

BEAUDESERT BOONAH ROAD

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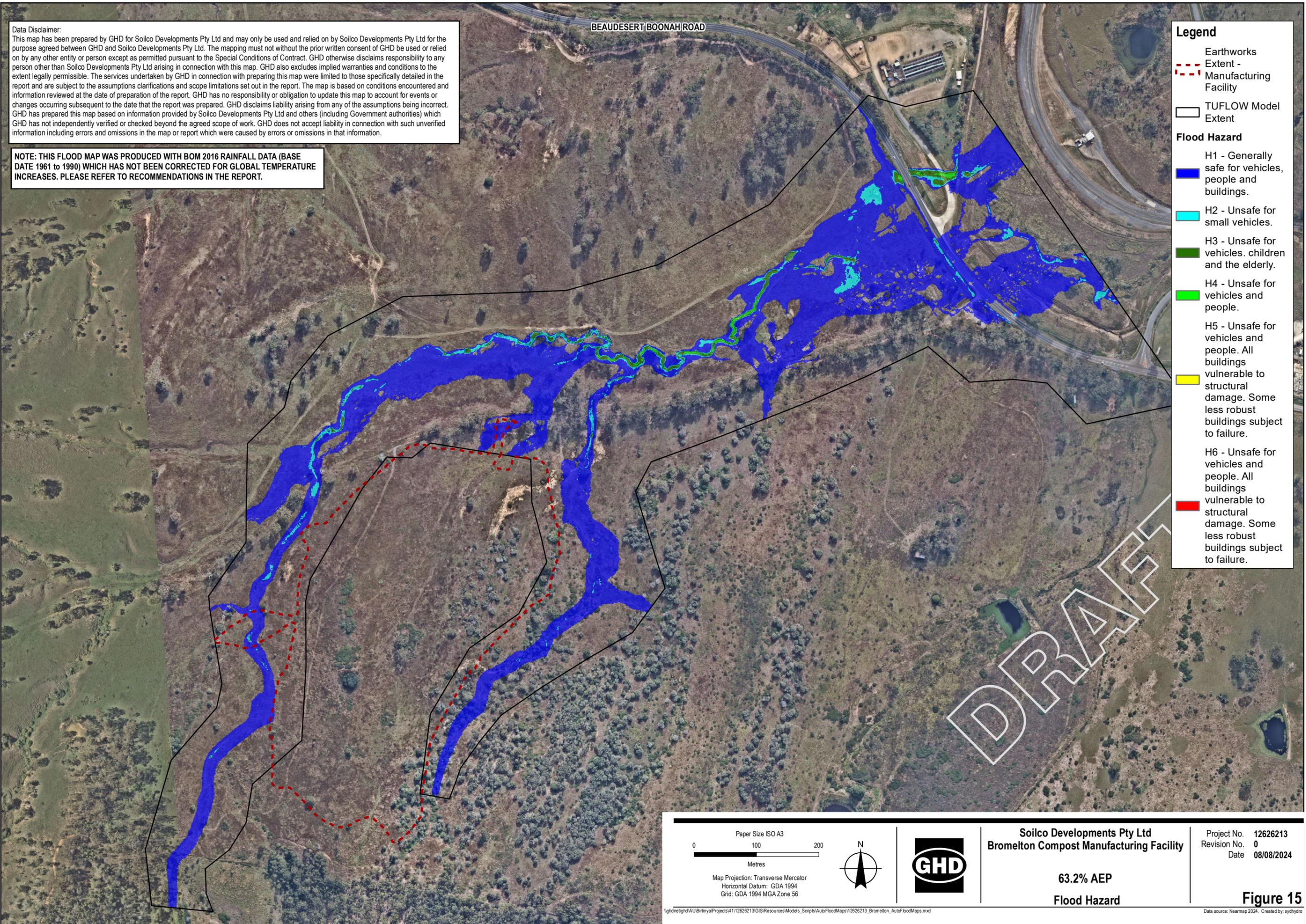
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Legend

- Earthworks
- Extent - Manufacturing Facility
- TUFLOW Model Extent

Flood Hazard

- H1 - Generally safe for vehicles, people and buildings.
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DRAFT

Paper Size ISO A3 0 100 200 Metres Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56			Soilco Developments Pty Ltd Bromelton Compost Manufacturing Facility 63.2% AEP Flood Hazard	Project No. 12626213 Revision No. 0 Date 08/08/2024
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Figure 15

