Appendix G
Noise Impact Assessment

Queensland Resources Common User Facility, Townsville

Noise Impact Assessment

RPS

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Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with RPS (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Table of Contents

1.0 Introduction 1
2.0 Scope of Work 1
3.0 Project Description 2
3.1 Site Location 2
3.2 Site Operation 4
4.0 Assessment Methodology 5
4.1 Offsite Sensitive Receptors 5
4.2 Existing Acoustic Environment 7
4.3 Noise Assessment Criteria 8
4.4 Assessment of Low Frequency Noise Characteristics 10
5.0 Assessment of Noise Impacts 10
5.1 Noise Modelling Parameters 10
5.2 Noise Source Emissions 10
5.2.1 External Noise Sources – Both Fixed and Mobile Plant 13
5.2.2 Internal Noise Sources – Process Building Operations 15
5.2.3 Externally Located Air Conditioning and Ventilation Plant 17
6.0 Noise Assessment Results 18
7.0 Noise Control Recommendations 19
7.1 General 19
7.2 Process Building Roof Upgrade 20
7.3 Air Conditioning and Ventilation Mechanical Plant 20
7.4 Design Validation, Certification, and Testing 20
7.4.1 Design Validation 20
7.4.2 Certification and Testing 21
8.0 Conclusion 22

Tables

Table 1 Nearest Sensitive Receptors 5
Table 2 Summary of measured ambient noise levels 8
Table 3 EPP (Noise) Acoustic Quality Objectives 9
Table 4 External Noise Criteria for the Project – Residential Receptors 9
Table 5 Modelled External Noise Sources - SWL and Spectra per Item 14
Table 6 Modelled Process Building Internal Noise Sources – SWL and Spectra per Item 16

Table 7 Maximum Predicted Sound Power Level for Combined External Mechanical Plant, Located on Rooftop 17

Table 8 Predicted Noise Levels at Nearby Sensitive Receptors with Noise Mitigation Treatment. 18

Figures

Figure 1 Location of Proposed Development Site 3

Figure 2 Site Layout 4

Figure 3 Location of Noise Sensitive Receptors and Monitoring Location in Relation to the Project Site 6

Figure 4 Unattended noise monitoring at the proposed site - Cleveland Bay industrial park 7

Figure 5 Modelled Noise Sources at Process Building, Vehicles and Mobile Plant Layout 11

Figure 6 Car Parking Areas including Designated Overflow Areas..... 12

Figure 7 Hypothetical 15 Minute Noise Measurement.....A-4

Appendices

Appendix A Terminology

A.1 Sound Level (or Noise Level)

A.2 A-weighted Sound Pressure Level

A.3 Change in Sound Pressure Levels

A.4 Typical Sound Pressure Levels

A.5 Statistical Noise Levels

A.6 Noise Propagation

Appendix B Grid Noise Maps

Appendix C Noise Monitoring Charts

Appendix D Project Site Plans and Elevations

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by RPS AAP Consulting Pty Ltd (RPS) to undertake a noise impact assessment to support the proposed Queensland Resources Common User Facility (the Development).

The purpose of the assessment is to evaluate compliance of the Project from an environmental noise perspective by assessing predicted noise levels onto external noise sensitive (residential) receptors against the requirements in the Queensland Environmental Protection Noise Policy (EPP (Noise)) Acoustic Quality Objectives, and additionally with reference to Australian Standard AS 1055:1997 Description and Measurement of Environmental Noise Parts 1, 2 and 3 (AS 1055) and in accordance with the Environmental Protection Act 1994 (EP Act) and the Department of Environment and Sciences' (DES) Noise Measurement Manual (NMM).

An explanation of common acoustic terms is provided in **Appendix A**.

The assessment takes into consideration the following:

- Project drawings and sketch layouts received on 1 and 19 November 2024.
- Equipment layout and brief dated 2 and 24 September 2024 respectively, prepared by Sedgman Pty Ltd.
- Baseline Air Quality and Noise Monitoring report ref.: 230801D02 by SEG, dated October 2023.

As revealed in **Section 6.0**, noise emissions from the development are expected to comply with the noise criteria during all periods with the inclusion of noise control as outlined in **Section 7.0**.

2.0 Scope of Work

Activities undertaken in the completion of this noise assessment included:

- A site visit to the Project site and surrounding areas to gain an appreciation of the site and the nature of the existing noise environment surrounding the site.
- Environmental noise logging within the receptor catchment areas to obtain baseline information required to establish noise criteria in accordance with the relevant legislation and guidelines.
- Preparation of a digital noise model (including all acoustically significant plant and equipment and features of the surrounding topography) for the site to predict representative operational noise emission levels at the nearest noise sensitive receptors. The operating scenarios was modelled to represent typical case noise emission levels at the closest noise sensitive receptors.
- Determination of compliance of the predicted operational noise emissions from the subject site with the noise criteria.
- Using the SoundPLAN noise model for the site to determine noise mitigation measures required to achieve compliance with the relevant criteria.

3.0 Project Description

The Queensland Government plans to develop the Queensland Resources Common User Facility (QRCUF) to support pilot and demonstration scale trials of processing methods and technologies for critical minerals and rare earth elements. The objective in developing the QRCUF is to accelerate the development of commercial projects, promote investment in advanced mineral manufacturing opportunities, enable development of supply chain and supporting industries, and position Queensland's resources industry for long-term, sustainable growth over the next 30 years. RPS has been engaged by the Queensland Treasury for the development approval phase of the project.

3.1 Site Location

The Development will be located on Lot 14 on SP338024 at the new Cleveland Bay Industrial Park (see **Figure 1**), approximately 6.5 km south of Townsville city centre. The land is predominantly undeveloped land, the site is bordered by a watercourse and wetland to the west, Penelope Road to the east and lots 13 and 15 to the north and south.

The concept design for the facility incorporates the following primary features:

- Mineral processing facility (enclosed shed).
- Operations building.
- Reagent Shed
- Site ancillaries including:
    - Gas and diesel storage,
    - Solid waste storage areas,
    - Fire water pump station, hydrants and water storage,
    - Electrical pad-mount transformer and substation,
    - Site entry/exits for heavy and light vehicles,
    - Light vehicle parking,
    - Heavy vehicle turning and unloading areas.

Figure 1 Location of Proposed Development Site

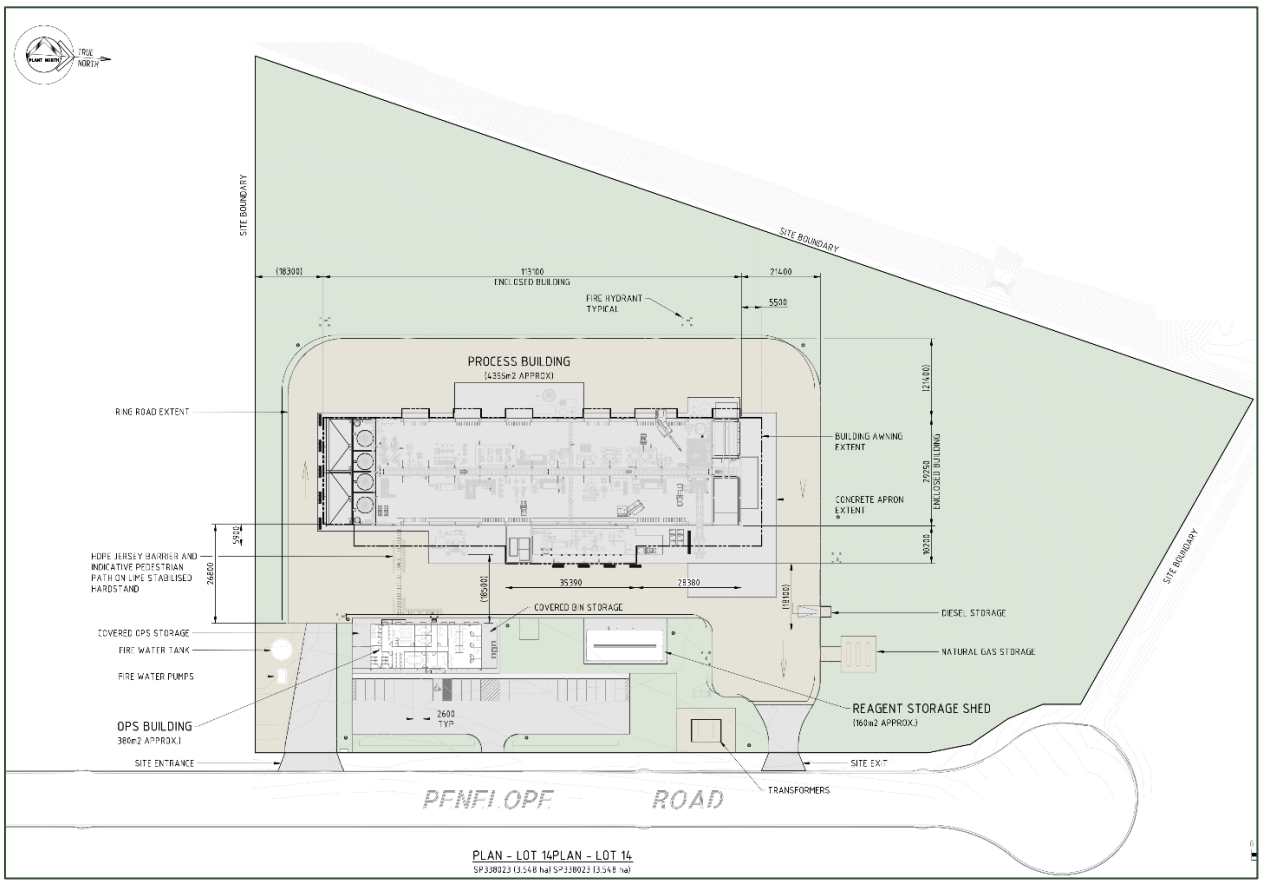
3.2 Site Operation

Diagrams illustrating the site operation is shown in **Figure 2** and include the following main items:

- Process building (Mineral processing facility approx. 4,265m^2)
- Operations building (approx. 495m^2)
- Reagent Storage Shed (approx. 160m^2)
- And the outdoors ancillaries' areas mentioned in **Section 3.1**.

Site plans and elevations are detailed in **Appendix D**.

Figure 2 Site Layout



Sourced from Drawing No. Ref.: B071-D1-01-0001_01_H, dated 05.09.24.

Sources of noise and vibration associated with the Project will generally occur from:

- Vehicle movement (i.e. trucks delivery, car park and forklift),
- Facility operation (Noise breakout from the machinery within the process building),
- External plant and machinery mechanical plant.

Hours of Operation.

The Common User Facility (QRCUF) is expected to operate in approximate 2-week campaigns followed by a period of downtime either due to future customer change-over, waiting for future customers or no demand. During the campaigns operation is expected to

be 24 hours per day. The majority of the processing operations will be undertaken inside the Process Building. Operations external to the building will comprise use of mobile plant for carting and loading of raw materials. External activity during night-time will be reduced as outlined in **Section 5.2**.

4.0 Assessment Methodology

4.1 Offsite Sensitive Receptors

The nearest identified residential receptors are the first row of houses (Holiday Village complex – Caravan Park) at 86 Minehane St, (Lot 2SP275824) Cluden QLD 4811, located at approximately 570m from the south-western boundary of the project site.

The noise sensitive receptors (NSRs) are located at South-west and West form the subject QRCUF, their address and approximate nearest distance to the proposed QRCUF are summarised in

Table 1 and also shown in **Figure 3**.

In opposite directions, there are no existing or expected residences. Thus, predicted compliance in the near noise-sensitive receptors assumes compliance in further directions.

Table 1 Nearest Sensitive Receptors

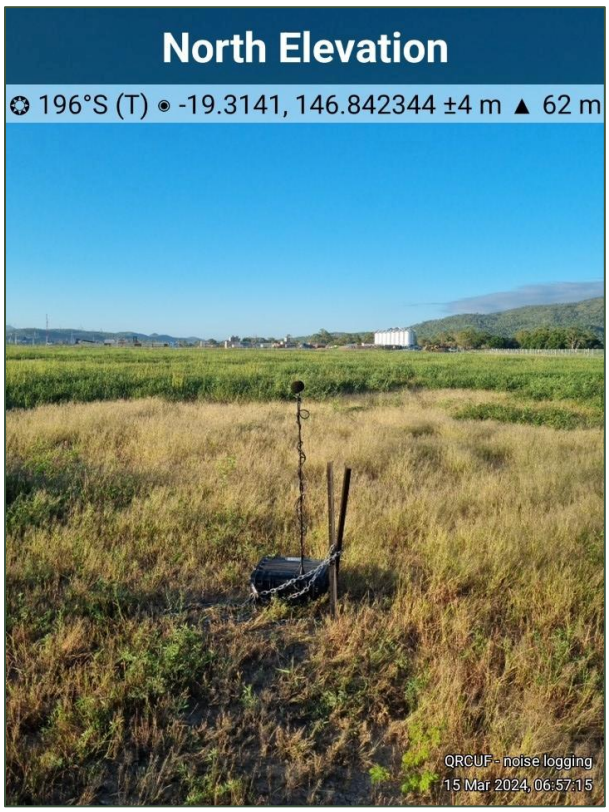
NSR No.	Address	Number of Storeys	Approx. distance from the proposed site boundary
NSR1	86 Minehane St	1-2	570 m (Nearest NSR)
NSR2	73 Minehane St	2	814 m
NSR3	71 Minehane St	1	820 m
NSR4	69 Minehane St	1	826 m
NSR5	67 Minehane St,	2	835 m
NSR6	65 Minehane St,	2	833 m
NSR7	63 Minehane St,	1	854 m
NSR8	61 Minehane St,	1	860 m
NSR9	59 Minehane St,	1	864 m
NSR10	57 Minehane St,	1	872 m
NSR11	55 Minehane St,	2	881 m
NSR12	53 Minehane St,	1	881 m
NSR13	51 Minehane St,	1	898 m
NSR14	49 Minehane St,	2	906 m
NSR15	47 Minehane St,	2	920 m
NSR16	45 Minehane St,	1	929 m
NSR17	43 Minehane St,	2	939 m
NSR18	30 Minehane St	1	1000 m (Nearest NSR at west)

Figure 3 Location of Noise Sensitive Receptors and Monitoring Location in Relation to the Project Site

4.2 Existing Acoustic Environment

The objective of the noise monitoring was to quantify the existing noise levels in the area surrounding the subject site and to assist in determining appropriate noise criterion. SLR undertook continuous unattended noise logging from 15 March 2024 to 22 March 2024 to determine the RBL[1] results at the location as shown in **Figure 3** and **Figure 4**.

Figure 4 Unattended noise monitoring at the proposed site - Cleveland Bay industrial park



Monitoring was carried out using an ARL Ngara Sound Level Meter (SLM) – SN: 8781C7. The SLM was configured to record a range of A-weighted fast-response statistical noise levels, including the L_{Amax}, L_{A10}, L_{A90}, L_{Aeq} and L_{Amax} noise levels over consecutive 15 minute periods. The SLM was checked for calibration before and after the monitoring, using a SVAN SV30A Sound Level Calibrator and no significant drift in calibration was detected. The measurement was conducted in a free-field with a microphone height of 1.2 m above the existing ground level.

Raw readings were identified to be influenced by insects and filtering was undertaken between 5kHz to 8 kHz 1/3 octave bands only as shown in the summary of the ambient noise levels presented in **Table 2**.

The recent results obtained are similar to logging results obtained previously by SEG, which were summarised in the noise monitoring report Ref.: 230801D02 by SEG 20, dated October 2023. The RBL results described in the SEG report were 38dBA during day, 40dBA in evening period and 35dBA at night-time.

[1] Rating Background Level

Table 2 Summary of measured ambient noise levels

Parameter	Period	Average of 15 minute Measured Noise Levels (dBA)
L_{Amax}	Daytime (7 am-6 pm)	61
	Evening (6 pm-10 pm)	63
	Night (10 pm-7 am)	61
L_{A10}	Daytime (7 am- 6pm)	50
	Evening (6 pm-10 pm)	55
	Night (10 pm-7 am)	55
Rating Background Level	Daytime (7 am-6 pm)	36
	Evening (6 pm-10 pm)	33 (Pre-insect corrected level was 41)
	Night (10 pm-7 am)	32 (Pre-insect corrected level was 49)
L_{Aeq}	Daytime (7 am-6 pm)	48
	Evening (6 pm-10 pm)	54
	Night (10 pm-7 am)	55

The measured statistical noise levels and daily weather parameters are displayed graphically in **Appendix C.**

4.3 Noise Assessment Criteria

We understand planning approval is to be granted by the State and therefore the relevant noise legislation applicable to the assessment is the:

- Queensland Environmental Protection Noise Policy (EPP) 2019.
- Townsville City Plan (which references the EPP Noise Policy).

In satisfying the requirements of the EPP Noise, it is considered the Townsville City Plan and Development Scheme for the Townsville State Development Area will also be satisfied.

The *Environmental Protection (Noise) Policy 2019* (EPP(Noise)) is subordinate legislation under the EP Act and the environmental values to be enhanced or protected under the EPP(Noise) are:

- The qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems.
- The qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following: sleep, study or learn or be involved in recreation, including relaxation and conversation.
- The qualities of the acoustic environment which are conducive to protecting the amenity of the community.

The EPP (Noise) contains Acoustic Quality Objectives (AQO) for receptors potentially sensitive to noise. Where the overall level of noise at the receptors, from all sources but excluding road and rail transport noise, are within the AQO, the environmental values are considered to be achieved. The AQO for the noise sensitive receptors and land use surrounding the Project are presented in **Table 3**. Project operations require continuous operation of plant and equipment, as such this assessment has referenced the 1-hour L_{Aeq} and L_{A1} AQO to assess the noise emissions from Project noise sources.

Table 3 EPP (Noise) Acoustic Quality Objectives

Sensitive receptor	Time of day	Acoustic Quality Objectives (measured at receptor) dBA			Environmental value
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$	
Residence (for outdoors)	Daytime and evening	50	55	65	Health and wellbeing
Residence (for indoors)	Daytime and evening	35	40	45	Health and wellbeing
	Night-time	30	35	40	Health and wellbeing, in relation to the ability to sleep

The external AQO has been adopted during the day and evening periods, while the internal criteria have been adopted for the night. The internal noise targets have been adjusted by a correction to allow for the direct assessment of external free field noise predictions in the vicinity of dwellings, which accounts for the reduction of noise achieved by the building (with windows open). For this assessment, a 7 dBA façade noise reduction has been applied in line with the DES guideline titled 'Noise and Vibration EIS Information Guideline', which states:

> *When assessing outdoor to indoor noise attenuation at sensitive receptors … use an outdoor to indoor attenuation value of 7dB, which is appropriate for typical Queensland buildings with open windows.*

Based on the above adopted targets and corrections, the residential criteria applicable to the Project is shown in **Table 4**.

