

***Environmental Protection Act 1986***

**Section 43A**

**NOTICE OF DECISION TO CONSENT TO CHANGE TO PROPOSAL DURING  
ASSESSMENT**

**PERSON TO WHOM THIS NOTICE IS GIVEN:**

- (a) Mr Vikas Rambal  
Chairman and Managing Director  
Perdaman Chemicals and Fertilisers Pty Ltd (ACN: 121 263 741)  
Level 17, Alluvion Building  
58 Mounts Bay Road  
PERTH WA 6000

**PROPOSAL TO WHICH THIS NOTICE RELATES:**

Perdaman Urea Project  
Assessment No. 2184

Pursuant to Section 43A of the *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) consents to the proponent making the following changes to the proposal during assessment without a revised proposal being referred:

- 1) Extend the duration of laydown area use from construction to construction and operations, and clarify the extent (approximately 6.8 ha) of rehabilitation delayed to the end of the project life.
- 2) Amendments to the key characteristics of the proposal (refer to Schedule 1) to:
  - a. Amend the Laydown associated with construction element to include “*and operations*”; and
  - b. Amend the laydown associated with construction proposed extent by deleting “*Clearing/fill of approximately 50 ha comprising of up to 28.5 ha in Site F and with the balance of laydown clearing as part of temporary construction activities across other construction elements within the DE*” to include “*Footprint approximately 6.8 ha*”.

The updated key characteristics tables and the associated figure depicting the Development Envelope and indicative disturbance footprint are attached to this Notice.

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The updated figure clarifies the indicative project footprint on Site F which does not represent a change to the proposal.

**EFFECT OF THIS NOTICE:**

1. The EPA considers that the change is unlikely to significantly increase any impact that the proposal may have on the environment. The proponent may change the proposal as provided for in this notice.

**RIGHTS OF APPEAL:**

There are no rights of appeal under the EP Act in respect of this decision.



**Professor Matthew Tonts**  
**Delegate of the Environmental Protection Authority**  
Chair

13 May 2021

# Schedule 1

## Change to Proposal

**Table 1 Summary of the Proposal**

Item	Detail
<b>Proposal title</b>	Perdaman Urea Project
<b>Proponent name</b>	Perdaman Chemical and Fertilisers Pty Ltd
<b>Short description</b>	<p>The Proponent intends to construct and operate a urea plant with a production capacity of approximately 2 million tonnes per annum (Mtpa) on Sites C and F within the Burrup Strategic Industrial Area (BSIA) on the Burrup Peninsula.</p> <p>Natural gas for the urea plant will be sourced from a nearby domestic gas plant. The urea product will be transported via closed conveyor to the nearby Dampier Port for export via Panamax vessels.</p>

**Table 2 Location and Proposed Extent of Physical and Operational Elements**

Element	Location	Proposed extent
<b>Physical elements</b>		
Overall extent of the Perdaman Urea Project	Figure 1	Clearing of no more than 73.05 ha within a Development Envelope of 106.7 ha.
Sites C & F	Figure 1	<p>Site C: Approximately 34.4 ha with clearing of up to 31.10 ha.</p> <p>Site F: Approximately 34.0 ha with clearing of up to 32.54 ha.</p> <p>Causeway: Approximately 3.6 ha with clearing of up to 1.36 ha.</p> <p>Access Road linking Burrup Road to Site C: Approximately 1.5 ha with clearing of up to 1.45 ha</p>
Ammonia Plant	Figure 1	3,500 tpd nominal capacity - no 3rd party sales.
Urea Production Plant	Figure 1	<p>Footprint approximately 70.5 ha with clearing of up to 66.5 ha.</p> <p>6,200 tpd nominal capacity, granulated product nominal 2.05 Mtpa.</p>
Infrastructure and Logistics Buildings	Figure 1	<p>including:</p> <ul style="list-style-type: none"> <li>▪ Administration buildings;</li> <li>▪ Operation control room;</li> <li>▪ Maintenance workshop;</li> <li>▪ Parts and materials warehousing; and</li> <li>▪ Plant security.</li> </ul>
Utility Block	Figure 1	<ul style="list-style-type: none"> <li>▪ Air separation (~2,200 tpd);</li> <li>▪ Power generation (Installed Combined Cycle Gas Turbine ~ 100 MW capacity and installed solar ~ 3.5 MW capacity);</li> <li>▪ Water treatment;</li> <li>▪ Cooling water;</li> <li>▪ Flare;</li> <li>▪ Firefighting facilities; and</li> <li>▪ Other utilities.</li> </ul>

