Appendix E
TCC Early Referral Response

Date >> 20 January 2025

PO BOX 1268, Townsville
Queensland 4810

13 48 10

enquiries@townsville.qld.gov.au
townsville.qld.gov.au

ABN: 44 741 992 072

RPS AAP Consulting Pty Ltd
PO Box 1307
FORTITUDE VALLEY QLD 4006

Email >> Stewart.Owen@rpsconsulting.com

Dear Sir/Madam

Amended Early Referral Entity Response

Townsville SDA Development Scheme (May 2019)

Council refers to your letter dated 20 December 2024 requesting an Early Referral Entity Response for development within the Townsville State development Area.

Upon review, council would like to provide the following comments and conditions to be considered on any future development approval issued by the Coordinator General.

Application Details

Application no:	CAR25/0004
Assessment no:	3172109
Proposal:	Early Referral Entity Response for a Proposed Material Change of Use for Research and technology industry.
Street address:	109 Penelope Road STUART QLD 4811
Real property description:	Lot 14 SP 338024
Assessment Manager:	Office of the Coordinator General

Referral Triggers

The application has been referred to council as Early Referral in accordance with schedule 2, part 2, section 2.2 of the development scheme for the Townsville State Development Area.

Matters of Referral Agency's Assessment

Pursuant to Schedule 2, part 2, section 2.2 of the Townsville State Development Area Development Scheme, council has reviewed the application and assessed the development against the Local Planning Instruments.

Council would like to advise the application referred to us for an Early Referral response is supported subject to the attached conditions being included on any development permit that may be issued.

Final matters

Council awaits the Coordinator General's decision on the application and receiving a copy of the decision notice.

If you have any further queries in relation to the above, please do not hesitate to contact Senior Development Assessment Officer, Kaitlyn O'Malley on telephone 07 4727 9415 or email developmentassessment@townsville.qld.gov.au .

Yours faithfully

For Assessment Manager
Planning and Development

Enclosed>> Material Change of Use Schedule of Conditions
Attachments>> Approved Plans

CC>> Office of the Coordinator General
Email >> chandler.walker@coordinatorgeneral.qld.gov.au
stephen.smith@coordinatorgeneral.qld.gov.au

RECOMMENDED CONDITIONS

Condition x – Approved Plans		Timing
x.x	The development must generally comply with the plans referenced below, which forms part of this approval, unless otherwise specified by any condition of this approval.	*To be maintained*

Plan Reference	Drawing Number	Revision Number	Plan Date
Site Plan	B071-D1-01-0001_01	J	05.09.2024
Proposed Site Plan	B071-D1-01-0002_01	C	18.11.2024
East and West Elevations	B071-D1-01-0002_02	B	06.09.2024
North and South Elevations	B071-D1-01-0002_03	B	06.09.2024
North West Isometric	B071-D1-01-0002_05	B	06.09.2024
North East Isometric	B071-D1-01-0002_06	B	06.09.2024
South West Isometric	B071-D1-01-0002_07	B	06.09.2024
South East Isometric	B071-D1-01-0002_04	B	06.09.2024
Reports			
Engineering Report by Northern Consulting Engineers, Revision D dated 18/12/2024 *Waste Management Strategy Plan* by Sedgman Prudentia, Revision D dated 16/12/2024			
Landscape Concept Plans, Reference 1.1 Queensland Resources Common User Facility, Drawing number AU213005687, Version G, dated 04 December 2024 and 1.2 Planting Palette, Drawing number AU213005687, Version D, dated 04 December 2024			

Condition x – Inspection		Timing
x.x	Permit the Coordinator-General, or any person authorised by the Coordinator-General, to inspect any aspect of the development or use. *Note: Where practicable, at least forty-eight (48) hours notice will be provided.*	*At all times*

Condition x – Complaints		Timing
x.x	Record all complaints received relating to the development in a register that includes, as a minimum: (a) date and time when complaint was received (b) complainant's details including name and contact information (c) reasons for complaint (d) investigations undertaken and conclusions formed (e) actioned taken to resolve this complaint, including the time take to implement these actions (f) include a notation to the register as to the satisfaction (or dissatisfaction) of the complainant with the outcome.	*At all times*
x.x	Prepare and provide a response to the complainant within 48 hours of receipt of the complaint	*As indicated*
x.x	Provide an up to date copy of the register if request by the Coordinator-General.	*As indicated*
x.x	In the event a complaint is received in relation to odour or air contamination, the developer / operator must engage a suitably qualified consultant to undertake an assessment addressing odour and/or air quality emanating from the site for this use in accordance with the provisions of the *Environmental Protection Act 1994*.	*At all times*

	The assessment must be accompanied by a report, inclusive of supporting calculations and site investigations. The report must provide recommendations of odour and air attenuation measures. The developer / operator must provide a copy of the report to Townsville City Council and the Coordinator-General and undertake any works within 3-months of supplying the report.	
x.x	In the even a complaint is received in relation to noise from the use, the developer / operator must engage a suitably qualified consultant to undertake an assessment addressing noise emanating from the site for this use in accordance with the provisions of the *Environmental Protection Act 1995*. The assessment must be accompanied by a report, inclusive of supporting calculations and site investigations. The report must provide recommendations of noise mitigation measures. The developer / operator must provide a copy of the report to Townsville City Council and the Coordinator-General and undertake any works within 3-months of supplying the report.	

Condition x – External details		**Timing**
x.x	Construct and/or paint external details of buildings and structures to reduce visual impact and negate excessive glare in accordance with best practice.	*To be maintained*
x.x	Legible property numbers must be erected at the premises and must be maintained. The site identification numbers should be of reflective material, maintained free from foliage and other obstructions, and be large enough to be read from the street.	*Prior to commencement of use and to be maintained*

Condition x – Vehicle crossovers		**Timing**
x.x	Unless otherwise agreed to in writing with Townsville City Council, all access driveways and crossovers must be constructed from the existing kerb and channel to the property boundary generally in accordance with the Transport impact, access and parking code of the Townsville City Plan	*Prior to commencement of use and to be maintained*
x.x	All parking is to occur on site	*At all times*

Condition x – Services and utilities		**Timing**
x.x	Obtain the necessary approvals for all required services and utilities (power, potable water, on-site sewer, gas wastewater, communications etc) for both construction and operation.	*Prior to commencement of construction and to be maintained*
x.x	The development must be serviced by the public sewerage network. In particular, the connection to Council's low pressure sewer system shall be at the boundary connection provided for each lot. Privately owned pressure sewer equipment must be installed and is to generally consist of a suitably sized tank with at least a 24-hour storage capacity, a positive displacement or 2-stage centrifugal grinder pump with minimum 0.45L/s flow rate at 50m pumping head, electrical control/alarms, property discharge lines and boundary kit in accordance with drawings SEQ-PSS-1100-2, SEQ-PSS-1101-1 and SEQ-PSS-1102-1. Any future owners of the property must be notified of the	*Prior to commencement of the use. A Compliance Permit to carry out plumbing and drainage works must be obtained prior to the commencement of any sanitary drainage works.*

	above requirements. A Property Notation will be placed on Council's property management files to advise prospective purchasers of these sewer connection requirements.	
x.x	The premises must connect to Townsville City Council's reticulated water system. Note: Townsville City Council does not permit the direct connection of pump systems to water mains for firefighting purposes. Private building fire systems must comply with relevant building codes and standards.	*Prior to commencement of the use*
x.x	Electricity and telecommunications must be provided to the premise in accordance with the works code of the Townsville City Plan.	*Prior to commencement of the use*
x.x	Any required relocation and/or alteration to any public service or facility installation must be carried out at no cost to Townsville City Council.	*Prior to commencement of the use and to be maintained*

Condition x – Potential contamination		**Timing**
x.x	Areas where potentially contaminating substances are stored or used, are roofed and sealed with concrete, asphalt or similar impervious substance and bunded.	*At all times*
x.x	Roof water is piped away from areas of potential contamination.	*At all times*

Condition x – Hazardous materials		**Timing**
x.x	All flammable and combustible liquids (including hazardous waste materials) must be contained within an on-site containment system, controlled in a manner that prevents environmental harm and must be maintained in accordance with the current edition of *AS1940 – Storage and Handling of Flammable Combustible Liquids*.	*At all times*
x.x	All containers must be secured to prevent movement during a flood event.	*At all times*

Condition x – Waste management		**Timing**
x.x	The development must reuse, recycle or lawfully dispose of all water (other than treated wastewater released to land) generated by the development.	*At all times*
x.x	Solid waste is to be stored on site in vermin-proof facilities until it is transferred to a licensed refuse facility.	*At all times*
x.x	If bulk refuse facilities are applicable, the bulk refuse facility must: (a) be a suitable enclosure with concrete slab floor, with dimensions which exceed the size of the nominated bin size by at least 300m at the rear and both sides and 600mm at the front (b) be within the curtilage of the premise in an accessible location to receive the service (c) be graded and drained through an approved sediment/silt trap to legal sewer connection and (d) be provided with a hose cock and hose in close proximity to the enclosure. (e) have a minimum overhead clearance of 6.5m for refuse collection. Access for collection is not impeded by any	*Prior to commencement of use and to be maintained*

	overhead obstructions such as trees, wires or other structure. This minimum height must be maintained at all times.	

Condition x – Air contaminants		Timing
x.x	Materials that are capable of generating air contaminants are wholly enclosed in storage bins.	*At all times*
x.x	All external areas containing the above storage bins must be sealed (impervious).	*Prior to commencement of use and to be maintained*

Condition x – Stormwater drainage		Timing
x.x	The development is required to achieve no-worsening and no-actionable nuisance in terms of stormwater quantity and stormwater quality for the major and minor events as defined by the Townsville City Plan relevant to the time of any future building approval.	*At all times*
x.x	Drainage from the development works/building must not adversely impact upon adjacent properties. Ponding, concentration or redirection of stormwater must not occur on adjoining land.	*At all times*
x.x	Drainage works must be designed and constructed in accordance with the latest edition of the Queensland Urban Drainage Manual and healthy waters code of the Townsville City Plan.	*Prior to commencement of site works and to be maintained*
x.x	Submit to the Coordinator-General and Townsville City Council, certification from a qualified and experienced Registered Professional Engineer of Queensland (RPEQ) that stormwater drainage achieves the prescribed outcomes in accordance with the healthy waters code of the Townsville City Plan. *Note: Certification must reference SDA approval number AP2023/xxx and be provided to:* *Coordinator-General – sdainfo@coordinatorgeneral.qld.gov.au* *Townsville City Council – developmentassessment@townsville.qld.gov.au*	*Prior to commencement site works*

Condition x – Stormwater quality		Timing
x.x	Implement the stormwater management plan documented in *Engineering Report* prepared by Northern Consulting Engineers, Revision D, dated 18/12/2024 and referenced in Table 1 to conditions of this approval.	*At all times*
x.x	An appropriately qualified and experienced RPEQ must certify that stormwater quality devices achieve the prescribed outcomes in accordance with the above condition.	*Prior to commencement of the use*

Condition x – Repair of damage		Timing
x.x	Repair any property fencing, roads and service infrastructure and reinstate existing signage and pavement markings that have been removed or damaged during any works carried out in association with the approved development.	*Prior to commencement of the use and ongoing*

Condition x - Storage		Timing
x.x	Goods, equipment, packaging material or machinery must not be stored or left exposed within the first 20m from the front property boundary..	*Prior to commencement of the use and to be maintained*

Condition x - Fire fighting		Timing
x.x	The development must be provided with an adequate and accessible supply of water for firefighting purposes. Note: Townsville City Council does not permit the direct connection of pump systems to water mains for firefighting purposes. Private building fire systems must comply with relevant building codes and standards.	*Prior to the commencement of the use and to be maintained*

Condition x - Lighting		Timing
x.x	Provide external lighting sufficient to provide safe ingress and egress for site users.	*Prior to the commencement of the use and to be maintained*
x.x	Outdoor lighting must be provided in accordance with *AS1158.1:2005 – Lighting for Roads and Public Spaces.*	*Prior to the commencement of the use and to be maintained*

Condition x - Landscaping		Timing
x.x	Implement the works shown in the Landscape Concept Plan identified in Condition x (Approved Plans). Note- The preferred street tree species for this location is Grevillea Baileyana.	*Prior to commencement of the use and to be maintained thereafter.*
x.x	Maintain landscaping and replace any failed or failing trees or shrubs.	*At all times*

Condition x - Construction Management Plan		Timing
x.x	Prepare a construction management plan that includes the following: (a) employee and visitor parking areas, as outlined in the approved plans; (b) Provision for loading and unloading materials including the location of any remote loading sites; (c) The storage location/s materials, structures, plant and equipment on the construction site; (d) management of noise and dust generated from the site during and outside construction work hours; (e) a monitoring program to identify issues of non-compliance, actions for correcting any non-compliance and who is responsible for undertaking those actions; (f) a timetable and process for review of the construction management plan to assess its effectiveness and to implement amendments as required.	*Prior to the commencement of construction*
x.x	Undertake all works generally in accordance with the	*At all times during*

	construction management plan which must be current and available on site at all times during the construction period.	*construction*
x.x	Water to be used for dust mitigation is to be drawn from sources other than Townsville City Council's reticulated water supply should Level 3 or 4 water restrictions be in effect and / or imposed during the construction of the development.	*At all times during the site works phase*
x.x	Dust or debris must not enter the State-controlled road during the construction phase of development.	*As indicated*

Condition x - Erosion and sediment control		**Timing**
x.x	a) Soil erosion and sediment control (SESC) plans must be prepared by a suitably qualified professional and submitted to Council for approval, with the proposed SESC measures to be designed in accordance with "Best Practice Erosion and Sediment Control" published by the International Erosion Control Association (Australasian Chapter) (lECA, 2008). The plans must demonstrate that the proposed SESC measures will achieve the erosion and sediment control design objectives specified in Appendix 2, Table A of the State Planning Policy 2017. b) Prescribed Water Contaminants (as defined in the Environmental Protection Act 1994) must not be released from the site or to waters within the site, or be likely to be released should rainfall occur, unless all reasonable and practicable measures are taken to prevent or minimise the release and concentration of contamination. These measures must be designed, implemented and maintained in accordance with "Best Practice Erosion and Sediment Control" published by the International Erosion Control Association (Australasian Chapter) (lECA, 2008) and achieve the design objectives specified in Appendix 2, Table A of the State Planning Policy 2017.	*Prior to the commencement of site works and to be maintained during the site works phase*

Enclosure 3 – Advice to be attached to an approval

Currency period

This SDA approval is valid until the end of the currency period, four years after the date of approval, unless the approval states a different period. For the SDA approval to remain valid the proponent must have, before the end of the currency period:

- (if the development is reconfiguring a lot) provided the plan of subdivision to the Coordinator-General for approval in accordance with the relevant development scheme; or
- (for all other development) substantially started the development; or
- made an application to the Coordinator-General to extend the currency period.

Other approvals

This approval relates solely to the Material change of use in the Townsville State Development Area. All other approvals and/or permits required under local, state and/or commonwealth legislation must be obtained prior to the commencement of the use.

Townsville City Council

Further Approvals Required

A Compliance Permit to carry out plumbing and drainage works prior to the commencement of sanitary drainage works.

A Roadworks permit for the construction of a driveway or access within the road reserve must be obtained.

For filling and excavation associated with this approval, an Operational works application must be submitted to Townsville City Council.

Building works

A Development Permit for Building Works must be obtained prior to building works commencing on site.

Prior to the issuing of a Development Permit for Building Works, documentation signed by a RPEQ must be submitted to a Building Certifier identifying the required minimum floor height of all habitable rooms to achieve storm tide/flood immunity.

Infrastructure charges

An Infrastructure Charges Notice outlining the estimated infrastructure contributions payable relevant to the Development Permit is attached for your information.

Water restrictions

To manage Townsville's water resources, council regulates water restrictions on a permanent basis. All development undertaken in Townsville must be mindful of the current and projected level of water restrictions that may affect development activities such as landscaping establishment and/or soil erosion and sediment control.

Developers remain responsible for compliance with any water restrictions as directed by Townsville City Council.

During times of significant water shortage, Townsville City Council may refuse to grant developer exemptions from water restrictions for the purposes of landscaping works or soil erosion and sediment control activities.

In circumstances where exemptions to water restrictions are no longer issued by Townsville City Council, bonding of soft landscaping works will be permitted to enable the release of plans of survey and / or compliance certificates. In cases where the soft landscaping is a component of permanent soil erosion and sediment control (such as an open drain) the use of "bonded fibre matrix" type hydro-mulch products or other suitable soil erosion and sediment control methods can be carried out as alternatives to demonstrate compliance with water restrictions.

The responsibility for compliance with all relevant environmental protection requirements (in particular sediment and erosion control) remains with the developer.

Connection to services

A copy of the SDA approval and the approved water reticulation design must be submitted to Townsville City Council with the appropriate application form for connection to Townsville City Council's water supply. Townsville City Council will respond to the application with a quotation for the work and upon payment will schedule the works for connection.

A copy of the SDA approval and the approved sewer reticulation design must be submitted to council with the appropriate application form for connection to Townsville City Council's sewer supply. Townsville City Council will respond to the application with a quotation for the work upon payment will schedule the works for connection.

Signage

Plans of any signage to be associated with the use that is deemed to be assessable development in accordance with the Categories of development and assessment - Operational work, specifically Operational work being placing an advertising device on premises of the Townsville City Plan, must be submitted to council for assessment.

Signs must be designed in accordance with relevant codes of the Townsville City Plan. To maintain amenity for the adjoining properties, no illumination of the signage is to occur unless otherwise approved by council.

Construction

Storage of Materials and Machinery

All materials and machinery to be used during the construction period are to be wholly stored on the site, unless otherwise approved.

Building Work Noise

The hours of audible noise associated with construction and building work on site must be limited to between the hours of:

a. 6.30 a.m. to 6.30 p.m. Monday to Saturday
b. No work on Sundays or Public Holidays.

Liquid Trade Waste Approval/Agreement

The developer is advised that a Trade Waste Approval/Agreement may be required under the *Water Supply (Safety and Reliability) Act 2008*. This should be discussed with Townsville City Council's Planning Services team at an early stage of project development.
Contact Tradewaste@townsville.qld.gov.au or 13 48 10.

Asbestos

All asbestos being removed from the site must be transported and disposed in accordance with relevant legislation.

Flammable and Combustible Liquids

Flammable and combustible liquids are to be stored and handled in accordance with *AS1940—The Storage and Handling of Flammable and Combustible Liquids*.

Chemical Storage

Where chemicals are stored or handled on site, the storage and handling of chemicals must be in accordance with the relevant WHS Code of Practice.

Roadworks Approval

The developer is responsible for obtaining a Roadworks permit in accordance with Subordinate Local Law No. 1.15 (Carry out Works or Interfering with a Road or its Operation) 2011 for the installation of any hoardings, gantries or temporary road closures of the footpath or road prior to the commencement of works. The application must indicate the following:

a. Completed Roadworks permit application form
b. Prescribed fee
c. Traffic Management Plan prepared by a suitable qualified traffic professional detailing the traffic management measures put in place to manage all Roadworks including pedestrians,

cyclists and vehicles in accordance with the Manual of Uniform Traffic Control Devices (Queensland) Part 3 – Works on Roads.

If the works require closure of part of the road reserve, a temporary Road Closure Permit will be required. This permit allows for a section of road reserve to be closed for the purpose of works. The Queensland Police Service is the issuing authority for these permits. An application will need to be made to Townsville City Council for a letter of 'no objection' prior to applying to the Queensland Police Service for the permit. The Traffic Management Plan will need to be included with the application to Townsville City Council.

Clinical/Medical Waste

If this development has the potential to generate or handle clinical and regulated waste material. Clinical and medical related waste it is to be handled in accordance with AS/NZS3816:1998 Australian Standard/New Zealand Standard – Management of clinical and related wastes.

Environmentally Relevant Activities

Where the premises is intended to be used for carrying out an Environmentally Relevant Activity as defined by the Environmental Protection Regulation 2019, an application under *the Planning Act 2016* and the *Environmental Protection Act 1994* must be submitted to the relevant administering authority prior to the commencement of the use.

Environmental Management Register

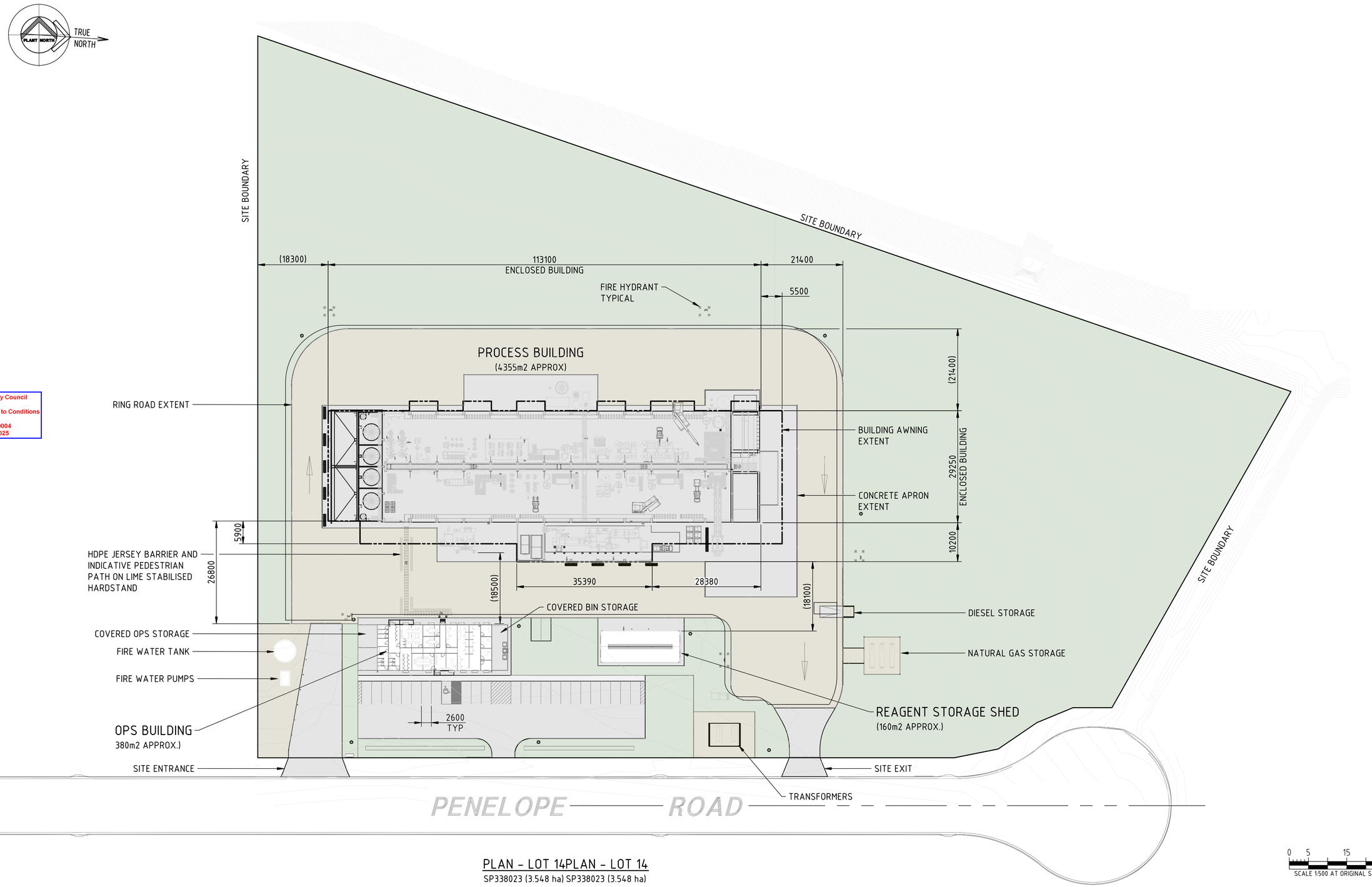
If the business meets the threshold specified in Schedule 3 of the *Environmental Protection Act 1994* for a notifiable activity, it has a responsibility under section 371(1) of the *Environmental Protection Act 1994* to notify the administering authority (Department of Environment and Science) within 22 business days of the use commencing.

Food Business

Where a food business is required to be licensed under the *Food Act 2006* Section 49, a Food Licence Application must be made prior to construction of the food premises. Please contact Townsville City Council's Environmental Health team on 13 48 10 for further information.

Cultural Heritage Duty of Care

Where items of archaeological importance are identified during construction of the project, the proponent must comply with its duty of care under the *Aboriginal Heritage Act 2003* and the Department of Environment and Heritage Protection (2014) *Guidelines: Archaeological investigations*. All work must cease and the relevant State agency must be notified. Work can resume only after State agency clearance is obtained.



Townsville City Council
Approved Subject to Conditions
CAR25/0004
15/01/2025

PLAN - LOT 14PLAN - LOT 14
SP338023 (3.548 ha) SP338023 (3.548 ha)

0 5 15 25m
SCALE 1:500 AT ORIGINAL SIZE

NOTE:
1. INTERNAL BUILDING EQUIPMENT LAYOUT IS INDICATIVE ONLY AND SUBJECT TO CHANGE.