Table 4 External Noise Criteria for the Project – Residential Receptors

Receptors	Day and evening (7:00 am – 10:00 pm)	Night (10:00 pm – 7:00 am)
Dwellings (for outdoors)	50 dBA $L_{Aeq,adj,1hr}$	37 dBA $L_{Aeq,adj,1hr}$
	55 dBA $L_{A10,adj,1hr}$	42 dBA $L_{A10,adj,1hr}$
	65 dBA $L_{A1,adj,1hr}$	47 dBA $L_{A1,adj,1hr}$

4.4 Assessment of Low Frequency Noise Characteristics

Consideration for the potential presence of tonal, impulsive and/or low frequency noise characteristics was investigated and the inclusion of 1/3 octave data was required. The EPP(Noise) does not detail specific criteria for assessing low frequency noise (which can be defined as noise from the 10 Hz to 200 Hz frequency range[2]). In the absence of specific low frequency noise assessment requirements, the following document and associated criteria are referenced to provide consideration of low frequency noise impact from potential low frequency emitter plant items onto the assessed noise sensitive receptors:

- The former Ecoaccess *Assessment of Low Frequency Noise* Guideline, which contains an initial screening test at noise sensitive receptors whereby the overall noise level should not exceed 50 dBL L_{eq} (internal) and the difference between the overall dBL and dBA L_{eq} (internal) noise levels should not exceed 15 dB. For this Assessment, a (conservative) 5 dB façade reduction has been applied to convert the 50 dBL internal level to an external level (i.e. 55 dBL L_{eq} external).

5.0 Assessment of Noise Impacts

5.1 Noise Modelling Parameters

Modelling of Project noise emission was conducted using the ISO 9613-2:2024 - *Acoustics attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors* incorporated in the SoundPLAN (version 8.2) noise modelling software. A three-dimensional digital terrain map giving all relevant topographic information was used in the modelling process. The model used this map, together with noise source data provided by the client along with source data measured at other similar sites (or from SLR's noise source database), ground cover and atmospheric information to predict noise levels at the nearest potentially affected receptors.

Information provided by the plant designer Sedgman Pty Ltd has been used to set up the scenario modelled for the Project noise assessment.

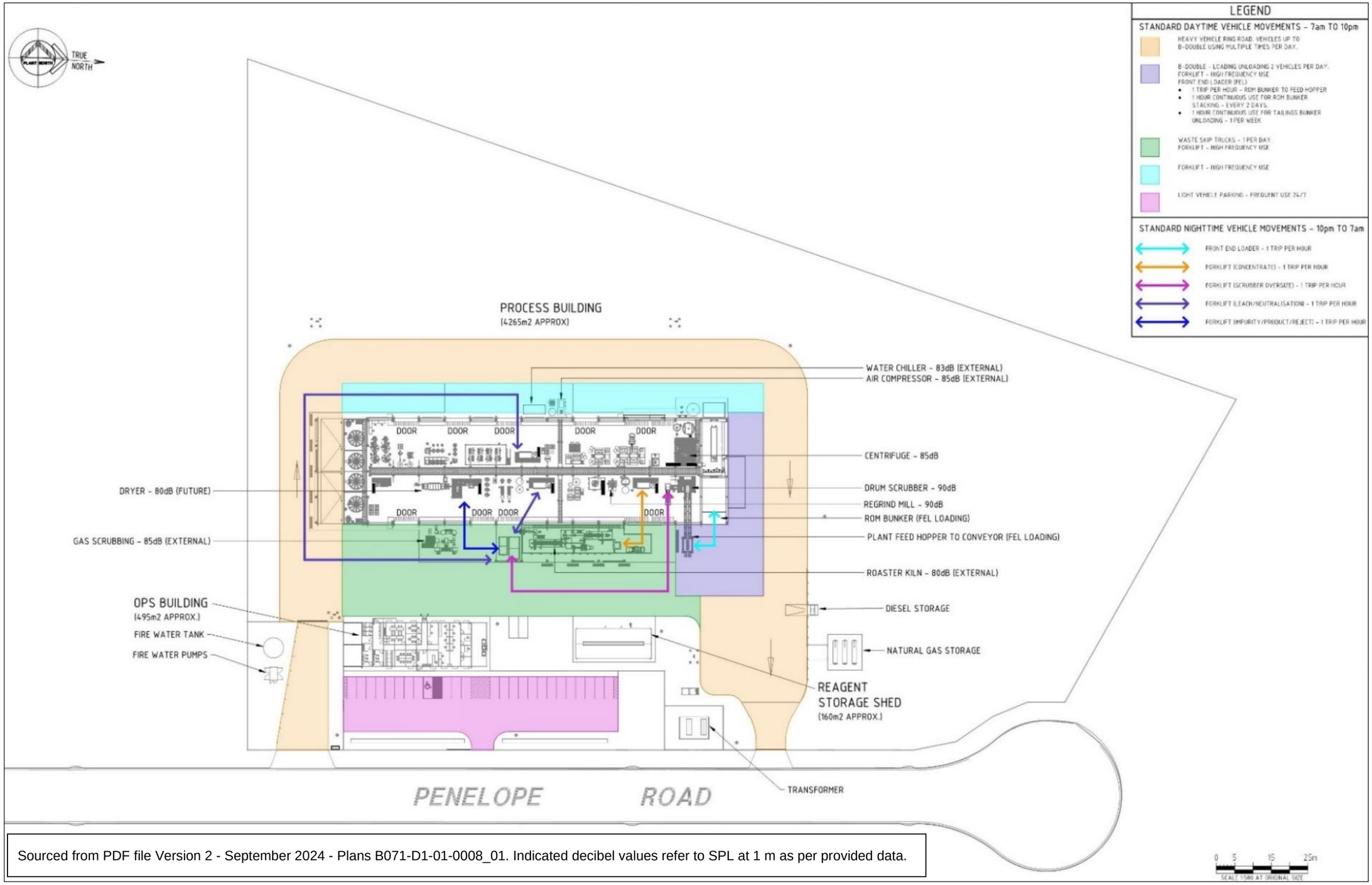
5.2 Noise Source Emissions

Details of the noise emissions of the activities pertaining the development are presented in this section. The noise sources digitised in the computer model are based on the operational layouts as shown in **Figure 5** and details provided by Sedgman. At this stage of the design development, SLR understands that the plant items are fixed within the indicated general positions.

Where noted in the figure, the noise emissions are specified as sound pressure level at 1 m distance (source: Sedgman). The noise emissions were converted into sound power level for noise prediction purposes using acoustic formulae.

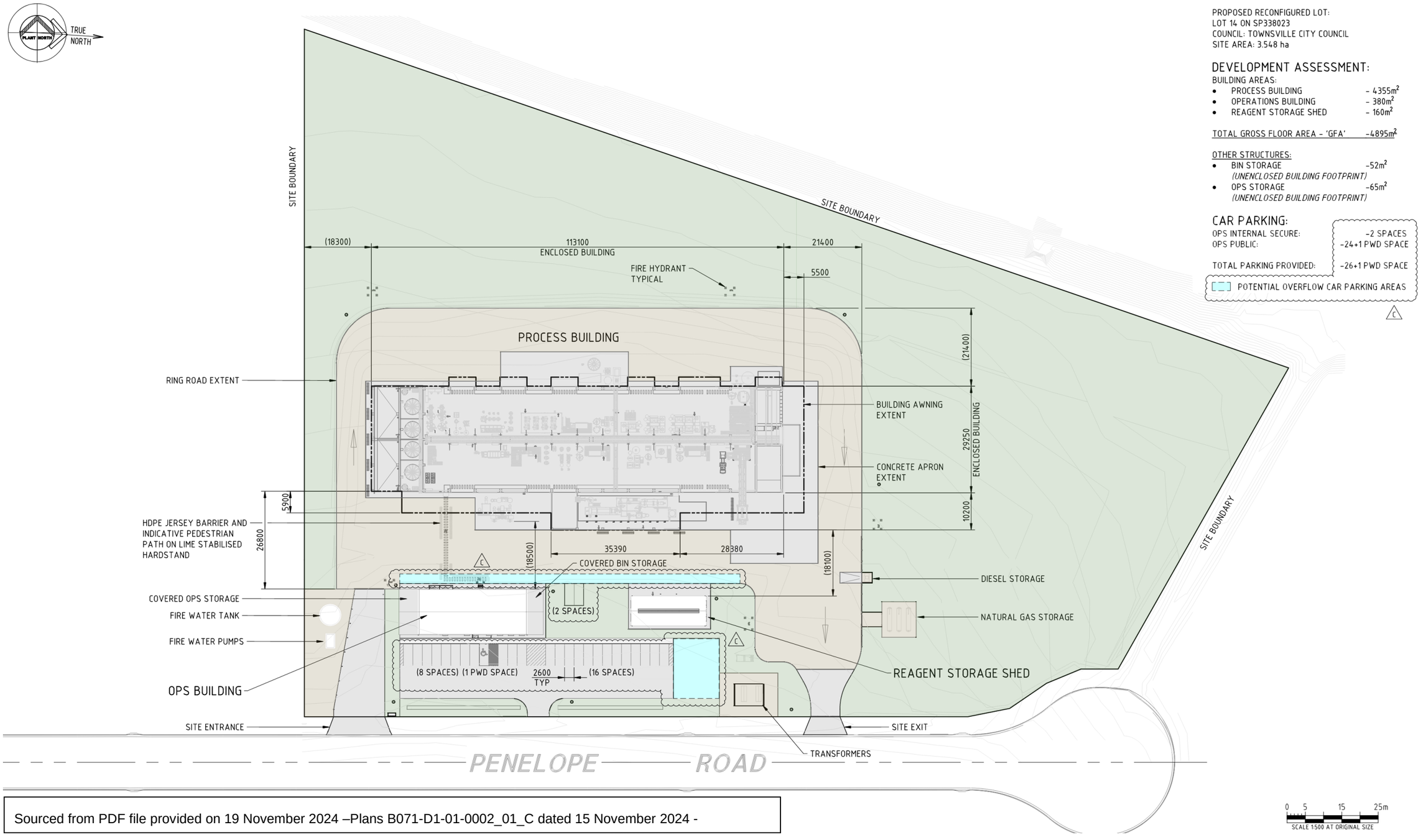
[2] With reference to DES Noise Measurement Manual and the former Ecoaccess *Assessment of Low Frequency Noise* Guideline.

Figure 5 Modelled Noise Sources at Process Building, Vehicles and Mobile Plant Layout



Sourced from PDF file Version 2 - September 2024 - Plans B071-D1-01-0008_01. Indicated decibel values refer to SPL at 1 m as per provided data.

Figure 6 Car Parking Areas including Designated Overflow Areas



Sourced from PDF file provided on 19 November 2024 –Plans B071-D1-01-0002_01_C dated 15 November 2024 -

5.2.1 External Noise Sources – Both Fixed and Mobile Plant

The proposed development will include an on-site external car parking facility (25 spaces).and an additional 2 car spaces for potential overflow. Furthermore, vehicles up to an articulated truck size are anticipated to be operated on site. All vehicles are assumed to move at a maximum 10 km/h whilst in the development and follow movement paths shown in **Figure 5.**

Based on the client inputs and SLR's understanding of the proposed operations the typical daily worst-case 1-hour scenario is as outlined below:

- **Carpark**: Noise will be generated by activities associated with cars arriving and leaving the site (opening/closing of doors, starting and moving), sources are broken down into:
  - 27 Light vehicle movements per hour in the car parking area (assumed frequent use at any time of day/night), located in the car parking section and the potential overflow car parking areas indicated in the site layouts in **Appendix D**. Each movement is assumed to be 30 seconds.

    Noise source: Parking lot (Area) source 1m above the ground.
  - Additional door closure events per hour linked to the movement of vehicles are modelled as a point source.

    Noise source: Point source 1 sec duration per event, 1m above the ground.
- **Truck movements:** Up to five (5) articulated trucks (vehicles up to B double size) per hour (during day and evening period only) to account for deliveries/pickup undertaken as part of the operations at the development. These were assumed to follow a full path around the development site. No truck movements are expected during the night (10pm to 7am).

  Noise source: Moving point source, 3m above the ground at 10 km/hr.
- **Truck idling:**, One (1) truck idling continuously for any given hour (day and evening). No truck idling at night-time.

  Noise source: Point source, 2 m above the ground.
- **Front End Loader:** Average 3 movements per hour (day and evening) and 2 movements per hour (night). Each movement ≤ 5 minutes.

  Noise source: Moving Point source, 2 m above the ground.
- **Forklifts:** Five (5) LPG forklift operating continuously throughout the external loading area during Day and Evening periods. Night-time 1 movement per hour for Concentrate, 1 movement per hour for Scrubber Oversize, 1 movement per hour for Leach Neutralisation and 1 movement per night for Impurity Product and Resin. Each night-time movement has a 5 minute duration.

  Noise source types:
  - Area source (1.5m above the ground) – Day and evening period movements.
  - Line source (1.5m above the ground) – Night time movements.
- **Plant Feeder Hopper to conveyor**: Continuous during day, evening and night. Nominal 1.5kW conveyor drive unit and 750kg/hour feed rate.
- **Roaster Kiln:** Continuous during day, evening and night.

- **Skip:** Solid waste is to be collected in skip bins to be collected one time a day and only between the times of 7 am and 10 pm. For modelling purposes we have assumed one event during the typical worst hour (day/evening) and no events during the night which has ben captured by the modelled truck and forklift movements.
- **Emergency vehicles:** not considered part of typical daily operations.

A summary of the modelled external noise sources is shown in **Table 5**.

Table 5 Modelled External Noise Sources - SWL and Spectra per Item

Noise source	Source type	Octave band frequency spectrum (Hz), dB Linear								Overall Leq SWL, dBA	Lmax dBA	Penalty adjustment	Time "ON" within the hour
		63	125	250	500	1K	2K	4K	8K				
Mobile Plant													
Carpark vehicle movement Note 1	Area	93	87	83	81	81	77	73	70	85	+8	N/A	27 events x 20 sec = 9mins (-8.2dB total)
Door closure (Carpark) Note 1	Point	93	86	83	88	86	78	75	72	89	+5	+5 dBA, door closure	27 events x 1 sec = 27 seconds (-21.2dB total)
Truck movement Note 1	Line	100	98	96	96	96	94	87	76	100	+8	+5 dBA, reverse beeper	Day/ev: 1 truck continuous Night: Nil
Gas Forklift movement Note 1	line	88	80	85	95	94	97	89	80	101	+8	+5 dBA, impulsive penalty	Day/ev: 3 x continuous Night: 20 mins (-4.8dB)
Front End Loader loading hopper Note 2	Line	111	105	98	98	98	96	92	86	103	+8	+5 dBA, impulsive penalty	Day/ev: 15min (-6dB) Night: 10 mins (-7.8dB)
Truck idling Note 1	Point	77	79	78	78	76	72	65	61	80	+5	Nil	Day/ev: 5 minutes (-10.8dB) Night: Nil
Fixed plant													
Plant Feed Hopper conveyor drive unit Note 4	Point	99	96	80	91	94	90	86	79	97	+5	Nil	Cont.
Roaster Kiln Note 3	Point	64	70	78	80	80	82	81	81	88	+3	Nil	Continuous

Noise source	Source type	Octave band frequency spectrum (Hz), dB Linear								Overall Leq SWL, dBA	Lmax dBA	Penalty adjustment	Time "ON" within the hour
		63	125	250	500	1K	2K	4K	8K				
Gas Scrubber Fowlerex Main Fan FC680 Note 5	Point	73	81	82	77	71	71	69	67	80	+10	Nil	Cont.
Chiller package 80kW	point	85	86	87	88	87	84	80	75	91	+3	Nil	Cont.
Air Compressor package	Point	76	77	78	79	78	75	71	66	82	+3	Nil	Cont.
Electrical transformer	Point	75	77	72	72	66	61	56	49	72	+1	Nil	Cont.

Note 1: SWL from SLR database from previous DA noise assessments.

Note 2: SWL obtained from Spectrum from BS5228 Part 1 2009.

Note 3: Overall SPL from Sedgman with spectrum applied from SLR database.

Note 4: SWL obtained from BS5228 Part 1 2009 for a 6kW unit and reduced by 6dB to scale for the proposed 1.5kW unit.

Note 5: Overall SPL for main fan FC680 from Sedgman with spectrum applied from SLR database. Main fan SWLs have been applied to indicated smaller fans to be modelled conservatively

Time histograms, speed correction and penalty adjustments were applied in the acoustic model to represent the above started operational parameters.

5.2.2 Internal Noise Sources – Process Building Operations

The proposed development may operate 24 hours per day subject to user requirements. The following has been considered for the operational assessment:

- According to the process layout (**Figure 5**) and equipment list [3], it has been identified the main contributing noise sources, as follows:
  - Internal equipment: Drum Scrubber, Discharge dewatering centrifuge, Regrind Mill and Flash dryer (Future use) have been considered inclusive of start ups.
  - External equipment: Chiller package, pumps, Gas scrubber, Compressor, Plant feed hopper and Roaster kiln dust collector.
- Five internal forklift paths. LPG Forklift movement inside the warehouse (high frequency use).
- Process building is assumed as follows,
  - Façade construction of the profiled metal sheeting 0.48mm thick.
  - Rooftop vents active openings (with fans, nominal 70 dBA sound power level for each fan is presumed).
  - Roller doors were assumed to be open for natural ventilation (worsts-case scenario).
- Future dryer indicated in **Figure 5** was modeled as a single point noise source. The resultant noise impacts have been assessed separately to the initial development and are presented in **Table 8**.

[3] Equipment list prepared by Sedgman Pty Ltd. File Ref.: B071-P01-06020-LI-0002-XLS_A

- Emergency stop alarms have not been modelled as they are assumed to be non tonal alarms and the resultant contributions to the 1 hour assessment period is expected to be negligible.

Sound powers used for assessment are presented in **Table 6**. Process plant overall sound levels were provided by Sedgman. A typical spectrum shape was applied to each from the SoundPLAN library.