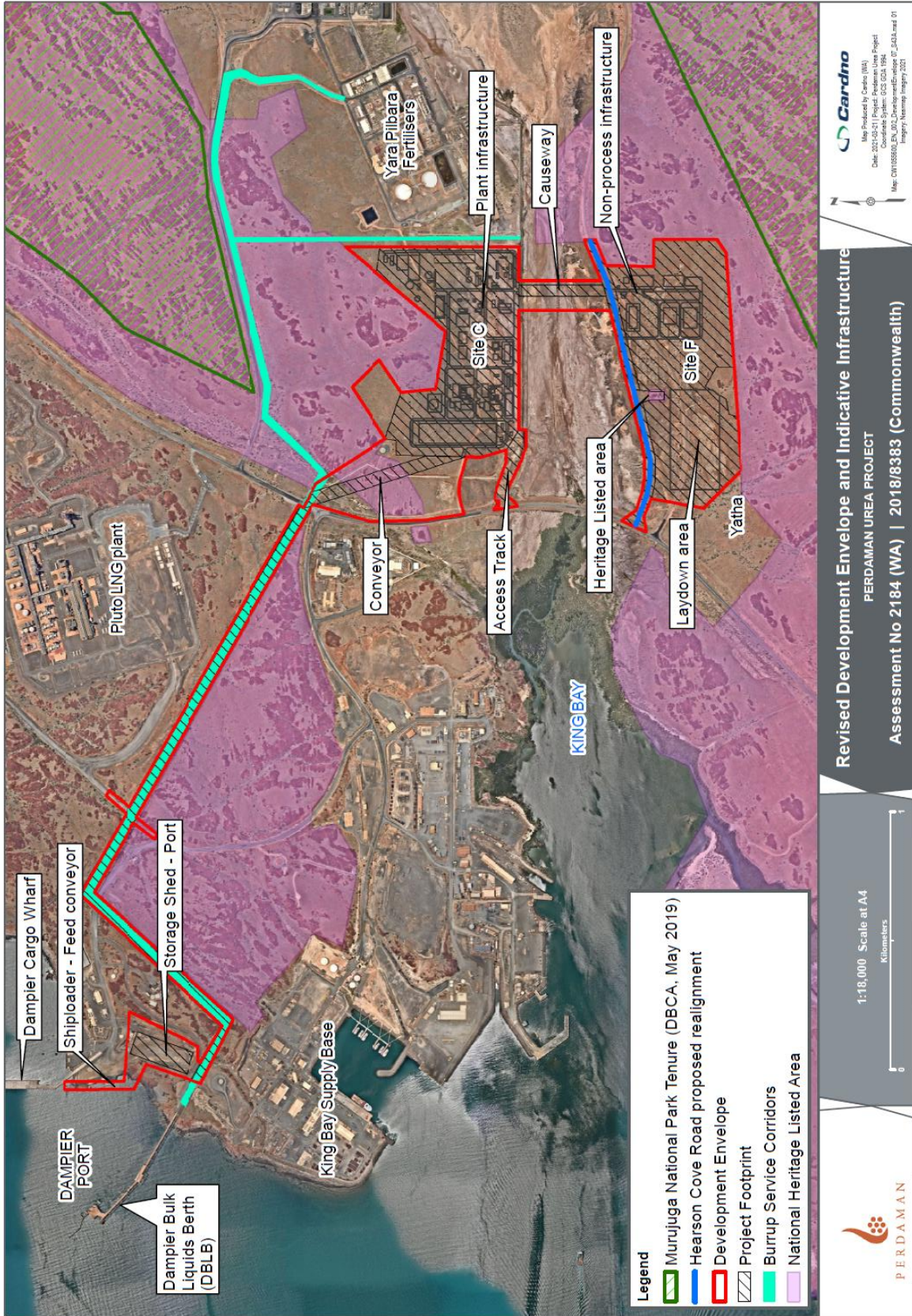
Element	Location	Proposed extent
Hearson Cove Road realignment to the northern boundary of Site F	Figure 1	Approximately 4.4 ha with clearing of up to 4 ha including construction laydown.
Laydown associated with Construction and Operations	Figure 1	Footprint approximately 6.8ha.
Product Conveyor linking Site C to Dampier Port	Figure 1	Portion of conveyor route between Site C boundary and the existing East West Service Corridor: Approximately 12.3 ha with clearing of approximately 2.60 ha. Remainder of conveyor route along the East West Service Corridor to Dampier Port: Approximately 11.3 ha (pre-disturbed).
Port Infrastructure / Product Storage Areas	Figure 1	Port Infrastructure (including Storage Shed and Ship-loader): Approximately 5.2 ha (pre-disturbed). <u>Ammonia</u> : Storage of a maximum of 10,000 tonnes capacity on plant site in refrigerated tank. <u>Urea (plant site)</u> : minimum 75,000 tonnes capacity, fully enclosed shed. <u>Urea (port site)</u> : 75,000 tonnes capacity, fully enclosed shed.
<b>Operational elements</b>		
Gas Supply (Natural Gas)		130 terajoules per day supplied via a gas pipeline.
Urea Formaldehyde Input		11 ktpa approximately.
Power Supply		Internal generation.
Water Supply		25.2 GLpa from existing sea water supply by Water Corporation.
Stormwater		Stormwater will be treated and re-used on site to the fullest extent practicable.
Wastewater		Domestic wastewater will be treated and re-used on site. Any excess will be combined with saline water prior to being discharged into the existing Multi-User Brine Return Line (MUBRL), subject to agreement with the Water Corporation.
Saline Water Discharge		Up to approximately 20 GL/yr (including excess treated wastewater) will be discharged into the existing MUBRL, subject to agreement with the Water Corporation.
Solid Waste		Some solid waste from site water treatment residue to appropriate disposal site. Spent catalyst/resins to appropriate disposal sites. Construction waste streams to be recycled where such services are available from waste management contractors. Residual wastes to local landfill in accordance with landfill classification.
Energy Efficiency		Approximately 21 GJ/t urea (LHV). Approximately 5.1 Gcal/t urea (LHV).
Material Transport	Figure 1	Transport of urea (granules) through conveyor to Dampier Port along existing service corridor.
Urea Shiploading System	Figure 1	Travelling (closed) conveyor-fed, cantilever arm loader with direct discharge to ship hold via chute. Nominal loading capacity of 2,200 tonnes per hour.
Shipping	Figure 1	Urea 50-100 times per year, depending on destination port limits on vessel capacity.

