing this report we had not been informed of any underground services on or adjacent to this allotment which may affect the proposed structure.

7.0 TESTING PROGRAM

22 test sites were established with a nominal 100 mm diameter power auger. The locations are shown on accompanying sketch and excavated to the depths indicated on the log section. Numerous samples were collected and hand classified.

8.0 FIELD & LABORATORY TESTING

The following testing was conducted in the geotechnical investigation:

- Pocket penetrometer tests in accordance with AS1289
- Dynamic Cone penetrometer tests in accordance with AS1289
- Shrink—swell index testing of soil to determine predicted surface movements ($Y_s + Y_{t\,max}$ value) in accordance with AS1289
- Atterberg Limits in accordance with AS1289

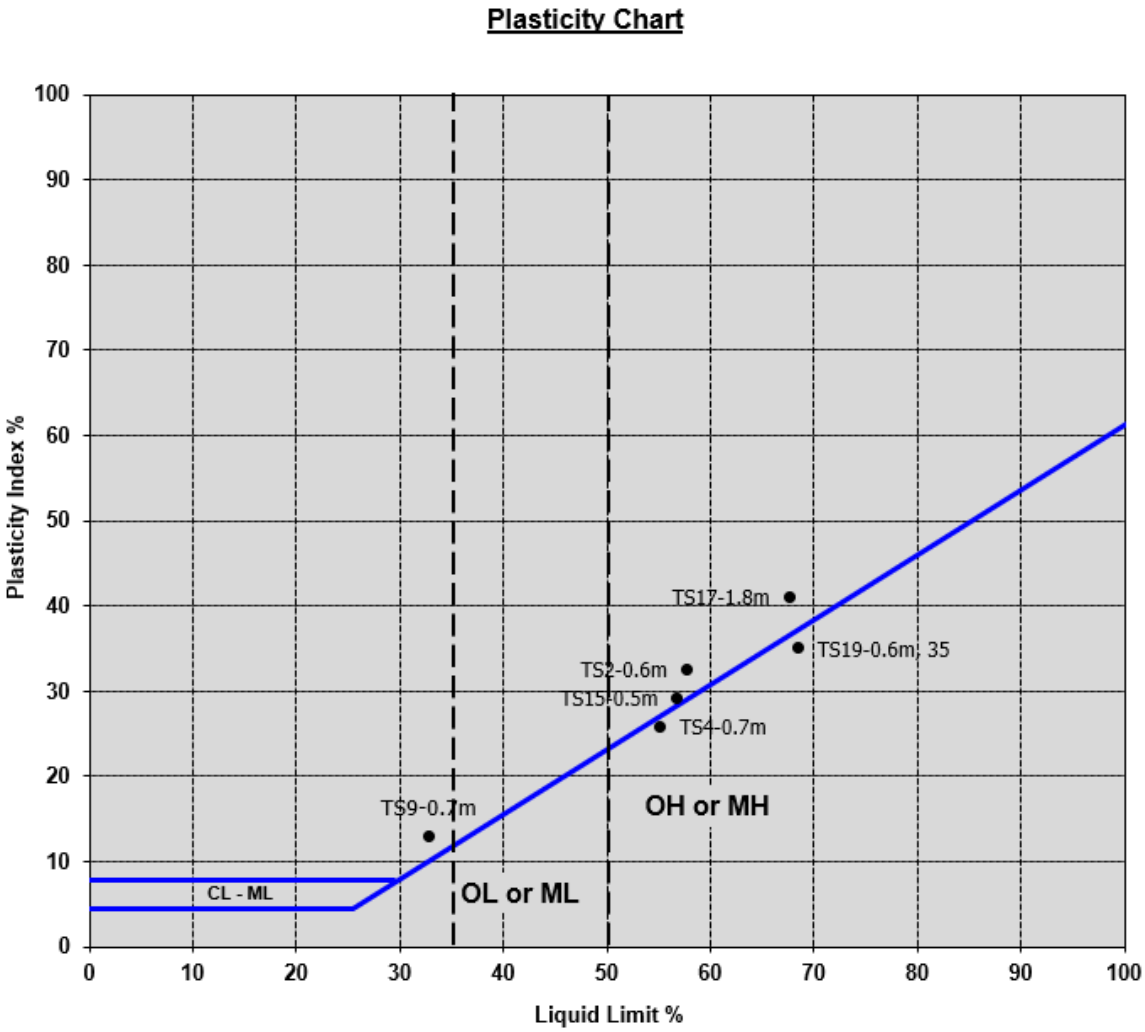
From the sample(s) collected the following laboratory testing was carried out:

Test Site	Depth (mm)	LS (%)	I_{ss} %/pF	Moisture Content %	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
1	600 – 800	-	2.2	21.1	-	-	-
2	500 – 700	17.7	-	26.7	57.7	25.2	32.5
4	600 – 800	15.1	-	15.2	55.2	29.4	25.8
7	500 – 700	-	5.1	22.0	-	-	-
9	600 – 800	12.7	-	22.8	32.8	19.9	12.9
15	400 - 600	15.8	-	23.7	56.8	27.6	29.2
17	500 – 700	-	2.7	18.9	-	-	-
17	1800 - 1900	17.7	-	22.5	67.6	26.6	41.0
19	500 – 700	18.9	-	27.4	68.5	33.5	35.0
20	500 – 700	-	6.5	34.2	-	-	-

LS – Linear Shrinkage
I_{ss} – Shrink Swell Index

The resistance of the soils encountered was tested with an approved pocket penetrometer (PP) and the results recorded at the appropriate levels on the attached log section.

The materials encountered consists of low to high plasticity clays and silts.



9.0 FINDINGS

9.1 GROUND WATER

The soil profiles encountered are shown on the attached log section. The water table was not encountered during our testing program.

We anticipate water seepage where the more permeable strata overlies the less permeable strata, which may cause some problems in excavating down to this level or deeper. This seepage may also cause collapse of excavations which will increase concrete volumes significantly above those normally anticipated. Furthermore, if a delay occurs between the time the footing is excavated and when the concrete is placed, the recommended foundation soil may soften, loosen or collapse, which will require further excavations and further increase in concrete volumes.

9.2 SOIL REACTIVITY

The samples were assessed as having high to extreme plasticity.

Using the method outlined in AS2870, we have calculated the characteristic surface movement (Y_s) and the maximum potential surface moment due to the tree induced suction change in addition to the normal design suction change ($Y_{t\,max}$) for the appropriate soil profiles.

Test Site No	Predicted Surface Movement – Y_s+ $Y_{t\,max}$ (mm)	
1	Y_s	30 – 40 mm
	$Y_{t\,max}$	20 – 30 mm
7	Y_s	80 – 90 mm
	$Y_{t\,max}$	50 – 60 mm
17	Y_s	40 – 50 mm
	$Y_{t\,max}$	30 – 40 mm
20	Y_s	100 – 110 mm
	$Y_{t\,max}$	70 – 80 mm

The predicted surface movement (Y_s + $Y_{t\,max}$) value has been calculated on the site as tested. The influence of any proposed earthworks has not been considered when calculating this Y_s + $Y_{t\,max}$, therefore the site classification and predicted surface movement may vary when proposed earthworks (if any) are considered.

9.3 ROCK DEPTHS

Rock was encountered at the following depths below our test surface level:

Test Site No	Extremely Weathered Rock Depth (mm)	Unexcavatable Rock Depth (mm)
3	2800	3300
4	800	900
5	1000	1200
6	1400	1500
8	2000	2200
10	1500	1700
11	900	1300
12	800	900
13	900	1000
14	5500	5600
15	5400	5500
16	1300	1400
18	1000	1400
19	3500	3700
22	5500	5700

9.4 REFUSAL DEPTHS

Our onsite testing refused at the following depths:

Test Site No	Depth (mm)
3	3300
4	900
5	1200
6	1500
8	2200
10	1700
11	1300
12	900
13	1000
14	5600
15	5500
16	1400
18	1400
19	3700
22	5700

9.5 ALLOWABLE DESIGN PARAMETERS

Soil Type	Allowable Bearing Capacity (kPa)			Allowable Skin Friction (kPa)
	Square or Circular Footings		Strip Footings	
	d/b < 4	d/b > 4		
1) Natural Silty/Sandy Clay - Firm	NR	NR	NR	10
2) Natural Silty/Sandy Clay – Stiff to Very Stiff	200	300	100	20
3) Natural Silty/Sandy Clay – Very Stiff to Hard	400	600	200	30
4) Natural Extremely Weathered Rock - VLS	600	800	300	40
5) Natural Clayey Sand – Dense (min 1000 below E.G.L)	400	600	100	30

Notes: Where weaker strata is within 1 metre beneath the proposed founding depth, the design parameters for the weaker strata must be adopted.

- Ignore top 1.5 metres of soil profile for skin friction calculations
- Values are unsaturated conditions
- d = Depth of footing

- b = Breadth of footing
- E.G.L = Existing Ground Level
- Factor of safety for Skin Friction = 2 has been applied
- Factor of safety for Bearing Capacity = 3 has been applied
- NA – Not Applicable
- NR – Not Recommended

9.6 EXCAVATABILITY

In reference to the Geological Survey of Queensland Map Ipswich 1:100 000 Series, materials in the area consist of Heiffer Creek Sandstone (consisting of sublabile to quartzose sandstone, siltstone & shale); Walloon Coal Measures (consisting of shale, siltstone, sandstone and coal seams) and Koukandowie Formation (consisting of lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, minor coal and ferruginous oolite material).

Excavatability of these materials may depend on layer orientation and medium to large excavators with rock breaking equipment may be required.

9.7 SUITABILITY OF MATERIAL FOR FILL AND COMPACTION CRITERIA

The soil material encountered during our testing may be used as structural fill provided that it is free of organic material and silt, and approximates the optimum moisture content for compaction as per AS 3798 (-1% to +2% of Optimum Moisture Content – OMC). All earthworks to be undertaken in accordance with Level 1 Inspection and Testing as defined in AS3798.

Special compaction consideration must be given to the rock encountered on site as it may not break down upon compaction which may leave voids.

Table 16. Minimum relative compaction values as per AS 3798

Location	Minimum Dry Density Ratio (%)
Building area	98

Note: The minimum relative compaction may need to be increased to limit deformations associated with the proposed filling (subject to a detailed analysis by an experienced engineer)

Further details on earthworks including suitability of material for fill and compaction requirements are highlighted in AS 3798.

9.8 TRAFFICABILITY

To ensure suitable site trafficability adequate drainage must be maintained to reduce any ponding of water on site which may soften underlying soils. Repetitive vehicle loading may also reduce the strength of founding material and such may promote the formation of depressions which can hinder adequate site drainage. Furthermore, proof rolling the site after clearing and grubbing can support positive conditions for suitable trafficability.

9.9 SITE FACTOR FOR SEISMIC DESIGN

In reference to AS1170.4-2007 Section 4 the Sub-Soil Class varies from Class B_e (Rock) to Class C_e (Shallow Soil).

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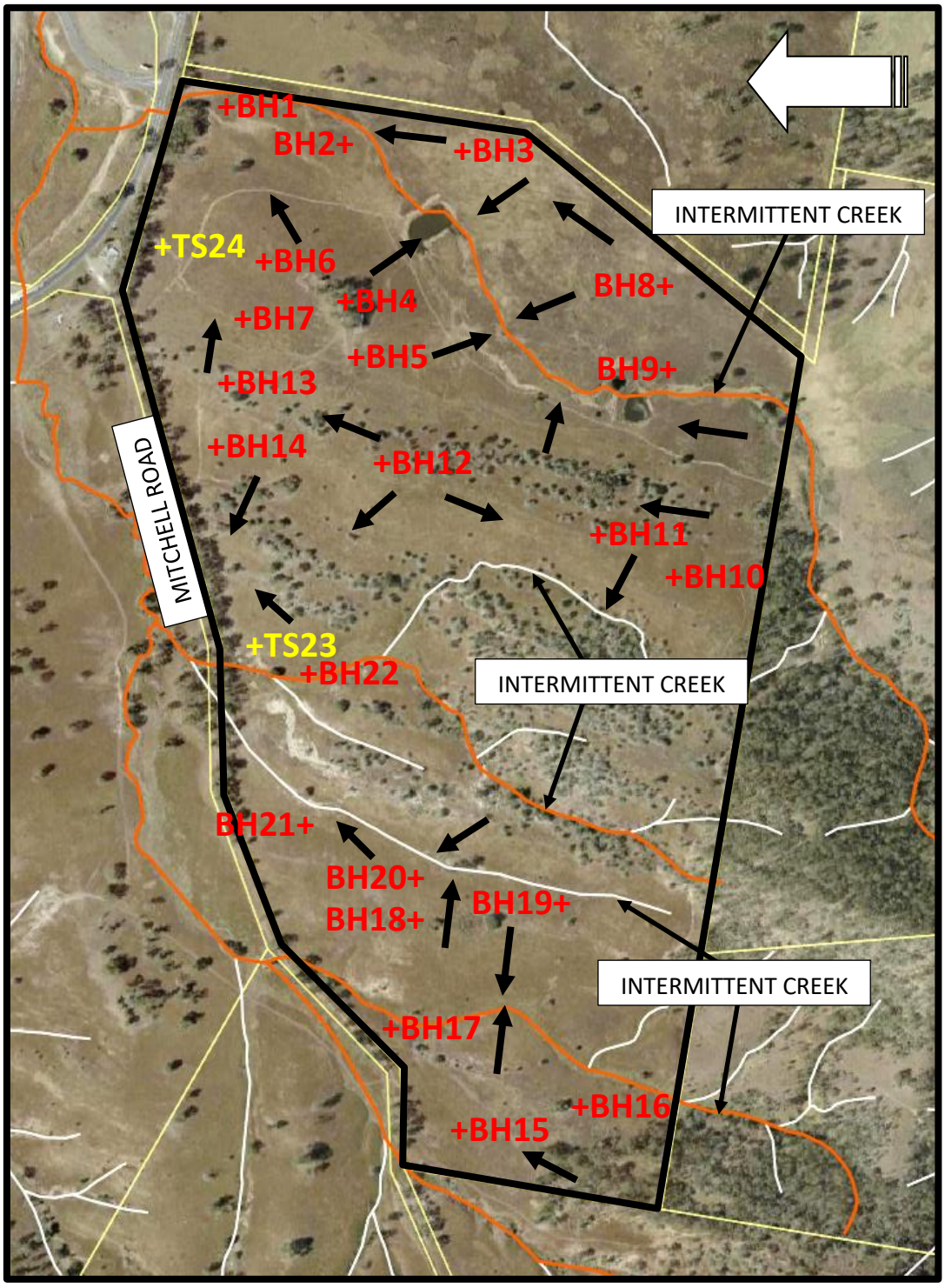
APPENDIX

APPENDIX A - SITE SKETCH & BORE LOGS

SITE SKETCH



Site Address:	Lot 4 #260 Mitchell Road, Bromelton
Date:	06/07/2021 & 07/07/2021
Job Number:	G21/109

Notes:

1. *This site sketch is schematic only and is not to scale.*
2. *Approximate measurements and locations have been used.*
3. *Site features in aerial photos may have changed from the time the photo was taken.*

BORELOGS

Bore Log 1			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021		**Job Number:** G21/109

Depth (m)	Soil Description # 1	FILL	PP	DCP
0.0	NATURAL – CLAYEY SILT (ML)			
0.1	Loose, Br, Medium Plasticity, Moist			
0.2	SILTY CLAY (CH)			
0.3	Very Stiff, Br, Yell-Br, Gr, Becoming Dk Gr, High Plasticity, Moist			
0.4			450	
0.5				
0.6				
0.7			300	
0.8				
0.9				
1.0				
1.1				
1.2	SILTY CLAY (CH)		350	
1.3	Very Stiff, Lt Br, Lt Gr, Becoming Grey & Yell, High Plasticity, Moist			
1.4				
1.5				
1.6				
1.7	As above, but Stiff		200	
1.8				
1.9				
2.0			150	
2.1				
2.2				
2.3				
2.4				
2.5			150	
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3			100	
3.4				
3.5	As above, but Traces of Coal (from 3.5m – 4.0m)			
3.6				
3.7				
3.8			150	
3.9				
4.0				

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 1			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021		**Job Number:** G21/109

Depth (m)	Soil Description # 1	FILL	PP	DCP
	~BORELOGS CONTINUED FROM PREVIOUS PAGE~			
4.1				
4.2				
4.3				
4.4			200	
4.5				
4.6				
4.7				
4.8				
4.9				
5.0				
5.1				
5.2			270	
5.3				
5.4				
5.5				
5.6				
5.7				
5.8			400	
5.9				
6.0	END BOREHOLE 1			

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 2			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 2	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Stiff, Yell-Br, High Plasticity, Moist			
0.3				
0.4				
0.5			180	
0.6				
0.7				
0.8				
0.9	SILTY SANDY CLAY (CI)		200	
1.0	Very Stiff, Yell-Br, Gr, Mottled Red-Br, Medium Plasticity, Moist			
1.1				
1.2	SILTY CLAY (CH)		450	
1.3	Very Stiff, Yell-Br, Gr, Becoming Pale Yell-Br, Traces of Sand, High Plasticity, Moist			
1.4				
1.5			450	
1.6				
1.7				
1.8				
1.9				
2.0			400	
2.1				
2.2				
2.3				
2.4			450	
2.5				
2.6				
2.7				
2.8				
2.9	As above, but Stiff		200	
3.0				
3.1				
3.2				
3.3				
3.4	As above, but Very Stiff		300	
3.5				
3.6				
3.7				
3.8				
3.9			300	
4.0				

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 2									
Site Address: Lot 4 #260 Mitchell Road, Bromelton				**Date Drilled:** 6th July 2021				**Job Number:** G21/109	
Depth (m)	Soil Description # 2							FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~										
4.1										
4.2										
4.3										
4.4									300	
4.5										
4.6										
4.7										
4.8										
4.9										
5.0										
5.1										
5.2										
5.3										
5.4										
5.5									300	
5.6										
5.7										
5.8										
5.9										
6.0	END BOREHOLE 2									

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 3			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021		**Job Number:** G21/109

Depth (m)	Soil Description # 3	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Stiff, Pale Yell-Br, High Plasticity, Moist			
0.3				
0.4				
0.5			100	
0.6				
0.7				
0.8	As above, but Very Stiff		300	
0.9				
1.0				
1.1				
1.2			350	
1.3				
1.4				
1.5			400	
1.6				
1.7				
1.8			450	
1.9				
2.0				
2.1	SILTY CLAY (CH)		450	
2.2	Hard, Lt Br, High Plasticity, Dry, Non-Cohesive Insitu			
2.3				
2.4				
2.5			450	
2.6				
2.7				
2.8	EXTREMELY WEATHERED ROCK (XW)			
2.9				
3.0				
3.1				
3.2				
3.3				
3.4	UTP – END BOREHOLE 3			
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 4			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 4	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Hard, Pale Yell-Br, High Plasticity, Sl Moist, Non-Cohesive Insitu			
0.3				
0.4			450	
0.5				
0.6				
0.7			450	
0.8	EXTREMELY WEATHERED ROCK (XW)			
0.9	UTP – END BOREHOLE 4			
1.0				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
2.0				
2.1				
2.2				
2.3				
2.4				
2.5				
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 5			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 5	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Very Stiff, Pale Yell-Br, High Plasticity, Moist			
0.3				
0.4			450	
0.5				
0.6				
0.7				
0.8			450	
0.9				
1.0	EXTREMELY WEATHERED ROCK (XW)			
1.1				
1.2				
1.3	UTP – END BOREHOLE 5			
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
2.0				
2.1				
2.2				
2.3				
2.4				
2.5				
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 6			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 6	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Very Stiff, Or-Br, Becoming Pale Yell-Br, High Plasticity, Moist			
0.3			400	
0.4				
0.5				
0.6			300	
0.7				
0.8	SILTY SANDY CLAY (CH)			
0.9	Very Stiff, Pale Yell-Br, Pale Gr, High Plasticity, Sl Moist			
1.0				
1.1			450	
1.2				
1.3				
1.4	EXTREMELY WEATHERED ROCK (XW)			
1.5				
1.6	UTP – END BOREHOLE 6			
1.7				
1.8				
1.9				
2.0				
2.1				
2.2				
2.3				
2.4				
2.5				
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 7			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021		**Job Number:** G21/109

Depth (m)	Soil Description # 7	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Very Stiff, Yell-Br, Becoming Lt Gr & Yell-Br, High Plasticity, Moist			
0.3				
0.4			300	
0.5				
0.6				
0.7				
0.8				
0.9			350	
1.0				
1.1				
1.2				
1.3				
1.4			450	
1.5				
1.6				
1.7				
1.8			400	
1.9				
2.0				
2.1			400	
2.2				
2.3				
2.4				
2.5			350	
2.6				
2.7				
2.8				
2.9			400	
3.0				
3.1				
3.2				
3.3				
3.4				
3.5			400	
3.6				
3.7				
3.8				
3.9				
4.0			400	

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 7										
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 6th July 2021					**Job Number:** G21/109		
Depth (m)	Soil Description # 7							FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~										
4.1										
4.2										
4.3										
4.4										
4.5									400	
4.6										
4.7										
4.8										
4.9										
5.0									450	
5.1										
5.2										
5.3										
5.4										
5.5										
5.6										
5.7									450	
5.8										
5.9										
6.0	END BOREHOLE 7									

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 8				
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 6th July 2021		**Job Number:** G21/109
Depth (m)	Soil Description # 8		FILL	PP	DCP
0.0	TOPSOIL		TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)				
0.2	Very Stiff, Or-Br, Becoming Pale Yell-Br, High Plasticity, Moist				
0.3					
0.4				450	
0.5					
0.6					
0.7	SANDY CLAY (CL)				
0.8	Hard, Lt Br, Low Plasticity, Sl Moist			450	
0.9	CEMENTED SAND (SP)				
1.0	Dense, Lt Br, Dry				
1.1					
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
2.0	EXTREMELY WEATHERED ROCK (XW)				
2.1					
2.2					
2.3	UTP – END BOREHOLE 8				
2.4					
2.5					
2.6					
2.7					
2.8					
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8					
3.9					
4.0					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 9					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 6th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 9		FILL	PP	DCP
0.0	NATURAL – SILTY SANDY CLAY (CH)				
0.1	Firm, Br, Becoming Br & Gr, High Plasticity, Moist				
0.2					
0.3					
0.4					
0.5				100	
0.6					
0.7					
0.8					
0.9				50	
1.0					
1.1					
1.2					
1.3				80	
1.4					
1.5					
1.6					
1.7					
1.8				70	
1.9					
2.0					
2.1					
2.2	SILTY SANDY CLAY (CH)				
2.3	Stiff, Lt Gr, Br, Yell-Br, High Plasticity, Moist				
2.4				150	
2.5					
2.6					
2.7	SANDY GRAVELLY CLAY (CI)				
2.8	Stiff, Br, Yell-Br, Red-Br, Gr, Medium Plasticity, Moist				
2.9				200	
3.0					
3.1					
3.2					
3.3					
3.4					
3.5				100	
3.6					
3.7					
3.8					
3.9					
4.0	SANDY GRAVELLY CLAY (CI), Firm, Br, Yell-Br, Red-Br, Gr, Medium Plasticity, ***Wet***			50	
~BORELOGS CONTINUED ON NEXT PAGE~					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 9					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 6th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 9		FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~					
4.1					
4.2					
4.3					
4.4					
4.5				80	
4.6					
4.7					
4.8					
4.9	SILTY GRAVELLY CLAY (CH)				
5.0	Very Stiff, Lt Gr, Yell-Br, High Plasticity, Moist				
5.1					
5.2				350	
5.3					
5.4					
5.5					
5.6					
5.7					
5.8				400	
5.9					
6.0	END BOREHOLE 9				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 10										
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 6th July 2021				**Job Number:** G21/109			
Depth (m)	Soil Description # 10						FILL	PP	DCP	
0.0	NATURAL – SILTY CLAY (CH)									
0.1	Stiff, Yell-Br, High Plasticity, Moist									
0.2										
0.3										
0.4								200		
0.5										
0.6										
0.7										
0.8	As above, but Very Stiff							350		
0.9										
1.0	SILTY CLAY (CI)									
1.1	Very Stiff, Pale Yell-Br, Lt Gr, Medium Plasticity, Sl Moist, Fine Sandstone Lenses Encountered									
1.2										
1.3								450		
1.4										
1.5	EXTREMELY WEATHERED ROCK (XW)									
1.6										
1.7										
1.8	UTP – END BOREHOLE 10									
1.9										
2.0										
2.1										
2.2										
2.3										
2.4										
2.5										
2.6										
2.7										
2.8										
2.9										
3.0										
3.1										
3.2										
3.3										
3.4										
3.5										
3.6										
3.7										
3.8										
3.9										
4.0										

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 11										
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 6th July 2021				**Job Number:** G21/109			
Depth (m)	Soil Description # 11							FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)									
0.1	Very Stiff, Yell-Br, High Plasticity, Moist									
0.2										
0.3										
0.4	GRAVELLY SAND (SP)									
0.5	Dense, Lt Br, Dry									
0.6										
0.7										
0.8										
0.9	EXTREMELY WEATHERED ROCK (XW)									
1.0										
1.1										
1.2										
1.3										
1.4	UTP – END BOREHOLE 11									
1.5										
1.6										
1.7										
1.8										
1.9										
2.0										
2.1										
2.2										
2.3										
2.4										
2.5										
2.6										
2.7										
2.8										
2.9										
3.0										
3.1										
3.2										
3.3										
3.4										
3.5										
3.6										
3.7										
3.8										
3.9										
4.0										

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 12									
Site Address: Lot 4 #260 Mitchell Road, Bromelton				**Date Drilled:** 6th July 2021				**Job Number:** G21/109	
Depth (m)	Soil Description # 12							FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)									
0.1	Stiff, Or-Br, High Plasticity, Moist									
0.2										
0.3									300	
0.4										
0.5	SILTY CLAY (CH)									
0.6	Very Stiff, Lt Br, Some Sand, Medium Plasticity, Sl Moist, With Rock Fragments									
0.7										
0.8	EXTREMELY WEATHERED ROCK (XW)									
0.9	UTP – END BOREHOLE 12									
1.0										
1.1										
1.2										
1.3										
1.4										
1.5										
1.6										
1.7										
1.8										
1.9										
2.0										
2.1										
2.2										
2.3										
2.4										
2.5										
2.6										
2.7										
2.8										
2.9										
3.0										
3.1										
3.2										
3.3										
3.4										
3.5										
3.6										
3.7										
3.8										
3.9										
4.0										

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 13			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 13	FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)			
0.1	Very Stiff, Or-Br, Becoming Pale Yell-Br, High Plasticity, Moist			
0.2				
0.3				
0.4			450	
0.5				
0.6				
0.7	CEMENTED SAND (SP)		450	
0.8	Dense, Lt Br, Br, Dry			
0.9	EXTREMELY WEATHERED ROCK (XW)			
1.0	UTP – END BOREHOLE 13			
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
2.0				
2.1				
2.2				
2.3				
2.4				
2.5				
2.6				
2.7				
2.8				
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 14			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 6th July 2021		**Job Number:** G21/109

Depth (m)	Soil Description # 14	FILL	PP	DCP
0.0	TOPSOIL	TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)			
0.2	Stiff, Or-Br, Becoming Yell-Br, High Plasticity, Moist			
0.3			200	
0.4				
0.5				
0.6	As above, but Very Stiff		300	
0.7				
0.8				
0.9				
1.0			200	
1.1				
1.2	SILTY CLAY (CH)			
1.3	Hard, Br, Yell-Br, Traces of Sand and Gravel, High Plasticity, Sl Moist			
1.4			450	
1.5				
1.6				
1.7				
1.8				
1.9			450	
2.0				
2.1				
2.2				
2.3				
2.4			450	
2.5				
2.6				
2.7				
2.8	SILTY CLAY (CH)			
2.9	Very Stiff, Yell-Br, Gr, Some Sand, High Plasticity, Moist			
3.0			420	
3.1				
3.2				
3.3				
3.4				
3.5				
3.6				
3.7				
3.8				
3.9				
4.0			450	

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 14					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 6th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 14		FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~					
4.1					
4.2	SILTY CLAY (CI)				
4.3	Hard, Yell-Br, Gr, With Sand, Medium Plasticity, Sl Moist, With Rock Fragments				
4.4					
4.5				500	
4.6					
4.7					
4.8					
4.9					
5.0				500	
5.1					
5.2					
5.3					
5.4					
5.5	EXTREMELY WEATHERED ROCK (XW)				
5.6					
5.7	UTP – END BOREHOLE 14				
5.8					
5.9					
6.0					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 15					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 15		FILL	PP	DCP
0.0	TOPSOIL		TOPSOIL		
0.1	NATURAL – SILTY CLAY (CH)				
0.2	Very Stiff, Lt Br, Becoming Gr, High Plasticity, Moist				
0.3				300	
0.4					
0.5					
0.6				300	
0.7					
0.8					
0.9					
1.0				450	
1.1					
1.2	SANDY CLAY (CI)				
1.3	Very Stiff, Pale Br, Some Gravel, Medium Plasticity, Moist				
1.4				400	
1.5					
1.6					
1.7				450	
1.8					
1.9					
2.0					
2.1					
2.2					
2.3					
2.4					
2.5	CLAYEY SAND (SC)				
2.6	Dense, Pale Br, Sl Moist, Fine to Coarse Sand				
2.7					
2.8					
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7	SILTY SANDY CLAY (CI)				
3.8	Pale Br, Medium Plasticity, Moist				
3.9					
4.0				350	
~BORELOGS CONTINUED ON NEXT PAGE~					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 15					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 15		FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~					
4.1					
4.2	SILTY CLAY (CH)				
4.3	Very Stiff, Gr, Becoming Lt Br, Very High Plasticity, Moist				
4.4					
4.5				450	
4.6					
4.7					
4.8					
4.9					
5.0					
5.1					
5.2					
5.3					
5.4	EXTREMELY WEATHERED ROCK (XW)				
5.5					
5.6	UTP – END BOREHOLE 15				
5.7					
5.8					
5.9					
6.0					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 16					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 16		FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)				
0.1	Very Stiff, Or-Br, High Plasticity, Moist				
0.2					
0.3				450	
0.4	SILTY SANDY CLAY (CI)				
0.5	Very Stiff, Lt Yell-Br, Medium Plasticity, Moist				
0.6					
0.7				350	
0.8	CLAYEY SAND (SC)				
0.9	Dense, Lt Yell-Br, Sl Moist				
1.0					
1.1					
1.2					
1.3	EXTREMELY WEATHERED ROCK (XW)				
1.4					
1.5	UTP – END BOREHOLE 16				
1.6					
1.7					
1.8					
1.9					
2.0					
2.1					
2.2					
2.3					
2.4					
2.5					
2.6					
2.7					
2.8					
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8					
3.9					
4.0					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 17					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 17		FILL	PP	DCP
0.0	NATURAL – SILTY SANDY CLAY (CH)				
0.1	Stiff, Br, High Plasticity, Moist				
0.2					
0.3					
0.4				250	
0.5					
0.6					
0.7					
0.8	SILTY SANDY CLAY (CH)				
0.9	Very Stiff, Br, Yell-Br, Gr, High Plasticity, Sl Moist				
1.0				450	
1.1					
1.2					
1.3				450	
1.4					
1.5					
1.6					
1.7	SILTY CLAY (CH)				
1.8	Very Stiff, Dk Gr, Traces of Sand, Very High Plasticity, Moist				
1.9				420	
2.0					
2.1					
2.2				450	
2.3					
2.4					
2.5					
2.6					
2.7	SILTY SANDY CLAY (CI)				
2.8	Very Stiff, Br, Medium Plasticity, Moist			450	
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8	CLAYEY SAND (SC)				
3.9	Dense, Yell-Br, Sl Moist				
4.0					

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 17										
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 7th July 2021					**Job Number:** G21/109		
Depth (m)	Soil Description # 17							FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~										
4.1										
4.2										
4.3										
4.4										
4.5										
4.6										
4.7										
4.8										
4.9										
5.0										
5.1										
5.2										
5.3										
5.4										
5.5										
5.6										
5.7										
5.8										
5.9										
6.0	END BOREHOLE 17									

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 18					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 18		FILL	PP	DCP
0.0	NATURAL – CLAYEY SAND (SC)			-	
0.1	Dense, Yell-Br, Sl Moist			3	
0.2				8	
0.3				13	
0.4				17	
0.5				>20	
0.6					
0.7					
0.8					
0.9					
1.0	EXTREMELY WEATHERED ROCK (XW)				
1.1				>30	
1.2					
1.3					
1.4					
1.5	UTP – END BOREHOLE 18				
1.6					
1.7					
1.8					
1.9					
2.0					
2.1					
2.2					
2.3					
2.4					
2.5					
2.6					
2.7					
2.8					
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8					
3.9					
4.0					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 19			
Site Address: Lot 4 #260 Mitchell Road, Bromelton	**Date Drilled:** 7th July 2021	**Job Number:** G21/109	

Depth (m)	Soil Description # 19	FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)			
0.1	Hard, Pale Br, Becoming Mottled Dk Br, High Plasticity, Moist			
0.2				
0.3				
0.4			300	
0.5				
0.6				
0.7			450	
0.8				
0.9				
1.0				
1.1				
1.2			450	
1.3				
1.4				
1.5				
1.6				
1.7				
1.8			450	
1.9				
2.0				
2.1				
2.2			500	
2.3				
2.4				
2.5				
2.6				
2.7				
2.8			500	
2.9				
3.0				
3.1				
3.2				
3.3				
3.4				
3.5			500	
3.6	EXTREMELY WEATHERED ROCK (XW)			
3.7				
3.8	UTP – END BOREHOLE 19			
3.9				
4.0				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 20					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 20		FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)				
0.1	Stiff, Dk Gr-Br, Becoming Black, Very High Plasticity, Moist				
0.2					
0.3					
0.4				200	
0.5					
0.6					
0.7					
0.8	As above, but Very Stiff			450	
0.9					
1.0					
1.1					
1.2					
1.3				450	
1.4					
1.5					
1.6					
1.7					
1.8				450	
1.9					
2.0	SILTY CLAY (CH)				
2.1	Hard, Br, Dk Br, Some Sand, High Plasticity, Moist				
2.2					
2.3					
2.4				450	
2.5					
2.6					
2.7					
2.8					
2.9				500	
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8					
3.9					
4.0					

~BORELOGS CONTINUED ON NEXT PAGE~

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 20									
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 7th July 2021				**Job Number:** G21/109		
Depth (m)	Soil Description # 20						FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~									
4.1									
4.2									
4.3									
4.4									
4.5									
4.6									
4.7									
4.8									
4.9									
5.0	END BOREHOLE 20								
5.1									
5.2									
5.3									
5.4									
5.5									
5.6									
5.7									
5.8									
5.9									
6.0									

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 21					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 21		FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)				
0.1	Very Stiff, Pale Br, High Plasticity, Moist				
0.2					
0.3					
0.4				300	
0.5					
0.6					
0.7				450	
0.8					
0.9	SILTY SANDY CLAY (CI)				
1.0	Hard, Pale Br, Medium Plasticity, Sl Moist			450	
1.1					
1.2					
1.3					
1.4				500	
1.5					
1.6					
1.7	SILTY CLAY (CH)				
1.8	Hard, Dk Gr-Br, Very High Plasticity, Moist			500	
1.9					
2.0					
2.1					
2.2				500	
2.3					
2.4					
2.5					
2.6	SILTY CLAY (CI)				
2.7	Very Stiff, Br, With Sand, Medium Plasticity, Moist				
2.8				450	
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7				450	
3.8					
3.9	SILTY CLAY (CH)				
4.0	Very Stiff, Br, Gr, Becoming Br, High Plasticity, Moist				
~BORELOGS CONTINUED ON NEXT PAGE~					

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 21									
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 7th July 2021				**Job Number:** G21/109		
Depth (m)	Soil Description # 21						FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~									
4.1									
4.2									
4.3									
4.4									
4.5								450	
4.6									
4.7									
4.8									
4.9									
5.0									
5.1									
5.2								450	
5.3									
5.4									
5.5									
5.6									
5.7									
5.8									
5.9									
6.0	END BOREHOLE 21							450	

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 22					
Site Address: Lot 4 #260 Mitchell Road, Bromelton		**Date Drilled:** 7th July 2021		**Job Number:** G21/109	
Depth (m)	Soil Description # 22		FILL	PP	DCP
0.0	NATURAL – SILTY CLAY (CH)				
0.1	Very Stiff, Dk Br, High Plasticity, Moist				
0.2					
0.3					
0.4				400	
0.5					
0.6					
0.7				450	
0.8					
0.9					
1.0				450	
1.1					
1.2	SANDY CLAY (CL)				
1.3	Hard, Br, Mottled Gr, Low Plasticity, Sl Moist				
1.4				450	
1.5					
1.6					
1.7					
1.8					
1.9					
2.0	SILTY SANDY CLAY (CI)				
2.1	Stiff, Br, Gr, Medium Plasticity, ***Very Moist***				
2.2				100	
2.3					
2.4					
2.5	CLAYEY SAND (SC)				
2.6	Dense, Pale Br, Mottled Gr, Sl Moist				
2.7					
2.8					
2.9					
3.0					
3.1					
3.2					
3.3					
3.4					
3.5					
3.6					
3.7					
3.8					
3.9					
4.0	SILTY CLAY (CH) – Hard, Br, Gr, Becoming Yell-Br, High Plasticity, Moist				

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

BORELOGS CONTINUED

Bore Log 22									
Site Address: Lot 4 #260 Mitchell Road, Bromelton			**Date Drilled:** 7th July 2021				**Job Number:** G21/109		
Depth (m)	Soil Description # 22						FILL	PP	DCP
~BORELOGS CONTINUED FROM PREVIOUS PAGE~									
4.1									
4.2									
4.3									
4.4									
4.5								450	
4.6									
4.7									
4.8									
4.9									
5.0								500	
5.1									
5.2									
5.3									
5.4									
5.5	EXTREMELY WEATHERED ROCK (XW)								
5.6									
5.7	UTP - END BOREHOLE 21								
5.8									
5.9									
6.0									

DRILLING TERMINOLOGY:

UTP	Unable to penetrate	R	Refusal						
DCP	Dynamic Cone Penetrometer	PP	Pocket Penetrometer	SPT	Standard Penetrometer Test	VS	Vane Shear		
DS	Disturbed Sample	UD	Undisturbed Sample	BS	Bulk Sample				
Br	Brown	Gr	Grey	Yell	Yellow	Or	Orange	Wt	White
Dk	Dark	Lt	Light	Pl	Pale				

APPENDIX B – LAB RESULTS

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781 Mt Glorious Rd Highvale 4520

Certificate of Analysis

Signatory:

Phone: +617 3289 7179 Bio-Track Pty Ltd ABN 91 056 237 275

Test Code/Name	**[32] Electrical Conductivity Soil (1:5)**		
Lab Reference (LR)	**080721.615**	Client Name	East Coast Geotechnical
SampleID	**All Samples**	Client Contact	Julian Lockwood
		Project Name	Aggressive Testing
Report Date	14/07/2021	Job Number	621/109
Sample Received Date	8/07/2021	Order Number	6687
Sample Disposal Date	6/09/2021	Chain of Custody	
Sample Packaging	Plastic Bag	Client Email	manager@eastcoast-geotech.com.au
Temperature	Ambient	Client Address	P.O Box 31 Acacia Ridge Brisbane Queensland 4110

Analytical Method: 1:5 in deionised water. 30 minute rolling shake. Measurement by pH probe.