Table 6 Modelled Process Building Internal Noise Sources – SWL and Spectra per Item

Noise source	Source type	Octave band frequency spectrum (Hz), dB								Overall Leq SWL, dBA	Lmax dBA	Penalty adjustment	Time "ON" within the hour
		63	125	250	500	1K	2K	4K	8K				
Mobile Plant													
Gas Forklift movement Note 1	line	88	80	85	95	94	97	89	80	101	+8	+5 dBA, impulsive penalty	Assumes one continuous
Fixed plant													
Drum Scrubber (2.2kW)	Point source	78	83	85	88	92	92	91	88	98	+3	Nil	Cont.
Regrind Mill	Point source	81	81	86	91	96	86	86	81	98	+3	Nil	Cont.
Centrifuge - Discharge dewatering (48kW)	Point source	86	87	88	85	87	87	83	76	93	+3	Nil	Cont.
Future Fixed plant													
Flash dryer (20kW)	Point source	78	78	77	80	83	83	81	78	89	+3	Nil	Cont.

Note 1: SWL from SLR database from DA noise assessments

5.2.3 Externally Located Air Conditioning and Ventilation Plant

At this stage, exact details of the proposed mechanical plant are not known, as the final specification of this equipment will take place during the detailed design stage of the project.

In the absence of detailed information, the below result is considered preliminary to show the feasibility of introducing typical mechanical plant. Potential sources of noise from mechanical plant at the development stage may include equipment associated with the following:

- Air conditioning plant,
- Condensers, and
- Ventilation/exhaust fans.

The maximum allowable sound power level has been calculated for all combined mechanical plant associated with the development with reference to the LAeq,adj,1hr criteria specified in **Table 4**. The sound power levels (SWLs) derived in **Table 7** identifies the maximum mechanical plant noise emission levels to be complaint at the closest noise sensitive receptors, in the presence of the other development noise sources. The effective SWL is based on the assumption that mechanical plant is unscreened; therefore, it is a conservative value.

Table 7 Maximum Predicted Sound Power Level for Combined External Mechanical Plant, Located on Rooftop

Source	Maximum Sound Power Level (SWL dBA) of combined rooftop plant	Comments
Proposed development combined mechanical plant	85	Combined SWL noise level for all outdoor plant items of the operations building.

6.0 Noise Assessment Results

As previously mentioned the proposed facility development may operate 24-hours per day during campaigns, albeit with reduced external activities to occur during the night-time (10pm to 7am) period. The cumulative noise emissions emanating from the premises due to the described occupant activities, vehicle movements and plant items during the hourly maximum events over the day/evening (7 am to 10 pm) and night-time (10 pm to 6 am) period have been assessed against the $L_{Aeq,1hour}$ and $L_{A1,1hour}$ AQO criteria is listed **Table 4.**

Noise predictions external to the noise sensitive receptors assume implementation of noise mitigation treatments listed in **Section 7.0.** The results are summarised in **Table 8.** Noise maps showing the predicted noise emissions have been provided in **Appendix B.**

Table 8 Predicted Noise Levels at Nearby Sensitive Receptors with Noise Mitigation Treatment.

Noise Assessment Limits derived from EPP Noise 2019	Predicted noise levels at noise sensitive receivers, dBA			
	NSR 1 86 Minehane St		NSR 2 73 Minehane St	
	Proposed development	With future works	Proposed development	With future works
Day and Evening, $L_{Aeq,Adj,1hr}$, 50 dBA $L_{A1,Adj,1hr}$, 65 dBA	41 $L_{Aeq,Adj,1hr}$, 41 $L_{A1,Adj,1hr}$	41 $L_{Aeq,Adj,1hr}$, 41 $L_{A1,Adj,1hr}$	39 $L_{Aeq,Adj,1hr}$, 40 $L_{A1,Adj,1hr}$	39 $L_{Aeq,Adj,1hr}$, 40 $L_{A1,Adj,1hr}$
Night-time, $L_{Aeq,Adj,1hr}$, 37 dBA $L_{A1,Adj,1hr}$, 47 dBA	32 $L_{Aeq,Adj,1hr}$, 41 $L_{A1,Adj,1hr}$	32 $L_{Aeq,Adj,1hr}$, 41 $L_{A1,Adj,1hr}$	32 $L_{Aeq,Adj,1hr}$, 39 $L_{A1,Adj,1hr}$	32 $L_{Aeq,Adj,1hr}$, 39 $L_{A1,Adj,1hr}$
Complies with EPP day and evening criterion?	Yes	Yes	Yes	Yes
Complies with EPP night-time criterion?	Yes	Yes	Yes	Yes
	Note: The highest noise level has been presented at these receptors (nearest noise sensitive receivers).			

Based on the noise prediction results presented in **Table 8** the acoustic noise emissions from the development are expected to comply with the noise criteria. For day and evening (7am to 10pm) periods the highest 1 hour noise emissions are expected to be relatively steady state and thus the predicted L_{Aeq} and L_{A1} levels are near identical. For night-time (10pm to 7am), the external on-site activities are less regular and thus some divergence between L_{Aeg} and L_{A1} becomes apparent as expected.

Regarding low frequency noise characteristics, consistent with the overall A-weighted predicted noise levels, the predicted overall dBL $L_{eq\ (internal)}$ from the 1/3 octave data is 33 dB and 32 dB at NSR 1 and NSR 2 respectively. With a difference of 4 dB at NSR 1 and 5 dB at NSR 2 between the overall dBL and dBA Leq (internal) noise levels, low frequency noise is predicted to be compliant with the nominated design standard.

According to the above mentioned, proposed noise control recommendations are described in **Section 7.0.**

7.0 Noise Control Recommendations

Based on the analysis outlined, SLR recommends the following noise mitigation measures and operational recommendations to be implemented in order to achieve the nominated environmental noise criteria limits. Maintaining compliance on an ongoing basis is also expected to rely upon careful and responsible use of the facility, (i.e. responsible use of external mobile plant and equipment). SLR recommend that the operator of the facility develop and implement a noise management plan that recognises the following requirements.

7.1 General

As outlined earlier in this assessment, environmental noise predictions have assumed certain typical maximum 1-hour operating conditions. For clarity, key assumptions are repeated below. Should plant operation be expected to exceed these amounts then this would likely alter the findings of this assessment.

- **Truck movements:** Up to five (5) articulated trucks (vehicles up to B double size) per hour (during day and evening period only) to account for deliveries/pickup undertaken as part of the operations at the development. Truck movements should generally be avoided during the night (10pm to 7am).
- **Front End Loader:** Average 3 movements per hour (day and evening) and 2 movements per hour (night). Each movement generally ≤ 5 minutes.
- **Forklifts:** Five (5) LPG forklift operating continuously in throughout the external loading area during Day and Evening periods. Night-time (10pm to 7am) forklift operations to be restricted to, 1 movement per hour for Concentrate, 1 movement per hour for Scrubber Oversize, 1 movement per hour for Leach Neutralisation and 1 movement per hour for Impurity Product and Resin. Night-time cumulative forklift use should be no more than 20 minutes in the hour.
- **Operator training:** Assessment presumes responsible driver behaviour. The Facility Management is to provide driver training and implement responsible driver behaviour practices. For example, responsible handling of materials to reasonably avoid dropping off heavy objects from height onto the ground or trucks. Excessive idling of engines to be avoided. Engines to be turned off, namely trucks upon deliveries. Signage to be installed to this effect.
- **Trafficable surfaces:** To minimise tyre squeal from on-site vehicle movements the trafficable surfaces are to be of a 'low-squeal' compound. Asphalt, plain concrete or textured surfaces are expected to satisfy this requirement. Polished concrete or high-gloss painted surfaces are not. A 10 km/h speed limit be set for the on-site vehicle movements. Metal grates and manhole covers be well fixed to avoid rattling.
- **Beepers:** On-site mobile plant (i.e. forklift and loader) reverse beepers/alarms assumed to be of broadband squawker type, avoiding tonal sirens.
- **Other unlisted equipment:** Unlisted equipment such as internal Motors, Pumps and Drives are negligible as is expected to be 10 dB below the main noise sources.
- **External fixed plant**: External equipment has been assessed based on the sound powers listed in **Section 0**. During commissioning of plant it is recommended that near-field operator attended noise monitoring be undertaken as a quality check of the final selected plant.
- **Internal Plant:** Plant internal to the Process Building has been assessed based on the sound powers listed in **Section 5.2.2** which resulted in predicted internal reverberant

level inside the building no greater than 78 dBA. It is recommended a final check to be undertaken once final equipment selections have been made. Presented results assume roof treatment listed in **Section 7.2.**

- Final gross area of roller door and ventilation openings in general accordance with those identified on the current plans.
- Air conditioning / ventilation mechanical plant sound powers for the operations building have been assessed on the sound powers listed in **Section 5.2.3.** Refer **Section 7.3** for recommendations.

7.2 Process Building Roof Upgrade

The roof was identified as one of the dominant noise transmission sources. An upgrade is proposed for the roof construction of the process building in order to improve its sound insulation performance and also provide reverberation noise control to the internal space. The required roof acoustic performance acoustic specification is a Weighted Sound Reduction Index (R_w) not less than 25 and a Noise Reduction Coefficient (NRC) not less than 0.9. Suitable materials are expected to include, but are not limited to,

- Min. 0.6mm steel roof deck plus Min. 75 mm thick acoustic fibrous insulation (type mineral wool, density 75 kg/m^3).
- min. 0.6mm steel roof deck plus Min. 80 mm thick acoustic fibrous insulation (type blow-in or spray cellulose fibre, density 30 kg/m^3).

The absorptive material is required to have min. NRC 0.9 (mineral wool / fibrous insulation) and must be exposed on the inner side of the roof but may be physically protected by perforated steel/aluminium sheet with perforations 10% to 20%.

7.3 Air Conditioning and Ventilation Mechanical Plant

In the absence of detailed information, a preliminary prediction showed the feasibility of introducing typical mechanical (condenser) plant for the operations building. The noise emission of the actual plant proposed for the development should be reviewed during the following design stages to confirm compliance with the noise criterion presented in **Table 4**. The combined rooftop plant maximum noise level has been assessed in the noise predictions as described at **Table 7.**

The following general principles may be implemented to control noise emissions from mechanical plant located on site:

- Air conditioning / ventilation mechanical plant sound powers not exceeding those listed in **Section 5.2.3.**
- Install plant on the rooftop at a location that maximises the distance to the closest noise sensitive receptors to the south of the development.

On the completion of construction, noise testing should be conducted to confirm noise emissions meet the specified noise limits in this report.

7.4 Design Validation, Certification, and Testing

7.4.1 Design Validation

The above sub-sections in this report outlines the minimum acoustic performance requirements and recommended methods and details to achieve the environmental noise criteria outlined in **Section 4.3**. Equipment selection sound emission details including any

proposed alternative methods, system variations or modifications are required to be professionally reviewed for suitability before final commitment. Requests for approvals need to demonstrate that the required performance standard can be achieved, via supply of either construction details and/or a statement of acoustic opinion as detailed below:

- Full acoustic performance details:
  - Equipment and construction details as appropriate including descriptive literature of installed equipment/construction, independent laboratory or field results of testing completed, in accordance with relevant Australian or International Standards, e.g. AS ISO 140 and AS/NZS ISO 717, or
  - A professional letter of opinion from either a member firm of the Association of Australian Acoustic Consultants or a suitably qualified Member of the Australian Acoustical Society, which certifies, on the basis of supporting technical data and risk management that the installed construction as installed will provide the specified performance.

    Where applicable, testing authority reports to document procedures in accordance with relevant Australian and International standards including AS ISO 140 and AS ISO 717. The testing authority must be either, NATA approved measuring laboratory, Member firm of the Association of Australian Acoustical Consultants, CSIRO, National Acoustic Laboratories, RMIT.
- Manufacturers published data:
  - technical specifications,
  - type test or factory test data,
  - description of construction materials and description of finishes to the frame, and
  - recommendations for installation and service use and the like.

7.4.2 Certification and Testing

Physical testing is recommended to scoped into the successful contractor's works such that there is a clear responsibility to demonstrate compliance to the specified acoustic performance requirements. Notionally this testing would be conducted at or near the completion of works (ie. during commissioning phase) with results reported to the State. Acoustic testing should be undertaken by an eligible member firm of the Association of Australian Acoustic Consultants or eligible Member of the Australian Acoustical Society. Acoustic testing would be undertaken over a sufficiently representative period; likely a series of operator attended near-field measurements of individual plant items plus supported by 15 minute measurements of plant cumulative noise levels during both day/evening and night periods.

8.0 Conclusion

SLR has been commissioned to undertake a noise impact assessment of the proposed development to be located on Lot 14 on SP338024 at the new Cleveland Bay Industrial Park, Townsville, QLD.

A noise model was developed in order to predict representative industrial and operational activities at the proposed development to assess potential noise emission onto surrounding noise sensitive receptors to confirm acceptable noise levels are achieved against the adopted EPP Noise 2019 Acoustic Quality Objectives (referenced to the EP Act 1994). In satisfying the requirements of the EPP Noise, it is considered the Townsville City Plan and Development Scheme for the Townsville State Development Area will also be satisfied.

Associated noise activities modelled and assessed were mobile plant (vehicle activities), Internal Plant (Process building operations) and expected mechanical plant (air conditioning and ventilation).

Noise predictions (**Section 6.0**) as part of this assessment show that noise intrusive activities from the development are expected to comply with the noise criteria during day, evening and night periods with the inclusion of noise control recommendations listed in **Section 7.0**.

Appendix A Terminology

Queensland Resources Common User Facility, Townsville

Noise Impact Assessment

RPS

SLR Project No.: 623.030270.00008

29 November 2024

Term	Description
‘A’ weighted	A frequency adjustment which represents how humans hear sounds.
ABL	Assessment Background Level. The single-figure background level representing each assessment period (day, evening and night). Defined in the *Noise Policy for Industry*.
Ambient noise level	The all-encompassing sound associated with an environment or area.
Background creep	The incremental increase in background noise levels over time as new developments are built in an area.
Ctr	A frequency adaptation term applied in accordance with the procedures described in ISO 717, generally to account for increased significance of low-frequency noise transfer being assessed.
dB	Decibel
dBA	‘A’ weighted decibel
DW	The weighted level difference between two rooms, that is, the on-site sound insulation between two spaces.
Facade affected	A monitoring location which is influenced by facade reflections. Measurements at facades are typically taken at a distance of 1 m away and the measured noise level generally regarded as being +2.5 dB higher than ‘free field’.
Free field	A monitoring location where the microphone is positioned sufficiently far from nearby surfaces for the measured data to not be influenced by reflected noise.
Hz	Hertz
Impulsive noise	Noise with a high peak of short duration, or sequence of peaks.
Intermittent noise	Noise which varies in level with the change in level being clearly audible
L90 , L10, etc.	Statistical exceedance levels, where LN is the sound pressure level exceeded for N% of a given measurement period.
LAE (or SEL)	Sound Exposure Level. This is the constant sound level that has the same amount of energy in one second as the original noise event.
LAeq	The ‘A’ weighted equivalent noise level. It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.
LAmax	The A’ weighted maximum sound pressure level of an event.
LnTw	The weighted, standardised impact sound pressure level of a floor/ceiling system. A lower LnTw value represents a better acoustic performance.
LnTw+Ci	The combined weighted, standard plus spectrum adaption term that describes the impact sound insulation performance of floor and ceiling systems. A lower LnTw value represents a better acoustic performance.
Term	Description
Low frequency	Noise containing energy in the low frequency range.
LP or SPL	Sound Pressure Level
Lw or SWL	Sound Power Level
Noise logger	A self-contained, battery powered item of equipment that is used to measure noise levels over several days.
Noise reduction	The difference in sound pressure level between any two areas.
NR noise rating	Single number evaluation of the background noise level in a space. The NR level is typically around 5 to 6 dB below the ‘A’ weighted noise level.
Octave-band	A frequency band where the highest frequency is twice the lowest frequency.
Offensive noise	Noise that is considered harmful or which interferes unreasonably with affected receivers.

Term	Description
Over pressure	A term used to describe the air pressure pulse emitted during blasting or similar events.
PNTL	Project Noise Trigger Levels. Target noise levels for a particular noise generating development.
RBL	Rating Background Level. The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period. Defined in the *Noise Policy for Industry*.
Reverberation time (or RT or T-60)	The time taken (in seconds) for a sound to decay by 60 dB within a space.
Rw	Weighted Sound Reduction Index of a building element. That is, the laboratory tested (or theoretically calculated) sound insulation performance of a single element.
Sound Insulation	A reference to the degree of acoustical separation between any two areas.
Steady state noise	Noise which remains relatively constant in level over time, as opposed to time-varying noise which fluctuates over time.
Speech privacy	The privacy achieved between two spaces, being a combination of source strength (vocal effort), sound insulation (D_W) between the spaces and the background noise levels in the receiving location.
Time weighting	Sound level meters can be set to 'fast' or 'slow' response. 'Fast' corresponds to a 125 ms time constant and 'slow' corresponds to a 1 second time constant.
Tonality	Noise containing a prominent frequency.
Transmission loss (or sound transmission loss or sound reduction index)	A test which rates the sound transmission properties of a wall, floor or roof construction.

A.1 Sound Level (or Noise Level)

The terms sound and noise are almost interchangeable, except that in common usage noise is often used to refer to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The human ear (and those of other species) responds to changes in sound pressure over a very wide range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (dB or dBL) scale reduces this ratio to a more manageable size by the use of logarithms.

A.2 A-weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to human hearing.

A.3 Change in Sound Pressure Levels

For human perception, a change of 1 dBA or 2 dBA in the level of a sound is considered to be indiscernible, while a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness. As noted in Section 2.4 of the TMR CoP Vol 1, while the above noted changes in sound pressure level are *not precisely verifiable for road traffic noise, it is useful in understanding the significance of change in environmental noise exposure*.

Additional facts about road traffic noise as stated in Section 2.4 of the TMR CoP Vol 1:

- A 3 dBA change in noise level is equivalent to halving or doubling the traffic volumes.

- A 10 dBA change in noise level is equivalent to halving or doubling the subjective or perceived loudness or a tenfold increase or decrease in traffic volume.
- A 10 km/h increase in speed will increase the noise level by approximately 1 dBA.
- A 3.5% compound annual growth rate in traffic will increase the noise level by approximately 1.5 dBA over a 10-year horizon.
- An 8% compound annual growth rate in traffic will increase the noise level by approximately 3.0 dBA over a 10-year horizon.