Element	Location	Proposed extent
Noise		< 35 dB(A) at nearest noise sensitive premises. < 65 dB(A) at plant boundary.
<b>Air Emissions</b>		
Oxides of Nitrogen (NO <sub>x</sub> ) (as NO <sub>2</sub> )		319 tpa approximately from power generation and fired heater.
Carbon Dioxide (CO <sub>2</sub> )		0.7 Mtpa approximately. Includes 0.07 Mtpa of CO <sub>2</sub> supplied in natural gas.
Sulphur Dioxide (SO <sub>2</sub> )		5 tpa approximately.
Methane (CH <sub>4</sub> )		Traces, < 1 tpa.
Ammonia (NH <sub>3</sub> )		400 tpa maximum, to be minimised as practicable during detailed engineering design.
Urea Particulates		353 tpa maximum, to be minimised as practicable during detailed engineering design.
Methanol		< 1 tpa.
Dust		Construction and fugitive operational emissions.

#### Units and abbreviations

dB(A)	decibels, A weighted	ktpa	kilotonnes per annum
Gcal/t	gigacalories per tonne	LHV	lower heating value
GJ/t	gigajoules per tonne	Mtpa	million tonnes per annum
GLpa	gigalitres per annum	MW	megawatts
GL/yr	gigalitres per year	tpa	tonnes per annum
ha	hectares	tpd	tonnes per day

Figure 1: Development Envelope and indicative infrastructure footprint



***Environmental Protection Act 1986***

**Section 43A**

**STATEMENT OF REASONS**

**CONSENT TO CHANGE PROPOSAL DURING ASSESSMENT**

**Proposal:** Perdaman Urea Project

**Proponent:** Perdaman Chemicals and Fertilisers Pty Ltd

**Decision**

For the reasons outlined below, the EPA has determined to consent to the Proponent changing the Proposal outlined in Schedule 1 attached to this Statement of Reasons.

**Background**

On 7 May 2018, the Proposal was referred to the Environmental Protection Authority (EPA) by a third party under Section 38 of the *Environmental Protection Act 1986* (EP Act). The Proposal involves the construction and operation of a urea plant with a nominal production capacity of approximately 2 million tonnes per annum (Mtpa) on Sites C and F within the Burrup Strategic Industrial Area on the Burrup Peninsula. The Proposal also includes a product conveyor linking Site C to Dampier Port via the existing East West Service Corridor together with a product storage shed and shiploader located within Dampier Port.

On 28 November 2018, the EPA determined to assess the Proposal at the level of Public Environmental Review with a 12-week public review period for the Environmental Review Document (ERD) and a Proponent-prepared Environmental Scoping Document (ESD) with a 2-week public review period. The ESD was approved on 22 July 2019. The public review period for the ERD commenced on 30 March 2020 and closed on 22 June 2020. Seventeen submissions were received on the ERD.

The Proponent submitted their Response to Submissions document to the EPA on 1 October 2020, and a revised version submitted on 8 and 20 January 2021. The Proponent was advised that the Response to Submissions document was accepted by the EPA on 4 March 2021. The Response to Submissions document was accepted subject to the resolution of comments from the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and the clarification of Greenhouse Gas emissions reduction targets.

The EPA has consented to two changes to the proposal pursuant to section 43A of the *Environmental Protection Act 1986* on 20 March 2020 and 10 February 2021.

In advance of the EPA preparing a report on the outcome of its assessment of the Proposal, on [29 April 2021], the Proponent sought the EPA's consent to for the following further changes to the Proposal:

- a) Extend the duration of laydown area use from construction to construction and operations, and clarify the extent (approximately 6.8 ha) of rehabilitation delayed to the end of the project life.
- b) Amendments to the key characteristics of the proposal (refer to Schedule 1) to:
  - a. Amend the Laydown associated with construction element to include "*and operations*"; and
  - b. Amend the laydown associated with construction proposed extent by deleting "*Clearing/fill of approximately 50 ha comprising of up to 28.5 ha in Site F and with the balance of laydown clearing as part of temporary construction activities across other construction elements within the DE*" to include "*Footprint approximately 6.8 ha*".

### **Relevant Statutory and Administrative Provisions**

Section 3.8 of the Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016 states what information the EPA requires from a person wanting to change its proposal during assessment.

The proponent is required to provide:

- details of the proposed change
- statement of the significance of the change; and
- rationale for the change.