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
		H	TRANSFORMER YARD AND REAGENT SHED RELOCATED	TKE	TKE	PJO	02.08.24	
		G	SITE RECONFIGURED	RWE	RWE	PJO	03.07.24	
		F	PRELIMINARY ISSUE - LAYOUT UPDATED	RWE	RWE	PJO	07.06.24	
		E	PRELIMINARY ISSUE - STORAGE AREAS ADDED AND BUILDING SIZES UPDATED	TKE	TKE	TKE	15.03.24	
		D	PRELIMINARY ISSUE - EQUIPMENT ADDED AND ADMIN BUILDING SIZE UPDATED	TKE	TKE	---	07.02.24	
		J	PRELIMINARY ISSUE	TKE	TKE	TKE		

REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	TKE	05.09.24	
CHECKED	TKE	05.09.24	
DESIGNED	TKE	02.09.24	
LEAD ENG	TKE	02.09.24	
APPROVED			
SCALE	1:500	OR AS SHOWN	
	DO NOT SCALE	A1	

SEDGMAN

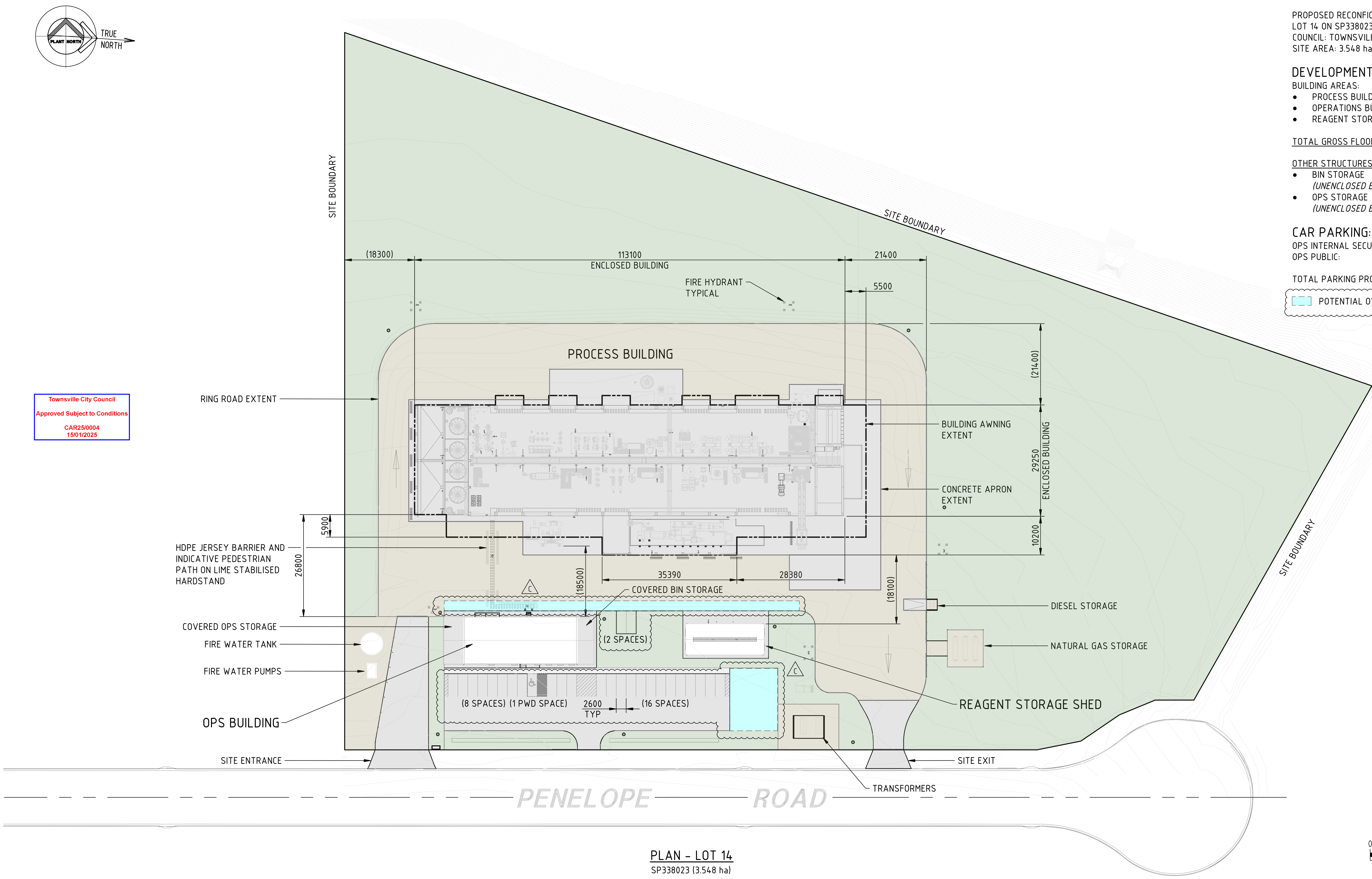
PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT QLD RESOURCES COMMON USER FACILITY

TITLE
MINERALS PROCESSING FACILITY
AREA 01 - SITE
SITE PLAN

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0001__01	J

PLOT DATE: 5/09/24, 5:36:45 AM File: C:\TEMP\Vault\Designs\B071\D\WGL_Development\01\B071-D1-01-0001_01.dwg By: Vault Job: Proj BNE01



PLAN - LOT 14
SP338023 (3.548 ha)

RPD:

PROPOSED RECONFIGURED LOT:
LOT 14 ON SP338023
COUNCIL: TOWNSVILLE CITY COUNCIL
SITE AREA: 3.548 ha

DEVELOPMENT ASSESSMENT:

BUILDING AREAS:
- PROCESS BUILDING - 4355m²
- OPERATIONS BUILDING - 380m²
- REAGENT STORAGE SHED - 160m²

TOTAL GROSS FLOOR AREA - 'GFA' -4895m²

OTHER STRUCTURES:
- BIN STORAGE -52m² *(UNENCLOSED BUILDING FOOTPRINT)*
- OPS STORAGE -65m² *(UNENCLOSED BUILDING FOOTPRINT)*

CAR PARKING:

OPS INTERNAL SECURE: -2 SPACES
OPS PUBLIC: -24+1 PWD SPACE

TOTAL PARKING PROVIDED: -26+1 PWD SPACE

POTENTIAL OVERFLOW CAR PARKING AREAS

0 5 15 25m
SCALE 1:500 AT ORIGINAL SIZE

NOTE:
1. INTERNAL BUILDING EQUIPMENT LAYOUT IS INDICATIVE ONLY AND SUBJECT TO CHANGE.

REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
C	PRELIMINARY ISSUE	TKE	TKE	JGO	18.11.24	
B	DA ISSUE - SITE RECONFIGURED	TKE	TKE	PJO	06.09.24	
A	DA ISSUE	TKE	TKE	---	25.03.24	

DRAWING NO | TITLE — REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	TKE	15.11.24
CHECKED	TKE	15.11.24
DESIGNED	JGO	18.11.24
LEAD ENG	JGO	18.11.24
APPROVED		

SCALE 1:500 OR AS SHOWN — DO NOT SCALE — A1

SEDGMAN

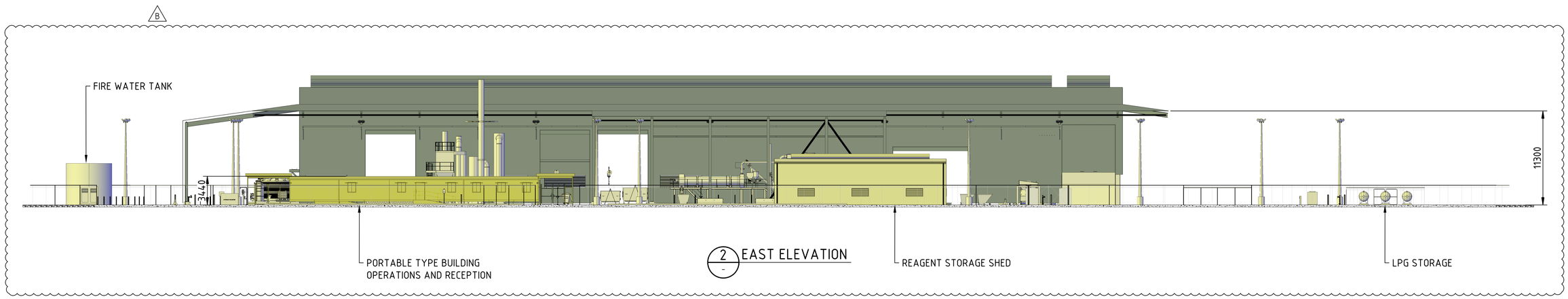
DA ISSUE
NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE: MINERALS PROCESSING FACILITY AREA 01 - SITE PROPOSED SITE PLAN

PROJECT NO: B071-P01 | DRAWING NO: B071-D1-01-0002_01 | REVISION: C

1 - WEST ELEVATION



2 - EAST ELEVATION

Townsville City Council
Approved Subject to Conditions
CAR25/0004
15/01/2025

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SITE PLAN DRAWING No. B071-D1-01-0002_01
2. COLORS SHOWN ARE NOT INDICATIVE OF FINAL DESIGN COLORS

REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
B	DA ISSUE - SITE RECONFIGURED	TKE	TKE	PJO	06.09.24	
A	DA ISSUE	TKE	TKE	TKE	25.03.24	

REFERENCE DRAWINGS | DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO:

DRAWN	TKE	04.09.24
CHECKED	TKE	04.09.24
DESIGNED	PJO	06.09.24
LEAD ENG	PJO	06.09.24
APPROVED		

SCALE: 1:250 OR AS SHOWN — DO NOT SCALE — A1

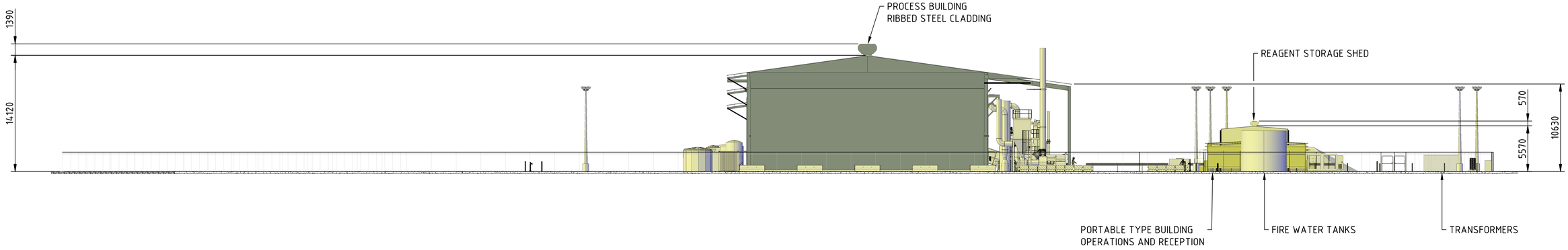
SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

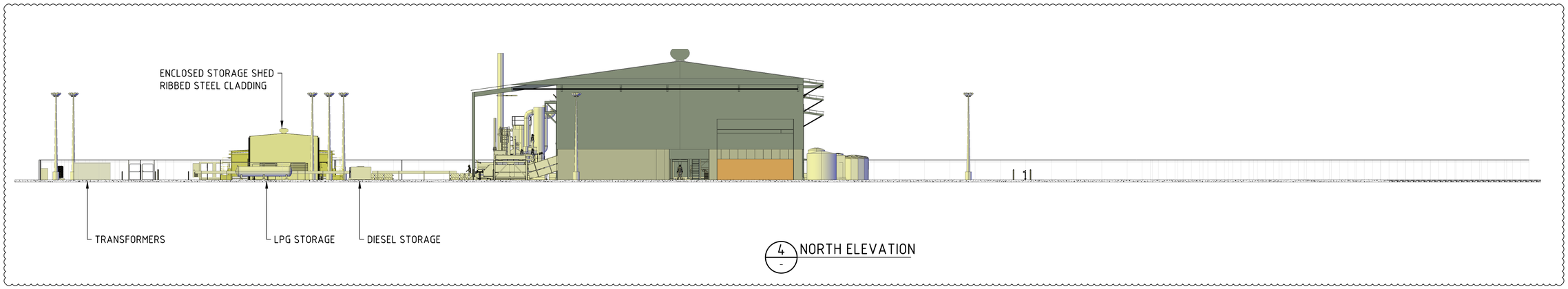
PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE: MINERALS PROCESSING FACILITY
AREA 01 - SITE
BUILDING ELEVATIONS AND PERSPECTIVES
EAST AND WEST ELEVATIONS

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002_02	B



3 SOUTH ELEVATION



4 NORTH ELEVATION

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NOTES

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2. COLORS SHOWN ARE NOT INDICATIVE OF FINAL DESIGN COLORS

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		A	DA ISSUE	TKE	TKE	TKE	25.03.24	

REFERENCE DRAWINGS | DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	TKE	04.09.24
CHECKED	TKE	04.09.24
DESIGNED	PJO	06.09.24
LEAD ENG	PJO	06.09.24
APPROVED		

SCALE: 1:250 OR AS SHOWN — DO NOT SCALE — A1

SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE: MINERALS PROCESSING FACILITY
AREA 01 - SITE
BUILDING ELEVATIONS AND PERSPECTIVES
NORTH AND SOUTH ELEVATIONS

PROJECT NO: B071-P01 | DRAWING NO: B071-D1-01-0002_03 | REVISION: B

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5 SOUTH EAST ISOMETRIC

NOTES

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2. COLORS SHOWN ARE NOT INDICATIVE OF FINAL DESIGN COLORS

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CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

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TITLE: MINERALS PROCESSING FACILITY
AREA 01 - SITE
BUILDING ELEVATIONS AND PERSPECTIVES
SOUTH EAST ISOMETRIC

PROJECT NO: B071-P01 — DRAWING NO: B071-D1-01-0002_04 — REVISION: B

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15/01/2025

6 NORTH WEST ISOMETRIC

NOTES

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REFERENCE DRAWINGS | DRAWING REVISIONS

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AREA 01 - SITE
BUILDING ELEVATIONS AND PERSPECTIVES
NORTH WEST ISOMETRIC

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002_05	B

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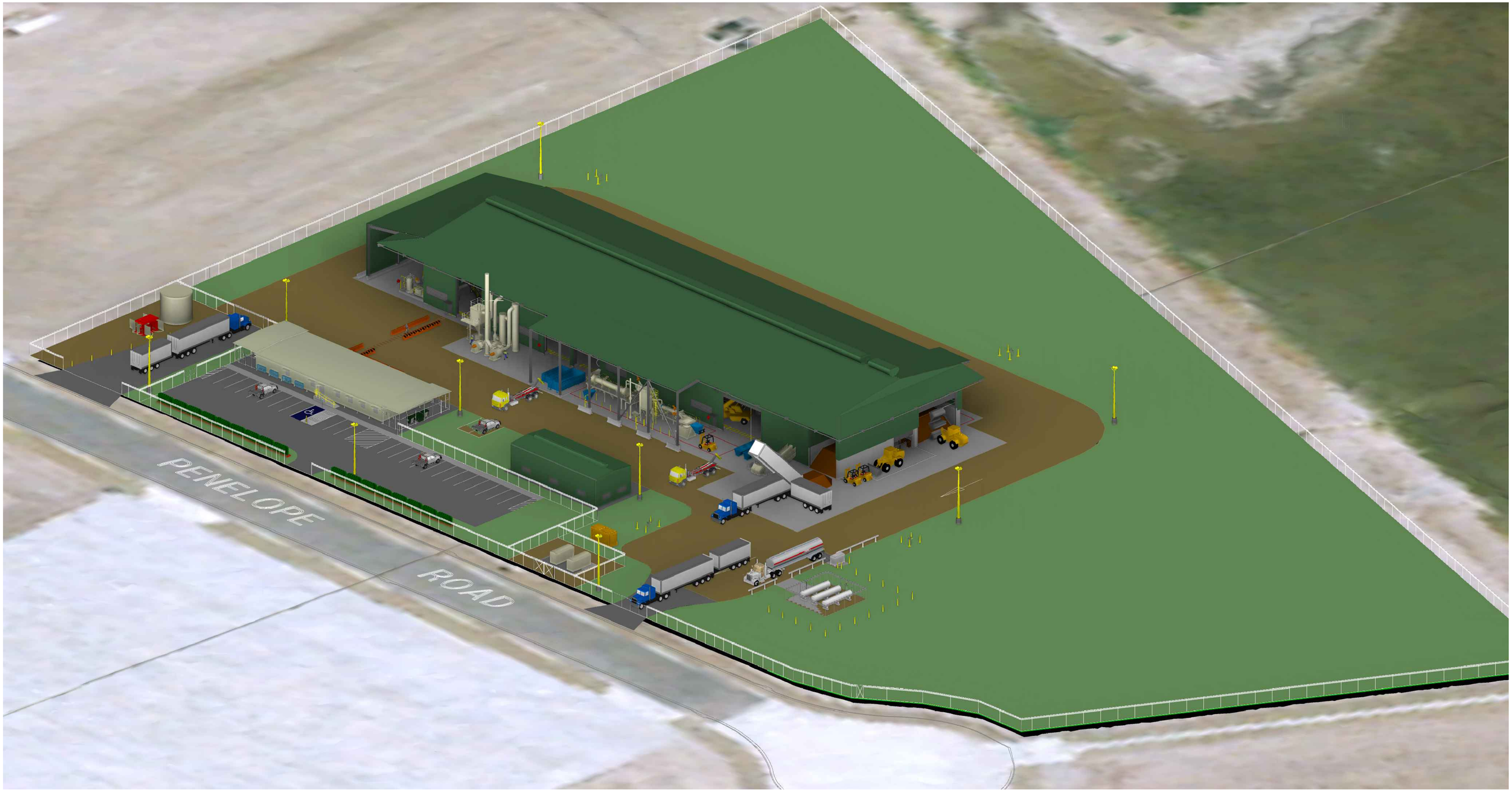

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CLIENT DRAWING NO

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PROJECT QLD RESOURCES COMMON USER FACILITY

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NORTH EAST ISOMETRIC

PROJECT NO B071-P01 | DRAWING NO B071-D1-01-0002_06 | REVISION B

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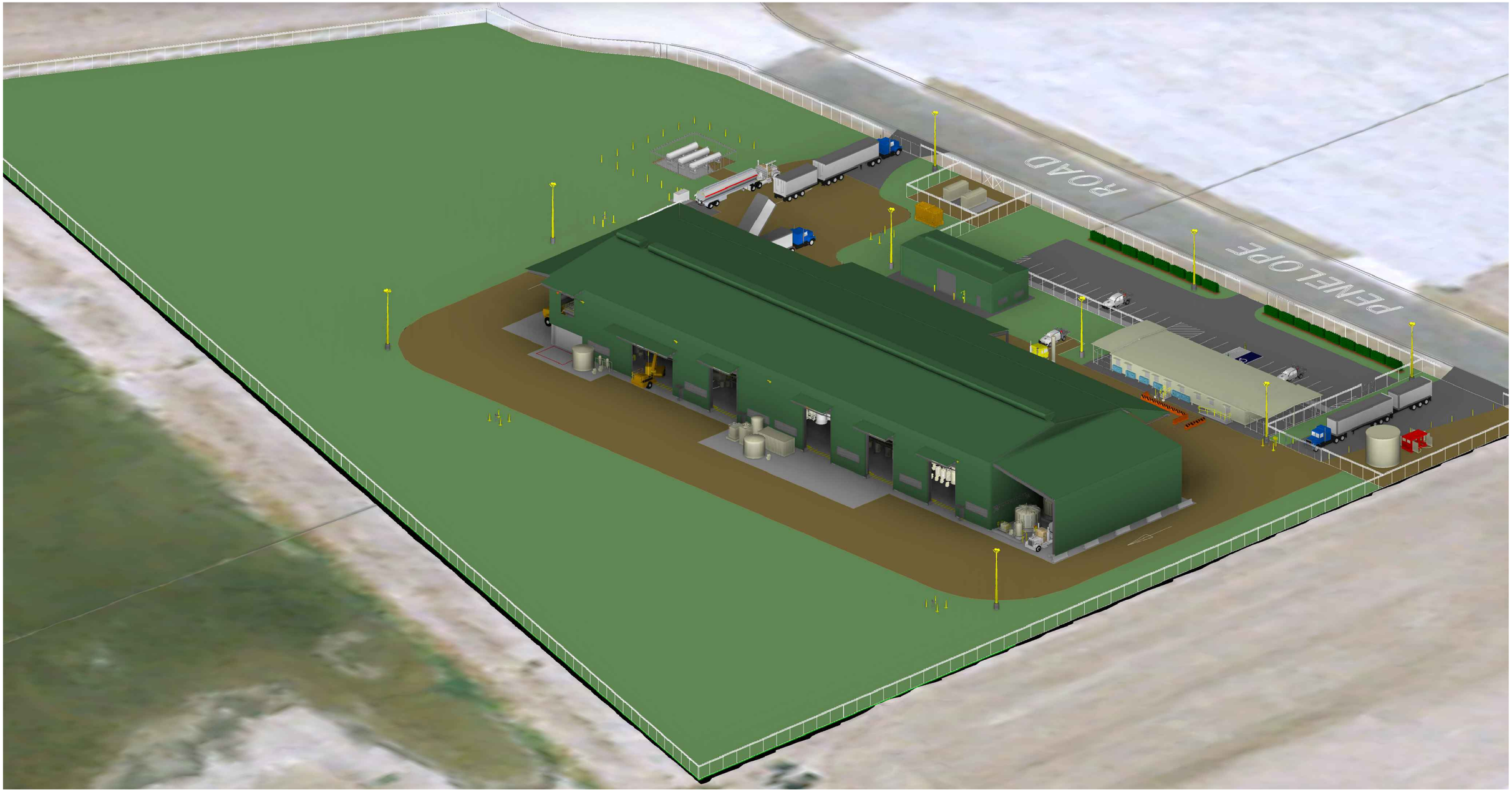

7 - SOUTH WEST ISOMETRIC

NOTES

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REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

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NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE:
MINERALS PROCESSING FACILITY
AREA 01 - SITE
BUILDING ELEVATIONS AND PERSPECTIVES
SOUTH WEST ISOMETRIC

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002_07	B

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1.1 QUEENSLAND RESOURCES COMMON USER FACILITY

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LEGEND

1. Open planting areas
2. Open turfed areas
3. Street trees
4. 2m screen planting along eastern boundary
5. Carpark planting
6. Proposed development buildings
7. Hardstand

Building awning extents

Scale 1:1000 @ A3

0 2 5 10 25 50

N

1.2 PLANTING PALETTE

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Street / Carpark Trees

CUPANIOPSIS anacardioides - street / carpark tree

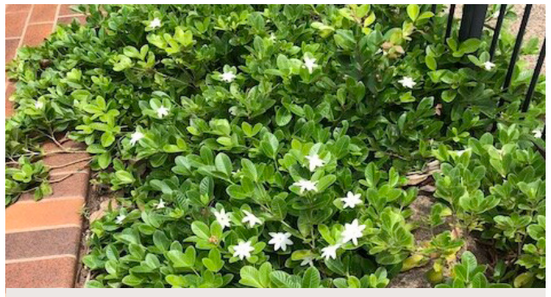
GREVILLEA baileyana - street / carpark tree

Screening Shrubs

SCAEVOLA taccada

SOPHORA tomentosa

Groundcovers



GARDENIA psidioides

LOMANDRA hystrix

LIRIOPE muscari

OPHIOPOGON intermedians

Planting Area Trees

TERMINALIA sericocarpa - planting area trees

NAUCLEA orientalis - planting area trees

NOTE:

Soil prep (Planting):

Mulch:

Imported weathered pine chip bark

Depth: 100mm - Refer to specifications for details.

_____

Horizon A:

Soil Classification: Landscape Soils (on Grade) per section 5.1 of AS4419 (2018).

Organic matter: Medium Organic Content Per Table 1 of AS4419 (2018) Phosphorus:

Low Phosphorus Per Table 1 of AS4419 (2018)

pH: Neutral Soil Per section 5.2 of AS4419 (2018)

Soil Grade: Sandy loam, fine Sandy Loam or Loam in accordance with table K1 of

AS4419 (2018)

Depth: 300mm consolidated depth

Or equal plant media certified as "fit for purpose" by qualified soil scientist, agronomist

or analyst in accordance with the specifications and approved by the Contract

Administrator.

_____

Horizon B: Ripped in-situ subsoil with addition of:

- gypsum @ 1000g/m2
- sulphur @ 100g/m2

Confirm subgrade additions with site specific soil testing.

Soil prep (Turf):

Species: Cynodon dactylon 25mm thick – First grade, 100% cover.

_____

Horizon A:

Soil Classification: Soils for turf and lawns Per section 5.1 of AS4419 (2018).

Organic matter: Percentage to requirements of "Sport Fields" Per Table

3 of AS4419 (2018).

Phosphorus: levels to requirements of "Sport Fields" Per Table 3 of AS4419 (2018)

pH: Neutral Soil Per section 5.2 of AS4419 (2018)

Depth: 100mm consolidated depth

Or equal plant media certified as "fit for purpose" by qualified soil scientist, agronomist or analyst in accordance with the specifications

and approved by the Contract Administrator.

_____

Horizon B: Ripped in-situ subsoil with addition of:

- gypsum @ 1000g/m2
- sulphur @ 100g/m2

Confirm subgrade additions with site specific soil testing.

Irrigation Strategy:

To TCC Irrigation specification - SPEC-PPL-CW-01 Rev 7

Carpark Tree Requirements:

1 per 6 Parks to TCC - SC6.4.12.5 (7)

NORTHERN CONSULTING engineers

CIVIL & STRUCTURAL ENGINEERS

ENGINEERING REPORT

QUEENSLAND RESOURCES COMMON USER FACILITY (QRCUF) AT 109 PENELOPE ROAD, STUART

FOR
RPS AAP Consulting Pty Ltd

JOB No: **MJ2506-A**

DOC REF: **MJ2506-A-ENG**

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DOCUMENT CONTROL

Rev	Author	Reviewed	Approved		Date	Issued To:	Purpose
A	Irem Guney	John Single	John Single (RPEQ 24378)		01/02/2024	RPS AAP Consulting Pty Ltd	Draft for review & comment
B	Irem Guney	John Single	John Single (RPEQ 24378)		15/05/2024	RPS AAP Consulting Pty Ltd	Development Application (DA)
C	Irem Guney	John Single	John Single (RPEQ 24378)		28/08/2024	RPS AAP Consulting Pty Ltd	Final – Changes associated with layout amendments
D	Irem Guney	John Single	John Single (RPEQ 24378)		18/12/2024	RPS AAP Consulting Pty Ltd	Quality Options and Parking Rates Update

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APPENDIX B

Turning Path Assessment prepared by NCE

APPENDIX C

Stormwater Management Conceptual Sketch (Prelim Design) by NCE

APPENDIX D

ATLAN Vault, Filter and Spillceptor Technical Data

1.0 INTRODUCTION

1.1 Background

Northern Consulting Engineers (NCE), have been commissioned by RPS AAP Consulting Pty Ltd to prepare an engineering report for a Queensland Resources Common User Facility (QRCUF) at Cleveland Bay Industrial Estate at 109 Penelope Road, Stuart. The proposed works are on land described as Lot 14 on SP338024.

The following report has been produced to support a development application for Material Change of Use (MCU). The purpose of this report is to demonstrate how the proposed development can be achieved by addressing:

- Stormwater management, both quantity and quality;
- Water and Sewer services planning assessment;
- Low Impact Traffic Impact Assessment;
- Flooding.

The information provided in this report is based on the following layout plan and documents which are provided as appendices to this report;

- Proposed Site Layout Plans, reference B071-D1-01-0001_01 Rev J, prepared by SEDGMAN (**Appendix A**).
- Turning Path Assessment prepared by NCE (**Appendix B**).
- Stormwater Management Conceptual Sketch (Prelim Design) by NCE (**Appendix C**)
- ATLAN Vault, Filter and Spillceptor Technical Data (**Appendix D**)

1.2 Existing Development

The site is located at Cleveland Bay Industrial Estate between Bruce Highway and Ron Mclean Drive. Cleveland Bay Industrial Estate is a newly developed industrial subdivision and therefore the site is an unvegetated vacant block. **Figure 1-1** shows the location of the site in context to the surrounding properties, water courses, road reserves and easements, courtesy of Queensland Globe's online mapping tool.