A.4 Typical Sound Pressure Levels

The table below lists examples of typical sound pressure levels.

Table A-1: Examples of Typical Sound Pressure Levels

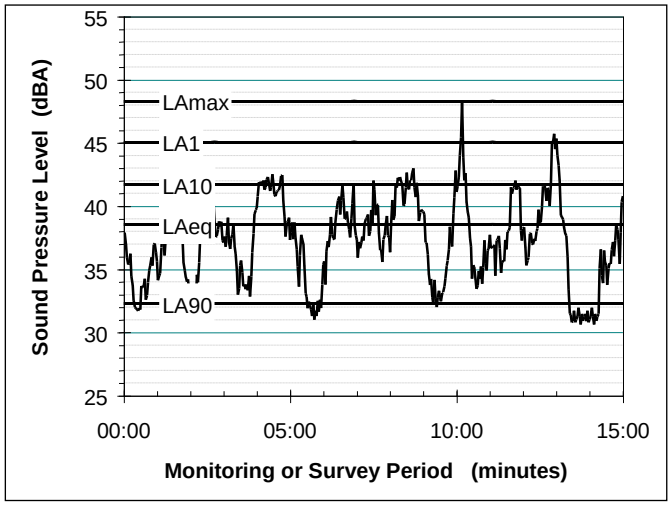
Sound pressure level (dBA)	Typical example
130	Threshold of pain
120	Metal hammering
110	Grinding on steel
100	Loud car horn at 3 metres (m)
90	Dog bark at 1 m
80	Cicadas at 1 m
70	Noise level directly adjacent to a busy main road
60	Ambient noise level in urban area close to main roads
50	Day time in a quiet suburban environment with background or distant road traffic noise
40	Night-time in a quiet suburban environment with background or distant road traffic noise Ambient noise level in rural to semi-rural environments with light breezes and some noise from insects, birds and distant traffic
30	Ambient noise level in a typical rural noise environment in the absence of insect noise and wind. Inside bedroom
20	Ambient noise level in remote rural environment away from main roads with no wind and no insect noise

A.5 Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels (LAN), where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA1 is the noise level exceeded for 1% of the time and LA10 the noise exceeded for 10% of the time.

Figure 9 below presents a hypothetical 15-minute noise measurement, illustrating various common statistical indices of interest.

Figure 7 Hypothetical 15 Minute Noise Measurement



Of particular relevance to this study, are:

- LAmax: The A-weighted maximum sound pressure level of any given measurement period.
- LA1: The A-weighted noise level exceeded for 1% during any given measurement period.
- LA10: The A-weighted noise level exceeded for 10% during any given measurement period. This is commonly referred to as the average maximum noise level.
- LA90: The A-weighted noise level exceeded for 90% during any given measurement period, often referred to as the 'background' noise level.
- LAeq: The A-weighted equivalent noise level (basically the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

Additionally,

- $L_{A10(18hour)}$ Road Traffic Noise Level: the level exceeded for 10% of any measurement period; the usual period of measurement is 1 hour. The hourly L_{A10} level, therefore, is the traffic noise level exceeded for 6 minutes in the hour. The 18-hour L_{A10} level ($L_{A10(18hour)}$) is the arithmetic average of 18, hourly L_{A10} traffic noise levels measured in consecutive hours between 6:00 am and 12:00 midnight.
- $L_{A10(12hour)}$ Road Traffic Noise Level – is the arithmetic average of 12 hourly L_{A10} traffic noise levels measured in consecutive hours between 6:00 am and 6:00 pm.
- $L_{An(1hour)}$ Road Traffic Noise Level – the level exceeded for n% of a 1-hour period.

A.6 Noise Propagation

Provided the receptor is in the far-field of the noise source, noise levels will reduce as a receptor moves further away from the source. This is due to spreading of the noise source energy over distance. For a simple point source (for example, a motor) the theoretical reduction in noise levels is 6 dBA per doubling of distance. For a line source (for example, a busy road) the theoretical reduction is 3 dBA per doubling of distance. In reality however other factors affect noise propagation. These include ground absorption, air absorption, acoustic screening, and meteorological effects.

Appendix B Grid Noise Maps

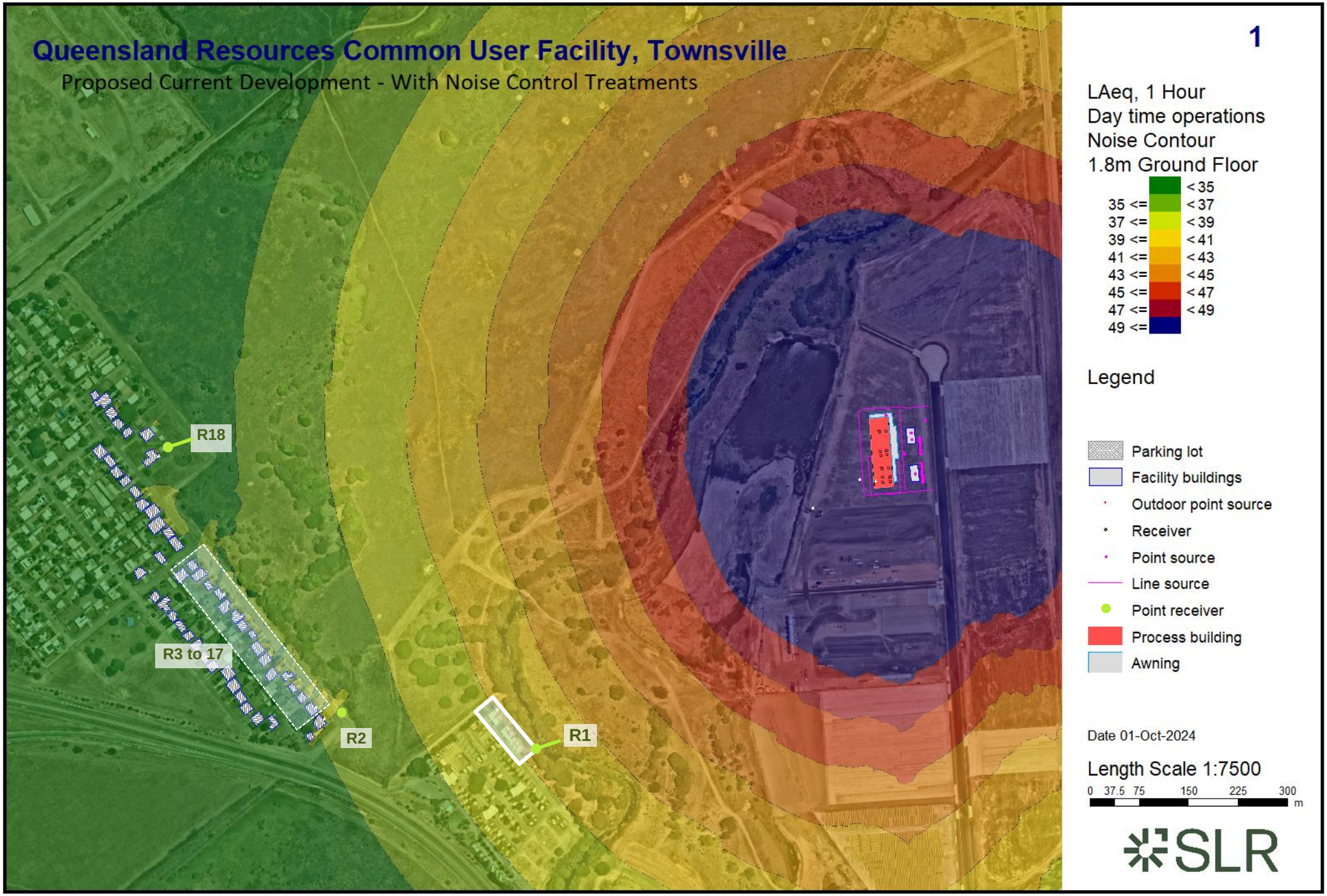
Queensland Resources Common User Facility, Townsville

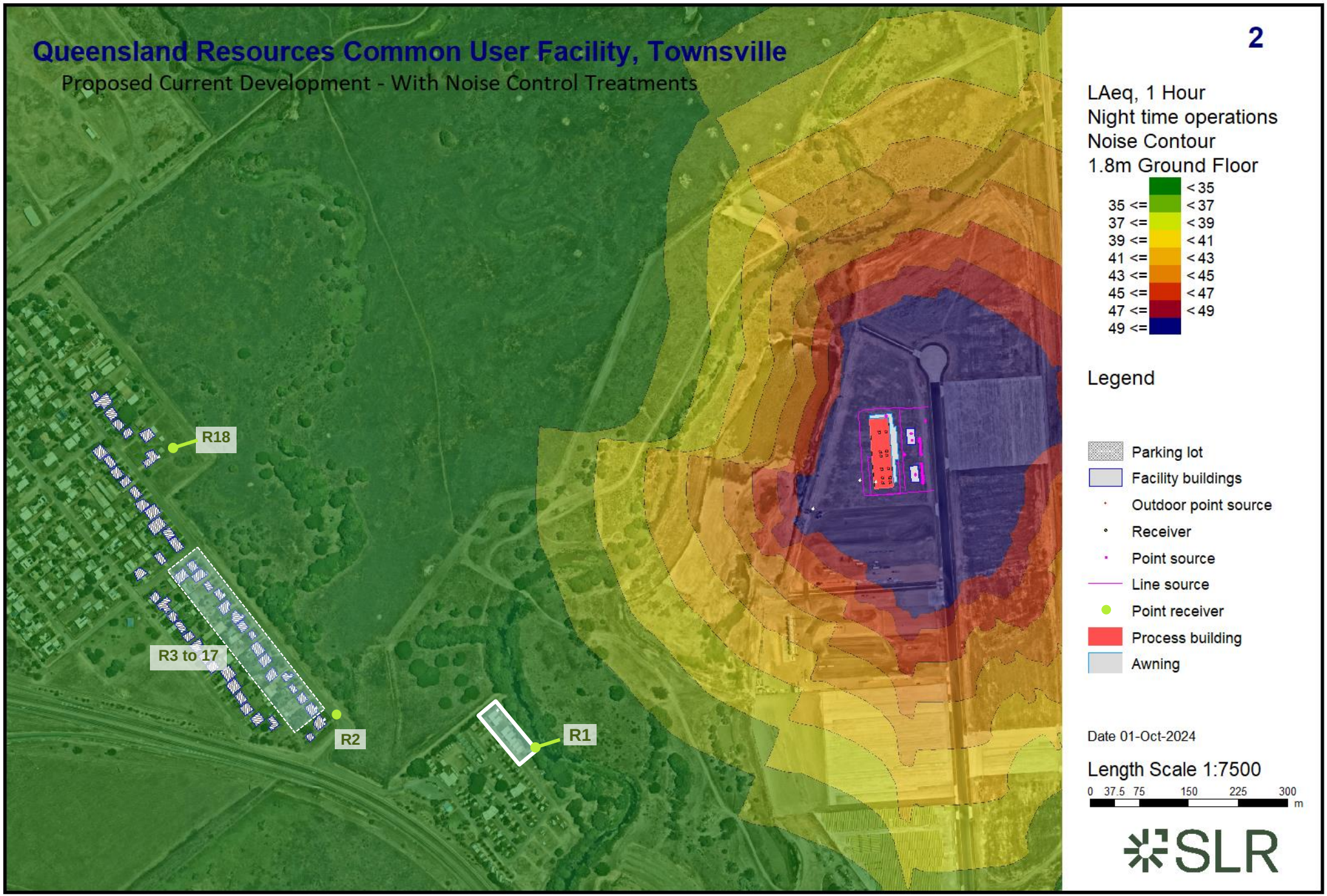
Noise Impact Assessment

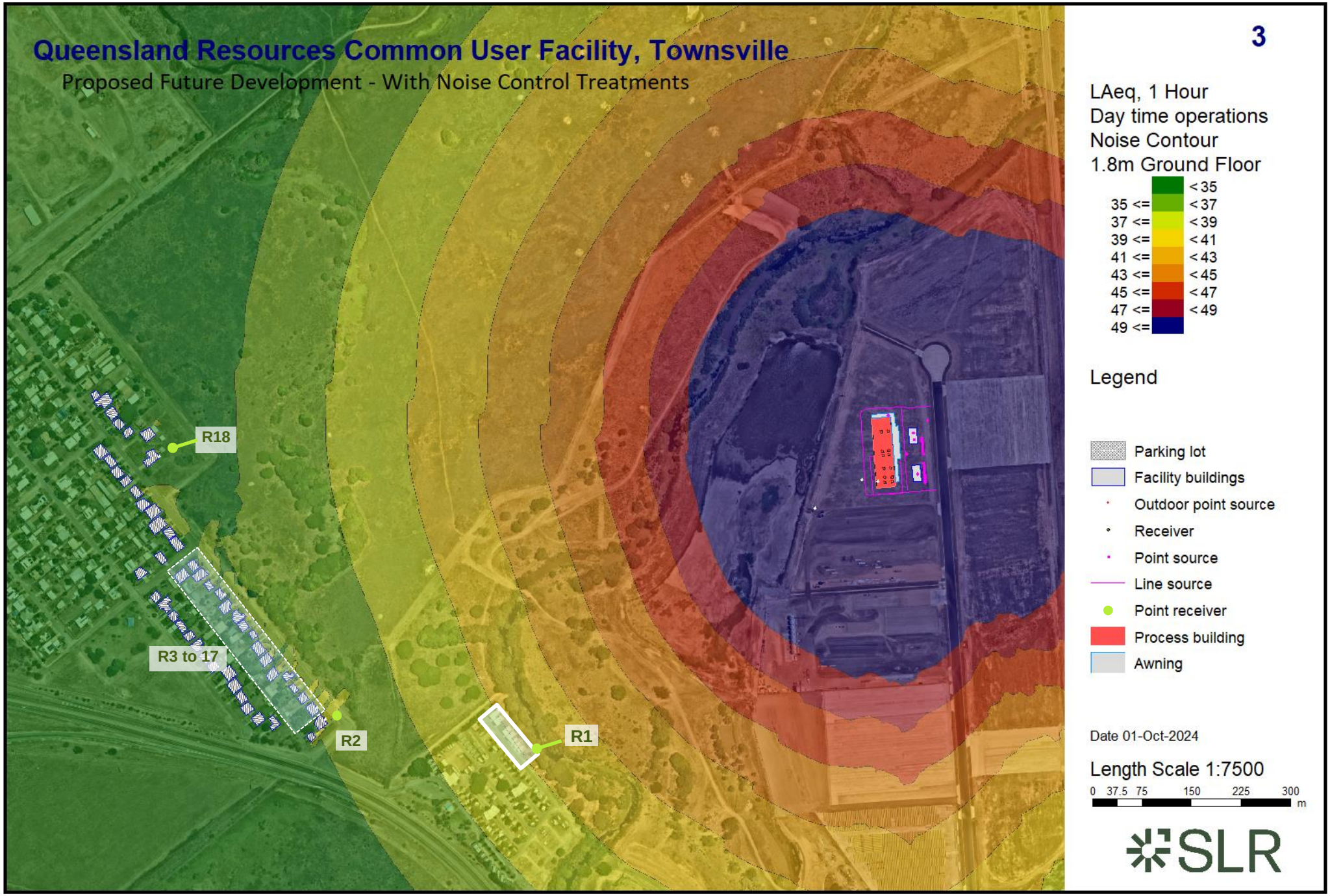
RPS

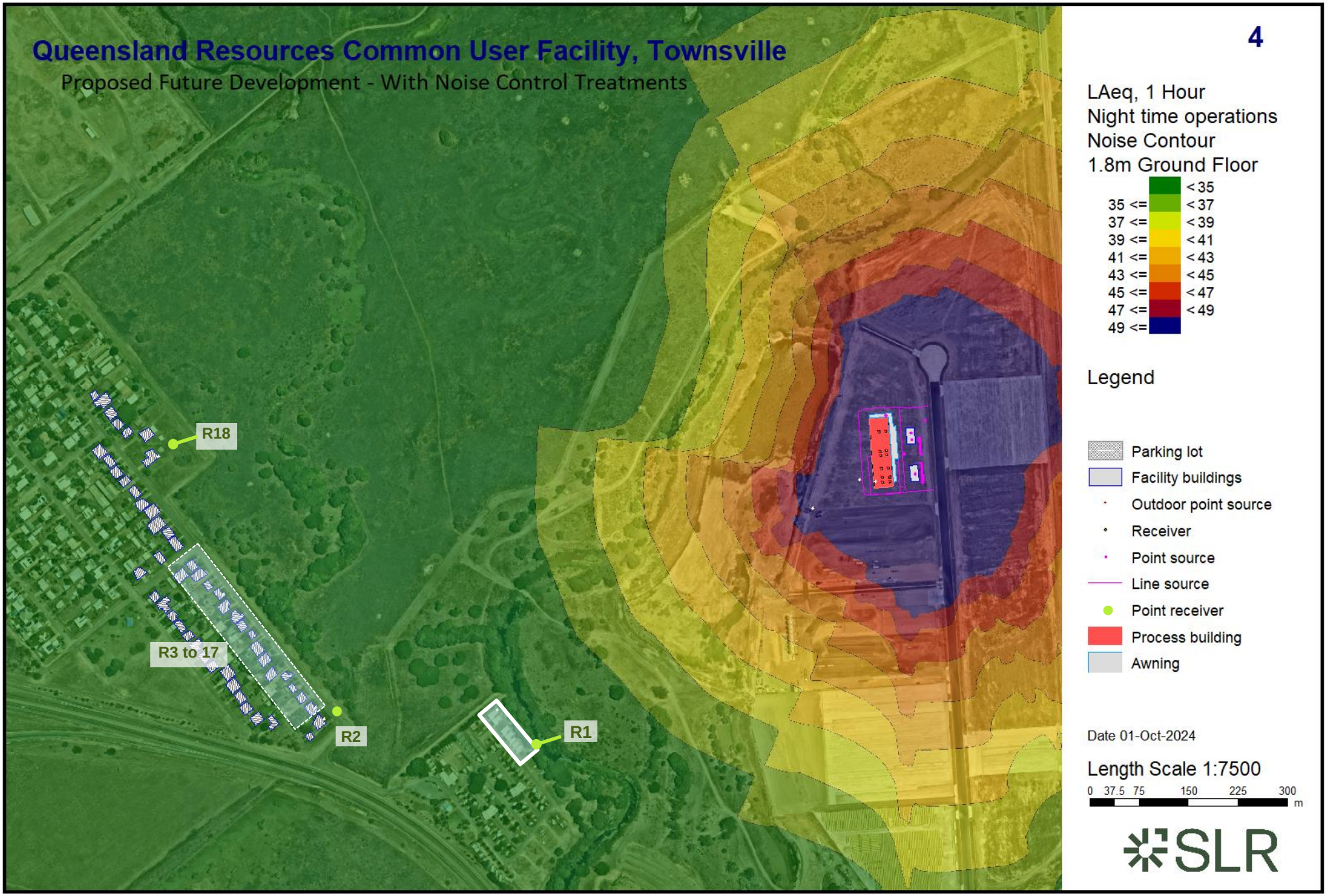
SLR Project No.: 623.030270.00008

29 November 2024


Queensland Resources Common User Facility, Townsville
Proposed Current Development - With Noise Control Treatments
R18
R3 to 17
R2
R1
1
LAeq, 1 Hour
Day time operations
Noise Contour
1.8m Ground Floor
< 35
35 <= < 37
37 <= < 39
39 <= < 41
41 <= < 43
43 <= < 45
45 <= < 47
47 <= < 49
49 <=
Legend
Parking lot
Facility buildings
Outdoor point source
Receiver
Point source
Line source
Point receiver
Process building
Awning
Date 01-Oct-2024
Length Scale 1:7500
0 37.5 75 150 225 300
m
SLR