S#	SampleID	Electrical Conductivity dS/m	pH	Chloride mg/L
1	TS_1 CLAY 600-800	**0.41**	***NM**	***NM**
2	TS_2 CLAY 500-700	**0.48**	***NM**	***NM**
3	TS_4 SAND 600-800	**0.49**	***NM**	***NM**
4	TS_7 CLAY 500-700	**1.08**	***NM**	***NM**
5	TS_8 SAND 1000	**0.59**	***NM**	***NM**
6	TS_9 CLAY 600-700	**0.11**	***NM**	***NM**
7	TS_15 CLAY 400-600	**0.43**	***NM**	***NM**
8	TS_15 SAND 1500-1600	**0.36**	***NM**	***NM**
9	TS_15 SAND 2800	**0.12**	***NM**	***NM**
10	TS_17 CLAY 1800-1900	**0.63**	***NM**	***NM**
11	TS_18 SAND 600	**0.05**	***NM**	***NM**
12	TS_20 CLAY 500-700	**0.11**	***NM**	***NM**
13	TS_23 SAND 200-500	**0.04**	***NM**	***NM**
14	TS_24 SAND 200-500	**0.09**	***NM**	***NM**

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Certificate of Analysis

Signatory:

Phone: +617 3289 7179 Bio-Track Pty Ltd ABN 91 056 237 275

Test Code/Name	**[34] Emerson Class**		
Lab Reference (LR)	**150721.430**	Client Name	East Coast Geotechnical
SampleID	**All Samples**	Client Contact	Julian Lockwood
		Project Name	Aggressive Testing
Report Date	16/07/2021	Job Number	621/109
Sample Received Date	8/07/2021	Order Number	6687
Sample Disposal Date	13/09/2021	Chain of Custody	
Sample Packaging	Plastic Bag	Client Email	manager@eastcoast-geotech.com.au
Temperature	Ambient	Client Address	P.O Box 31 Acacia Ridge Brisbane Queensland 4110

Analytical Method: As per Emerson, WW 1967, A classification of soil aggregates based on their coherence in water. *Australian Journal of Soil Research*, 5: 47-57.

S#	SampleID	Emerson Class
1	TS_1 CLAY 600-800	**1**
2	TS_7 CLAY 500-700	**1**
3	TS_9 CLAY 600-700	**2**
4	TS_15 CLAY 400-600	**4**
5	TS_20 CLAY 500-700	**4**

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Certificate of Analysis

Signatory:

Phone: +617 3289 7179 Bio-Track Pty Ltd ABN 91 056 237 275

Test Code/Name	**[15] Aggressive Soil Suite #1 for AS2159 Piling Code**		
Lab Reference (LR)	**150721.431**	Client Name	East Coast Geotechnical
SampleID	**All Samples**	Client Contact	Julian Lockwood
		Project Name	Aggressive Testing
Report Date	15/07/2021	Job Number	621/109
Sample Received Date	8/07/2021	Order Number	6687
Sample Disposal Date	13/09/2021	Chain of Custody	
Sample Packaging	Plastic Bag	Client Email	manager@eastcoast-geotech.com.au
Temperature	Ambient	Client Address	P.O Box 31 Acacia Ridge Brisbane Queensland 4110

Analytical Method: As per ASTM G187 - 12 a. Resistivity **R**15.5 standardised to a resistance at 15.5'C (per ASTM G187 - 12 a) Resistivity will be ***lower*** at temperatures above 15.5 'C which may apply to field conditions.

Resistivity at reported temperature

* NM = Not Measured

S#	SampleID	Resistivity (Ohms.cm) #	Temp # 'C	Resistivity (Ohms.cm) R15.5	pH
1	TS_2 CLAY 500-700	380	22	440	5.8
2	TS_7 CLAY 500-700	450	22	520	7.0
3	TS_8 SAND 1000	470	22	550	8.7
4	TS_17 CLAY 1800-1900	290	22	340	7.8

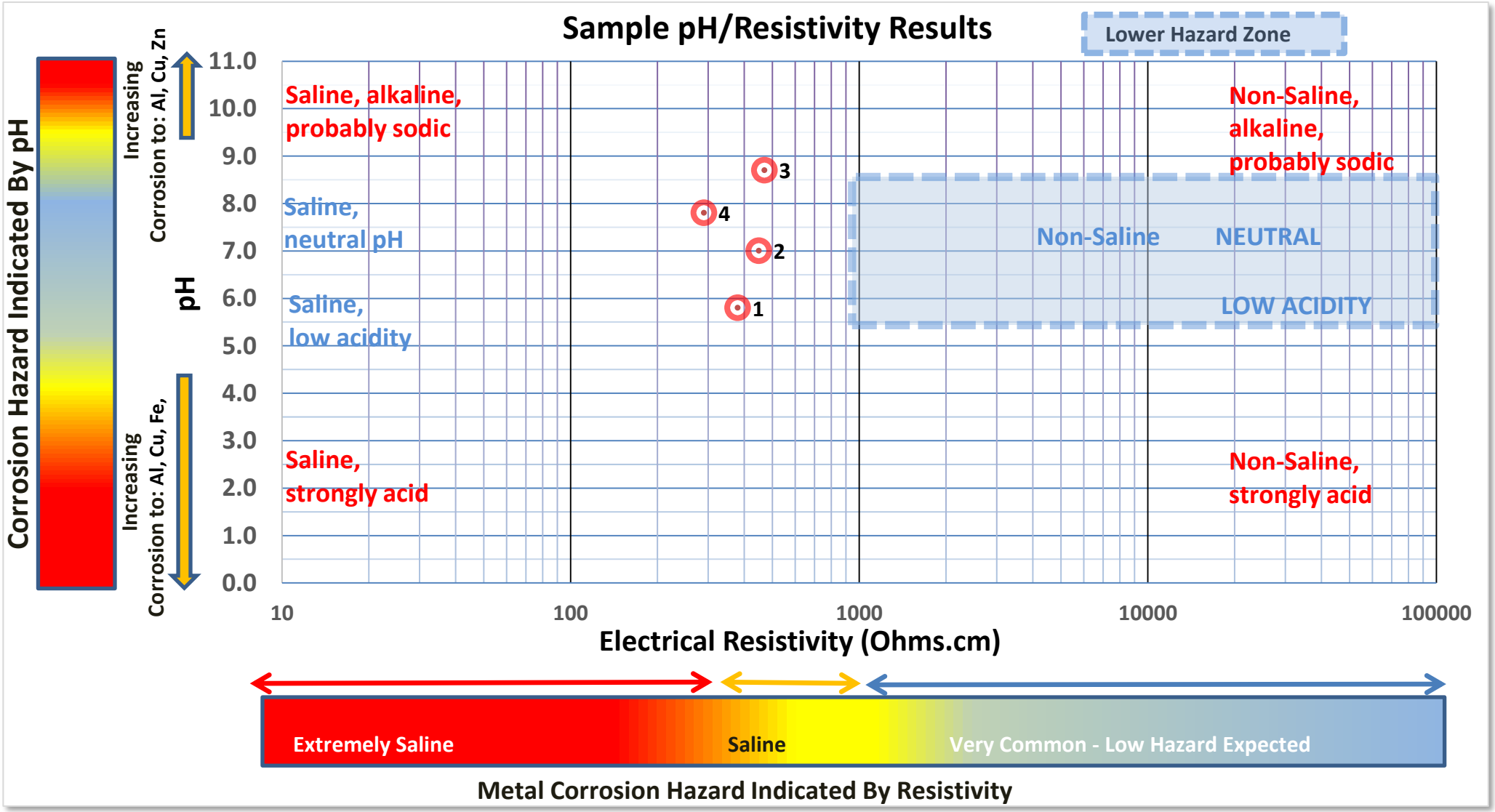
www.biotrack.com.au
781 Mt Glorious Rd Highvale 4520

Certificate of Analysis

Signatory:

Phone: +617 3289 7179 Bio-Track Pty Ltd ABN 91 056 237 275

Test Code/Name	[15] Aggressive Soil Suite #1 for AS2159 Piling Code		
Lab Reference (LR)	150721.431	Client Name	East Coast Geotechnical
SampleID	All Samples	Client Contact	Julian Lockwood
		Project Name	Aggressive Testing



CERTIFICATE OF ANALYSIS

Analysis By: Bio-Track Pty Ltd
ABN 91 056 237 275
Mt. Glorious Road
Highvale, Brisbane, Australia, 4520
Ph. 07 3289 7179 Fx. 07 3289 7155

DATE OF REPORT 16 JULY 2021 Page 1 of 1 Report Pages.
CLIENT NAME Julian Lockwood c/o East Coast Geotechnical
CLIENT ADDRESS P.O Box 31 Acacia Ridge Brisbane 4110
PROJECT NAME Aggressive Testing YOUR PROJECT/JOB REFERENCE 621/109
SAMPLING DATE NUMBER OF SAMPLES 4 SAMPLE TYPE:Soil/Solid
PACKAGING Plastic Bag ** SAMPLES DISPOSED ON 13/09/2021
DATE RECEIVED 15/07/2021 10:18:32 AM LAB REF. LR150721.431

METHODOLOGY: EC Cl as 1:5, pH 1:2.5; air dried soil in water, 30 minute rolling shake, Cl by ion selective electrode. S as 1:40 IN KCl extract measured by ICP OES.
RESIS:soil resistivity per AS1289.4.4.1 SO4 calculated as S x 3 SO3 calculated as S x 2.5

SAMPLE ID mm depth	EC dS/m	pH	Cl mg/kg	S mg/kg	SO4 %	SO3 %	RESIS ohm-cm
TS_2CLAY 500-700	0.48	5.8	650	56	<0.1	<0.1	380
TS_7CLAY 500-700	1.08	7.0	1500	19	<0.1	<0.1	450
TS_8SAND 1000-	0.59	8.7	550	44	<0.1	<0.1	470
TS_17CLAY 1800-1900	0.63	7.8	750	12	<0.1	<0.1	290

Signatory

For and behalf of Bio-Track Pty Ltd

REPORT LIMITATIONS

Our commission from our client was to establish test sites as shown and then undertake geotechnical testing aimed at providing parameters for proposed design. Under normal circumstances the attached log sections should be representative of the soil conditions over this site, however in some cases, soil conditions can change dramatically over short distances and even careful exploration programmes may not locate all the variations. If footing excavations reveal soil conditions differing from those shown on the log sheet in this report, we recommend that we be immediately notified so that further exploration can be carried out and the designer of the footings then notified to consider the influence of the changes to the design.

In this report we have attempted to convey to the designer of the footings as much information about the site and conditions so that an economical and practical footing can be designed.

In writing this report, we have also considered all the information supplied to us by our client. Should the client or his agent have omitted to supply us with relevant information, our report may be irrelevant and/or inappropriate. We do not take responsibility for the consequences in such cases and we will make an additional charge if as a result, more testing or rewriting of this report is necessary.

This report has been signed in blue ink. If the signature on this report is in black ink, you are reading a photocopy.

This report has not taken into consideration the long-term effects of any previous, current or potential sub-surface work by mining companies, developers or local authority or potential slope instability problems. At the time of writing this report, neither our client (nor his agent) nor the local authority had made us aware that these problems may be affecting this allotment. If a mining subsidence or slope stability assessment is required for this allotment to obtain building approval, we can arrange for this to be done, but that type of report is beyond the scope of our commission and fees in this report.

SITE CLASSIFICATIONS

Australian Standard AS 2870-2011 establishes performance requirements and specific designs for common foundation conditions as well as providing guidance on the design of footing systems using engineering principles. Site classes for AS 2870 are presented IN the Table below.

Site Class	Foundation	Characteristic Surface Movement
A	Most sand and rock sites with little or no ground movement from moisture changes.	
S	Slightly reactive clay site, which may experience only slight ground movement from moisture changes	0 – 20 mm
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes	20 – 40 mm
H1	Highly reactive clay sites, which experience high ground movement from moisture changes	40 – 60 mm
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes	60 – 75 mm
E	Extremely reactive site, which may experience extreme ground movement from moisture changes	>75 mm
P	Sites which include filled site (refer to AS 2870 2, 4, 6), soft soils, such as soft clay or silt or loose sands; landslip: mine substance: collapsing soils: soils subject to erosion: reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.	

Reactive sites are sites consisting of clay soils that swell on wetting and shrink on drying, resulting in ground movements that can damage lightly loaded structures. The amount of ground movement is related to the physical properties of the clay and environmental factors such as climate, vegetation and watering. Higher probability of damage can occur on reactive sites WITH abnormal moisture conditions, as defined in AS 2870, due to factorS such as:

- Presence of trees on the building site or adjacent site, removal of trees prior to or after construction, and the growth of trees too close to a footing. The proximity of trees and their effect on foundation should be considered when determining building areas within each allotment (refer to AS 2870)
- Failure to provide adequate site drainage or lack of maintenance of site drainage, failure to repair plumbing leaks and excessive or irregular watering of gardens:
- Unusual moisture conditions caused by removal of structures, ground covers (such as pavements), drains, dams, swimming pools, tanks, etc.

DEFINITIONS

In our log section we describe filled ground as stated below. It must be remembered that when sampling boreholes, particularly in alluvial soils, some top soils and other natural soils are indistinguishable from fill, therefore can be logged as fill and vice versa.
All sites with fill deeper than the limits prescribed in AS 2870 have been classified as Class "P". A predicted surface movement (Y_s) has also been supplied. The design engineer must make allowances for both possible limited bearing and reactivity affecting the footings.

CONTROLLED FILL
Fill which has been placed under supervision and at the time of writing this report we have received written certification from a Geotechnical Testing Authority that this fill complies with either Level 1 or 2 as defined in A.S. 3798. Certification of fill as controlled does not equate with STABLE conditions for design purposes.

UNCONTROLLED FILL
Fill other than controlled fill consists of many forms. In all cases consideration should be given to design by engineering principles.

VIRTUALLY FLAT
Visually assessed as minor levelling only required to form a level construction pad.

GENTLY SLOPING
Visually assessed as having gradient of less than 1:25.

MODERATELY SLOPING
Visually assessed as having gradients in the order of 1:12 to 1:25.

STEEPLY SLOPING
Visually assessed as having gradients in the order of 1:5 to 1:12.

VERY STEEPLY SLOPING
Visually assessed as having gradients steeper that 1:5.

UNEXCAVATABLE ROCK
Any material which is similar to that described in Clause 1.8.47 of A.S. 2870-1996. Strong material including shaley material and strongly cemented sand or gravel that does not soften in water. Material that cannot **readily** be excavated by a conventional backhoe with a normal bucket* may be taken to be rock.

EXCAVATABLE ROCK
A rock-like material which does not shrink or swell with changes in soil moisture, but is readily excavatable with a conventional backhoe with a normal bucket.*

GRAVEL
Coarse soil particles, larger than sand size, but less than 60mm in diameter. Generally 2mm to 60mm in size.

ROCK FLOATERS
Pieces of rock in a soil profile larger than 60mm, but can range up to well over a metre in diameter. Where these rock floaters form a layer or mat within the soil profile and difficulty is encountered in excavating them, subject to the geotechnical consultant, they may be taken to be the same as unexcavatable rock. For the purpose of this report cobbles and boulders are the same as rock floaters.

**A rubber tyred machine similar in power to a Case 580 series using a 300mm wide bucket.*

Services Offered by East Coast Group of Companies

Bore Hole Drilling

Bracing, Framing and Tie Down

CBR Test

Contamination Testing

Cut and Fill Design

Density Testing

Footing Design

Inspections and Certifications

Investigation of Structural Failures

Percolation Testing

Retaining Wall / Fences

Site Contours

Site Investigations

Site Management on Small Developments

Site Visits

Slope Stability

Steel Screw Piling

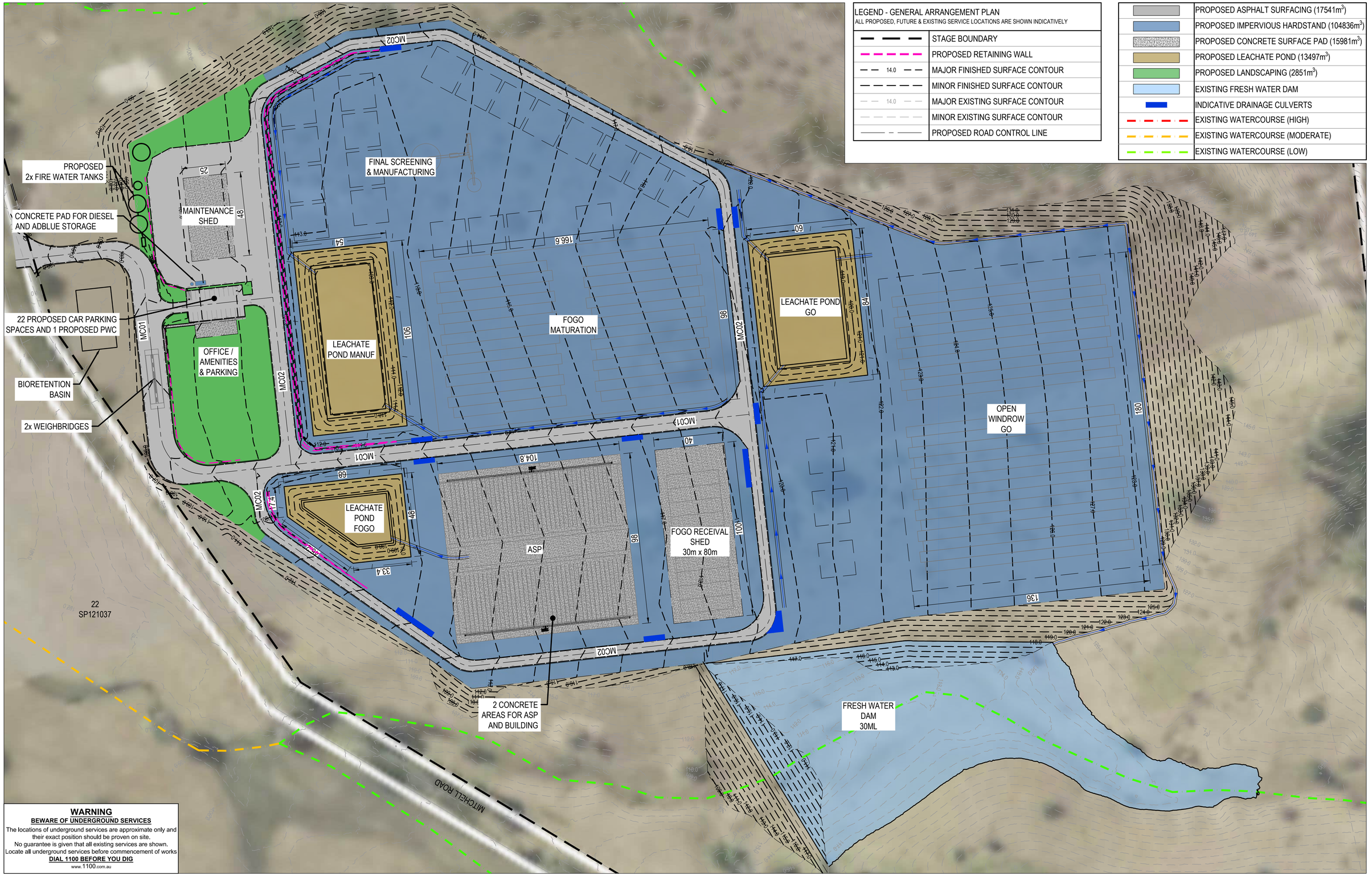
Sheet Piling

Structural Design

Subdivisional Area Investigation and Certification of Earthworks

Timber Piling

Wind Ratings



LEGEND - GENERAL ARRANGEMENT PLAN
ALL PROPOSED, FUTURE & EXISTING SERVICE LOCATIONS ARE SHOWN INDICATIVELY

	STAGE BOUNDARY
	PROPOSED RETAINING WALL
14.0	MAJOR FINISHED SURFACE CONTOUR
	MINOR FINISHED SURFACE CONTOUR
14.0	MAJOR EXISTING SURFACE CONTOUR
	MINOR EXISTING SURFACE CONTOUR
	PROPOSED ROAD CONTROL LINE

	PROPOSED ASPHALT SURFACING (17541m^3)
	PROPOSED IMPERVIOUS HARDSTAND (104836m^3)
	PROPOSED CONCRETE SURFACE PAD (15981m^3)
	PROPOSED LEACHATE POND (13497m^3)
	PROPOSED LANDSCAPING (2851m^3)
	EXISTING FRESH WATER DAM
	INDICATIVE DRAINAGE CULVERTS
	EXISTING WATERCOURSE (HIGH)
	EXISTING WATERCOURSE (MODERATE)
	EXISTING WATERCOURSE (LOW)

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works
DIAL 1100 BEFORE YOU DIG
www.1100.com.au

REV	DATE	AMENDMENT \ REVISION DESCRIPTION	DRAFT	DESIGN	WVR No.
01	07.08.2024	ISSUED FOR APPROVAL	KM	MH	0002
02	03.04.2025	ISSUED FOR APPROVAL	MH	MH	0003

STATUS: **SUBJECT TO APPROVAL**
APPROVED RPEQ:
DATE

smec an SJ company

0 10 20 40
Scale 1:1000

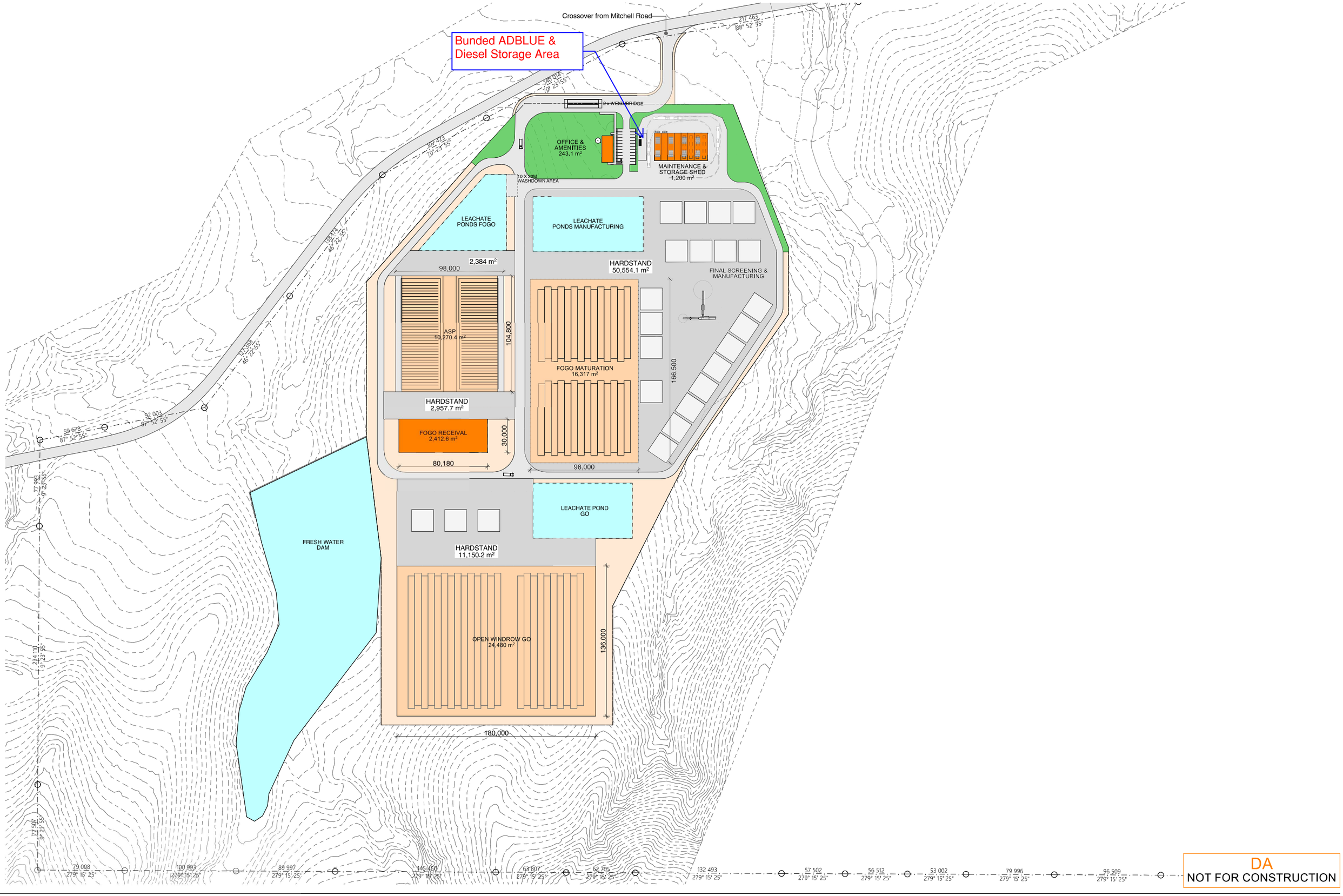
N

CLIENT: SOILCO

PROJECT NAME: PROPOSED DEVELOPMENT
SOILCO PTY LTD
260 MITCHELL ROAD, BEAUDESERT
SCENIC RIM REGIONAL COUNCIL

DRAWING TITLE: GENERAL ARRANGEMENT OVERALL LAYOUT

DATUM	SCALE	SIZE	PROJECT\DRAWING No	REVISION
AHD	AS SHOWN	A1	30034146-000-114	02



DA
NOT FOR CONSTRUCTION

elevation architecture

Contact
(07) 3251 6900
20 Prospect St, Fortitude Valley QLD 4006
info@elevationarchitecture.com.au

Revision

A	Preliminary DA Set	19/07/2024
B	DA Information Request	21/03/2025

Project
Bromelton Compost Manufacturing Facility
Lot 4 Mitchell Road Bromelton 4285

Client
SOILCO

Stage
DA

Status
Peliminary
NOT FOR CONSTRUCTION

Architect
GA

Drawn
ZB

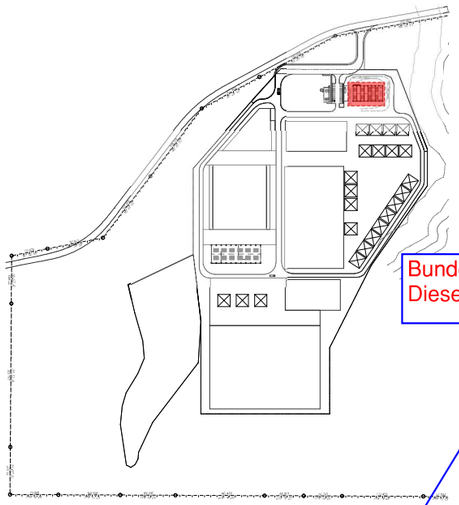
Project No.
1384-02

Scale
1:1500 at A1

Proposed Site Plan

A-DA-01.02 B

P:\Data 1\1384-02 Bromelton Compost Manufacturing Facility\5.2 Development Application\5.2.1 ArchiCAD\1384-02_Site Master DABR 27.pln

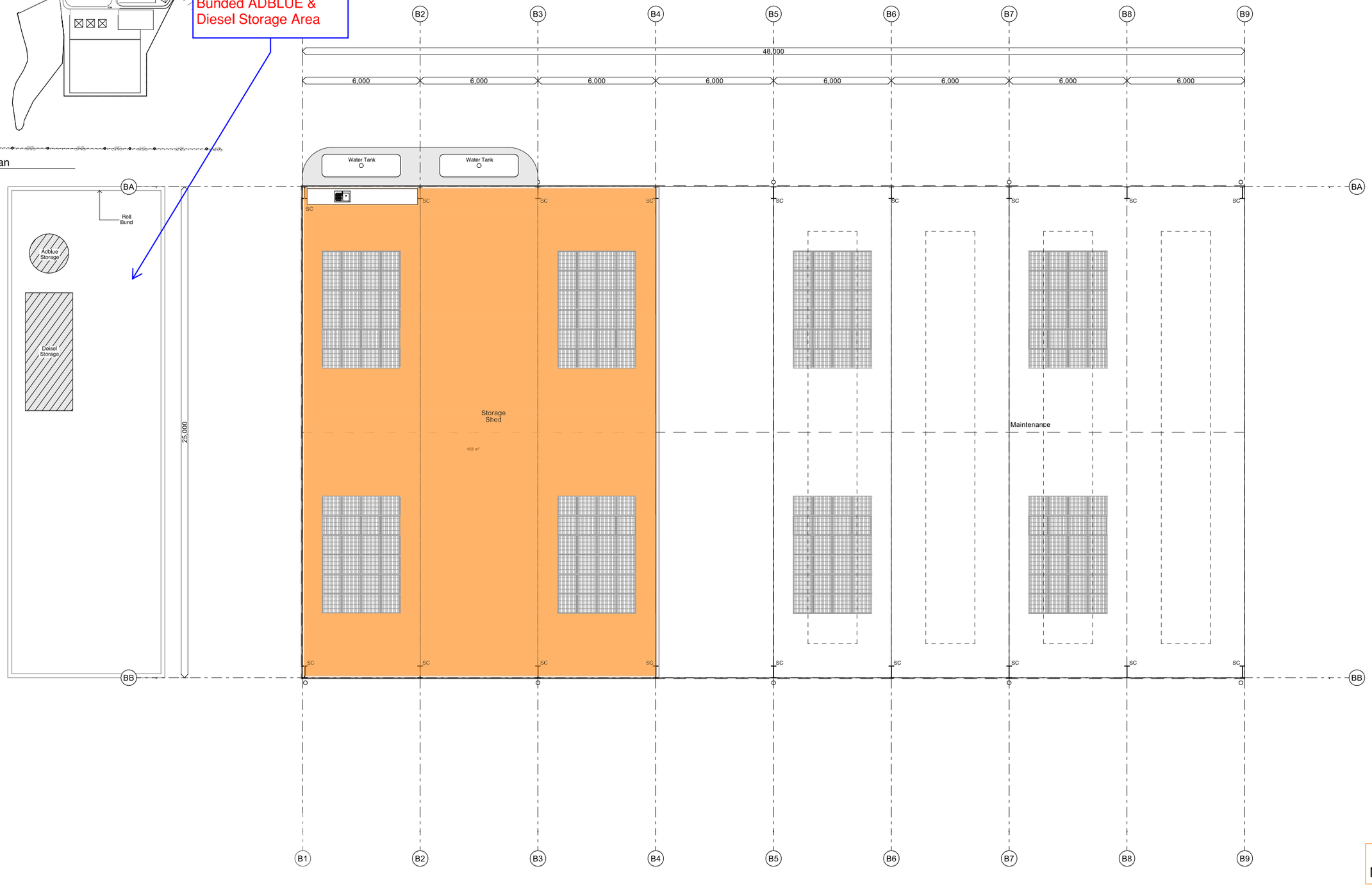


2 Key Plan
Scale 1:5000

Bunded ADBLUE &
Diesel Storage Area

LEGEND

DP Downpipe
SC Structural Column



DA
NOT FOR CONSTRUCTION

elevation architecture

Contact
(07) 3251 6900
20 Prospect St, Fortitude Valley QLD 4006
info@elevationarchitecture.com.au

Revision

A	Preliminary DA Set	19/07/2024
B	DA Information Request	21/03/2025

Project
Bromelton Compost Manufacturing Facility
Lot 4 Mitchell Road Bromelton 4285

Client
SOILCO

Stage
DA

Status
Peliminary
NOT FOR CONSTRUCTION

Architect
GA

Drawn
ZB

Project No.
1384-02

Scale
1:100, 1:5000
at A1

Floor Plan - Ground - Maintenance & Storage Shed

A-DA-03.02 B

P:\Data 1\1384-02 Bromelton Compost Manufacturing Facility\5.2 Development Application\5.2.1 ArchiCAD\1384-02_Site Master DAIR 27.pln

145 Ann Street, Level 9
Brisbane, Queensland 4000
Australia
ghd.com http://www.ghd.com/http://www.ghd.com/

Our ref: 12626213

04 April 2025

Dave Schumacher
Soilco Developments Pty Ltd
3/132 W Dapto Road
Kembla Grange, NSW 2526

Office of the Coordinator-General: Information Request – MCU for Special Industry (Reference: OUT24/5995) – Response Letter

Dear Dave,

SOILCO Developments Pty Ltd (SOILCO) submitted a Material Change of Use (MCU) Development Application (DA) (Reference: OUT24/5995) on October 2025. An Information Request letter was issued from the Office of the Coordinator-General (OCG) dated 6 January 2025 (Reference D24/202645).

OCG has advised that additional information is required in order for an assessment of the application proposal to be completed and have provided items for clarification. Responses to OCG's information request have been provided below.

OCG Information Request

On-site wastewater management

Item 3: Storage of Chemicals

Request:

1. *The proponent is requested to provide additional detail to demonstrate compliance with Performance Outcome PO28 of the Seqwater Development Guidelines and support the location of large quantities of Adblue and diesel such as:*
   a. *detailed drawings of storage facilities*
   b. *a plan showing the specific location of Adblue and diesel within the building (highest setback possible)*
   c. *building components (i.e. bunded edges, floor pad permeability rating etc)*
   d. *secondary containment methods with at least 110% spill recovery capacity, or industry standard, whichever is greatest*
   e. *product details for storage vessels*
   f. *procedures and notifications in the event of a spill*
   g. *spill kit contents, location and signage*
   h. *any other information / research / details the applicant can provide to justify the minimal setback.*
2. The proponent is requested to provide an updated Environmental Management Plan that includes the following information:
   a. amended risk assessment and general provisions to include further discussion of the site's location within the drinking water catchment
   b. appropriate unmitigated and mitigated risk scores for both surface and groundwater

c. clear mitigation measures, emergency actions, notifications procedures and responsibilities in the event of a large chemical/hazardous material spill

d. notification procedures to include direct notification of Seqwater's operations and water quality departments of any significant spills (i.e. quantities over 200L) which may enter surface waters.

Response:

In the town planning report for the SDA application, SOILCO propose to have a 5000 L AdBlue tank and 33,460 L capacity portable fuel station to support their operations. The Bromelton Compost Manufacturing Facility (CMF) will be running their own trucks and a large diesel fuel and AdBlue storage solution will be required. portable fuel station is a 20 foot container size and takes one full tanker's worth of diesel, making it a more cost effective solution. 5000 L of AdBlue is the same storage quantity currently used at SOILCO's existing Wogamia and Kembla Grange sites in NSW and have been recommended by SOILCO's operations team.

Separation distances from waterways and features have been considered during the design phase of the Project. The portable fuel station and the AdBlue tank will be set back more than 100 m from a green (low risk) waterway located to the east and more than 100 m from a red (high risk) waterway north of Mitchell Road. It is located more than 7 km from Wyaralong Dam and is located more than 4 km from the Bromelton Off-stream storage adjacent to Logan River. The CMF is required to be setback from surrounding sensitive receptors, and with its location onsite and within the SDA precinct, is appropriately setback from sensitive receptors. The CMF is located within an area that has limited environmental values.

The project is located within the Special Zone Industry Precinct within the Bromelton State Development Area and the project meets the development intent of the Precinct. The project area is also located within the Water supply buffer area and has included the following in the design phase, construction phase and operation phase to avoid compromising the drinking water supply and affecting the physical integrity of natural ecosystems that contribute to maintaining healthy functioning catchments:

- **Water Management and Risk Mitigation**: The CMF's design incorporates robust water management measures that ensure minimal risk to water supply and environmental resources. The separation of water types, in line with best practice for composting sites and Seqwater's Model Operating Conditions (MOC), will prevent contamination of water resources. The project adheres to these guidelines to manage and control any potential water-related risks effectively.
- **Exceedance of Design Standards**: The CMF has been designed with a 30 ML leachate storage capacity, exceeding the MOC-required storage based on a 10-year, 24-hour rainfall event (152 mm). This proactive approach ensures adequate leachate storage and mitigates any risks from excess runoff, enhancing the site's sustainability and resilience to extreme weather conditions. The leachate storage exceeds the 24-hour event size and can be reused during the early composting (pre-pasteurisation) stage, which further promotes resource efficiency.
- **No Active Release of Leachate**: A key environmental safeguard is the decision not to release leachate actively, ensuring there is no environmental contamination from leachate overflow. The design is robust enough to handle extreme rainfall occurrences (up to 900 mm within six months) without the need for overflow, providing strong environmental protection.
- **Stormwater Management:** The CMF will incorporate a stormwater treatment train in compliance with Seqwater (2017) guidelines. This system ensures that stormwater is effectively separated from contaminants, reducing the risk of contamination to surrounding water bodies, maintaining water quality, and complying with stringent water management protocols.
- **Sustainable Water Use**: The CMF demonstrates a commitment to sustainable water use by estimating water demands and ensuring a 30 ML harvesting storage system. This system will minimise reliance on external water sources, particularly during dry periods when water may be sourced via road tankering. This plan significantly reduces the environmental footprint by optimising the use of harvested water, contributing to water conservation efforts.
- **Flood Impact Considerations**: The operational site has been located outside the 1% Annual Exceedance Probability (AEP) flood impact zone, ensuring the facility will not be affected by the identified flow paths or potential flooding. This consideration further aligns with Seqwater's (2017)

guidelines, reducing the risk of water-related hazards and making the site more resilient to future flood events.

