CONSTRUCTION DUST MANAGEMENT PROCEDURE

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1. INTRODUCTION

This Dust Management Procedure has been prepared by the CONTRACTOR to comply with the requirement of the CONTRACTOR Construction Environmental Management Plan (CEMP) that will be applied by the CONTRACTOR and SUBCONTRACTORS during the construction program relating to Project CERES, the relevant Works Approvals issued by DWER and the City of Karratha Development Approval.

The CEMP Air Quality Management Protocol (provided as attached appendix J in the CEMP) describes the Scope of Work, addresses all requirements related to management of dust by the Project, and establishes the strategies, methods, processes which will be adopted by CONTRACTOR to provide certainties in delivering successful execution of the project while adhering to environmental objectives for the Project.

The CEMP Air Quality Management Protocol requires the preparation of a Dust Management Procedure prior to commencing works likely to generate dust. In addition, the Development Approval for Project CERES requires the CONTRACTOR to comply with the following conditions and advice notes.

- *The applicant shall implement dust management measures at all times during the construction and operational phases of the development in accordance with the required plans; and*
- *The Construction Environmental Management Plan shall be implemented and adhered to through the construction phase of the development to the satisfaction of the City of Karratha.*

This Dust Management Procedure presents in detail:

- The dust emission management principle and EPA air quality objective.
- Potential air emissions project scope and context.
- Aspects and impacts.
- Legislation, guidelines, approvals, licences and permits.
- Applicable Licence and Works Approval Conditions.
- Management actions.
- Monitoring requirements.

The Dust Management Procedure is prepared and maintained by the CONTRACTOR Environmental Team or designated delegate. It is a “live” Procedure and as such may be reviewed periodically and revised as needed.

This Dust Management Procedure must be read and implemented in conjunction with the most recent and approved version of the CONTRACTOR CEMP it is appended to.

2. DUST MANAGEMENT REQUIREMENTS

Table 2-1 Dust Management Requirements

EPA Objective for Air Quality
'To maintain air quality and minimise emissions so that environmental values are protected.'
Dust Management Principle
To minimise the impact of dust from Project CERES on sensitive receptors.
Potential Dust Emissions Project Scope and Context
Dust emissions during construction have the potential to adversely impact vegetation, cultural and heritage sites, the built landscape (buildings, vehicles, machinery and other infrastructure) and public amenity. In addition, dust emissions have the potential to smother vegetation and reduce a plants ability to photosynthesize, reducing plant growth. Reduced plant growth may in turn adversely impact local fauna, through habitat changes and reduction in food sources. Dust deposition on Aboriginal Cultural Heritage (e.g., petroglyphs) is also a potential impact to the receiving environment on the Burrup Peninsula. Dust emissions produced during the construction of Project CERES are expected to be minor and temporary. A more detailed scope of works is provided within the CEMP. During construction, the EPC Contractor shall comply with: • Construction Environmental Management Plan (0000-ZA-E-09071) (CEMP) o Drill and Blast Near Rock Art Management Protocol (attached appendix H) o Air Quality Management Protocol (attached appendix J) o Concrete Batching Management Protocol (attached appendix M) o Dust Management Procedure (this document)

- All relevant legislation, approvals and conditions detailed below in *"Legislation, Guidelines, Approvals, Licenses and Permits"*.

At the Dampier Port, Perdaman shall comply with the PPA Environmental Management Plan requirements. For construction activities at the Port, Perdaman shall prepare a Construction Environmental Management Plan in accordance with the PPA Guidelines for Preparing an Environmental Management Plan, which shall include environmental risk management, including a risk management plan for dust.

For crushing and screening activities, Perdaman shall comply with the requirements and conditions of the Works Approval W6630.