Queensland Resources Common User Facility, Townsville
Proposed Current Development - With Noise Control Treatments
2
LAeq, 1 Hour
Night time operations
Noise Contour
1.8m Ground Floor
< 35
35 <= < 37
37 <= < 39
39 <= < 41
41 <= < 43
43 <= < 45
45 <= < 47
47 <= < 49
49 <=
Legend
Parking lot
Facility buildings
Outdoor point source
Receiver
Point source
Line source
Point receiver
Process building
Awning
R18
R3 to 17
R2
R1
Date 01-Oct-2024
Length Scale 1:7500
0 37.5 75 150 225 300 m
SLR


Queensland Resources Common User Facility, Townsville
Proposed Future Development - With Noise Control Treatments
3
LAeq, 1 Hour
Day time operations
Noise Contour
1.8m Ground Floor
< 35
35 <= < 37
37 <= < 39
39 <= < 41
41 <= < 43
43 <= < 45
45 <= < 47
47 <= < 49
49 <=
Legend
Parking lot
Facility buildings
Outdoor point source
Receiver
Point source
Line source
Point receiver
Process building
Awning
R18
R3 to 17
R2
R1
Date 01-Oct-2024
Length Scale 1:7500
0 37.5 75 150 225 300
m
SLR


Queensland Resources Common User Facility, Townsville
Proposed Future Development - With Noise Control Treatments
4
LAeq, 1 Hour
Night time operations
Noise Contour
1.8m Ground Floor
< 35
35 <= < 37
37 <= < 39
39 <= < 41
41 <= < 43
43 <= < 45
45 <= < 47
47 <= < 49
49 <=
Legend
Parking lot
Facility buildings
Outdoor point source
Receiver
Point source
Line source
Point receiver
Process building
Awning
R18
R3 to 17
R2
R1
Date 01-Oct-2024
Length Scale 1:7500
0 37.5 75 150 225 300 m
SLR

Appendix C Noise Monitoring Charts

Queensland Resources Common User Facility, Townsville

Noise Impact Assessment

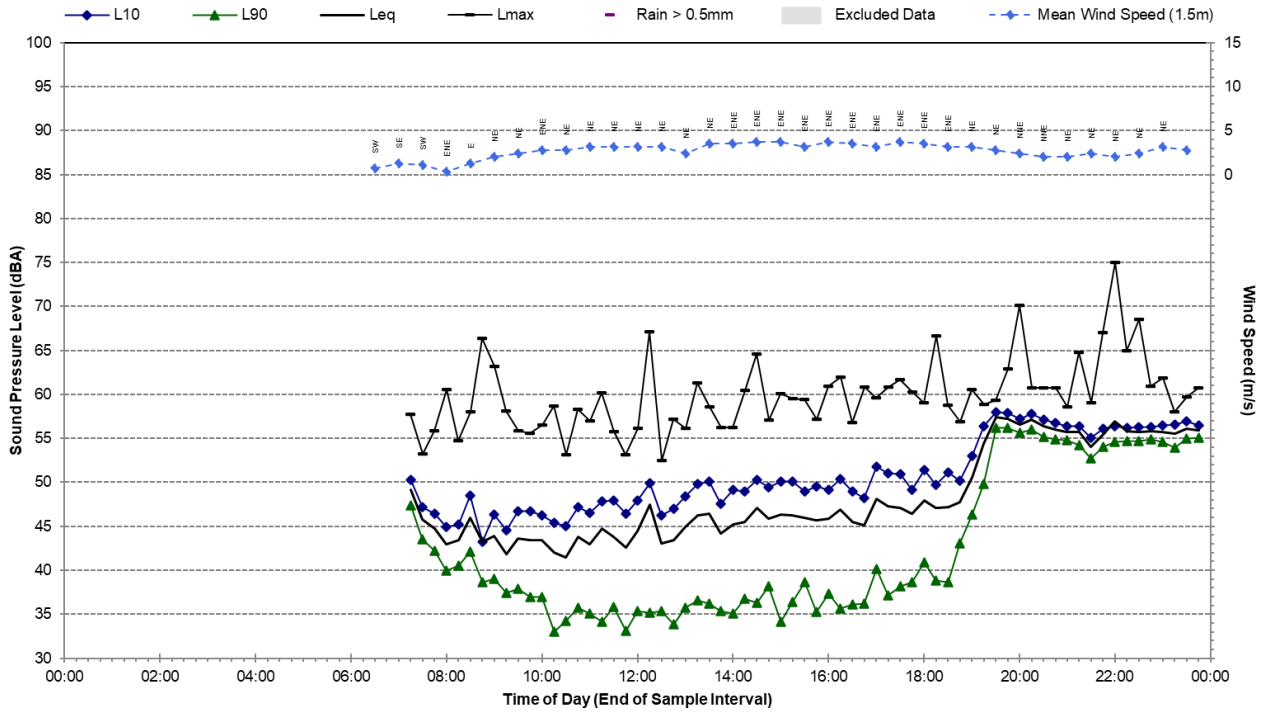
RPS

SLR Project No.: 623.030270.00008

29 November 2024

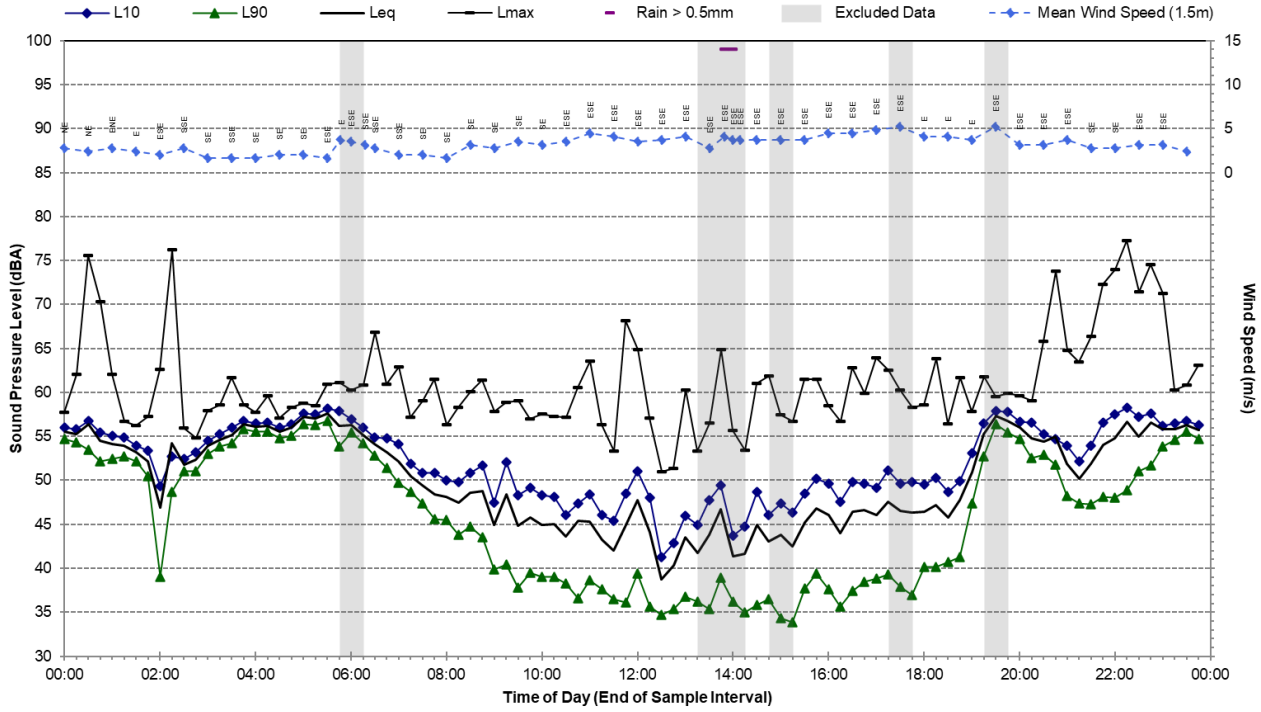
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Friday, 15 March 2024



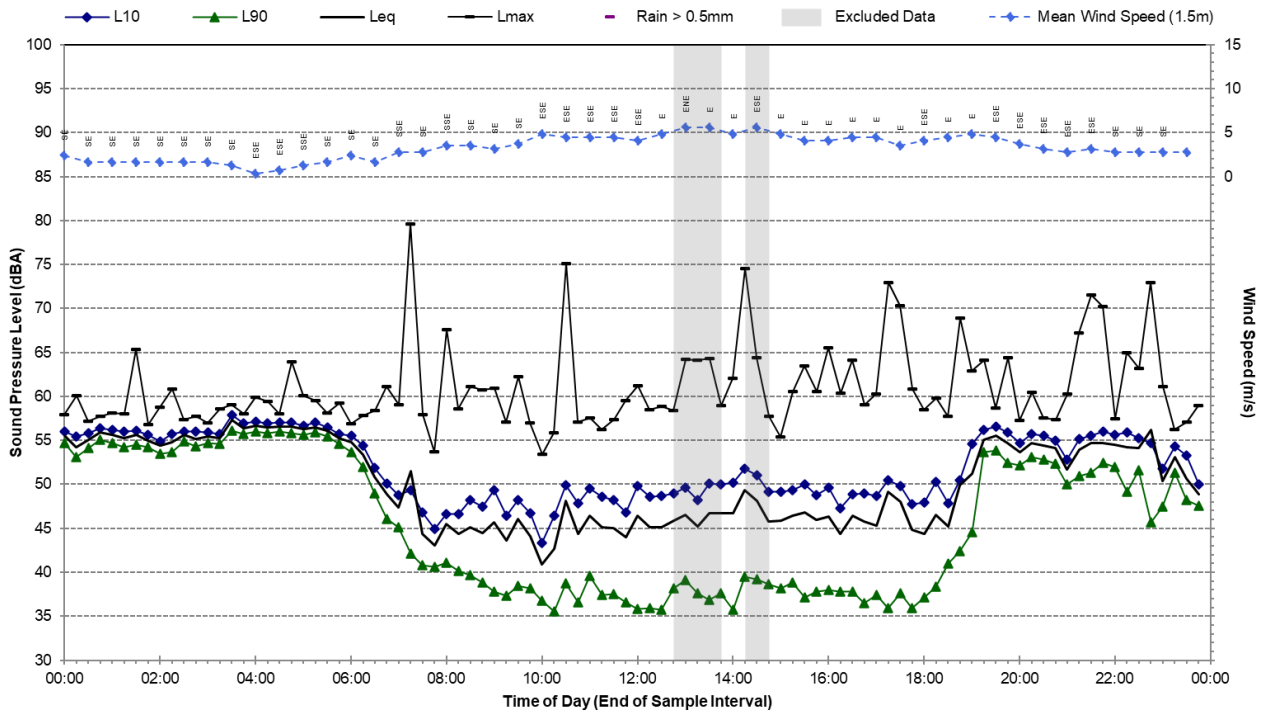
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Saturday, 16 March 2024



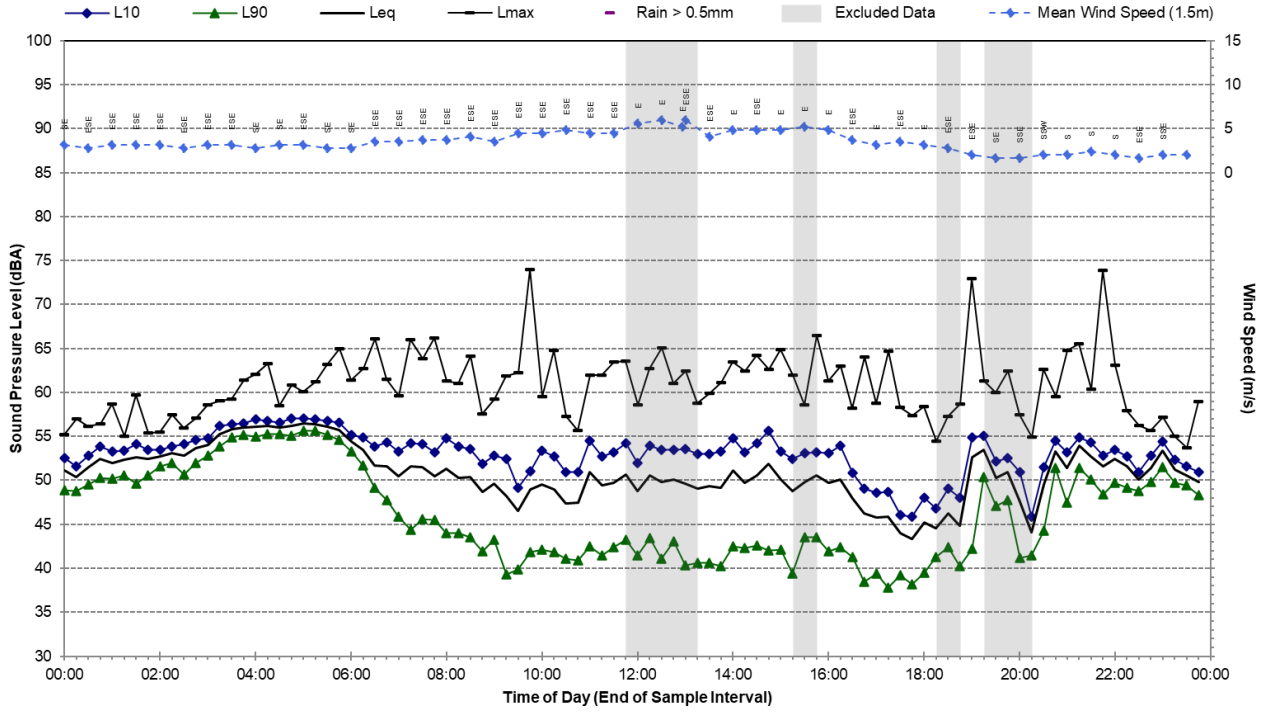
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Sunday, 17 March 2024



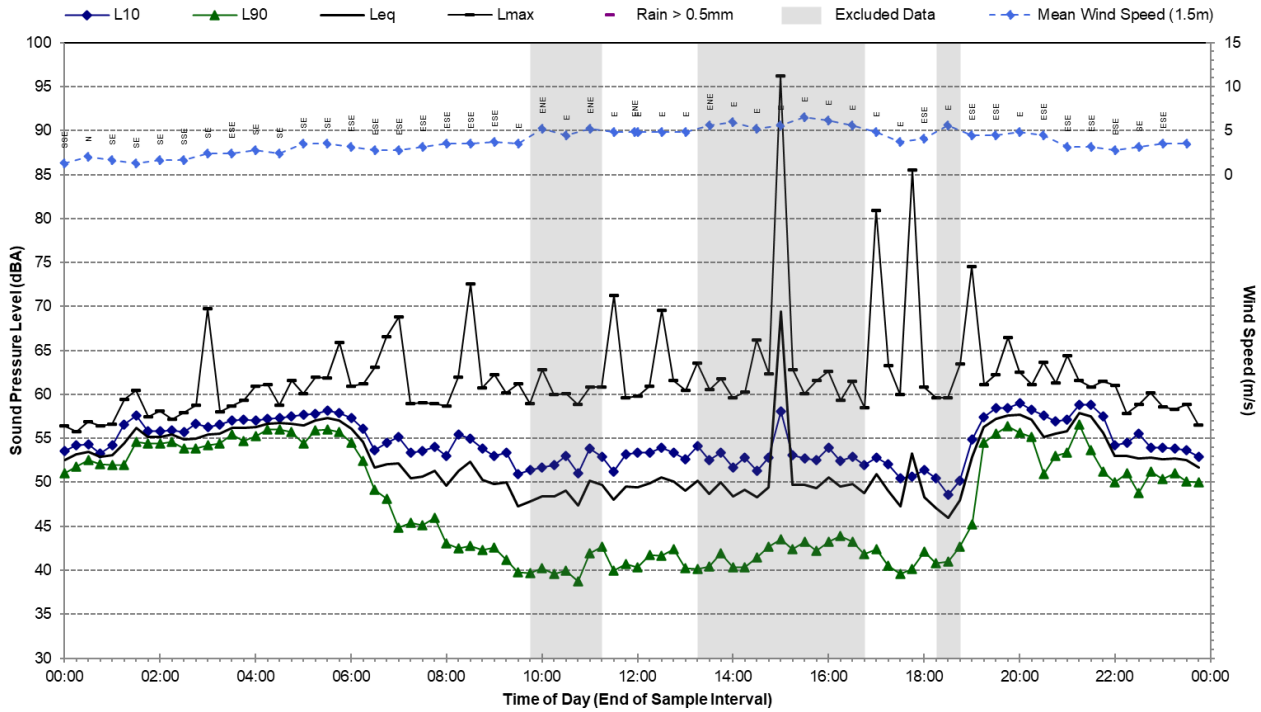
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Monday, 18 March 2024