The CMF is designed to adhere to best practices for water management and environmental protection. By proactively addressing water-related risks, including leachate containment, stormwater management, and sustainable water use, the facility minimises its impact on the surrounding environment. These measures make the project a responsible and environmentally sound initiative, ensuring that water supply buffers and nearby water resources remain protected throughout the facility's operation. In addition, a number of specific environmental controls will be implemented to manage the storage and use of hazardous material on site, and these are discussed below.

Description of the portable fuel station

The portable fuel station will hold diesel and will be located to the north of the site between the office and the maintenance shed as shown in Figure 1 and Figure 2. The portable fuel station will have a capacity of 33,460 litres of diesel and be 6.1 metres (20 feet) in length.

The portable fuel station will be a proprietary self-bunded storage and dispensing unit and will include an outer tank that acts as a containment bund to catch any leaks from the inner tank, preventing environmental contamination or loss of product. The portable fuel station will have spill recovery capacity for 110% of the storage volume.

The portable fuel station will have the following certifications:

– AS 1692-2006 Steel tanks for flammable and combustible liquids
– AS 1940-2004 Storage and handling of flammable and combustible liquids
– CAN/ULC-S601 Shop fabricated steel aboveground tanks for flammable and combustible liquids
– SANS 10131 Ed.1 (2004) Above-ground storage tanks for petroleum products
– UL 142 Aboveground flammable liquid tanks

The safety features of the portable fuel station are outlined below:

– GES innovative 3” mechanical overfill protection allowing the fuel supply company to deliver at 1,200 lpm flow rates right up to the safe fill level of the tank, saving time and money on fuel company deliveries
– Tank supplied as standard with 15 amp single phase 3 pin electrical cord connection to internal distribution board and isolation RCD’s saving on onsite installations costs
– Controlled operation prevents pump burnout when the fuel level gets too low
– Audible overfill alarms that indicate when the fuel level is too high or too low
– Fuel-level temperature monitoring
– Emergency stop switches
– Enclosed pump bay with lockable doors
– Pump bay fluorescent light, ladder platform and dip stick.

Figure 1 *33,460 litre 20 foot portable fuel station*

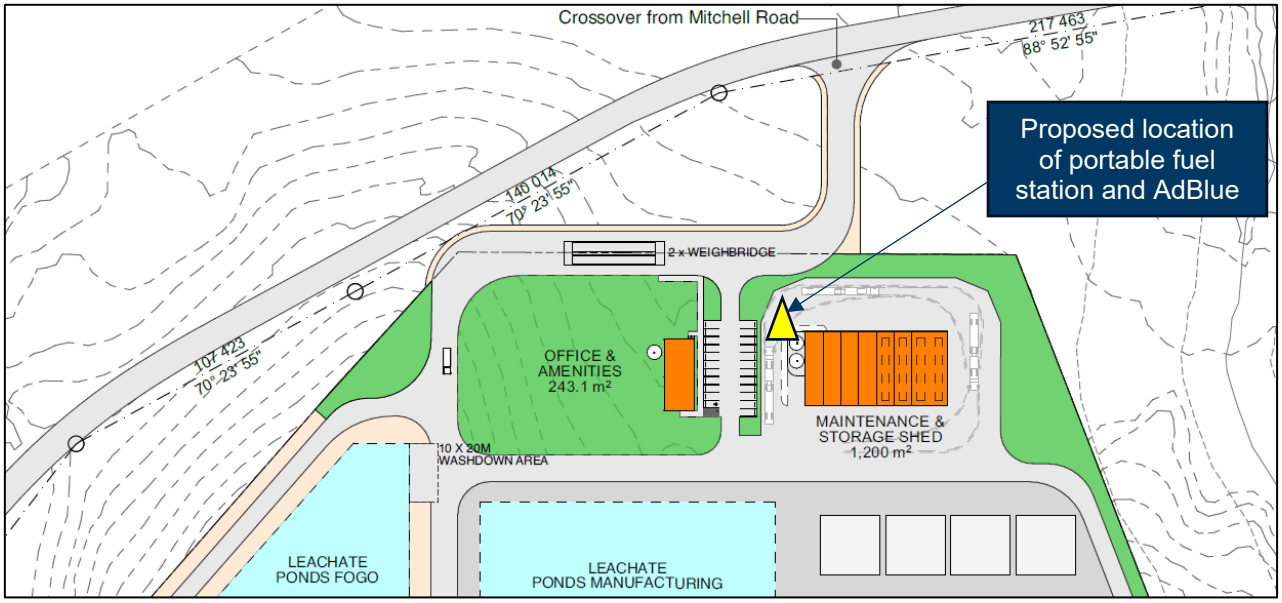


Figure 2 *Proposed location of portable fuel station and AdBlue tank*

Environmental controls for the portable fuel station

The portable fuel station will be located outdoors within a bunded area on an impervious base. A summary of the key environmental controls to manage fuels and chemicals within the project area are outlined below:

- The following management plans will be developed and implemented for the operation phase to manage fuel and chemicals used within the project area:
  - An Environmental Management Plan has been developed for the project that outlines the environmental controls to be implemented during the operational phase. Refer to Attachment 1 for Rev 1 of the Environmental Management Plan.
  - A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction.
  - An incident and emergency management plan will be developed and implemented for the operational phase. This plan will identify the potential hazards and actions to be taken to prevent environmental harm, detailing any communication required in the event of an incident. Refer to section 9.2 in the Environmental Management Plan for more information.
- As outlined in Section 8 of the Environmental Management Plan, during the operation phase the nominated contractor will undertake inspections of the plant and equipment. The inspections will focus on:
  - Environmental controls
  - Waste storage
  - Chemical storage
  - Site environmental safety
  - Compliance with management strategies implemented.
- There will be no direct discharge of runoff to the surrounding environment. Provision of in excess of 30 ML of leachate storage sized in exceedance of the 24-hour event supported by the MOC, with reuse in the early stages of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period.
- Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines.
- Hardstand areas include installing compacted material that will achieve in-situ permeability (K) of less than $1x10^{-9}$ m/s.
- Leachate ponds will be lined with low permeability material (either recompacted clay or HPDE) to achieve in-situ permeability (K) of less than $1x10^{-9}$ m/s.
- A leachate management system will be implemented to capture leachate from compost handling areas.
- A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas to manage the erosion and sediment.
- SOILCO will have and maintain sufficient equipment to ensure that the response strategies outlined incident and emergency management plan can be rapidly and effectively implemented in the event of a spill. The following equipment items are to be on located within the site at all times to assist with clean-up and containment operations that may be required:
  - Oil and Fuel Spill Kit (containing absorbent material and pads, cable ties, gloves, plastic bags)
  - Personal protective equipment (PPE)
  - Shovels
  - Containers (e.g. empty IBC) for collection of soil
  - Plastic pit liners
  - In addition, identification of relevant equipment which may be required in a major containment operation, and which could be mobilised to site within 8 hours, is to be identified prior to

operations commencing: graders, bulldozers and/or scrapers; water tankers, suction tankers and/or trucks and/or portable storage tanks etc.

– Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following:
    - Emergency response instruction folders
    - First aid equipment
    - Fire extinguishers
    - Stretcher(s)
    - Oil and chemical spill kits
    - Safety showers/eyewash stations.

    The site will be equipped with fire extinguishing equipment in accordance with the relevant fire codes and legislation.

Description of the AdBlue

SOILCO are proposing to install a 5000 L self-bunded AdBlue tank within the project area for the operational phase of the project (refer to Figure 3). The AdBlue storage tank will also include a 240V AdBlue pump, automatic AdBlue nozzle and digital inline flowmeter. The tank will consist of UV-resistant polypropylene with ISO22241 compliant AdBlue. The tank diameter will be 1.8 m and height 2.05 m. AdBlue is not a dangerous good, however it is considered to be a hazardous substance. The AdBlue tank will be located outdoors, and within a bunded area on an impervious base. It will be located within the northern portion of the site between the office and the maintenance shed as shown in Figure 1. Its designated location set back more than 100 m from a green (low risk) waterway located to the east.

A Safety Data Sheet for AdBlue is attached to this document (refer to Attachment 2) providing additional information about AdBlue and safety measures to be adopted when storing and handling AdBlue.

The AdBlue is certified and manufactured to exceed the ISO 22241-1 quality management standards. A specialist AdBlue supplier will service AdBlue tank. The AdBlue tank will be self-bunded (a tank within a tank) designed for safe storage of liquids like fuel, where the outer tank acts as a containment bund to catch any leaks from the inner tank, preventing environmental contamination or loss of product. The AdBlue containment tank will have 110% spill recovery capacity.

Environmental controls for the AdBlue

A summary of the key environmental controls to manage fuels and chemicals within project area are outlined below:

– The following management plans will be developed and implemented for the operation phase to manage fuel and chemicals used within the project area:
    - An Environmental Management Plan (refer to Attachment 1) has been prepared by SOILCO for the CMF, which will involve the construction and operation of the facility.
    - A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction.
    - An incident and emergency management plan will be developed and implemented for the operational phase. This plan will identify the potential hazards and actions to be taken to prevent environmental harm, detailing any communication required in the event of an incident. Refer to section 9.2 in the Environmental Management Plan for more information.
– As outlined in Section 8 of the Environmental Management Plan during the operation phase the nominated contractor will undertake inspections of the plant and equipment. The inspections will focus on:
    - Environmental controls

- Waste storage
- Chemical storage
- Site environmental safety
- Compliance with management strategies implemented.

– There will be no direct discharge of runoff to the surrounding environment. Provision of in excess of 30 ML leachate storage sized in exceedance of the 24-hour event supported by the MOC, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period.
– Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines.
– Hardstand areas include installing compacted material that will achieve in-situ permeability (K) of less than $1x10^{-9}$ m/s.
– Leachate ponds will be lined with low permeability material (either recompacted clay or HPDE) to achieve in-situ permeability (K) of less than $1x10^{-9}$ m/s.
– A leachate management system will be implemented to capture leachate from compost handling areas.
– A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas to manage the erosion and sediment.
– Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following:
  - Emergency response instruction folders
  - First aid equipment
  - Fire extinguishers
  - Stretcher(s)
  - Oil and chemical spill kits
  - Safety showers/eyewash stations.

  The site will be equipped with fire extinguishing equipment in accordance with the relevant fire codes and legislation.

Figure 3 Example of AdBlue tank

Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchment (dated October 2024)

An updated version of the Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchment was released following the lodgement of the development application for Bromelton Compost Manufacturing Facility. As a result, to respond to this RFI item an assessment against Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchment (dated October 2024) has been undertaken and is provided in Attachment 3.

Bromelton Compost Manufacturing Facility Environmental Management Plan

The Bromelton Compost Manufacturing Facility Environmental Management Plan has been updated to address this RFI and to demonstrate that environmental controls have been included in the Environmental Management Plan that address the provisions of Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchment (dated October 2024). Refer to Attachment 1.

Site Operations

Item 4: Waste feedstock

Request:

The proponent is requested to provide a comprehensive list of types of waste that may be received on site and identify where they have been accounted for in the impact assessment. This may also require amendments to any supporting application materials if additional impacts are identified.

Response:

SOILCO has provided additional information about the feedstock to be received at the Bromelton Compost Manufacturing Facility and this information is outlined in Table 1 below. Table 1 also provides details of where feedstock will be stored, any specific offloading procedures, details of sorting procedures, details of leachate management, details about whether the feedstock will be mixed, and environmental controls applicable to the feedstock.

The feedstock outlined in Table 1 still meets the definition of garden, food and wood wastes and manure and meets the definition of sand and soil products. It should be noted that Virgin Excavated Natural Materials or VENM has the same meaning as 'earth' defined in the Queensland *Waste Reduction and Recycling Act 2011*, as "natural materials such as clay, gravel, sand, soil, and rock". It is also noted that there is no longer any distinction made in the *Waste Reduction and Recycling Act 2011* between "clean earth" and contaminated earth in terms of Queensland waste levy liability for materials disposed to landfill.

Potential impacts associated with the feedstock have already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report and an updated Environmental Management Plan will be provided to the OCG.

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Table 1 Description of feedstock to be received at Bromelton Compost Facility

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
Animal manure In small amounts for blending purposes only. No more than 200 tonnes onsite at any one time.	Up to a combined total of 250,000 tonnes per annum (tpa), including the other feedstocks.	Location 8 - will be used at the final manufacturing stage. We noted that in the planning report that Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Refer to flowchart of processes in Figure 4. Inspected on arrival and stored appropriately	The material will be sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	We noted that any feedstock with a higher odour risk rating would comprise a small fraction of the total and once mixed would have a much lower odour potential Manure, soil and sand will be used for the manufacturing process as required.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Bark, lawn clippings, leaves, mulch, pruning waste, sawdust, shavings, woodchip and other waste from forest products.		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	Due to the nature of the materials received at the Facility and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497 m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic	Wood waste may be sold as a mulch product on its own. Lawn clippings and leaves will be included in the composting process.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
				decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1,200 m^3 of capacity will allow for material to be stockpiled prior to being processed.	material processing by composting, Version 1.02.		report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Biosolids - Stabilised biosolids		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Cardboard and paper waste - paper mulch, paper pulp effluent, paper sludge dewatered.		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase.

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	well mixed and homogenised.	A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Compostable polylactic acid (PLA) plastics - compostable plastics produced in accordance with (a) AS 4736:2006 (Biodegradable plastics) or most recent or replaced version of that standard or (b) AS 5810:2010 (Biodegradable plastics - Biodegradable plastics suitable for home composting) or the most recent or replaced version of that standard).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Food and food processing waste (Expired/past used by date non-protein based food from supermarkets, expired beer, vegetable oil wastes and starches, vegetable waste, yeast waste, food processing effluent (wastewater) and solids (including sludges) from non protein based food) and (Food organics, expired/past used by date		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance.

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
protein based food from supermarkets, brewery and distillery effluent and waste) and (Expired soft drinks, molasses waste, grain waste (hulls/waste grains), starch water waste, sugar and sugar solutions).					Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.		Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Green waste - (leaves, grass clippings, pruning, tree branches from household maintenance).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Inorganic additives with beneficial properties - (bentonite, crusher dust, gypsum, lime and lime slurry (inert)).		Location 8 in Figure 4, as this feedstock will be used at the manufacturing stage.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by	Added as part of the manufacturing process	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					composting, Version 1.02.		updated Air Quality Impact Assessment Report will be provided to the OCG.
Wood waste from untreated timber - (Untreated pallets, offcuts, boards, stumps and logs, shavings, timber offcuts, crates, wood packaging).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	Due to the nature of the materials received at the Facility and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1200m^3 of capacity will allow for material to be stockpiled prior to being processed.	Three leachate ponds are proposed to handle the leachate runoff from the site, and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Wood waste may be sold as a mulch product on its own.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Soils - (clean soil, clean mud, sand).	Up to a combined 150,000 tpa of sand and soil products.	Location 8 in Figure 4, the feedstock will be used at the manufacturing stage	Refer to flowchart of processes in Figure 4.	Sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m^3. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the	Soil and sand will be used for the manufacturing process as required	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.		ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.

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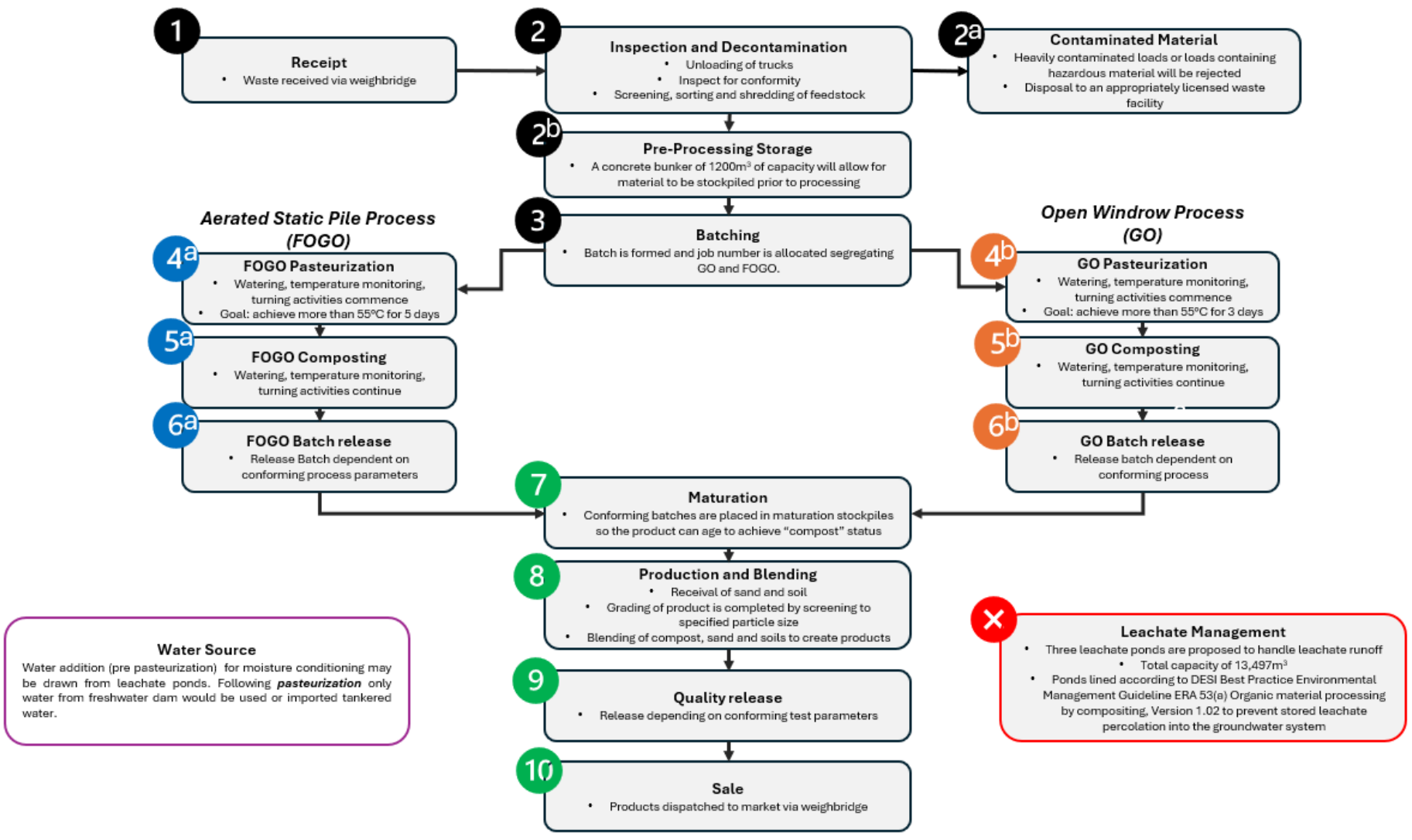

Figure 4 *The compost manufacturing process proposed for Bromelton Compost Manufacturing Facility*

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Noise Impact Assessment (NIA)

Item 23: Noise monitoring data

Request:

The proponent is requested to provide a detailed analysis and summary of the noise monitoring data that has been collected during the monitoring campaign including the average, minimum and the maximum hourly figures for the parameters of LAeq, LA90 and LA10 for each of the periods (morning shoulder, daytime, evening and night).

Response:

From the meeting with OCG, it is confirmed that the Bromelton Compost Manufacturing Facility Acoustic Assessment (Acoustic Assessment) included both background noise levels and uses deemed background noise levels when measured noise levels were below the deemed minimum noise levels, though did not use ambient data for the morning shoulder periods.

It was noted that the table in the Acoustic Assessment provided the ambient noise levels, however, did not include the minimum and maximum levels for each parameter, or the morning shoulder period. This information has now been included in the updated Acoustic Assessment. From an initial review of the ambient data, the use of the morning shoulder ambient noise data will likely result in a higher noise criteria than that used in the initial assessment, and will not change the results of the assessment.

GHD holds a differing opinion regarding the comment that SOILCO must compare to existing noise levels to determine impact in all cases, as in quiet areas this would mean that a noise producing activity would require unreasonable (and possibly impractical) level of noise attenuation to comply with the existing noise levels in the area.

** Use of deemed minimum background level is considered reasonable in the situation where measured ambient noise levels are below the minimum levels.*

The Acoustic Assessment has been updated and included in Attachment 4 and additional detail is included in the report for the measured ambient noise levels requested along with additional explanation on the use of minimum deemed background noise levels where appropriate. In this case it is unlikely to have any implications on the assessment conducted, but only due to the relative distance to sensitive receptors around the site and the proposed operations.

Acoustic Assessment has been updated and included in Attachment 4 to address the RFI 23 and the following sections in the Acoustic Assessment have been updated:

– Section 3.2.1.2 - Additional tables and summary of measured levels now includes the morning shoulder period).
– Section 3.2.2 – Wording is clarified.
– Section 4.2.3 – Includes the background levels measured for the morning shoulder and added additional explanation to Note 2 to say how the noise limits are derived.
– Section 5.2.4 – Added in the modified levels for the morning shoulder (still complies).

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Closing

I trust that the above information addresses all the required information outlined in the OCG's information request, is to the OCG's satisfaction, and sufficient to allow assessment of the development application to proceed to the next phase. Should you have any queries relating to this response, please do not hesitate to contact the undersigned.

Regards,

Sarah Wilson
Team Leader and Technical Director - Planning

+61 7 54138133
sarah.wilson@ghd.com

PR1118- Bromelton CMF

Environmental Management Plan

11 April 2025

SOILCO Pty Ltd
1300 254 443 | info@soilco.com.au | soilco.com.au
PO Box 199 Unanderra NSW 2526
ABN 85 055 303 243

Bromelton CMF- Document Description

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
14/08/2024	Draft A	Draft A (GHD)	L Hughes S Wilson	E Rothwell
22/08/2024	Rev 00	Rev 00 (GHD)	G Robertson S Wilson	S Wilson
11/10/2024	Rev 01	Rev 01 (GHD)	G Robertson	S Wilson
11/04/2025	Rev 05	Rev 02 (GHD)	S Wilson	E Rothwell

Contents

1. Background

SOILCO commenced composting operations in 1985 in Australia and has a strong distribution network in agricultural and urban markets. SOILCO are a manufacturer of quality assured compost, mulch and soil blends and specialise in the design, construction and operation of innovative organics recycling facilities in Australia. SOILCO's mission is to transform organic resources into the world's best products to regenerate and enhance the health and productivity of soil and to maximise our contribution to clean energy and sustainable communities.

SOILCO Pty Ltd (SOILCO) is a producer of organic soil improvers, manufacturing a range of soil, compost, and mulch products and specialising in the processing of organic waste through composting facilities and organics processing facilities. SOILCO currently has four approved and licensed facilities in New South Wales and is proposing to develop and operate a Compost Manufacturing Facility (CMF) in Southeast Queensland, approximately 80 km south-west of Brisbane and 62 km west of the Gold Coast (the Project).

1.1 Purpose of this document

The following Environmental Management Plan (EMP) has been prepared by SOILCO for the Compost Manufacturing Facility (CMF) located at 260 Mitchell Rd, Bromelton. The Bromelton CMF Project will involve the construction and operation of a facility for the receipt, processing, composting, and storage of the following materials: garden, food, wood wastes, manures and soil for the sale and distribution of finished compost, mulch and soil products. SOILCO will design, construct and operate the Bromelton CMF Project. This EMP details the processes that occur on-site and how any potential impacts identified during the planning, approval, construction and operational phases will be controlled, monitored and reported.

1.1.1 Integrated management system

SOILCO operates an Integrated Management System (IMS) that combines all related components of a business into one system for easier management and operations. Quality (QMS), Safety (SMS) and Environmental (EMS) management systems are combined and managed as part of this IMS. The IMS ensures SOILCO focuses on delivering best practice service to its customers, staff and the community. SOILCO is committed to third-party certification and has designed and implemented its management system accordingly. The IMS is structured upon the requirements of:

- AS/NZS 9001:2016 – Quality Management Systems
- AS/NZS 45001:2018 – Occupational Health and Safety Management Systems
- AS/NZS 14001:2016 – Environmental Management Systems
- AS 4454:2012 – Composts, Soil Conditioners and Mulches
- AS 4419:2018 – Soils for Landscaping & Garden Use
- NHVR Regulations for Mass, Maintenance & Fatigue Modules
- NSW DPI Phylloxera
- NSW EPA Environment Protection Licences
- *Mines and Petroleum Regulation 2022*
- *Protection of the Environment Operations Act 1997*.

IMS certification will be conducted by a third-party certification body, providing confidence in the commitment, application, and continual improvement of SOILCO's management systems to our staff, customers and other interested parties.

The requirements specified are aimed primarily at achieving objectives, goals and commitments stated in SOILCO's Quality, Environmental and Safety Policies. External certification ensures and confirms that the technical, administrative, and human factors are identified and controlled, and that they satisfy the internal managerial needs of SOILCO. The systems also demonstrate SOILCO's capability to meet the required standards of quality to customers, regulatory bodies and interested parties as well as meeting the organisations own objectives within business capabilities.

The management system follows the "process approach" which incorporates the "Plan-Do-Check-Act (PDCA) Cycle" and "risk-based thinking" defined and promoted by ISO 9001, whereby desired results are achieved more efficiently through planning and management as well as review and addressing of risks and opportunities that threaten or may enhance objectives. The processes herein are considered in terms of adding value to SOILCO's overall product and service provision and will be continually improved based on objective measurements over the years.

The management system has also been structured following the "system approach to management", whereby a system of interrelated processes for a given objective have been identified, which in some cases satisfy the requirements of more than one standard i.e., management review. The management system also aims at facilitating the training and induction of new staff to allow them to rapidly achieve a high level of performance, thereby allowing SOILCO to continue to operate at its peak performance always.

Continual improvement principles and the prevention of non-conformities will be objectives of SOILCO to constantly improve the effectiveness of the management systems with the aim of enhancing customer satisfaction through meeting their requirements. Improvement initiatives will be reported upon and reviewed during regular Monthly Management Meetings.

The management of SOILCO understand that our customers' opinion of us is influenced by the behaviour of our staff, our ability to meet service and product requirements, enhance customer satisfaction and maintain long term relationships. Our customers are the centre of our business so meeting and exceeding customer needs forms a core focus of our business and, therefore, forms the basis of our quality system.

SOILCO ensures customer requirements are determined in the form of a specification for all sites (Environmental Management Plan) and projects (Contract Management Plan). For each site and project, SOILCO implements a straightforward structure utilising several key staff to ensure customer service and product requirements are met.

A copy of SOILCO's Environmental Policy is included in Appendix A.

1.1.2 Administration and control

This EMP and its associated Flowcharts, Roles and Responsibilities, Registers and Standard Forms are regularly reviewed by SOILCO management for continued compliance and relevance to the SOILCO business operation, as well as relevant standards. The EMP will be used as a reference tool to guide all staff through their day-to-day duties in a safe and efficient manner.

All SOILCO staff will have access to the relevant parts of the EMP and associated documents, procedures, and forms either electronically via the centralised SOILCO computer system or with up-to-date controlled copies on-site.

The location of all documents and records associated with the EMP are documented in the Forms Register (SOILCO001), which also serves as an archive and records register.

Revisions are scheduled and noted in the Forms Register. Minor changes are proposed and changed by the relevant divisional Manager and are approved by the Executive General Manager (EGM Finance & Operations). Changes to documentation shall be noted in the 'amendment records' tab of the Forms Register. Superseded copies of the EMP and related documents listed in the Forms Register, shall be placed in the 'Archive' electronic folder for reference. References in this EMP to accompanying documents are in italics.

2. Project overview

The Bromelton CMF Project aligns with objectives in the Queensland Government's Queensland Organics Strategy 2022–2032 by reducing the amount of organic waste going to landfill, and will offer economic and social benefits through employment and local business opportunities in South East Queensland. Table 1 below summarises the key components of the Bromelton CMF Project.

Table 1 *Key Project components*

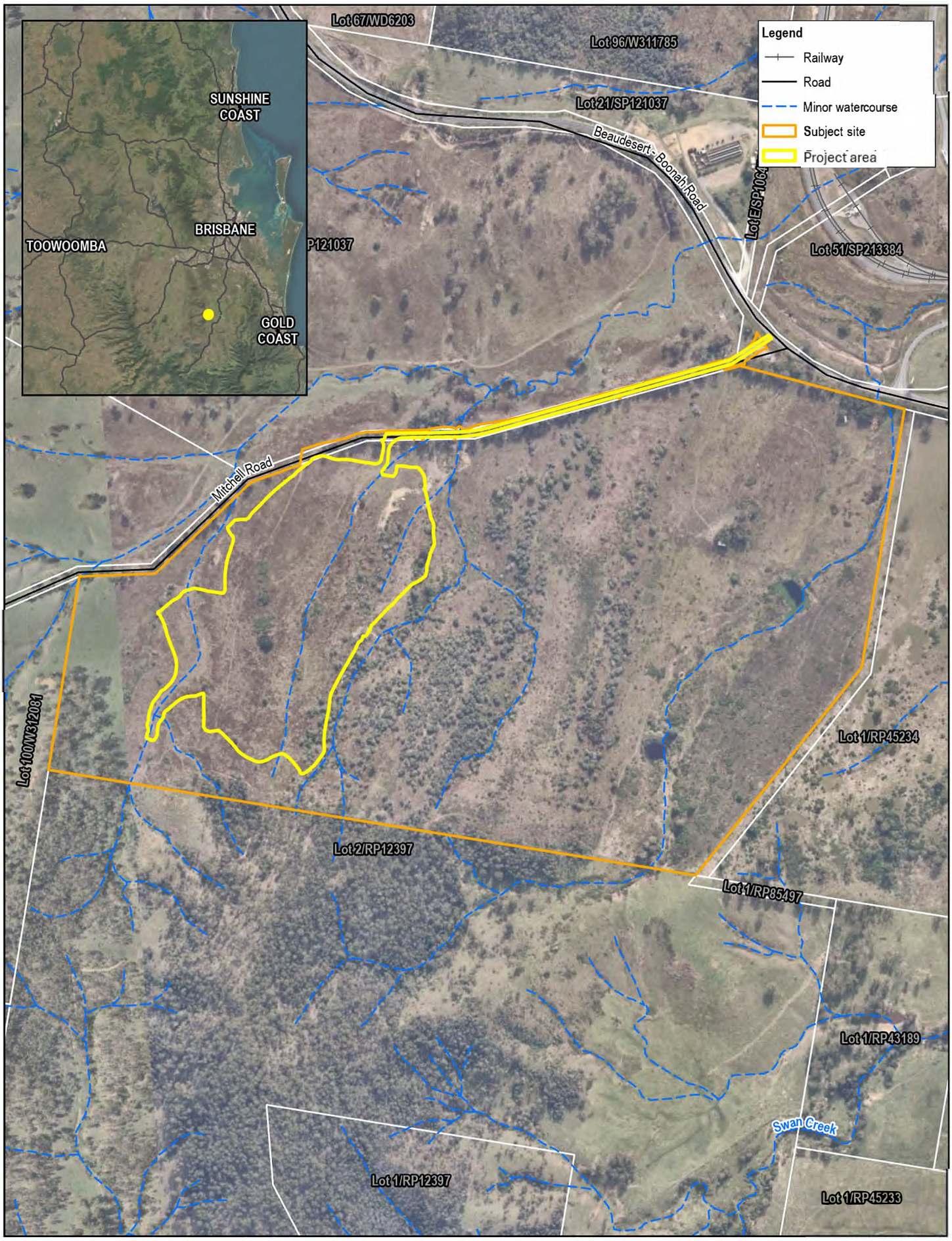
Project Component	Details
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (local government road parcel)
Description of works	Operation of the Compost Manufacturing Facility (CMF) at 260 Mitchell Road, Bromelton for the sale and distribution of finished compost, mulch and soil products The site will be split into 3 different processing areas: Receival, decontamination and composting utilizing Forced Aeration Pad system (ASP).
Construction disturbance area within Lot 4 on RP85497	21 ha
Operational footprint within Lot 4 on RP85497	18.5 ha
The output of the CMF and type of material to be received and processed	Receipt, processing, composting, and storage of up to 250,000 tpa of the following materials: garden, food and wood wastes and manure. Receipt, processing, storage and blending of up to 150,000 tpa of sand and soil products for manufacturing (Virgin Excavated Natural Materials or VENM).
Technology used	Two composting technologies will be utilised to handle different feedstocks: – 100,000 tpa of garden organics (GO) composted by Passive Open Windrow (OW) method. – 150,000 tpa of Food Organics and Garden Organics (FOGO) is to be processed on a Forced Aeration Pad system (ASP). Wood wastes and manure will make up a small portion of the composting feedstocks and will be blended with the GO & FOGO based on onsite capacity. VENM will be received and stored as required based on demand of finished products. Due to the seasonal nature of feedstock generation, up to 15% of the total annual waste may be received in any one month. This would typically occur around spring and autumn.
Key infrastructure and structures	– Access from Mitchell Road – Weigh bridges – Internal road network – Maintenance and storage shed – Final screening and manufacturing area – Water tanks – Aeration Pad system – Office, carparking and amenities – FOGO receival area – 3x leachate ponds – 1x freshwater dam – Open windrows pad – FOGO maturation pad – Hardstand areas – Lined leachate ponds – Retaining wall – Upgrade of Mitchell Road.
Hours of operation	Monday – Friday: 6am to 6pm Saturday: 6am to 4pm Sunday and public holidays: 9am to 4pm
Operational staff required	22 employees
Access arrangements	Mitchell Road will connect the Bromelton CMF to the road network. Mitchell Road will be upgraded to accommodate the traffic from the Bromelton CMF.
Timeframe	Construction and Commissioning: 7 April 2025 – 30 January 2026

2.1 Project location

Table 2 and Figure 1 provides a summary of the key features of the CMF location.

Table 2 Facility location – key features

Category	Description
Street Address	260 Mitchell Road, Bromelton
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (road parcel)
Lot size	160 ha
Longitude and latitude (approximate central lot coordinate)	-27.97834, 152.91454
Local Government Area (LGA)	Scenic Rim Regional Council (SRRC)
Suburb	Bromelton
Tenure	Freehold
Categorising instrument	Bromelton SDA
Existing environmental conditions	**Lot 4 on RP85497** Topography is a series of undulating hills and valleys, predominately cleared, previously used for grazing native vegetation. **Mitchell Road** Unformed road with trees.



Paper Size ISO A4

0 50 100 150 200

Metres

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

Project No.	**12626213**
Revision No.	**A**
Date	**14/08/2024**

Proposed subject site

FIGURE 1

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Print date: 14 Aug 2024 - 17:08

Data source: DoR: rail, watercourse (2023), cadastre (2024), road (2021); SoilCo: project area (2024); World Imagery: Earthstar Geographics public/NSW_POI: © Department of Finance, Services & Innovation 2018 nearmap.com: extracted 14/08/2024 . Created by: mvandermerwe

2.2 Feedstocks to be received at CMF

Table 3 Feedstocks to be received at the site

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
Animal manure In small amounts for blending purposes only. No more than 200 tonnes onsite at any one time.	Up to a combined total of 250,000 tonnes per annum (tpa), including the other feedstocks.	Location 8 - will be used at the final manufacturing stage. We noted that in the planning report that Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Manufacturing	Refer to flowchart of processes in Figure 2 and 3. Inspected on arrival and stored appropriately	The material will be sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	We noted that any feedstock with a higher odour risk rating would comprise a small fraction of the total and once mixed would have a much lower odour potential Manure, soil and sand will be used for the manufacturing process as required.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
Bark, lawn clippings, leaves, mulch, pruning waste, sawdust, shavings, woodchip and other waste from forest products.		Location 2 in Figure 2 and 3.	Aerated Static Pile (ASP) or Open Windrow (OW)	Refer to flowchart of processes in Figure 2 and 3.	Due to the nature of the materials received at the Facility and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1,200 m^3 of capacity will allow for material to be stockpiled prior to being processed.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Wood waste may be sold as a mulch product on its own. Lawn clippings and leaves will be included in the composting process.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Biosolids - Stabilised biosolids		Location 4a, 5a, 6a in Figure 2 and 3.	ASP	Refer to flowchart of processes in F Figure 2 and 3.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30	Feedstocks would be received and processed within the material processing building	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
						ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	and that after this stage, all material will be well mixed and homogenised.	Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Cardboard and paper waste - paper mulch, paper pulp effluent, paper sludge dewatered.		Location 2 in Figure 2 and 3.	ASP or OW	Refer to flowchart of processes in Figure 2 and 3.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
						to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.		be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Compostable polylactic acid (PLA) plastics - compostable plastics produced in accordance with (a) AS 4736:2006 (Biodegradable plastics) or most recent or replaced version of that standard or (b) AS 5810:2010 (Biodegradable plastics - Biodegradable plastics suitable for home composting) or the most recent or replaced version of that standard).		Location 2 in Figure 2 and 3.	ASP	Refer to flowchart of processes in Figure 2 and 3.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
						material processing by composting, Version 1.02.		management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Food and food processing waste (Expired/past used by date non-protein based food from supermarkets, expired beer, vegetable oil wastes and starches, vegetable waste, yeast waste, food processing effluent (wastewater) and solids (including sludges) from non protein based food) and (Food organics, expired/past used by date protein based food from supermarkets, brewery and distillery effluent and waste) and (Expired soft drinks, molasses waste, grain waste (hulls/waste grains), starch water waste, sugar and sugar solutions).		Location 2 in Figure 2 and 3.	ASP	Refer to flowchart of processes in Figure 2 and 3.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
								ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Green waste - (leaves, grass clippings, pruning, tree branches from household maintenance).		Location 2 in Figure 2 and 3.	ASP or OW	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
								provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Inorganic additives with beneficial properties - (bentonite, crusher dust, gypsum, lime and lime slurry (inert)).		Location 8 in Figure 2 and 3, as this feedstock will be used at the manufacturing stage.	Manufacturing	Refer to flowchart of processes in Figure 2 and 3.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Added as part of the manufacturing process	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
								already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Wood waste from untreated timber - (Untreated pallets, offcuts, boards, stumps and logs, shavings, timber offcuts, crates, wood packaging).		Location 2 in Figure 2 and 3.	OW or shredded Note: Shredded wood waste may be sold as a mulch product on its own.	Refer to flowchart of processes in Figure 2 and 3.	Due to the nature of the materials received at the CMF and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1200 m^3 of capacity will allow for material to be stockpiled prior to being processed.	Three leachate ponds are proposed to handle the leachate runoff from the site, and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Wood waste may be sold as a mulch product on its own.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of feedstock processing type	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
								Assessment Report will be provided to the OCG.
Soils - (clean soil, clean mud, sand).	Up to a combined 150,000 tpa of sand and soil products.	Location 8 in Figure 2 and 3, the feedstock will be used at the manufacturing stage	Manufacturing	Refer to flowchart of processes in Figure 2 and 3.	Sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of in excess of 30 ML. To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Soil and sand will be used for the manufacturing process as required	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. The Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Additionally, SOILCOs process flow diagram in Figure 2 and 3 provides detail about the feedstock management processes. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.