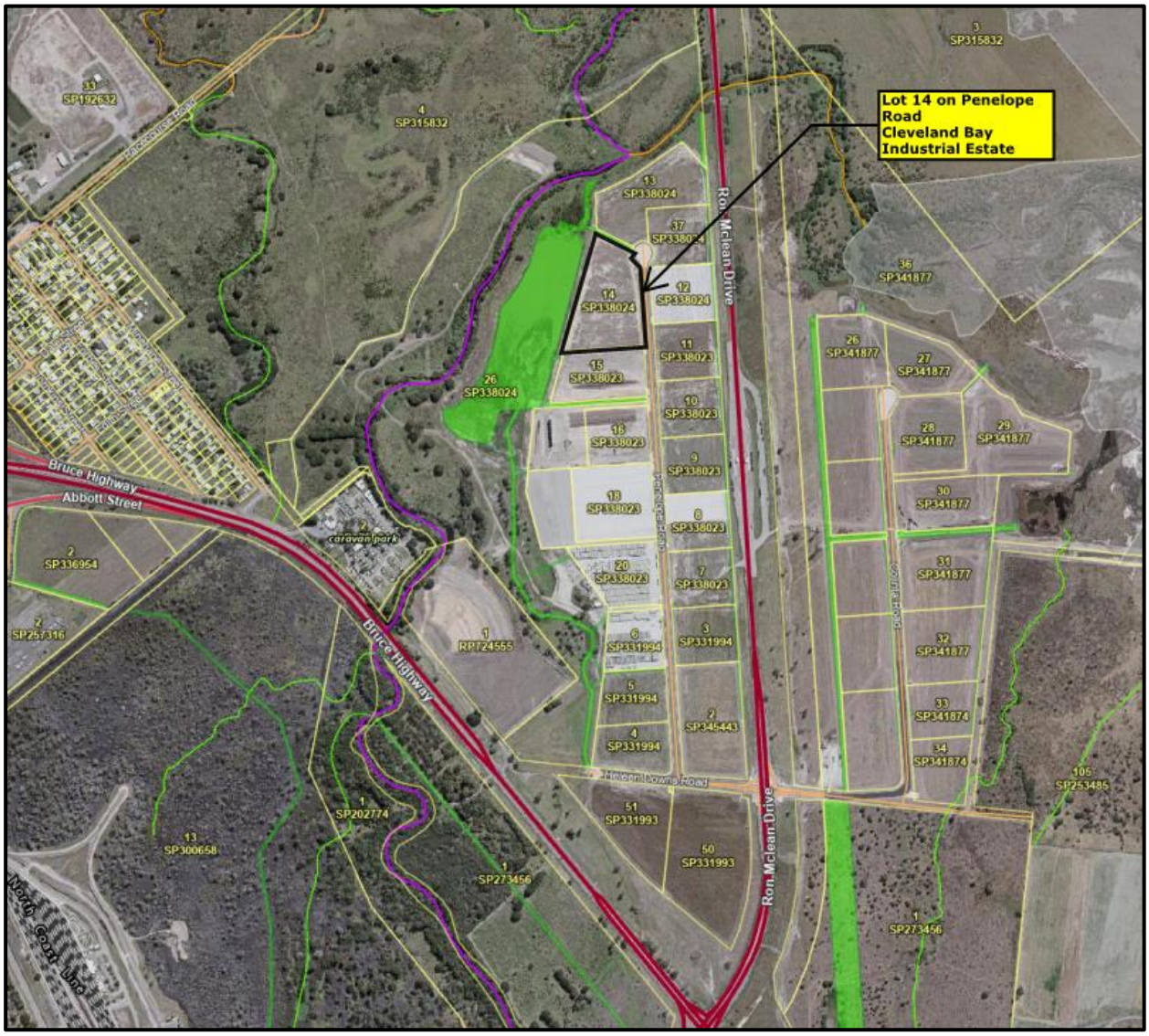


Figure 1-1 Location of the development in context to the surrounding properties

1.3 Proposed Development

The proposed development is a research and technology industry for QRCUF which involves the following;

- Operations Office/Process Buildings
- Reagent Storage Shed
- Fuel areas (bunded)
- Hardstand area
- Internal roads/car park
- Landscaping

The proposed development is illustrated in **Figure 1-2** with the original drawing provided in **Appendix A.**

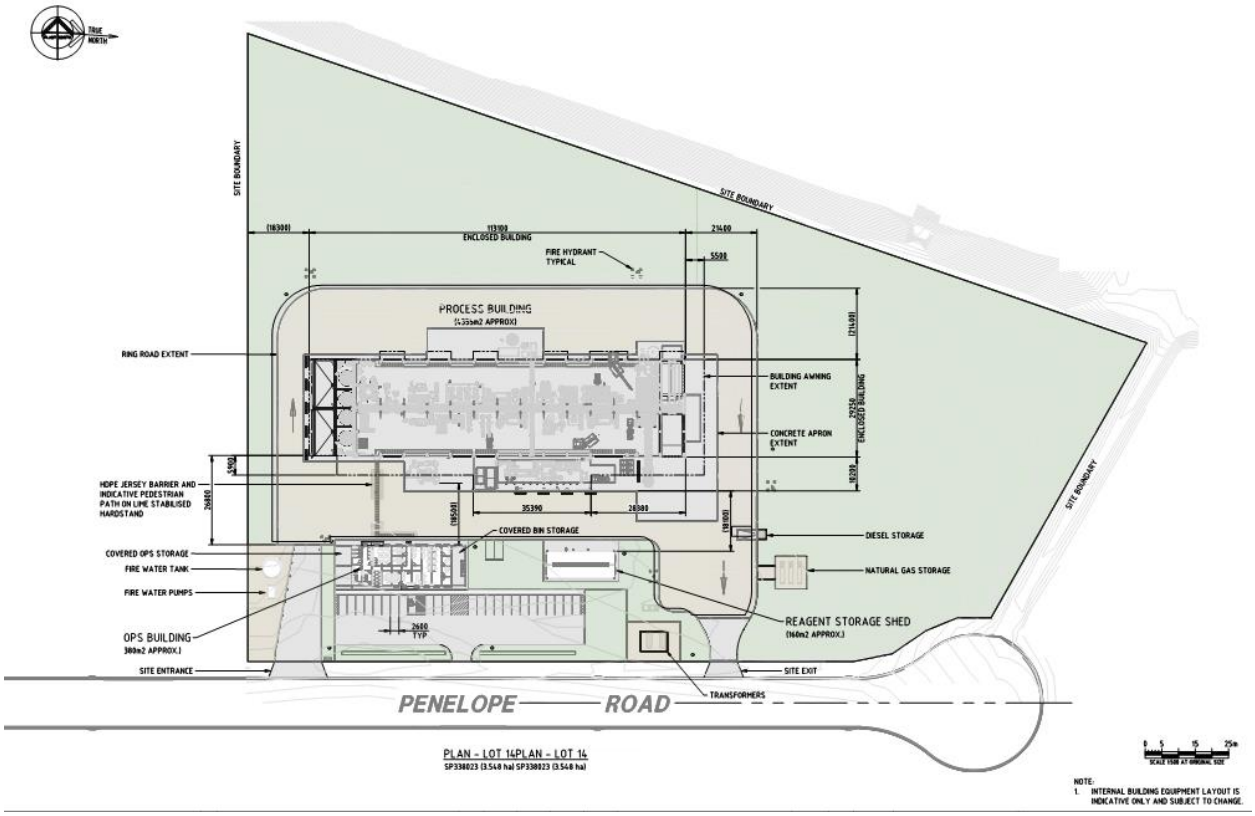


Figure 1-2 Proposed Development

2.0 STORMWATER MANAGEMENT

In accordance with the Queensland Urban Drainage Manual (QUDM) test in determining the lawful point of discharge (LPOD), the LPOD for the development has been defined as:

- The open drain at the rear (western) of site (Easement P in Lot 26 on SP338024)
- The open drain along the northern boundary (Easement R in Lot 26 on SP338024)

Currently, the site is free draining in a western direction towards the easement along the western boundary and discharging into the existing basin at the rear property (west). There is a 600mm dia (600Ø) reinforced concrete pipe (RCP) located on the western boundary to facilitate discharge to the easement for any future underground network.

The proposed development is expected to maintain the existing stormwater management strategy by draining towards the rear drainage easement being the existing basin. Run-off from the pavement areas will overland sheet flow and be captured via a pit and pipe system in which the first flush volume will be treated at an end of line device prior to discharging via the drainage easement. Roof water will be piped underground directly to the treatment system. Flows greater than the first flush volume within the underground system will by-pass the treatment system whilst the first flush flows will be treated via underground stormwater cartridge filter system that will adequately treat run-off prior to water reaching to LPOD's. Further details on water quality treatment are discussed in **Section 2.2**, while **Figure 2-1** illustrate the conceptual stormwater management describe above.

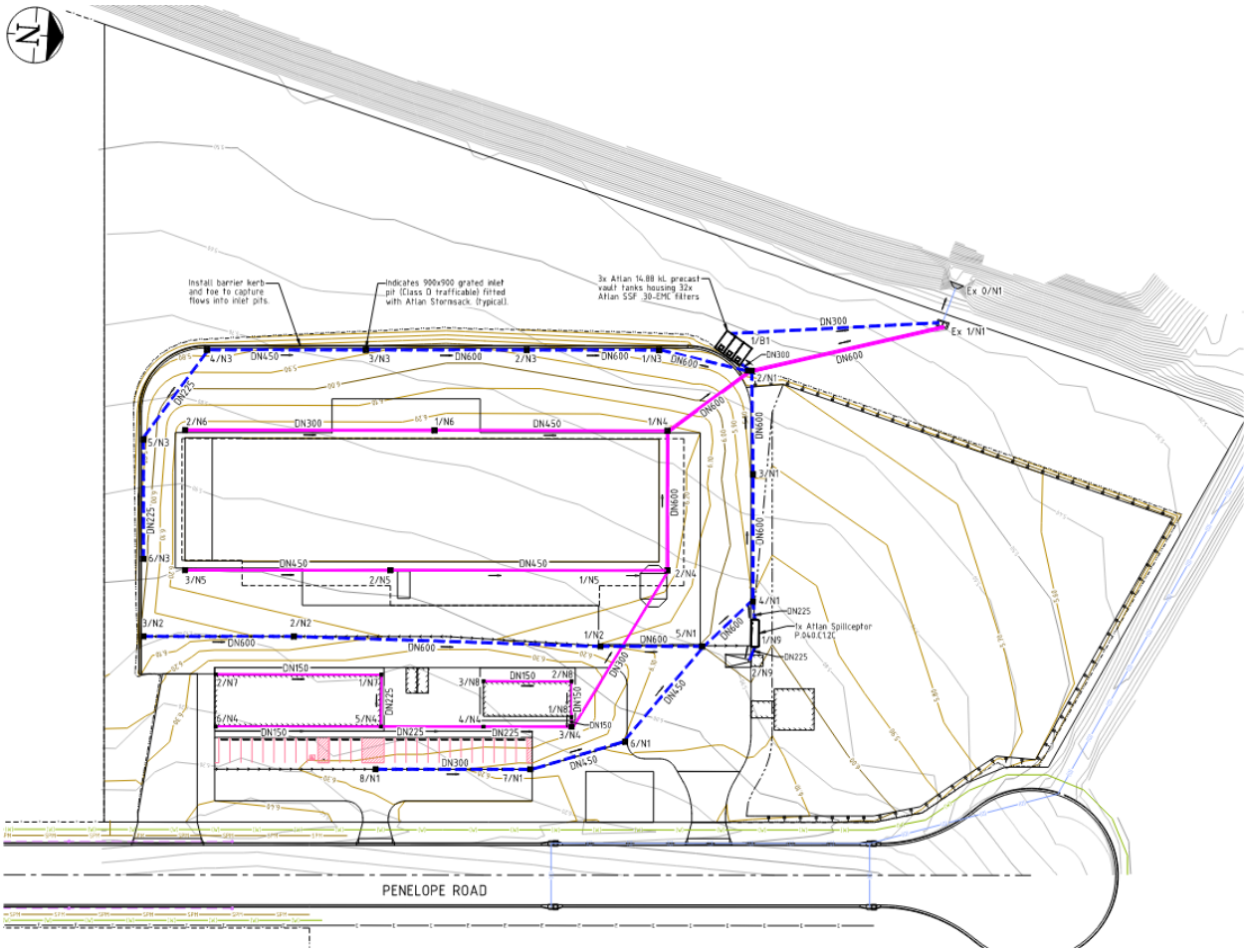


Figure 2-1 Stormwater management concept – cartridge system (refer **Appendix C** for original)

2.1 Quantity

The fraction impervious modelling for the site as part of the Cleveland Bay Industrial Precinct subdivision flood modelling was 90%. The increase in peak runoff due to the increased impervious area was addressed in the XP-RAFTS model developed by Venant Solutions during the subdivision design and thus any stormwater quantity issues have already been addressed as the development site will not exceed the 90% fraction impervious. Therefore, no additional quantity mitigation assessment has been completed as part of this report.

2.2 Quality

All stormwater treatment trains have been modelled with the aid of MUSIC 6.4.0. The catchments have been modelled in accordance with the following:

- "MUSIC Modelling Guidelines November 2018 – Consultation Draft", Water by Design (2018);
- Townsville Aero, 6 Minute Time Step From 3/03/1953 To 31/03/2010;
- Water by Design MUSIC Modelling Guidelines Source Nodes (Split) utilising modified percent impervious area & pollutant concentration;
- No drainage routing between nodes;
- Water by Design MUSIC Modelling Guidelines Recommended MUSIC Rainfall-Run-off Parameters SEQ for industrial land use.

2.2.1 Stormwater Quality Objectives

The design intent for the system is to meet the current TCC Planning Scheme water quality targets, namely:

- 80% Total Suspended Solids (TSS) Reduction
- 65% Total Phosphorus (TP) Reduction
- 40% Total Nitrogen (TN) Reduction
- 90% Gross Pollutants (GP) Reduction

In the event that the above targets are not achievable, the design intent is to ensure that the post development water quality discharging the site is equal to or better than the pre-development quality. Treatment targets shall be reached before water leaves the lot.

2.2.2 MUSIC Modelling

Pollutant loads for the development have been modelled primarily using "split" land use and references the MUSIC Modelling Guidelines November 2018 for the pollutant parameters for industrial surface types. The pollutant generation parameters adopted are shown in **Figure 2-2** with **Figure 2-3** depicting the rainfall-run-off parameters.

Below is the modelling concept adopted:

- The modelling has been assessed for post development.
- The developed assessment has been considered as only one (1) catchment area. The zone has been assessed as Industrial and based only on the area that shall be developed using a "split" catchment method.
- The MUSIC nodes include runoff from roof area, road/carparking area, ground area, hardstands, and the landscaping. **Table 2-1** depicts the source nodes and their imperviousness adopted in the assessment.

Table 2-1 MUSIC Source Nodes

Node Name	Zoning/Surface Type	Surface Area (ha)	Impervious (%)
Sheds/Office/Storage (roof)	Industrial	0.490	100
Roads (breakdown below)	Industrial	2.001	58
Landscaping	Industrial	1.057	0

- Generally, water will be treated via the combination of proprietary products, i.e., Atlan Stormsacks, Vault and Filter treatment train before leaving the lot and prior to entering the open drain to the west. The proposed cartridge filters can be fitted into a single module vault as shown on drawings provided in **Appendix D**. Proposed underground cartridge filter system parameters as input into MUSIC are given in **Table 2-2**. The modelling was carried out by Atlan which were based on:
    - Roof area = 4,895m²
    - Road Area = 20,015m² at 58% impervious as follows:
        - 60% impervious road (stab-gravel) area = 7,515m²
        - 100% impervious driveway/carparks area = 1,700m²
        - 50% impervious gravel hardstand = 10,800m²
    - 100% perv ground area = 10,570m²

- The fuel areas are to be bunded and treated separately via an oil separating system i.e., Atlan Spillceptor or similar, such that run-off (run-off with hydrocarbons) can be captured treated separately prior to discharging clean run-off into the stormwater network and trade waste.

- The MUSIC model setups described above and the proposed indicative treatment train layout is depicted in **Figure 2-4**.

TABLE 3.9 POLLUTANT EXPORT PARAMETERS FOR SPLIT CATCHMENT LAND USE (LOG^{10} VALUES)

FLOW TYPE	SURFACE TYPE	TSS LOG^{10} VALUES		TP LOG^{10} VALUES		TN LOG^{10} VALUES	
		MEAN	ST. DEV	MEAN	ST. DEV	MEAN	ST. DEV
URBAN RESIDENTIAL							
Baseflow parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	1.00	0.34	-0.97	0.31	0.20	0.20
	Ground level	1.00	0.34	-0.97	0.31	0.20	0.20
Stormflow parameters	Roof	1.30	0.39	-0.89	0.31	0.26	0.23
	Roads	2.43	0.39	-0.30	0.31	0.26	0.23
	Ground level	2.18	0.39	-0.47	0.31	0.26	0.23
INDUSTRIAL							
Baseflow parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	0.78	0.45	-1.11	0.48	0.14	0.20
	Ground level	0.78	0.45	-1.11	0.48	0.14	0.20
Stormflow parameters	Roof	1.30	0.44	-0.89	0.36	0.25	0.32
	Roads	2.43	0.44	-0.30	0.36	0.25	0.32
	Ground level	1.92	0.44	-0.59	0.36	0.25	0.32
COMMERCIAL							
Baseflow parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	0.78	0.39	-0.60	0.50	0.32	0.30
	Ground level	0.78	0.39	-0.60	0.50	0.32	0.30
Stormflow parameters	Roof	1.30	0.38	-0.89	0.34	0.37	0.34
	Roads	2.43	0.38	-0.30	0.34	0.37	0.34
	Ground level	2.16	0.38	-0.39	0.34	0.37	0.34

Figure 2-2 MUSIC "split" pollutant export parameters extracted from MUSIC Modelling Guidelines November 2018

TABLE A1.2 RECOMMENDED MUSIC RAINFALL-RUNOFF PARAMETERS SEQ

PARAMETER	LAND USE			
	URBAN RESIDENTIAL	COMMERCIAL AND INDUSTRIAL	RURAL RESIDENTIAL	FORESTED
RAINFALL THRESHOLD (MM)	1	1	1	1
SOIL STORAGE CAPACITY (MM)	500*	18	98	120
INITIAL STORAGE (% CAPACITY)	10	10	10	10
FIELD CAPACITY (MM)	200	80	80	80
INFILTRATION CAPACITY COEFFICIENT A	211	243	84	200
INFILTRATION CAPACITY COEFFICIENT B	5.0	0.6	3.3	1.0
INITIAL DEPTH (MM)	50	50	50	50
DAILY RECHARGE RATE (%)	28	0	100	25
DAILY BASEFLOW RATE (%)	27	31	22	3
DAILY DEEP SEEPAGE RATE (%)	0	0	0	0

Figure 2-3 MUSIC recommended rainfall run-off parameters for SEQ

2.2.2.1 Results

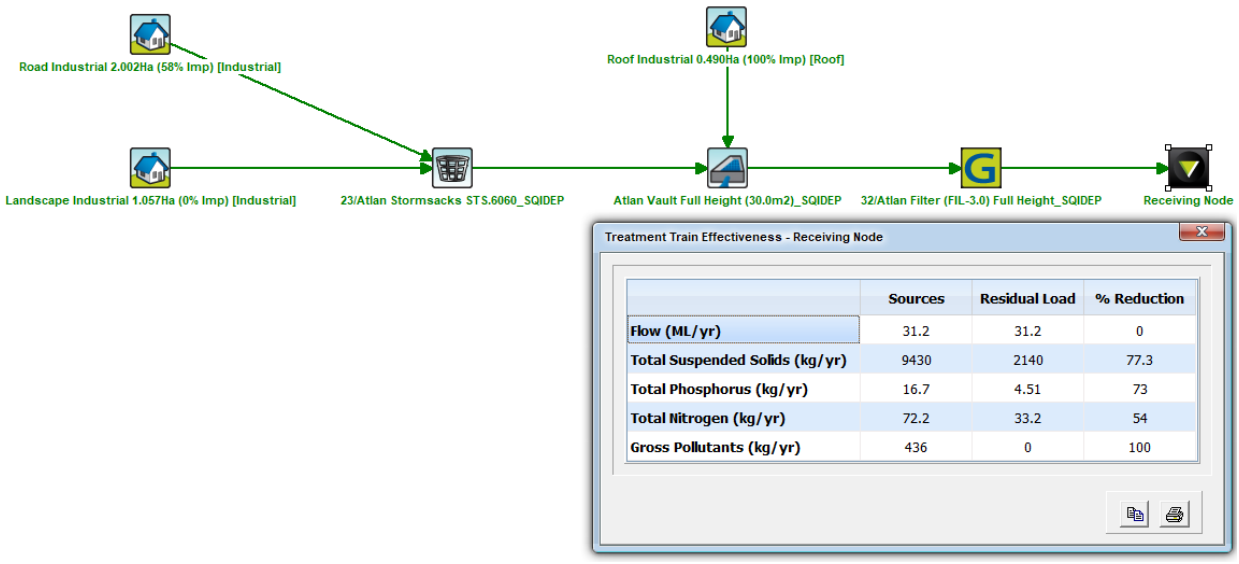


Figure 2-4 MUSIC treatment train layout

Table 2-2 MUSIC treatment input parameters

Treatment Item	Properties
Atlan Design Proposal	23x Atlan Stormsacks 32x Atlan Filters housed within 3x Atlan Vaults (Single module vault drawing attached) 1x Atlan Spillceptor P.040.C1.2C (drawing attached)

Refer to **Appendix D** for Atlan filter, vault and spillceptor drawings.

Table 2-3 summarises the results of the assessment. The data clearly indicate that the water quality leaving the site post-development generally complies with the quality objectives set by TCC, other than being 2.7%

shy of the TSS target. That said, this is a minor reduction to the overall target with the intent of water quality being achieved as each other parameter exceed the reduction targets. Overall, the proposed development can comply with TCC's healthy water policy, ensuring that water quality remains within acceptable limits across all evaluated scenarios.

Table 2-3 MUSIC treatment train effectiveness

Description	Sources	Residual Load	% Reduction	TCC Treatment %
Flow (ML/yr)	31.2	31.2	0	
Total Suspended Solids (kg/yr)	9190	1840	77.3	80
Total Phosphorus (kg/yr)	16.9	4.21	73	65
Total Nitrogen (kg/yr)	72.4	31.9	54	40
Gross Pollutants (kg/yr)	436	0	100	90

3.0 WATER AND SEWER SERVICES

3.1 Water Network

Considering the location of this development parcel within a newly established industrial zone, it is expected that a comprehensive evaluation of the water network capacity has been conducted to ascertain its sufficiency for accommodating the envisioned development.

In accordance with the Cleveland Bay Industrial Estate Subdivision plans for Lot 14, shown in below **Figure 3-1**, the site is currently serviced via Ø200 UPVC Class 16 water main along the frontage, Penelope Road. It is proposed that connection to Council's system will be via a new water meter tapping into the Ø200 main located at the front of site.

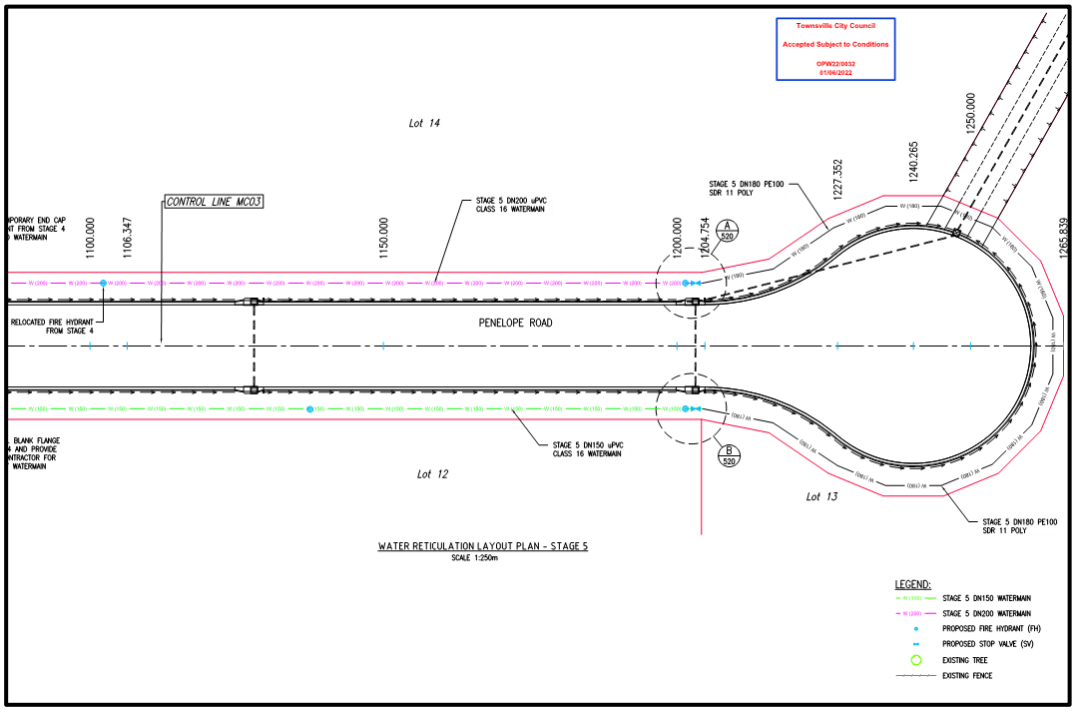


Figure 3-1 Cleveland Bay Industrial Estate Stage 5 - Water Reticulation Plans by Langtree Consulting (Extract)

3.2 Sewer Network

Similar to the adequate capacity of the water network servicing the proposed development lot, it is anticipated that a comprehensive evaluation of the sewer network capacity has been undertaken to ensure its adequacy for accommodating the proposed development.

It is understood that the sewer strategy for the estate is each lot will be serviced by its own private pump station that will discharge to a connection point and sewer pressure main located in the road reserve which will convey waste water to a Council owned centralised pump station. In accordance with the Cleveland Bay Industrial Estate Subdivision plans for Stage 4, there is OD63 PE100 P16 SDR11 pressure main along the frontage of adjacent Lot 15 on SP338023 which terminates 1.5m north of the Lot 14/15 common boundary as shown in below **Figure 3-2**. This will be the connection/discharge point for the developments private pump station.