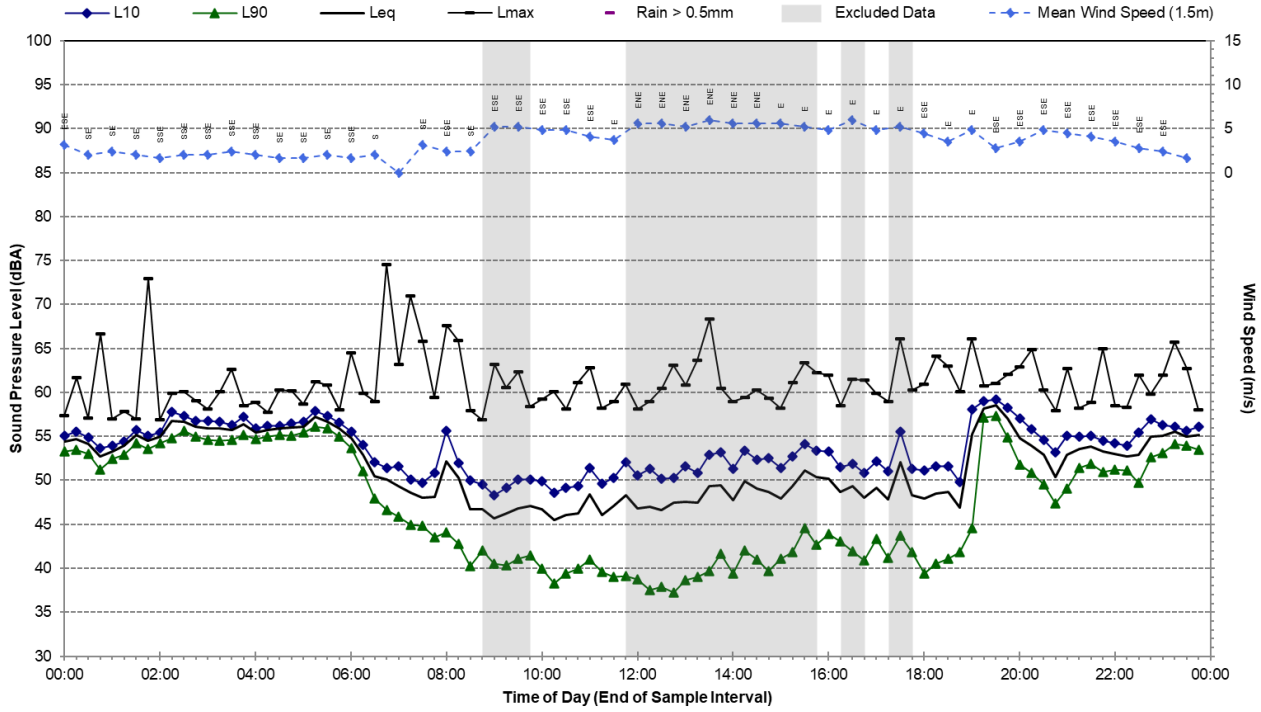
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Tuesday, 19 March 2024



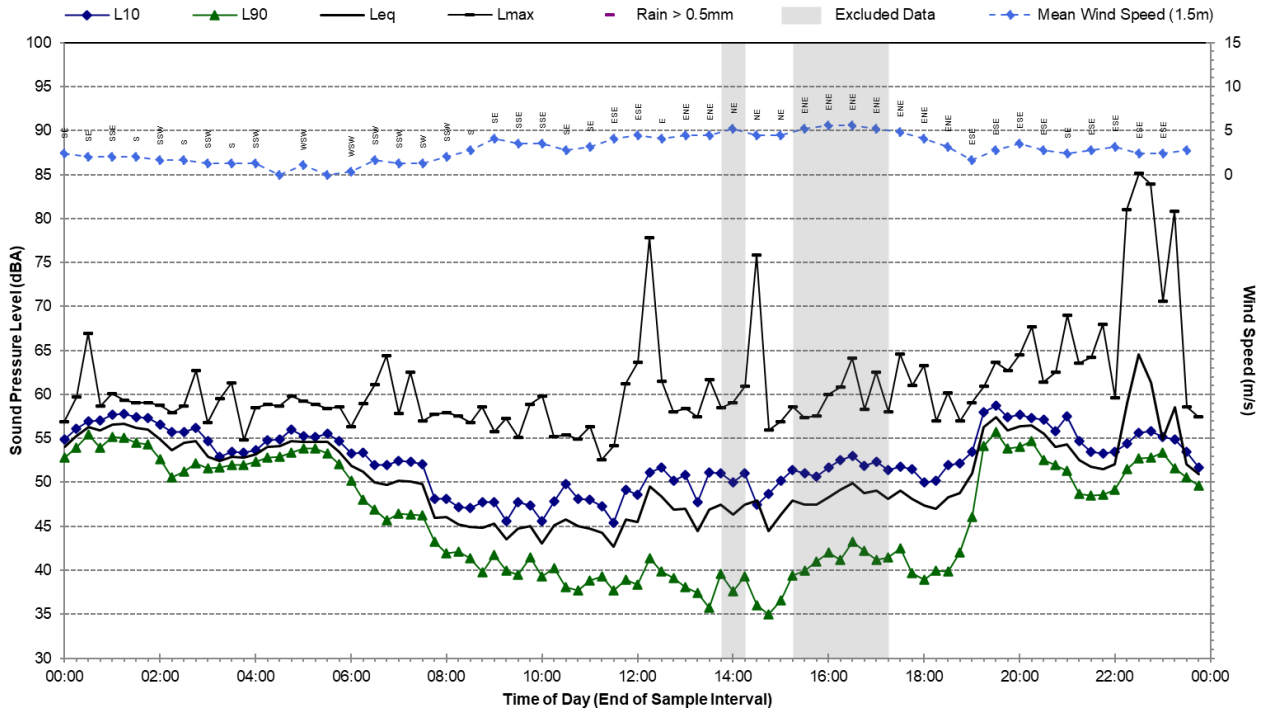
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Wednesday, 20 March 2024



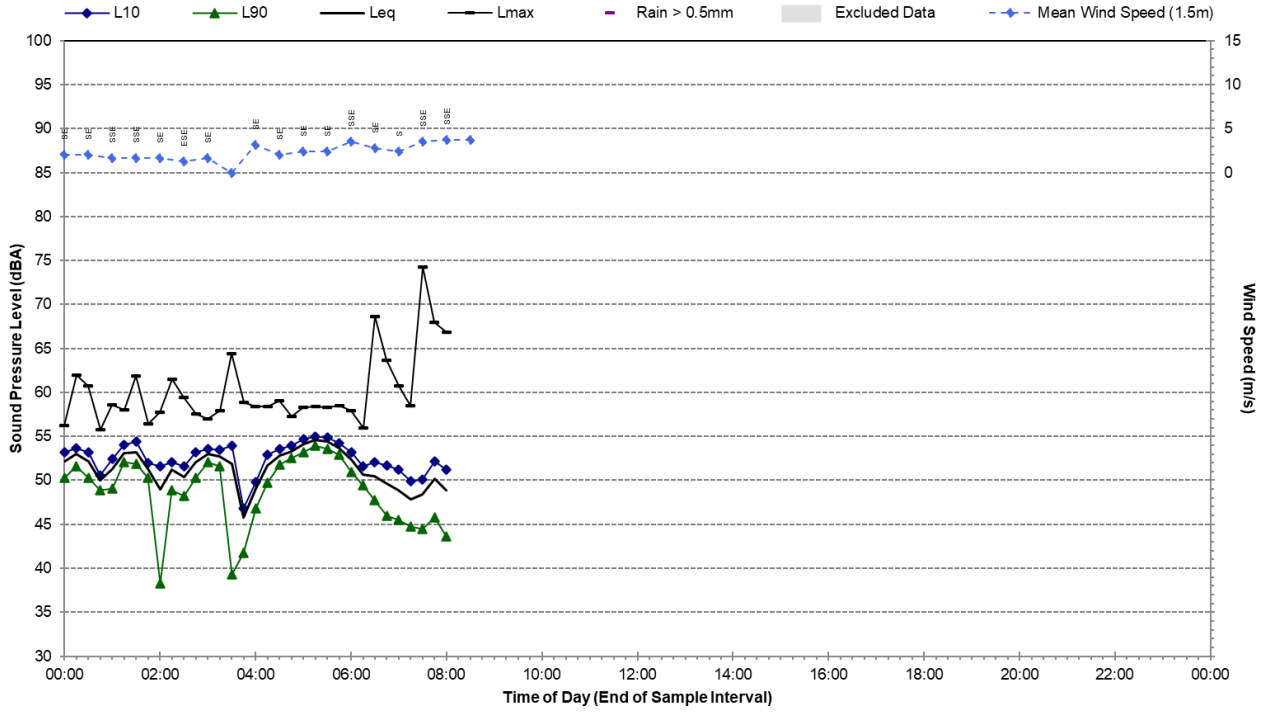
Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Thursday, 21 March 2024



Statistical Ambient Noise Levels

Noise Monitoring Location - Cleveland Bay Industrial Park - Friday, 22 March 2024



Appendix D Project Site Plans and Elevations

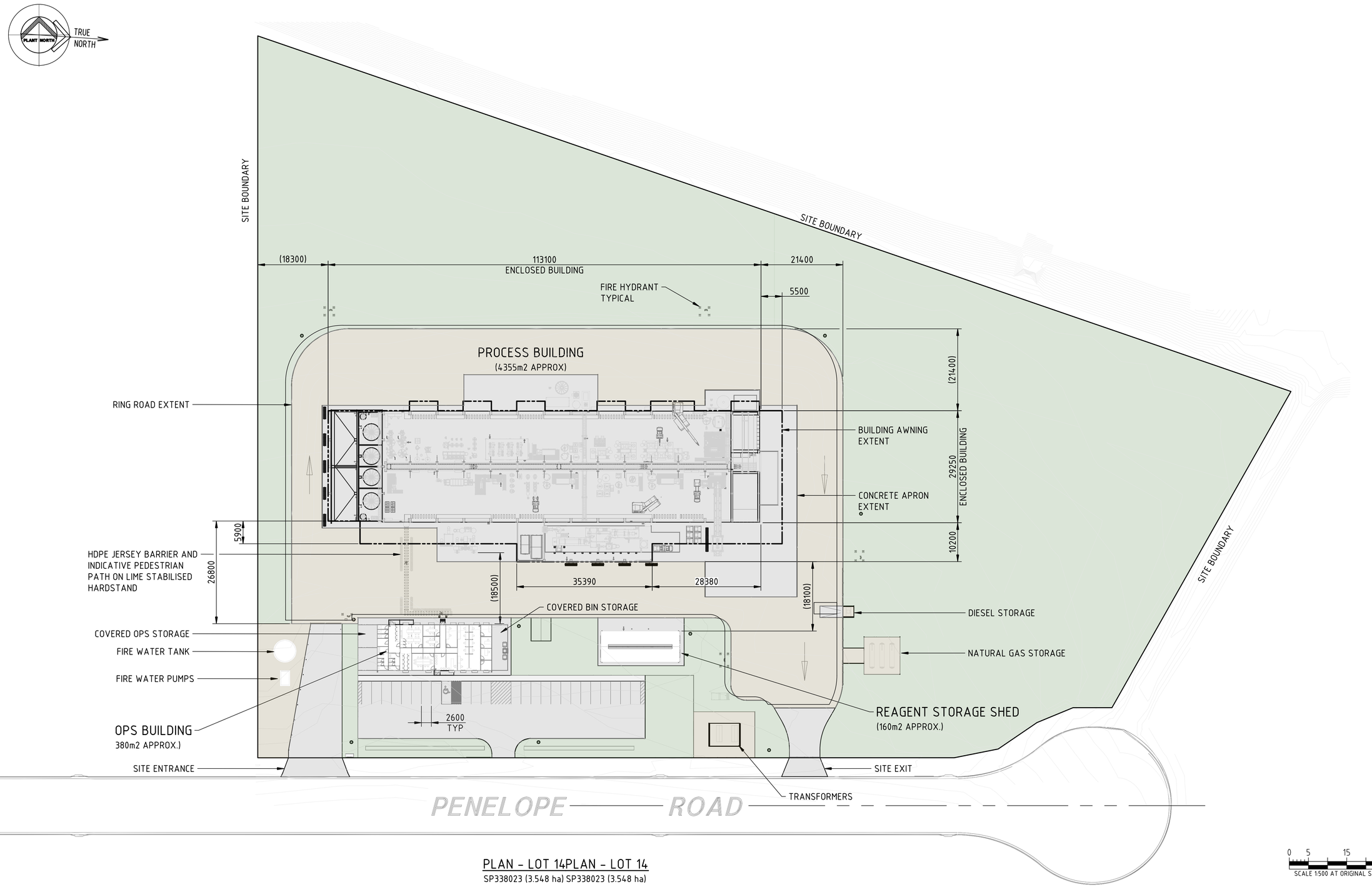
Queensland Resources Common User Facility, Townsville

Noise Impact Assessment

RPS

SLR Project No.: 623.030270.00008

29 November 2024



PLAN - LOT 14PLAN - LOT 14

SP338023 (3.548 ha) SP338023 (3.548 ha)

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

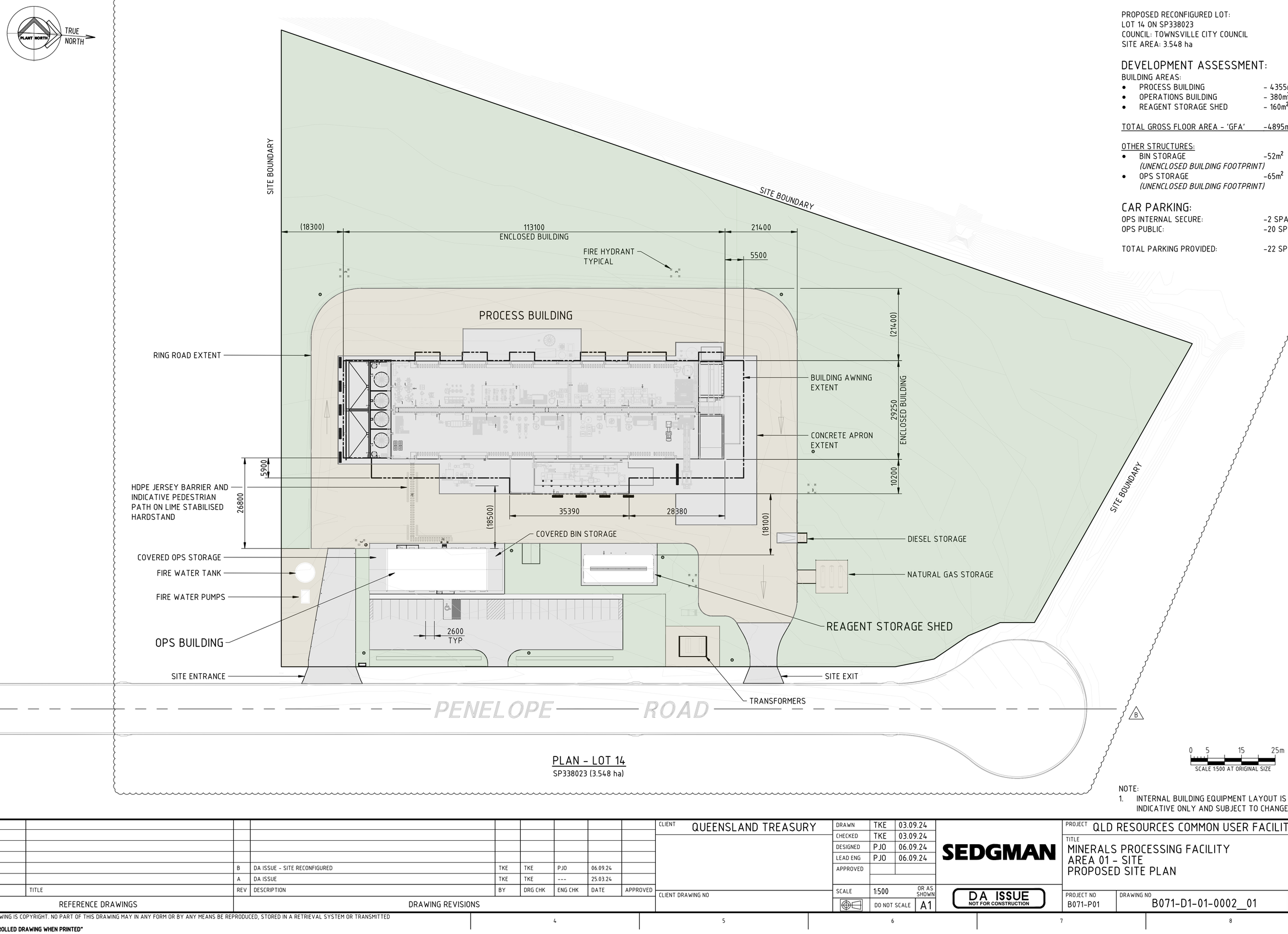
SEDGMAN

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



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 – 4355m^2
- OPERATIONS BUILDING – 380m^2
- REAGENT STORAGE SHED – 160m^2

TOTAL GROSS FLOOR AREA – 'GFA' –4895m^2

OTHER STRUCTURES:

- BIN STORAGE –52m^2
  (UNENCLOSED BUILDING FOOTPRINT)
- OPS STORAGE –65m^2
  (UNENCLOSED BUILDING FOOTPRINT)

CAR PARKING:

OPS INTERNAL SECURE:	–2 SPACES
OPS PUBLIC:	–20 SPACES
TOTAL PARKING PROVIDED:	–22 SPACES

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
		B	DA ISSUE - SITE RECONFIGURED	TKE	TKE	PJO	06.09.24	
		A	DA ISSUE	TKE	TKE	---	25.03.24	

REFERENCE DRAWINGS | DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY
CLIENT DRAWING NO

DRAWN	TKE	03.09.24
CHECKED	TKE	03.09.24
DESIGNED	PJO	06.09.24
LEAD ENG	PJO	06.09.24
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	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002_01	B