Figure 2 The compost manufacturing process proposed for Bromelton Compost Manufacturing Facility plan

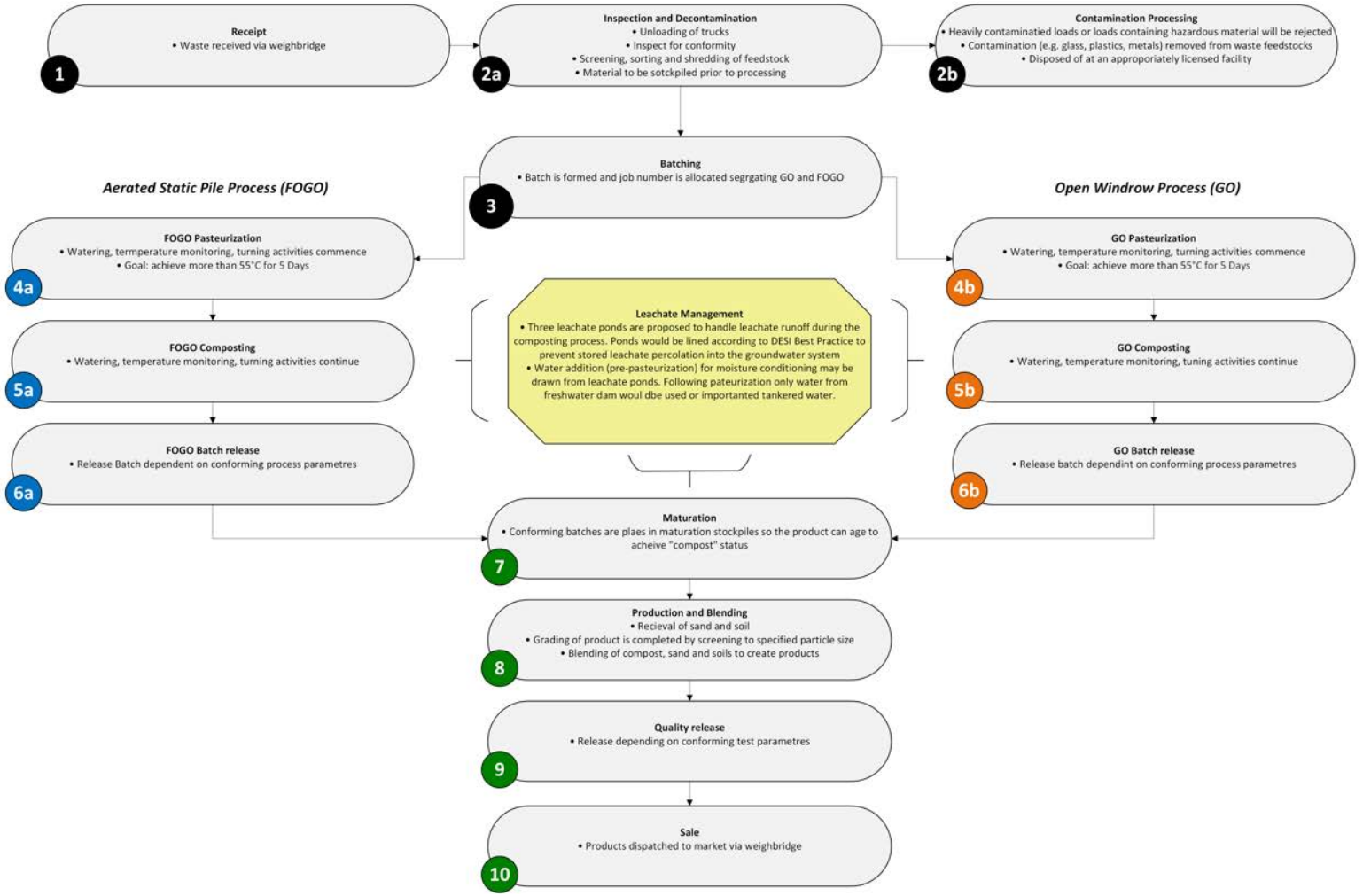

Figure 3 *The compost manufacturing process proposed for Bromelton Compost Manufacturing Facility*

2.3 Project location

Table 2 and Figure 1 provides a summary of the key features of the CMF location.

Table 4 Facility location – key features

Category	Description
Street Address	260 Mitchell Road, Bromelton
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (road parcel)
Lot size	160 ha
Longitude and latitude (approximate central lot coordinate)	-27.97834, 152.91454
Local Government Area (LGA)	Scenic Rim Regional Council (SRRC)
Suburb	Bromelton
Tenure	Freehold
Categorising instrument	Bromelton SDA
Existing environmental conditions	**Lot 4 on RP85497** Topography is a series of undulating hills and valleys, predominately cleared, previously used for grazing native vegetation. **Mitchell Road** Unformed road with trees.

3. Overview of statutory framework

Table 5 Overview of statutory framework for the Bromelton CMF Project

Legislation	Regulatory bodies	Description	Relevance to Project
Commonwealth			
Environment Protection and Biodiversity Act 1999	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. The EPBC Act provides the legal framework to protect and manage Matters of National Environmental Significance (MNES). There are currently nine MNES protected under the EPBC Act: – World heritage properties – National heritage properties – Wetlands of international importance (Ramsar wetlands) – Nationally listed threatened species and ecological communities – Listed migratory species – Commonwealth marine parks – Great Barrier Reef Marine Park – Nuclear actions (including uranium mining) – A water resource, in relation to coal seam gas development and large coal mining development.	MNES that have potential or are likely to occur in the Project area being: – White-throated needletail (*Hirundapus caudacutus*) – Koala (*Phascolarctos cinereus*) – Grey-headed flying fox (*Pteropus poliocephalus*) – Yellow bellied glider (*Petaurus australis australis*) – Greater glider *(Petauroides volans*). Habitat for the five MNES species primarily occurs in the surrounding areas and not directly impacted by the Project area. The exception is the presence of dispersal habitat for the koala and very limited foraging tree species for the grey-headed flying fox within the south section of Lot 4 on Plan RP85497 and koala habitat along Mitchell Road. Provisions under the EPBC Act will be addressed for the Project.
State			
State Development Public Works Organisation Act 1971 Bromelton State Development Area Development Scheme	Department of State Development, Infrastructure and Planning (DSDIP)	The *State Development and Public Works Organisation Act 1971* (SDPWO Act) authorises the declaration of State Development Areas (SDAs) – clearly defined areas of land established by the Coordinator-General to promote economic development in Queensland.	The Project area is located within the Bromelton SDA and is subject to the Bromelton SDA Development Scheme under the SDPWO Act. It meets the preferred development intent of the Area outlined within the Bromelton SDA Development Scheme and is defined as 'medium to large scale industrial activities of regional, state and national significance'. An assessment against the provisions in the Bromelton SDA in outlined in **Section 6** of the **Town Planning Report**. A SDA Material Change of Use (MCU) approval for works within the Bromelton SDA is being sought for the Project. Conditions of the SDA MCU approval will need to be considered in this document.
Environmental Protection Act 1994	Department of Environment, Tourism, Science and Innovation (DETSI)	The *Environmental Protection Act 1994* (EP Act) prescribes conditions through an Environmental Authority (EA), that operators must comply with to undertake environmentally relevant activities (ERAs).	An environmental authority (EA) under the EP Act is required for the CMF. The operation of the CMF will require the following ERAs: – ERA 33 Crushing, milling, grinding or screening – ERA 53(a) Organic material processing

Legislation	Regulatory bodies	Description	Relevance to Project
		ERAs are activities with the potential to release contaminants into the environment that will or may cause environmental harm.	• Processing more than 200 t of organic material in a year by composting. – ERA 54 Mechanical waste processing • 2(c) – operating a facility for receiving and mechanically reprocessing more than 10,000 t a year of general waste. An EA for the ERAs is being sought for the Project. Conditions of the EA will need to be considered in this document
Planning Act 2016	Department of Housing and Public Work (DHPW)	The *Planning Act 2016* is the primary legislation governing planning and development in Queensland. It outlines the framework for creating and implementing planning instruments, policies and designations. The Act aims to achieve ecological sustainability and provides a system for plan-making and development assessment.	Part of the Project area within mapped core koala habitat area. The clearing of core koala habitat is exempted development under Schedule 10, Part 10 of the *Planning Act 201*, and does not trigger assessable development. The Project area is located within the water supply buffer area which is managed by Seqwater. Therefore, the CMF will be required to be assessed against Chapter 4 of the *Seqwater Development Guidelines: Water Quality Management in Drinking Water Catchments* (Seqwater 2024). This has been addressed in the SDA MCU approval for works within the Bromelton SDA.
Aboriginal Cultural Heritage Act 2003	Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism (DWATSIPM)	The *Aboriginal Cultural Heritage Act 2003* is legislation enacted by the Queensland Parliament to recognise, protect, and conserve Aboriginal cultural heritage in Queensland. It provides protection over areas and objects of traditional, customary and archaeological significance.	The Project area has been assessed as a Category 5 risk in accordance with the Cultural Heritage Duty of Care Guidelines under the *Aboriginal Cultural Heritage Act 2003*. Therefore, a cultural heritage management plan or cultural heritage agreement will be required to be developed with traditional owners under the *Aboriginal Cultural Heritage Act 2003*.
Environmental Offsets Act 2014	Department of Environment, Tourism, Science and Innovation (DETSI)	The *Environmental Offsets Act 2014* is legislation in Queensland designed to manage the environmental impacts of development. It aims to counterbalance significant residual impacts of development on environmental values by requiring offsets when unavoidable impacts occur.	Offsets under this Act may be required to counterbalance any significant residual impacts of the Bromelton CMF Project. This has been addressed in the SDA MCU approval for works within the Bromelton SDA.
Land Act 1994	Department of Environment, Tourism, Science and Innovation (DETSI) Department of Resources (DoR)	The *Land Act 1994* is a key piece of legislation in Queensland that regulates the ownership, use and management of land. It ensures the sustainable use and management of State land by providing guidelines for the allocation of land, including leasing and reservations.	The Project will involve works with Mitchell Road Reserve. Mitchell Road will be upgraded to facilitate the access to the subject site. Scenic Rim Regional Council have determined that the road is to be upgraded to a class 4B – rural collector road and this entails an 8m formation and 7m carriageway. The upgraded will accommodate B-Double traffic. SOILCO has secured a separate development approval for operational works from Scenic Rim Regional Council for the upgrade of Mitchell Road.

Legislation	Regulatory bodies	Description	Relevance to Project
Vegetation Management Act 1999	Department of Resources (DoR)	The *Vegetation Management Act 1999* regulates the clearing of vegetation in Queensland in a way that: – conserves remnant vegetation; – ensures clearing does not cause land degradation; and – prevents loss of biodiversity. The Act provides for five 'Accepted development vegetation clearing codes'. Each code outlines the requirements for clearing vegetation for particular purposes and to achieve the desired environmental outcomes., offsets and voluntary declarations. – Category A — vegetation that is subject to compliance notices, offsets and voluntary declarations – Category B — remnant vegetation shown on a regional ecosystem or remnant map as an endangered regional ecosystem, an of concern regional ecosystem or a least concern regional ecosystem – Category C— high-value regrowth vegetation – Category R— regrowth watercourse area – Category X— vegetation that is generally exempt from requirements under vegetation management laws.	The project footprint within Lot 4 RP85497 for the CMF will require the clearing of 21 ha of Category X vegetation. The clearing of within the CMF Project area does not trigger approvals as the clearing of Category X area on freehold land is exempt development as outlined under Part 2, Schedule 21 of the Planning Regulation 2017. The project footprint within Mitchell Road will require the clearing of: - 0.5 ha of Category B Endangered and Of Concern regional ecosystems. - 0.2 ha of Category X (non-remnant) vegetation. The clearing within the Mitchell Road Reserve will be limited to 10 m wide and meets the clearing limits in Section 4.3 in Accepted Development Vegetation Clearing Code – Clearing for Infrastructure.
Fisheries Act 1994	Department of Primary Industries (DPI)	The *Fisheries Act 1994* provides Queensland's principal legislative framework for the regulation of commercial fishing, recreational fishing, indigenous fishing, coastal areas that are important as fisheries habitat and marine plants. To protect and manage fish passage and fish habitat in Queensland waterways, waterway barrier works (when barriers to fish movement, including partial barriers, are installed across waterways) are regulated under the *Fisheries Act 1994* and the *Planning Act 2016*.	Two green low risk waterway barrier works waterways traverse the Project area (referred to as ACT1 and ACT2). The waterways details include: – ACT1 – traverses outside of the CMF – ACT2 – traverses through the centre of the CMF. The two waterways (ACT1 and ACT2) are not considered to be suitable for fish passage or provide fish habitat for the following reasons: – The waterways provide no connectivity and fish passage to upstream areas. – The waterways do not provide suitable fish habitat features and there were evidence of fauna species within ACT1 and/or ACT2. – There is no evidence of aquatic species recorded in waterways ACT1 and ACT2. – ACT1 and ACT2 have reasonably poor water quality. – No fish passage occurs due to absence of defined bed and banks, minimal flow and depth, no habitat features present and no upstream habitat.

Legislation	Regulatory bodies	Description	Relevance to Project
			– ACT 1 and ACT 2 are considered to be drainage depressions that carry overland flow water during and immediately after rainfall events; and flows for only a short duration after a rainfall event, regardless of the frequency of flow events; and does not have enough continuing flow to create a riverine environment. DAF noted that ACT1 has a shallower gradient that allows for fish movement, defined bed and banks and shows evidence of fish habitats. DAF considered ACT1 to constitute a waterway as defined under the *Fisheries Act 1994* and any waterway barrier works within this waterway require authorisation. The works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. SOILCO is seeking further clarification from DAF regarding waterway ACT1 based on the findings of the aquatic assessment.
Water Act 2000 *Water Plan (Logan Basin) 2007*	Department of Local Government, Water and Volunteers (DLGWV)	The *Water Act 2000* provides a framework for the planning, allocation and use of surface water and groundwater in Queensland, including regulating major water impoundments (e.g. dams and weirs) and extraction through pumping for irrigation and other uses. Water plans are developed under the Water Act to sustainably manage and allocate water resources in Queensland.	One minor watercourse intersects the centre of the Project area (ACT2) and is classified as 'Unmapped' under the *Water Act 2000*. Pre-lodgement advice from DRDMW, confirmed that no approvals are triggered for the water feature. DRDMW also confirmed that no approvals under *Water Plan (Logan Basin) 2007* are required for the freshwater dam, and no authorisations are required to take/use water from the dam under this Water Plan.

4. Existing environment

A summary of the existing condition of key environmental aspects that have the potential to be impacted by the works associated with the construction and operational phases of the CMF is provided in Table 6 below. Potential approval triggers and additional investigations recommended for consideration in the next phase of the Project are also covered.

The existing condition of each environmental aspect and notable legislative requirements have been recorded in relation to the modifications proposed as part of the Project.

Table 6 ***Existing condition of key environmental aspects and notable legislative requirements***

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
Land				
Bushfire hazard	*State Development and Public Works Organisation Act 1971*	Fire weather Vegetation (fuel load) Slope and aspect Ignition sources	The majority of the development footprint is outside the Bushfire Prone Area (BPA) and consequently avoids areas of bushfire risk. Additionally, the Project can be adequately separated from nearby hazardous vegetation and does not include significant changes to the vegetation hazard class adjacent to the development footprint, therefore it is not expected to increase the severity of bushfire hazard. The development footprint is on land that is largely cleared of vegetation and is not steeply sloping. A Bushfire Hazard Assessment and Management Plan (Appendix B) has been developed for the CMF to address the requirements in the Bromelton SDA Development Scheme. The Bushfire Hazard Assessment and Management Plan has been conducted in accordance with Part 5 of the Bushfire Resilient Communities guidance material supporting the implementation of the State Planning Policy, prepared by Queensland Fire and Emergency Services. The bushfire risk is expected to be low to moderate. There are several mitigation measures to manage bushfire risk such as asset protection zones, fencing, water supply, fire-fighting infrastructure, revegetation, and fuel load management. The Queensland Fire and Emergency Services (renamed Queensland Fire Department in July 2024) Catalyst Fire Management System includes Forest Fire Danger Index (FFDI) mapping which is climate-adjusted for a five percent annual exceedance probability (AEP) fire weather event in 2050. Vegetation can impact fire intensity Vegetation classification is an indicator of fire intensity and fire behaviour, associated with specific types of vegetation. Vegetation communities within 150 m of the Project footprint form the basis of the assessment required as part of the Bushfire Resilient Communities Guidelines.	Section 6.4.1.1

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			The broad vegetation group present within 150 m of the Project footprint is Eucalypt woodlands to open forests; with a surface potential fuel load of 16.3 t/ha, and a total potential fuel load of 20.8 t/ha. The overall site slope (the slope within the development footprint itself) in proximity to the southern boundary of the site has been estimated to be approximately 6.5 degrees from the southern boundary, down toward the north. It is noted that the overall site slope within the development footprint will be subject to cut and fill to create flat pads to facilitate the development. The development footprint generally maintains a northerly and north-westerly aspect. Ignition sources in the area surrounding the Project area may include: – Accidental ignition from agricultural and extractive industry uses and other machinery and equipment – Sparking – Roadside ignition (potentially caused by cigarette butts thrown from vehicles) – Arcing powerlines – Other rural and industrial activities – Ignitions may also occur from activities on nearby rural residential properties such as lawnmowing and use of power tools. The ignition potential of the CMF, may occur from various activities on-site, including use of machinery and fuel storage. Ignition from the composting process itself may also occur.	
Landscape	*State Development and Public Works Organisation Act 1971*	Visual amenity	A Visual Impact Assessment (VIA) was completed to outline the potential visual amenity impacts of the CMF and to address the requirements in the Bromelton SDA Development Scheme. The landscape within the Project area contains the Bromelton SDA, heavy and high-impact industries, undulating farmland, recreational areas, and elevated upland and ridges. The topography of the Project area is a landscape characterised by gently undulating and rolling hills, ridges and valleys. It encompasses various major and minor creeks such as Swan Creek, Sandy Creek and Allan Creek. The Project area has a diverse array of vegetation, featuring native woodlands and forests, grasslands and revegetation native trees. The VIA was undertaken with seven representative viewpoints selected for assessment. The outcome of this process indicates that the visual impacts of	Section 6.4.1.2

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			the Project are anticipated to be moderate-low to negligible as overall the site is well-screened by intervening landform and vegetation.	
	State Development and Public Works Organisation Act 1971 *Environmental Protection Act 1994*	Potential and actual acid sulfate soils (ASS) (elevation ≤5 m AHD)	Acid sulfate soils generally occur in coastal areas lower than 5 m AHD and can be found at elevations below 20 m AHD. Mapping on Queensland Globe, combined with the site being located at over 100 m AHD indicates that the site is not likely to contain acid sulfate soils. Acid sulphate soils are not considered to be present within the Project area due to the Project area being located above 20m AHD. An assessment of ASS was undertaken to address the requirements in the Bromelton SDA Development Scheme.	Section 6.4.1.3 Section 6.4.1.8
	State Development and Public Works Organisation Act 1971 *Environmental Protection Act 1994*	Dispersive soils	A review of the Australian Soil Classification mapping (Queensland Globe 2024) shows the six unique soil classifications with the Project area. The main soil types within the site are classified as chromosols, kurosols, dermosols, ferrosols, and sodosols.	
	State Development and Public Works Organisation Act 1971 *Environmental Protection Act 1994*	Geology and topography	The Queensland Government 1:100,000 Detailed Surface Geology spatial layer (GeoRes Globe 2024) shows that, within the Project area, the surface geology is made up of three rock units; however, the Project footprint is comprised of only the Koukandowie Formation and the Heifer Creek Sandstone Member. The Project area is described as undulating terrain. The general contour of the Project area has an increasing 15 m slope from the western to the eastern extent. Within the Project area, the terrain is relatively even, with the southern extent having the highest elevation of 145 m AHD and the northern extent (Mitchell Road) having the lowest height of 100 m AHD.	
Terrestrial biodiversity	*Environment Protection and Biodiversity Conservation Act 1999*	Matters of National Environmental Significance (MNES)	**Threatened ecological communities** A desktop assessment indicated that six threatened ecological communities (TECs) have the potential to occur within the Project area. A field survey, undertaken on 10 and 12 April 2024, assessed the vegetation communities within the Project area to determine the presence of any TECs. The survey identified no vegetation communities within the Project area confirmed to align with any TECs. Only one type of vegetation community that could potentially align with a TEC was recorded; regrowth patches of RE 12.9-10.3, dominated by Eucalyptus moluccana. RE 12.9-10.3 may align with the 'Grey box-grey gum wet forest of subtropical eastern Australia' TEC (DCCEEW, 2022). This vegetation community occurs within the Project footprint along Mitchell Road.	Section 6.4.1.4

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			Multiple patches were assessed against the relevant TEC criteria, including the key diagnostic characteristics and condition thresholds. One of the key diagnostic characteristics of this TEC is to have a canopy containing grey box (*Eucalyptus moluccana*) and grey gums (*E. propinqua*, *E. punctata*); however only grey box individuals were recorded. Due to the lack of grey gums (*E. propinqua*, *E. punctata*) and the poor quality of the habitat; the TEC criteria were not met, and this TEC was evaluated as being 'unlikely to occur' as part of the likelihood of occurrence assessment. **Threatened fauna species** There were no conservation significant fauna species identified during field surveys; however, a likelihood of occurrence assessment was completed based on habitat assessments undertaken during the field survey. Five MNES were assessed as 'likely to occur' or having the 'potential to occur' within the Project area. Specifically, five listed fauna species were identified, one of which is also listed as migratory: – <u>Likely to occur:</u> • White-throated needletail (*Hirundapus caudacutus*) • Koala (*Phascolarctos cinereus*) • Grey-headed flying fox (*Pteropus poliocephalus*). – <u>Potential to occur:</u> • Yellow bellied glider (*Petaurus australis australis*) • Greater glider (*Petauroides volans*).	
	Environmental Protection Act 1994 *Nature Conservation Act 1992* *Vegetation Management Act 1999* *State Development and Public Works Organisation Act 1971*	Matters of State Environmental Significance (MSES)	– MSES conservation areas – none mapped within the Project area. – MSES wetland values– none mapped within the Project area. – MSES wildlife habitat – none mapped within Lot 4 RP85497, however a small area of MSES wildlife habitat [SEQ koala habitat - core] is mapped along Mitchell Road. – MSES vegetation and habitat - MSES regulated vegetation (essential habitat) is partly mapped within the Project area. – MSES regulated vegetation (category C- endangered or of concern) is s partly mapped within the Project area. MSES regulated vegetation (category B - endangered or of concern) is mapped along Mitchell Road.	

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
	Vegetation Management Act 1999 *Planning Regulation 2017* *State Development and Public Works Organisation Act 1971* *Environmental Protection Act 1994*	Vegetation communities	The project footprint within Lot 4 RP85497 for the CMF will require the clearing of 21 ha of Category X vegetation. The project footprint within Mitchell Road will require the clearing of: - 0.5 ha of Category B Endangered and Of Concern regional ecosystems. - 0.2 ha of Category X (non-remnant) vegetation.	
	Nature Conservation Act 1999	Conservation significant flora species and conservation significant fauna.	There were no protected plant trigger areas located within the Project footprint or wider Project area. No conservation significant flora species were identified during field surveys and therefore, the likelihood of occurrence assessment determined all flora species as either 'unlikely to occur' or 'highly unlikely to occur'. No flora species required a significant impact assessment. The short-beaked echidna (*Tachyglossus aculeatus*), has the 'potential to occur' within the Project area.	
	Vegetation Management Act 1999	Essential habitat (fauna)	Essential habitat is mapped at the southern western corner of Lot 4 on RP85497 and along Mitchell Road. During field surveys, open woodlands were observed only in the south-west of the Project area and Lot 4 on RP85497 i, as well as along Mitchell Road reserve. These vegetated areas support essential habitat for koalas (*Phascolarctos cinereus*). Microhabitats were present adjacent to the Project area; primarily hollows (generally small) present in eucalypt trees (predominantly *E. tereticornis*). These could provide breeding habitat for gliders as well as avifauna. However, all but one area containing these hollows was deemed unsuitable habitat for gliders due to the lack of connectivity.	
	South East Queensland Koala Conservation Strategy 2020–2025 *Planning Act 2016*	Core koala habitat	Core koala habitat is mapped along Mitchell Road to the north and at the southern western corner of Lot 4 on RP85497. Field surveys have confirmed koala habitat within the Project area.	
	Nature Conservation Act 1992	Native animal breeding places	During field assessments conducted in April 2024, fauna breeding places were observed to be present amongst remnant vegetation patches within the	

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			Project area; providing a range of microhabitat features for breeding, shelter and roosting habitat. Fauna breeding places were generally uncommon within the Project area owing to a lack of remnant vegetation and historical clearing. The highest value fauna habitat was found in the south-west margin of the Project area, as well as along Mitchell Road to the north outside of the Project area.	
	Biosecurity Act 2014	Introduced/pest flora and fauna species	Several species of fauna/flora relevant to the *Biosecurity Act 2014* were present in the field surveys. During field surveys the following introduced fauna species were observed: – Cane toad (*Rhinella marina*) was observed three times. – European fox (*Vulpes vulpes*) was captured twice on remote camera imagery. Weed species considered to be of greatest threat to natural and economic values on a national basis have been ranked as Weeds of National Significance (WONS) (Thorp & Lynch 2000). Ten restricted flora species were recorded during the site visit, five of which are listed as WONS: – Groundsel bush (*Baccharis halimifolia*) – Mother-of-millions (*Bryophyllum delagoense*) – Chinese celtis (*Celtis sinensis*) – Lantana (*Lantana camara*) – WONS – Creeping lantana (*Lantana montevidensis*) – Prickly pear (*Opuntia stricta*) – WONS – Velvety tree pear (*Opuntia tomentosa*) – WONS – Parthenium (*Parthenium hysterophorus*) – WONS – Fireweed (*Senecio madagascariensis*) – WONS – Giant rat's tail grass (*Sporobolus pyramidalis*)	
Aquatic biodiversity	*Environmental Protection (Water and Wetland Biodiversity) Policy 2019* Logan River Environmental Values	Aquatic MSES values	An aquatic ecology assessment has been completed for the Project.	Section 6.4.1.5

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
	and Water Quality Objectives			
	Environment Protection and Biodiversity Conservation Act 1999 *Nature Conservation Act 1999*	Conservation significant flora and fauna species	A desktop assessment identified no species of conservation significance within 1 km of the Project area. No aquatic flora or fauna species listed under the EPBC Act or NC Act were observed during field surveys. Eight different species of aquatic plants (macrophytes) were recorded across five testing points within the survey area; and no fish or turtle species were observed.	
Heritage	*Aboriginal Cultural Heritage Act 2003*	Aboriginal cultural heritage values	A Cultural Heritage and Native Title Duty of Care Assessment has been completed for the Project and found the following: – revealed two known cultural heritage values within 1 km of the Project area. – identified 18 stone artefacts inside or adjacent to the Project area. The fie Cultural Heritage and Native Title Duty of Care Assessment determined that the Project area is mapped as a Category 5 risk, under the Aboriginal Cultural Heritage Act – Duty of Care Guidelines. A Category 5 risk indicates that there is a generally high risk that an activity can harm Aboriginal cultural heritage. Particular care must be taken where it is proposed to undertake activities causing additional surface disturbance to the features likely to have cultural heritage significance.	Section 6.4.1.6
	Queensland Heritage Act 1992	European cultural heritage values	No National, State or local heritage values were recorded within or adjacent to the Project area.	
	Native Title Act 1993	Native Title	Lot 4 on RP85497 is mapped as freehold land. A search of the Native Title Register indicated that no Native Title determinations currently exist over the Lot 4. One Native Title application exists over the works area: – Ted Williams & Ors on behalf of the Danggan Balum (Five Rivers) People v State of Queensland (QC2017/007)(QUD331/2017).	
Waste	*Environmental Protection Act 1994*	Asbestos containing materials (ACMs)	No known ACM present.	Section 6.4.1.7
	Environmental Protection Act 1994	Known waste/regulated waste	No existing known or regulated waste present.	

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
	Environmental Protection Regulation 2019			
Air				
Pollutant dispersal factors	*State Development and Public Works Organisation Act 1971* *Environmental Protection Act 1994*	Climate	The greater Southeast Queensland region (encompassing the SRRC LGA) is classified as a sub-tropical climate influenced by tropical systems in the north, and fluctuations in the high pressure ridge to the south (DES 2019). Climate data was sourced from the Bureau of Meteorology (BoM) Beaudesert–Drumley Street Weather Station (ID: 040983), approximately 6.6 km east of the CMF (BoM 2024). The data, on average, indicates that January is the warmest month and July is the coolest month. January has the highest average rainfall in comparison to August, which has the lowest rainfall. August also has the lowest average of days ≥1 mm of rain.	Section 6.4.2.1
	State Development and Public Works Organisation Act 1971 *Environmental Protection Act 1994*	Wind direction and speed	Key observations for the annual wind rose are as follows: – Overall, winds are predominantly from the south-west – The average wind speed is a moderate 1.3 m/s – Calms, which are defined as wind speeds less than 0.5 m/s and are associated with poor dispersion outcomes, occur 33.8 percent of the time. Seasonal wind roses show the following trends: – Relatively high prevalence of calm conditions can be observed all year round as with the highest percentage of calms being observed in winter (40.1 percent of the time) – Wind speeds are generally moderate year-round, with marginally higher wind speeds observed in spring and summer – Winds blow primarily from the south south-west in autumn and winter. Winter wind data shows weak directionality in wind directions. Summer wind directions occur primarily from the east north-east and south south-west. Diurnal wind roses show that: – Calm conditions are significantly more frequent in the nighttime period relative to the daytime period, with calm conditions occurring between 58.2 percent to 61.4 percent of the time	

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			– Wind generally occurs from a southerly direction in the nighttime periods – Wind occurs primarily from the southwest and northwest between 6:00 am and 12:00 pm, and primarily from the northeast between 12:00 pm and 6:00 pm.	
Ambient air quality	*State Development and Public Works Organisation Act 1971* *Environmental Protection Act 1994*	Pollutants	The nearest station to the CMF site is located in North Maclean, approximately 24.5 km north of the site, which commenced operating in February 2021. The monitoring station has recorded the following general trends for Particulate Matter (PM) pollutants between 2021 and 2023: – A reduction in the maximum 24-hour average of PM_{10} and $PM_{2.5}$ – An increase in the 70th percentile, 24-hour average of PM_{10} and $PM_{2.5}$ – An increase in the annual average of PM_{10} and $PM_{2.5}$.	Section 6.4.2.2
Noise and vibration				
Noise	*Environmental Protection (Noise) Policy 2019*	Sensitive receptors	Twelve sensitive receptors were identified to be within 2.5 km of the Project area. Refer to the Noise Impact Assessment Report completed for the Project. The sensitive receptors primarily consist of rural residential and industrial properties. The existing environment consists of rural open land with residential buildings and industrial operations scattered around. The main road servicing the area is Beaudesert–Boonah Road.	Section 6.4.3.1
	Environmental Protection Act 1994 *Environmental Protection Regulation 2019*	Background noise	In the Noise Impact Assessment Report completed for the Project, two noise loggers were deployed near the Project area to capture ambient and representative background levels near the area. The noise levels measured around the Project area were very low; below the minimum background noise levels for isolated rural areas.	
Water				
Water features	*Fisheries Act 1994*	Waterways for waterway barrier works	An aquatic ecology assessment has been competed for the Project. There are several green (low risk) waterways for waterway barrier works within the Lot boundary. These waterways flow north-west into two separate 'amber' (moderate risk) waterways, and then converge to a 'red' (major risk) waterway approximately 200 m from the Project area. This 'red' waterway then continues to flow north-west as a tributary to Allan Creek.	Section 6.4.4.1

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			Allan Creek is mapped as a 'purple' (major risk) waterway, which has a confluence to the Logan River approximately 6.5 km downstream of the Project area. Two green low risk waterway barrier works waterways traverse the Project area (referred to as ACT1 and ACT2). The waterways details include: – ACT1 – traverses outside of the CMF location – ACT2 – traverses through the centre of the CMF. The two waterways (ACT1 and ACT2) are not considered to be suitable for fish passage or provide fish habitat for the following reasons: – The waterways provide no connectivity and fish passage to upstream areas. – The waterways do not provide suitable fish habitat features and there was no evidence of fauna species within ACT1 and/or ACT2. – There is no evidence of aquatic species recorded in waterways ACT1 and ACT2. – ACT1 and ACT2 have reasonably poor water quality. – No fish passage occurs due to absence of defined bed and banks, minimal flow and depth, no habitat features present and no upstream habitat. – DAF noted that ACT1 has a shallower gradient that allows for fish movement, defined bed and banks and shows evidence of fish habitats. DAF considered ACT1 to constitute a waterway as defined under the Fisheries Act 1994 and any waterway barrier works within this waterway require authorisation. The works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. SOILCO is seeking further clarification from DAF regarding waterway ACT1 based on the findings of the aquatic assessment.	
	Water Act 2000	Drainage features	Within the Project area there are various drainage lines and unmapped watercourses. To gain clarity on these unmapped features, DRDMW was contacted (via email on 12/06/2024) to determine if these features will be mapped. DRDMW replied to the confirmation email and stated that all other unmapped features are classified as drainage features under the Water Act.	
Wetlands	*Environment Protection and Biodiversity Conservation Act 1999*	RAMSAR wetland/wetland Protection Area in a Great Barrier Reef catchment	A search of the EPBC Act Protected Matters Search Tool (PMST) indicated that the Project area is not located within the vicinity of any wetlands of international importance (Ramsar wetlands). The Moreton Bay Ramsar Wetland is located approximately 30-40 km downstream of the Project area.	