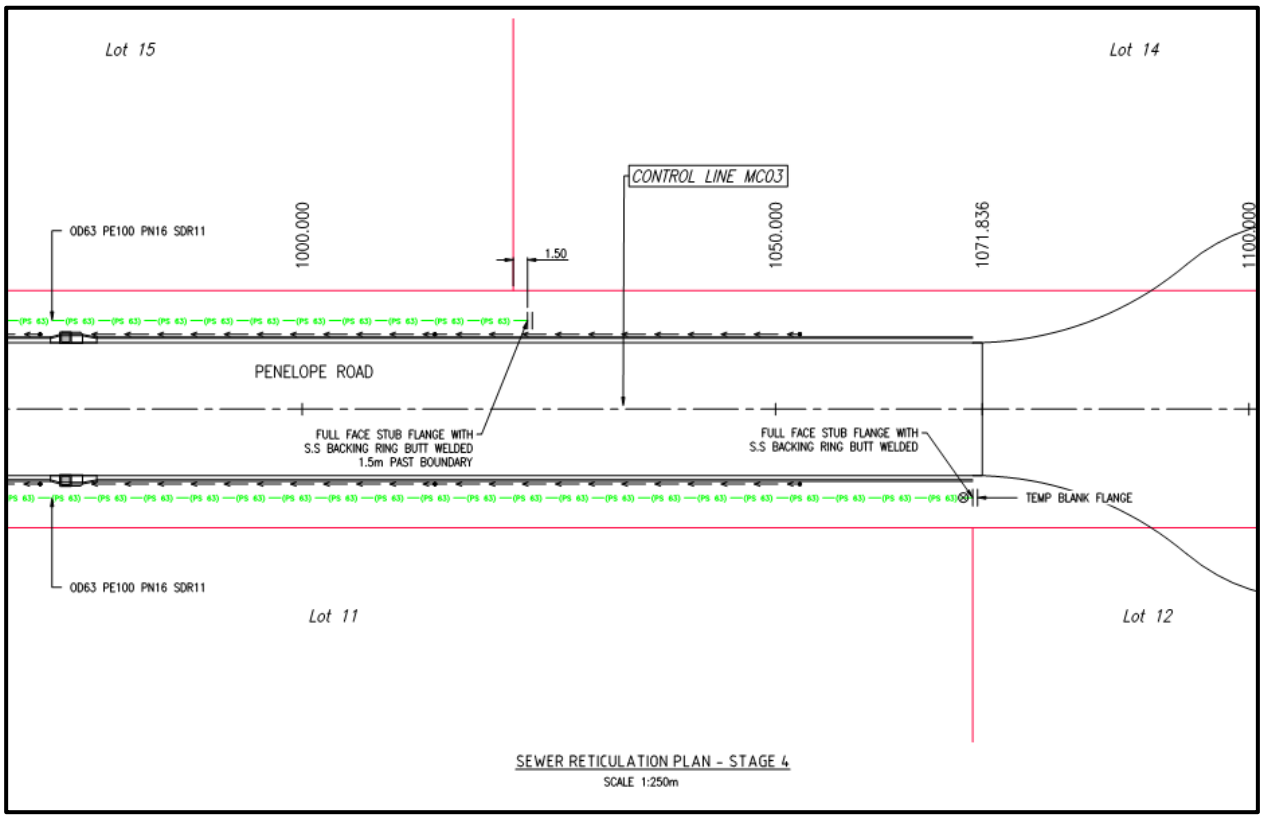


Figure 3-2 Cleveland Bay Industrial Estate Stage 4 - Sewer Reticulation Plans by Langtree Consulting (Extract)

4.0 TRAFFIC ASSESSMENT

4.1 Development Parking Facilities

The parking arrangement delineated in **Appendix A** by Sedgman was evaluated for adherence to both AS2890.1 and the TCC Planning Scheme.

TCC planning scheme, Schedule 6.10 prescribes a parking rate of one (1) space per 80m^2 GFA (gross floor area). As the proposed use involves a total GFA of 4,895m², this would prescribe 62 car parking spaces. The proposal provides 24 car parking spaces plus 1 PWD space; accessed directly from Penelope Road; while a further two (2) spaces provided within the processing building compound; giving a total of 26 spaces plus 1

PWD space. While this is less than prescribed within Schedule 6.10; as a specialist facility, those travelling to the QRCUF will either be staff or others having a specific reason to be there, for example, representatives of the proponents for campaigns. Access by members of the general public will not occur, meaning that vehicle demand for parking will be known and can be regulated during site operation.

The GFA of the QRCUF reflects the dimensions of the main processing building which is designed to house large and highly specialised equipment, machinery and associated controls. Operation of this machinery is largely automated, with staff being on site to monitor the equipment and assist in moving material in and out of the facility through the various stages of processing. In practical application, operation assumes an average of 25 persons will be on the site during testing campaigns, allowing for overlapping shifts. As such, the 26 car parking spaces (plus 1 PWD space) proposed are sufficient for the operations of the site and supporting administrative activities, including provision for visitor parking. Notwithstanding this, the site provides sufficient area for overflow parking adjacent to the car parking area and south of the processing building should greater car parking be required for a particular proponent. The proposed car parking rate will thus be sufficient to cater to the demand generated by the development and avoid overflow of car parking on Penelope Road.

In general, the proposed parking bay arrangement ensures adequate width (2.6m) and length (6.0m) in compliance with AS2890.1 Clause 2.4.1 (b) (ii).

4.2 Traffic Management

Figure 4-1 indicates anticipated traffic movement over the site. NCE have conducted a swept path analysis for the internal roads and access to the site utilising a 25.0m B-double. Furthermore, car park vehicle movements have been assessed to demonstrate vehicles can enter and exit the car parks safely. This analysis shows that the access and internal roads can cater for the largest design vehicle. Refer to the **Appendix B** which shows the vehicle swept paths completed by NCE.

An assessment of the current development footprint was completed against the Department of Transport and Main Roads Guideline “Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways February 2021”.

The “Access Sight Line Layout” provided in **Appendix B** evidences sufficient sight distance is provided to pedestrian/bicycle users of a typical pathway constructed in accordance with TCC Standard drawings. A control gate is proposed to be installed at the exit location of the internal road that will limit vehicle speeds prior to entering the verge/road corridor, therefore; speed humps are not required at this location. No control gate is currently proposed for the car park entry/exit, however as there is no pedestrian facilities proposed or currently in place; the site being located within a cul-de-sac and the provision for on-site parking; the likelihood of pedestrian and cyclist traffic within the verge/road corridor is very low. Subsequently, no speed controls are proposed for the car park entry exit location.

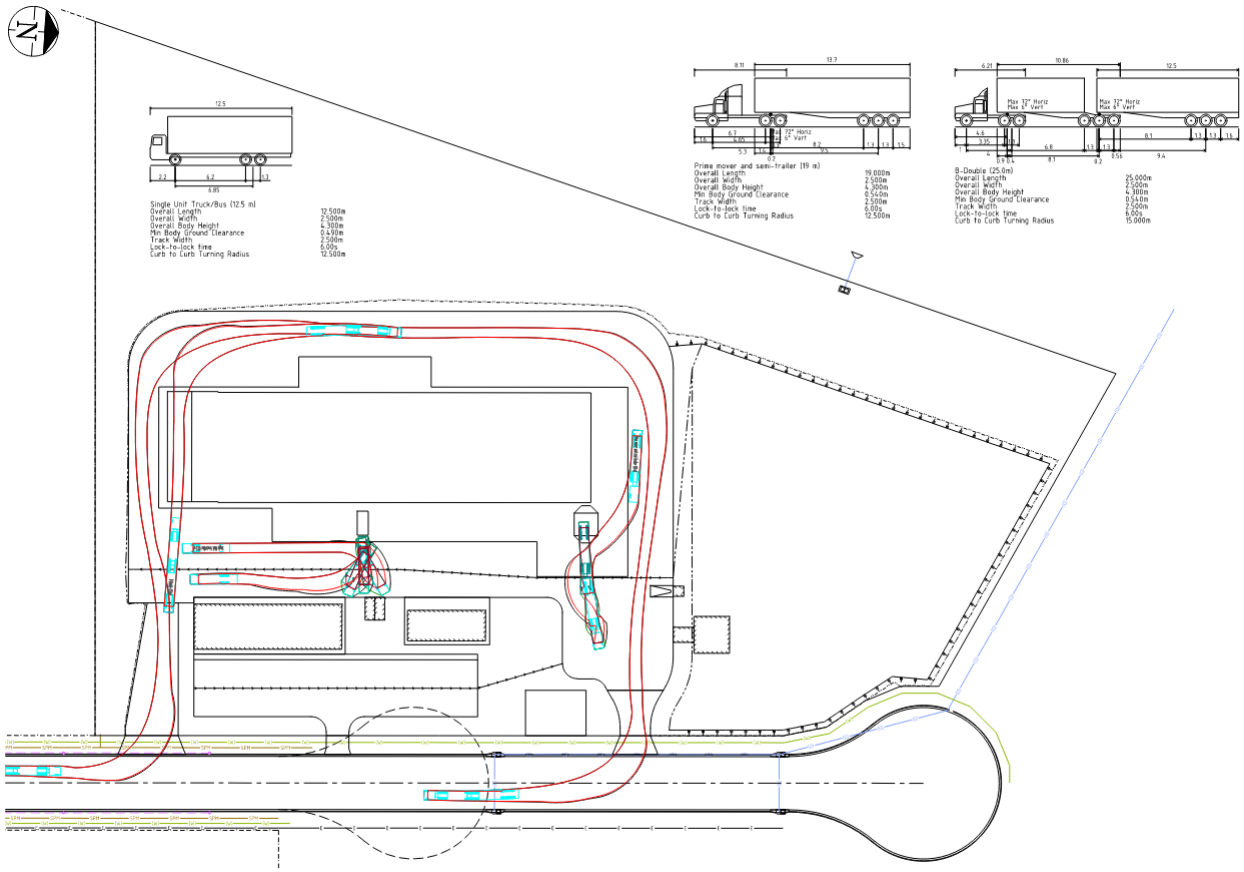


Figure 4-1 Site Traffic Movements

5.0 FLOODING

Flooding has been addressed by the flood report completed by Venant Solutions (Ref. MJ: L.M00260.02.07.docx) which addresses the flood impacts for the Cleveland Bay Industrial Precinct development stages. In accordance with this assessment the 1% AEP (defined flood event) for the site varies along the western boundary from 5.36m AHD at the common boundary of Lot14/15 to 5.30m AHD at the north-western corner. Based on the above, the site is predominately immune from the 1% AEP flood event.

5.1 Finished Floor Levels

There is some uncertainty on the triggers that constitute a structure being used for the manufacture or storage of hazardous materials and as such it's unclear as to whether the proposed warehouse needs to be designed to prevent the intrusion of flood waters up to at least 0.2% AEP flood event, refer Council's flood hazard overlay code, PO9. To gain an appreciation of the potential impact that the difference in design flood events has on the finished floor level (FFL) of the structures, advice relating to the 0.2% AEP and probable maximum flood (PMF) level were sought from Council. Based on the advice received, the following is noted:

- The increase in PMF level from the 1% AEP flood ranges from 0.19m to 0.28m, therefore is recommended to adopt 0.3m for design purposes (note this increase is based on baseline, i.e. no estate development).

- The increase from the 1% AEP flood level to the 0.2% AEP flood level is ~0.15m (note this increase is based on baseline, i.e. no estate development).

From the above, it is recommended to adopt a minimum FFL for buildings of 5.76m AHD, which will provide ~100mm freeboard to the expected PMF level, however subject to the end users desires, this FFL could be reduced to 5.50m AHD which is estimated to equal the 0.2% AEP event. The natural surface levels (NSL) over the warehouse footprint range from 6.0m to 5.60m, therefore the adoption of 5.76m is anticipated to achieve a suitable balance between compliance with flood criteria and NSL's.

6.0 CONCLUSION

NCE have undertaken an engineering investigation associated with the Queensland Resources Common User Facility (QRCUF) development at 109 Penelope Road, Stuart (Lot 14 on SP338024). The findings of this assessment are summarised below:

- The development site does not exceed the fraction impervious previously addressed as part of the Cleveland Bay Industrial Precinct subdivision design and thus no additional mitigation is required for the stormwater quantity.

- The stormwater quality assessment was undertaken via MUSIC and shows that the quality objectives have been met via a treatment train of cartridge system and oil separator.

- The existing water and sewer infrastructure is anticipated to have sufficient capacity to service the proposed development and is located appropriately to service the proposed lots from the frontage.

- The development proposes to provide 27 parking spaces, less that the provision 62 spaces in accordance with Council planning scheme parking rate, however due to the assumption that the facility will have an average of 25 staff (allowing for overlapping shifts); strict compliance with the planning scheme parking rates would significantly exceed the parking demand generated by proposed staffing and is considered excessive and unnecessary. Therefore, the current proposal of 27 spaces is considered to adequate service the development.

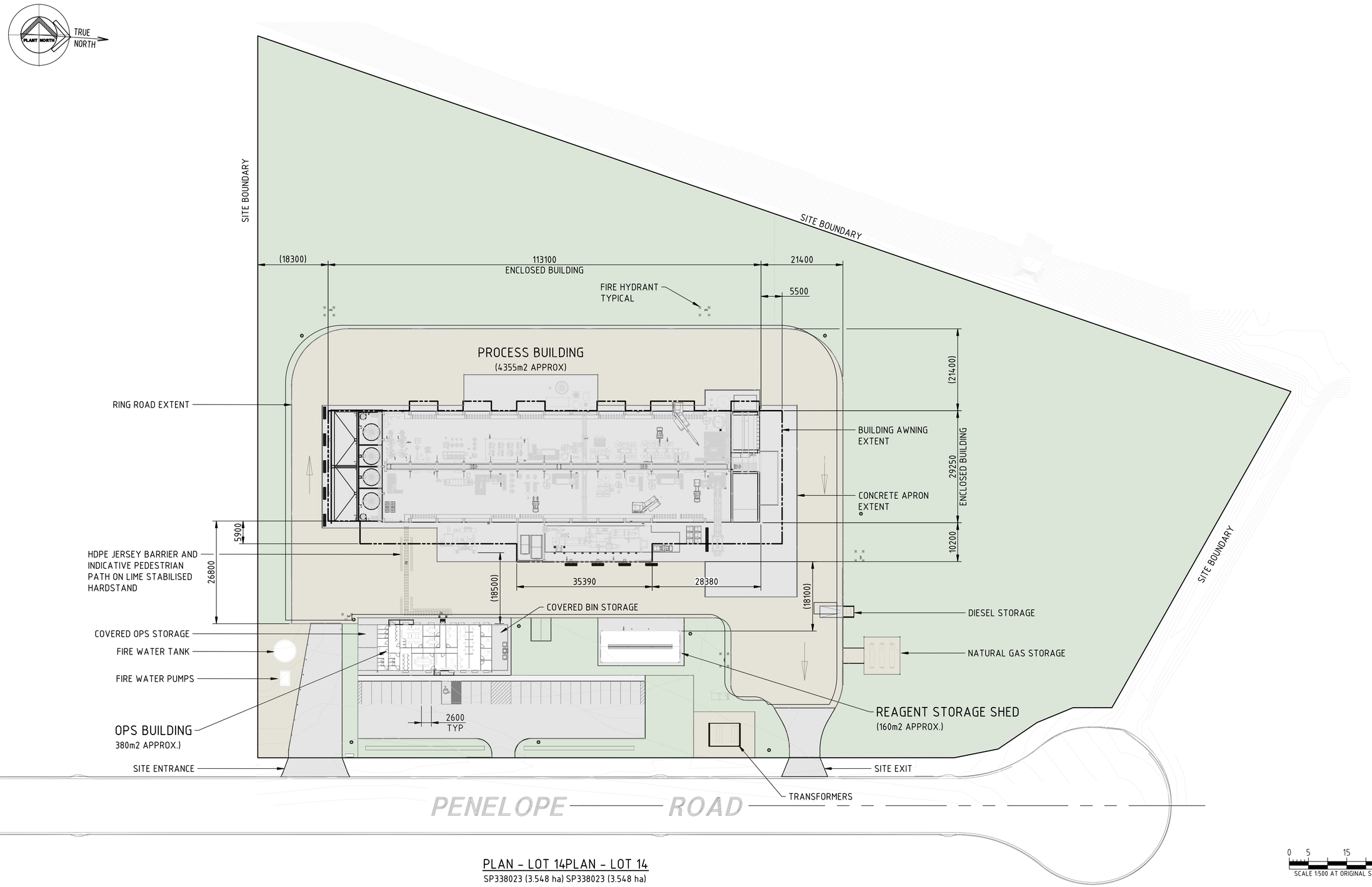
- In general, the proposed parking bay arrangement ensures adequate width and length in compliance with AS2890.1 Clause 2.4.1 (b) (ii).

- NCE have completed swept path modelling of a 25.0m B-double indicates the access and internal roads adequately cater for the largest design vehicle.

- The site is predominately immune from the 1% AEP flood event, however there is some uncertainty surrounding the minimum finished floor level (FFL) of structures. Subsequently a recommendation of a minimum FFL of 5.76m AHD has been provided in order to provide immunity to the probable maximum flood (PMF).

APPENDIX A

B071-D1-01-0001_01 Rev J, prepared by SEDGMAN



PLAN - LOT 14PLAN - LOT 14

SP338023 (3.548 ha) SP338023 (3.548 ha)

0 5 15 25m
SCALE 1:500 AT ORIGINAL SIZE

NOTE:
1. INTERNAL BUILDING EQUIPMENT LAYOUT IS INDICATIVE ONLY AND SUBJECT TO CHANGE.

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
		H	TRANSFORMER YARD AND REAGENT SHED RELOCATED	TKE	TKE	PJO	02.08.24	
		G	SITE RECONFIGURED	RWE	RWE	PJO	03.07.24	
		F	PRELIMINARY ISSUE - LAYOUT UPDATED	RWE	RWE	PJO	07.06.24	
		E	PRELIMINARY ISSUE - STORAGE AREAS ADDED AND BUILDING SIZES UPDATED	TKE	TKE	TKE	15.03.24	
		D	PRELIMINARY ISSUE - EQUIPMENT ADDED AND ADMIN BUILDING SIZE UPDATED	TKE	TKE	---	07.02.24	
		J	PRELIMINARY ISSUE	TKE	TKE	TKE		

REFERENCE DRAWINGS | DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	TKE	05.09.24
CHECKED	TKE	05.09.24
DESIGNED	TKE	02.09.24
LEAD ENG	TKE	02.09.24
APPROVED		

SCALE 1:500 OR AS SHOWN
DO NOT SCALE A1

SEDGMAN

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY

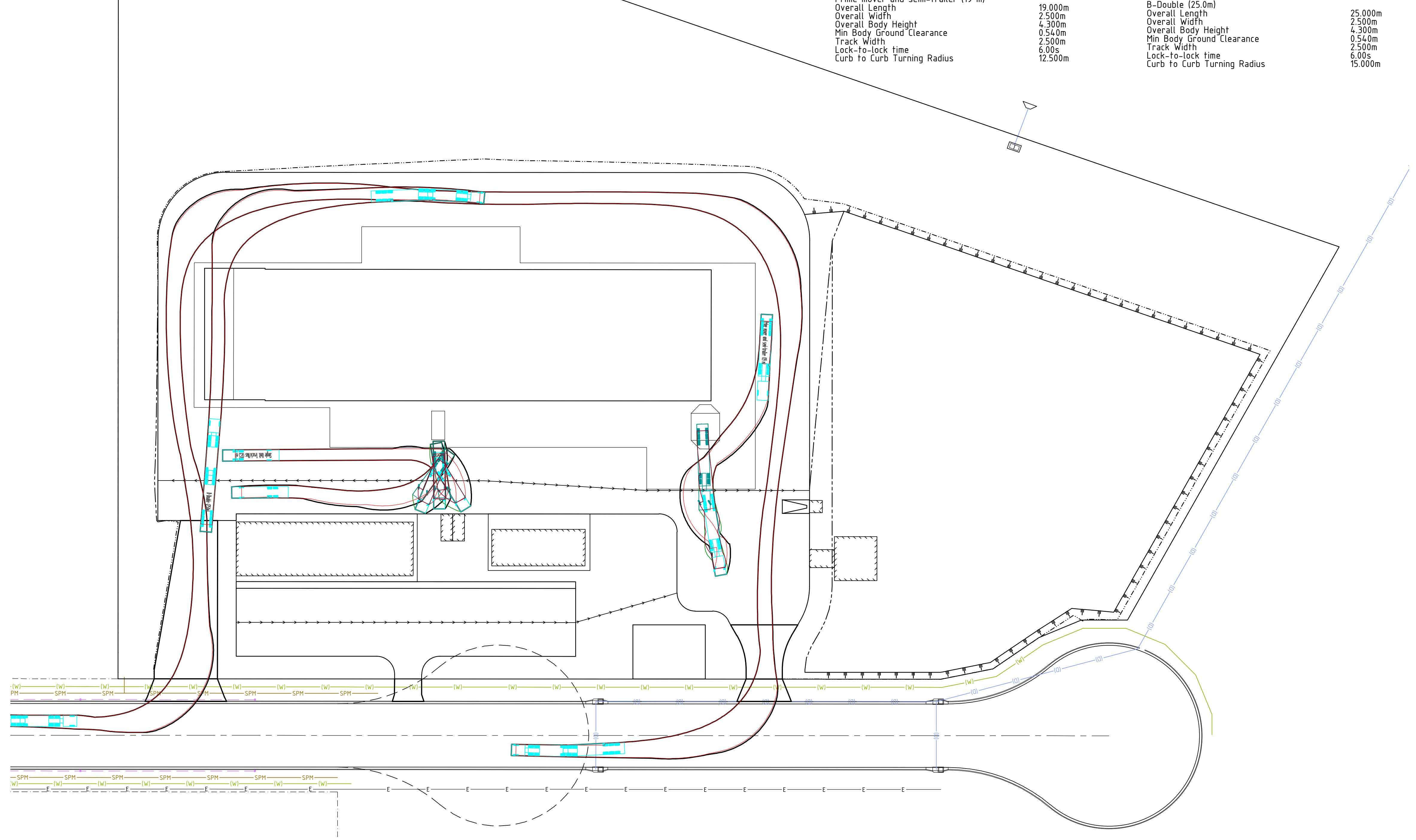
TITLE: MINERALS PROCESSING FACILITY
AREA 01 - SITE
SITE PLAN

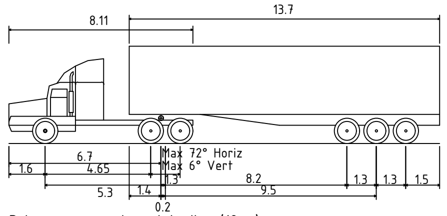
PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0001__01	J

PLOT DATE: 5/09/24, 5:36:45 AM File: C:\TEMP\Vault\Designs\B071\Dwgs_Development\01\B071-D1-01-0001_01.dwg Bv: Vault Job Proj: BNE01

APPENDIX B

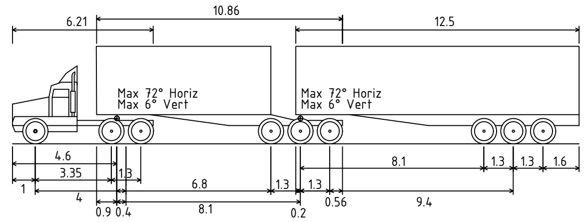
Turning Path Assessment prepared by NCE





Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

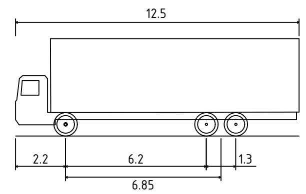


B-Double (25.0m)

Overall Length	25.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

LEGEND

- Existing RP boundary.
- Existing easement.
- (W) Existing water main.
- SPM Existing sewer main.
- (D) Existing stormwater drain line.
- Existing subsoil drainage.



Single Unit Truck/Bus (12.5 m)

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

REFERENCE DRAWINGS

DRAWING NO	TITLE
B071-D1-01-0001_01_C	SITE PLAN
B071-XR-01-3000_04_A	TOPOGRAPHIC SURVEY SHEET 4 OF 4
B071-XR-01-3000_03_A	TOPOGRAPHIC SURVEY SHEET 3 OF 4
B071-XR-01-3000_02_A	TOPOGRAPHIC SURVEY SHEET 2 OF 4
B071-XR-01-3000_01_A	TOPOGRAPHIC SURVEY SHEET 1 OF 4

DRAWING REVISIONS

REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
A	PRELIMINARY ISSUE	KJM	JS	JS	2/08/24	

CLIENT QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	KJM	2/08/24
CHECKED	JS	2/08/24
DESIGNED		
LEAD ENG	JS	2/08/24
APPROVED		
SCALE	1:500	OR AS SHOWN
	DO NOT SCALE	A1

SEDGMAN

NORTHERN CONSULTING engineers

Civil | Structural | Forensic
Traffic | Flood Modelling

TOWNSVILLE | SUNSHINE COAST | BRISBANE
GLADSTONE | NEW ZEALAND
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W: www.nceng.com.au

PRELIMINARY
NOT FOR CONSTRUCTION

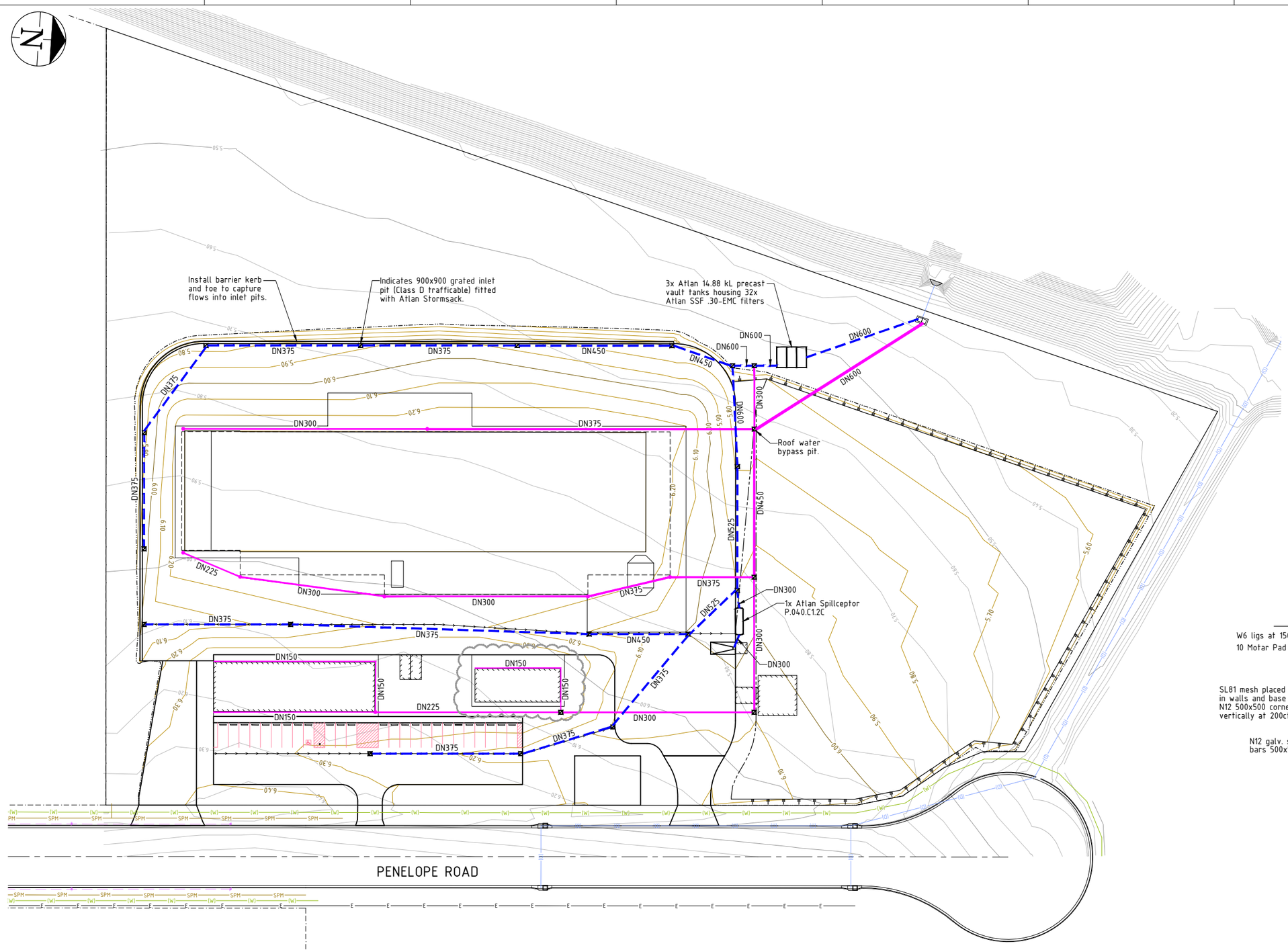
PROJECT QLD RESOURCES COMMON USER FACILITY

TITLE
MINERALS PROCESSING FACILITY
AREA 01 - SITE
VEHICLE MOVEMENT
LAYOUT PLAN

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D3-01-1050__01	A

APPENDIX C

Stormwater Management Conceptual Sketch (Prelim Design) by NCE

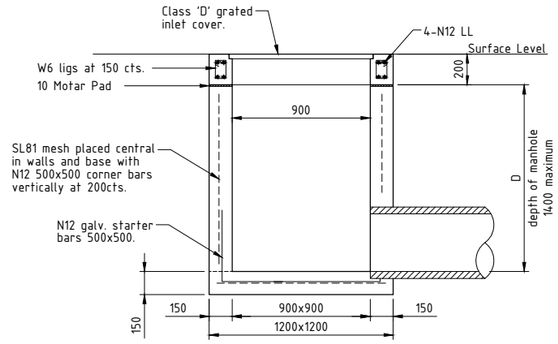


LEGEND

- Overland stormwater system.
- Roof stormwater system.
- RP boundary.
- Existing minor contour.
- Existing major contour.
- Design minor contour.
- Design major contour.
- Change of grade.
- Top of batter.