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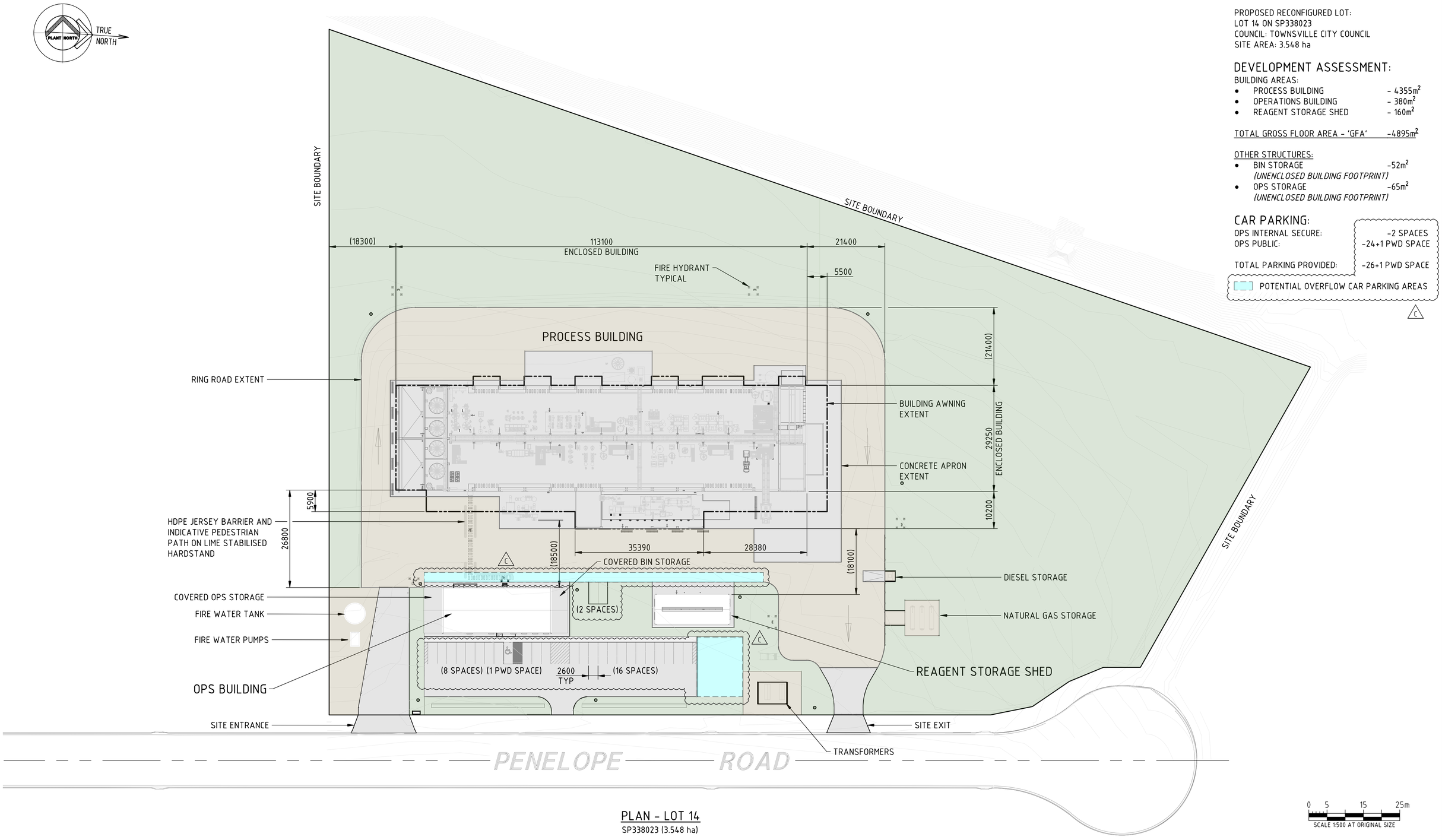

RPD:

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

DEVELOPMENT ASSESSMENT:

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TOTAL GROSS FLOOR AREA – 'GFA' –4895m^2

OTHER STRUCTURES:

- BIN STORAGE –52m^2
  (UNENCLOSED BUILDING FOOTPRINT)
- OPS STORAGE –65m^2
  (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

C

PLAN – LOT 14

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
		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	

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

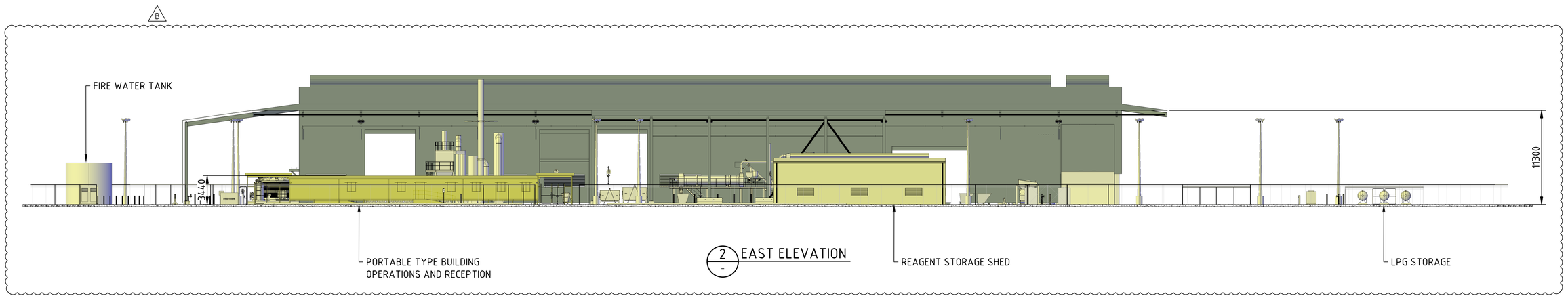
SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY
TITLE: MINERALS PROCESSING FACILITY
AREA 01 – SITE
PROPOSED SITE PLAN

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002__01	C

1 - WEST ELEVATION



2 - EAST ELEVATION

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

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
REFERENCE DRAWINGS		DRAWING REVISIONS						
		B	DA ISSUE - SITE RECONFIGURED	TKE	TKE	PJO	06.09.24	
		A	DA ISSUE	TKE	TKE	TKE	25.03.24	

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

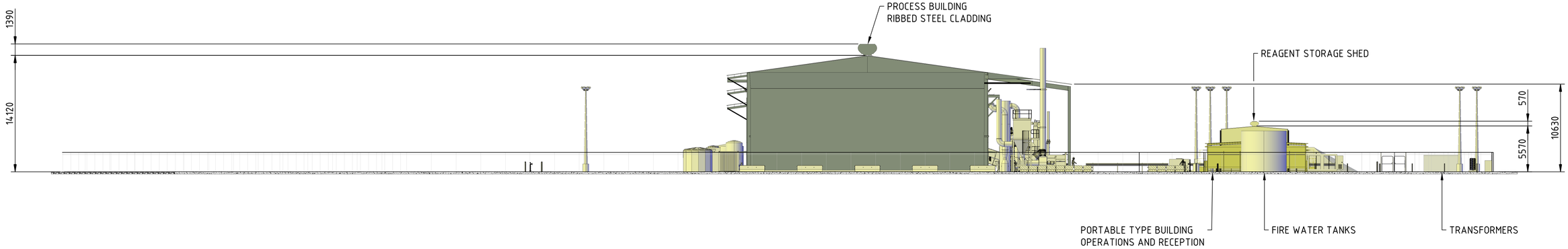
SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

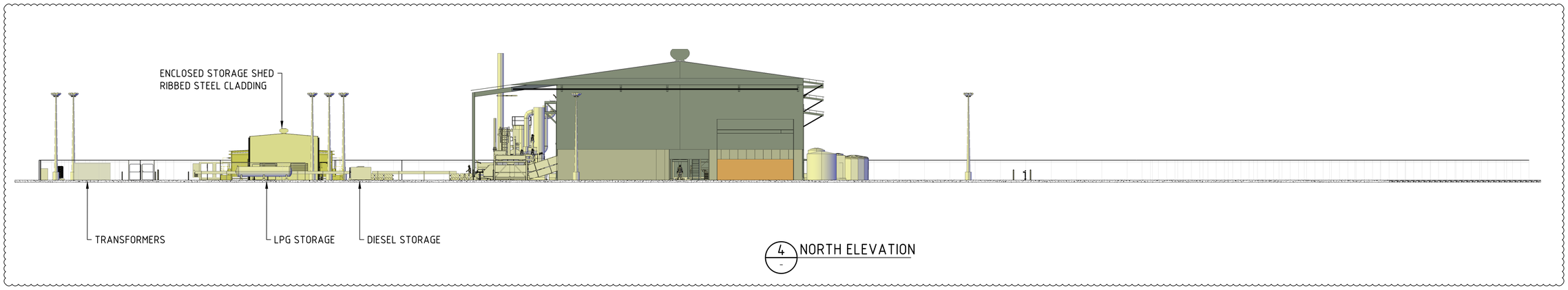
PROJECT: QLD RESOURCES COMMON USER FACILITY

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

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
NORTH AND SOUTH ELEVATIONS

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

5 SOUTH EAST ISOMETRIC

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

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
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		A	DA ISSUE	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 NTS 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
SOUTH EAST ISOMETRIC

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0002__04	B

6 NORTH WEST ISOMETRIC

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

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
		B	DA ISSUE - SITE RECONFIGURED	---	---	---	06.09.24	
		A	DA ISSUE	TKE	TKE	TKE	25.03.24	

REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	---	04.09.24
CHECKED	---	04.09.24
DESIGNED	---	06.09.24
LEAD ENG	---	06.09.24
APPROVED		

SCALE NTS 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 WEST ISOMETRIC

PROJECT NO B071-P01

DRAWING NO B071-D1-01-0002_05

REVISION B

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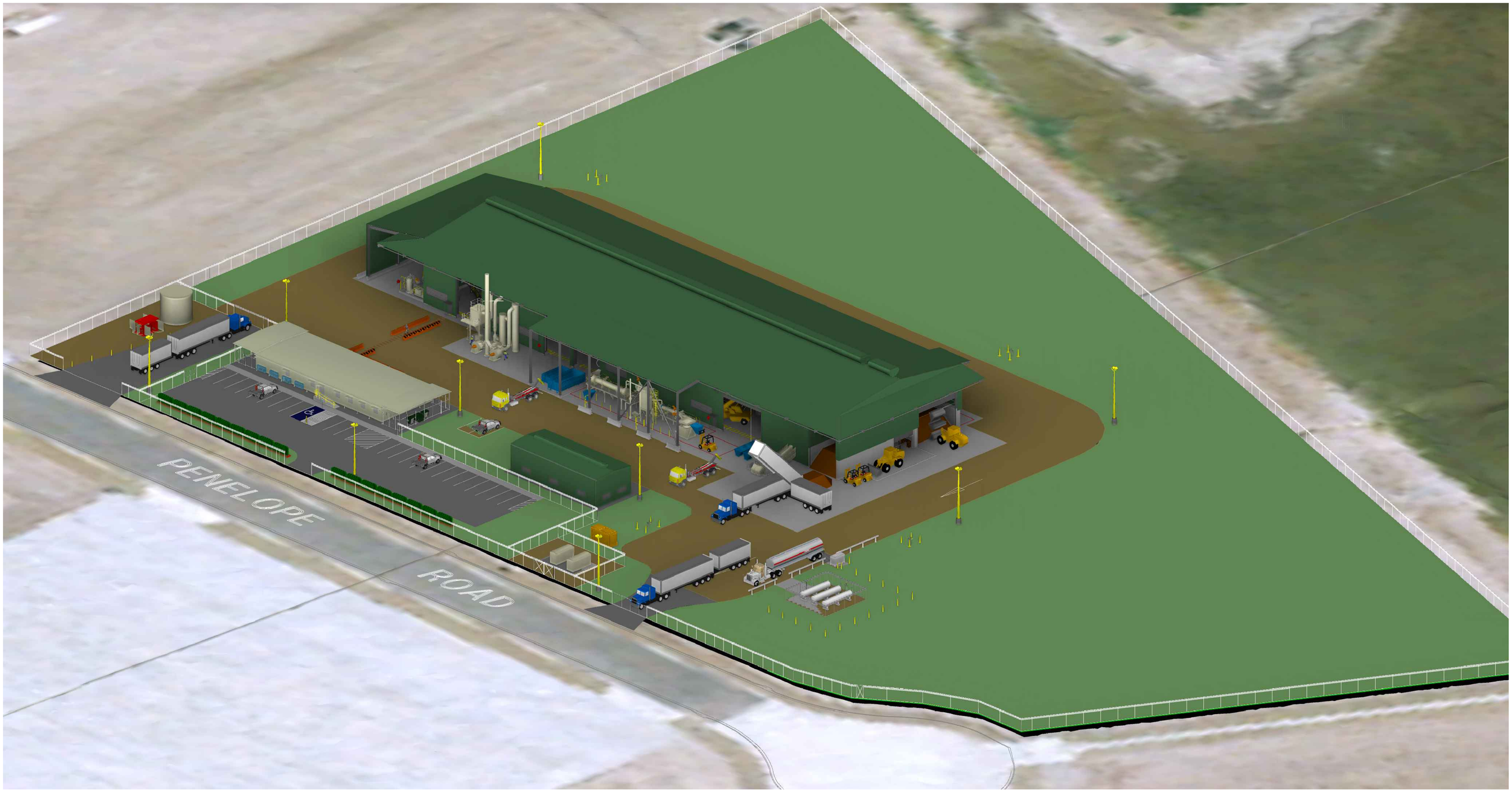

7 NORTH EAST ISOMETRIC

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

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
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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	NTS	OR AS SHOWN
DO NOT SCALE	A1	

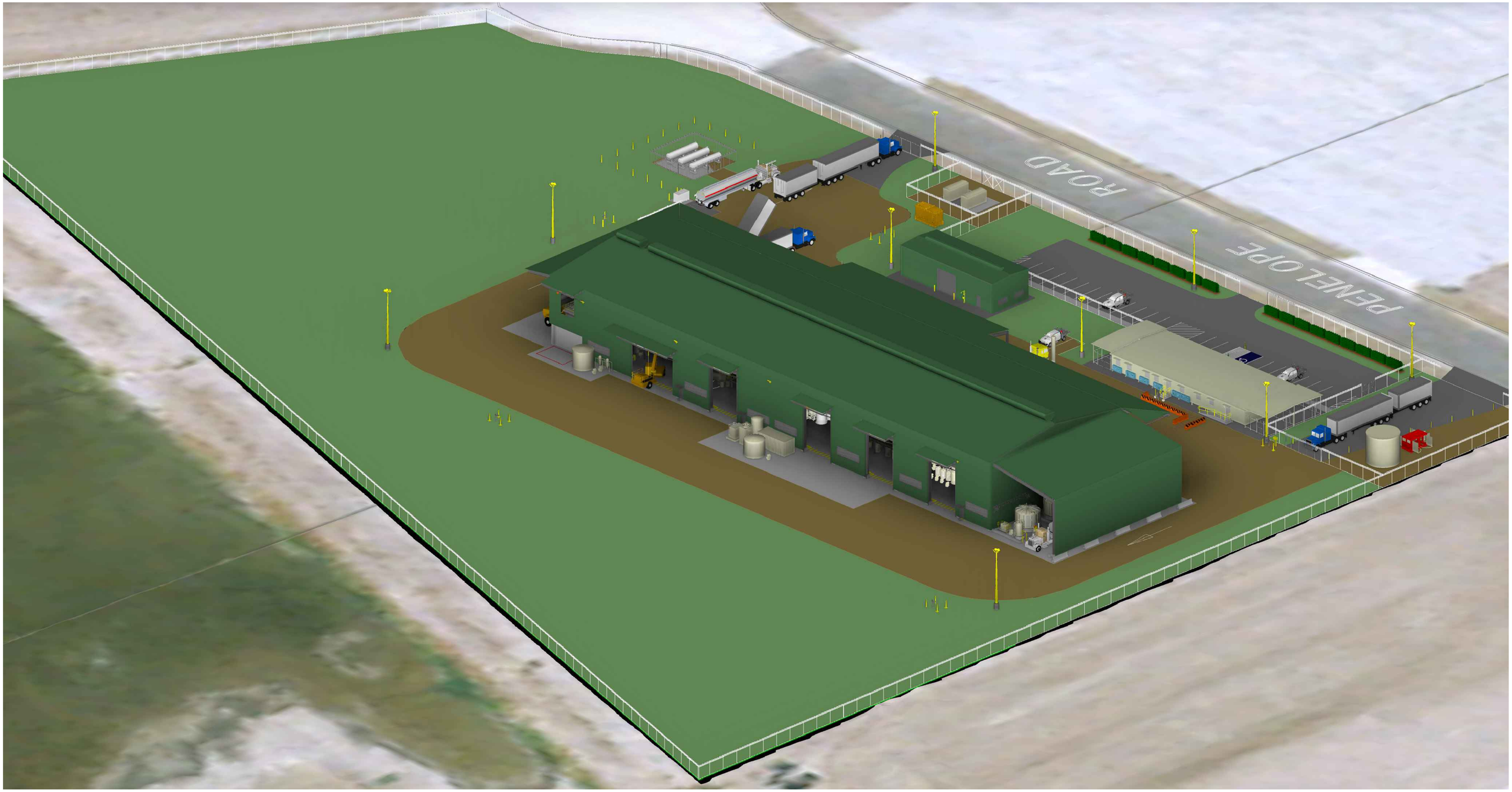
SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

PROJECT QLD RESOURCES COMMON USER FACILITY

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

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



7 SOUTH WEST ISOMETRIC
-

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

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
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		A	DA ISSUE	TKE	TKE	TKE	25.03.24	

REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	---	04.09.24
CHECKED	---	04.09.24
DESIGNED	PJO	06.09.24
LEAD ENG	PJO	06.09.24
APPROVED		
SCALE	NTS	OR AS SHOWN
	DO NOT SCALE	A1

