GREENHOUSE GAS EMISSIONS MANAGEMENT PROTOCOL

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1. EXECUTIVE SUMMARY

This Greenhouse Gas Emissions Management Protocol (GHGEMP) has been prepared by the CONTRACTOR to comply with the requirement of the Ministerial Statement No. 180 (MS 1180), provisions of the Confirmed Greenhouse Gas Management Plan (PCF-PD-EN-GHGMP) and the management controls specific to the CONTRACTOR construction methodology that will be applied by the CONTRACTOR during the construction program relating to Project CERES.

The GHGEMP describes the Scope of Work, addresses all requirements related to management of greenhouse gases 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 greenhouse gas objectives for the Project.

The Greenhouse Gas Emissions Management Protocol presents in detail:

- Address relevant conditions of the Project Approvals and confirmed management plans including monitoring of greenhouse gas emissions.
- Provide employees and SUBCONTRACTORS with a clear and concise description of their responsibilities in relation to controls to minimise greenhouse gas emissions for the duration of the construction works.
- Consider all relevant legislation, standards and technical guidelines when developing preventative controls.
- Detail the CONTRACTOR monitoring requirements during construction.

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

This GHGEMP must be read and implemented in conjunction with the most recent and approved version of the Confirmed Greenhouse Gas Management Plan and the CONTRACTOR CEMP it is appended to. It **does not** replace the Confirmed Greenhouse Gas Management Plan, it aims to provide the construction team with clear actions, management, and monitoring responsibilities under these plans during the construction program.

2. ABBREVATIONS AND DEFINITIONS

DEFINITIONS	
CONTRACT	Contract agreement entered between OWNER and CONTRACTOR.
CONTRACTOR	SAIPEM CLOUGH JOINT VENTURE
DEVELOPMENT ENVELOPE	The Project Development Envelope to which the Part IV of the EP Act and EPBC Act assessments relate shown in Figure 2-1 of the ERD
DISTURBANCE AREA	The area within the Development Envelope (DE) covered by the urea production plant that will be cleared for plant construction and laydown areas
ENVIRONMENTAL LEAD	Includes the Environmental Representative and Lead for the CONTRACTOR team, who are responsible for carrying out the responsibilities as they relate to the CONTRACTOR.
ENVIRONMENTAL ADVISOR	Includes the Environmental Advisor/s for the CONTRACTOR team, who are responsible for carrying out the responsibilities as they relate to the CONTRACTOR and as directed by the Environmental Lead and or the HSSE Deputy.
PERDAMAN ENVIRONMENTAL REPRESENTATIVE	The Environmental Representative includes Perdaman's ENVIRONMENT AND HERITAGE MANAGER, the ENVIRONMENTAL COORDINATOR or their delegated representative that represents Perdaman and is accountable for Perdaman responsibilities during construction.
ENVIRONMENT AND HERITAGE MANAGER	The ENVIRONMENT AND HERITAGE MANAGER is Perdaman's site based Environmental Representative who has the authority and responsibility for managing the implementation, compliance, and effectiveness of the Project's environmental and heritage requirements.
GROUND DISTURBANCE PERMIT	A GROUND DISTURBANCE PERMIT (GDP) is a permit issued to a SUBCONTRACTOR, by the CONTRACTOR, enabling Works within defined battery limits to manage any impacts on native vegetation, heritage, or other environmentally sensitive values. It includes the key approval commitments and obligations obtained by or issued to the CONTRACTOR or OWNER by regulators, tenure holders and other third parties.
INFRASTRUCTURE ZONE	East West Service Corridor is the common-user corridor disturbed / cleared by WA government and the Project footprint in Dampier Port
LICENSOR	HALDOR TOPSOE for AMMONIA, SAIPEM for UREA, THYSSENKRUP for GRANULATION
MAY	Indicates that the SUBCONTRACTOR is permitted to do something, or the CONTRACTOR reserves the right to dosomething according to the text.
MUST	Indicates a requirement or action that must be followed to comply with legal framework for the Project and environmental approval conditions.
NO-GO ZONES	NO-GO ZONES are defined areas within the Project's footprint which ARE NOT ENTERED AND OR DISTURBED by Project activities. These areas