STORMWATER NOTES:

1. All stormwater drainage to be in accordance with AS/NZS 3500.3 U.N.O.
2. All pipes to be BlackMAX U.N.O. Approved alternative rubber ring jointed PVC.
3. Laying of pipe to be in accordance with AS/NZS 3500.3.
4. All junction pits are to be 900x900 concrete manholes. Proprietary product approved alternate subject to compliance with design vehicle loads.
5. All pit lids are to be minimum class D.



900x900 CONCRETE STORMWATER PIT
NTS

LAYOUT PLAN

0 5 15 25m
SCALE 1:500 AT ORIGINAL SIZE

REFERENCE DRAWINGS		REV	DRAWING REVISIONS	BY	DRG CHK	ENG CHK	DATE	APPROVED
B071-D1-01-0001_01_C	SITE PLAN	F	BUILDING LOCATION AMENDED	KJM	JS	JS	22/08/24	
B071-XR-01-3000_04_A	TOPOGRAPHIC SURVEY SHEET 4 OF 4	E	LAYOUT AMENDED.	KJM	JS	JS	15/08/24	
B071-XR-01-3000_03_A	TOPOGRAPHIC SURVEY SHEET 3 OF 4	D	ISSUED FOR OPERATIONAL WORKS APPROVAL.	KJM	JS	JS	20/06/24	
B071-XR-01-3000_02_A	TOPOGRAPHIC SURVEY SHEET 2 OF 4	C	LAYOUT AMENDED	KJM	JS	JS	17/05/24	
B071-XR-01-3000_01_A	TOPOGRAPHIC SURVEY SHEET 1 OF 4	B	PRELIMINARY ISSUE 100% - TITLE BLOCK CHANGES	JS	JS	JS	5/03/24	
		A	PRELIMINARY ISSUE	KJM	JS	JS	8/02/24	

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	KJM	8/02/24	
CHECKED	JS	8/02/24	
DESIGNED	DS	8/02/24	
LEAD ENG	JS	8/02/24	
APPROVED			
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SEDGMAN
NORTHERN CONSULTING engineers
Civil | Structural | Forensic
Traffic | Flood Modelling

PRELIMINARY
NOT FOR CONSTRUCTION

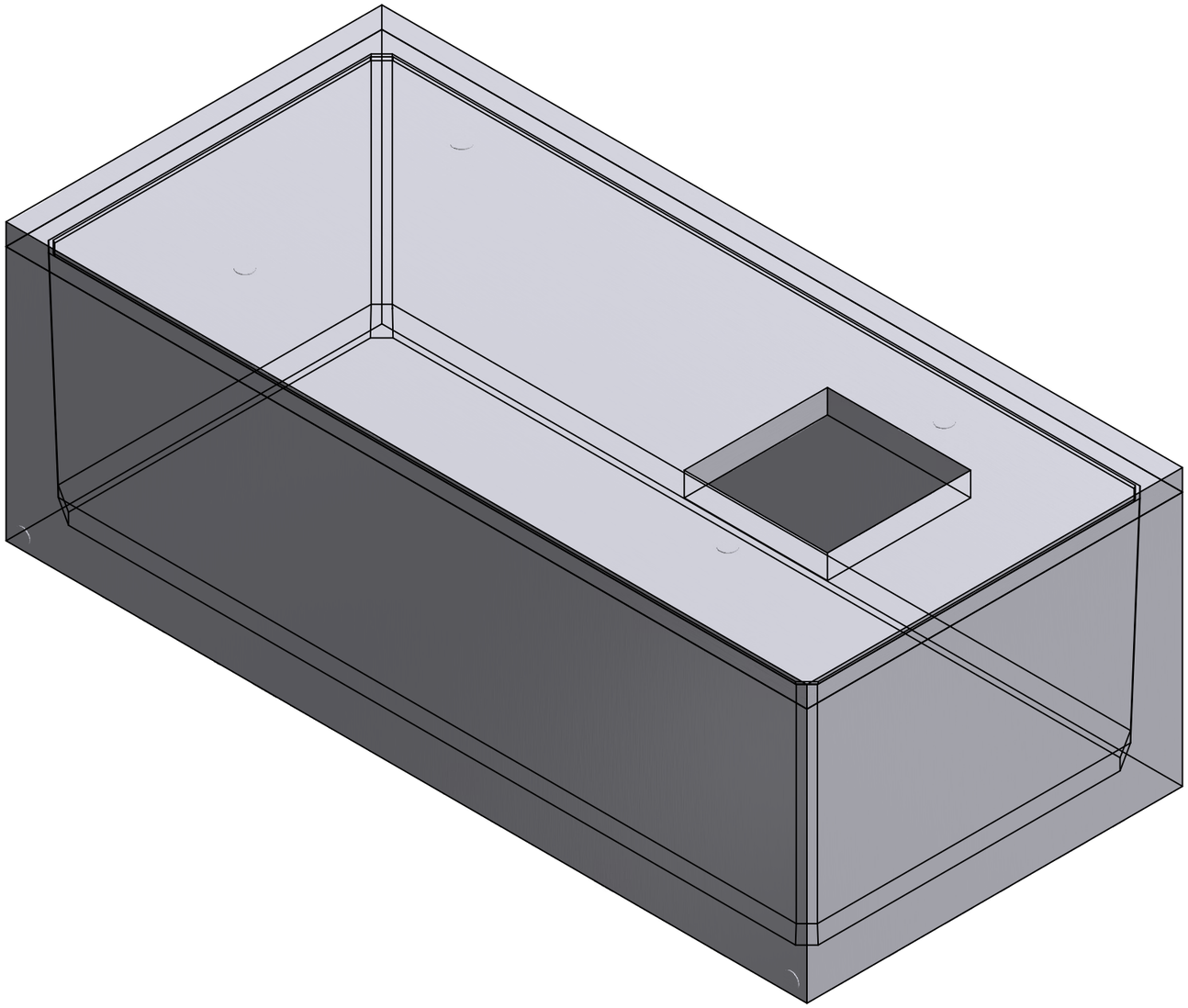
PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE:
MINERALS PROCESSING FACILITY
AREA 01 - SITE
STORMWATER CONCEPT
LAYOUT PLAN OPTION 1

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D3-01-1020__01	F

APPENDIX D

ATLAN Vault, Filter and Spillceptor Technical Data



SV.5023-1464 - 3D VIEW

DRAWING INDEX	
DRAWING No.	DRAWING TITLE
SP21-CT19370-C	COVER SHEET AND DRAWING INDEX
SP21-CT19380-C	GENERAL NOTES
SP21-CT19390-C	GENERAL ARRANGEMENT
SP21-CT19400-C	PERMISSIBLE PENETRATIONS. SHEETS 1,2 & 3
SP21-CT24070-C	TANK LID PENETRATION OPTIONS
SP21-CT48180-C	GENERAL LIFTING ARRANGEMENT

SV.5023-1464 COVER PAGE.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	04/21	G.T	INITIAL RELEASE	
2	10/21	G.T	GENERAL AMENDMENTS	

CLIENT:

Drawn	G.T	Date 9/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

spelstormwater
joy in water
spel.com.au

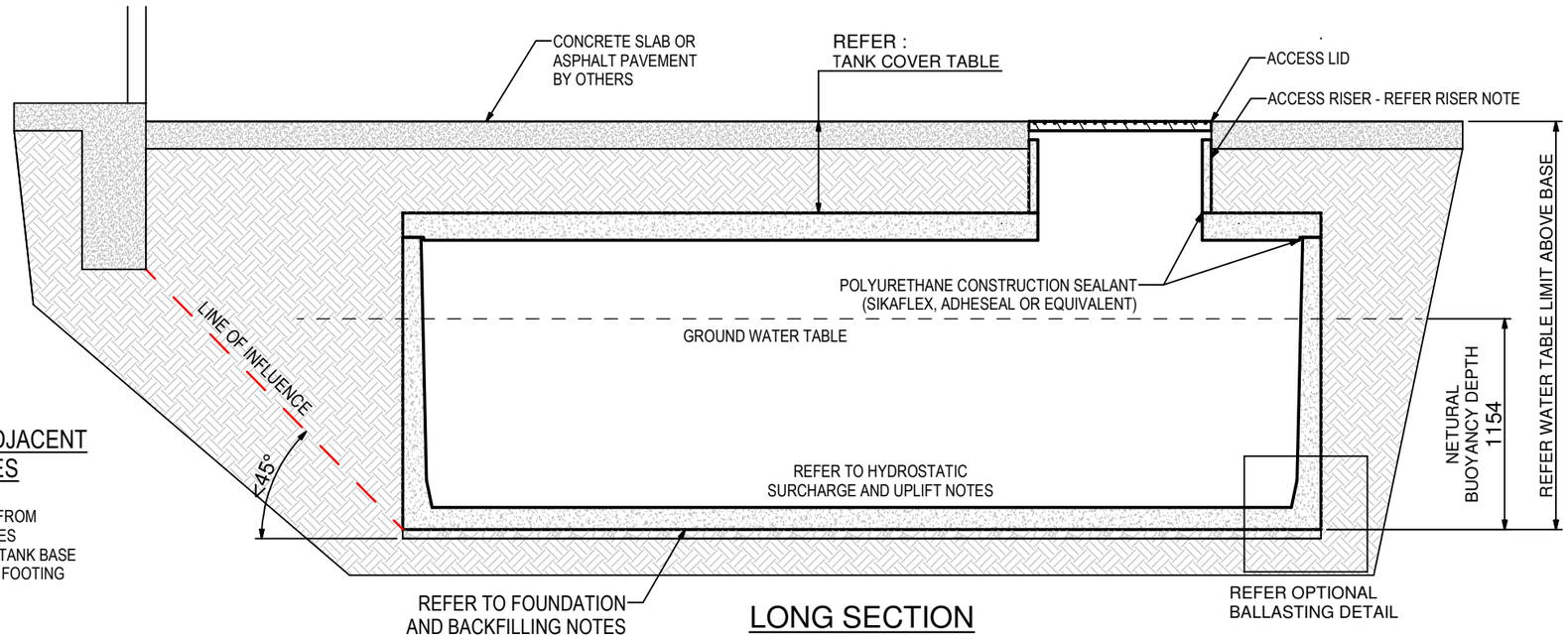
PROJECT :

TITLE
COVER SHEET AND DRAWING INDEX
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	2

CUSTOMER CODE :

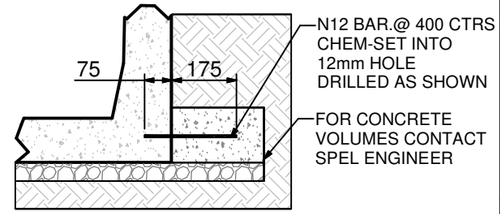
DWG No. SP21-CT19370-C



LONG SECTION

TANK POSITIONING ADJACENT TO STRUCTURES

THE LINE OF INFLUENCE FROM
ADJACENT STRUCTURES
IS TO BE LESS THAN 45° FROM TANK BASE
EXCAVATION TO STRUCTURE FOOTING



OPTIONAL BALLASTING DETAIL

BOUYANCY CONTROL JOINT

ANTI-BOUYANCY CONTROL ONLY REQUIRED FOR
TANKS IN HIGH WATER TABLE REFER TO
HYDROSTATIC SURCHARGE AND UPLIFT NOTES

DESIGN CRITERIA

DESIGN IN ACCORDANCE WITH:
AS/NZS 1170.0 - DESIGN LOAD GENERAL REQUIREMENTS
AS/NZS 1170.1 - PERMANENT AND SUPERIMPOSED LOADS
EXPOSURE CLASSIFICATION IN ACCORDANCE WITH AS/NZS 3600 - 'B2'
THE TANK DESIGN LIFE EXPECTANCY IS UP TO 50 YRS.

HEAVY VEHICLES ARE ASSUMED TO BE WITHIN THE GROSS VEHICLE MASS (GVM) AND AXLE LIMITS PRESCRIBED BY THE QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS. THE HEAVY VEHICLES THAT THE TANK AND LID ARE DESIGNED FOR INCLUDES:

- SINGLE RIGID TRUCK
- RIGID TRUCK WITH TRAILER
- SEMI TRAILER
- B-DOUBLE
- TWIN STEER TRUCKS

WHICH REPRESENTS AXLE GROUPS OF:

- SINGLE AXLE = 9.0 TONNES
- TANDEM AXLE = 16.0 TONNES
- TRI-AXLE = 20.0 TONNES

WHEEL LOADS ARE BASED ON TANKS INSTALLED IN CONTROLLED TRAFFIC AREA (CARPARK) WITH VEHICLES OPERATING AT REDUCED SPEED.
NOTE: TANKS ARE NOT DESIGNED TO BE INSTALLED UNDER OPEN ROADS. IF W80 AND SM1600 RATING IS REQUIRED, CONSULT SPEL ENGINEERS

CONCRETE

1. TO COMPLY WITH THE REQUIREMENTS OF AS 3600-2018-CONCRETE STRUCTRES.
2. 50 MPa

TANK COVER

TANK TYPE	COVER	BASE THICKNESS	LID THICKNESS	EXTRA REINFORCEMENT	EXCAVATION kPa	WATER TABLE LIMIT ABOVE BASE
STOCK	0-2000	120	150	-	100 kPa	5000
CUSTOM	2001-2500	150	200	Y	125 kPa	7000
CUSTOM	2501-3000	150	200	Y	150 kPa	7000
CUSTOM	3001-3500	150	200	Y	175 kPa	7000

HYDROSTATIC SURCHARGE AND UPLIFT

IMPORTANT NOTE:

NEUTRAL BUOYANCY DEPTH PROVIDED IS A GUIDE ONLY. IT IS CONSERVATIVELY CALCULATED WITH ZERO SOIL COVER AND ZERO SLAB COVER. SEEK SPEL ADVISE FOR SITE SPECIFIC BALLASTING CALCULATIONS, THAT CAN TAKE INTO CONSIDERATION SOIL / SLAB COVER OVER TANK, ANY ADDITIONAL CLEAR OPENINGS IN THE TANK LID,AND ANY PENETRATIONS IN THE TANK WALLS OR BASE.

1. TANK WITH WATER LEVEL UP TO 1154 FROM THE TANK BASE HAS NIL HYDROSTATIC UPLIFT (NEUTRAL BUOYANCY MARK). FOR WATER LEVELS GREATER THAN THIS CONTACT SPEL ENGINEERS FOR SITE SEPTIC BALLASTING ADVICE..

RISER NOTES:

IF PROCURING NON-"SPEL" MANUFACTURED RISERS.
THE SUPPLIER IS TO CONFIRM THE RISER IS SUITABLE FOR:
1. THE DEPTHS REQUIRED FOR THE PROJECT.
2. THE TRAFFIC RATING REQUIRED
3. 35mm MINIMUM RISER WALL THICKNESS BEARING ON TANK LID.

FOUNDATION REQUIREMENTS AND BACKFILLING

1. THE TANK MUST BE FOUNDED ON COMPACTED 50mm MINIMUM LEVELLING SUB-BASE COMPRISED OF SAND OR ROAD BASE THAT ACHIEVES CBR40 WHEN THE TANK IS SUBJECTED TO VEHICLE LOADING. CBR15 OR OTHERWISE. 5-10mm DRAINAGE GRAVEL IS AN ACCEPTABLE SUB-BASE MATERIAL WHEN TANK IS SUBJECTED TO VEHICLE LOADING, 10mm MAXIMUM TO BE STRICTLY ADHERED TO.
2. BACKFILL AROUND THE TANK WITH A WELL DRAINING GRANULAR MATERIAL IN LAYERS NO THICKER THAN 500mm. MAXIMUM VARIATION OF 500mm IN BACKFILL PLACEMENT HEIGHT FROM ONE SIDE OF TANK TO THE OTHER
3. COMPACT PAVEMENT SUBGRADES ABOVE THE TANK LID WITH LIGHT DUTY HAND OPERATED COMPACTION EQUIPMENT. DO NOT USE HEAVY MECHANICAL COMPACTION TECHNIQUES (SUCH AS VIBRATORY OR STATIC ROLLERS) ABOVE TANK LID OR ADJACENT TO THE TANK WALLS WITHIN 1500mm OF TANKS WITHOUT ENGINEER'S APPROVAL
4. BACKFILL SUPPORTING BUILDINGS OR PAVEMENTS TO HAVE LEVEL 1 SUPERVISION & TESTING (PROJECT ENGINEER TO ADVISE)
5. BACKFILL SUPPORTING TRAFFICABLE PAVEMENT MUST BE LEVEL 1 SUPERVISION & TESTING. A PAVEMENT THAT IS DESIGNED TO BE SUSPENDED OVER BACKFILL SHOULD EXTEND A NOMINAL DISTANCE BEYOND THE EDGE OF THE EXCAVATION ONTO NATURAL GROUND. THE SPECIFIC DESIGN IS THE RESPONSIBILITY OF THE PROJECT ENGINEER.

LIFTING NOTES:

1. TOTAL APPROVED 15.0 t (WLL) LIMIT AS SPECIFIED ON DRAWING. CONSULT AN RPEQ ENGINEER FOR LIFTING DESIGN OF SPECIFICALLY DESIGNED TANKS WITH ADDITIONAL FIXTURES INSTALLED AND TOTAL WEIGHT EXCEEDING APPROVED 15.0 t
2. THE ERECTOR SHALL COORDINATE WITH THE SITE PROJECT ENGINEER FOR SITE ACCESS, GROUND CONDITIONS AND PLANNED LIFTING EQUIPMENT PRIOR TO TANK DELIVERY ON SITE.
3. RIGGING ARRANGEMENT SHALL ENSURE THE LOAD IS EVENLY DISTURBED BETWEEN ALL LIFTING ANCHORS.
4. ONLY USE LIFTING PINS PROVIDED WHEN LIFTING, DAMAGED LIFTING PINS SHALL NOT BE USED UNLESS CAPACITY IS VERIFIED AND APPROVED BY A RPEQ ENGINEER.

REV	DATE	BY	DESCRIPTION	CHK
1	04/21	G.T.	INITIAL RELEASE	
2	10/21	GT	GENERAL AMENDMENTS	
3	01/22	GT	FOUNDTION NOTE 3 AMENDED	
4	01/22	GT	BUOYANCY NOTE AMENDED	

Drawn GT	Date 7/04/2021
Check	Date
Verified	Date
Approved	Date
Request No. KEYWORDS	

spelstormwater
joy in water
spel.com.au

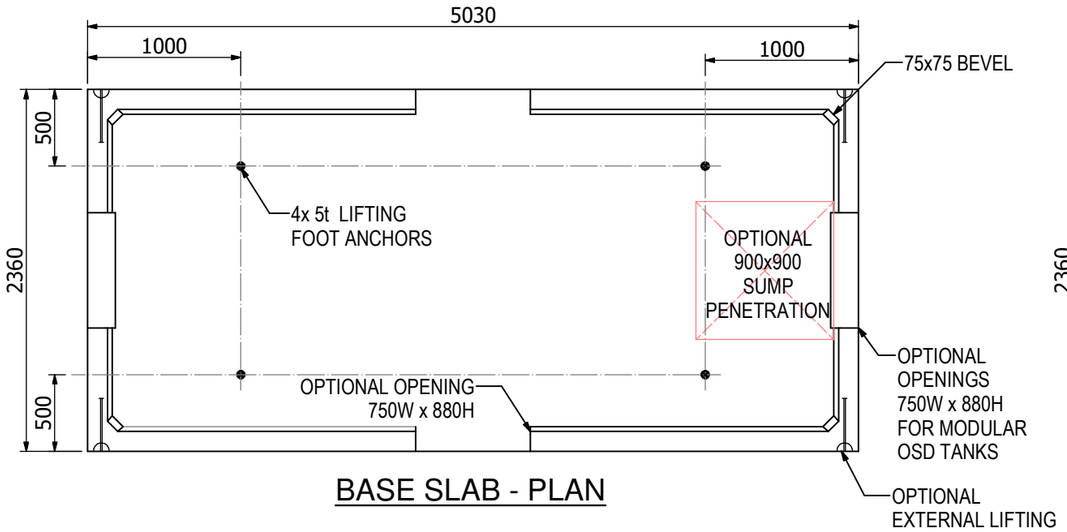
PROJECT :

TITLE
GENERAL NOTES
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

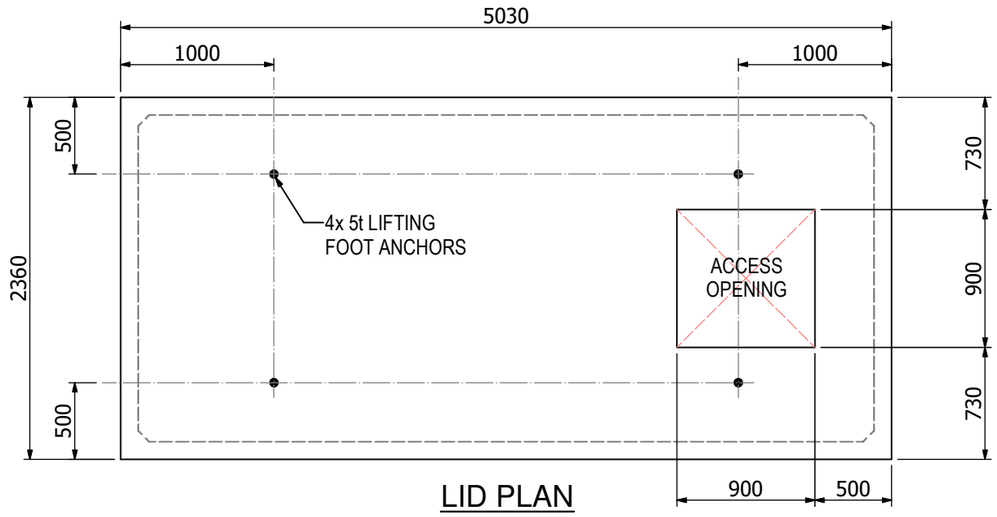
SCALE	SIZE	SHEET	REV
N.T.S	A3	1	4

CUSTOMER CODE :
DWG No. SV.5023-1464 NOTES PAGE

SV.5023-1464 NOTES PAGE.idw



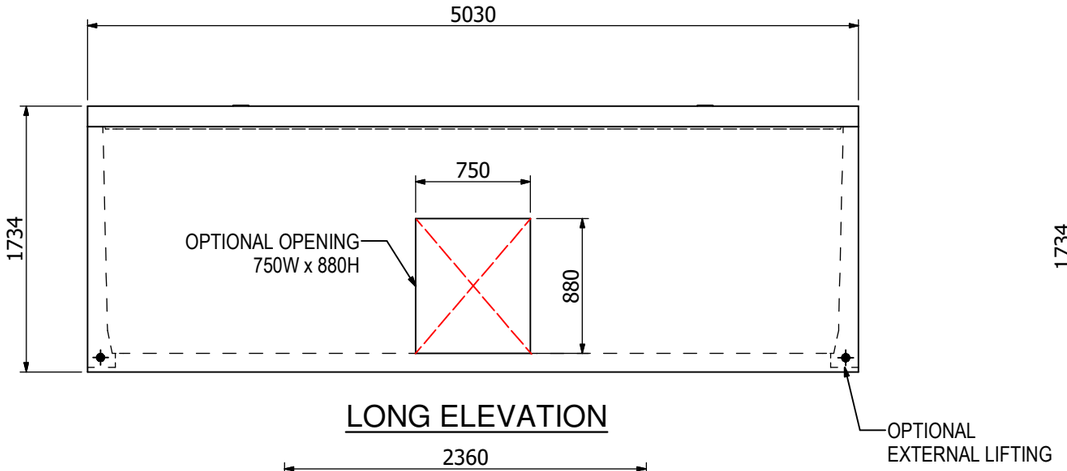
BASE SLAB - PLAN



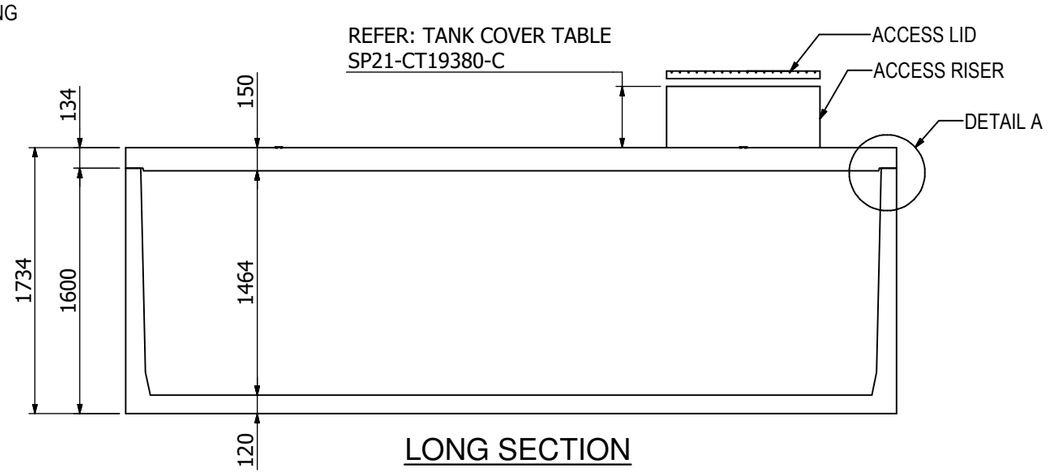
LID PLAN

NOTE:

OTHER ACCESS OPENING SIZES AND POSITIONING OPTIONS AVAILABLE SEE "TANK LID PENETRATION OPTION" DRAWING No. SP21-CT204070-C



LONG ELEVATION



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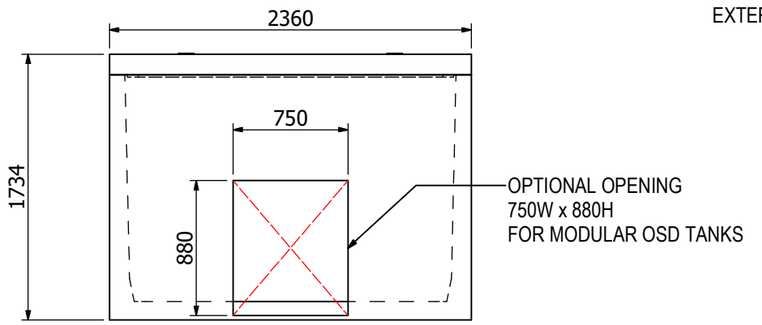
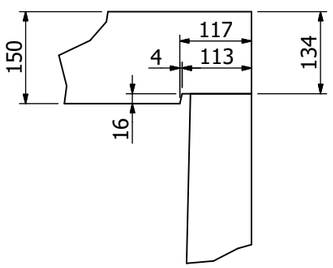


SHORT WALL ELEVATION



DETAIL A

STOCK TANKS

TANK WEIGHT = 9.8t
LID WEIGHT = 4.4t
(WEIGHTS CALCULATED WITH NO PENETRATIONS IN TANK OR LID)

SV.5023-1464 GENERAL ARRANGEMENT.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	05/21	G.T	INITIAL RELEASE	
2	10/21	GT	GENERAL AMENDMENTS	

CLIENT:

Drawn	GT	Date 8/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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PROJECT :

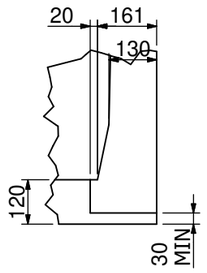
TITLE
GENERAL ARRANGEMENT
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

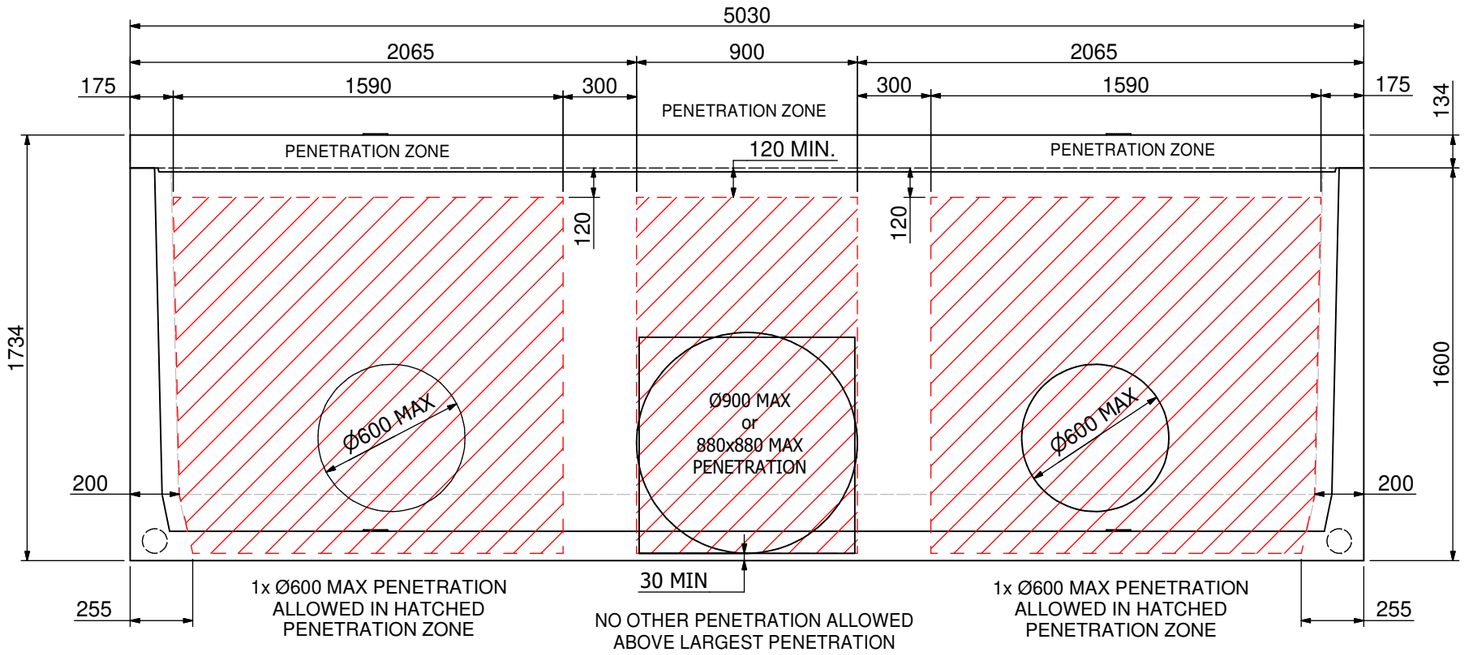
SCALE	SIZE	SHEET	REV
N.T.S	A3	1	2

CUSTOMER CODE :

DWG No. SP21-CT19390-C

STOCK TANKS





PLEASE NOTE:

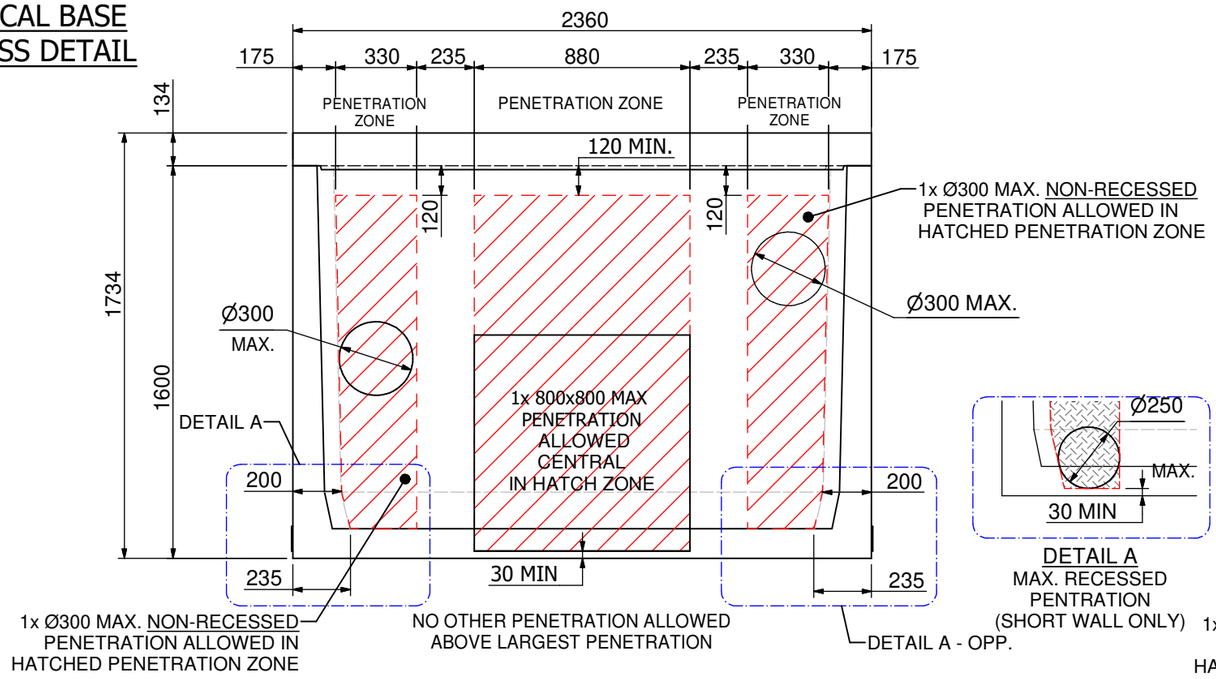
THESE GUIDELINES ARE FOR A STOCK TANK
WITH STANDARD REINFORCEMENT.

IF REQUIRED PENETRATIONS ARE OUTSIDE OF THE GUIDELINES SHOWN, CONTACT SPEL WHO WILL SEEK FURTHER ENGINEERING ADVICE.

CUSTOM TANKS CAN PROVIDE PENETRATIONS OUTSIDE THESE GUIDELINES REFER.
"PERMISSIBLE PENETRATIONS - CUSTOM TANKS"
ON DRAWINGS SP21-CT19400 - C SHEET 2 & 3
FOR A GUIDE PRIOR TO TANK PRODUCTION.

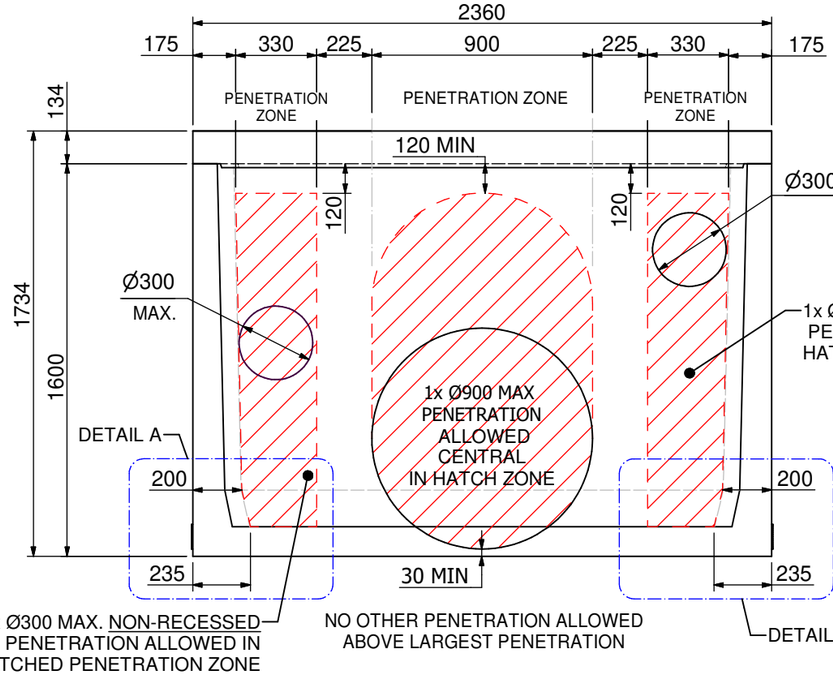
LONG WALL - SINGLE LARGEST PERMISSIBLE PENETRATION

TYPICAL BASE RECESS DETAIL



DETAIL A
MAX. RECESSED
PENTRATION
(SHORT WALL ONLY)

SHORT WALL - 880x880 MAX. PENETRATION



SHORT WALL - Ø 900 MAX PENETRATION

SV.5023-1464 PENETRATIONS - STOCK TANKS.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	07/21	G.T	INITIAL RELEASE	
2	10/21	GT	DRAWING SET EXPANDED	

Drawn	GT	Date 7/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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PROJECT :

TITLE PERMISSIBLE PENETRATIONS
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464 STOCK TANKS

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	2

CUSTOMER CODE :
DWG No. SP21-CT19400-C

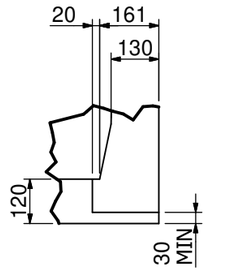
CUSTOM TANKS

IMPORTANT NOTE:

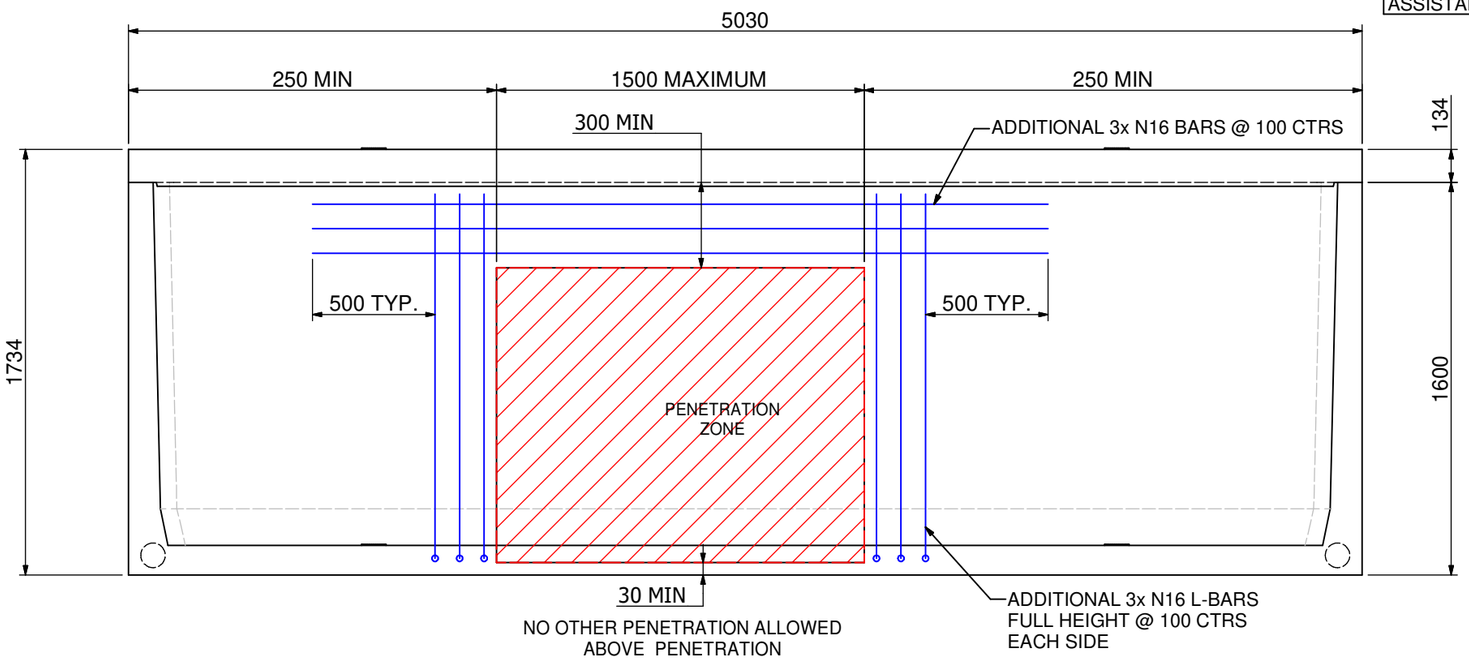
THESE PENETRATIONS CANNOT BE PERFORMED TO A STANDARD TANK.

THEY ARE REQUIRED TO BE ARRANGED WITH SPEL, PRIOR TO POURING THE TANK SO ADDITIONAL REINFORCEMENT CAN BE INCLUDED.

FOR STANDARD PERMISSIBLE PENETRATION REFER DRAWING SP21-CT19400-C SHEET 1
FOR ADDITIONAL PENETRATION COMBINATIONS CONTACT SPEL FOR DESIGN / ENGINEERING ASSISTANCE.



TYPICAL BASE RECESS DETAIL



LONG WALL - MAXIMUM SINGLE PENETRATION

SV.5023-1464 PENETRATIONS - CUSTOM TANKS PAGE 2.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	10/11/2020	G.T	INITIAL RELEASE	

Drawn	GT	Date 7/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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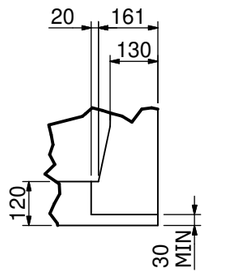
PROJECT :

TITLE PERMISSIBLE PENETRATIONS
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464- CUSTOM TANK

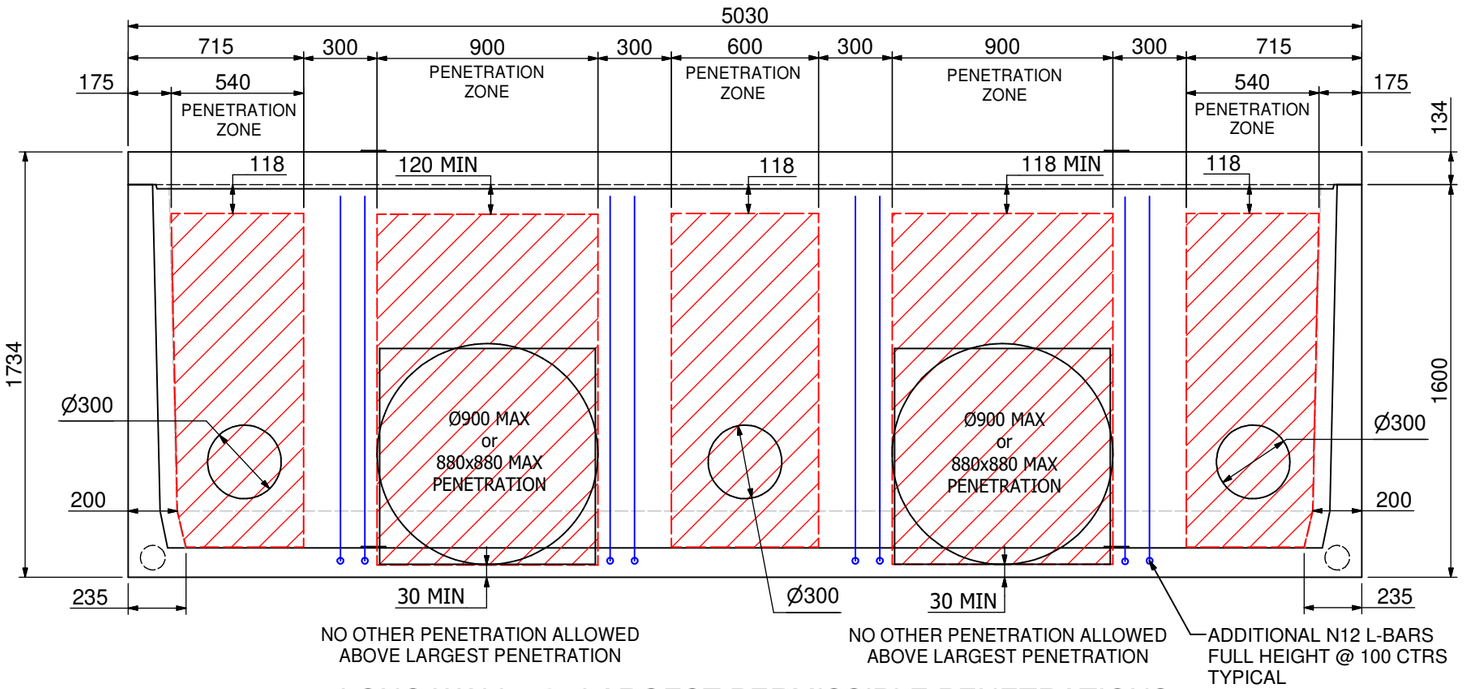
SCALE	SIZE	SHEET	REV
N.T.S	A3	3	1

CUSTOMER CODE : | DWG No. SP21-CT19400-C

CUSTOM TANKS



TYPICAL BASE RECESS DETAIL



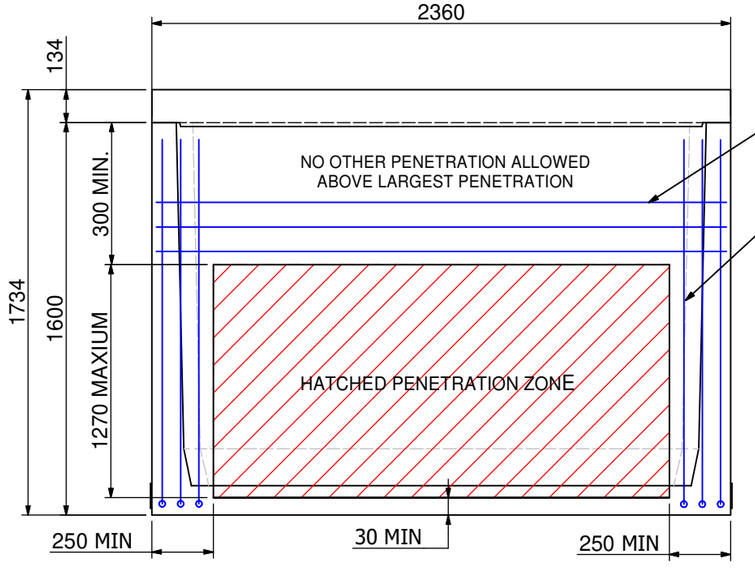
LONG WALL - 2x LARGEST PERMISSIBLE PENETRATIONS

IMPORTANT NOTE:

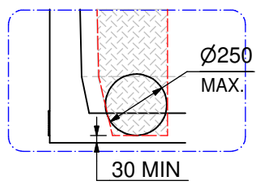
THESE PENETRATIONS CANNOT BE PERFORMED TO A STANDARD TANK.

THEY ARE REQUIRED TO BE ARRANGED WITH SPEL, PRIOR TO POURING THE TANK SO ADDITIONAL REINFORCEMENT CAN BE INCLUDED.

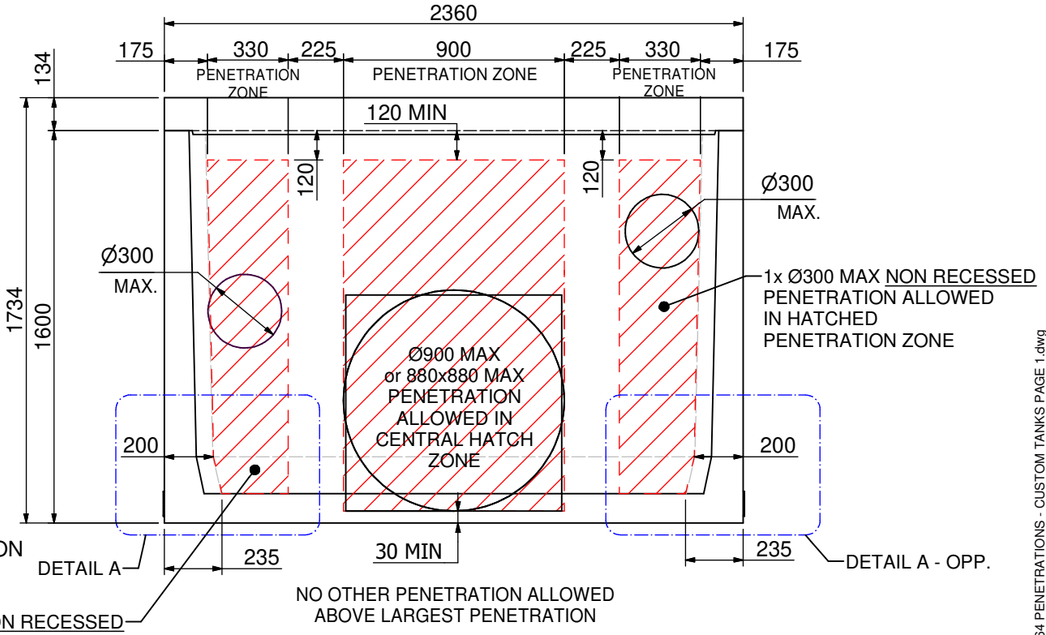
FOR STANDARD PERMISSIBLE PENETRATION REFER DRAWING SP21-CT19400-C SHEET 1
FOR ADDITIONAL PENETRATION COMBINATIONS CONTACT SPEL FOR DESIGN / ENGINEERING ASSISTANCE.