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
	Environmental Protection Act 1994 *State Development and Public Works Organisation Act 1971*	Matters of State and Local Environmental Significance (MSES and MLES)	The DESI referable wetlands mapping indicates the Project area is not located in a wetland protection trigger area. However, there are natural wetlands of High Ecological Significance occurring within 5 km of the Project area. These wetlands comprise less than one percent of the desktop search extent, with the closest wetland area situated more than 3 km from the Project area boundary.	
Flood hazard	*State Development and Public Works Organisation Act 1971*	Flood hazard areas	Model simulations were undertaken for seven AEP storm events. Ten storm rainfall patterns were simulated for a range of durations, with the median flood peak identified from the ten storm patterns. The operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site.	
Water resource catchment	*Planning Act 2016*	Catchment area and drainage basins	Based on the Scenic Rim Regional Council Overlay mapping for water resource catchments, the Project area is located within the Logan River Catchment Area, and the Logan-Albert Drainage Sub-Basin. Major regional hydrological features include Wyaralong Dam located 4.6 km to the north-west, which impounds Teviot Brook, a direct tributary of the Logan River downstream of the Project area. Bromelton Off Stream Storage, an off-stream storage located adjacent the Logan River, is also located 4.2 km northeast of the Project area; however, it is currently out of commission. The Project area is located within a Water Supply Buffer Area which is managed by Seqwater. Therefore, the CMF will be required to be assessed against Chapter 4 of the *Seqwater Development Guidelines: Water Quality Management in Drinking Water Catchments* (Seqwater 2024).	
Groundwater	*Water Act 2000*	Groundwater values	A groundwater assessment report has been developed for the Project. It was based on desktop assessment and described the existing groundwater environment and identified potential groundwater sensitive receptors. A search of the Queensland Groundwater Database lists 28 registered groundwater bores within a 2 km radius of Lot 4 RP85497 (Queensland Globe 2024). Of the registered bores, five of them are registered as existing water supply bores, which identified as one of the sensitive receptors. There are no groundwater receptors (GDEs) or users within the Project area. The geological units underlying the construction area comprises the Koukandowie Formation and associated member Heifer Creek Sandstone, both of which have been noted to be low permeability aquifer or aquitard. Therefore, the geological units are not considered to be a regional water source.	Section 6.4.4.2

Element	Legislative trigger	Environmental aspect	Comments	Reference to mitigation measures
			The groundwater quality generally meets the aquatic ecosystem guideline values for metals and ammonia. The groundwater is considered to be brackish and not suitable for use as drinking water. There are also a number of contaminating industries to the north, east and south of the lot that could be contaminating groundwater.	
Surface water	*Environmental Protection (Water and Wetland Biodiversity) Policy 2019* Logan River Environmental Values and Water Quality Objectives	Water quality	An aquatic ecology assessment has been competed for the Project. In-situ water quality was taken at the water features intersecting and surrounding the Project area during field surveys conducted in April 2024. The parameters were compared to the Western Logan River Freshwaters - upland moderately disturbed water quality guidelines (DES 2022). Exceedances were recorded at all five sites for dissolved oxygen and turbidity. Dissolved oxygen ranged from 50.6% to 84.1%, whilst turbidity ranged from 42.11 NTU to 78.15 NTU. Exceedances for electrical conductivity were also recorded at all sites, except for one (346 µS/cm). The pH was within the water quality guideline range at each site. These results indicate the overall water quality across site was reasonably poor to support a diverse range of aquatic species.	Section 6.4.1.5

5. Environmental management

5.1 Roles and responsibilities

All SOILCO employees and contractors associated with the Project are required to abide by the legislation outlined in

Table 6 and comply with all procedures outlined in this Plan. Persons involved with the Project must not carry out any activities that may cause, or are likely to cause, environmental harm unless the person(s) involved take all reasonable and practical measures to prevent or minimise harm. Parties who have active roles in the Plan for construction and operational phases are outlined in Table 7 below and shown in Figure 4.

Table 7 Roles and responsibilities for construction and operational phases

Role	Responsibilities
Construction phase	
Project Manager	– Overall Project compliance with this plan. – Provision of onsite supervision via the Contractor for approved staff. – For ensuring that the Project environmental performance meets requirements and in particular is responsible for the integrity of the work and commercial performance of the Project. – Ensure all environmental requirements are implemented in accordance with the Project approvals, SOILCO requirements, the specification, the contract requirements, and legislative obligations. – Reviewing and implementing this EMP. – Communicating the requirements of this EMP to the Project team and ensuring compliance. – Ensuring Project environmental documentation records are maintained and provided to SOILCO and their representatives as necessary. – Ensuring Environmental Incidents are reported as per the Incident reporting outlined in Section 8. – For issuing controlled electronic and hard copies (where required) of the EMP. – Obtaining all the required approvals to undertake the proposed works for further information. – Engage qualified and experienced staff and provide management support to ensure all activities relating to environmental performance are undertaken by trained and competent personnel and in accordance with the contract. – Select subcontractors and suppliers based on an evaluation of their ability to meet the specified requirements including those for environmental aspects and ensure compliance.
Project Director	– Manage the construction process as the Project Proponent. – Provide readily available expertise for the construction of the Project, as required. – Receive progress reports on performance by the Principal Contractor for the purpose of acknowledging compliance with contract conditions. – Review the EMP submitted by the Principal Contractor. – Ensure that the requirements of the Conditions of Contract (environmental management) and approved EMP included in the contract documentation are implemented. – Review any revisions to the EMP as required. – Maintain a current copy of the Contract and the EMP, a record of the completion of planned actions, and monitoring records and reports, supplied by the Principal Contractor. – Initiate audits of environmental performance.
Principal Contractor	– Develop Construction Contractor's EMP in accordance with the approved EMP. – Maintain a master copy of the EMP, a record of the completion of planned actions, and monitoring records and reports, which are made available during audits. – Obtain all necessary statutory approvals and licences, and ensure that conditions of licences/approvals/permits are met. – Provide copies of the EMP to the relevant Project staff, with responsibilities clearly defined in the EMP. – Maintain a record of all training undertaken by all Project staff, detailing the type and purpose of the training. – Ensure that environmental protection measures are implemented in accordance with EMP. – Coordinate regular monitoring in relation to environmental management issues and ensure that monitoring results are made available to the Proponent.

Role	Responsibilities
	– Ensure corrective actions arising from self-assessments and external audits are completed, and in accordance with the EMP. – Notify the Proponent and any relevant agency of all environmental incidents and maintain a record of events relating to the environmental incidents, including any remedial action taken. – Ensure there is adequate and accurate identification and reporting of all non-conformances, complaints and any other environmental issues that may arise during construction. – Provide relevant and timely information about construction activities that may impact on the relevant stakeholders and as required, consult with individuals that may be directly impacted by construction activities to ensure direct Project impacts are being managed. – Undertake regular management reviews of the EMP, at scheduled intervals and on the identification of a system failure.
Principal Contractor (Construction Manager)	– Ensure all staff are trained/inducted to site (including environmental management responsibilities) and that all training/inductions are recorded in a Training and Induction Register. – Ensure appropriate waste facilities are provided on-site and that maintenance and waste disposal is conducted by a licenced contractor, where required. – All vehicles accessing the site use the designated access routes, entries/exits, and parking locations. – All equipment is maintained and 'fit for purpose' before arriving at the site. – All environmental incidents and complaints are reported to the Project Manager.
Construction Superintendent	– Ensure this CEMP, all approved plans and conditions are referred to during construction works on-site and available to all relevant personnel. – Appoint a suitably experienced, licensed fauna spotter-catcher and arborist to oversee the implementation of this Plan during site works. – Undertake works in accordance with the Plan. – Undertake compliance, incidence and/or exceedance reporting during construction. – Monitor weather conditions and water quality, as required. – Report environmental incidents to DESI, where required. – Report and monitor any non-compliance and review management procedures, where required.
Construction Contractor (Employees)	– All personnel involved in construction activities are to be fully briefed on what is permissible under law and animal welfare implications as well as emergency procedures and reporting of incidents. – Complete required inductions and training. – Comply with SOILCO and site rules, practices, management plans, procedures and protocols. – Have appropriate qualifications and licenses to undertake the activities. – Prevent and minimise environmental impacts, where possible. – Report environmental and safety incidents, non-compliances, near misses or complaints to the Supervisor or Construction Manager without delay.
Principal Contractor (Environmental Representative)	– Responsible for ensuring all contractors and operational personnel are aware of their responsibilities under the EMP and any approval/permit conditions. – Prepare relevant plans, procedures and policies to assist in compliance with relevant environmental obligations. – Develop and run awareness training sessions and visitor inductions. – Conduct regular audits. – Oversee monitoring programs. – Prepare internal and external compliance reports.
Fauna Spotter-catcher	– A person authorised under a current rehabilitation permit to take and/or keep a protected animal whose habitat is about to be destroyed by human activity in accordance with the *Nature Conservation (Administration) Regulation 2017*. – Undertake pre-clearance and post-clearance surveys. – Oversee all vegetation clearing on-site. – Manage and handle all fauna tasks onsite. – Implement fauna contingency measures, where required. – Prepare a pre-clearance and post-clearance fauna spotter-catcher report following the completion of vegetation clearing and the requirements for low risk SMP's under Section 335 of the *Nature Conservation (Animals) Regulation 2020*.

Role	Responsibilities
Wildlife Carer	– A person qualified to take and keep protected wildlife under a current rehabilitation permit in accordance with the *Nature Conservation (Administration) Regulation 2017*.
All personnel (including sub-contractors)	**General Environmental Duty** Under Section 319 of the *Environmental Protection Act 1994* (EP Act), everyone has a general environmental duty to not undertake an activity that causes or is likely to cause environmental harm unless all reasonable and practicable measures are taken to avoid that harm. All staff and sub-contractors will attend a site specific environmental induction and awareness training to ensure that all personnel are aware of their responsibilities in this regard. **Duty to Notify** The EP Act also imposes a 'duty to notify' (Section 320A – 320G) upon any person who becomes aware that their activities, or the activities of somebody working with them, has caused or threatens to cause material or serious environmental harm that is unlawful under the EP Act.
Operational phase	
Facility Manager	– Develop Operational Contractor's EMP in accordance with the approved EMP. – Maintain a master copy of the EMP, a record of the completion of planned actions, and monitoring records and reports, which are made available during audits. – Obtain all necessary statutory approvals and licences, and ensure that conditions of licences/approvals/permits are met. – Provide copies of the EMP to the relevant Project staff, with responsibilities clearly defined in the EMP. – Maintain a record of all training undertaken by all Project staff, detailing the type and purpose of the training. – Ensure that environmental protection measures are implemented in accordance with EMP. – Coordinate regular monitoring in relation to environmental management issues and ensure that monitoring results are made available to the Proponent. – Ensure corrective actions arising from self-assessments and external audits are completed, and in accordance with the EMP. – Notify the Proponent and any relevant agency of all environmental incidents and maintain a record of events relating to the environmental incidents, including any remedial action taken. – Ensure there is adequate and accurate identification and reporting of all non-conformances, complaints and any other environmental issues that may arise during construction. – Provide relevant and timely information about construction activities that may impact on the relevant stakeholders and as required, consult with individuals that may be directly impacted by construction activities to ensure direct Project impacts are being managed. – Undertake regular management reviews of the EMP, at scheduled intervals and on the identification of a system failure. – Ensuring Contractor's commitment to Safety, Health, Environment and Quality (SHEQ) are clearly understood and followed: • Providing adequate resources to achieve the objectives and targets of the Business Plan. • Effectively managing the plant as a business. • Delivering contractual, legal, technical and other performance commitments to clients. • Promoting awareness of customer and other stakeholder requirements throughout the organisation. • Managing risk within operations. • Developing a positive relationship with stakeholder groups to minimise any potential risks to the Project and provide advice as necessary. – Managing regulatory requirements and communication with government agencies.
Safety Advisor	– Ensure this EMP, all approved plans and conditions are referred to during operational works on-site and available to all relevant personnel. – Ensuring the WHS Management System is established, implemented and maintained in accordance with ISO 45001 and relevant legislation.
Asset and Projects Supervisor	– Ensuring the Asset Management System is established, implemented and maintained in accordance with Asset Management Plan and relevant legislation.

Role	Responsibilities
Principal Contractor (Environmental Representative)	– Responsible for ensuring all contractors and operational personnel are aware of their responsibilities under the EMP and any approval/permit conditions. – Prepare relevant plans, procedures and policies to assist in compliance with relevant environmental obligations. – Develop and run awareness training sessions and visitor inductions. – Conduct regular audits. – Oversee monitoring programs. – Prepare internal and external compliance reports.
All personnel (including sub-contractors)	**General Environmental Duty** Under Section 319 of the *Environmental Protection Act 1994* (EP Act), everyone has a general environmental duty to not undertake an activity that causes or is likely to cause environmental harm unless all reasonable and practicable measures are taken to avoid that harm. All staff and sub-contractors will attend a site specific environmental induction and awareness training to ensure that all personnel are aware of their responsibilities in this regard. **Duty to Notify** The EP Act also imposes a 'duty to notify' (Section 320A – 320G) upon any person who becomes aware that their activities, or the activities of somebody working with them, has caused or threatens to cause material or serious environmental harm that is unlawful under the EP Act.

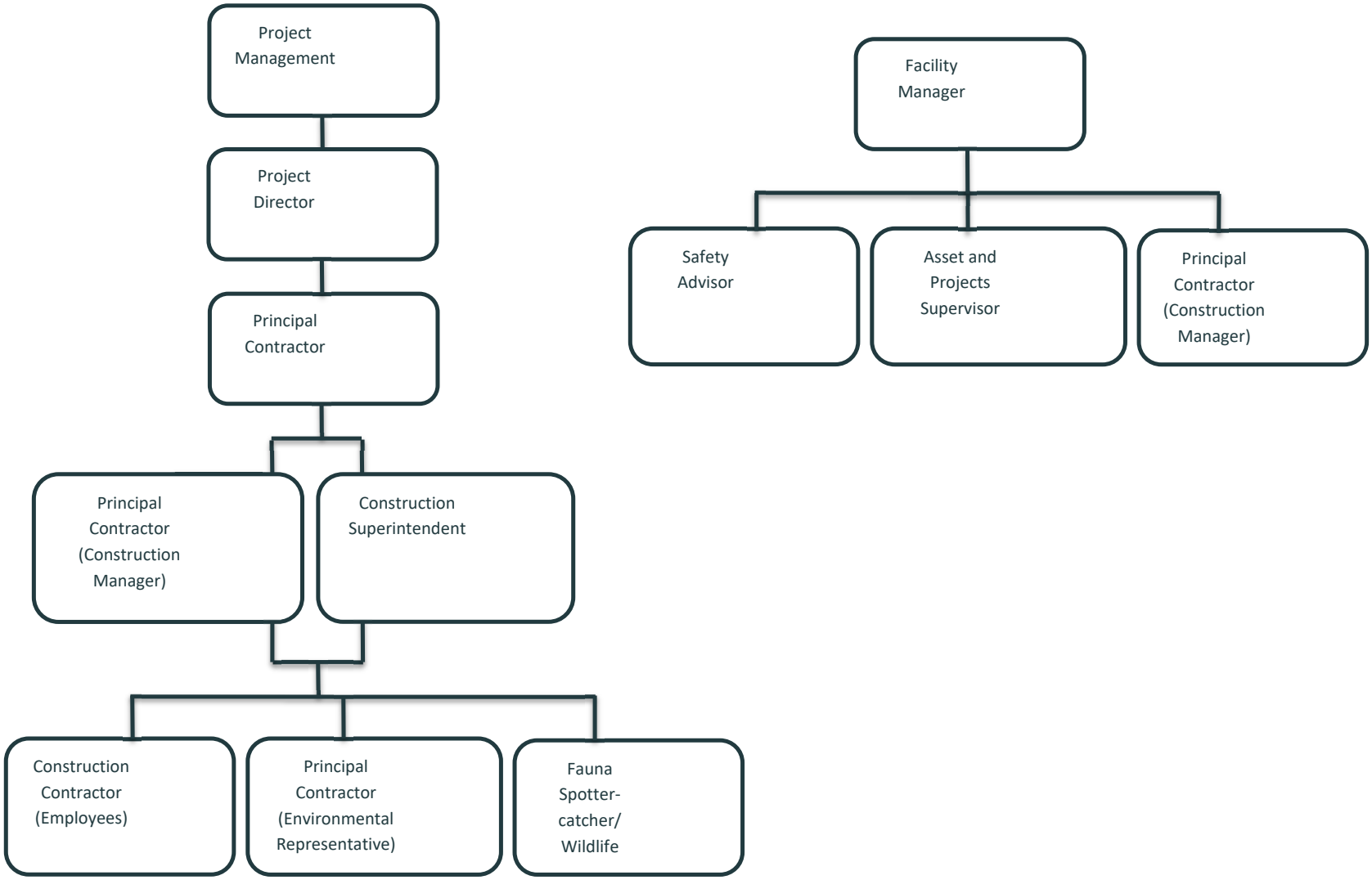

Figure 4 Construction (left) and operational (right) roles and responsibilities organisation chart

6. Impacts and mitigation measures

6.1 Environmental factors

This EMP provides a discussion of potential impacts and management measures for each of the following environmental factors that relate to the construction and operation of the CMF:

- Bushfire hazard
- Visual amenity
- Erosion and sediment control
- Terrestrial biodiversity
- Aquatic biodiversity
- Heritage
- Waste
- Public health and safety
- Climate
- Air quality
- Noise
- Surface and stormwater
- Groundwater.

To reduce the risks that the Project may have on the above-mentioned values, potential impacts have been identified, with corresponding mitigation measures to be implemented during construction and operation detailed in Section 6.4.

6.2 Risk assessment

The purpose of this section is to qualitatively determine the risk of potential impacts to environmental factors occurring during construction and/or operational activities associated with the CMF – without having any environmental controls in place. Mitigation measures for each potential impact are described with a residual risk rating then applied.

6.2.1 Risk assessment criteria

The risk rating applied to each potential impact and residual impact has been identified using the risk matrix shown in Table 8. The risk matrix applies consequence ratings (Table 9) and likelihood ratings (Table 10) to the identified environmental impacts to give an overall risk rating for each impact. The most suitable descriptor is assigned based on the information available, rather than the worst possible outcome. Consequence is assessed first, with the likelihood based on the consequence descriptor selected.

Table 8 Risk ratings matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Very unlikely	Negligible	Negligible	Low	Moderate	Moderate
Unlikely	Negligible	Negligible	Low	Moderate	Significant
Possible	Negligible	Low	Moderate	Significant	Extreme
Likely	Low	Low	Moderate	Significant	Extreme
Almost certain	Low	Moderate	Significant	Extreme	Extreme

Table 9 Consequence descriptors

Descriptor	Definition
Insignificant	Negligible on-site/off-site environmental impact and of low significance
Minor	On-site/off-site environmental localised impact, immediately contained
Moderate	On-site/off-site environmental short term impact, immediately recoverable
Major	On-site/off-site environmental medium term impact or repeated non-compliance with potential in some jurisdictions for prosecution

Catastrophic	On-site/off-site environmental long-term impact or repeated non-compliance with potential in some jurisdictions for prosecution

Table 10 Likelihood descriptors

Descriptor	Definition
Very unlikely	Highly doubtful but could occur in exceptional circumstances
Unlikely	It is improbable that it may occur
Possible	It is conceivable that it may occur
Likely	Will probably occur in most circumstances
Almost certain	Will likely occur in most circumstances

6.3 Initial risk assessment

6.3.1 Construction phase

6.3.1.1 Land

Table 11 Initial risk assessment for construction – land

Impact	Initial risk rating
Bushfire hazard	
Bushfire impacts during the construction phase; including damage to equipment, buildings and staff.	Low
Visual amenity	
Impacts to the design materiality due to the construction works	Moderate
Visual modification of the area due to landscaping works	Significant
Visual modification of the area due to signage required for construction works	Low
Visual modification of the area due to construction works	Low
Erosion and sediment control	
Disturbance of in-situ soils during construction, resulting in erosion and sedimentation	Low
Terrestrial biodiversity	
Disturbance/clearing of vegetation and fauna habitat during construction; reducing native fauna in the area	Significant
Injury and mortality of wildlife, due to wildlife movement through the Project area during construction	Significant
Vegetation clearing during construction reduces habitat connectivity within and adjacent to the Project area	Moderate
Disturbance of wildlife due to increased light, noise and vibration during construction activities; resulting in injury or mortality of wildlife	Significant
Habitat degradation due to dust, run-off and sedimentation generated by construction activities reducing the abundance and diversity of habitats by: – Physically smothering vegetation – Changing nutrient levels – Decreasing water quality – Encouraging weed incursions – Altering the movement of wildlife.	Moderate
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction	Significant
Impacts to MNES from the construction of the CMF	Moderate
Aquatic biodiversity	
Loss of aquatic habitat due to construction activities	Low
Degradation of aquatic habitat and water; due to excessive sediment and release of contaminant, increase of weed and pest species and overall reduction in suitability of habitat conditions as a result of construction activities	Moderate
Disturbance of aquatic fauna due to increased light, noise and vibration during construction activities; resulting in injury or mortality of wildlife	Significant
Alteration of flow and aquatic fauna movement, as a result of construction activities	Moderate
Fauna injury or mortality, due to construction works undertaken within waterways, including the excavation and dewatering of modified dams	Moderate
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction	Moderate
Heritage	
Indigenous heritage values uncovered during construction works	Significant
Non-Indigenous heritage values uncovered during construction works	Low
Native Title claim existing over the Project area	Low

Waste	
Inappropriate/inefficient material and resource selection and consumption during construction	Low
Failure to carry out general waste management activities during construction	Moderate
Inappropriate handling of waste/reuse materials during construction	Low
Inappropriate disposal of waste during construction	Low

6.3.1.2 Air

Table 12 Initial risk assessment for construction – air

Impact	Initial risk rating
Climate	
Extreme temperatures and heatwave events during construction impacting the efficiency of electrical infrastructure, and construction activities (both personnel and rate of infrastructure renewal)	Low
Air quality	
Dust emissions produced during construction, due to the movement of trucks and other vehicles on unpaved roads, and from other sources associated with material handling on-site; wind erosion from unsealed surfaces and stockpiles; unloading and turning compost stockpiles and product screening	Low
Particulates generated during site establishment works; including delivery of site amenities, and surveying/pegging of the site	Moderate
Particulates generated during earth works, including: – Establishment of access road to work area – Grading, excavation and general movement of earth materials.	Significant
Particulates generated during road works and intersection works, including: – Removal of trees/stripping of topsoil – Box out to required levels – Subgrade and base course – Asphalting – Line marking – Signage installation – Defect inspection and cleaning.	Moderate
Particulates generated during civil works, including: – Demolition and earthworks – Civil works – Ponds and other civil structures.	Significant
Particulates generated during mechanical installation of the following: – Shredder – Drum screen – Platforms – Storage tanks/platforms – Blowers – Leachate system – Water system – Picking system – Control system and instrument mech – Odour control system – Interconnecting pipework.	Moderate
Particulates generated during electrical installation of the following: – Blowers – Pumps	Moderate

– Screens – Motor control centre works – Interconnecting cabling.	
Greenhouse gas emissions produced by machinery and equipment used during construction	TBD

6.3.1.3 Noise and vibration

Table 13 Initial risk assessment for construction – noise and vibration

Impact	Initial risk rating
Noise	
Excess generation of noise during construction activities, which may include: – Earthworks – Slab construction – Building construction – Embankment/pavement works – Sealing works.	Moderate

6.3.1.4 Water

Table 14 Initial risk assessment for construction – water

Impact	Initial risk rating
Surface and stormwater	
Excess sediment generated by ground disturbance activities being discharged into the downstream environment	Moderate
Risk of contamination to surface water from accidental hazardous material spills during construction of the CMF, given the site's location within a drinking water catchment area.	Significant
Groundwater	
Groundwater seepage into excavated areas leading to structural instability of excavation walls	Significant
Excavation activities intercepting groundwater table and/or underground springs	Low
Contamination of groundwater from unintentional leaks/spills of hazardous substances, from plant/machinery, vehicle washdowns or chemical storage during construction.	Significant
Changes to groundwater levels and recharge dynamics resulting from excavation and filling works	Moderate
Cut and fill works during construction using sulfidic rock excavated at the site, resulting in acid rock drainage (ARD)	Moderate
Contamination of imported fill material for construction leaches contaminants into the groundwater	Moderate

6.3.2 Operational phase

6.3.2.1 Land

Table 15 Initial risk assessment for operations – land

Impact	Initial risk rating
Bushfire hazard	
Increased bushfire impacts during the operational phase due to CMF materials; resulting in significant bushfire risks for adjacent properties, fire runs and disruptions to operation of the CMF	Moderate
Visual amenity	
Impacts to the design materiality during operations, as a result of the construction of the CMF	Moderate
The CMF being visible from residential areas and the state controlled road reserve.	Moderate
Visual modifications due to signage required for operational works	Low
Erosion and sediment control	
Increased erosion and sediment mobilisation due to the movement of vehicles on-site during operations	Moderate

Increased erosion and sediment mobilisation, due to wind, from materials stockpiled on-site during operations	Moderate
Terrestrial biodiversity	
Disturbance/clearing of vegetation and fauna habitat to accommodate CMF operations leading to a reduction of native fauna in the area	Moderate
Injury and mortality of wildlife, due to wildlife movement through the Project area during operations	Moderate
Vegetation clearing to accommodate CMF operations reduces habitat connectivity within and adjacent to the Project area	Low
Disturbance of wildlife due to increased light, noise and vibration during operational activities; resulting in injury or mortality of wildlife	Low
Impact surrounding native flora and fauna due to the operation of the CMF; resulting in a reduction of surrounding native populations	Moderate
Impacts to MNES from the operation of the CMF	Moderate
Aquatic biodiversity	
Degradation of aquatic habitat and water; due to storage pond runoff during high rainfall events, and rubbish entering downstream waterways via stormwater drains on-site during operational activities	Low
Heritage	
Heritage items uncovered during earthworks	Low
Waste	
Failure to carry out general waste management activities during operations	Moderate
Inappropriate handling of waste/reuse materials during operations	Low
Inappropriate waste disposal during operations	Low
Increased fire risk due to stockpiles present on-site during operations	Low
Public health and safety	
Increased risk of pathogens such as Legionella and dispersion of bioaerosols, due to operation of the CMF	Low
Inappropriate management of contaminants such as heavy metals and PFAS during operations	Low

6.3.2.2 Air

Table 16 Initial risk assessment for operations – air

Impact	Initial risk rating
Climate	
Extreme temperatures and heatwave events during operational activities impacting the efficiency of electrical infrastructure, and operational and maintenance activities (both personnel and rate of infrastructure renewal)	Low
Air quality	
Potential for odour to exceed the highest predicted 99.5th percentile odour impact of 2.1 OU at the industrial receptor R7	Low
Potential for odour to exceed the highest predicted 99.5th percentile odour impact of 0.6 OU at the residential receptor R6	Low
Cumulative odour impacts during operations due to the distinct odour characteristics associated with Bush's Proteins	Low
Dust emissions produced during operations, due to the movement of trucks and other vehicles on unpaved roads, and other sources associated with material handling onsite; wind erosion from unsealed surfaces and stockpiles; unloading and turning of compost stockpiles and product screening	Low
Greenhouse gas emissions produced by machinery and equipment used during operations	Moderate

6.3.2.3 Noise and Vibration

Table 17 Initial risk assessment for operations – noise and vibration

Impact	Initial risk rating
Noise	
Increased noise levels, above those of the pre-existing environment, due to operational activities	Low
Excess generation of noise, due to additional traffic during operations, impacting on sensitive receptors in the surrounding area.	Moderate

6.3.2.4 Water

Table 18 Initial risk assessment for operations – water

Impact	Initial risk rating
Surface and stormwater	
Generation of differing types of water during operations, distinguished by their respective water quality, impacting downstream environments	Moderate
Discharge of untreated runoff that has come into significant contact with organic material	Moderate
Runoff from impervious site areas, not impacted by organic material	Low
Increased site water supply required for the composting process	Moderate
Impacts of external floodwaters on operations, and the resulting water quality risks associated with site inundation	Moderate
The increase in impervious areas for the CMF, leading to an increase in the peak rate of runoff and changes flood conditions downstream	Moderate
Non-compliance with government authorities during operations	Low
Risk of contamination to surface water from accidental hazardous material spills during operation of the CMF, given the site's location within a drinking water catchment area.	Significant
Groundwater	
Changes to groundwater levels and recharge dynamics as a result of landform changes	Low
Risk of contamination to groundwater from accidental hazardous material spills during construction and/or operation of the CMF, given the site's location within a drinking water catchment area.	Significant
Contamination of groundwater from unintentional leaks/spills of hazardous substances, from plant/machinery, vehicle washdowns or chemical storage during operations.	Significant
Water from harvest water dam seeping into groundwater during operations	Low
Contaminated water from leachate dams seeping into groundwater during operations	Moderate
Contaminated leachate, seeping through the hardstand underlying the aeration pad/windrow pad/maturation, into soils and groundwater during operations	Moderate

6.4 Mitigation measures

6.4.1 Land

6.4.1.1 Bushfire hazard

Table 19 Mitigation measures for bushfire hazards

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Bushfire impacts during the construction phase; including damage to equipment, buildings and staff. Ignition sources in the area surrounding the Project area may include: – Accidental ignition from agricultural and extractive industry uses and other machinery and equipment – Sparking – Roadside ignition (potentially caused by cigarette butts thrown from vehicles) – Arcing powerlines – Other rural and industrial activities – Ignition may also occur from activities on nearby rural residential properties such as lawnmowing and use of power tools – The ignition potential of the CMF, may occur from various activities on-site, including use of machinery and fuel storage; ignition from the composting process itself may also occur.	– Construction will not include any Class 1, 2, 3 or selected 9 and 10 buildings. Therefore, further assessment of building provisions has not been carried out. – Recommended that materials used on-site are largely non-flammable/fire resistant in nature e.g. concrete or steel to minimise the risk of fire spreading onsite and beyond the facility. – Use of timber for construction shall be minimised. – Any fences or barriers must not be constructed from timber. – Retaining walls should be constructed of fire resistant or fire-retardant material e.g. concrete, stone, masonry. – Adequate standard to accommodate emergency access to and from site, via the upgrade of Mitchell Road. – Ignition management of the will be the subject of broader facility management plans and strategies.	✓		– Principal Contractor – Construction Manager – Construction Superintendent
Increased bushfire impacts during the operational phase due to CMF materials; resulting in significant bushfire risks for adjacent properties, fire runs and disruptions to operation of the CMF	Due to the surrounding landscape and slope, there is opportunity for fire to advance towards the facility at any angle. However, fire runs are more likely to occur from the south and south-west direction. **Asset Protection Zones (APZ)** – An APZ is an area that surrounds a building and/or structure and is to be maintained continuously in a no/low fuel condition to aid in the protection of buildings. – An APZ offers a defensible space for firefighters to work safely from radiant heat exposure. – APZ distances are calculated based on fire weather, fuel load and topography. An APZ of 10 kW/m2 is proposed for the CMF as the use of industrial machinery and fuel storage may be hazardous in the context of a bushfire.		✓	– Principal Contractor – Facility Manager – Safety Advisor

	– An APZ along the south-western boundary is not required due to the separation from the nearest hazardous vegetation by the freshwater dam. **Site layout** – The CMF has safe and convenient access to the road network (via upgrade of Mitchell Road) for evacuation purposes and access for emergency services. – Vulnerable components of the facility (e.g. fuel storage areas and buildings are at the northern extent of the development footprint, located outside the bushfire prone area and as far as practical from hazardous vegetation. – A one-way road for heavy vehicles is provided at the perimeter of the site, effectively separating the activities of the CMF from adjacent grass hazard. **Water supply and fire-fighting infrastructure** – Static water supply in form of water tanks and booster pump – Additional 45,000 L static water tank • Non-flammable construction • Medium rigid vehicle clear access within 6 m of the tank • A 50 mm male camlock fitting for emergency fire service use if required. **Rehabilitation/re-vegetation and landscaping** – Further assessment to be completed to ensure that rehabilitation/ revegetation areas do not affect the vegetation hazard class or increase the severity of the hazard. – Adopt landscaping principles and species in accordance with Section 8 of the *Bushfire Resilient Communities: Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire'* (QFES, 2019). Including: • Low threat (flammability) species adopted • Tree specimens are smooth-barked species only and are not within 20 km of the CMF • The use of organic mulches in garden beds should be avoided. **Land and Field Load Management** – Ongoing land and diel load management practices; both within and beyond the APZ. – Land outside the development footprint. **Operational procedures** – Evacuation procedures and site emergency plans: • Where advised, watch and act or emergency warning is issued for a location within 5kms of the CMF, advice is sort from emergency services and / or the site operations are immediately ceased, and the facility evacuated.			

	• For warnings (advice, watch and act or emergency) issued for locations within 10km of the site, in the surrounding area more broadly, contact is made with the fire brigade's fire warden for status and advice, and prepare to cease operations and prepared to evacuate the site. • Fire that is ignited on the site or in immediate proximity – cease operation and evacuate the site if safe to do so. Call 000. • On 'Extreme' and 'Catastrophic' fire danger days or under 'total fire bans'. Activities that may generate an ignition threat are not conducted. Monitoring of emergency services media regularly throughout operation hours to check for local warnings.			
Performance criteria				
– No staff injured or stuck during an emergency situation, without access to safe exit routes. – No damage to the assets at the Bromelton CMF.				
Monitoring				
Undertake routine inspections to ensure the site is managed according to design specifications, and that sufficient controls are in place and remain fit-for-purpose.				– Principal Contractor – Construction Manager – Construction Superintendent – Facility Manager – Safety Advisor
Regularly monitor site conditions against emergency procedures and management plans to keep documentation up to date; and ensure provision of optimal exit routes for all staff, operators and machinery.				– Construction Manager – Construction Superintendent – Facility Manager – Safety Advisor
Reporting				
Any potential emergency situations identified are to be reported to the Construction Manager/Facility Manager as soon as practicable.				– All staff
Any reported emergency situations are to be relayed to the Principal Contractor as soon as practicable.				– Construction Manager – Construction Superintendent – Facility Manager
Corrective actions				
Immediately cease all site activities and proceed calmly to emergency evacuation points upon notification of an emergency evacuation.				– All staff
Follow all directions given by emergency wardens and site management during an emergency evacuation.				– All staff
Ensure that the site is inspected following the emergency evacuation procedures, to determine whether the site is safe for return to work.				– Construction Manager – Facility Manager – Safety Advisor – Assigned persons responsible

6.4.1.2 Visual amenity

Table 20 Mitigation measures for visual amenity risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Visual modification of the area due to construction works	– Take all practical measures to ensure construction equipment, storage areas, and other visible elements are located away from key views to or from the sensitive visual receptors identified in this assessment – Ensure general tidiness of the site is maintained during construction – Avoid conducting work in evenings and nights where possible, to minimise impacts from lighting – Where construction activity cannot be located away from trees, provide tree protection to ensure they are not damaged – All areas disturbed by construction and ancillary works are to be rehabilitated to their previous condition – During construction, employ screening measures to assist the site in blending into the surrounding area. Choice of screening is to be sympathetic to the existing rural setting.	✓		– Construction Manager – Construction Superintendent
Impacts to the design materiality due to the construction of the CMF	– Ensure the Project's form, material and finishes are of high quality and are in keeping with the surrounding setting to positively contribute to existing rural landscape character values – Avoid or minimise the use of shiny or reflective materials to reduce associated visual impacts on surrounding sensitive receptors – Consider specifying neutral colours such as brown and green for the cladding of external walls and roof that complements the rural landscape setting – If required, specify boundary fencing that is sensitive to the rural aesthetic of the site and avoid large areas of opaque, metal fencing.	✓	✓	– Construction Manager – Construction Superintendent – Facility Manager
Visual modification of the area due to landscaping	– Additional screen planting using shrubs and trees along Mitchell Road will assist to preserve the landscape character of surrounding farmlands whilst minimising views from Beaudesert Boonah Road – Increasing the density of planting along the site boundaries will minimise visual impacts of the additional infrastructure and taller buildings within the CMF – Plant screening vegetation within the site boundary to minimise visual impacts experienced from Beaudesert Boonah Road, Sandy Creek Road and the railway corridor – Avoid vegetation clearing, especially mature and regulated trees, where possible, to retain existing character values – Consider planting vegetation throughout the Project area to break up the concrete expanses and hard stand areas and to aid successful blending of the Project into the surrounding rural landscape.	✓	✓	– Construction Manager – Construction Superintendent – Facility Manager
Visual modification to the area due to signage required for construction and operational activities	– Where possible, minimise visual impacts of signage by: • Minimising signage dimensions • Avoiding brightly illuminated signage • Employing high-quality signage design • Locating signage on buildings rather than freestanding.	✓	✓	– Construction Manager – Construction Superintendent – Facility Manager – Safety Advisor
Performance criteria				
– No significant long-term impacts to the visual amenity of the area resulting from construction or operational activities.				
Monitoring				

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				–
Reporting				
Maintain a complaints register, recording all complaints regarding visual amenity issues received from the surrounding community.				– Principal Contractor – Construction Manager – Facility Manager
Corrective actions				
Investigate complaints received regarding impacts to the visual amenity of the surrounding area. Identify corrective actions if required and allocate a responsible person and timeframe for completion.				– Principal Contractor – Construction Manager – Facility Manager
Validate any complaints/reports received; and review any relevant controls currently in place, including their effectiveness.				– Principal Contractor – Construction Manager – Facility Manager
Any additional control measures identified are to be implemented in a timely manner where excessive visual amenity impacts are identified.				– Principal Contractor – Construction Manager – Facility Manager
All complaints/reports are to be investigated in a timely manner, using appropriate dispute resolution methods and abatement or attenuation measures.				– Principal Contractor – Construction Manager – Facility Manager

6.4.1.3 Erosion and sediment control

Table 21 ***Mitigation measures for erosion and sediment control risks***

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Disturbance of in-situ soils during construction, resulting in erosion and sedimentation. Potential activities that could result in erosion and sedimentation include earthworks and excavations which could pose a risk to flora and fauna and impact on waterways.	– Routine inspection/observation of cleared land to determine flow paths of stormwater and install appropriate controls. – Install bunds and stormwater controls to divert flow to appropriate areas and discharge points. – Routine inspection/observation and cleaning of drains and stormwater control infrastructure. – Temporary stormwater ponds should be desilted and maintained to ensure operation allows for the maximum storage volume and minimal unlicensed discharges. – Stormwater quality should be inspected and tested to confirm if it meets levels appropriate for discharge. Only stormwater that meets specified license or site water quality criteria (i.e. State and local government) should be discharged from the site. – Sediment collected in stormwater infrastructure will be appropriately disposed of in a manner that will not create an erosion or pollutant hazard, or allow it to re-enter a waterway.	✓		– Construction Manager – Construction Superintendent – Environmental Representative