	are established to protect environmental, cultural heritage, infrastructure and other values from damage or other detrimental impacts.
OWNER / PROPONENT	PERDAMAN CHEMICALS AND FERTILIZERS PTY LTD.
PROJECT	BURRUP UREA PROJECT - **PROJECT CERES** (Plant to be supplied, erected and commissioned by CONTRACTOR under the CONTRACT).
PROJECT PERSONNEL	PROJECT PERSONNEL includes all persons working on the Project directly employed by PERDAMAN, or its CONTRACTORS.
PROJECT WORK SITES	The Project work sites include Area C, Area F, the causeway linking these two areas, the conveyor corridor tothe port and the port storage and loading infrastructure. It can also include any other Project relevant location under operational control of PERDAMAN.
REGISTRAR	REGISTRAR of ABORIGINAL HERITAGE SITES, Western Australia Department of Planning, Lands and Heritage.
SHALL	Indicates that a statement is mandatory.
SHOULD	Indicates a recommendation.
SUBCONTRACTOR	Any supplier, consultant or CONTRACTOR engaged by the CONTRACTOR to carry out specific activities or tasks on behalf of the CONTRACTOR during construction (i.e., Dewatering Sub-CONTRACTOR, Clearing Sub-CONTRACTOR etc).
UREA PLANT DEVELOPMENT ENVELOPE (UPDE)	Comprises Site C, Site F and the causeway as shown in Figure 4.1.
VENDOR	Entity that provides equipment and related services part of the WORK according to purchase order
WILL	Indicates a requirement or action that Perdaman or the CONTRACTOR will be implementing during the Project activities to ensure compliance with legal framework for the Project and environmental approval conditions.
WORKS	All work which the CONTRACTOR and or its SUBCONTRACTORS are required to perform to comply withits obligations under the CONTRACT.
ABBREVIATIONS	
BMIEA	Burrup & Maitland Industrial Estates Agreements
BSIA	Burrup Strategic Industrial Area
CAR	Compliance Assessment Report
CEMP	Construction Environmental Management Plan
DE	Development Envelope
DCCEEW	The Federal Department of Climate Change, Environment, Energy and Water.
DPLH	Department of Planning, Lands and Heritage
EMS	Environmental Management System
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*

EPC	Engineering Procurement Construction
ERD	Perdaman Urea Project, Environmental Review Document. Assessment No.2184(WA) – 2018/8383 (Commonwealth)
GDA	Ground Disturbing Activities
GDP	Ground Disturbance Permit
GHGEMP	Greenhouse Gas Emissions Management Protocol
MAC	Murujuga Aboriginal Corporation
MS 1180	Ministerial Statement No. 1180
NAC	Ngarluma Aboriginal Corporation
NYFL	Ngarluma and Yindjibarndi Foundation Limited
OEMP	Operational Environmental Management Plan
PUP	Perdaman Urea Project

3. KEY EXECUTION PLANS & PROCEDURES

Following are the list of key execution plan documents serving as a guide lines for respective execution domains.

Document No.	Document Title
0000-ZA-E-09071	Construction Environmental Management Plan
PCF-PD-EN-GHGMP	Confirmed Greenhouse Gas Management Plan

4. PROJECT DETAILS

OWNER is focused on the development of a urea fertilizer plant, called as Project CERES with a nominal daily production capacity of 6,200 tons, equating to 2.140 million tons per annum at Sites C and F in the Burrup Strategic Industrial Area in Western Australia.

The plant will be located approximately 10km from Dampier and 20km North-West of Karratha on the North-West coastline of Western Australia.