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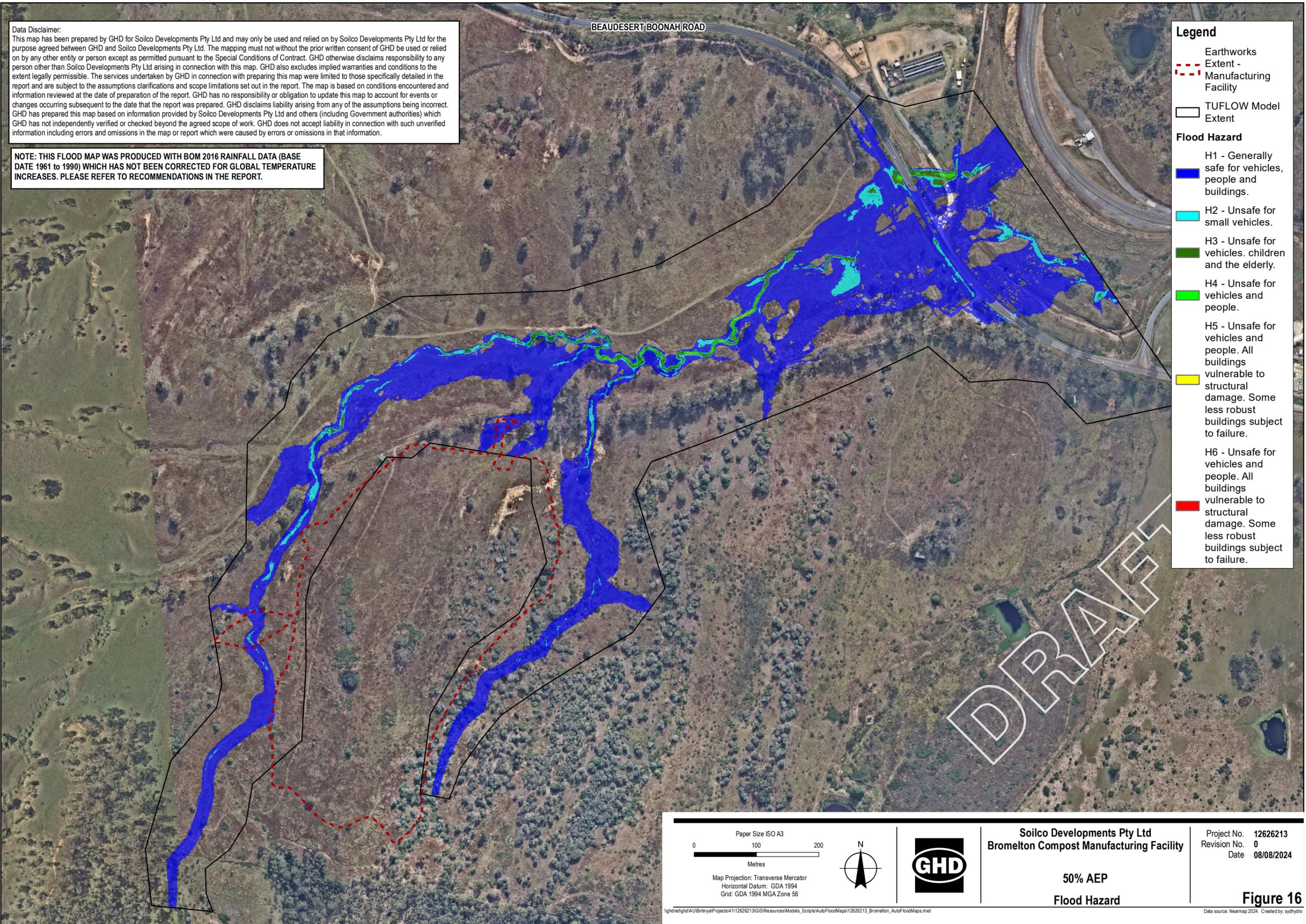
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Paper Size ISO A3

0 100 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Soilco Developments Pty Ltd
Bromelton Compost Manufacturing Facility

50% AEP
Flood Hazard

Project No. 12626213
Revision No. 0
Date 08/08/2024

Figure 16

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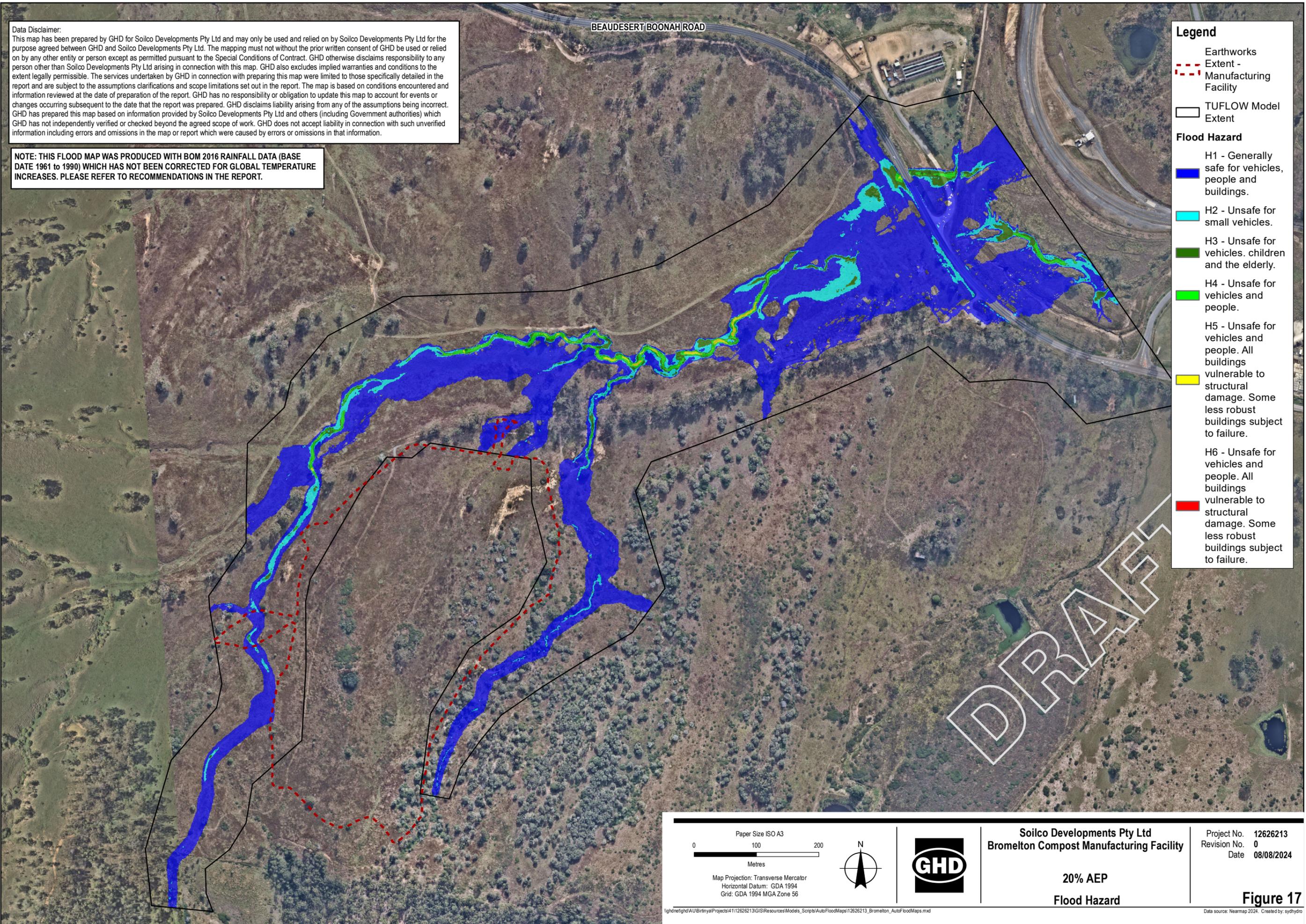
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Figure 17