The impacts of dust are influenced by particle size, chemical composition and concentration. Human health effects of dust tend to be associated with particles with an aerodynamic diameter of 10 µm or less (≤ PM10). These smaller particles tend to remain suspended in the air for longer periods and can penetrate into the lungs. PM2.5 particles are fine particles that are inhaled more deeply and lodge in the gas exchange region (alveolar region) of the human lung and are termed "respirable dust".

Identification of likely dust emission sources during construction and the applicable management measures are detailed within the CEMP and relevant Environmental Management Plans (Flora, Fauna and Threatened Species).

In addition to this Plan, the CONTRACTOR must ensure compliance with the Environmental License and Works Approval conditions during construction.

Aspects and Impacts

Project CERES has the potential to cause dust emissions during construction and commissioning of the scope of works.

The most likely cause of dust pollution during project construction through air dispersal and wind migration includes:

- Clearing and grubbing works.
- Mulching and stockpiling green waste and waste materials for reuse and / or disposal.
- Bulk excavations and earthworks.
- Crushing and screening activities.

- Concrete batching.
- Movement of soils, stockpiling and other materials.
- Vehicles and heavy equipment movements on unsealed roads / surfaces.

A risk assessment has been carried out that presents the risks identified and associated risk rating. It is presented in the CEMP Appendix C.

Legislation, Guidelines, Approvals, Licenses and Permits

Applicable Legislation & Regulations:

- *Environmental Protection Act 1986*
- Environmental Protection (Unauthorised Discharge) Regulations 2004
- Draft Guideline: Dust Emissions (DWER, 2021)

Applicable Environmental Approvals:

- City of Karratha Development Approval (DA21261)
- Works Approval– W6630/2021/1 – for Category 12: Screening etc of material, premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.
- Works Approval (pending) – for Categories 31 (Chemical manufacturing), 52 (Electric power generation), 58 (Bulk material loading or unloading), 73 (Bulk storage of chemicals etc), and 85 (Sewage facility)
- Part IV *(Environmental Protection Act 1986)* – Ministerial Statement 1180

Applicable Management Plans:

- Construction Environmental Management Plan (0000-ZA-E-09071) (CEMP)
  - Drill and Blast Near Rock Art Management Protocol (attached appendix H)
  - Air Quality Management Protocol (attached appendix J)
  - Concrete Batching Management Protocol (attached appendix M)
- Dust Management Procedure (this document)

- Project Environmental Management Plan (PCF-PD-EN-PEMP)
- Confirmed Flora Management Plan (PCF-PD-EN-FMP)
- Confirmed Fauna Management Plan (PCF-PD-EN-FaMP)
- Confirmed Threatened Species Management Plan (PCF-PD-EN-FaMP)
- Confirmed Cultural Heritage Management Plan (PCF-PD-EN-CHMP)

Applicable License and Works Approval Conditions

Development Approval (DA21261)

Condition 13. The Construction Environmental Management Plan shall be implemented and adhered to through the construction phase of the development to the satisfaction of the City of Karratha.

Advice Note 6. The applicant shall implement dust management measures at all times during the construction and operational phases of the development in accordance with the required plans and any other relevant legislation and/or approvals applicable to this development.

Works Approval (W660/2021/1)

Condition 1.

The works approval holder must:

(a) construct and/or install the infrastructure and/or equipment.

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe, as set out in Table 1.

Table 1: Design and construction/installation requirements	
Infrastructure	**Design and construction / installation requirements**

Crushing and screening circuit	Metso Lokotrack LT125 Mobile Crushing Plant Transfer conveyors Kleemann MS19D Track Screen Komatsu WA600 loader **Dust suppression sprays installed at material transfer locations on the Jaw Crusher, Cone Crushers (2), Triple Deck Screen and product stackers (3).** Plant to be equipped with exhaust mufflers from the Original Equipment Manufacturer (OEM) or systems meeting or exceeding the OEM specifications. Earthen bund around the premises boundary to prevent surface water run-off from the crushing and screening plant and associated processed material stockpiles being discharged from the premises.

Condition 6.

During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 2 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 2.