### **Materials considered in making this decision**

In determining whether to consent to the proponent changing the proposal the EPA has considered, in particular, the following:

1. The Proponent's Request to Change the proposal under Section 43A of the EP Act (29 April 2021) and additional information received 6 May 2021.
2. The ERD,
3. Public submissions received during the 12-week public review period for the ERD.
4. EPA Guidance and procedures.
5. Response to Submissions document

### **Consideration**

1. Nature of the proposed change

The nature of the proposed change relates to the extended duration of laydown area use from construction to construction and operations, and clarify the extent of laydown which (approximately 6.8 ha) will be rehabilitated at the end of the project life.



The laydown area is proposed to be used for both construction and operational activities. Rehabilitation of the proposed laydown area will be deferred until the expiry of the lease or end of the projects life. Required rehabilitation earthworks and erosion control within the laydown area will be undertaken throughout the life of the project to ensure the site is safe and stable following construction and episodic activities.

The change to the duration of use of the laydown area does not change the extent and nature of clearing and the vegetation communities and habitat being cleared within Site F.

## 2. Stage of the assessment process

The EPA commenced preparing its assessment report for the Minister for Environment on 4 March 2021.

## 3. Currency, relevance and reliability of the information, including submissions

The EPA considers that the currency, relevance and reliability of the information provided in the Section 43A application dated 29 April 2021 and 6 May 2021 is satisfactory.

## 4. Community engagement

Seventeen submissions were received on the ERD. The main concerns that were raised in the submissions related to the:

- cumulative impact of industrial air emissions on human health at nearby sensitive receptor locations and rock art located within Murujuga (the Dampier Archipelago and Burrup Peninsula);
- potential for the GHG emissions from the proposal (i.e. 0.65 Mtpa of CO<sub>2</sub>- e) to cumulatively increase the risk of environmental harm associated with climate change; and
- direct and indirect impacts to Aboriginal heritage sites and cultural values due to the construction and operation of the proposed urea plant.

The proponent has undertaken extensive consultation with the Murujuga Aboriginal Corporation (MAC) to address concerns about the impacts of the Proposal on rock art, Aboriginal heritage sites, and cultural values within Murujuga. The EPA is advised that the MAC have been consulted on the proposed change and have not raised an objection to the change. The EPA considers that this constitutes an adequate level of community engagement.

## 5. Level of public concern

The proposed change does not materially affect the values of public concern which are associated with industrial emissions, GHG and impacts to rock art, Aboriginal heritage sites and cultural values.

The proposed change does not change the extent of impact the change results in the delayed rehabilitation of the laydown area. On this basis and considering the number of public submissions associated with the proposal the EPA does not expect a significant level of public concern about the proposed changes to the Proposal.

### **Consideration of Whether the Change is Unlikely to Significantly Increase Any Impact that the Proposal May Have on the Environment**

The following were considered:

- 1) Values, sensitivity and the quality of the environment which is likely to be impacted

On 28 November 2018, the EPA Chairman's determination identified the following preliminary environmental factors for the current proposal:

- Flora and Vegetation;
- Terrestrial Fauna;
- Inland Waters;
- Air Quality;
- Greenhouse Gas; and
- Social Surroundings
- Coastal Processes;
- Marine Environmental Quality

The prior to the proposed change, the proposal is considered to impact on the following values:

- Flora and Vegetation; clearing of up to 73.05 ha of native vegetation, including 64 ha in 'Good to Excellent' condition and 0.16 ha of the Priority 1 PEC - Burrup Peninsula Rock Pile community.
- Terrestrial Fauna; clearing of up to 64 ha of 'Good to Excellent' condition foraging and roosting habitat for EPBC Act and BC Act listed fauna species.
- Air Quality; emissions of NO<sub>2</sub>, SO<sub>2</sub>, NH<sub>3</sub>, O<sub>3</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from the Urea Plant impacting on ambient air quality.
- Greenhouse Gas Emissions; Scope 1 greenhouse gas emissions estimated at project commencement of 650,000 tonnes CO<sub>2</sub>-e per annum commencing and mitigated to net zero by 2050.
- Inland waters; risks to surface water and groundwater due to chemical and fuel spillages during construction and operation; risk of erosion, sediment transport, and deposition; dewatering and the risk of disturbing acid sulfate soils.
- Coastal Processes; construction of a causeway with culverts predicted to result in outflow velocities of under 1.0 m/s which are not expected to result in any significant erosion or sedimentation.