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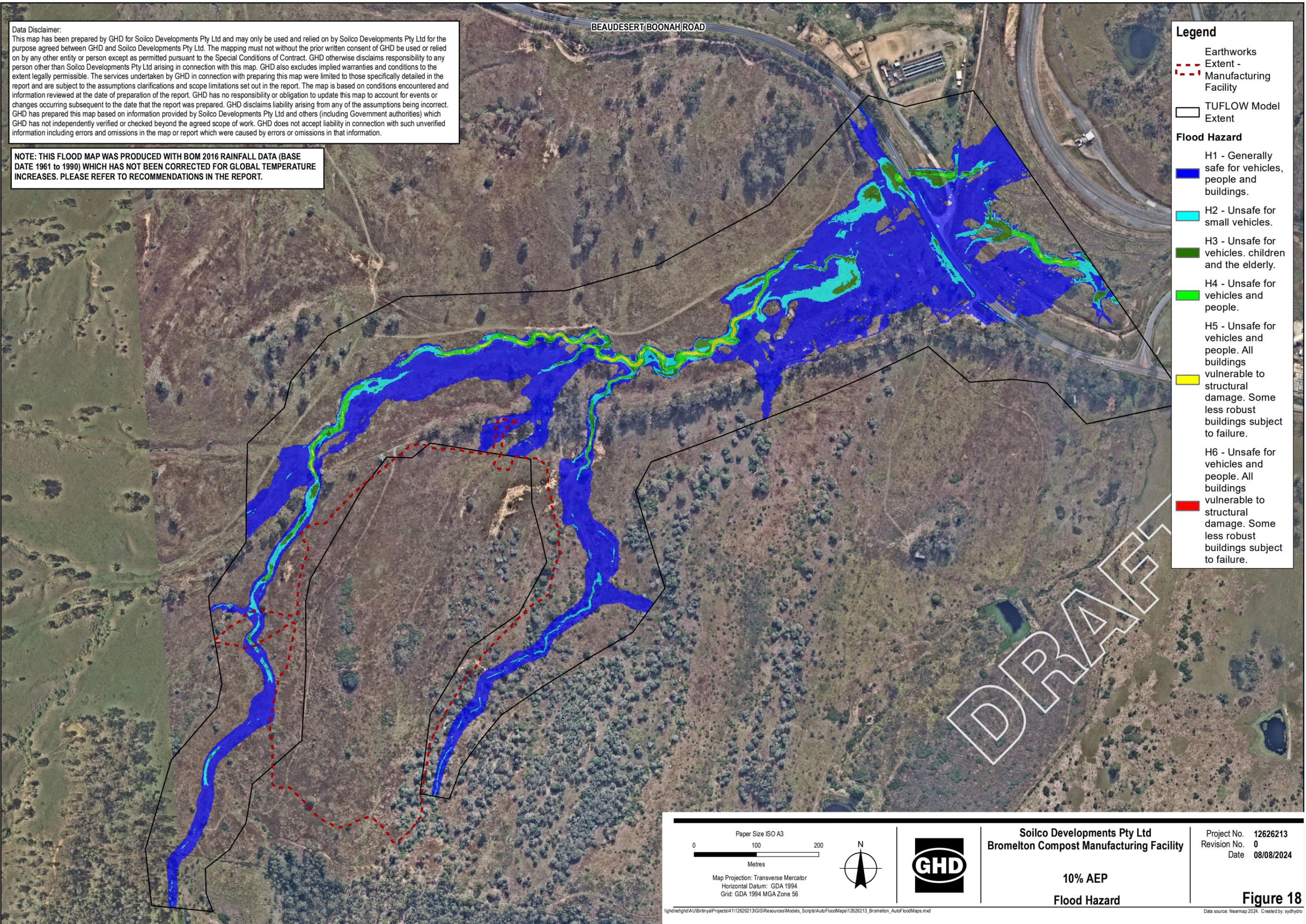
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			<p>10% AEP Flood Hazard</p>	<p>Figure 18</p> <p><small>Data source: Nearmap 2024. Created by: sydhro</small></p>

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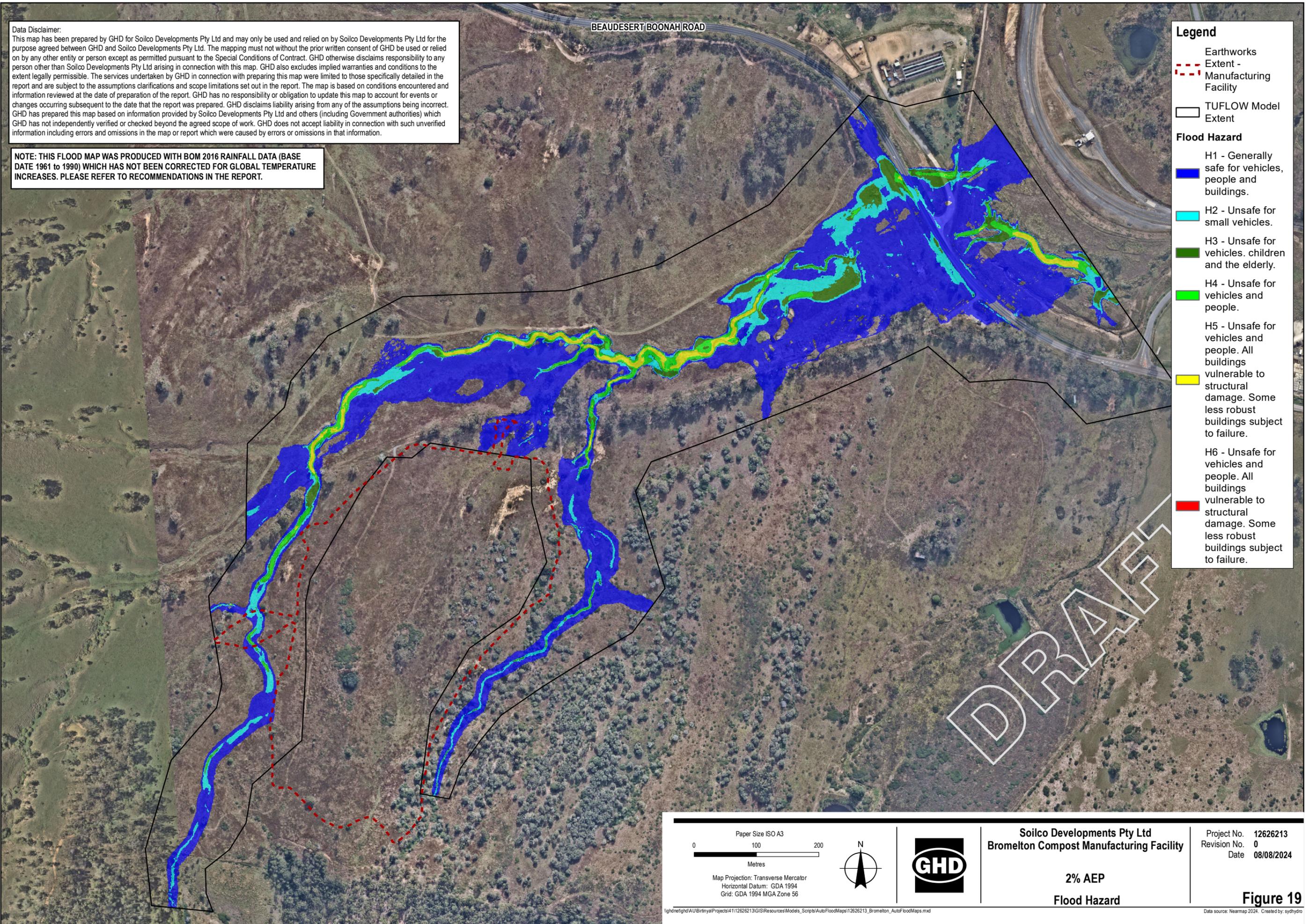
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Figure 19