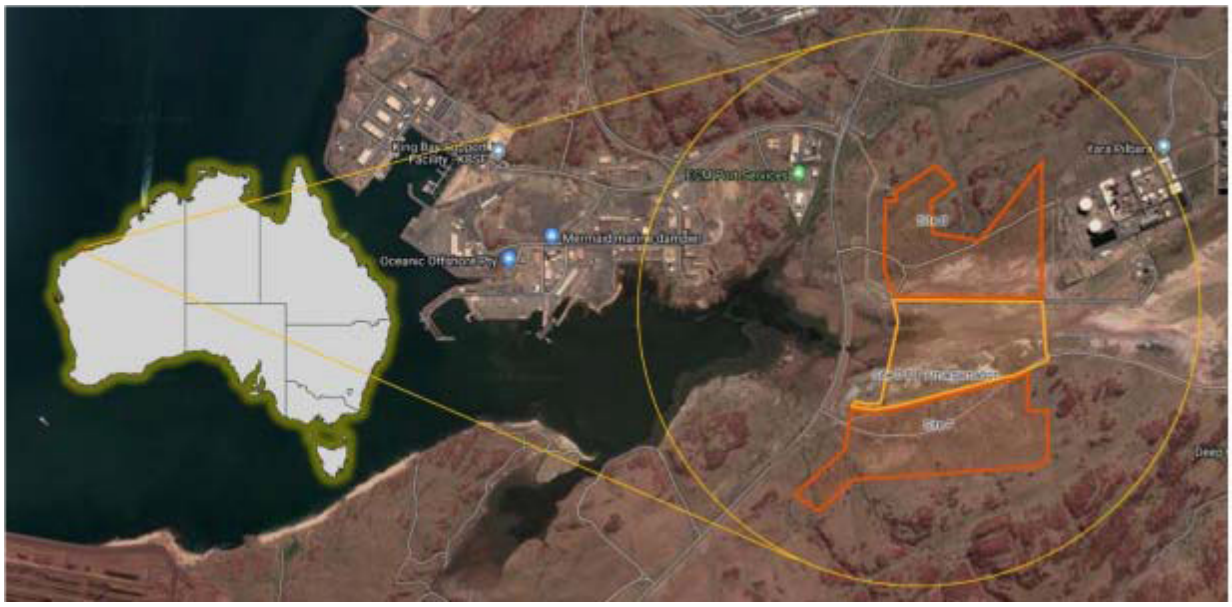

Figure (4.0) Location map

4.1 Plant overview

The Plant areas include Site C, Site F, the causeway, conveyor, and Port storage and loading Facilities. Figure (4.1) Project site areas below illustrates the project site areas.

Site C is relatively undeveloped except for some access roads. The site is situated adjacent to the Yara Ammonia Plant to its East, to the North are steep rocky outcrops and to the South the saline coastal flat area. Drainage from the site flows in a southerly direction towards the saline coastal flat between Hearson Cove and King Bay.

Once developed Site C will include the main process plant, associated infrastructure and a 75,000-tonne urea storage shed.

Fig (4.1) Project site areas

Site F is situated to the South of Site C, on the opposite side of the saline coastal flat. It includes Hearson Cove Road and a significant proportion of previously disturbed area. Drainage from this area flows primarily North into the saline coastal flat.

During the construction phase of the Project, this area will be used as laydown for equipment and modules. The East portion of Site F will be developed to include the Perdaman Urea Plant's administration, maintenance, storage and warehousing facilities.

The causeway, which links Sites C and F, extends across the saline coastal flat. The causeway will be built above the flat with regular culverts to ensure the structure does not impede natural drainage or tidal action, whilst providing continuous access between Sites C and F.

The 3.2km conveyor will transport urea from the storage shed at Site C to the Port loading shed. From Site C the conveyor will be constructed on relatively undisturbed land, to the West of the existing Water Corp pipeline corridor. It will extend North, connecting to the existing Burrup East West Services Corridor (EWSC).

The EWSC is a bitumen sealed corridor that already includes the Yara Pilbara Fertilizer's ammonia pipeline which extends to the bulk liquids jetty adjacent to the Project's Port facilities. The Project's conveyor will be positioned within this corridor and where possible use existing culverts to avoid roads and other infrastructure. Where the conveyor crosses Woodside's Haul Road the road will be built up to allow the conveyor to pass under.

The Port Area includes a 75,000-tonne storage shed, conveyor and ship loader. The storage shed will be located within an existing quarry and the ship loader on a wharf which will be constructed by others engaged by Pilbara Port Authority (PPA). The Conveyor will be situated on cleared area associated with the new wharf and quarry, and a 0.2-hectare section of undisturbed rocky ground between these two areas.