NB: Figure 4 and Figure 5 noted in Table 2 are presented within the Works Approval document.

Table 2: Infrastructure and equipment requirements during time limited operations.

Site infrastructure and equipment	Operational requirement
Crushing and screening circuit	• The mobile crushing and screening plant must operate only at locations within the clearing boundary specified in Figure 4 and Figure 5. • Water systems to be used to minimise dust generation at material transfer points, crusher and at the materials stockpiles.

	• Chemical dust suppressants or water trucks to be operated on roads and open areas to ensure dust generation is kept to a minimum. • Stockpiles must not exceed 5 m in height above ground level.	

Objectives	Performance Indicators	Target
Minimise dust impact on workers, native vegetation, native fauna, cultural heritage and amenity.	Community complaints. Dust covering vegetation. Vegetation decline. SRE decline/death. Dust loading on petroglyphs.	No substantiated complaints relating to amenity impacts. No negative impact on vegetation, fauna or cultural heritage.
CONTRACTOR to comply with the Part V (*EPA 1986*) Works Approval – W6630/2021/1 during Project CERES crushing and screening works.	Non-conformances or incidents related to works approval conditions.	Zero non-conformances or incidents related to works approval conditions.
CONTRACTOR to comply with the Part V (*EPA 1986*) Works Approval (pending) for Categories 31 (Chemical manufacturing), 52 (Electric power generation), 58 (Bulk material loading or unloading), 73 (Bulk storage of chemicals etc), and 85 (Sewage facility)	Non-conformances or incidents related to works approval conditions.	Zero non-conformances or incidents related to works approval conditions.

3. DUST EMISSION MANAGEMENT ACTIONS

Table 3-1 Dust Management Actions

ID	Management Actions	Responsibility
1.1	Dust suppression techniques will be used on unsealed roads and access tracks, cleared areas and at locations of high dust risk.	SCJV
1.2	Dust suppression sprays installed at material transfer locations on the jaw crusher, cone crushers, triple deck screen and product stackers. (Refer to Figure 4-1, Figure 2-2, Figure 2-3, Figure 2-4 and Figure 2-5)	SCJV
1.3	Dust suppression controls will be in operation any time material is being processed through the crushing and screening equipment. (Refer to Figure 4-1, Figure 2-2, Figure 2-3, Figure 2-4 and Figure 2-5).	SCJV
1.4	Water systems to be used to minimise dust generation at material transfer points, crusher and at the materials stockpiles. (Refer to Figure 4-1, Figure 2-2, Figure 2-3, Figure 2-4 and Figure 2-5).	SCJV
1.5	Chemical dust suppressants or water trucks to be operated on roads and open areas to ensure dust generation is kept to a minimum	SCJV
1.6	Stockpiles must not exceed 5 m in height above ground level.	SCJV
1.7	Dust suppression measures will be implemented where dust is visible, except during topsoil stripping.	SCJV
1.8	Saline water (> 5000 mg/L TDS) will not be used for dust suppression unless approved by the CONTRACTOR Environment and Heritage Manager, or delegate.	SCJV
1.9	Where the use of saline water for dust suppression (> 5000 mg/L TDS) is approved, dribble bars will be used to control overspray onto adjacent vegetation.	SCJV