- Social Surroundings (Cultural Heritage); three Aboriginal heritage sites located in Site C will be disturbed and relocated during construction of the proposed urea plant, with the agreement of the MAC.
- Social Surroundings (Amenity); noise levels at sensitive locations predicted to be at, or below applicable noise criteria; impacts to traffic volumes and visual amenity from viewsheds at Hearson Cove and Deep Gorge (Ngajarli) is not significant.
- Marine Environmental Quality; the discharge of saline water and wastewater into King Bay via the existing Water Corporation's Multi-User Brine Return Line (MUBRL); potential surface water runoff accessing King Bay via the supra and intra tidal flat system and potential urea product fugitive emissions from ship loading.

The proposal is located within Murujuga. Murujuga is the traditional Aboriginal name for the Dampier Archipelago and surrounds, including the Burrup Peninsula and the Murujuga National Park. Murujuga was included in the National Heritage List in July 2007. Murujuga National Park covers the northern area of the Burrup Peninsula and sits within the broader National Heritage Listed area. The Murujuga Cultural Landscape was nominated for World Heritage Listing in January 2020 in view of its extensive collection of rock art and the ongoing social, spiritual and cultural connection of the Traditional Owners and Custodians to country and a diverse range of Aboriginal heritage sites and objects such as ethnographic sites, shell middens and standing stones.

The proposed changes will not require additional factors to be considered as key environmental factors for the purposes of the EPA's assessment of the Proposal.

## 2) Extent (intensity, duration, magnitude and geographic footprint) of the likely impacts

The extent of the change is to increase the duration of use of the laydown area (approximately 6.8 ha) in Site F for the duration of the project. The laydown is proposed to be used for activities which are temporary and episodic in nature and duration such as laydown during construction and operational maintenance (i.e. shutdowns) and activities to support the continuous improvement technology studies aimed at reducing project emissions.

The proposed change to the laydown area does not change the magnitude or geographic footprint, and nature of clearing, and the vegetation communities and habitat being cleared within Site F.

The change results in a change in the timing of the rehabilitation of the laydown site.

## 3) Consequence of the likely impacts (or change)

The consequence of the likely impacts (or change) to the proposal has the potential to change the environmental impact to the following environmental factors:

- Flora and Vegetation; the change delays the rehabilitation of approximately 6.8 ha (comprising of approximately 6.02 ha of Hummock Grasslands) to the

end of the project life. The change does not increase project clearing. The magnitude of the change (the delay in rehabilitation) to flora and vegetation is unlikely to significantly increase any impact that the proposal may have on the environment.