SHORT WALL - MAX. CUSTOM PENETRATION



DETAIL A
MAX. RECESSED PENTRATION (SHORT WALL ONLY)



SHORT WALL - Ø 900 MAX PENETRATION

SV.5023-1464 PENETRATIONS - CUSTOM TANKS PAGE 1.dwg

REV	DATE	BY	DESCRIPTION	CHK
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Drawn	GT	Date 7/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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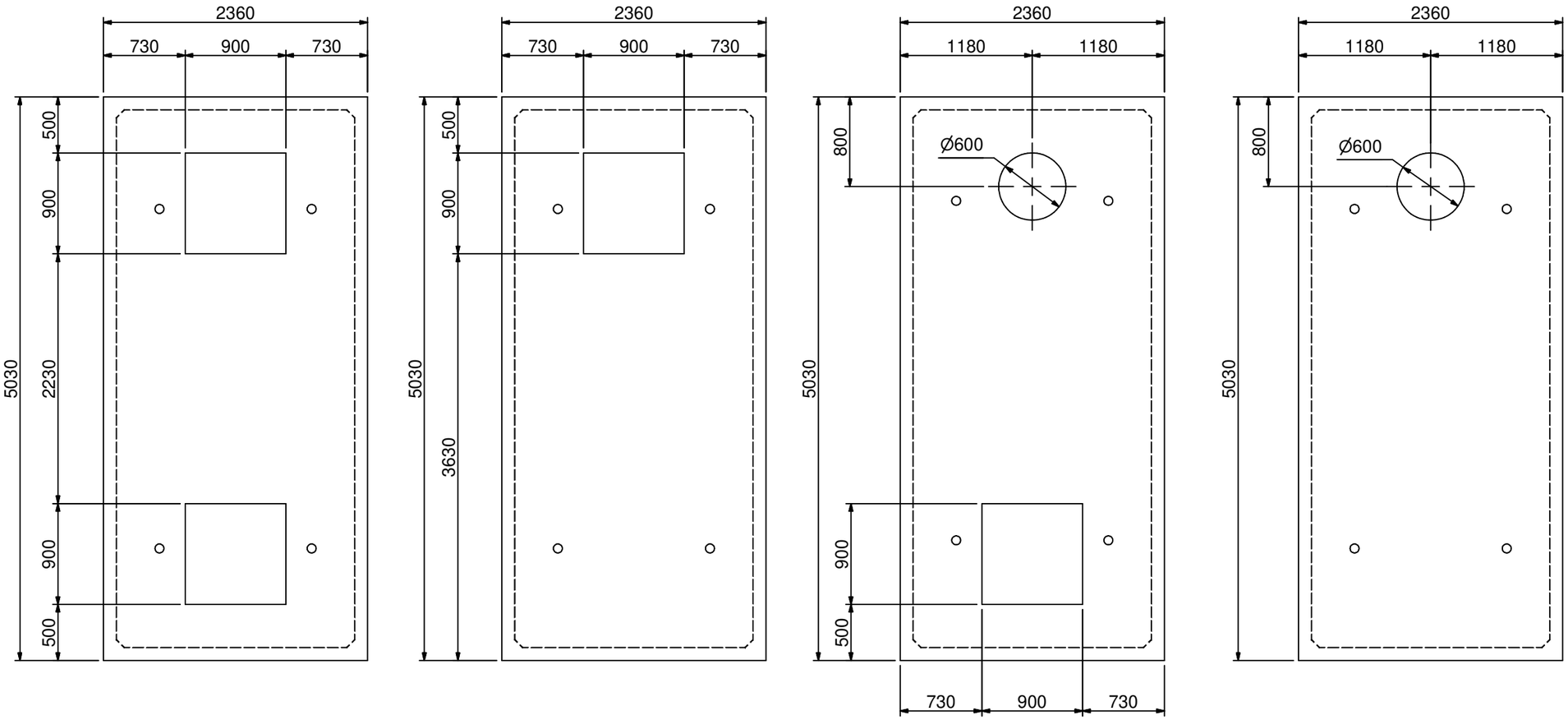
spel.com.au

PROJECT :

TITLE
PERMISSIBLE PENETRATIONS
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464- CUSTOM TANKS

SCALE	SIZE	SHEET	REV
N.T.S	A3	2	1

CUSTOMER CODE :
DWG No. SP21-CT19400-C



STANDARD LID FORMATIONS

FOR ADDITIONAL ACCESS OPENING AND POSITIONING OPTIONS
CONTACT SPEL

SV.5023- STD LID TYPES.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	08/04/21	G.T	INITIAL RELEASE	

CLIENT:

Drawn	G.T	Date 9/04/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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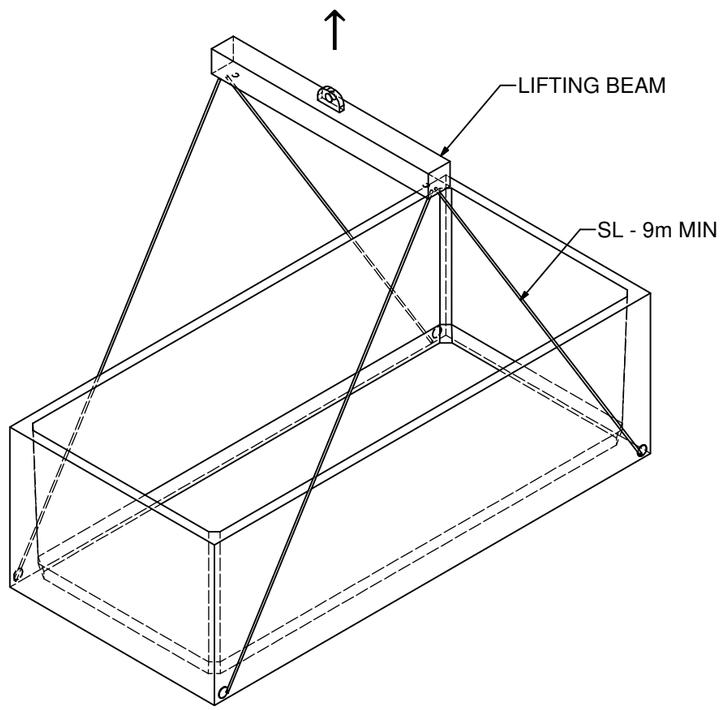
PROJECT :

TITLE TANK LID PENETRATION OPTIONS
SPEL PRECAST CONCRETE TANK
SV.5023

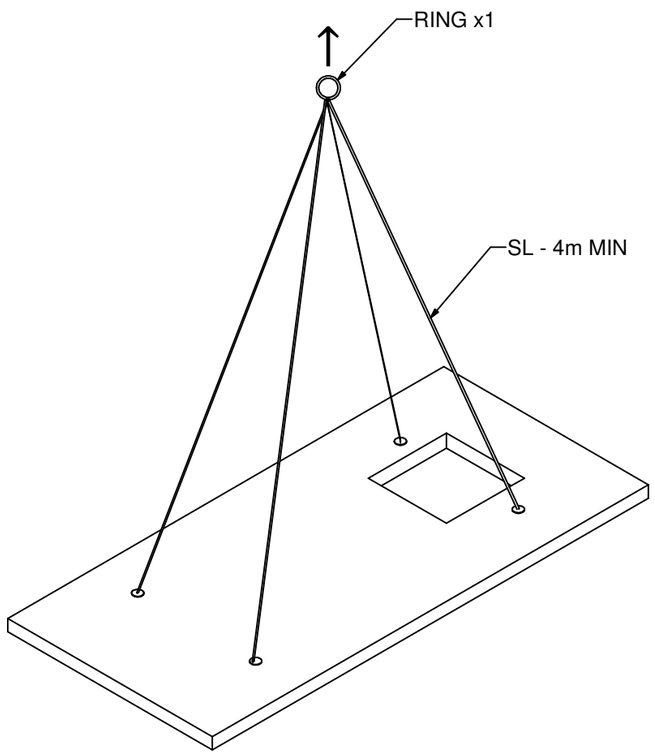
SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

CUSTOMER CODE :

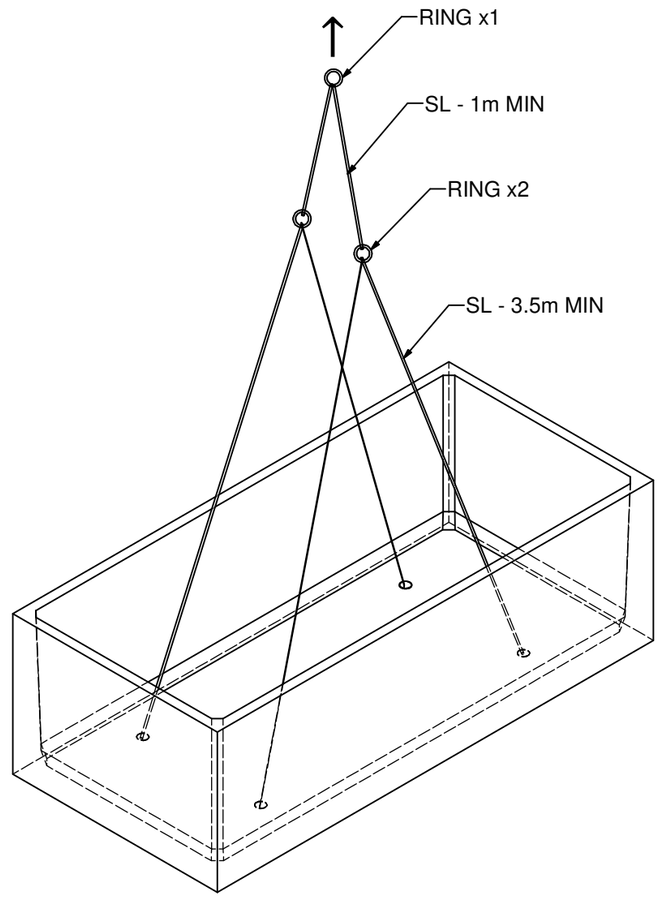
DWG No. SP21-CT24070-C



EXTERNAL LIFTING OPTION
LIFTING BEAM w/ SL=9m MIN



TYPICAL LID LIFTING
FLAT LIFT - 4 POINT LOAD
SL = 4m MIN. EACH



INTERNAL LIFTING OPTION
SL = 3.5m MIN. EACH

SV.5023- GENERAL LIFTING ARRANGEMENTS.dwg

REV	DATE	BY	DESCRIPTION	CHK
1	11/21	GT	INITIAL ISSUE	

CLIENT:

Drawn	GT	Date 9/11/2021
Check		Date
Verified		Date
Approved		Date
Request No.		

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PROJECT :

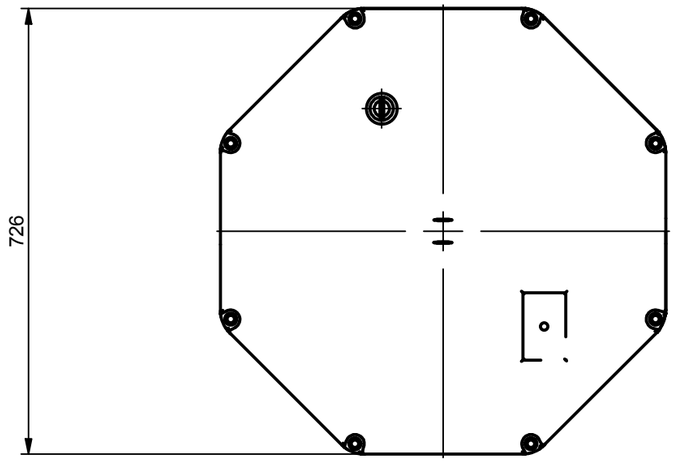
TITLE
GENERAL LIFTING ARRANGEMENT
SPEL PRECAST CONCRETE TANK
SV.5023

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

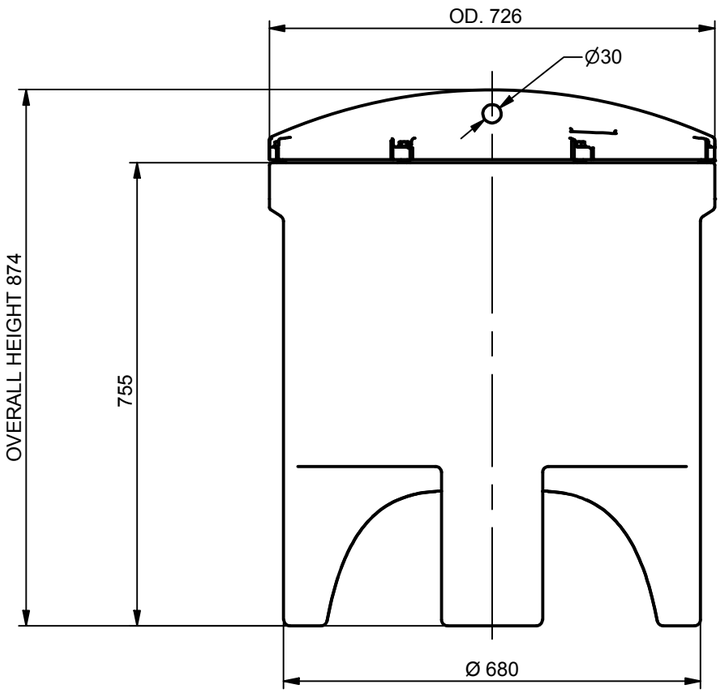
CUSTOMER CODE :

DWG No. SP21-CT48180-C

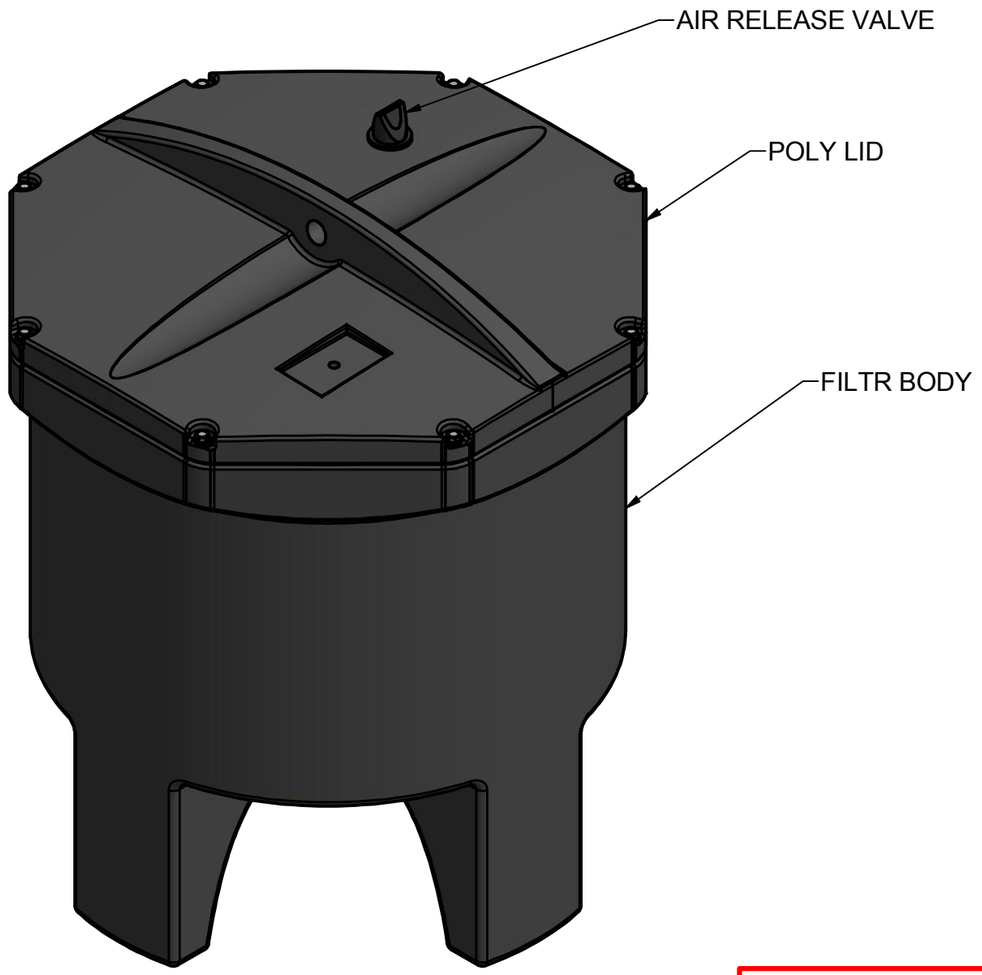
REVISION HISTORY				
REV	DESCRIPTION	DESIGNER	CREATION DATE	CHECKED BY
1	INITIAL RELEASE	M.MAKIN	7/08/2018	



PLAN VIEW



ELEVATION VIEW



ISOMETRIC VIEW

APPROVED..... ☐

NAME.....

SIGNED.....

DATE...../...../.....

ISSUED FOR CONSTRUCTION

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

CLIENT:

DISTRIBUTOR :

Drawn	M.MAKIN	Date 7/08/2018
Check		Date
Verified		Date
Approved		Date
Request No.		

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS
100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

PROJECT :

TITLE: SPEL FILTER
MODEL : SF-3.0-EMC-M
GENERAL ARRANGEMENT

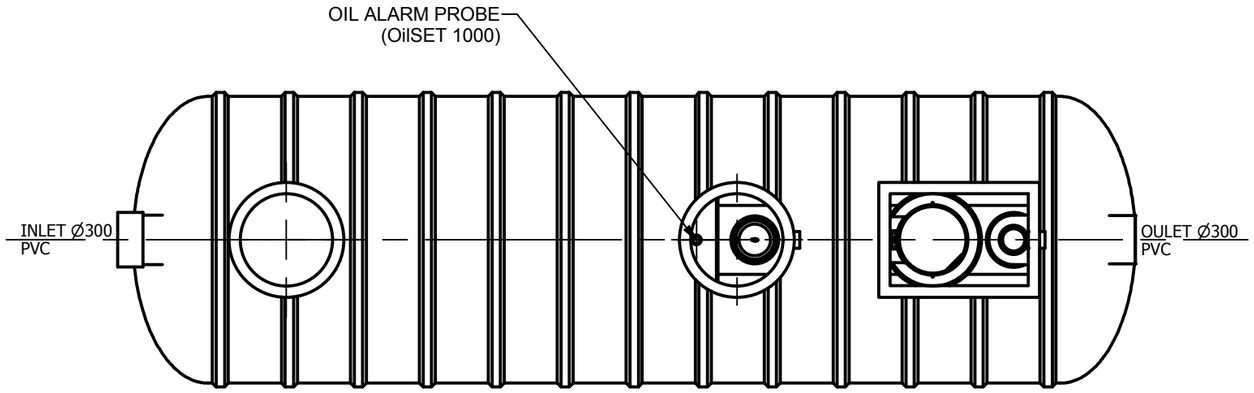
SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

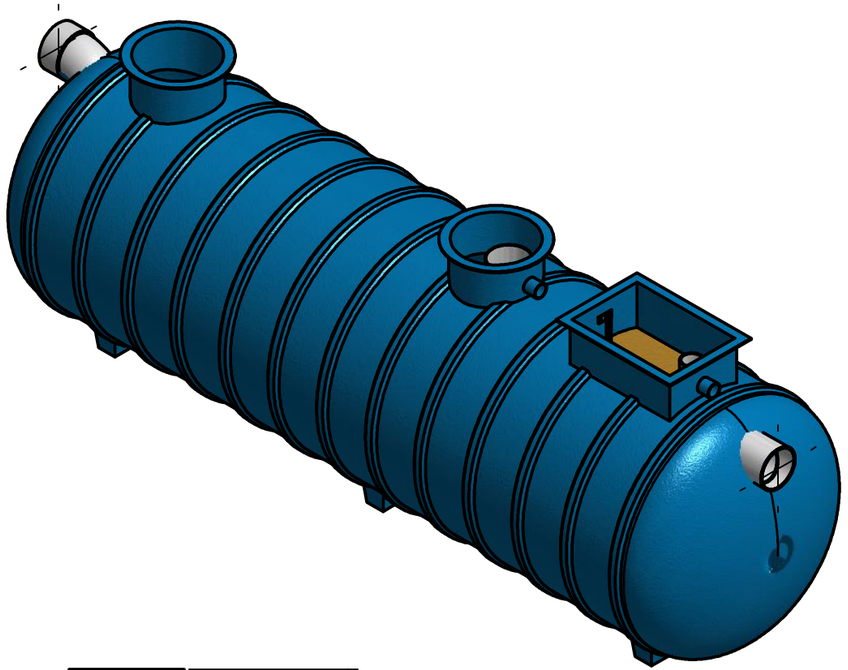
CUSTOMER CODE :

DWG No. SP18-SF21760-S

D:\Vault Working Folder\Designs\SPEL\STD ITEMS\PRODUCTS\FILTER\POLY SPEL FILTER\SP18-SF21760-S.idw

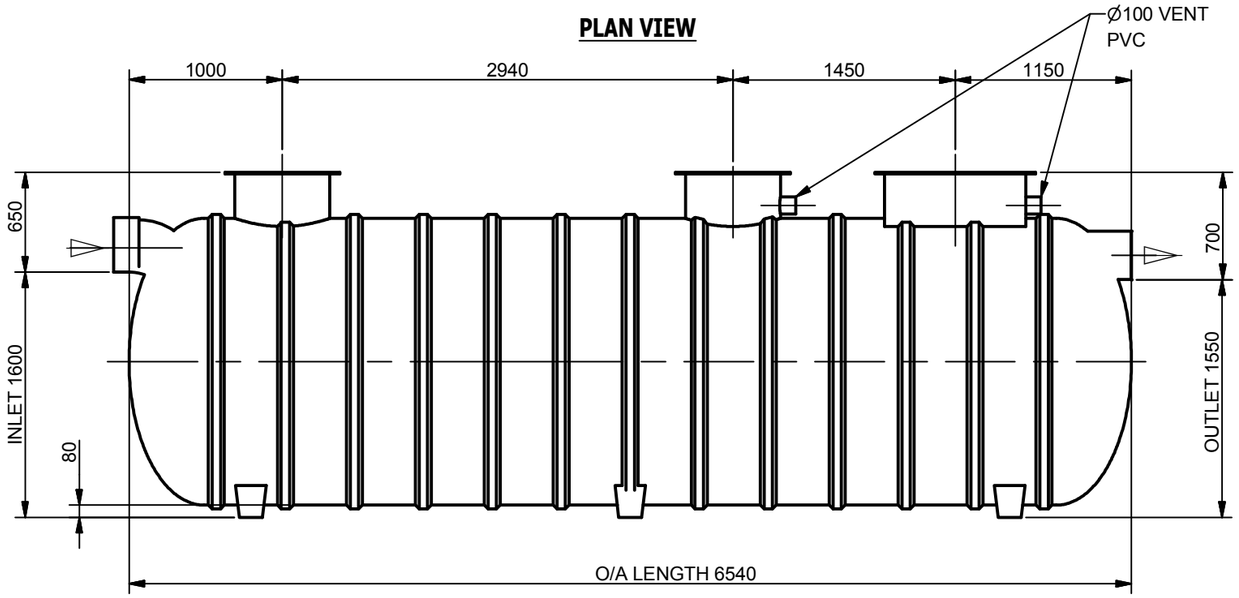
REVISION HISTORY				
REV	DESCRIPTION	DESIGNER	DATE	CHECKED BY
1	INITIAL RELEASE	M.M.	13/09/2013	J.L.



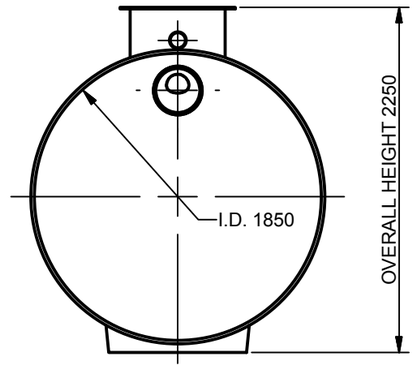


ISOMETRIC VIEW

PLAN VIEW



ELEVATION VIEW



END VIEW
OUTLET

APPROVED.....
NAME.....
SIGNED.....
DATE...../...../.....

Site Level Confirmation	
Finished Surface Level (FSL)	RL:
Access Cover Thickness	mm
Inlet Invert Level	RL:
Outlet Invert Level	RL:
Company:	
Name:	
Date:	

ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

CLIENT:

DISTRIBUTOR :

Drawn M.M.	Date 13/09/2013
CHECKED BY	Date
Verified	Date
Approved	Date
Dig. Add.	

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS
100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

TITLE: SPEL PURACEPTOR
P.040.C1.2C.A.300
GENERAL ARRANGEMENT

CODE	SIZE	SHEET	REV
500060	A3	1	1

SCALE	DWG No.
N.T.S	SP13-PC1560-S

SEDGMAN
Prudentia

Townsville City Council

Approved Subject to Conditions

CAR25/0004
15/01/2025

Queensland Resources Common User Facility

Waste Management Strategy Plan

Prepared for: Queensland Treasury

Prudentia Project No: **MC23059**

Prudentia Document No: MC23059-RPT-002

Revision: D

Revision	Description	Date	By	Checked
A	Issued For Information	24/04/2024	B. O'Shea	M. Campbell
B	Issued For Information	15/11/2024	J. Gooch	
C	Issued For Information	13/12/2024	J. Gooch	M. Campbell
D	Liquid waste generation clarified	16/12/2024	J. Gooch	B. O'Shea

Contents

List of Tables

List of Figures

1 Executive Summary

This report outlines the basis for waste management to support development of the Queensland Resources Council Common User Facility (QRCUF). The basis for the waste characteristics and throughputs is based on the current QRCUF design basis at the time of this report. Being a test facility, future customers' requirement and third-party waste management requirements may change as the design is progressed further. The volumes and cost estimate would need to be re-evaluated if the basis changes.

Below is a summary of daily waste disposal from the facility.

Table 1-1: Daily Waste Disposal Summary

Waste	Indicative Composition	Daily Flow Estimate
	Continuous Solids Waste	**Total = 30.9 tonne/ day**
1. Leach Residue	pH: 2-4 60% solids containing: • 30% alumina, • 30% limestone, • 30% silica, • balance carbon, Na2O and K2O 30% liquid, • ~15g/L of sulphate salt (including K, Na, Al, V)	8.1 tonne/ day
2. Impurity Removal Residue	pH: 2-4 60% solids containing: • 40% calcium silicate, • 40% gypsum, • balance iron oxide 30% liquid, • ~5g/L vanadyl sulphate,	0.3 tonne/day
3. Reject Filter Residue	pH: 6-8 60% solids containing various concentrations of: • Metal sulphate salt (K, Mn, Fe, Na, Al, Va) • Gypsum, • silica, • carbon, • Na2O, K2O and gypsum 40% liquid containing • 80g/L sulphate salt including Fe, Na, Al, 1000 ppm D70 SX diluent (kerosene like)	0.7 tonne/day
4. Tailings	60% solids, containing various concentration of • silica ~26% w/w • limestone ~47% w/w • balance, iron oxide, alumina, organic material found with shale ore 40% liquid, • Water with a composition similar to Townsville town water supply	20.8 tonne/day
5. Drum Scrubber Oversize	80% solids, containing various concentration of • silica ~26% w/w • limestone ~47% w/w • balance, iron oxide, alumina, organic material found with shale ore 20% liquid, • Water with a composition similar to Townsville town water supply	1 tonne/day
	Continuous Liquid Waste	**Total = 20.9m^3/day**
6. Neutralised liquid waste	80g/L sulphate salt including Fe, Na, Al, 1000 ppm D80 SX diluent (kerosene like).	20.9m^3 per day *
	Intermittent Wastes	
7. Sampling waste	General lab wastes containing various metal salt, organics, and solids residue	1 x 1000L IBC per week

*** Note:** Includes 3.1m^3/day of Neutralisation Reagent, in addition to the 17.8m^3/day liquid waste generation documented under Section 4.1.

The size of waste disposal equipment and containers is described in Section 5. In general the liquid waste is taken away in 20kL tankers. The solids waste will be disposed in various sized bins. Roll on / roll off bins are available in the following sizes: 12m^3, 15m^3 and 30m^3.

2 Introduction

The Queensland Government (hereinafter referred as “the State”) is developing the Queensland Resources Common Users Facility (QRCUF). This facility is delivering common user infrastructure at the Cleveland Bay Industrial Park in Townsville to support the development, extraction and production of critical minerals.

The intent of the facility is to support prospective mining companies in demonstrating their flowsheet at demonstration scale to validate commerciality and technical viability to secure finance, investor interest, off-take agreements and partnerships. The initial focus will be on vanadium with capacity to expand over time to encompass processing other critical minerals like cobalt and rare earth elements.

Prudentia was engaged as the design subcontractor to perform design work and produce the draft design documentation to support the project.

This report outlines the basis for waste management to support development of the facility. The basis for the waste characteristics and throughputs is based on the current QRCUF design basis as the time of this report.

2.1 Objective

The objective of this report is to document the waste management philosophy proposed for QRCUF to support the on-going project development. Specifically, this report:

- describes the waste management philosophy that is appropriate for QRCUF
- outlines the necessary facilities such as tanks and filters for waste management
- provides options for waste treatment and disposal methods based on feedback from a third party waste management company, e.g. Cleanaway

2.2 Project Location

The Queensland Resources Common User Facility will be located at the Cleveland Bay Industrial Park in Townsville.

Cleanaway waste services, waste management company in Townsville, is located approximately 20km northeast of the site.