4.2 Client information

Perdaman Chemicals and Fertilizers Pty Ltd., ABN 31121263 741of Level 17, 58 Mounts Bay Road, Perth, Western Australia.

Perdaman is a multinational group based in Western Australia with a long-standing track record in involvement within a diverse range of markets. Perdaman Industries (Chemicals & Fertilizers division) has current focus on the production of urea, the most commonly traded nitrogenous fertilizer.

The plant named as project CERES will be located at Karratha, Western Australia. The planned capacity of the Urea plant is two million ton per annum with most of the urea produced by the plant will be exported.

4.3 Scope & Context

This Greenhouse Gas Emissions Management Protocol (GHGEMP) has been developed as an appendix to the CONTRACTOR Construction Environmental Management Plan (CEMP) and align with the following Perdaman Confirmed Management Plans:

- Confirmed Greenhouse Gas Management Plan (PCF-PD-EN-GHGMP)

This Plan has also been developed to comply with the requirements of the Ministerial Statement (1180) (Condition 3) and the management controls specific to the construction methodology that will be applied by the CONTRACTOR during the construction program.

Potential sources of greenhouse gases (GHG) during construction includes (not limited to):

- Emissions during operation and idling of plant, equipment, and machinery.
- Use of diesel and other fuels on site during construction

- Transport of materials required for construction to the Project site.
- Energy use during construction.
- Commissioning of the Plant.

CONTRACTOR and its SUBCONTRACTORS shall ensure the requirements of MS 1180 are complied with.

4.4 Purpose of this Plan

This protocol has been developed to guide activities associated with the construction of the Perdaman Urea Project such that greenhouse gas emissions from the Project is minimised and ensure compliance with the conditions set out in the Project Approvals and Contract.

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- Consider all relevant legislation, standards and technical guidelines when developing preventative controls.
- Detail the CONTRACTOR monitoring requirements during construction.

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

This GHGEMP must be read and implemented in conjunction with the most recent and approved version of the Confirmed Greenhouse Gas Management Plan and the CONTRACTOR CEMP it is appended to. It **does not** replace the Confirmed Greenhouse Gas Management Plan, it aims to provide the construction team with clear actions, management, and monitoring responsibilities under these plans during the construction program.

Mitigation measures, monitoring and reporting requirements related to the construction team are presented within this protocol. This protocol contains specific references to the Confirmed Greenhouse Gas Management Plan, where the reader may have to review the Confirmed Greenhouse Gas Management Plan to obtain the correct context of a requirement.

4.5 Plan Review

This protocol can be reviewed as updated independently of the CEMP and should be treated as an Appendix to the CEMP, particularly where there are changes to the construction methodology affecting greenhouse gas emissions, and if there are changes to management or monitoring required where management actions and targets are not achieved (refer to the Confirmed Greenhouse Gas Management Plan for further details).

This protocol will be reviewed and amended any time the Confirmed Greenhouse Gas Management Plan has been reviewed and amended, to ensure all Plans appropriately correspond to one another, particularly upon identification of additional risks during the plant design and construction planning stage.

Any review to this protocol will be submitted to Perdaman for review and approval. The Perdaman Environment & Heritage Manager may direct the CONTRACTOR to further amend the protocol where necessary.

4.6 Responsibility

The mitigation measures presented in Section 6 below are the responsibility of the CONTRACTOR and their SUBCONTRACTORS to carry out and implement during Project construction, unless otherwise indicated within the specific control or measure. Further details on the CONTRACTOR role specific authorities and responsibilities can be sighted in section 9 of the CEMP. Appendix D of the CEMP includes Project Organisation Charts.

Any SUBCONTRACTOR engaged to carry out works on behalf of the CONTRACTOR during the construction works must comply with the CEMP and the management measures stated within this protocol.

In certain circumstances a SUBCONTRACTOR working under the CONTRACTOR will be primarily responsible for the implementation of management measures, as indicated per the work packages they will be executing on the Project and will be doing so under the CONTRACTOR authority and oversight.