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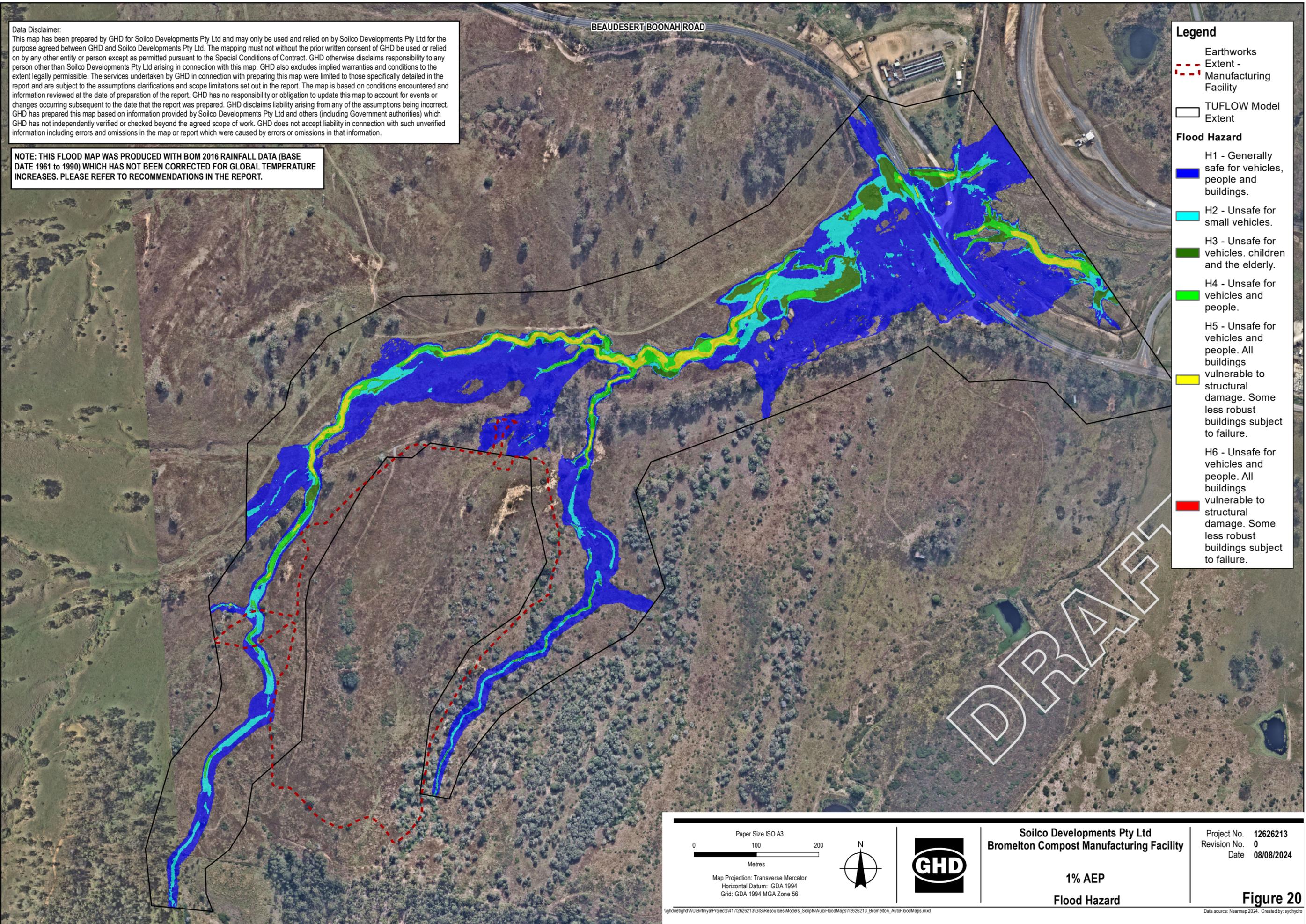
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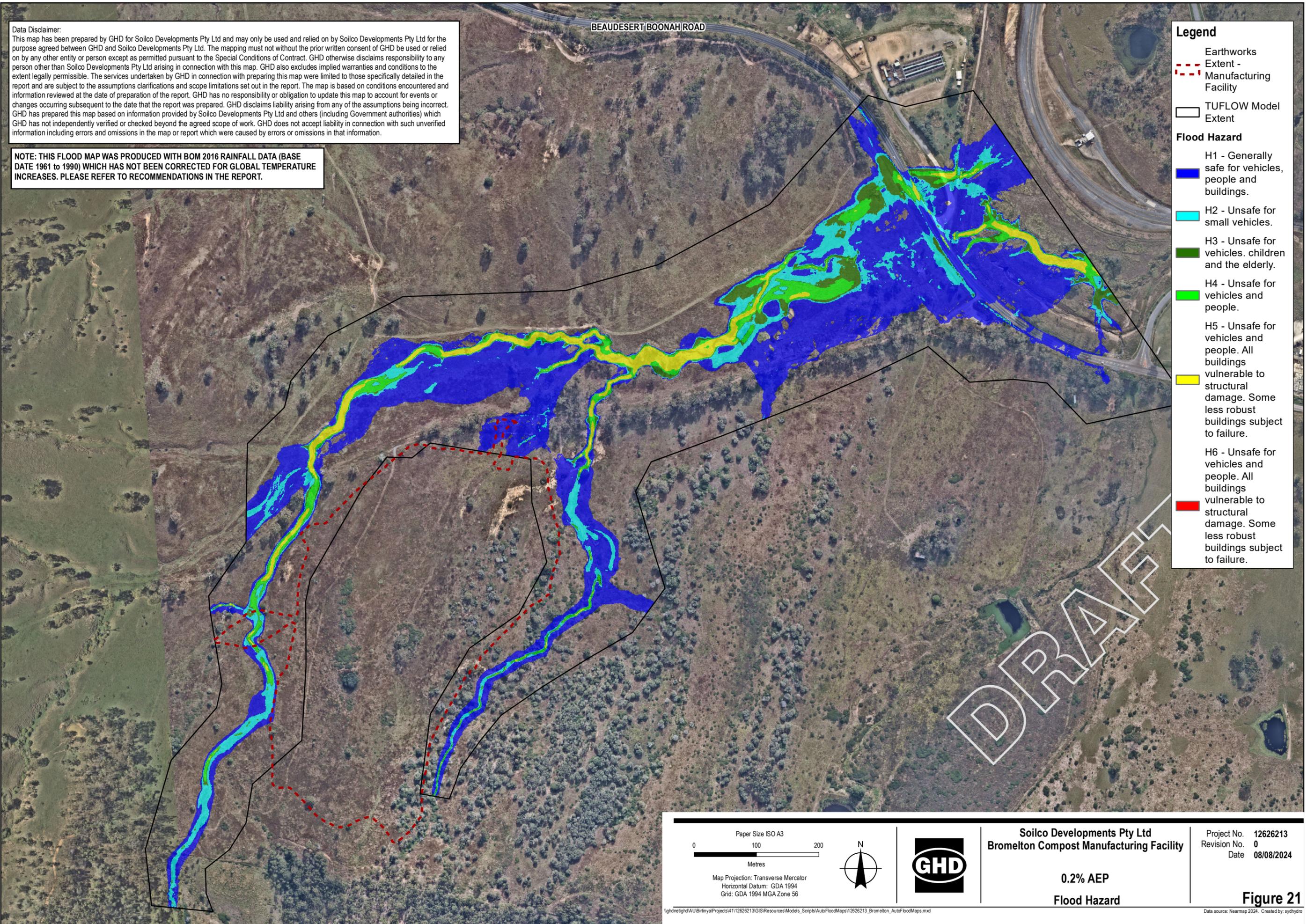
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