1.10	A log of water used for dust suppression will be maintained and reported in the Monthly Environmental Report. Information reported will include, where relevant, the source of the water, date and time, volume removed (including meter reading at start and finish), location where water was used.	SCJV
1.11	Vegetation clearing and exposed surfaces will be kept to a minimum wherever practicable.	SCJV
1.12	Vehicle speeds on access tracks and around work sites will be reduced where necessary to minimise dust emissions.	SCJV
1.13	Vehicles will remain within designated roads and park only in allocated areas.	SCJV
1.14	Dust suppressant additives or methods that reduce overall water consumption should be used wherever practicable. This will include restricting traffic within cleared areas until access is needed.	SCJV
1.15	Vegetation clearing, grubbing and earthworks during high winds (>40 km/hr) should be avoided. Where these works are required to be conducted during high winds, additional management measures must be implemented to minimise and control dust emissions.	SCJV
1.16	Where ground disturbance, including clearing activities are conducted either within the NHP or within 50m where the Lease abuts the NHP, ground preparation works in proximity to the NHP must be managed using water carts to decrease dust and blast mats will be used during blasting to prevent flying rock.	SCJV
1.17	Dust mitigation (i.e., water carts) will be utilised where activities are likely to cause dust pollution and nuisances to community visitors, tourists, traditional owners and MAC etc who are visiting culturally significant sites (i.e., during conveyor works or works adjacent to heritage sites within the Development Envelope.)	SCJV
1.18	Employ various methods onsite to reduce dust onsite, including dust suppression with water or stabilisers (i.e., dustex).	SCJV
1.19	Water tankers to be readily available to dampen exposed surfaces within construction and laydown areas, particularly ground disturbing activities.	SCJV
1.20	Any work activities prone to creating dust i.e., excavations or clearing, will be staged and conducted during low wind periods.	SCJV

1.21	Erosion and sediment control methods will be in place onsite to prevent soil from being deposited offsite and causing a dust nuisance later.	SCJV
1.22	Loads being transported to site, from site and within the site shall be damped down or covered where wind-blown material can cause nuisance.	SCJV
1.23	Stockpiles will be covered or hydro mulched and inspected regularly for integrity and intactness.	SCJV
1.24	Disturbed areas on site will be stabilised as soon as practicable.	SCJV
1.25	Dust suppressant additives or methods that reduce overall water consumption should be used wherever practicable. This shall include restricting traffic within cleared areas until access is needed.	SCJV
1.26	Blasting or clearing within NHP or less than 50m of NHP boundary, use of dust control and blast mats.	SCJV
1.27	The crushing and screening plant will be located outside of a 100m buffer from sensitive sites, including petroglyphs and public roads. Refer to Figure 4-7.	SCJV

4. DUST MONITORING

Table 4-1 Dust Monitoring Requirements

ID	Monitoring Requirements
M.1.1	Site inspections during windy days to ensure dust management controls are effectively applied.
M.1.2	Opportunistic visual inspections daily to ensure dust controls are being implemented.
M.1.3	Weekly environmental inspections to monitor project activities for dust emissions
M.1.4	Weekly dust suppression water quality field test using a calibrated pocket TDS meter to monitor no exceedance of 5,000 mg/L limit
M.1.5	Visual dust inspections conducted continually during dust generating activities.
M.1.6	Quarterly inspect of vegetation for dust settlement on foliage during construction and impacts of poor water quality used for suppression.
M.1.7	Annually conduct inspections on vegetation health and foliage for signs of dust impacts during operations.
M.1.8	Regular inspections and auditing of complaints register and incident register / reporting system.
M.1.9	Regular auditing of maintenance records to ensure vehicles, equipment and plant are being maintained according to schedules.
M.1.10	Post-blasting survey to assess if heritage sites were impacted.
M.1.11	Dust monitoring for PM 2.5 and PM10 shall be implemented continuously during construction works in the locations shown in the following table, and Figure 2-6.

Monitor #	Easting	Northing
Monitor 1	476805.764	77718236.851
Monitor 2 – West Industrial Area	475895.889	7719286.703
Monitor 3 – Yara Boundary	476913.656	7719080.439