Increased erosion and sediment mobilisation due to the movement of vehicles on-site during operations	– Implementation of an Erosion and Sediment Control Plan (ESCP). – Vehicles should be washed down off-site to prevent introducing contaminated runoff – Minimise traffic and construction of additional roads – Dust suppression systems. – The internal roads will be pavemented with different surface materials. Refer to Project drawing No 30034146-000-114 for more details regarding roads surface material. – Water from the onsite storage dam will be used for dust suppression.		✓	– Facility Manager – Environmental Representative
Increased erosion and sediment mobilisation, due to wind, from materials stockpiled on-site during operations			✓	– Facility Manager – Environmental Representative
Performance criteria				
– No environmental harm occurs as a result of disturbance of soils during construction activities – No unlawful discharges of sediment.				
Monitoring				
Undertake routine inspections to ensure the site is managed according to design specifications, and that sufficient controls are in place and remain fit-for-purpose.				– Construction Manager – Facility Manager – Environmental Representative
Additional water quality monitoring and laboratory analysis to be carried out in response to a complaint or incident.				– Construction Manager – Facility Manager – Environmental Representative
Reporting				
Maintain a complaints register, recording all complaints regarding erosion and sediment control issues received from the surrounding community and/or regulatory authorities.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Corrective actions				
Increase the frequency of dust suppression and/or erosion protection measures where appropriate and practical.				– Principal Contractor – Construction Manager – Facility Manager
Investigate complaints received regarding impacts of erosion and sedimentation on the surrounding environment. Identify corrective actions if required and allocate a responsible person and timeframe for completion.				– Principal Contractor – Construction Manager – Facility Manager
Validate any complaints/reports received against the performance criteria associated with the activity being undertaken at the time; and review any relevant controls currently in place, including their effectiveness.				– Principal Contractor – Construction Manager – Facility Manager
Any additional control measures identified are to be implemented as relevant, in a timely manner where erosion and sediment control impacts are identified.				– Principal Contractor – Construction Manager – Facility Manager

All complaints/reports are to be investigated in a timely manner, using appropriate dispute resolution methods and abatement or attenuation measures.	– Principal Contractor – Construction Manager – Facility Manager

6.4.1.4 Terrestrial biodiversity

Table 22 Mitigation measures for erosion and terrestrial biodiversity risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Disturbance/clearing of vegetation and fauna habitat leading to a reduction of native fauna in the area	**Design:** – Vegetation clearing limits around sensitive habitat (core koala habitat) to be defined within the contract documentation for Mitchell Road. – Nominate no-go zones on the design drawings and within contract documentation to protect significant vegetation within Mitchell Road. Including areas mapped as core koala habitat. – Require the Contractor to develop a clear staged approach to vegetation clearing to minimise the amount of clearing undertaken at one time and include an initial stage for vegetation clearing to support pioneering works such as for fence installation and establishment of erosion and sediment control devices. – Design drawings to delineate the extent of the Project area and any specific nominated no-go zones where vegetation is to be retained within the Project area. – Minimise the extent of clearing required for the Project, where possible. – Pre-clearance surveys to mark the locations of all potential breeding places for wildlife, disturbance of which is to be avoided as possible. These will target areas with potential to support breeding habitat for conservation significant species and breeding places identified within this report. – Design adverse incident response procedures to detail actions to be taken in the event of wildlife injury or mortality during clearing. – Develop a Construction ESCP (ESCP(C)) in accordance with the *Best Practice Erosion and Sediment Control Guidelines* (IECA 2008). – Prepare a low-risk Species Management Program (SMP) in accordance with the requirements of Section 335 of the *Nature Conservation (Animals) Regulation 2020*. This will outline a process to identify and minimise impact on breeding places for least concern species listed under the NC Act. – If a landscape plan is to be developed, it is recommended that this incorporates the use of endemic native species wherever possible. – Incorporate design measures that prevent or reduce the attraction of introduced fauna such as foxes, rats, cats and dogs to the Project area, such as ensuring waste areas are enclosed and secure. **Construction:**	✓	✓	– Construction Manager – Construction Superintendent – Fauna Spotter-catcher – Wildlife Carer – Facility Manager – Environmental Representative
Injury and mortality of wildlife, due to wildlife movement through the Project area during construction and operations		✓	✓	
Vegetation clearing for the Project reduces habitat connectivity within and adjacent to the Project area		✓	✓	
Disturbance of wildlife due to increased light, noise and vibration; resulting in injury or mortality of wildlife		✓	✓	
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction and operations		✓	✓	
Habitat degradation due to dust, run-off and sedimentation generated by construction activities reducing the abundance and diversity of habitats by: – Physically smothering vegetation – Changing nutrient levels – Decreasing water quality – Encouraging weed incursions – Altering the movement of wildlife.		✓		
Impact surrounding native flora and fauna due to the operation of the CMF; resulting in a reduction of surrounding native populations			✓	

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Prepare and adhere to a Construction EMP (EMP(C)). The EMP(C) should include protocols to limit injury and mortality to fauna including management of risks associated with open excavations and increased traffic, and responses and reporting for roadkill and adverse incident protocols. – Restrict vegetation clearing to the minimal area required to enable safe construction, operation and maintenance of the Project. – Ensure that vegetation clearing boundaries are established with appropriate signage at regular intervals using visible and physical markings. High visibility tape, barricade webbing or similar should be utilised. Ensure that all contractors are aware of these boundaries. – Engage a suitably qualified and experienced Fauna Spotter-catcher to undertake pre-clearance surveys immediately prior to clearing and supervise all clearing activities associated with construction. This will involve searching and clearing tree hollows, habitat trees and fallen logs prior to clearing and relocating resident fauna to the nearest suitable, safe habitat outside the clearing footprint. – If a koala is encountered within the Project area, the individual must not be relocated and should be left to self-disperse on their own accord (wherever possible). – Fauna within the Project area will be encouraged to self-disperse when the works take place. Disturbances associated with construction of the facility (i.e. increased noise and human presence) are anticipated to encourage species occurring within the Project area to self-disperse. – If injuries occur, the Fauna Spotter-catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably qualified to undertake treatment/euthanasia themself). Prior to clearing for construction, formalise arrangements with local veterinary services to treat and care for injured animals. – Rehabilitate and revegetate temporary construction areas as soon as possible after the completion of construction. – Include weed management measures in the EMP(C) to prevent the spread or introduction invasive plants and environmental weeds. – Reduce sources of artificial light by reducing night works and limiting site lighting to the minimum needed for safety. – Prioritise construction activities to daylight hours to reduce the need for lighting and resultant light spill into adjacent habitat and to reduce noise and vibration impacts on nocturnal fauna species. – Install erosion and sediment control devices where disturbance must be undertaken within or adjacent to wetted waterways.			

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Implement responsible waste management practices (e.g. not leaving out food waste and not feeding wildlife) during construction. All waste will be stored in secure temporary holding containers and transported off-site. – Clearly demarcate areas of native vegetation to be removed so that equipment operators and supervisors are aware of clearing extents. **Operations:** – Utilise existing cleared areas for laydown of materials. – Reduce light spill, associated with permanent infrastructure, into retained adjacent vegetation by limiting artificial light associated with operations to the minimum needed for safety. – Limit operation and maintenance work to day light hours, as is feasible, to decrease the impacts of light and noise pollution on nocturnal organisms within adjacent retained vegetation. – Speed limits will be established and enforced on all access roads and/or internal roads to reduce the potential for vehicle fauna interactions. – If fauna injuries occur within the Project area, a fauna spotter/catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably qualified to undertake treatment/euthanasia themself). – Develop an ESCP(C) in accordance with the *Best Practice Erosion and Sediment Control Guidelines* (IECA 2008) to minimise impacts to water quality and adjacent habitats. – Mapping of major weed infestations identified during a pre-clearing survey and appropriate management actions to be undertaken. As a minimum, the management actions should include: • An explanation of the general biosecurity obligation under the *Biosecurity Act 2014* • Procedures for vehicle wash-downs and inspections • Procedures for reporting sightings of prohibited and restricted pest species within the works area • A requirement that weed infested vegetation is not mulched for re-use on-site, and off-site disposal for weed infested mulch at an appropriate facility. – Prohibiting the movement of restricted invasive plants, including aquatic plants, such as salvinia (*Salvinia molesta*), into areas which do not contain the restricted invasive plants.			
Impacts to MNES from the construction of the CMF	**Construction:** – Prepare and adhere to an EMP(C). The EMP(C) should include protocols to limit injury and mortality to fauna including management of risks associated with open excavations and increased traffic, and responses and reporting for roadkill and adverse incident protocols.	✓		– Construction Manager – Construction Superintendent – Fauna Spotter-catcher – Wildlife Carer

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Restrict vegetation clearing to the minimal area required to enable safe construction, operation and maintenance of the Project. – Ensure that vegetation clearing boundaries are established with appropriate signage at regular intervals using visible and physical markings. High visibility tape, barricade webbing or similar should be utilised. Ensure that all contractors are aware of these boundaries. – Engage suitably qualified and experienced fauna spotter/catchers to undertake pre-clearance surveys immediately prior to clearing and supervise all clearing activities associated with construction. This will involve searching and clearing tree hollows, habitat trees and fallen logs prior to clearing and relocating resident fauna to the nearest suitable, safe habitat outside the clearing footprint. – Pre-clearance surveys to mark the locations of all potential breeding places for wildlife (i.e. hollows, nests, burrows etc), disturbance of which is to be avoided as possible. These will target areas with potential to support breeding habitat for conservation significant species and breeding places identified within this report. – Prepare an SMP in accordance with the requirements of Section 335 of the *Nature Conservation (Animals) Regulation 2020*. This will outline a process to identify and minimise impact on breeding places for least concern species listed under the NC Act. – If a koala is encountered within the Project area, the individual must not be relocated and should be left to self-disperse on their own accord (wherever possible). – Fauna within the Project footprint will be encouraged to self-disperse when the works take place. Disturbances associated with construction of the facility (i.e. increased noise and human presence) are anticipated to encourage species occurring within the Project footprint to self-disperse. – If injuries occur, the fauna spotter/catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably qualified to undertake treatment/euthanasia themself). Prior to clearing for construction, formalise arrangements with local veterinary services to treat and care for injured animals. – Inspect trenches, excavations and machinery daily for the presence of trapped fauna. – Develop adverse incident response procedures to detail actions to be taken in the event of wildlife injury or mortality during clearing. This will include procedures for capture and transport of injured wildlife to qualified veterinarian or humane on-site euthanasia and formalisation of arrangements with a local veterinarian to treat and care for wildlife injured during for the construction period.			– Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Rehabilitate and revegetate temporary construction areas as soon as possible after the completion of construction. – Include weed management measures in the EMP(C) to prevent the spread or introduction invasive plants and environmental weeds. – Reduce sources of artificial light by reducing night works and limiting site lighting to the minimum needed for safety. – Prioritise construction activities to daylight hours to reduce the need for lighting and resultant light spill into adjacent habitat and to reduce noise and vibration impacts on nocturnal fauna species. – Where nightworks are required, minimise lighting impacts into retained adjacent vegetation and wetland areas by reducing light spill outside of the Project site. – All waterway crossing structures are to consider the suite of fish present in the waterway and the fish species' passage requirements. Thirty-four native freshwater fish have been recorded in the catchment, which may migrate upstream when flows occur. Fish most likely to migrate into the Project footprint are small-bodied fish that are adapted to the ephemeral conditions of the local waterways, such as gudgeon, rainbowfish, etc. – Where de-watering of waterways and/or modified dams is required, develop a Dewatering Management Plan to identify appropriate management strategies for aquatic fauna to minimise injury and death during construction, which include (as a minimum) the following: • Aquatic fauna salvage prior to and during de-watering by a suitably qualified aquatic ecologist • Translocating species to nearby waterways or wetlands of similar quality • Temporary storage and monitoring to demonstrate the water meets the reuse or discharge water quality objectives • On-site re-use of suitable water (e.g. for dust suppression) where practicable. – Contingency for on-site treatment and discharge for water that does not meet the objectives or approvals conditions – Install erosion and sediment control devices where disturbance must be undertaken within or adjacent to wetted waterways. – Implement responsible waste management practices (e.g. not leaving out food waste and not feeding wildlife) during construction. All waste will be stored in secure temporary holding containers and transported off-site. – Clearly demarcate areas of native vegetation to be removed so that equipment operators and supervisors are aware of clearing extents. – Utilise existing cleared areas for laydown of materials. – Design storage facilities and laydown areas a minimum of 50 m from any waterway, where possible. If areas cannot be located 50 m away, then bunds			

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	would need to be erected around the perimeter of the laydown area and checked daily for failures. Any failures in the bund wall will need to be rectified prior to any additional material being stored. **Design:** – Vegetation clearing will be restricted to the minimum amount necessary for the construction within the Project footprint, including in riparian zones. – The extent of vegetation clearing (and no-go areas) will be clearly identified on construction plans and in the field using high visibility fencing. Clearing extent will be communicated to construction supervisors. – Require the Contractor to develop a clear staged approach to vegetation clearing to minimise the amount of clearing undertaken at one time and include an initial stage for vegetation clearing to support pioneering works such as for fence installation and establishment of erosion and sediment control devices. – Design drawings to delineate the extent of the Project area and any specific nominated no-go zones where vegetation is to be retained within the Project area. – Design adverse incident response procedures to detail actions to be taken in the event of wildlife injury or mortality during clearing. – Where reasonable and practicable, incorporate water sensitive urban design measures to minimise runoff that enters waterways. This should take into consideration the water quality objectives, level of risk, maintenance requirements and physical space within the site to accommodate treatment devices. It should also include consideration of any locations where additional scour protection may be required to minimise erosion risk and maintain watercourse stability. Measures may include wide grassed swales, rock dissipaters, gross pollutant traps, and sediment basins. Within waterways and riparian areas, erosion and sediment control measures should prioritise soft engineering measures to achieve stabilisation where possible (i.e. geofab, jute matting or planting). – Where possible, design culverts in accordance with the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (DAF 2018). – Develop a Construction Erosion and Sediment Control Plan (ESCP(C)) in accordance with the *Best Practice Erosion and Sediment Control Guidelines* (IECA 2008). – If a landscape plan is to be developed, it is recommended that this incorporates the use of endemic native species wherever possible. – Incorporate design measures that prevent or reduce the attraction of introduced fauna such as European foxes, black rats, feral cats and wild dogs to the Project area, such as ensuring waste areas are enclosed and secure.			

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Limit permanent exclusion fencing at site. – All fencing used on the Project will use fencing without barbed wire, particularly on the top strand, to minimise incidence of flying-fox entanglement.			
Impacts to MNES from the operation of the CMF	– Inspect and maintain all vehicles, machinery and plant regularly to minimise operational noise. – Restrict vehicle movements as far as practicable and minimise night driving. – Reduce light spill, associated with permanent infrastructure, into retained adjacent vegetation by limiting artificial light associated with operations to the minimum needed for safety. – Limit operation and maintenance work to day light hours, as is feasible, to decrease the impacts of light and noise pollution on nocturnal organisms within adjacent retained vegetation. – Speed limits will be established and enforced on all access roads and/or internal roads to reduce the potential for vehicle fauna interactions. – If fauna injuries occur within the Project footprint, a Fauna Spotter-catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably qualified to undertake treatment/euthanasia themself). – Develop an Erosion and Sediment Control Plan (ESCP) in accordance with the *Best Practice Erosion and Sediment Control Guidelines* (IECA 2008) to minimise impacts to water quality and adjacent habitats. – Mapping of major weed infestations identified during a pre-clearing survey and appropriate management actions to be undertaken. As a minimum, the management actions should include: • An explanation of the general biosecurity obligation under the *Biosecurity Act 2014* • Procedures for vehicle wash-downs and inspections • Procedures for reporting sightings of prohibited and restricted pest species within the works area • A requirement that weed infested vegetation is not mulched for re-use on-site, and off-site disposal for weed infested mulch at an appropriate facility. – Prohibiting the movement of restricted invasive plants, including aquatic plants, such as salvinia (*Salvinia molesta*), into areas which do not contain the restricted invasive plants.		✓	– Facility Manager – Environmental Representative
Performance criteria				
– No injury or death to native flora or fauna species – No existing or new pest species spread by heavy vehicles/machinery entering or exiting the site – All necessary reporting and pre-start checks are completed, and controls implemented to protect fauna during clearing and other construction activities – No vegetation cleared outside of the approved footprints.				

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Monitoring				
Undertake weekly inspections to assess the implementation of the above measures, with records kept in an environmental checklist.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Ensure all personnel on-site during construction have undertaken weed, pest and pathogen induction training.				– Construction Manager – Facility Manager – Environmental Representative
Routine inspections for weeds and pest species during and after construction activities, to ensure no establishment of new/existing species within the Project area.				– Construction Manager – Facility Manager – Environmental Representative
Reporting				
Any non-conformance regarding implemented mitigation measures is to be noted and reported to the Construction Manager.				– All staff
Maintain a record of all plant/machinery washdown checks undertaken.				– Principal Contractor – Construction Manager – Facility Manager
Maintain records demonstrating that personnel associated with the construction and operational phases have undertaken weed, pest and pathogen induction training.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Maintain a register of weeds, pests and pathogens observed within the Project area.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Any observed weed/pest infestations are to be documented and reported to the Construction Manager.				– All staff
Corrective actions				
Any works identified outside of the approved area are to be stopped immediately, and flagging/fencing checked and replaced, to avoid any accidental clearing outside the approved footprint.				– Construction Manager – Construction Superintendent
If any fauna are identified to be at risk of injury or death, the activity responsible should be stopped immediately, and appropriate authorities or suitably qualified persons engaged to determine steps for relocation.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative – Fauna Spotter-catcher

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Any reported weed/pest infestations are to be documented and reported to the appropriate regulatory authority, so they can be rectified in a timely manner.				– Project Manager – Principal Contractor

6.4.1.5 Aquatic biodiversity

Table 23 ***Mitigation measures for aquatic biodiversity risks***

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Loss of aquatic habitat due to construction activities	– Minimise the extent of all vegetation clearing wherever possible, particularly within riparian zones of waterways.	✓		– Construction Manager – Construction Superintendent – Fauna Spotter-catcher – Wildlife Carer – Environmental Representative
Degradation of aquatic habitat and water; due to excessive sediment and release of contaminant, increase of weed and pest species and overall reduction in suitability of habitat conditions as a result of construction activities	– Where reasonable and practicable, incorporate water sensitive urban design measures to minimise runoff that enters waterways. This should take into consideration the water quality objectives, level of risk, maintenance requirements and physical space within the site to accommodate treatment devices. It should also include consideration of any locations where additional scour protection may be required to minimise erosion risk and maintain watercourse stability. Measures may include wide grassed swales, rock dissipaters, gross pollutant traps, and sediment basins. Within waterways and riparian areas, erosion and sediment control measures should prioritise soft engineering measures to achieve stabilisation where possible (i.e. geofab, jute matting or planting). – Minimise lighting impacts into retained adjacent vegetation and wetland areas by reducing light spill outside of the Project area.	✓		
Disturbance of aquatic fauna due to increased light, noise and vibration during construction activities; resulting in injury or mortality of wildlife	– All waterway crossing structures are to consider the suite of fish present in the waterway and the fish species' passage requirements. Thirty-four native freshwater fish have been recorded in the catchment, which may migrate upstream when flows occur. Fish most likely to migrate into the Project area are small-bodied fish that are adapted to the ephemeral conditions of the local waterways, such as gudgeons, rainbowfish, etc.	✓		
Alteration of flow and aquatic fauna movement, as a result of construction activities	– Where possible, design culverts in accordance with the 'Accepted development requirements for operational work that is constructing or raising waterway barrier works' (DAF, 2018). – Develop an Erosion and Sediment Control Plan (ESCP) in accordance with the *Best Practice Erosion and Sediment Control Guidelines* (IECA 2008) to minimise impacts to water quality and aquatic habitat.	✓		
Fauna injury or mortality, due to construction works undertaken within waterways; including the excavation and dewatering of modified dams	– Where de-watering of waterways and/or modified dams is required, develop a Dewatering Management Plan to identify appropriate management strategies for aquatic fauna to minimise injury and death during construction, which include (as a minimum) the following: • Aquatic fauna salvage prior to and during de-watering by a suitably qualified aquatic ecologist • Translocating species to nearby waterways or wetlands of similar quality • Temporary storage and monitoring to demonstrate the water meets the reuse or discharge water quality objectives • On-site re-use of suitable water (e.g. for dust suppression) where practicable • Contingency for on-site treatment and discharge for water that does not meet the objectives or approvals conditions.	✓		
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction		✓		

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Mapping of major weed infestations identified during a pre-clearing survey and appropriate management actions to be undertaken. As a minimum, the management actions should include: • An explanation of the general biosecurity obligation under the *Biosecurity Act 2014* • Procedures for vehicle wash-downs and inspections • A requirement for 'weed free' certification and checks prior to vehicles entering the construction site during site establishment • Procedures for reporting sightings of prohibited and restricted pest species within the works area • A requirement for the appropriate treatment of all restricted invasive plants in the construction area before construction begins • A requirement that weed infested vegetation is not mulched for re-use on-site, and off-site disposal for weed infested mulch at an appropriate facility • The identification of no-go zones and protection areas in the construction area • Prohibiting the movement of restricted invasive plants, including aquatic plants, such as salvinia (*Salvinia molesta*), into areas which do not contain the restricted invasive plants. – Design storage facilities and laydown areas a minimum of 50 m from any waterway, where possible. If areas cannot be located 50 m away, then bunds would need to be erected around the perimeter of the laydown area and checked daily for failures. Any failures in the bund wall will need to be rectified prior to any additional material being stored.			
Degradation of aquatic habitat and water; due to storage pond runoff during high rainfall events, and rubbish entering downstream waterways via stormwater drains on-site during operational activities	– Minimise lighting impacts into retained adjacent vegetation and wetland areas by reducing light spill outside of the Project area. – Design storage facilities and laydown areas a minimum of 50 m from any waterway, where possible. If areas cannot be located 50 m away, then bunds would need to be erected around the perimeter of the laydown area and checked daily for failures. Any failures in the bund wall will need to be rectified prior to any additional material being stored.		✓	– Facility Manager – Environmental Representative
Performance criteria				
– No injury or death to native flora or fauna species – No existing or new pest species spread by heavy vehicles/machinery entering or exiting the site – All necessary reporting and pre-start checks are completed, and controls implemented to protect fauna during clearing and other construction activities – No vegetation cleared outside of the approved footprints.				
Monitoring				
Undertake weekly inspections to assess the implementation of the above measures, with records kept in an environmental checklist.				– Construction Contractor – Construction Manager – Facility Manager – Environmental Representative
Ensure all personnel on-site during construction have undertaken weed, pest and pathogen induction training.				– Construction Manager – Facility Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Environmental Representative
Routine inspections for weeds and pest species during and after construction activities, to ensure no establishment of new/existing species within the Project area.				– Construction Manager – Facility Manager – Environmental Representative
Reporting				
Any non-conformance regarding implemented mitigation measures is to be noted and reported to the Construction Manager.				– All staff
Maintain a record of all plant/machinery washdown checks undertaken.				– Principal Contractor – Construction Manager – Facility Manager
Maintain records demonstrating that personnel associated with the construction and operational phases have undertaken weed, pest and pathogen induction training.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Maintain a register of weeds, pests and pathogens observed within the Project area.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Any observed weed/pest infestations are to be documented and reported to the Construction Manager.				– All staff
Corrective actions				
Any works identified outside of the approved area are to be stopped immediately, and flagging/fencing checked and replaced, to avoid any accidental clearing outside the approved footprint.				– Construction Manager – Construction Superintendent
If any fauna are identified to be at risk of injury or death, the activity responsible should be stopped immediately, and appropriate authorities or suitably qualified persons engaged to determine steps for relocation.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative – Fauna Spotter-catcher
Any reported weed/pest infestations are to be documented and reported to the appropriate regulatory authority, so they can be rectified in a timely manner.				– Project Manager – Principal Contractor

6.4.1.6 Heritage

Table 24 *Mitigation measures for heritage risks*

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Indigenous heritage values uncovered during construction works	The entirely of the site is mapped as a Category 5 risk under the ACH Act – Duty of Care Guidelines. The likelihood of other values being uncovered during construction are significantly high. – Traditional Owner consultation will be required to avoid harm to Indigenous cultural heritage under the *Aboriginal Cultural Heritage Act 2003*. Consultation may result in: • A cultural heritage management plan • A cultural heritage management agreement • A cultural heritage field agreement. **Site protocols** Site protocols are to be followed at all times during construction and operation. Site inductions: – Provide machinery and road/traffic personnel with relevant cultural heritage training to ensure they: • Understand the Duty of Care requirements under the *Aboriginal Cultural Heritage Act 2003* • Understand where machinery, stockpiles etc. should be located. – The site induction can be delivered by the responsible cultural heritage officer (Tim Menkins: 0497 259 960). **During works** These guidelines are developed from the Department of Environment and Science's *Procedural guide: Managing Indigenous Cultural Heritage* (DES 2015). – **FIND:** An item of potential Cultural Heritage is found. – **STOP:** All work at the FIND location shall cease. The item shall not be removed or disturbed and an exclusion zone must be installed around the area. – **NOTIFY:** The Contractor shall immediately notify a 'responsible person'. – **MANAGE:** This may include precluding access to that area and liaison with relevant Aboriginal party/parties. The Contractor shall notify all site personnel of the object and/or area and proposed treatment of the object and/or area as soon as possible, but prior to commencing work on the next working day. Please immediately notify the responsible cultural heritage officer should further historical or Indigenous heritage values be identified (Tim Menkins: 0448 119 104). Archaeological Discoveries: – Under Section 89 of the *Queensland Heritage Act 1992* (QHA), if values are, or could be, of State significance, a notification of discovery must be made to the Department of Environment, Science and Innovation (DESI). – Under Section 90 of the QHA, unless the chief executive gives consent, or if a person has a reasonable excuse, the archaeological artefact must not be interfered with until at least 20 business days after the giving of notice. When an archaeological discovery is reported, DESI	✓		– Construction Manager – Construction Superintendent

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	assesses the finds to determine if it is an important source of information about Queensland's history. Discoveries may be assessed as: • Not important • Important and requiring management strategies • Important and eligible for entry in the Queensland Heritage Register. – Archaeological discoveries can occur regardless of land tenure.			
Non-Indigenous heritage values uncovered during construction works	**Site protocols** Site protocols are to be followed at all times during construction and operation. <u>Site inductions:</u> – Provide machinery and road/traffic personnel with relevant cultural heritage training to ensure they: • Understand the Duty of Care requirements under the *Aboriginal Cultural Heritage Act 2003* • Understand where machinery, stockpiles etc. should be located. – The site induction can be delivered by the responsible cultural heritage officer (Tim Menkins: 0497 259 960). **During works** These guidelines are developed from the Department of Environment and Science's *Procedural guide: Managing Indigenous Cultural Heritage* (DES 2015). – **FIND:** An item of potential Cultural Heritage is found. – **STOP:** All work at the FIND location shall cease. The item shall not be removed or disturbed and an exclusion zone must be installed around the area. – **NOTIFY:** The Contractor shall immediately notify a 'responsible person'. – **MANAGE:** This may include precluding access to that area and liaison with relevant Aboriginal party/parties. The Contractor shall notify all site personnel of the object and/or area and proposed treatment of the object and/or area as soon as possible, but prior to commencing work on the next working day. Please immediately notify the responsible cultural heritage officer should further historical or Indigenous heritage values be identified (Tim Menkins: 0448 119 104). <u>Archaeological Discoveries:</u> – Under section 89 of the *Queensland Heritage Act 1992* (QHA), if values are, or could be, of State significance, a notification of discovery must be made to the Department of Environment, Science and Innovation (DESI) – Under section 90 of the QHA, unless the chief executive gives consent, or if a person has a reasonable excuse, the archaeological artefact must not be interfered with until at least 20 business days after the giving of notice. When an archaeological discovery is reported, DES assesses the finds to determine if it is an important source of information about Queensland's history. Discoveries may be assessed as: • Not important • Important and requiring management strategies • Important and eligible for entry in the Queensland Heritage Register. – Archaeological discoveries can occur regardless of land tenure.	✓		– Construction Manager – Construction Superintendent

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Native Title claim existing over the Project area	– If it can be proven that freehold tenure was validly declared prior to 13 December 1996, then Native Title is extinguished in this area. If Native tile has been validly extinguished for this reason, then it need not be considered further for the Project.	✓		– Project Manager
Heritage items uncovered during operational works	– Follow the Find, Stop Notify and Manage steps in the Department of Environment and Science's *Procedural guide: Managing Indigenous Cultural Heritage* (DES 2015). • **FIND:** A potential Cultural Heritage item or object is found. • **STOP:** STOP WORK IMMEDIATELY and install an exclusion zone around the area. • **NOTIFY:** notify a responsible person (e.g. Project Manager). • **MANAGE:** This may include precluding access to that area and liaison with relevant Aboriginal party/parties. The Contractor shall notify all site personnel of the object and/or area and proposed treatment of the object and/or area as soon as possible, but prior to commencing work on the next working day. Please immediately notify the responsible cultural heritage officer should further historical or Indigenous heritage values be identified (Tim Menkins: 0448 119 104). – Adhere to the requirements set out in the ACH Act for the development of an appropriate Environmental Management Plan (EMP).		✓	– Facility Manager
Performance criteria				
– All activities are to be managed in accordance with the *Aboriginal Cultural Heritage Act 2003* – No sites of cultural significance are to be disturbed, damaged, or altered in any way, shape, or form.				
Monitoring				
Undertake inspections prior to construction for sites of cultural significance.				– Construction Manager – Construction Superintendent
Any unexpected finds should be confirmed not to be sites of cultural significance before further activity occurs.				– Construction Manager – Construction Superintendent
Reporting				
Any unexpected finds that could potentially be of cultural significance must be reported to the Construction Manager as soon as reasonably practicable.				– All staff
The identification of a potential site of cultural significance must be reported to the relevant authority for confirmation on next steps.				– Principal Contractor – Construction Manager
Corrective actions				
Immediately cease all activity within the area of a potential site of cultural significance.				– Construction Manager – Construction Superintendent
The site of cultural significance is to be reported to the relevant authority for investigation and confirmation.				– Project Manager – Principal Contractor
If confirmed as a site of cultural significance, actions are to be undertaken in accordance with the *Aboriginal Cultural Heritage Act 2003* and instructions given by the relevant authority.				– Construction Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Construction Superintendent
If deemed to not be a site of cultural significance, actions are to be undertaken in accordance with the Project's Unexpected Finds Procedure and relevant construction specification.				– Construction Manager – Construction Superintendent

6.4.1.7 Waste

Table 25 Mitigation measures for waste management risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Inappropriate/inefficient material and resource selection and consumption during construction	– Educated planning shall be implemented to efficiently manage the delivery and storage of materials, reducing spoilage of materials. – Agreements with suppliers to where possible use reusable or recyclable packaging in preference of single use packaging. – Minimise procurement of material to reduce spoilage.	✓		– Principal Contractor – Construction Manager – Environmental Representative
Failure to carry out general waste management activities	– The Waste Management Hierarchy of "avoidance, reuse, recycling, disposal" will be followed to manage waste throughout site operations. – The relevant persons responsible (the Contractor during construction; SOILCO during operations), will identify and maximise opportunities for supporting a circular economy that benefits waste avoidance and recycling of key priority waste streams. – A site induction shall be implemented for all site personnel detailing their responsibilities under the relevant waste management legislation and guidelines in regard to the minimisation, classification, management and reporting of waste on-site. – Signs within the site will be erected to encourage employees to reduce, reuse or recycle where possible. – Footpaths and road reserves on the site are to be maintained clear of rubbish, building materials and all other waste materials.	✓	✓	– Construction Manager – Facility Manager – Environmental Representative
Inappropriate handling of waste/reuse materials/feedstock	**General:** – If encountered or identified, hazardous waste shall be managed by appropriately qualified and licensed contractors in accordance with State legislation. – Waste receptacles, both general and recycling, shall be made available throughout the site to allow for waste segregation and replaced or emptied regularly to prevent overflow. – Liquid wastes are to be stored in appropriate containers in areas that are bunded. – Recyclables and non-recyclable wastes are to be stored in appropriate containers on-site until removed to an approved disposal or recycling facility. – All waste receptacles shall be covered and bunded where possible. **Operations:** – All waste inputs and outputs are entered into SOILCO's database and recorded in SOILCO's Waste Monthly Contribution Report on the Queensland Waste and Resource Reporting Portal.	✓	✓	– Construction Manager – Facility Manager – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Organic wastes to be processed to ensure effective pasteurisation and segregation of pasteurised material from unpasteurised materials and/or leachate, in accordance with SOILCO's composting procedures and operating protocols. – A Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance.			
Inappropriate disposal of waste	**General:** – Procedures shall be implemented and maintained to verify licenses and permits for the handling, transportation and disposal of waste. All relevant information is to be recorded in a Waste Management Register. – Disposal of septage from site amenities shall be directed to holding tanks for licenced disposal, if a sewer connection is unavailable. **Construction:** – Materials should be transported to C and D recycling facilities for recovery.	✓	✓	– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Increased fire risk due to stockpiles present on-site during operations	Measures outlined in the *Guideline Prevention of fires in waste stockpiles* (DESI 2024) are implemented across the site.		✓	– Facility Manager – Safety Advisor
Performance criteria				
– No complaints are received in relation to waste generated on-site – Litter is contained in appropriate facilities on-site. – No complaints are received in relation to the feedstock received at the site.				
Monitoring				
Routine inspections to ensure waste is appropriately stored, handled, transported and disposed of.				– Construction Manager – Facility Manager – Environmental Representative
Routine inspections to ensure all practicable environmental management measures are being followed to minimise excess waste and energy consumption.				– Construction Manager – Facility Manager – Environmental Representative
Routine inspection of incoming feedstocks, litter pick-up and cleaning of tipping floors, conveyor transfer points and of wheels of all vehicles leaving the site.				– Facility Manager – Environmental Representative
Reporting				
Maintain a register, recording all monitoring/inspections undertaken for the entirety of site operations.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Introduce and maintain a Waste Management Register, which includes all waste inputs and outputs generated up until the actual completion date of site operations.				– Principal Contractor

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Construction Manager – Facility Manager – Environmental Representative
Introduce and maintain a record of induction training completed by site personnel, for the entirety of site operations.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Corrective actions				
If failure to contain waste generated on-site is a recurring issue, review disposal facility locations and types.				– Principal Contractor – Construction Manager – Facility Manager
Consider shelters and prevailing winds.				– Principal Contractor – Construction Manager – Facility Manager

6.4.1.8 Public health and safety

Table 26 ***Mitigation measures for public health and safety risks***

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Increased risk of pathogens such as Legionella and dispersion of bioaerosols, due to operation of the CMF	– The risk of pathogen transmission is as low possible. – Control and minimisation of dust to reduce the migration of certain pathogens. – Table 2.3 and Appendix A of the Environmental Assessment Report, outline the processing and timing for pasteurisation. For the Bromelton CMF, the feedstock is to remain on the ASP between 18 and 21 days, depending on conditions and seasonal variation.		✓	– Facility Manager – Safety Advisor
Inappropriate management of contaminants such as heavy metals and PFAS during operations	– A Hazardous Material and Waste Management Plan will be developed and implemented by the operator to describe how generated wastes are handled, stored, recycled and disposed of in accordance with applicable legislative and contractual requirements during operation of the facility. – Waste Hierarchy Principles will be adopted during the operational phase, and this involves the adoption of environmentally sensitive work practices and implementation of environmental safeguards to minimise waste and promote Ecologically Sustainable Development.		✓	– Construction Manager – Facility Manager – Safety Advisor – Environmental Representative
Inappropriate management of feedstock during the operation of the CMF resulting in vermin infestation.	– A Site-Specific Management Plan will include a feedstock management plan for the operational phase, which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. – Frequent removal of waste contaminants, regular cleaning and maintenance of tipping areas, conveyor transfer points, stormwater and leachate ponds and sumps. – Prevention of water pool and stagnating. – Ensuring appropriate feedstock management including frequent turning and mixing, and minimised storage times.		✓	– Facility Manager – Safety Advisor

Performance criteria	
– No adverse impacts to human health or safety as a result of construction or operational activities.	
Monitoring	
Undertake inspections/observations of the storage, use and impacts of hazardous substances on-site.	– Construction Manager – Facility Manager – Safety Advisor – Environmental Representative
Undertake regular check-ins with staff, and health monitoring of staff members as required.	– Construction Manager – Facility Manager – Safety Advisor – Assigned persons responsible
Reporting	
Any observations or evidence of incorrect use of PPE, or adverse impacts to persons by hazardous chemicals, are to be reported to the Construction Manager.	– All staff
Corrective actions	
Any reported observations or evidence of potentially hazardous substances affecting the surrounding environment, will require an investigation into the source.	– Construction Manager – Facility Manager – Safety Advisor – Environmental Representative
The source of contamination should be immediately remediated in accordance with safe practices outlined in the SDS.	– Construction Manager – Facility Manager – Safety Advisor – Environmental Representative
Any contamination discovered is to be isolated as soon as practicable and assessed to determine suitable remediation strategies.	– Construction Manager – Facility Manager – Safety Advisor – Environmental Representative
Any reported observations or evidence of incorrect use of PPE or handling of a hazardous substance, will require the activity responsible to be stopped while an investigation occurs.	– All staff
Following an investigation, training will be carried out on the correct use and handling of hazardous substances in the workplace to ensure worker safety is maintained.	– Construction Manager – Facility Manager – Safety Advisor