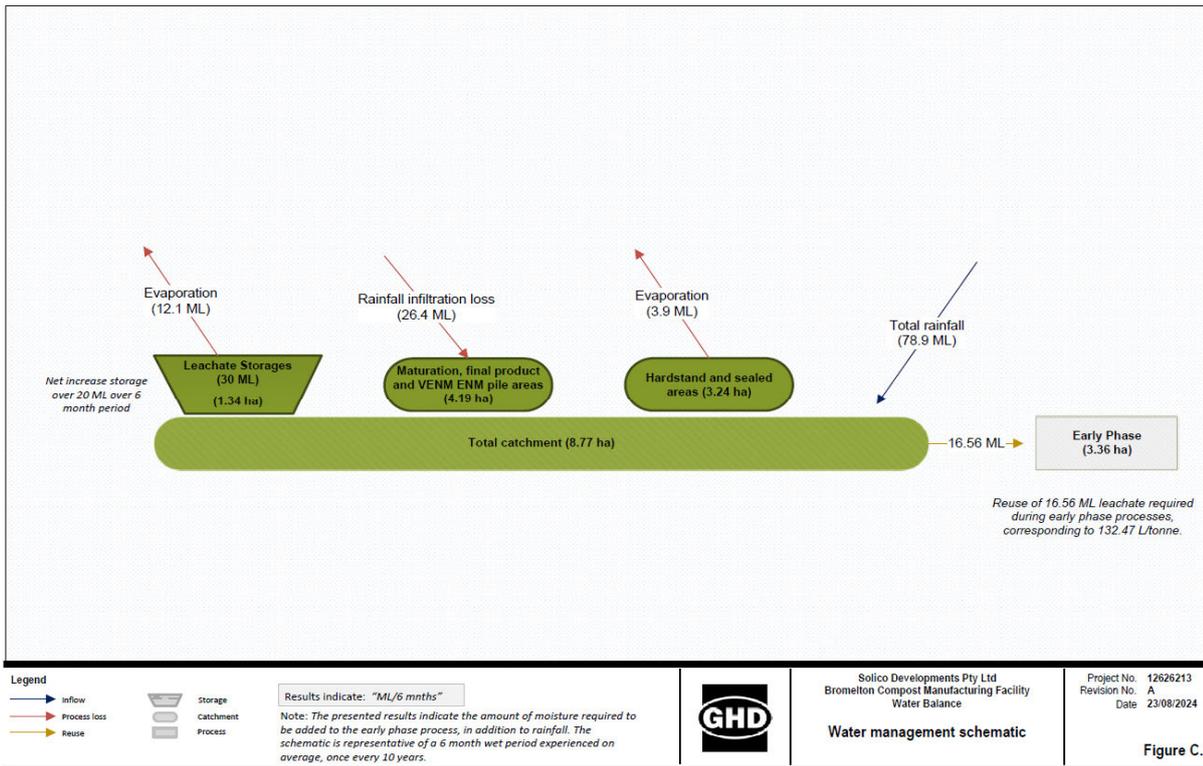
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			<p>0.2% AEP Flood Hazard</p>	<p>Figure 21</p> <p><small>Data source: Nearmap 2024. Created by: sydhro</small></p>