	Monitor 4 – Heritage Site 9239	476352.224	7718262.91	

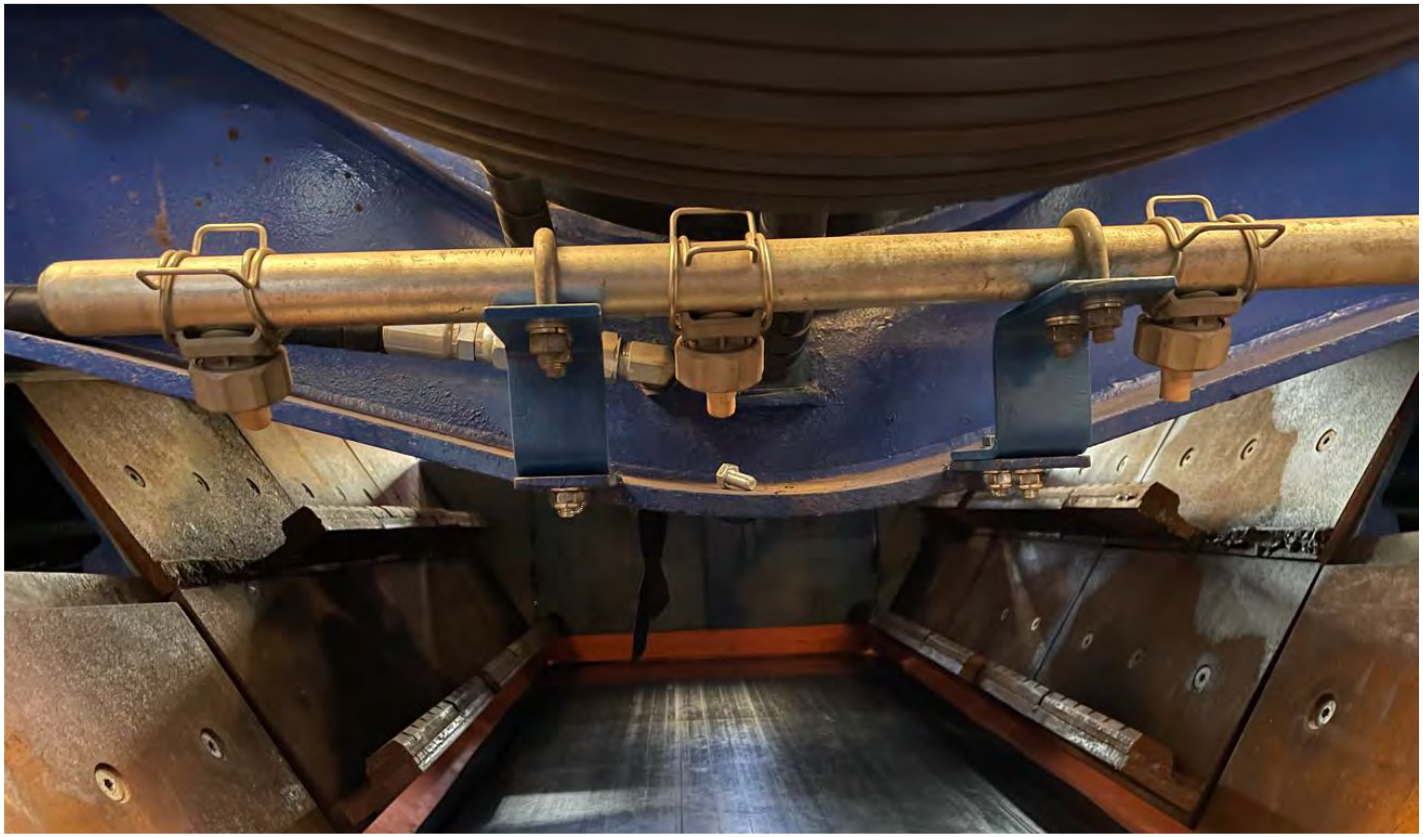

Figure 4-1 Dust Suppression Sprays Crusher Point

Figure 4-3 Transfer points with dust controls