6.4.2 Air

6.4.2.1 Climate

Table 27 Mitigation measures for climate risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Extreme temperatures and heatwave events during operational activities impacting the efficiency of electrical infrastructure; and construction, operational and maintenance activities (both personnel and rate of infrastructure renewal)	– Develop emergency response plans with emergency muster and access points clearly established and maintain open communications with stakeholders.	✓	✓	– Construction Manager – Facility Manager – Safety Advisor
Performance criteria				
– No adverse impacts to on-site worker health and safety due to extreme temperature events – Minimal unplanned downtime due to overheating of electrical infrastructure.				
Monitoring				
Undertake routine inspections to ensure the site is managed according to design specifications, and that sufficient controls are in place and remain fit-for-purpose.				– Construction Manager – Facility Manager – Safety Advisor
Regularly monitor site weather conditions and forecasts to plan for extreme temperatures/heatwave events.				– Construction Superintendent
Reporting				
Any emergency situations regarding the failure of electrical infrastructure or personnel health and safety, during an extreme temperature event, are to be reported to the Construction Manager or Facility Manager as soon as practicable.				– All staff
Any reported emergency situations are to be relayed to the Principal Contractor as soon as practicable.				– Construction Manager – Facility Manager – Safety Advisor
Corrective actions				
Investigate any reductions in efficiency or failure of electrical infrastructure during extreme temperature events. Identify corrective actions if required, and allocate a responsible person and timeframe for completion.				– Construction Manager – Facility Manager
Any additional control measures or maintenance activities identified are to be implemented in a timely manner.				– Construction Manager – Facility Manager

6.4.2.2 Air quality

Table 28 Mitigation measures for air quality risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Dust emissions produced by the movement of trucks and other vehicles on unpaved roads, and other sources associated with material handling onsite; wind erosion from unsealed surfaces and stockpiles; unloading and turning of compost stockpiles and product screening	**Construction:** – A construction dust control protocol will be prepared detailing management measures including a method for recording dust complaints and monitoring requirements. – On days with forecasted and actual high winds (i.e., over 10 m/s), reduce work effort accordingly if wind-blown dust is observed to be leaving the site boundary. – Undertake dust suppression, as required, using water sprays, water extension agents, soil stabilising polymers or other media on: • Unpaved work areas subject to traffic or wind • Spoil and aggregate stockpiles • During the loading and unloading of dust generating materials • Unpaved access tracks. – Water from the onsite storage dam will be used for dust suppression for the internal roads used by heavy vehicles. – If the works are creating levels of dust which may significantly impact on public amenity, modify or stop the works until the dust hazard is reduced to an acceptable level. – Stockpile turning will be suspended during periods of high wind – Maintain plant and equipment in good condition to minimise air emissions. **Operations:** Dust emissions from unpaved access and site roads, as well as all composting operations are readily managed with application of watering and proactive dust controls. Water from the onsite storage dam will be used for dust suppression for the internal roads used by heavy vehicles. Covering all loads include the transport of feedstocks and final products to and from the CMF.	✓	✓	– Construction Manager – Facility Manager – Environmental Representative
Particulates generated during site establishment works; including delivery of site amenities, and surveying/pegging of the site		✓		– Construction Manager – Construction Superintendent
Particulates generated during earth works, including: – Establishment of access road to work area – Grading, excavation and general movement of earth materials.		✓		– Construction Manager – Construction Superintendent
Particulates generated during road works and intersection works, including: – Removal of trees/stripping of topsoil – Box out to required levels – Subgrade and base course – Asphalting – Line marking – Signage installation – Defect inspection and cleaning.		✓		– Construction Manager – Construction Superintendent
Particulates generated during civil works, including: – Demolition and earthworks – Civil works – Ponds and other civil structures.		✓		– Construction Manager – Construction Superintendent
Particulates generated during mechanical installation of the following: – Shredder – Drum screen		✓		– Construction Manager – Construction Superintendent

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
– Platforms – Storage tanks/platforms – Blowers – Leachate system – Water system – Picking system – Control system and instruments – Odour control system – Interconnecting pipework.	The pavement types of the internal roads are not expected to produce significant dust emission. The pavement types are: • unbound granular pavements • stabilised pavements • asphalt pavements and surfacing stabilised pavements • sprayed bituminous surfacing • asphalt pavements and surfacing			
Particulates generated during electrical installation of the following: – Blowers – Pumps – Screens – Motor control centre works – Interconnecting cabling.		✓		– Construction Manager – Construction Superintendent
Greenhouse gas emissions produced by machinery and equipment used during construction and operations	Greenhouse gas emissions assessment will be completed during the detailed design phase.	✓	✓	– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Potential for odour to exceed the highest predicted 99.5th percentile odour impact of 2.1 OU at the industrial receptor R7	– Maintain plant and equipment in good condition to minimise ignition risk of fuel or chemicals, spills, and air emissions that may cause nuisance. – Mixing putrescible feedstock materials immediately into the compost process, if not pre-treated or dried. No feedstock with a 'very high' odour rating will be accepted onsite. The only feedstock with a 'high' rating accepted at the site are food organics for composting and small amounts of animal manure (up to 200 tonnes) for blending purposes only. – Implementing a management strategy for turning open windrows to prevent anaerobic conditions which is determined by an experienced operator through site trials and measurements.		✓	– Facility Manager – Environmental Representative – Assigned persons responsible

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Potential for odour to exceed the highest predicted 99.5th percentile odour impact of 0.6 OU at the residential receptor R6	– Minimising turning events for open windrows, especially during the first 7-10 days of composting, with only the minimum turning required to support pasteurisation and moisture redistribution. – Train staff (internal and contractors) on odour management strategy and all relevant procedures. Requirements to be included in the Odour Management Plan. – Install and operate as needed an aerator in the leachate pond to reduce the odour potential from the stored leachate. – Scheduling activities for times when they will have least impact (e.g. avoid undertaking odour-generating activities such as turning windrows of compost at times when it is windy, and the odour might carry to a sensitive or commercial place. – If the site activities are emitting odour concentrations which may significantly impact the nearby receptors, the works should be modified or stopped until the hazard is reduced to an acceptable level. This can include shredding of raw feedstock or turning of windrows. – An Odour Management Plan to be developed prior to the activity commencing which includes: • Identification of all odour sources, and potential odour sources at the site, including odours and potential odours generated from the activity • A requirement that odour investigations be completed by an appropriately qualified person • An analysis of routine and non-routine processes and operating conditions that could potentially result in odour emissions • Measures to avoid the generation and minimise the impacts of odours • At a minimum, annual reviews of the effectiveness of the measures. – Upon receipt of a valid odour complaint, engage a suitable experienced odour professional to conduct odour surveillance (odour surveys) to determine the extent of		✓	– Facility Manager – Environmental Representative – Assigned persons responsible

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	odour from the site and investigate what site activities led to elevated odour.			
Cumulative odour impacts during operations due to the distinct odour characteristics associated with Bush's Proteins	Not expected to occur as the odour from Bush's Proteins is not similar to that of the odour character experienced from composting, therefore cumulative impacts are not expected.		✓	– Facility Manager – Environmental Representative – Assigned persons responsible
Performance criteria				
– All construction and operational activities are managed in accordance with the *Environmental Protection Act 1994* and the *Environmental Protection Policy (Air) 2019* – No complaints are received from regulatory authorities or the surrounding community in relation to air quality issues.				
Monitoring				
Undertake air quality monitoring prior to construction commencing and during the construction phase.				– Air quality specialist
Undertake inspections/observations of air quality for fugitive dust, odour at the facility. Undertake air quality testing for point source emissions.				– Construction Manager – Facility Manager – Environmental Representative
Reporting				
Any observations or evidence of air pollution likely to cause nuisance is to be reported to the Construction Manager or Facility Manager for action.				– All staff
Any observations or evidence of fugitive air emissions travelling offsite that may impact surrounding receivers to be reported to the Facility Manager.				– All staff
Any emission non-compliance are to be recorded and appropriately investigated.				– Construction Manager – Facility Manager – Environmental Representative
Maintain a complaints register, recording all complaints regarding air quality issues received from the surrounding community and/or regulatory authorities.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Prepare an environmental monitoring report documenting the results of the monitoring programs during the operational phase and any actions taken to address exceedances.				– Principal Contractor

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Environmental Representative
Corrective actions				
Investigate any non-compliance or complaint including review of operational activity that may be source and weather conditions. Identify corrective actions if required and allocate a responsible person and timeframe for completion.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Validate any complaints/reports received against the performance criteria associated with the activity being undertaken at the time; and review any relevant controls currently in place, including their effectiveness.				– Construction Manager – Facility Manager – Environmental Officer
Any additional control measures identified are to be implemented in a timely manner where excessive emissions or nuisance dust and other air quality issues are identified.				– Construction Manager – Facility Manager – Environmental Representative
All complaints/reports are to be investigated in a timely manner, using appropriate dispute resolution methods and abatement or attenuation measures.				– Construction Manager – Facility Manager – Environmental Representative

6.4.3 Noise and vibration

6.4.3.1 Noise

Table 29 ***Mitigation measures for noise risks***

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Excess generation of noise during construction activities, which may include: – Earthworks – Slab construction	Construction noise levels will be dynamic and vary based on the construction activities being undertaken. **Site inductions** – All employees, contractors and sub-contractors are to receive an environmental induction. The induction should include:	✓		– Principal Contractor – Construction Manager – Construction Superintendent

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
– Building construction – Embankment/ pavement works – Sealing works.	• All relevant project-specific and standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures. **Behavioural practices** – No swearing or unnecessary shouting or loud stereos/radios on-site – No dropping of materials from height, throwing of metal items and slamming of doors. **Community consultation measures** – Contact will be established with the local residents as deemed necessary and the construction program and progress communicated on a regular basis, particularly when noisy or vibration-generating activities are planned. – This may include a local community update letters for specific construction activities and a Project information line. **Complaints management** Complaints will be managed in accordance with the procedure outlined below. Signage at each site will clearly and visibly provide a contact number and name to receive complaints and enquiries about construction. – Potential complaints specific to these works could include: • A cluster of noise complaints – In this instance, the response would be to: • Verbally respond to complainant • Provide a written response within seven calendar days, if the complaint cannot be resolved verbally • Log the complaint, and any actions taken with regards to the complaint within a complaints register • Undertake monitoring at the complainant's residence(s), where appropriate. • Investigate the nature and reasons of the impact – Investigate and implement further mitigation measures to minimise the impact. **Construction hours and scheduling**			– Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Comply with the recommended standard construction hours outlined in **Section 4.1.1 of Appendix I** in the **Environmental Assessment Report**, unless out of hours work has been approved. – For any work that would take place outside of normal construction hours: • Undertake an assessment of the potential noise and vibration impacts associated with the proposed activities and outline specific mitigation measures. • Residents potentially affected by such activities will be notified at least five days before hand, where required. • Minimise consecutive night activities in the same locality and provide periods of quiet if activities occur for extended periods during the night. • Conduct activities in a manner that eliminates or minimises the need for audible warning alarms. **Equipment selection** – Use quieter and less vibration emitting construction methods where reasonable and feasible. **Use and siting of plant** – Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. – The offset distance between noisy plant and adjacent sensitive receivers is to be in accordance with this report. – Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers where possible. **Plan worksites and activities to minimise noise and vibration** – Plan traffic flow, parking and loading unloading areas to minimise reversing movements within the site. **Minimise disturbance arising from delivery of goods to construction sites** – Loading and unloading of materials/deliveries is to occur during standard construction hours. – Contractors are to avoid dropping materials from height where practicable, during loading and unloading. – Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible.			

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Increased noise levels, above those of the pre-existing environment, due to operational activities	– Clear signage should be erected at site entrances advising people that they must not generate excessive noise and leave the site in a quiet and sensible manor to minimise any potential impacts to the surrounding amenity. – Dump trucks, loaders (L90 and L150) and shredder operations should be limited to day time operations or only operated near the centre of the Project area during the start of the day (6am to 7am) to reduce noise impacts during the morning shoulder period. A Noise Management Plan (NMP) be prepared for the CMF. It should contain (but not limited to): – A noise complaints management system is to be implemented whilst the completed facility is in operation. The following process should be established to ensure all complaints are dealt with in an appropriate manner: • A staff member will be nominated to deal with complaints from the community. Contact details of nominated staff member will be displayed at entry point of the site • All complaints will be logged within a complaint register. An archive of complaints will be maintained, documenting the nature of the complaint and the actions implemented for resolving the complaint. • SOILCO will endeavour to attend to these complaints within 48 hours of receipt. • The complaint log should be reviewed at regular intervals to identify common complaints and recurring issues. The review can be used to adjust operations to reduce the number of complaints moving forward. • The complaints log will be made available to relevant regulatory authorities on request. – A record of the noise mitigation measures implemented on-site. **Best practice environmental management practices** – All work to be within nominated hours of operation – Switch off equipment when not in use. – Select the quietest machinery and equipment available and find quieter processes or ways of performing tasks where possible (e.g. investigate whether there are suitable alternatives to reversing alarms on vehicles and select vehicles with low noise emissions). – Ensure that roads have a suitable and well-maintained surface and limit the amount, type, times and speed of vehicle movements. – Start plant and vehicles sequentially rather than all at the same time. – Use existing screens or site features to their advantage to reduce noise. – If the noise is directional, point the source away from noise-sensitive locations where possible. – Ensure that equipment, vehicles and acoustic screens or other noise mitigation devices are properly maintained.		✓	– Facility Manager – Environmental Representative
Excess generation of noise, due to additional traffic during operations, impacting on sensitive receptors located along the road network near the site			✓	– Facility Manager – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– Ensure that each staff member is aware of their responsibilities to reduce noise emissions, and how this can be achieved. – Noise at the sensitive and commercial places is periodically monitored to ensure that noise mitigation strategies are effective. – Monitoring is undertaken at a sufficient frequency to demonstrate that the activity is not causing or likely to cause environmental harm. This may include background monitoring of a sufficient period to demonstrate a background level, taking into consideration natural and seasonal variations. – An environmental management system is implemented per *AS/NZS ISO 14001:2016 – Environmental management systems – Requirements with guidance for use* (Standards Australia 2016).			
Performance criteria				
– No complaints or adverse impacts on staff or the community relating to noise.				
Monitoring				
Routine inspection of operations to identify any points of excessive noise generation outside of that which is approved under operational works approvals.				– Construction Manager – Facility Manager – Environmental Representative
Background noise criteria to be developed from baseline noise monitoring prior to the construction phase.				– Noise specialist
Environmental monitoring program to be developed for the operational phase.				– Principal Contractor – Environmental Representative
Reporting				
Any complaints made by staff or the community relating to noise should be recorded in a complaints register.				– Principal Contractor – Construction Manager – Construction Superintendent – Facility Manager – Environmental Representative
Environmental monitoring report documenting the results of the monitoring programs during the operational phase and any actions taken to address exceedances.				– Principal Contractor – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Corrective actions				
Review the activity being undertaken at the time of the complaint/report and confirm the validity of the complaint/report received.				– Construction Manager – Facility Manager – Environmental Representative
Validate any complaints/reports received against the performance criteria associated with the activity being undertaken at the time; and review any relevant controls currently in place, including their effectiveness.				– Construction Manager – Facility Manager – Environmental Representative
Any additional control measures identified are to be implemented in a timely manner where excessive noise issues are identified.				– Construction Manager – Facility Manager – Environmental Representative
All complaints/reports are to be investigated in a timely manner, using appropriate dispute resolution methods and abatement or attenuation measures.				– Construction Manager – Facility Manager – Environmental Representative

6.4.4 Water

6.4.4.1 Surface and stormwater

Table 30 Mitigation measures for surface and stormwater risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Excess sediment generated by ground disturbance activities being discharged into the downstream environment	– During detailed design, temporary sediment basins, would be sized in accordance with management of at least 80% of the annual average runoff to 50 mg/L of TSS. – Staging of the works is also to be considered during detailed design, and in particular the provision of early-stage temporary sediment basin(s) before final pad levels are reached and leachate basins cannot be used as temporary sediment basins. – Development of a Stormwater Management Plan to address surface water quality risks. A Surface Water Impact Assessment including Conceptual Surface Water Management Plan has been developed and include in Appendix C.	✓		– Principal Contractor – Construction Manager – Construction Superintendent – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– To minimise potential erosion and sedimentation impacts during construction of the composting manufacturing facility, a detailed Construction Erosion and Sediment Control Plan (ESCP(C)) would be developed based on relevant regulatory requirements. • This ESCP(C) would be prepared by a suitably qualified professional, as certified by the International Erosion Control Association (IECA). • The ESCP(C) would be developed as an addendum to an EMP(C) that would address risks to the environment from a multitude of sources, including water and soil resources.			
Generation of differing types of water during operations, distinguished by their respective water quality, impacting downstream environments	– Diversion of upstream run-on around the facility. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Preparation and regular update of a Operational Management Plan.		✓	– Facility Manager – Environmental Representative
Discharge of untreated runoff that has come into significant contact with organic material	Provision of 30 ML of contact water storage with disposal via reuse in the pasteurisation phase of the process. No proposed activities release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period.		✓	– Facility Manager – Environmental Representative
Runoff from impervious site areas, not impacted by organic material	– Runoff from impervious site areas not impacted by organic material includes a water quality risk consistent with typical urban stormwater, requiring consideration accordingly. – Provision of a typical urban stormwater treatment train including 500 m^2 of bio-retention filter area and a gross pollutant trap.		✓	– Facility Manager – Environmental Representative
Increased site water supply required for the composting process	Water is required for the composting process, including in the pasteurisation and maturation processes, with leachate only able to be used in the pasteurisation process – Provision of a 30 ML harvesting storage to the west of the operational area – Water delivery from appropriately licensed external water sources during dry periods to meet water supply needs.		✓	– Facility Manager – Environmental Representative
Impacts of external floodwaters on operations, and the resulting water quality risks associated with site inundation	– The operational site is located outside the 1% AEP flood impact for the identified flow paths adjacent to the site, other than for two minor locations where through detailed design extents would be altered as required to locate outside the flood extent. This would also be undertaken in consideration of waterway separation distance requirements. – The upgrade of Mitchell Road includes provision of appropriate flood protection and flow conveyance. – A Water Quality (groundwater, surface water and ponds) Monitoring Plan will be developed and implemented for the construction and operational phase.		✓	– Facility Manager – Environmental Representative
The increase in impervious areas for the CMF, leading to an increase in the peak rate of runoff and changes flood conditions downstream	– 3 Leachate storage ponds will be included for the CMF as shown in Drawing 30034146-000-300 – Adjustment of leachate catchment area when full processing rate is not occurring – Preparation of a detailed water balance model based on actual site operational data and provide emergency containment bunding if required.		✓	– Facility Manager – Environmental Representative
Non-compliance with government authorities during operations	– 25 m setback from flow paths, other than the harvesting storage – Location of site operational activities above the 1% AEP.		✓	– Principal Contractor – Facility Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Environmental Representative
Adverse impact on fish passage / loss of fish habitats	– The CMF will setback 25 metres from the waterways – The waterways ACT1 and ACT2 do not meet Fisheries Act 1994 definition of a waterway and are not considered to provide fish passage. Pre-lodgement advice received from DAF (refer to Section 7) and DAF confirmed that ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. – A Water Quality (groundwater, surface water and ponds) Monitoring Plan will be developed and implemented for the construction and operational phase. – DAF noted that ACT1 has a shallower gradient that allows for fish movement, defined bed and banks and shows evidence of fish habitats. DAF considered ACT1 to constitute a waterway as defined under the Fisheries Act 1994 and any waterway barrier works within this waterway require authorisation. The proposed works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included.			– Principal Contractor – Facility Manager – Environmental Representative
Risk of contamination to surface waters from accidental hazardous material spills during construction and/or operation of the CMF, given the site's location within a drinking water catchment area.	– A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction phase. – An incident and emergency plan will be developed and implemented for the operational phase. This plan will identify hazards and action to be taken to prevent environmental harm, detail the steps to follow and communication protocols required in the event of an emergency. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2024) guidelines. – A leachate management system will be implemented to capture leachate from compost handling areas. – A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas. – The following equipment items are to always be on location to assist with clean-up and containment operations that may be required: Oil and Fuel Spill Kit (containing absorbent material and pads, cable ties, gloves, plastic bags), AdBlue Spill Kit, Protection Personal Equipment (PPE), shovels, containers (e.g. empty IBC) for collection of soil and plastic pit liners. • In addition, identification of relevant equipment which may be required in a major containment operation, and which could be mobilised to site within 8 hours is to be	✓	✓	– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	identified prior to operations commencing: graders, bulldozers and/or scrapers; water tankers, suction tankers and/or trucks and/or portable storage tanks etc. – Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following: emergency response instruction folders, first aid equipment, fire extinguishers, stretcher(s) and safety showers/eyewash stations. – The portable fuel station and AdBlue tank will be contained within a self-bunded container. A specialist supplier will be responsible for servicing the portable fuel station and AdBlue tank. The portable fuel station and AdBlue tank will be located on an impervious area with bunding around it. They will be located more than 100 m from existing water features. – Hazardous substance to be used during the construction phase to be stored in bunded area, in accordance with the specific storage recommendations outlined in the Safety Data Sheet for each substance, ensuring proper ventilation, secure storage practices and to be located more than 100 m from existing water features. – Store and handle flammable and combustible liquids during the operational phase in strict accordance with Australian Standard AS 1940:2017.			
Performance criteria				
– No unlawful discharges of contaminated or unlicensed surface water.				
Monitoring				
Routine inspection/observation of stormwater infrastructure to confirm it is clear from obstructions and maintained. Preparation of an environmental monitoring program will be required for the operational phase.				– Construction Manager – Facility Manager – Environmental Representative
Routine inspection/observation of flows to confirm to unlawful discharges and any controlled releases should be monitored against discharge criteria determined in a Surface Water Management Plan.				– Construction Manager – Facility Manager – Environmental Representative
Implement a Receiving Environmental Monitoring Program (REMP).				– Principal Contractor – Environmental Representative
A Water Quality (groundwater, surface water and ponds) Monitoring Plan will be developed and implemented for the construction and operational phase.				– Principal Contractor – Environmental Representative – Facility Manager
Reporting				

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Any unscheduled discharges or flows outside of stormwater infrastructure should be reported to the Construction Manager/Facility Manager and relevant Environmental Representative.				– All staff
Any controlled releases should be recorded in a register with the accompanying test results to demonstrate compliance with licensed discharge criteria.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Environmental monitoring report documenting the results of the monitoring programs during the operational phase and any actions taken to address exceedances.				– Principal Contractor – Environmental Representative
Corrective actions				
Any stormwater identified to impact on construction or operational activities, should be assessed to determine whether additional infrastructure is required to manage stormwater through appropriate controls.				– Construction Manager – Facility Manager – Environmental Representative
Stormwater not suitable for discharge should be retained on-site and treated to meet discharge quality characteristics or taken to a suitably licensed disposal facility.				– Construction Manager – Facility Manager – Environmental Representative
Following any scheduled or unscheduled discharges, an accompanying downstream inspection should be undertaken to confirm that the discharge has not created adverse impacts to the receiving environment.				– Construction Manager – Facility Manager – Environmental Representative

6.4.4.2 Groundwater

Table 31 Mitigation measures for groundwater risks

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
Groundwater seepage into excavated areas leading to structural instability of excavation walls	– If groundwater is likely to be intercepted during construction, design of the facility should include management of excavation walls and seepage controls – The Contractor must prepare a Groundwater Management Plan.	✓		– Principal Contractor – Construction Manager – Environmental Representative
Excavation activities intercepting groundwater table and/or underground springs	– The Construction Contractor must prepare a Groundwater Management Plan that details the capture, testing, treatment (if required), and disposal/discharge of seepage.	✓		– Principal Contractor – Construction Manager – Environmental Representative
Cut and fill works during construction using sulfidic rock excavated at the site, resulting in acid rock drainage (ARD)	– Conduct additional geotechnical investigations to target depth of below the proposed level of excavation to determine presence of potential acid rock drainage (ARD) materials.	✓		– Principal Contractor – Construction Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	– If during excavation coal is encountered, the material should be segregated and stockpiled for ARD testing. The stockpile should be placed on an impervious base and leachate generated from the stockpile must be captured, tested, treated if required, prior to discharge/disposal. – If the stockpile material is confirmed to produce acid, the rock must be managed in accordance with the Hazardous Material Management Plan and Waste Management Plan (Appendix D), to be prepared by the Construction Contractor.			– Environmental Representative
Contamination of imported fill material for construction leaches contaminants into the groundwater	– The Construction Contractor is required to source fill from a reputable supplier that has a quality assurance system. – All imported fill must be certified as 'clean', prior to entering the site, and is to be free of debris, weeds and potential contaminants. – A register will be kept of all fill materials imported to the site (source and destination).	✓		– Principal Contractor – Construction Manager – Environmental Representative
Changes to groundwater levels and recharge dynamics resulting from excavation and filling works	– The desktop assessment identified that groundwater is likely to be at depth, and recharge is likely low within the Project footprint, therefore changes in groundwater levels are not expected. – On-going groundwater monitoring of the proposed groundwater monitoring bores during and after construction will allow for early detection of any changes.	✓		– Construction Manager – Environmental Representative
Risk of contamination to groundwater from accidental hazardous material spills during construction and/or operation of the CMF, given the site's location within a drinking water catchment area.	– A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction phase. – An incident and emergency plan will be developed and implemented for the operational phase. This plan will identify hazards and action to be taken to prevent environmental harm, detail the steps to follow and communication protocols required in the event of an emergency. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2024) guidelines. – A leachate management system will be implemented to capture leachate from compost handling areas. – A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas. – The following equipment items are to always be on location to assist with clean-up and containment operations that may be required: Oil and Fuel Spill Kit (containing absorbent material and pads, cable ties, gloves, plastic bags), AdBlue Spill Kit, Protection Personal Equipment (PPE), shovels, containers (e.g. empty IBC) for collection of soil and plastic pit liners.	✓	✓	– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
	• In addition, identification of relevant equipment which may be required in a major containment operation, and which could be mobilised to site within 8 hours is to be identified prior to operations commencing: graders, bulldozers and/or scrapers; water tankers, suction tankers and/or trucks and/or portable storage tanks etc. – Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following: emergency response instruction folders, first aid equipment, fire extinguishers, stretcher(s) and safety showers/eyewash stations. – The portable fuel station and AdBlue tank will be contained within self-bunded container. A specialist supplier will be responsible for servicing the portable fuel station and AdBlue tank. The portable fuel station and AdBlue tank will be located on an impervious area with bunding around it. They will be located more than 100 m from existing water features. – Hazardous substance to be used during the construction phase to be stored in bunded area, in accordance with the specific storage recommendations outlined in the Safety Data Sheet for each substance, ensuring proper ventilation, secure storage practices and to be located more than 100 m from existing water features. – Store and handle flammable and combustible liquids during the operational phase in strict accordance with Australian Standard AS 1940:2017.			
Changes to the surrounding landform causing changes to groundwater recharge dynamics	– The desktop assessment identified that groundwater is likely to be at depth, and recharge is likely low within the Project footprint, therefore changes in groundwater levels are not expected in the vicinity of the facility. – Maintain environmental flows in downstream watercourses, so that recharge of alluvium in Allan Creek is not altered.		✓	– Facility Manager – Environmental Representative
Water from harvest water dam seeping into groundwater during operations	Design of the freshwater storage dam indicates that the dam will be lined to limit seepage.		✓	– Principal Contractor – Facility Manager – Environmental Representative
Contaminated water from leachate dams seeping into groundwater during operations	– Design of the leachate dam indicates that the dam will be fully lined with either: • 600 mm thick recompacted clay with a permeability of less than 10-9 m/s; or • A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. – The facility will have a designated leachate management system, as per the Queensland Government guidelines for *Model operating conditions: ERA 53(a) – Organic material processing by composting* (Queensland Government 2024). – Seepage may be detected through installation of spears around the dam.		✓	– Principal Contractor – Facility Manager – Environmental Representative
Contaminated leachate, seeping through the hardstand underlying the aeration	– Hardstand areas are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater.		✓	– Principal Contractor – Facility Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
pad/windrow pad/maturation, into soils and groundwater during operations	– The facility will have a designated leachate management system, as per the Queensland Government guidelines for *Model operating conditions: ERA 53(a) – Organic material processing by composting* (Queensland Government 2024). – The generation of leachate in operational areas will be minimised using drive-over culverts to separate clean and dirty water. – The leachate pond system and pipework will be regularly inspected, maintained, and repaired when necessary.			– Environmental Representative
Performance criteria				
– No unlawful discharges of contaminated or unlicensed surface water/leachate – No seepage of contaminated water/leachate into groundwater.				
Monitoring				
Preparation of an environmental monitoring program will be required for the operational phase.				– Principal Contractor – Environmental Representative
Routine inspection/observation of flows to confirm to unlawful discharges and any controlled releases should be monitored against discharge criteria determined in a Groundwater Management Plan.				– Construction Manager – Facility Manager – Environmental Representative
A Water Quality (groundwater, surface water and ponds) Monitoring Plan will be developed and implemented for the construction and operational phase.				– Principal Contractor – Environmental Representative – Facility Manager
Maintain a register of all fill materials imported to the site.				– Principal Contractor – Construction Manager
Reporting				
Any unscheduled discharges or flows outside of stormwater infrastructure should be reported to the Construction Manager/Facility Manager and relevant Environmental Representative.				– All staff
Any unintentional spills or leaks of hazardous substances, leaks/spills from plant/machinery, vehicle washdowns or chemical storage should be reported to the Construction Manager/Facility Manager and relevant Environmental Representative.				– All staff
Any controlled releases should be recorded in a register with the accompanying test results to demonstrate compliance with licensed discharge criteria.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative
Preparation of an environmental monitoring report documenting the results of the monitoring programs during the operational phase and any actions taken to address exceedances.				– Environmental Representative
Corrective actions				
Water not suitable for discharge should be retained on-site and treated to meet discharge quality characteristics or taken to a suitably licensed disposal facility.				– Construction Manager – Facility Manager

Risk	Mitigation measures	Construction phase	Operational phase	Responsibility
				– Environmental Representative
Investigate any non-compliance or incidents reported, including review of any operational activities that may have been the source. Identify corrective actions if required and allocate a responsible person and timeframe for completion.				– Principal Contractor – Construction Manager – Facility Manager – Environmental Representative

6.5 Residual risk assessment

6.5.1 Construction phase

6.5.1.1 Land

Table 32 Residual risk assessment for construction – land

Impact	Residual risk rating
Bushfire hazard	
Bushfire impacts during the construction phase; including damage to equipment, buildings and staff.	Low
Visual amenity	
Impacts to the design materiality due to the construction works	Low
Visual modification of the area due to landscaping works	Moderate
Visual modification of the area due to signage required for construction works	Negligible
Visual modification of the area due to construction works	Negligible
Erosion and sediment control	
Disturbance of in-situ soils during construction, resulting in erosion and sedimentation	Negligible
Terrestrial biodiversity	
Disturbance/clearing of vegetation and fauna habitat during construction; reducing native fauna in the area	Moderate
Injury and mortality of wildlife, due to wildlife movement through the Project area during construction	Moderate
Vegetation clearing during construction reduces habitat connectivity within and adjacent to the Project area	Low
Disturbance of wildlife due to increased light, noise and vibration during construction activities; resulting in injury or mortality of wildlife	Low
Habitat degradation due to dust, run-off and sedimentation generated by construction activities reducing the abundance and diversity of habitats by: – Physically smothering vegetation – Changing nutrient levels – Decreasing water quality – Encouraging weed incursions – Altering the movement of wildlife.	Low
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction	Low
Impacts to MNES from the construction of the CMF	Low
Aquatic biodiversity	
Loss of aquatic habitat due to construction activities	Negligible
Degradation of aquatic habitat and water; due to excessive sediment and release of contaminant, increase of weed and pest species and overall reduction in suitability of habitat conditions as a result of construction activities	Low
Disturbance of aquatic fauna due to increased light, noise and vibration during construction activities; resulting in injury or mortality of wildlife	Low
Alteration of flow and aquatic fauna movement, as a result of construction activities	Low
Fauna injury or mortality, due to construction works undertaken within waterways; including the excavation and dewatering of modified dams	Low
Introduction and spread of invasive species due to increased movement of vehicles and machinery during construction	Low
Heritage	
Indigenous heritage values uncovered during construction works	Moderate

Non-Indigenous heritage values uncovered during construction works	Negligible
Native Title claim existing over the Project area	Low
Waste	
Inappropriate/inefficient material and resource selection and consumption during construction	Negligible
Failure to carry out general waste management activities during construction	Low
Inappropriate handling of waste/reuse materials during construction	Low
Inappropriate disposal of waste during construction	Low

6.5.1.2 Air

Table 33 Residual risk assessment for construction – air

Impact	Residual risk rating
Climate	
Extreme temperatures and heatwave events during construction impacting the efficiency of electrical infrastructure, and construction activities (both personnel and rate of infrastructure renewal)	Negligible
Air quality	
Dust emissions produced during construction, due to the movement of trucks and other vehicles on unpaved roads, and from other sources associated with material handling on-site; wind erosion from unsealed surfaces and stockpiles; unloading and turning compost stockpiles and product screening	Negligible
Particulates generated during site establishment works; including delivery of site amenities, and surveying/pegging of the site	Negligible
Particulates generated during earth works, including: – Establishment of access road to work area – Grading, excavation and general movement of earth materials.	Low
Particulates generated during road works and intersection works, including: – Removal of trees/stripping of topsoil – Box out to required levels – Subgrade and base course – Asphalting – Line marking – Signage installation – Defect inspection and cleaning.	Low
Particulates generated during civil works, including: – Demolition and earthworks – Civil works – Ponds and other civil structures.	Low
Particulates generated during mechanical installation of the following: – Shredder – Drum screen – Platforms – Storage tanks/platforms – Blowers – Leachate system – Water system – Picking system – Control system and instrument mech – Odour control system – Interconnecting pipework.	Negligible
Particulates generated during electrical installation of the following:	Negligible

– Blowers – Pumps – Screens – Motor control centre works – Interconnecting cabling.	
Greenhouse gas emissions produced by machinery and equipment used during construction	To be determined.

6.5.1.3 Noise and vibration

Table 34 Residual risk assessment for construction – noise and vibration

Impact	Residual risk rating
Noise	
Excess generation of noise during construction activities, which may include: – Earthworks – Slab construction – Building construction – Embankment/pavement works – Sealing works.	Moderate

6.5.1.4 Water

Table 35 Residual risk assessment for construction – water

Impact	Residual risk rating
Surface and stormwater	
Excess sediment generated by ground disturbance activities being discharged into the downstream environment	Low
Risk to surface waters from hazardous material spills during construction, considering the location is within a drinking water catchment area.	Low
Risk of contamination to surface water from accidental hazardous material spills during construction of the CMF, given the site's location within a drinking water catchment area.	Moderate
Groundwater	
Groundwater seepage into excavated areas leading to structural instability of excavation walls	Low
Excavation activities intercepting groundwater table and/or underground springs	Negligible
Risk of contamination to groundwater from accidental hazardous material spills during construction of the CMF, given the site's location within a drinking water catchment area.	Moderate
Contamination of groundwater from unintentional leaks/spills of hazardous substances, from plant/machinery, vehicle washdowns or chemical storage during construction, particularly in a drinking water catchment area.	Low
Changes to groundwater levels and recharge dynamics resulting from excavation and filling works	Negligible
Cut and fill works during construction using sulfidic rock excavated at the site, resulting in acid rock drainage (ARD)	Low
Contamination of imported fill material for construction leaches contaminants into the groundwater	Negligible

6.5.2 Operational phase

6.5.2.1 Land

Table 36 Residual risk assessment for operations – land

Impact	Residual risk rating
Bushfire hazard	
Increased bushfire impacts during the operational phase due to CMF materials; resulting in significant bushfire risks for adjacent properties, fire runs and disruptions to operation of the CMF	Low
Visual amenity	

Impacts to the design materiality during operations, as a result of the construction of the CMF	Low
Visual modifications due to landscaping	Moderate
Visual modifications due to signage required for operational works	Negligible
Erosion and sediment control	
Increased erosion and sediment mobilisation due to the movement of vehicles on-site during operations	Low
Increased erosion and sediment mobilisation, due to wind, from materials stockpiled on-site during operations	Low
Terrestrial biodiversity	
Disturbance/clearing of vegetation and fauna habitat to accommodate CMF operations leading to a reduction of native fauna in the area	Low
Injury and mortality of wildlife, due to wildlife movement through the Project area during operations	Low
Vegetation clearing to accommodate CMF operations reduces habitat connectivity within and adjacent to the Project area	Negligible
Disturbance of wildlife due to increased light, noise and vibration during operational activities; resulting in injury or mortality of wildlife	Negligible
Impact surrounding native flora and fauna due to the operation of the CMF; resulting in a reduction of surrounding native populations	Low
Impacts to MNES from the operation of the CMF	Low
Aquatic biodiversity	
Degradation of aquatic habitat and water; due to storage pond runoff during high rainfall events, and rubbish entering downstream waterways via stormwater drains on-site during operational activities	Negligible
Heritage	
Heritage items uncovered during operational works	Low
Waste	
Failure to carry out general waste management activities during operations	Low
Inappropriate handling of waste/reuse materials during operations	Negligible
Inappropriate waste disposal during operations	Negligible
Increased fire risk due to stockpiles present on-site during operations	Low
Public health and safety	
Increased risk of pathogens such as Legionella and dispersion of bioaerosols, due to operation of the CMF	Negligible
Inappropriate management of contaminants such as heavy metals and PFAS during operations	Negligible

6.5.2.2 Air

Table 37 Residual risk assessment for operations – air

Impact	Residual risk rating
Climate	
Extreme temperatures and heatwave events during operational activities impacting the efficiency of electrical infrastructure, and operational and maintenance activities (both personnel and rate of infrastructure renewal)	Negligible
Air quality	
Potential for odour to exceed highest predicted 99.5th percentile odour impact (2.1 OU) at industrial receptor R7	Low
Potential for odour to exceed highest predicted 99.5th percentile odour impact (0.6 OU) at residential receptor R6	Low
Cumulative odour impacts during operations due to the distinct odour characteristics associated with Bush's Proteins	Negligible
Dust emissions produced during operations, due to the movement of trucks and other vehicles on unpaved roads, and other sources associated with material handling onsite; wind erosion from unsealed surfaces and stockpiles; unloading and turning of compost stockpiles and product screening	Low

Greenhouse gas emissions produced by machinery and equipment used during operations	TBD

6.5.2.3 Noise and Vibration

Table 38 Residual risk assessment for operations – noise and vibration

Impact	Residual risk rating
Noise	
Increased noise levels, above those of the pre-existing environment, due to operational activities	Negligible
Excess generation of noise, due to additional traffic during operations, impacting on sensitive receptors located along the road network near the site	Low

6.5.2.4 Water

Table 39 Residual risk assessment for operations – water

Impact	Residual risk rating
Surface and stormwater	
Generation of differing types of water during operations, distinguished by their respective water quality, impacting downstream environments	Low
Discharge of untreated runoff that has come into significant contact with organic material	Low
Runoff from impervious site areas, not impacted by organic material	Negligible
Increased site water supply required for the composting process	Low
Impacts of external floodwaters on operations, and the resulting water quality risks associated with site inundation	Low
The increase in impervious areas for the CMF, leading to an increase in the peak rate of runoff and changes flood conditions downstream	Low
Non-compliance with government authorities during operations	Low
Risk to surface waters from hazardous material spills during operation, considering the location is within a drinking water catchment area.	Low
Risk of contamination to surface water from accidental hazardous material spills during operation of the CMF, given the site's location within a drinking water catchment area.	Moderate
Groundwater	
Changes to groundwater levels and recharge dynamics as a result of landform changes	Negligible
Contamination of groundwater from unintentional leaks/spills of hazardous substances, from plant/machinery, vehicle washdowns or chemical storage during operation.	Moderate
Water from harvest water dam seeping into groundwater during operations	Negligible
Contaminated water from leachate dams seeping into groundwater during operations	Low
Contaminated leachate, seeping through the hardstand underlying the aeration pad/windrow pad/maturation, into soils and groundwater during operations	Low

6.6 Management plans

The following management plans will be developed for the construction and operational phases of the Project:

- Bushfire Hazard Assessment and Management Plan (included in Appendix B)
- Surface Water Impact Assessment including Conceptual Surface Water Management Plan (included in Appendix C)
- Odour Management Plan
- Surface and Groundwater Management Plan
- Traffic Management Plan
- Hazardous Materials Management Plan
- Waste Management Plan (included in Appendix D)
- Noise Environmental Management Plan
- Flora and Fauna Management Plan

- A Site-Specific Management Plan
- Incident and Emergency Management Plan.