Appendix C

Preliminary Water Balance

Extent of Water Balance Calculation

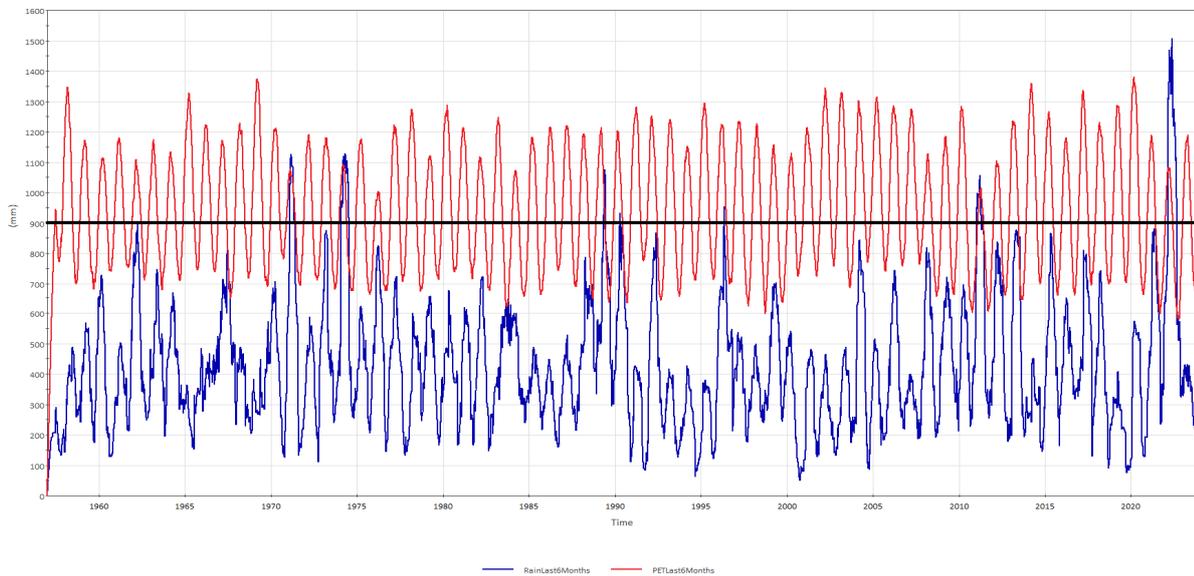
The water balance extent is conceptualised in Figure C.1. The extent of the water balance was selected such that the result of the calculation would be the amount of moisture required to be added to the early phase process, in addition to rainfall.



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Climate

6 Month rolling total rainfall and potential evaporation indicated below
 900 mm - rain in 6 months experienced on average once every 10 years
 900 mm - realistic estimate of potential evaporation over 6 month period



Catchment

Leachate catchment areas provided by SOILCO
hectares

- 12.13 total leachate catch
- 3.3642 Early phase - actual pile areas
- 4.1888 Maturation, final product and venm enm - actual pile areas
- 1.34 Leachate Dams
- 3.237 Hardstand and sealed

8.7658 leachate catch excluding early phase piles = the area of the balance calculation

Rainfall

78.9 ML/6months - rainfall on balance area in 6 month period [Rain x area of balance calculation]

Evaporation from Leachate Dams

13,400 m² - combined leachate dam areas
12.1 ML/6months - evaporation loss over 6 months [Evaporation area x evaporation depth]

Evaporation from rainwater on hardstand pad surfaces

Well graded engineered surface, would generally be dry, with evaporation only for brief periods after each rain event

120 mm - assume 60 rainy days over 6 month period and 2mm evaporation each event
32,370 m² - hardstand areas within leachate catchment
3.9 ML/6months - evap from hardstand [evap depth x area]

Loss of rainwater into Maturation Final Product and VENM/ENM piles

41,888 m² - pile areas
70% Loss factor - assume % loss of total rain on piles. Iterated based on site experience and also based on a realistic % moisture addition the piles can accommodate
26.4 ML/6months - loss of rainwater into piles [Rain depth x pile area x loss factor]

Increase in water in leachate dams between start and end of period

30 ML - dam(s) capacity
10 ML - assumed starting volume
20 ML/6months - of storage filled up during the 6 month period

Net loss of water required from the water balance extent to the early phase piles

16.56 ML/6months [Rainfall volume - Evaporation from dams - Evaporation from hardstand - Loss to Mat/prod/venm/enm piles - Increase in water in leachate dams]

Incoming Rate of early phase

250,000 tpa - early phase
125,000 tonnes/6months
4,808 tonnes/week

Net loss of water required to early phase by tonne incoming

132.47 L/tonne [Water loss required/Tonnes incoming]

Average water demand advised by SOILCO

566,538 L/Week leachate demand [SOILCO provided]
158,635 L/Week leachate generated [SOILCO Provided]
407,903 L/Week water applied to piles that is not recirculated leachate [Leachate demand - Leachate generated]

Average water applied to early phase piles by tonne incoming

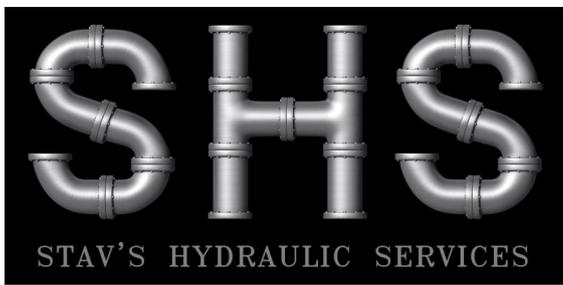
85 L/tonne [Water applied/Tonnes incoming]

Factor of wet period disposal requirement over average period demand

156% [L/tonne of loss required divided by L/tonne of average water applied]

Appendix D

Wastewater Assessment



STAV'S HYDRAULIC SERVICES
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0402 303 599

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:	P1
Date Issued:	18-Jul-24
Author:	Stephen Stavrinou