Any SUBCONTRACTOR carrying out works on behalf of the CONTRACTOR will be required to complete the applicable inductions and training as well as participate in pre-starts and toolbox talks (refer to the CEMP for detail) as well as applicable risk analysis for work activities. The responsibilities of SUBCONTRACTORS are further detailed within the CEMP. The CONTRACTOR will monitor the environmental performance of the SUBCONTRACTORS against the implementation of applicable management measures

during environmental inspections and during SUBCONTRACTOR audits (refer to the CEMP for detail).

Where a conditional requirement or a management measure is the responsibility of the OWNER, the measure or conditional requirement (MS No. 1180) will state this.

It is important to note that overall accountability lies with the OWNER for ensuring the conditions of the EPBC 2018/8383 Approval and MS 1180 are met throughout the Project phases, including construction. CONTRACTOR are responsible for carrying out certain management and controls to ensure compliance with these approvals. The OWNER is accountable for reporting to regulatory bodies. CONTRACTOR must ensure reporting of data and information is provided to the OWNER to ensure reporting can be carried out within the applicable timeframes.

SUBCONTRACTORS must provide all relevant information and data requested by CONTRACTOR to the Environmental Lead within the specified timeframe to ensure regulatory reporting, incident investigations and corrective actions can be implemented.

5. ENVIRONMENTAL APPROVALS

5.1 Part IV Approval

The Project has approval under the Environmental Protection Act 1986 to carry out the implementation of the Proposal as per the conditions within the Ministerial Statement 1180.

The EPA has identified Air Quality as Key Environmental Factor. The EPA Objective for Air Quality relevant to greenhouse gas emissions is as follows:

- To maintain air quality and minimise emissions so that environmental values are protected.

This GHGEMP will communicate the relevant aspects that are within the Confirmed Greenhouse Gas Management Plan that relate to the construction works. Where a particular objective, trigger, threshold, management action, monitoring event or reporting requirement within the GHGMP relates to the direct implementation of a control detailed within the Protocol, it will be stated within Table 6-1.

Overall accountability lies with the OWNER for ensuring the conditions of the MS 1180 are complied with throughout the Project phases, including construction. CONTRACTOR are responsible for carrying out certain management and controls to ensure compliance.

6. MITIGATION MEASURES

6.1 Management Protocols

Mitigation measures presented in Table 6-1 provide the CONTRACTOR team and its SUBCONTRACTORS with minimum standard controls to mitigate impacts associated with the CONTRACTOR construction methodology to minimize greenhouse gas emissions. These mitigation measures have been adopted from the OWNER PEMP environmental protocols, and the Confirmed Greenhouse Gas Management Plan.

Table 6-1 Greenhouse Gas Emissions Management Protocol Mitigation Measures

Requirements	Project Area
Project areas = CF – Site C & F / Ca – Causeway / Co – Conveyor / P – Port	
Plan and optimise utilisation of construction crews, materials and services in a way that reduces GHG emissions, including sourcing materials and services from local resources to reduce transport emissions.	CF, Ca, Co, P
Ensure vehicles, plant and equipment are well maintained to reduce exhaust emissions to surrounding environment.	CF, Ca, Co, P
Ensure vehicles, plant and equipment are fitted with systems to reduce pollution where practicable.	CF, Ca, Co, P
Maintain record on GHG emission sources, fuel consumption and energy consumption.	CF, Ca, Co, P
Encourage personnel onsite to switch lighting and appliances off when not in use.	CF, Ca, Co, P
Educate personnel using awareness reminders, posters and signage in offices, toilets and other facilities to encourage energy-saving strategies.	CF, Ca, Co, P
Include timers and sensors on lighting in ablutions and outside offices to reduce energy use.	CF, Ca, Co, P
Ensure vehicles, plant and equipment are not left idling.	CF, Ca, Co, P
Utilise equipment and vehicles that conform with the highest emissions standards available.	CF, Ca, Co, P
Ensure diesel used conforms with the national diesel fuel quality standard (AS)	CF, Ca, Co, P
Avoid the onsite use of diesel- or petrol-powered generators or other equipment by substituting mains electricity or battery powered equipment where practicable.	CF, Ca, Co, P
Reuse waste materials, demolition materials, soil material. Waste reduction strategies will be implemented where practicable.	CF, Ca, Co, P