Figure 4-2 Stacker transfer with dust controls

Figure 4-4 Transfer Chute with dust controls

Figure 4-5 Jaw Crusher with spray bars

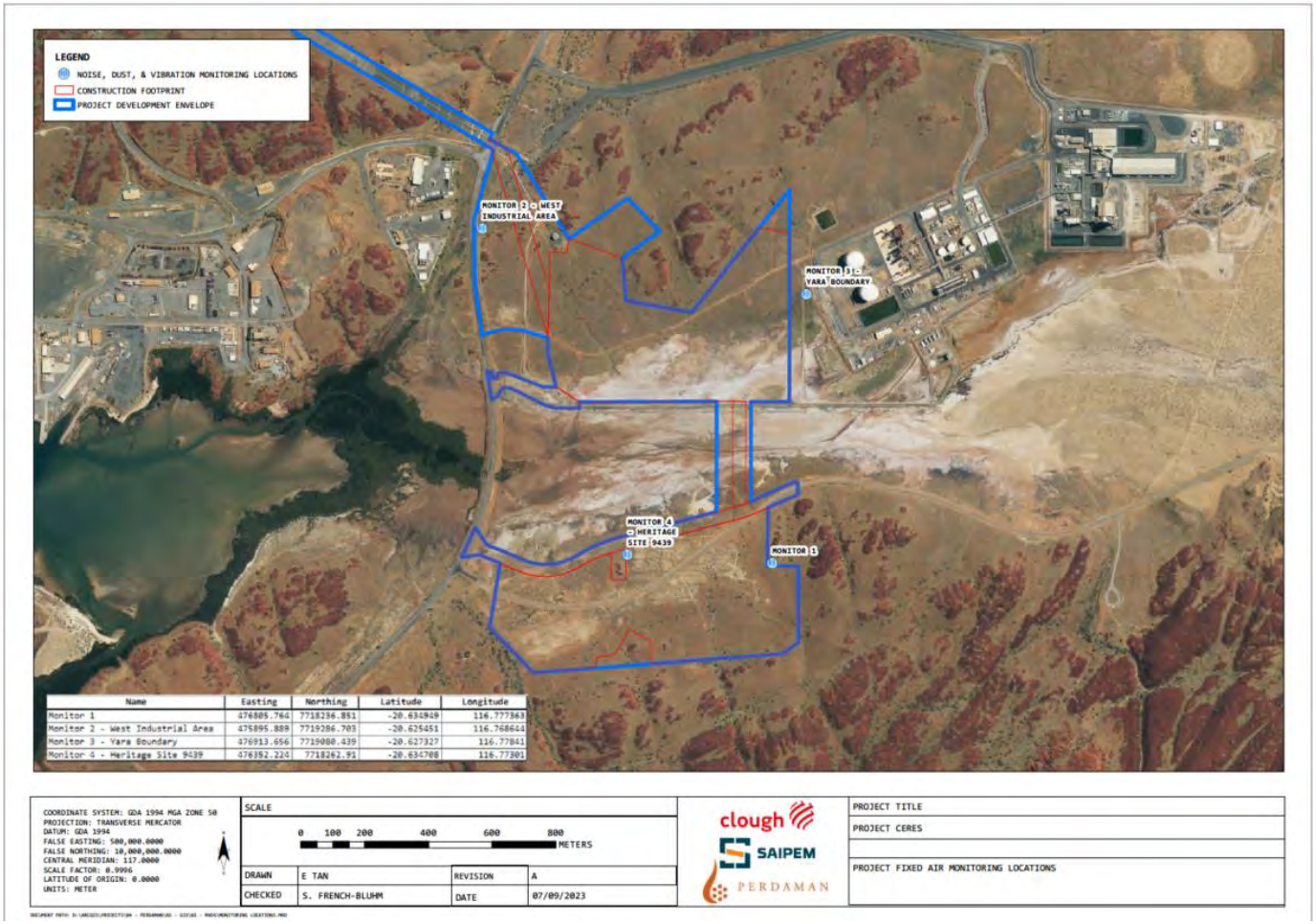

Figure 4-6 Project Fixed Air Monitoring Locations

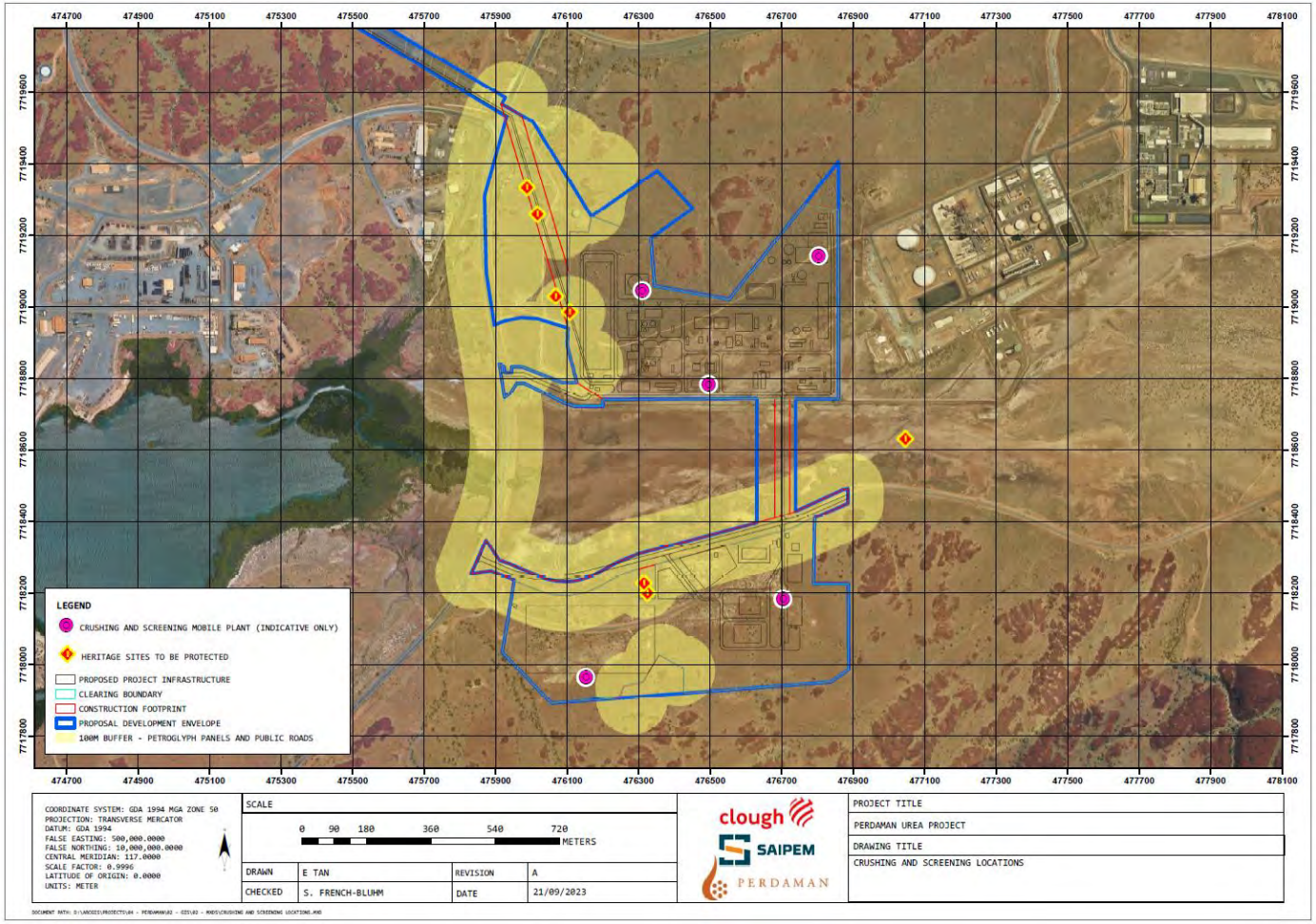

Figure 4-7 Crushing & Screening Locations (indicative)