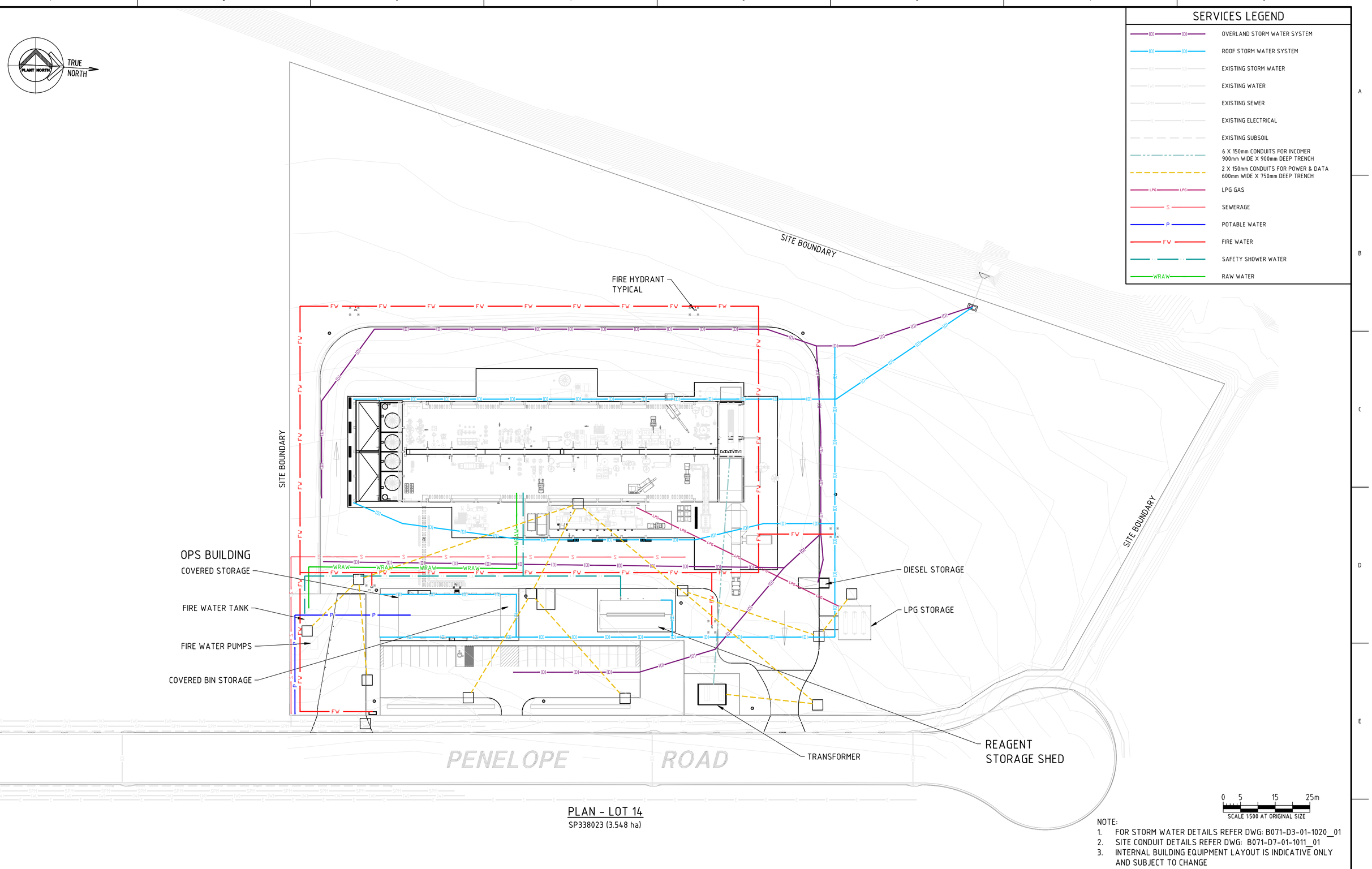
SEDGMAN

DA ISSUE
NOT FOR CONSTRUCTION

PROJECT QLD RESOURCES COMMON USER FACILITY

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

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



SERVICES LEGEND

- OVERLAND STORM WATER SYSTEM
- ROOF STORM WATER SYSTEM
- EXISTING STORM WATER
- EXISTING WATER
- EXISTING SEWER
- EXISTING ELECTRICAL
- EXISTING SUBSOIL
- 6 X 150mm CONDUITS FOR INCOMER 900mm WIDE X 900mm DEEP TRENCH
- 2 X 150mm CONDUITS FOR POWER & DATA 600mm WIDE X 750mm DEEP TRENCH
- LPG GAS
- SEWERAGE
- POTABLE WATER
- FIRE WATER
- SAFETY SHOWER WATER
- RAW WATER

PLAN - LOT 14

SP338023 (3.548 ha)

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

NOTE:
1. FOR STORM WATER DETAILS REFER DWG: B071-D3-01-1020__01
2. SITE CONDUIT DETAILS REFER DWG: B071-D7-01-1011__01
3. INTERNAL BUILDING EQUIPMENT LAYOUT IS INDICATIVE ONLY AND SUBJECT TO CHANGE

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
		B	PRELIMINARY ISSUE	BWE	BWE	PJO	06.09.24	
		A	PRELIMINARY ISSUE	RWE		PJO	06.06.24	

REFERENCE DRAWINGS | DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY
CLIENT DRAWING NO

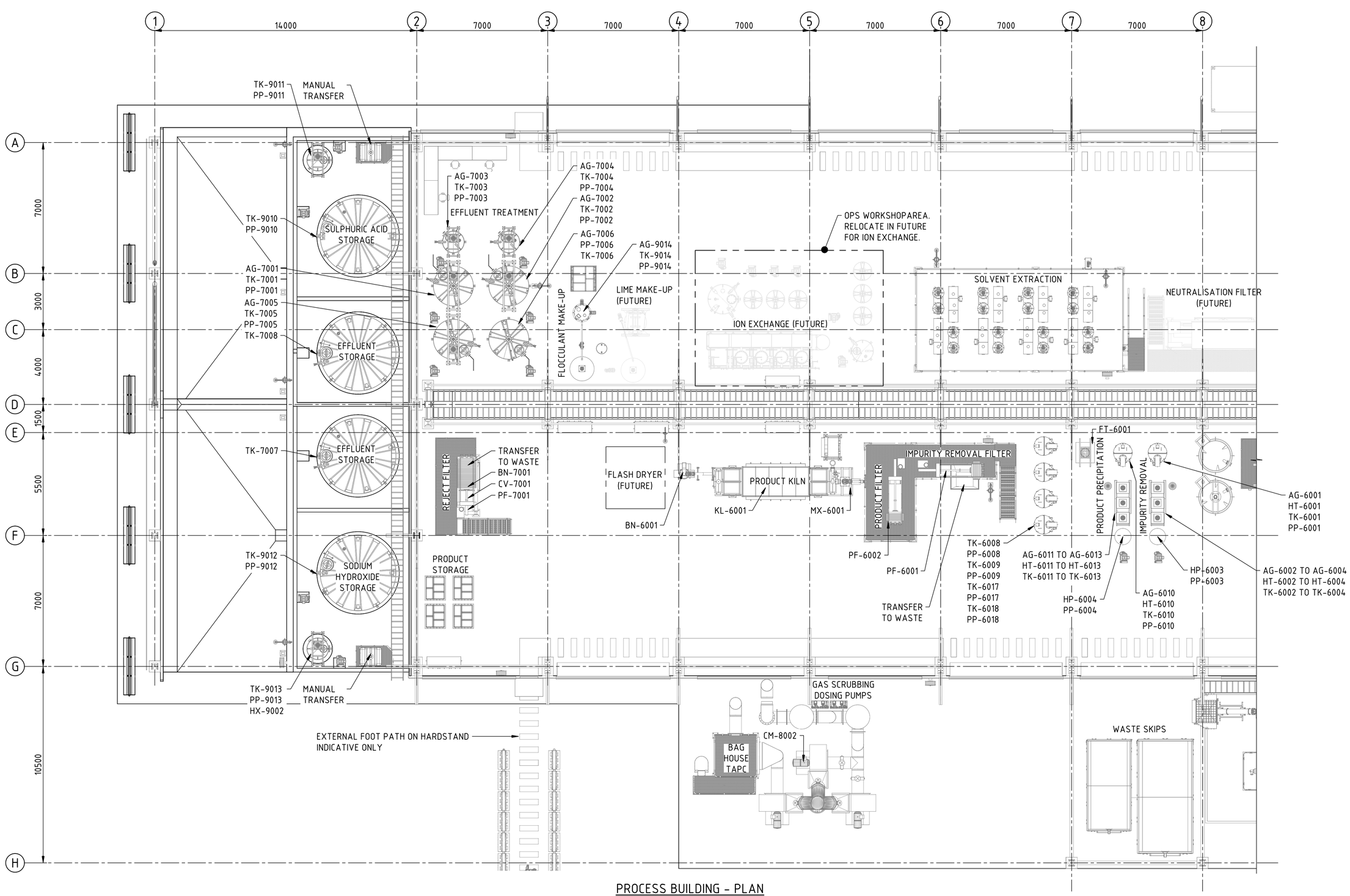
DRAWN	BWE	04.09.24
CHECKED	BWE	04.09.24
DESIGNED	PJO	06.09.24
LEAD ENG	PJO	06.09.24
APPROVED		
SCALE	1:500	OR AS SHOWN
	DO NOT SCALE	A1

SEDGMAN

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY
TITLE: MINERALS PROCESSING FACILITY AREA 01 - SITE UNDERGROUND PIPES AND SERVICES PLAN

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-0005__01	B



PROCESS BUILDING - PLAN

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
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		B	PRELIMINARY ISSUE - LAYOUT UPDATED	RWE	RWE	PJO	07.06.24	
		A	PRELIMINARY ISSUE	TKE	TKE	TKE	18.04.24	

REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	BWE	05.09.24	
CHECKED	BWE	05.09.24	
DESIGNED	PJO	06.09.24	
LEAD ENG	PJO	06.09.24	
APPROVED			
SCALE	1:100	OR AS SHOWN	
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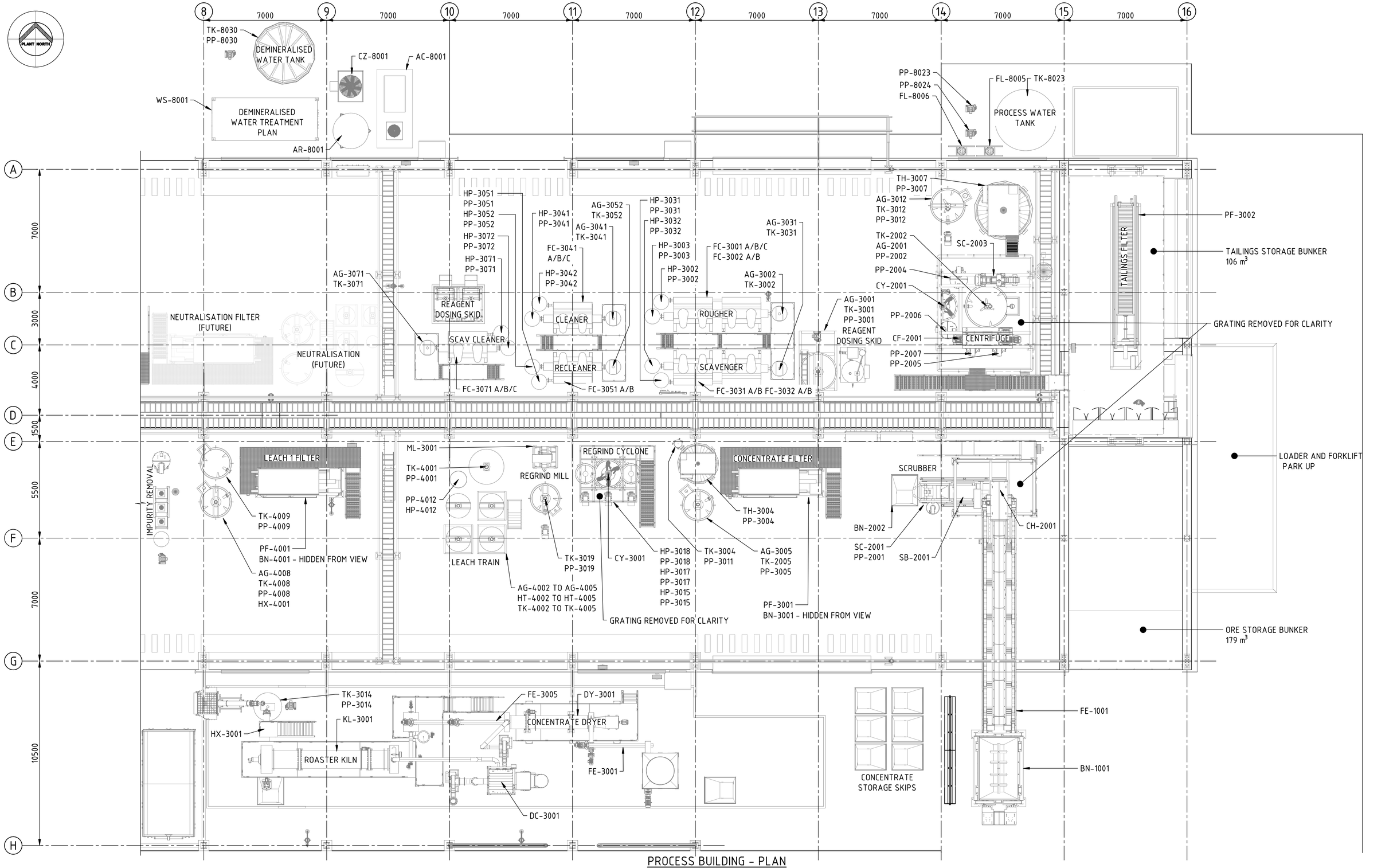
SEDGMAN

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT QLD RESOURCES COMMON USER FACILITY

TITLE
MINERALS PROCESSING FACILITY
GENERAL ARRANGEMENT
PLAN - GRIDS 1 TO 8

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-8000__01	C



PROCESS BUILDING - PLAN

DRAWING NO	TITLE	REV	DESCRIPTION	BY	DRG CHK	ENG CHK	DATE	APPROVED
		C	PRELIMINARY ISSUE - LAYOUT RECONFIGURED	BWE	BWE	---	06.09.24	
		B	PRELIMINARY ISSUE	RWE	RWE	PJO	07.06.24	
		A	PRELIMINARY ISSUE	TKE	TKE	TKE	18.04.24	

REFERENCE DRAWINGS

DRAWING REVISIONS

CLIENT: QUEENSLAND TREASURY

CLIENT DRAWING NO

DRAWN	BWE	05.09.24	
CHECKED	BWE	05.09.24	
DESIGNED	---	06.09.24	
LEAD ENG	---	06.09.24	
APPROVED			
SCALE	1:100	OR AS SHOWN	
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SEDGMAN

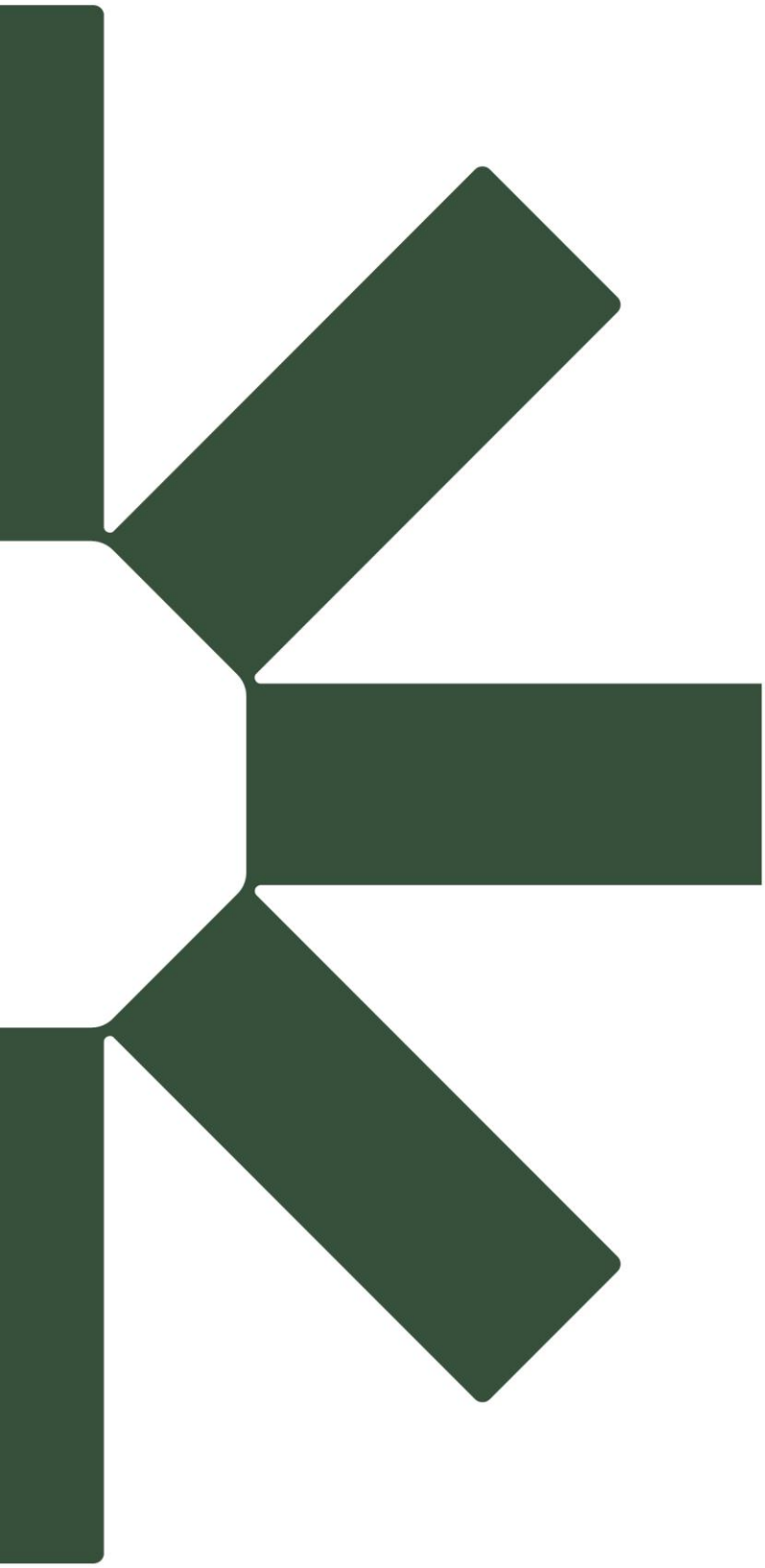
PRELIMINARY NOT FOR CONSTRUCTION

PROJECT: QLD RESOURCES COMMON USER FACILITY

TITLE: MINERALS PROCESSING FACILITY GENERAL ARRANGEMENT PLAN - GRIDS 8 TO 16

PROJECT NO	DRAWING NO	REVISION
B071-P01	B071-D1-01-8000__02	C

PLOT DATE: 6/09/24, 3:47:51 PM | File: C:\TEMP\Vault\Designs\B071\Dwgs_Development\01\B071-D1-01-8000__02.dwg | By: Vault Job Proc BNE01



Making Sustainability Happen