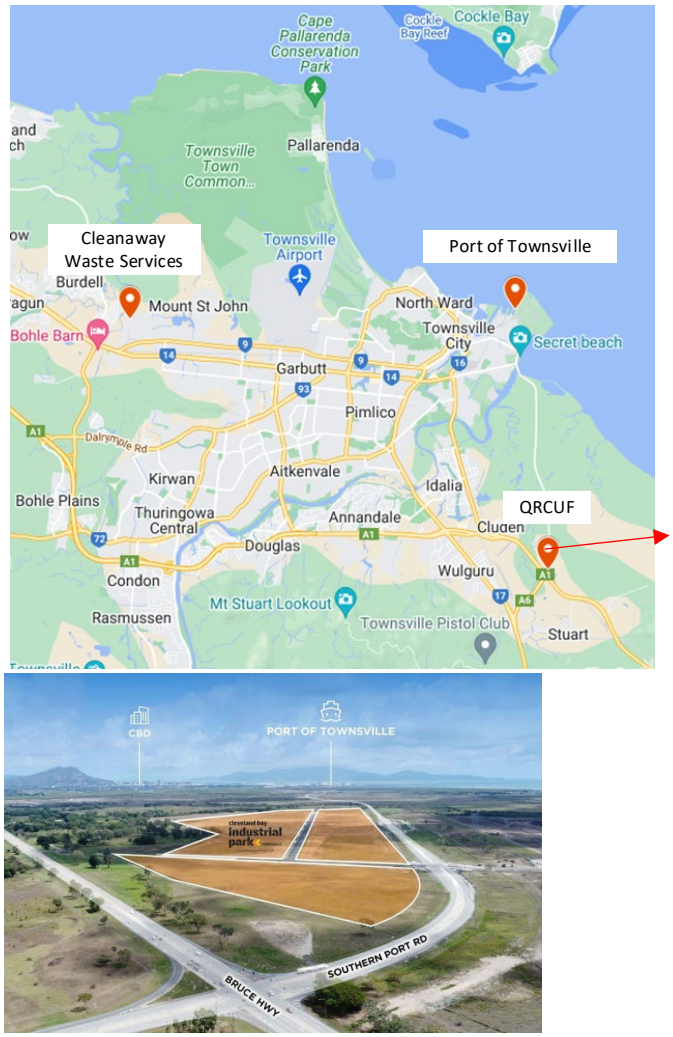


Figure 2-1 QRCUF Site Location

2.2.1 Site Layout Showing Waste Point of Production

The key wastes generated and the point of generation within the plant is presented on the site layout in Figure 2-2 below. The raffinate, spent wash, product filtrate and scrubber bleed waste is processed through effluent treatment before direct discharge.

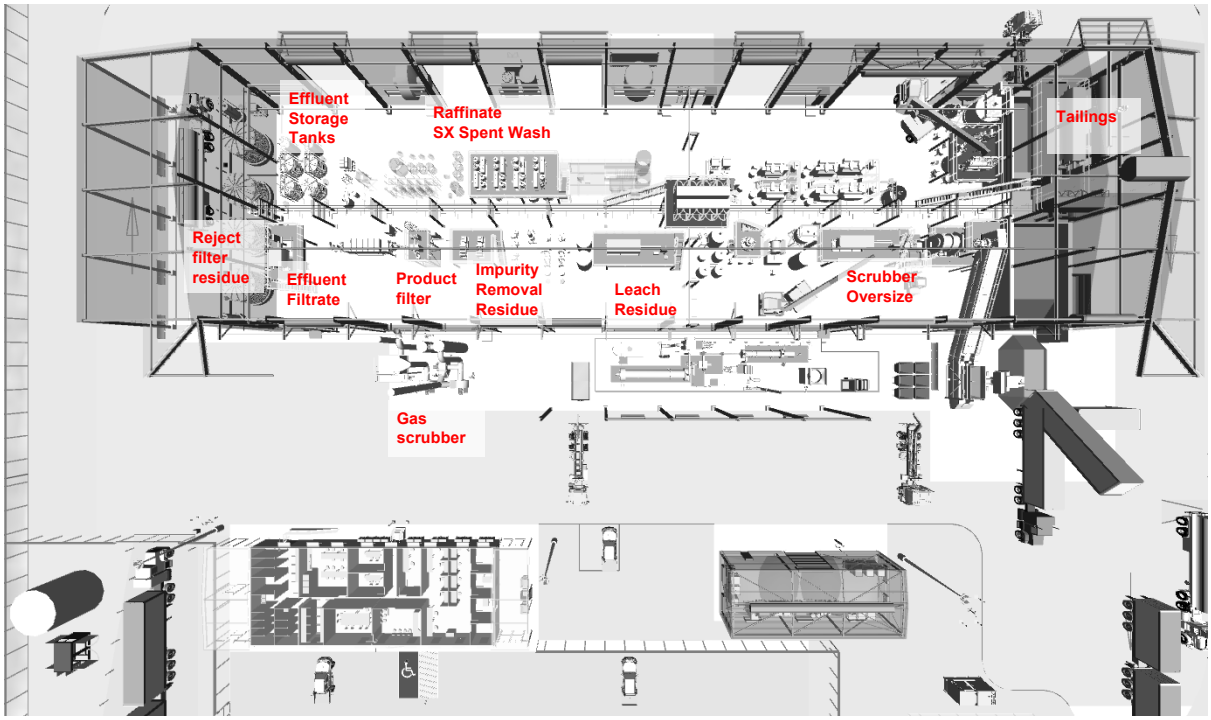


Figure 2-2 QRCUF Site Layout – Waste Generation Points

3 Waste Management Strategy Scope

The scope of this document includes:

- Outline the on-site waste management strategy and philosophy
- Define the waste treatment and storage requirements for various waste streams
- Provide a workable framework for the development of a waste management plan for QRCUF.

The scope of this document does not consider stormwater catchment or run-off that falls outside the building footprint and loading/unloading bunds and this has not been factored in to process water capture. Stormwater capture and treatment requirements will be addressed separately through the Site-Based Stormwater Management Plan (SBSMP) for the development.

The key inputs and outputs for the QRCUF Vanadium flowsheet are summarised in the figure below. The scope of this report is highlighted in a red box. Water reuse within the QRCUF vanadium flowsheet is incorporated into the design to reduce waste.

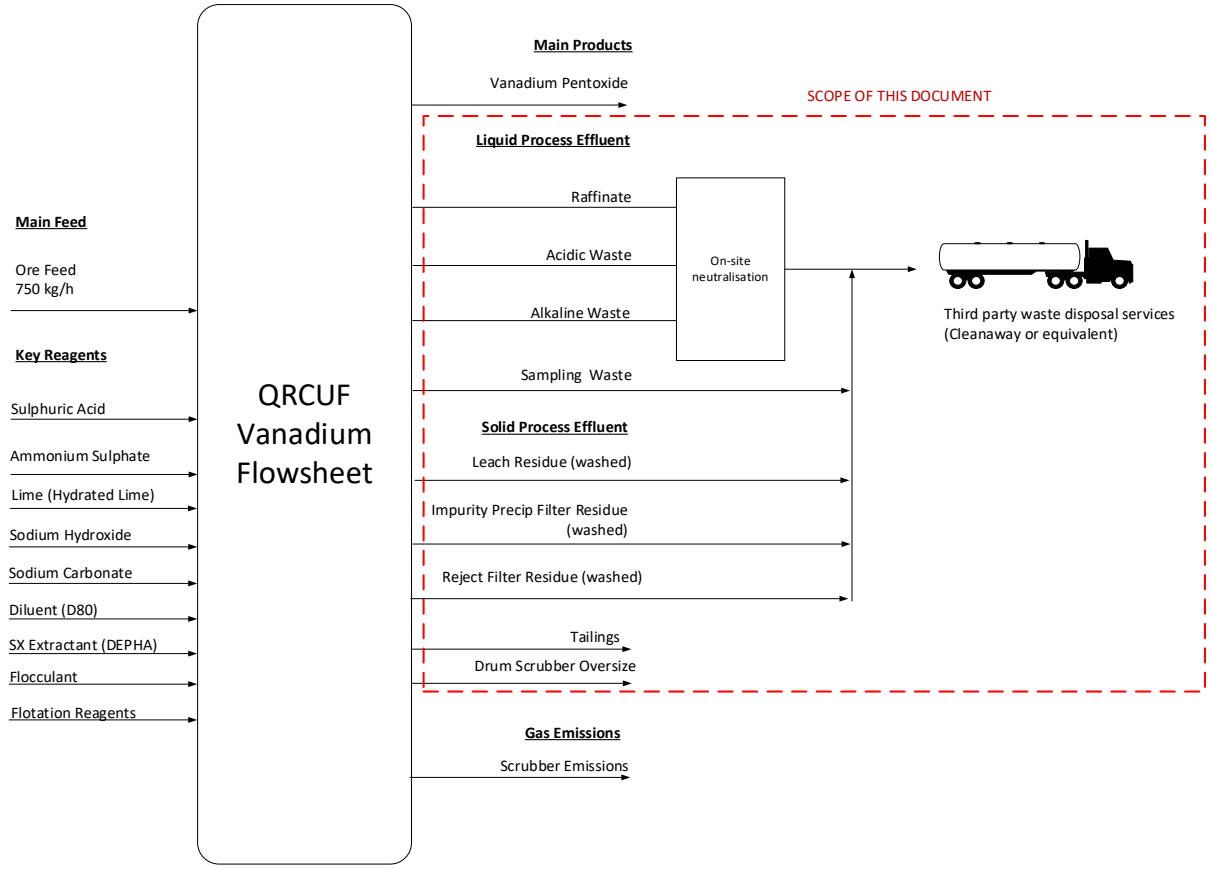


Figure 3-1 QRCUF Key Input and Outputs

4 Waste Overview

4.1 Waste Flows and Composition Summary

QRCUF is intended to be a multi-use hub that is used by future customers for flowsheet and technology demonstration purposes. It is expected that the flowsheets will not be optimised or fully incorporate recycle streams and may produce a large variety of wastes at varying flows and compositions. It is not possible to accurately predict the range of waste properties that different future customers will generate due to both to limited data or customers still developing technologies. Therefore, the waste management plan is developed based on the flows and composition indicated by the mass balance model (MC23059-CAL-001_RevD) for the QRCUF project. This has been developed with a combination of testwork, relevant published data and assumptions.

The plant is expected to operate in approx. 2-week campaigns followed by a period of downtime either due to future customer change-over, waiting for future customers, or no demand. The waste flows and composition for the flowsheet considered are summarized in Table 4-1 below.

Table 4-1 QRCUF Waste Flow and Composition Summary

Waste	Indicative Composition	Waste Generation Rate	Waste Storage	Collection Frequency
	Continuous Solids Waste	**Total = 30.9 tonne per day**		
1. Leach Residue	60% solids: • 30% alumina, • 30% limestone, • 30% silica, • balance carbon, Na_2O and K_2O 40% liquid: • ~15g/L sulphate salt ~15g/L sulphuric acid	8.1 tonne/ day	Stored in skips $12m^3$ /$15m^3$/ $30m^3$ and collected by roll on roll off skips	Approx. 2-3 days
2. Impurity Removal Residue	60% solids, • 40% calcium silicate, • 40% gypsum, • balance iron oxide 40% liquid: • ~20g/L sulphate salt (5g/L as Vanadyl sulphate)	0.3 tonne/day	Stored in skips $1m^3$, and collected by a skip loader	Approx.1-2 weeks
3. Reject Filter Residue	60% solids, containing various concentration of • Iron sulphate • Aluminium sulphate • Gypsum • Manganese sulphate 40% liquid, • 80g/L sulphate salt including Fe, Na, Al, 1000 ppm D70 SX diluent (kerosene like)	0.7 tonne/day	Stored in skips $1m^3$ and collected by a skip loader	Approx.1-2 weeks
4. Tailings	60% solids, containing various concentration of • silica ~26% w/w • limestone ~47% w/w • balance, iron oxide, alumina, organic material found with shale ore 40% liquid, • Water with a composition similar to Townsville town water supply	20.8 tonne/day	Stored in skips $12m^3$ /$15m^3$/ $30m^3$ and collected by roll on roll off skips	Approx.2-3 days
5. Drum Scrubber Oversize	80% solids, containing various concentration of • silica ~26% w/w • limestone ~47% w/w • balance, iron oxide, alumina, organic material found with shale ore 20% liquid, • Water with a composition similar to Townsville town water supply	1.0 tonne/day	Stored in skips $1m^3$ and collected by a skip loader	Approx.2-3 days
	Continuous Liquid Waste	**Total = 17.8m^3/day**		
6. Raffinate	pH: 2-4 100% liquid containing: • 80g/L sulphate salt including Fe, Na, Al , • 1000 ppm D70 SX diluent (kerosene like)	10.8m^3per day	Stored in Effluent Storage Tanks and Collect by	Approx.2 days

			~20m^3 Tanker Trucks	
7. SX Spent Wash	pH: 2-4 100% liquid containing: • <1% sulphuric acid • <10g/L sulphate salts	0.5m^{3}per day	Stored in Effluent Storage Tanks and Collect by ~20m^3 Tanker Trucks	Approx.2 days
8. Product Filtrate	pH 2-4 100 % liquid containing: • <1% sulphuric acid • Sodium ~ 5.4 %	1.9 m^3 per day	Stored in Effluent Storage Tanks and Collect by ~20m^3 Tanker Trucks	Approx.2 days
9. Scrubber Bleed	pH 2-4 100 % liquid containing: • <0.1% sulphuric acid • Trace of aluminium and sodium	4.6 m^3 per day	Stored in Effluent Storage Tanks and Collect by ~20m^3 Tanker Trucks	Approx.2 days
Intermittent Waste				
10. Sampling waste	General lab wastes containing various metal salt, organics, and solids residue	Allow for 1000L IBC per week	Stored in Effluent Storage Tanks and Collect by ~20m^3 Tanker Trucks	Approx.1-2 weeks

In addition to the above process plant and laboratory generated waste, the operation of the facility will also generate general waste, some recyclable, through functions such as operations deliveries (packaging waste) and through the general use of the administration and operations building.

Waste is also expected to be generated during the construction period of the facility, including delivery packaging and pallets, and general construction material off-cuts (steel, timber, other materials).

Refer Section 5 for details on the planned management and disposal of the waste categories outlined above.

4.2 Regulated Waste Assessment/ Hazardous Material

The Environmental Protection Regulation (2019) specifies waste categories as summarised below:

- Category 1 regulated waste (highest risk)
- Category 2 regulated waste (moderate risk)
- Non-regulated waste/general waste

Some examples of Category 1 and 2 wastes relevant to the facility as listed below:

Category 2 (moderate risk):

- Acidic solutions and acids in solids form
- Basic (alkaline) solutions and bases (alkalis) in solid form
- Non-toxic salts, including, for example, saline effluent
- Oil and water mixtures or emulsions, or hydrocarbons and water mixtures or emulsions
- Organic solvents, other than halogenated solvents, including, for example, ethanol
- vanadium compounds

Category 1 (highest risk):

- filter cake, other than filter cake waste generated from the treatment of raw water for the supply of drinking water
- oxidising agents

Regulated wastes require a more stringent management requirements than unregulated wastes. It is the waste generators' responsibility to identify, categorise and track the wastes.

For the assessment completed in this report, apart from the tailings and drum scrubber oversize solid waste (non-regulated / benign general waste), the wastes generated from the facility are assumed to be a mix of Category 1 and 2.

4.3 Third-Party Waste Disposal Facility

It is proposed that a third-party waste disposal service provider is engaged to support the development of the site waste management strategy. Hence, Prudentia has approached Cleanaway managers in their Townsville office to review the disposal options of the following wastes:

1. Leach Residue
2. Impurity Residue
3. Tailings
4. Process solids wastes
5. Raffinate
6. Product filtrate
7. Scrubber liquid bleed
8. General acidic waste (5% sulphuric acid)
9. General alkaline waste (5% caustic, 5% ammonia and 100g/L ammonium salt).
10. Treated process liquid wastes (neutralised liquid wastes)

Key outcomes identified from this exercise are:

- Receipt and disposal of neutralised liquid waste is preferred.
- Cleanaway had not been able to provide a quote for disposal of alkaline wastes.
- Cleanaway is able to receive solids waste in skips (as long as there is no free liquid that could leak during transport).
- Cleanaway can provide options for 10kL or 20kL collection on a schedule or adhoc basis.
- Lift on / lift off bins are available in $6m^3$ and $12m^3$. Roll on / roll off bins are available in $12m^3$, $15m^3$ and $30m^3$.

It is further noted that a licensed contractor such as Cleanaway or another waste disposal contractor would also be proposed to remove and dispose of the non-regulated (tailings) waste. This provides opportunity to streamline the removal of regulated and non-regulated waste from the facility.

Following this Prudentia had formulated a process liquid waste treatment strategy in Section 5.1 and defined the storage requirements for solids waste in Section 5.2.

5 Waste Management Strategy

5.1 Process Liquid Waste

A request for information from Cleanaway identified two key outcomes driving the liquid waste strategy:

1. Cleanaway does not have capability to handle alkaline wastes; therefore, alkaline waste must be neutralised prior to disposal, and
2. Cleanaway does have capability to handle acid waste: however, there is a substantial cost saving by neutralising onsite prior to disposal, hence this is the basis.

The following strategy is proposed for the neutralisation of process liquid wastes:

- Two acidic waste treatment are provided. The tanks will be operating batchwise in a parallel arrangement to allow for manual sampling of the neutralised wastes for QA/QC purposes. There are no alkaline waste produced on-site based on the mass balance model however it is suggested that a similar arrangement is allowed for due to the flexibility nature of the facility.
- Then the neutralised waste is transferred to a common filter feed tank and the operator can initiate the filter sequence to remove the precipitations that resulted from the neutralisation process. The solid waste is collected in a skip bin and stored on-site.
- The filtrate is stored in the filtrate tank to allow for a final check of the quality (e.g. clarity and colour) before transferring to the storage tanks.
- Two storage tanks were allowed for segregation of neutralised wastes if required. The waste will be collected by tanker trucks which are self-loading (with pump on board).

A Block Flow Diagram (BFD) is provided below for reference:

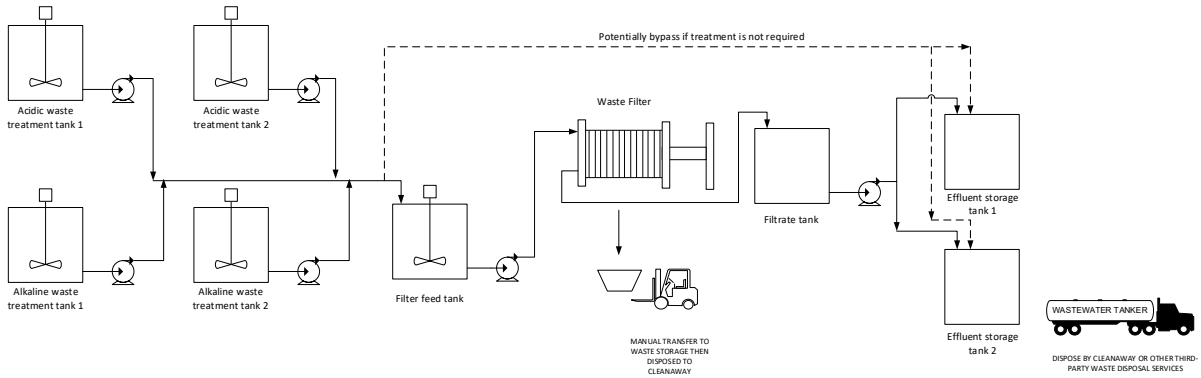


Figure 5-1 Process Liquid Waste Treatment BFD

The proposed tank sizes are summarised in the table below:

Tanks	Quantity	Tank sizes	Residence time (Based on mass balance model)
Acidic Waste Treatment Tank	2	$9m^3$ each	9 hours
Alkaline Waste Treatment Tank	2	$3m^3$ each	9 hours
Filter feed tank	1	$9m^3$	9 hours
Filtrate Tank	1	$9m^3$	9 hours
Effluent Storage Tanks	2	$12m^3$ each	23 hours (1.9 days)

5.2 Process Solids Waste

Regarding regulated waste, there is no apparent benefit to further process waste solids based on the information provided by Cleanaway. Therefore, it is proposed that the solid wastes are stored in skip bins as is, with delineation of waste, and removed by the waste disposal service provider.

The proposed solids storage arrangement is as follows:

- 1 x 10 tonne and 2 x 2.5 tonnes skips for solid storage
- A tailing bunker with a capacity of 75 m3 (105 m3 with FEL management)

5.3 Bund Water

Bund water is collected in various process bunds and directed to either the acidic waste or alkaline waste tanks (based on the expected material pH) and treated as per described in Section 5.1

5.4 Waste Movement and Storage Area

Figure 5-2 illustrates the movement of waste solids to storage areas and the process of liquid effluent from the treatment area to the effluent storage tanks. The red lines represent leach filter residue solid waste movement, the yellow lines represent the reject and impurity removal filter residue movement, the green line will be offspec concentrate stored with or near the tailings, and the blue arrow is liquid waste storage.

Section 4.1 further details the quantum and frequency of these expected waste removal movements.

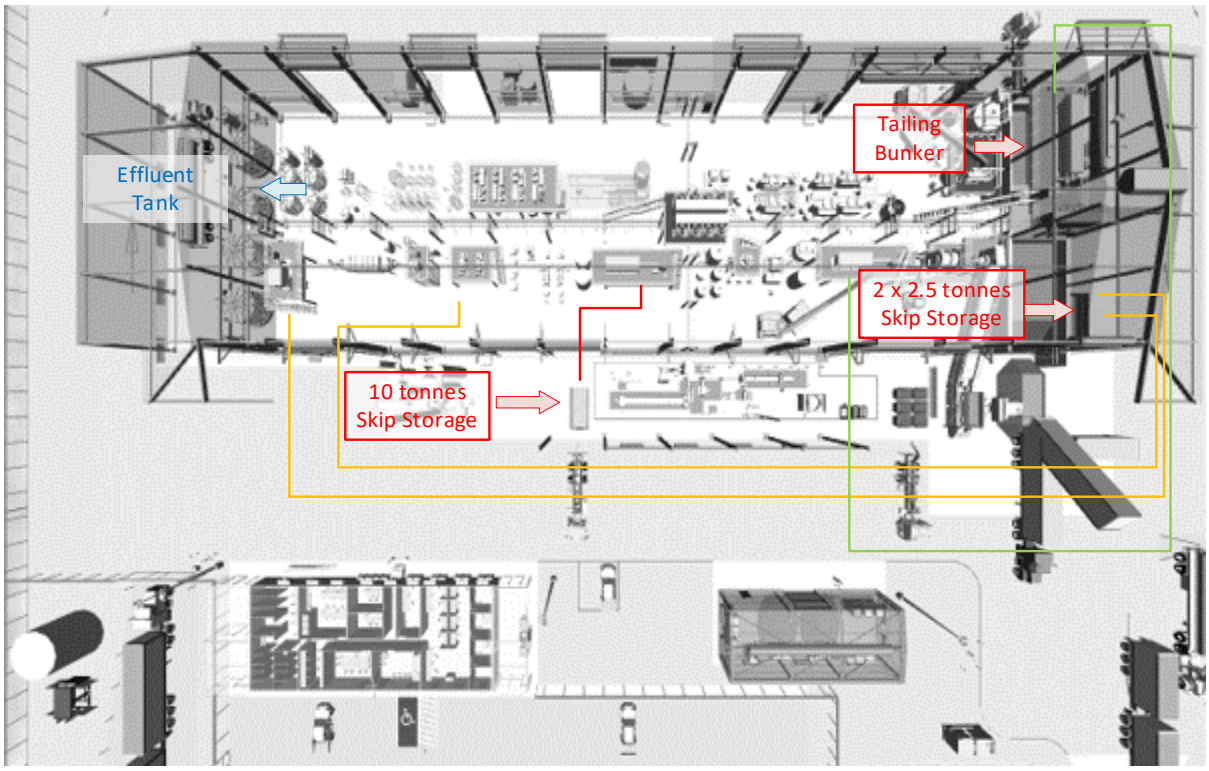


Figure 5-2 QRCUF Site Layout – On-Site Waste Movements

5.5 General Waste

General waste generated through the day-to-day use of the operations buildings will be captured and stored in the general and recyclable waste bins located within the refuse yard adjacent to the main administration building. The waste in these bins will be collected via front-loader garbage truck on an as-required (e.g. weekly) basis via the public carpark.

Non-typical waste generated through the operation of the facility (e.g. material off-cuts resulting from ongoing maintenance of the facility) would be assessed on a case-by-case basis, generally managed through the use of skip bins provided and removed by licensed operators.

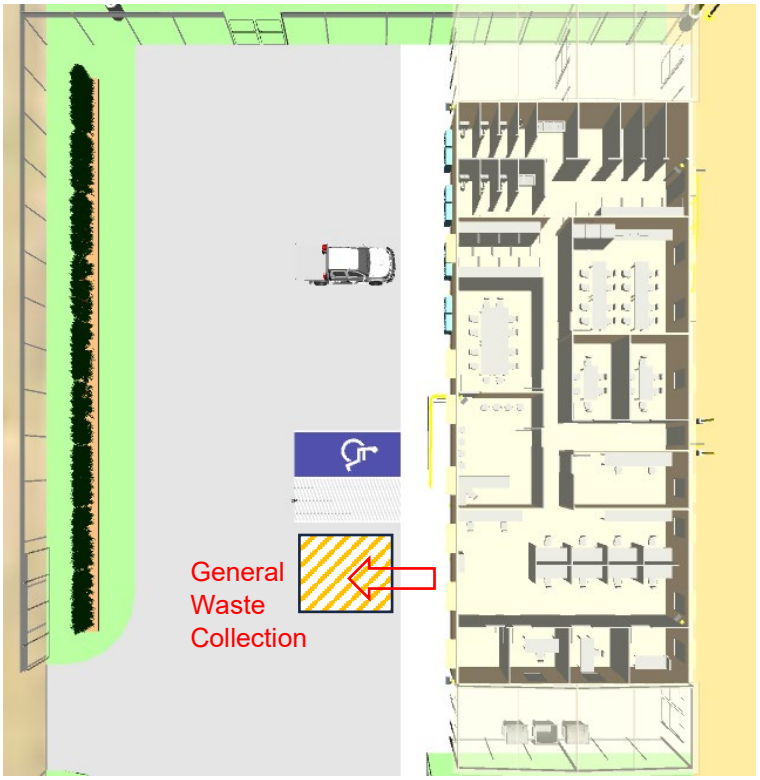


Figure 5-3: QRCUF General Waste Collection

During the construction period, waste generated from construction activities and deliveries will be managed and disposed of consistent with relevant industry practice – i.e.:

- Generated waste will be temporarily held within appropriate delineated skip bins (e.g. metal, general, timber) and delivery pallets will be stored in a designated area ready for truck load-out.
- Area supervisor will assess the generated waste at regular intervals to coordinate removal from site and replacement with new (empty) skip bins as required.

6 References

Environmental Protection Regulation (2019)

https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/classification

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