7. Communication, monitoring and reporting

7.1 Communication

7.1.1 Construction phase

All personnel involved in the construction phase shall be required to attend a compulsory induction before commencing any work on-site. The environmental component of the induction shall include (but not be limited to) the following items:

- Guidance on the significance and sensitivity of environmental features within the Project area.
- Environmental obligations under relevant environmental legislation.
- The potential environmental impacts of construction (where relevant).
- Controls and procedures to prevent impacts.
- All staff shall be made aware of their General Environmental Duty and Duty to Notify responsibilities as per the *Environmental Protection Act 1994*, and the implications of failing to fulfil these duties.
- All staff shall be made aware of their environmental responsibilities under the EMP in relation to implementing mitigation measures, reporting environmental incidents and complaints and implementing corrective actions.
- All staff shall be given instructions on environmental emergency response procedures.

The environmental induction training should be developed prior to construction commencing.

7.1.2 Operational phase

For the operational phase, the nominated Contractor should promote the effective communication of information for both internal and external purposes. The nominated Contractor and the employees should aim to:

- Build morale, trust and encourage engagement amongst the team.
- Ensure effective discussion on health, safety and environment matters between the Contractor and the employees, and extended to sub-contractors, labour hire personnel, and any other people who work for the Contractor and are directly affected by the work health and safety matters.
- Provide open and honest external communication to key stakeholder groups and other relevant parties including surrounding community groups as applicable.
- Implement an effective complaint management procedure for all community complaints, enquiries and concerns.

7.1.2.1 Site inductions and toolbox talks

All Contractor personnel including sub-contractors will either be briefed on environmental requirements for specific construction activities or on a site-specific basis, concentrating on reinforcing practical measures. It is typical for these briefings to become a part of the Toolbox agenda. Typical topics for toolbox talks include:

- Permit conditions
- Vegetation clearing demarcations
- Refuelling plant and machinery
- Precautions to prevent sediment-laden run-off entering watercourses
- Waste management (including re-use, recycling, segregation, storage and disposal)
- Noise management measures
- Precautions for protected flora and fauna
- Wildlife care.

7.2 Monitoring

During construction and operational phases, compliance monitoring will be conducted in accordance with the requirements of EMP, as well as construction procedures, relevant legislation, licence and permit conditions and industry standards. Requirements for monitoring during the construction and operational phases of the Project are outlined in Section 6.4, and may need to be updated follow the receipt of approvals for the Project.

7.3 Reporting

7.3.1 Construction phase

Records of all environmental inspections and other relevant environmental records will be kept demonstrating environmental due diligence and compliance with this EMP. As well as conditions of approval. To demonstrate compliance the following records will be kept and provided upon request:

- Site inspections
- Non-conformance and contingency plans
- Complaints
- Environmental incidents and response actions
- Safety data sheets and chemical registers
- Waste tracking documentation
- Fauna record register
- Fauna Spotter-catcher pre-clearance and post-clearance report.

7.3.2 Operational phase

During the operational phase of the Project, records of environmental monitoring and other relevant, audits, and incidents will be kept ensuring compliance with the framework of this EMP and regulatory requirements and conditions of approval. To demonstrate compliance, the following records will be kept and provided upon request:

- All monitoring data from the site including laboratory analysis results
- Environmental incidents and response actions
- Workplace incidents and near misses and response actions
- Waste tracking documentation
- Safety data sheets and chemical registers
- Feedback and complaints received and responses
- Audits and inspections outcomes
- Operational data (quality, quantity, availability and treatment process optimisation).

7.4 Review

7.4.1 Construction phase

During the construction phase the Construction Contractor nominated by SOILCO will regularly review and (if necessary) update the EMP. The review will consider the following:

- Changes in legislative requirements (including conditions of approvals)
- Environmental performance, findings of environmental audits and inspections
- Outcomes of agency consultation
- Outcomes of consultation with communities and resolution of complaints
- Changes in external and internal policies, standards and guidelines.

7.4.2 Operational phase

Throughout the operational phase of the Project, the nominated Contractor will regularly review and (if necessary) update the EMP. The review will consider the following:

- Changes in legislative requirements (including conditions of approvals)
- Environmental performance, findings of environmental audits and inspections
- Changes in external and internal policies, standards and guidelines
- Recorded incidents and near misses
- The effectiveness of current management procedures.

8. Compliance auditing and monitoring

8.1 EMP provisions

For the environmental matters identified in Section 4, the performance and corrective actions have been outlined in Section 8.1.1 and Section 8.1.2 below. The Project Manager will be responsible for the implementation to reduce any impact to the environment. This section is broken into the construction phase and operational phase.

8.1.1 Construction phase

8.1.1.1 Inspections

The Contractor will carry out site inspections to ensure compliance with environmental obligations, task and actions outlined in this EMP. The site inspections shall be carried out by any personnel, leading hand or higher, to visually assess the compliance of the work with this EMP. The inspection shall check for each environmental element the mitigation measures which should be in place and if they are working effectively as intended. Broadly the checks should include:

- Site layout and access.
- Condition of skip bins (i.e., sufficiently covered, not over-flowing etc.).
- All materials being handled within laydown areas.
- Spill kits stocked and available.
- Management of surface water and debris within the bunded areas.

8.1.1.2 Audits

The Contractor's Environmental Representative or SOILCO Representative may conduct internal audits. The audit will focus on:

- Review of all environmental incidents and corrective actions.
- Review of inspection records.
- Implementation of this management plan.

Audit reports will be submitted to the Principal Contractor and will include the date of the audit and the timeframe that the Contractor and sub-contractors must complete any required action.

8.1.1.3 Compliance with planning and environmental approvals

During the construction phase, SOILCO will be required to comply with the relevant conditions in the planning and environmental approvals that have been secured for the Project and discussed in Section 3.

During the construction phase, SOILCO will need to consider environmental sensitive and no-go areas within the Project area. If changes are made to the footprint of the CMF, post receipt of the planning and environmental approvals then an environmental and planning review will need to be undertaken to determine if any additional approvals and/or amendments to existing approvals are required.

8.1.2 Operational phase

8.1.2.1 Inspections

The nominated Contractor for the operational phase of the Project may undertake inspections of the plant and equipment. The inspections will focus on:

- Environmental controls
- Waste storage
- Chemical storage
- Site environmental safety
- Compliance with management strategies implemented.

8.1.2.2 Audits

The nominated Contractor for the operational phase of the Project may conduct internal audits. The audits will focus on:

- Review of all environmental incidents and corrective actions
- Review of workplace incidents and corrective actions
- Implementation of this management plan
- Review of compliance with company policies and procedures, legislation and industry standards
- Review of compliance with contractual and client requirements.

8.1.2.3 Compliance with planning and environmental approvals

During the operational phase of the Project, SOILCO will be required to comply with the relevant conditions in the planning and environmental approvals that have been secured for the Project and discussed in Section 3.

During the operational phase, SOILCO will need to consider environmental sensitive areas within the Project area as shown in the figures in following technical reports:

- Terrestrial Ecology Assessment
- Aquatic Ecology Assessment
- Cultural Heritage and Native Title Duty of Care Assessment
- Stormwater Impact Assessment

If changes are made to the footprint of the CMF, post receipt of the planning and environmental approvals then an environmental and planning review will need to be undertaken to determine if any additional approvals and/or amendments to existing approvals are required.

9. Emergency planning and response

9.1 Construction phase

Emergency and incident responses will vary and be proportional to the nature of the incident. An Incident and Emergency Management Plan will be developed and implemented. The key steps involved in the managing an emergency/incident is show in SOILCO's Emergency and Incident Reporting Flow Chart in Figure 5.

The Principal Contractor will be verbally notified by the Construction Manager of an incident on the day it occurs and as soon as practicable of the responsible person becoming aware of the incident, and in writing within 24 hours.

All notifications to authorities including but not limited to the Department of the Environment, Tourism, Science and Innovation, State emergency services (police/fire/ambulance) and Department of Transport and Main Roads will be undertaken by the Principal Contractor.

In the event of an accidental hazardous material spills during construction phase for hazardous substances quantities over 200 L, the Principal Contractor will be required to undertake direct notification of Seqwater's on 1300 737 928 and email communications@seqwater.com.auoperations.

The Principal Contractor will be required to provide an Emergency Response Plan and for this plan to be thoroughly communicated to all staff members in the Construction Induction. The Emergency Response Plan should identify evacuation routes, mustering points, communication protocols and provide key contact details for local authorities and services.

When reporting environmental incidents, the following information is to be provided:

- The name and contact details of the reporting person
- The date and time the environmental incident occurred
- The activity that was being undertaken when the incident occurred
- How the incident occurred
- Any containment measures put in place to reduce or contain environmental harm
- An assessment of the amount of environmental harm that occurred
- If any other stakeholders are aware of the incident.

Environmental incidents and emergencies have been identified within Section 8. However, pro-active environmental risk management measures should be undertaken wherever possible.

Some examples of environmental risk responses are provided below in Table 40.

Table 40 Example environmental incidents and mitigation and reporting requirements

Incident	Mitigation measures	Reporting authority
Failure of erosion and sediment control devices following rainfall event or flooding	Re-instatement of erosion and sediment control devices.	SOILCO
Injury to fauna during site works	Following notification procedure as detailed in the Flora and Fauna Management Plan.	DETSI
Accidental spill of fuel or hazardous chemicals	Spills are to be isolated, stopped and contained and will be cleaned up utilising onsite spill kits	DETSI and Seqwater

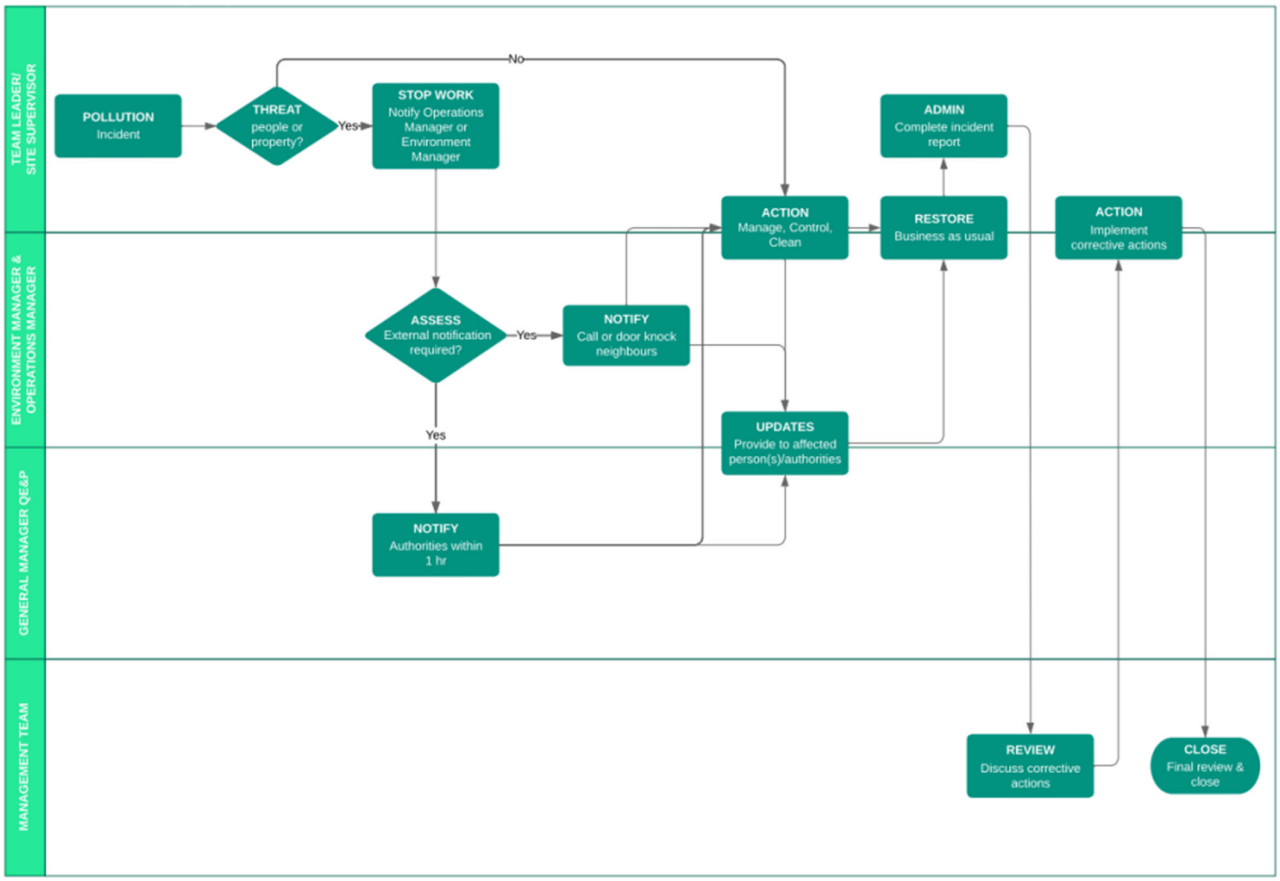

Figure 5 Example of the SOILCO's Emergency and Incident Reporting Flow Chart

9.1.1 Induction and training requirements

All personnel involved in the process shall be required to attend a compulsory site induction before commencing any work at the site. The environmental component of the induction shall include (but not be limited to) the following items:

- All staff shall be made aware of the environmental obligations and requirements, including any weeds, pests, and contamination risks
- All staff shall be made aware of waste management practices including segregation, storage, waste management and duty to report issues
- All staff shall be made aware of their environmental responsibilities under the EMP in relation to implementing mitigation measures, reporting environmental incidents and complaints, and implementing corrective actions.
- All staff to be made aware of obligations under any SOILCO procedures.
- All staff shall be given instructions on environmental emergency response procedures (i.e., spill kit locations and usage).

Task-specific training sessions covering specific topics will be undertaken on an 'as needed basis'. A training register and sign off sheets are to be maintained at the Project's office and be able to be provided to SOILCO Representatives on request.

9.1.2 Environmental incidents

An environmental incident refers to an event that has either caused or has the potential to cause damage or harm to the environment. These incidents serve as opportunities for improving or enhancing the Project's environmental performance.

For the Project, the Construction Contractor is responsible for establishing their own incident reporting and response procedure, which must be both ISO certified and compliant. The key steps involved in managing an emergency/incident is shown in SOILCO's Emergency and Incident Reporting Flow Chart in Figure 5. When an environmental incident occurs, the following general steps should be taken:

- Notification: The Principal Contractor should be promptly notified.
- Reporting: The Contractor and all sub-contractors must complete an Environmental Reporting/Incident Form.
- Immediate Action: If environmental harm becomes evident, the Principal Contractor must immediately contact the SOILCO Representative.

This process ensures effective management of environmental incidents while adhering to established standards and protocols.

9.1.3 Non-conformance

Non-conformances managed by the EMP shall include the following:

- An incident or near-miss with potential or actual environmental impact
- Complaints regarding Project activities
- Not meeting an objective or target
- Management review not being undertaken.

The Principal Contractor shall be responsible for identifying, reporting/record and implementing any preventative and/or corrective actions in response to any non-conformance. Preventative and corrective actions shall be incorporated into the EMP as required.

9.2 Operational phase

For the operational phase, an incident and emergency management plan will be developed by the SOILCO. The plan is intended to provide guidance to the operations team on:

- The correct response to incidents that occur on, or near to the Project area
- The reporting requirements to support external but relevant plans
- The various aspects of incident management before, during and after any incident that may occur on or around the Project area
- Help reduce the impact of incidents on personnel, clients and customers, the community, the environment, sites, assets and systems.

The plan in anticipated to include the following contents:

- Incident Definition, Classification and Notification
- Incident and Emergency Management Response
- Incident Management Team
- Incident Management Actions
- Incident Communication Protocol
- Incident De-escalation and Recovery
- Incident Investigation

- Incident Prevention and Preparedness.

The key steps involved in managing an emergency/incident is shown in SOILCO's Emergency and Incident Reporting Flow Chart in Figure 5. The operator will be verbally notified by the Environmental Manager of an incident on the day it occurs and as soon as practicable of the responsible person becoming aware of the incident, and in writing within 24 hours.

All notifications to authorities including but not limited to the Department of the Environment, Tourism, Science and Innovation, State emergency services (police/fire/ambulance) and Department of Transport and Main Roads will be undertaken by the Principal Contractor.

In the event of an accidental hazardous material spills during construction phase for hazardous substances quantities over 200 L, the operator will be required to undertake direct notification to Seqwater on 1300 737 928 and email communications@seqwater.com.auoperations.

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11. Appendices

Appendix A SOILCO's Environmental Policy

BioBlue AdBlue®

BioBlue Australia Pty Ltd

Chemwatch Hazard Alert Code: **2**

Chemwatch: **5650-55**
Version No: **3.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **15/03/2024**
Print Date: **17/03/2024**
S.GHS.AUS.EN.E

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	BioBlue AdBlue®
Chemical Name	Not Applicable
Synonyms	BioBlue AdBlue®; AUS32; Aqueous Urea Solution 32.5%;; Diesel Exhaust Fluid (DEF).; ® = Registered trademark of the Verband der Automobilindustrie e. V. (VDA)
Chemical formula	Not Applicable
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Reactant for reducing NOx-emissions for use in Selective Catalytic Reduction (SCR) fitted diesel engines. Use according to manufacturer's directions.

Details of the manufacturer or supplier of the safety data sheet

Registered company name	**BioBlue Australia Pty Ltd**
Address	180a Cavan Road DRY CREEK SA 5094 Australia
Telephone	1300 211 007
Fax	Not Available
Website	www.bioblue.com.au
Email	sales@bioblue.com.au

Emergency telephone number

Association / Organisation	**Poisons Information Centre**
Emergency telephone numbers	131 126
Other emergency telephone numbers	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Page 1 continued...

Poisons Schedule	Not Applicable
Classification [1]	Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2A, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
Signal word	**Warning**

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s) Prevention

P271	Use only outdoors or in a well-ventilated area.
P261	Avoid breathing mist/vapours/spray.
P264	Wash all exposed external body areas thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves, protective clothing, eye protection and face protection.

Precautionary statement(s) Response

P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330	Rinse mouth.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.

Precautionary statement(s) Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

Continued...

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
57-13-6	31.8-33.2	urea
7732-18-5	<67.5	water

Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ‣ Wash out immediately with fresh running water. ‣ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ‣ Seek medical attention without delay; if pain persists or recurs seek medical attention. ‣ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ‣ Immediately remove all contaminated clothing, including footwear. ‣ Flush skin and hair with running water (and soap if available). ‣ Seek medical attention in event of irritation.
Inhalation	‣ If fumes or combustion products are inhaled remove from contaminated area. ‣ Lay patient down. Keep warm and rested. ‣ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ‣ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ‣ Transport to hospital, or doctor, without delay.
Ingestion	‣ **IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.** ‣ For advice, contact a Poisons Information Centre or a doctor. ‣ Urgent hospital treatment is likely to be needed. ‣ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition. ‣ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist. ‣ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. **Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:** ‣ **INDUCE** vomiting with fingers down the back of the throat, **ONLY IF CONSCIOUS**. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. **NOTE:** Wear a protective glove when inducing vomiting by mechanical means.

Continued...

Indication of any immediate medical attention and special treatment needed

As in all cases of suspected poisoning, follow the ABCDEs of emergency medicine (airway, breathing, circulation, disability, exposure), then the ABCDEs of toxicology (antidotes, basics, change absorption, change distribution, change elimination).
For poisons (where specific treatment regime is absent):

BASIC TREATMENT

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 L/min.
- Monitor and treat, where necessary, for pulmonary oedema.
- Monitor and treat, where necessary, for shock.
- Anticipate seizures.
- **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994
Treat symptomatically.

SECTION 5 Firefighting measures

Extinguishing media

The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.
Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.
In such an event consider:

- foam.
- dry chemical powder.
- carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	- Alert Fire Brigade and tell them location and nature of hazard. - Wear breathing apparatus plus protective gloves in the event of a fire. - Prevent, by any means available, spillage from entering drains or water courses. - Use fire fighting procedures suitable for surrounding area. - **DO NOT** approach containers suspected to be hot. - Cool fire exposed containers with water spray from a protected location.

Continued...

	‣ If safe to do so, remove containers from path of fire. ‣ Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	‣ The material is not readily combustible under normal conditions. ‣ However, it will break down under fire conditions and the organic component may burn. ‣ Not considered to be a significant fire risk. ‣ Heat may cause expansion or decomposition with violent rupture of containers. ‣ Decomposes on heating and may produce toxic fumes of carbon monoxide (CO). ‣ May emit acrid smoke. Decomposes on heating and produces toxic fumes of: carbon dioxide (CO_2) nitrogen oxides (NOx) other pyrolysis products typical of burning organic material. May emit poisonous fumes. May emit corrosive fumes.
HAZCHEM	Not Applicable

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	‣ Clean up all spills immediately. ‣ Avoid breathing vapours and contact with skin and eyes. ‣ Control personal contact with the substance, by using protective equipment. ‣ Contain and absorb spill with sand, earth, inert material or vermiculite. ‣ Wipe up. ‣ Place in a suitable, labelled container for waste disposal.
Major Spills	Moderate hazard. ‣ Clear area of personnel and move upwind. ‣ Alert Fire Brigade and tell them location and nature of hazard. ‣ Wear breathing apparatus plus protective gloves. ‣ Prevent, by any means available, spillage from entering drains or water course. ‣ Stop leak if safe to do so. ‣ Contain spill with sand, earth or vermiculite. ‣ Collect recoverable product into labelled containers for recycling. ‣ Neutralise/decontaminate residue (see Section 13 for specific agent). ‣ Collect solid residues and seal in labelled drums for disposal. ‣ Wash area and prevent runoff into drains. ‣ After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. ‣ If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	‣ Avoid all personal contact, including inhalation.

Continued...

- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- **DO NOT** enter confined spaces until atmosphere has been checked.
- **DO NOT** allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, **DO NOT** eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this SDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
- **DO NOT** allow clothing wet with material to stay in contact with skin

Shelf life: AdBlue® has a shelf life of 12 months when stored in typical Australian conditions, at constant ambient storage temperatures <30 degrees Celsius. Store AdBlue® in a cool, well-ventilated area. Keep away from heat and direct sunlight. Constant ambient storage temperature of the product should not exceed 30 degrees Celsius. Care should be taken to prevent contamination of AdBlue® fluid by dust, dirt, grime, oils, fuels, or other foreign materials. Keep containers tightly closed. Regularly inspect storage vessels and dispensing equipment for contaminating matter. Contamination of AdBlue® may cause damage to vehicle SCR systems. Constant ambient storage temperature (°C): <10, >25, <30,<35, >35 Minimum Shelf Life (months): 36, 18, 12, 6, Significant loss of shelf life, re-test according to ISO 22241-1:2019 before use. *To prevent decomposition of AdBlue®, prolonged transportation or storage above 25 °C should be avoided. For more information of shelf life, refer to ISO 22241-3. For more information of shelf life, refer to ISO 22241-3:2017. [Manufacturer]

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storage and handling recommendations contained within this SDS.

Other information

BioBlue AdBlue® fulfills quality standards as per ISO-22241-1:2019.

Property	Unit	Minimum Limit	Maximum Limit	Test Methods
Urea content	% (mass fraction)	31,8	33,2	ISO 22241-2:2019-2, Annex B ISO 22241-2:2019, Annex C
Refractive Index at 20°C	-	1,381 4	1,384 3	ISO 22241-2:2019, Annex C
Alkalinity as NH3	% (mass fraction)	-	0,2	ISO 22241-2:2019, Annex D
Biuret	% (mass fraction)	-	0,3	ISO 22241-2:2019, Annex E
Aldehydes	mg/kg	-	5	ISO 22241-2:2019, Annex F
Insoluble matter	mg/kg	-	20	ISO 22241-2:2019, Annex G

Continued...

	Phosphate (PO4)	mg/kg	-	0,5	ISO 22241-2:2019, Annex H ISO 22241-2:2019, Annex I
	Aluminium	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Calcium	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Chromium	mg/kg	-	0,2	ISO 22241-2:2019, Annex I
	Copper	mg/kg	-	0,2	ISO 22241-2:2019, Annex I
	Iron	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Potassium	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Magnesium	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Sodium	mg/kg	-	0,5	ISO 22241-2:2019, Annex I
	Nickel	mg/kg	-	0,2	ISO 22241-2:2019, Annex I
	Zinc	mg/kg	-	0,2	ISO 22241-2:2019, Annex I

Conditions for safe storage, including any incompatibilities

Suitable container	Bulk fluid, Intermediate Bulk Containers (IBCs), Drums, small-volume containers. ‣ Polyethylene or polypropylene container. ‣ Packing as recommended by manufacturer. ‣ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	To prevent AdBlue® contamination and corrosion of storage vessels and/or dispensing equipment, all materials in direct contact with AdBlue® during handling, transportation and storage must be composed of compatible materials. AdBlue® Compatible Materials: Stainless steel 304, 304L, 316 and 316L. Titanium. Ni-Mo-Cr-Mn-Cu-Si-Fe allows, Hastelloy c/c-276. Polyethylene, free of additives. Polypropylene, free of additives. Polyisobutylene, free of additives. Perfluoroalkoxyl alkane (PFA), free of additives. Polyfluoroethylene (PPE), free of additives. Polyvinylidenefluoride (PVDF), free of additives. Polytetrafluoroethylene (PTFE), free of additives. Copolymers of vinylidenefluoride and hexafluoropropylene, free of additives. Examples of materials not compatible with AdBlue®: Materials forming compounds as a result of reaction with ammonia, which may negatively interfere with the SCR converter system: carbon steels, zinc coated carbon steels, mild iron. Non-ferrous metals and alloys: copper, copper alloys, zinc, lead Solders containing lead, silver, zinc, or copper. Aluminium, aluminium alloys. Magnesium, magnesium alloys. Plastics or metals coated with nickel, coated either electrochemically or chemically. For more information on material compatibility, refer to ISO-22241-3:2017. [Manufacturer] Urea: ‣ forms anhydrous ammonia and nitrous vapours on contact with hot surfaces ‣ reacts violently with strong oxidisers, chlorine, inorganic chlorides, chlorites, chromyl chloride, dichromates, dicyanofurazan, fluorine, gallium perchlorate, hydrogen peroxide, lead dioxide, nitrates, nitrites, permanganates, perchlorates, titanium tetrachloride, triethylenetetramine ‣ ignites or explodes on reaction with ammonium nitrate, chromyl chloride, nitrosyl perchlorate, phosphorus pentachloride

Continued...

	‣ may form highly explosive nitrogen trichloride on contact with hexanitroethane, perchloryl fluoride, sodium perchlorate, trichloroisocyanuric acid, hypochlorites and other chlorinating agents ‣ is incompatible with oxalic acid, sodium dichlorocyanurate

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
urea	30 mg/m3	280 mg/m3	1,700 mg/m3

Ingredient	Original IDLH	Revised IDLH
urea	Not Available	Not Available
water	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
urea	E	≤ 0.01 mg/m³
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)

Continued...

	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) — 1-2.5 m/s (200-500 f/min.) grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion) — 2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Individual protection measures, such as personal protective equipment

Eye and face protection

- Safety glasses with side shields.
- Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

Skin protection

See Hand protection below

Hands/feet protection

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity

Continued...

	Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent). · When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. · When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. · Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use. · Contaminated gloves should be replaced. As defined in ASTM F-739-96 in any application, gloves are rated as: · Excellent when breakthrough time > 480 min · Good when breakthrough time > 20 min · Fair when breakthrough time < 20 min · Poor when glove material degrades For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended. It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times. Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task. Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example: · Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of. · Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Body protection	See Other protection below
Other protection	‣ Overalls. ‣ P.V.C apron. ‣ Barrier cream. ‣ Skin cleansing cream. ‣ Eye wash unit.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
BioBlue AdBlue®

Material	CPI
BUTYL	A
NEOPRENE	A
VITON	A
NATURAL RUBBER	C
PVA	C

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator

Continued...

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Ansell Glove Selection

Glove — *In order of recommendation*
AlphaTec 02-100
AlphaTec® Solvex® 37-185
AlphaTec® 38-612
AlphaTec® 58-008
AlphaTec® 58-530B
AlphaTec® 58-530W
AlphaTec® 58-735
AlphaTec® 79-700
AlphaTec® Solvex® 37-675
DermaShield™ 73-711

The suggested gloves for use should be confirmed with the glove supplier.

up to 10	1000	A-AUS / Class1	-
up to 50	1000	-	A-AUS / Class 1
up to 50	5000	Airline *	-
up to 100	5000	-	A-2
up to 100	10000	-	A-3
100+			Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear colourless liquid; mixes with water. Hydrophilic (aqueous solution).

Physical state	Liquid	**Relative density (Water = 1)**	Not Available
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Available	**Taste**	Not Available

Continued...

Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Available	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water	Miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	‣ Unstable in the presence of incompatible materials. ‣ Product is considered stable. ‣ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Not normally a hazard due to non-volatile nature of product
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Urea may cause irritation to the digestive tract, nausea, vomiting, diarrhoea, salt depletion, headache and confusion.
Skin Contact	The material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. Urea is a common ingredient of skin ointment and acts to soften dry scaly skin. Prolonged skin contact may cause stinging sensation, irritation and skin inflammation in some people. High doses in clinical application has caused nausea and vomiting.
Eye	This material can cause eye irritation and damage in some persons.
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Substance accumulation, in the human body, may occur and may cause some concern following

Continued...

	repeated or long-term occupational exposure. Urea is a body metabolic waste but high exposure to it was reported to cause emphysema, disturbances in protein metabolism and chronic weight loss. However skin exposure of rats produced no reddening but low brain and prostate weights were recorded. It should be avoided in those with kidney or liver impairment.

BioBlue AdBlue®	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
urea	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: 8200 mg/kg[2]	Eye: no adverse effect observed (not irritating)[1]
	Oral (Rat) LD50: 8471 mg/kg[2]	Skin (human): 22 mg/3 d (I)- mild
		Skin: no adverse effect observed (not irritating)[1]
water	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: >90000 mg/kg[2]	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

UREA	Altered sleep time, change in motor activity, antipsychosis, dyspnea, methaemoglobinaemia, convulsions, lymphomas recorded. Carcinogenic by RTECS criteria. Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production. Based on laboratory and animal testing, exposure to the material may result in irreversible effects and mutations in humans. The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. For urea: Urea is used in ointments and creams to treat dry skin. Long-term follow-up studies have indicated that the substance does not cause allergy, and is virtually free from side effects. It is usually tolerated well, although diarrhea is sometimes reported after ingestion of very large amounts (60-90 grams/day). There is the possibility that infection of H. pylori in the human stomach may aggravate local effects by urea because of the generation of ammonia. Acute toxicity: Animal testing shows that the acute toxicity of urea is low. Repeated dose toxicity: No well-conducted repeated dose toxicity studies were located. Tests involving the skin on animals suggested low toxicity. Reproductive and developmental toxicity: No adequate data exists regarding the reproductive/developmental toxicity of urea. Genetic toxicity: Urea has been negative in several appropriately conducted tests on bacteria to assess mutation-causing potential. In mammals, it causes chromosomal aberrations only at concentrations much higher than the physiological range.

Continued...

WATER	No significant acute toxicological data identified in literature search.

Acute Toxicity	✔	**Carcinogenicity**	✘
Skin Irritation/Corrosion	✔	**Reproductivity**	✘
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✘
Mutagenicity	✘	**Aspiration Hazard**	✘

Legend: ✘ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

SECTION 12 Ecological information

Toxicity

BioBlue AdBlue®

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

urea

Endpoint	Test Duration (hr)	Species	Value	Source
ErC50	72h	Algae or other aquatic plants	24541.9mg/l	2
EC50	48h	Crustacea	3910mg/l	4
EC50	72h	Algae or other aquatic plants	24541.9mg/l	2
NOEC(ECx)	5040h	Fish	>=1.71mg/l	2
LC50	96h	Fish	4.65-8.48mg/l	4

water

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

For Urea: log Kow: -2.97 to -2.26; Henry's Law Constant: 4.4E-8 atm m3/mol. Urea is essentially non-volatile in solid form.
Atmospheric Fate: Urea will not evaporate from water to the atmosphere and is expected to be readily degraded by reactions with photochemically produced hydroxyl radicals; half-life is expected to be less than 1 day. Degradation of urea to ammonia causes NH3-emissions to the air.
Terrestrial Fate: The highest environmental exposure for urea is via fertilizer when 85 - 90% of urea is incorporated into the soil. Urea will hydrolyze into ammonium in a matter of days to several weeks. Urea is relatively leachable from the soil into surface water and groundwater especially if the soil surface is saturated with water.
Aquatic Fate: Urea is very soluble in water and may rapidly biodegrade to a moderate extent. Urea is not expected to evaporate significantly. Urea can be leached relatively easily into the surface water and the groundwater. Degradation products (e.g. nitrate, nitrite and ammonium) can be measured after urea has undergone biodegradation.
Ecotoxicity: Urea is not likely to undergo bioaccumulation and generally has low acute ecotoxicity to organisms. The degradation product of urea, ammonia, is known to be toxic to all vertebrates; however, in neutral and acidic conditions, ammonia exists in the form of the ammonium ion. Urea may directly influence eutrophication in the environment and there is a pollution risk to groundwater when urea is used as a fertilizer, and a deicing agent at airports. Ecosystems may be affected following long-term use of urea in the

Continued...

control of soil acidification and by ammonia emissions to air.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
urea	LOW	LOW
water	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
urea	LOW (BCF = 10)

Mobility in soil

Ingredient	Mobility
urea	LOW (Log KOC = 4.191)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	‣ Containers may still present a chemical hazard/ danger when empty. ‣ Return to supplier for reuse/ recycling if possible. Otherwise: ‣ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ‣ Where possible retain label warnings and SDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: ‣ Reduction ‣ Reuse ‣ Recycling ‣ Disposal (if all else fails) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. ‣ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ‣ It may be necessary to collect all wash water for treatment before disposal. ‣ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ‣ Where in doubt contact the responsible authority. ‣ Recycle wherever possible. ‣ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ‣ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material). ‣ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Continued...

SECTION 14 Transport information

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
urea	Not Available
water	Not Available

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
urea	Not Available
water	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

urea is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

water is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

Additional Regulatory Information

Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (urea; water)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes

Continued...

National Inventory	Status
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date	15/03/2024
Initial Date	14/03/2024

SDS Version Summary

Version	Date of Update	Sections Updated
2.1	14/03/2024	Physical and chemical properties - Appearance, Composition / information on ingredients - Ingredients, Handling and storage - Storage (storage incompatibility), Handling and storage - Storage (storage requirement), Identification of the substance / mixture and of the company / undertaking - Supplier Information, Name
3.1	15/03/2024	Handling and storage - Storage (storage requirement)

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

- PC—TWA: Permissible Concentration-Time Weighted Average
- PC—STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit。
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL: No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index

Continued...

- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration

- AIIC: Australian Inventory of Industrial Chemicals
- DSL: Domestic Substances List
- NDSL: Non-Domestic Substances List
- IECSC: Inventory of Existing Chemical Substance in China
- EINECS: European INventory of Existing Commercial chemical Substances
- ELINCS: European List of Notified Chemical Substances
- NLP: No-Longer Polymers
- ENCS: Existing and New Chemical Substances Inventory
- KECI: Korea Existing Chemicals Inventory
- NZIoC: New Zealand Inventory of Chemicals
- PICCS: Philippine Inventory of Chemicals and Chemical Substances
- TSCA: Toxic Substances Control Act
- TCSI: Taiwan Chemical Substance Inventory
- INSQ: Inventario Nacional de Sustancias Químicas
- NCI: National Chemical Inventory
- FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

end of SDS