1. Contents

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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	1,192,790m ²
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	Nil
Embankments	Nil
Buildings	Nil
Site Exposure	Full Sunlight
Boundaries	Sufficient
Landscape Description	Waxing Divergent
Diversion / Retention Mound	Nil
Ground Water Cut off drains	Nil
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 (m ²)	220 m ²	Adopt	220 m ²

Bod5 Applied	
Bod5 Applied 10mg / litre/ day	2.409 kg/year
Soil Absorption Only	0.05kg / m ² / year
Minimum land Application Area	48.18 m ²

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	<u>Botanical Name</u>	Common Name
Ground cover / grasses / clumping	Belechnum SPP	Water ferns
	Lomandra Longiflora	Matt rush
	Themeda Triandra	Kangaroo grass
	Viola Hederacea	Native violet
	Dianella Caurulea	Paroo lily
	Gahnia SPP	Sword grass
Vines	<u>Cissus Antarctica</u>	Kangaroo vine
	Cissus Hypoglauca	Water vine
	Hibbertia Scandens	Guinea flower
Shrubs	<u>Callistemon Pachyphyllus</u>	Swamp callistemon
	Callistemon Salignus	Pink tips
	Leptospermum Speciosum	Coastal tea tree
	Leptospermum Flavescens	Weeping tea tree
	Melastoma Affine	Native lasiandra
Small Trees	<u>Melicope Elleryana</u>	Corkwood
	Melaleuca Thymifolia	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

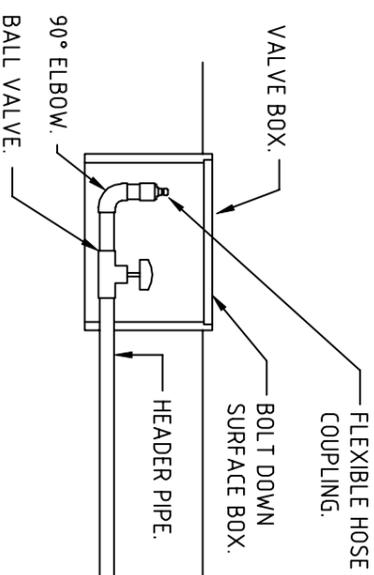


LOCATION PLAN

NOT TO SCALE

ISSUE	AMENDMENT	DATE	CLIENT:	CONSULTANT:	PROJECT:	TITLE:	PROJECT No.	DRAWING No.	ISSUE No.
P1	PRELIMINARY ISSUE	18.07.2024	SOILCO C/o ACS ENGINEERS	 STAV'S HYDRAULIC SERVICES	SITE & SOIL EVALUATION REPORT LOT 4 ON RP85497 MITCHELL ROAD BROMELTON 4285	HYDRAULIC SERVICES COVER SHEET & LOCATION PLAN	ACCS31	H101	P1
DESIGNER: STEPHEN STAVRINOU QBCC 15061807				07 5623 4177 www.stavs.com.au shs@stavs.com.au PO Box 529, Jimboomba, Qld					

- GENERAL**
- 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.
 - THESE PLANS SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL AND RELEVANT SERVICES PLANS AND SPECIFICATIONS
 - 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.
 - ARRANGE & APPLY TO THE LOCAL AUTHORITY FOR ALL NECESSARY PERMITS. PAY ALL PLUMBING INSPECTION FEES AND CHARGES, OBTAIN COMPLETION CERTIFICATE AND SUBMIT TO SUPERVISOR.
 - 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.
 - 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**
- 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. DENSOWRAP ALL CW PIPEWORK IN-GROUND. PROVIDE INSULATION TO ALL HOT WATER PIPEWORK. PROVIDE ALL NECESSARY ALLOWANCES FOR THERMAL MOVEMENT OF PIPES.
 - 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.
 - TAKE ALL NECESSARY PRECAUTIONS TO PREVENT WATER HAMMER AND RECTIFY SHOULD IT OCCUR.
 - EXTERNAL AND INTERNAL HOSE COCKS SHALL BE FITTED WITH HOSE TYPE VACUUM BREAKERS.
 - PROVIDE HW & CW STOPCOCKS TO ALL HW & CW FIXTURES.
 - ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.
 - ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

- ON SITE DISPOSAL NOTES**
- IRRIGATION SYSTEM TO COMPLY WITH AS1547, QLD PLUMBING WASTE WATER CODE, ASSOCIATED DOCUMENTATION AND MANUFACTURERS SPECIFICATIONS.
 - 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.
 - 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.

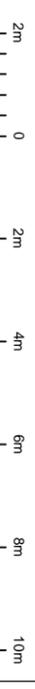
DRAINAGE

- SANITARY DRAINAGE & VENT PIPEWORK IN UPVC IN ACCORDANCE WITH AS1260 AND THE MANUFACTURERS SPECIFICATIONS.
- ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.
- ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

LEGEND

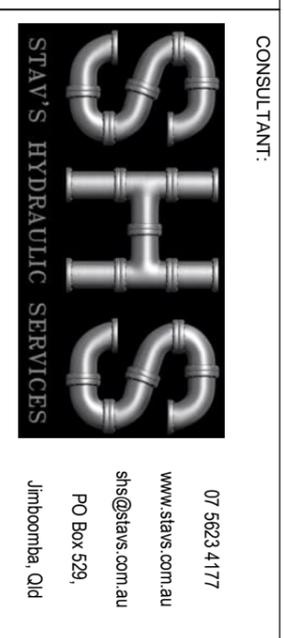
	PUMPED EFFLUENT
	SANITARY DRAINAGE PIPEWORK
	VENT PIPEWORK
	STORMWATER PIPEWORK
	COLD WATER PIPEWORK
	HOT WATER PIPEWORK

	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



ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024

CLIENT: **SOILCO**
C/O ACS ENGINEERS



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

TITLE: HYDRAULIC SERVICES LEGEND, NOTES & DETAILS	
PROJECT No. ACCS31	DRAWING No. H102
SCALE / SIZE: NTS @ A3	ISSUE No. P1



ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024

DESIGNER: STEPHEN STAVRINOU QBCC 15061807

CLIENT:
SOILCO
C/O ACS ENGINEERS

CONSULTANT:

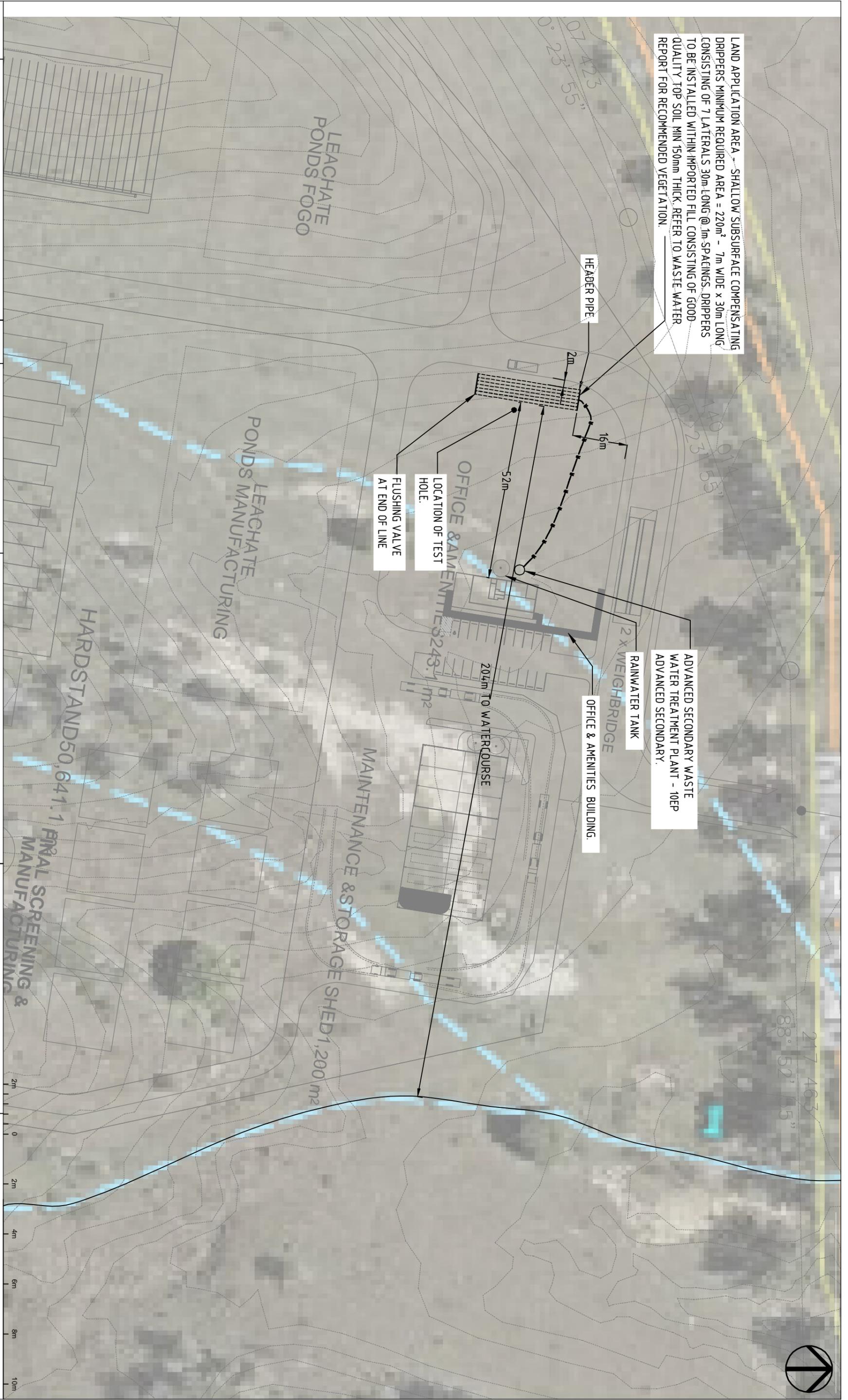


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PROJECT:
SITE & SOIL EVALUATION
REPORT
LOT 4 ON RP85497
MITCHELL ROAD
BROMELTON 4285

TITLE: HYDRAULIC SERVICES SITE PLAN	PROJECT No. ACSS31	DRAWING No. H103	ISSUE No. P1
SCALE / SIZE: 1:4000 @ A3			

LAND APPLICATION AREA - SHALLOW SUBSURFACE COMPENSATING DRIPPERS MINIMUM REQUIRED AREA = 220m² - 7m WIDE x 30m LONG, CONSISTING OF 7 LATERALS 30m LONG @ 1m SPACINGS. DRIPPERS TO BE INSTALLED WITHIN IMPORTED FILL CONSISTING OF GOOD QUALITY TOP SOIL MIN 150mm THICK. REFER TO WASTE WATER REPORT FOR RECOMMENDED VEGETATION.



ISSUE	AMENDMENT	DATE
P1	PRELIMINARY ISSUE	18.07.2024

CLIENT:
SOILCO
C/O ACS ENGINEERS

CONSULTANT:



STAV'S HYDRAULIC SERVICES

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Jimboomba, Qld

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

TITLE:	HYDRAULIC SERVICES PART SITE PLAN EFFLUENT DISPOSAL LAYOUT
PROJECT No.	ACSS31
SCALE / SIZE:	1:1000 @ A3
DRAWING No.	H104
ISSUE No.	P1

DESIGNER: STEPHEN STAVRINOU QBCC 15061807

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

Unmitigated Score	No further mitigation required	Mitigated Score
4		0
VERY LOW		
Calculating Unmitigated Risk		
1	<p>Does the disposal area and wastewater treatment system maintain the following separation distances (AND):</p> <ul style="list-style-type: none"> • At least 100m to the nearest watercourse (permanent and non-permanent)? • At least 400m from the full supply level of a potable water supply? <p>Please note: Potable water supply includes any dam, bore, reservoir or conduit used for direct extraction of water for drinking water purposes.</p>	Yes
2	<p>Is the disposal area or the wastewater treatment system (OR):</p> <ul style="list-style-type: none"> • 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? <p>Please note: Potable water supply includes any dam, bore, reservoir or conduit used for direct extraction of water for drinking water purposes.</p>	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.



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