- Terrestrial Fauna; the change delays the rehabilitation of approximately 6.8 ha (currently comprising of approximately 6.02 ha of Hummock Grasslands habitat) to the end of the project life. The change does not increase the proposed clearing of up to 64 ha of 'Good to Excellent' condition foraging and roosting habitat for EPBC Act and BC Act listed fauna species. The magnitude of the change (the delay in habitat rehabilitation) to terrestrial fauna is unlikely to significantly increase any impact that the proposal may have on the environment.
- Air Quality; The proposed change does not change the industrial emissions of NO<sub>2</sub>, SO<sub>2</sub>, NH<sub>3</sub>, O<sub>3</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from the Urea Plant impacting on ambient air quality. The proposed change retains a 6.8 ha laydown area within the 106.7 ha Development Envelope for the duration of the project life. The change has the potential to contribute to fugitive dust which is proposed to be managed under the requirements of the proposal. The intensity and magnitude of the potential fugitive dust emissions are unlikely to significantly increase any impact that the proposal may have on the environment.
- Greenhouse Gas Emissions; The change does not change the proposed Scope 1 greenhouse gas emissions of the proposal.
- Inland waters; The proposed change extends the potential duration of risk from chemical spillages from during construction to operation in addition to the increased risk of erosion, sediment transport, and deposition limited to the 6.8 ha laydown area. The magnitude and intensity of the potential change on risks to inland waters is unlikely to significantly increase any impact that the proposal may have on the environment.
- Coastal Processes; The change does not change the construction of the causeway or associated sedimentation.
- Social Surroundings (Cultural Heritage); The change does not change the direct or indirect impacts on Aboriginal heritage sites located in the proposal Development Envelope.
- Social Surroundings (Amenity); The change does not change the predicted noise levels at sensitive locations. The change in use of an episodic and temporary nature results in a change to the view shed at adjacent viewpoints and is in context with the surrounding land use. The impact on visual amenity from viewsheds at Hearson Cove and Deep Gorge (Ngajarli) is not proposed to be changed due to the landscape. The change is not associated with increased traffic and is unlikely to change low traffic volumes resulting in negligible queuing. The change amenity is unlikely to significantly increase any impact that the proposal may have on the environment.
- Marine Environmental Quality; The change does not change the discharge of saline water and wastewater. The change has the potential to change potential surface water runoff accessing King Bay via the supra and intra tidal flat system. The magnitude and intensity of the potential change to surface water runoff on the marine environmental quality is unlikely to significantly increase any impact that the proposal may have on the environment.

#### 4) Resilience of the environment to cope with the impacts or change

The EPA considers that the resilience of the environment to cope with the impacts from the changed Proposal remains unchanged from that of the original proposal, should it be implemented.

5) Cumulative impacts with other projects

Cumulative impacts will be considered in the EPA's assessment of the changed Proposal. The change does not change the amount of clearing from the proposal. There is unlikely to be a significant change in the cumulative impacts of the proposal at a local or regional scale

6) Connections and interactions between parts of the environment to inform holistic view of impacts of the whole environment

The impact to the environmental functions and values of the Proposal area due to the changed proposal being implemented is likely to be minor given the nature of the change. A holistic assessment of the changed Proposal will be undertaken during the EPA's assessment of the Proposal.

7) Level of confidence in the prediction of impacts and the success of proposed mitigation

There is no change to the level of confidence in the prediction of impacts and the success of the proposed mitigation measures. Rehabilitation of the laydown site would still occur and there would remain a need to meet standards for revegetation.

8) Public interest about the likely effect of the proposal, if implemented, on the environment, and public information that informs the EPA's assessment

Seventeen submissions were received during the 12-week public review for the ERD. As mentioned previously, the main public concern about the Proposal centred around the potential for rock art located in the surrounding areas to be adversely affected by air emissions from the Proposal and other existing industrial sources within Murujuga. The EPA considers that the public interest in the Proposal will likely remain largely the same regardless of the proposed changes.

## **Conclusion**

In conclusion, the EPA considers that the proposed changes are unlikely to significantly increase any impact that the Proposal may have on the environment primarily because the impacts remained unchanged and no additional clearing of vegetation will be required.

## Schedule 1

### Change to Proposal

**Table 1 Summary of the Proposal**

Item	Detail
<b>Proposal title</b>	Perdaman Urea Project
<b>Proponent name</b>	Perdaman Chemical and Fertilisers Pty Ltd
<b>Short description</b>	<p>The Proponent intends to construct and operate a urea plant with a production capacity of approximately 2 million tonnes per annum (Mtpa) on Sites C and F within the Burrup Strategic Industrial Area (BSIA) on the Burrup Peninsula.</p> <p>Natural gas for the urea plant will be sourced from a nearby domestic gas plant. The urea product will be transported via closed conveyor to the nearby Dampier Port for export via Panamax vessels.</p>

**Table 2 Location and Proposed Extent of Physical and Operational Elements**

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Overall extent of the Perdaman Urea Project	Figure 1	Clearing of no more than 73.05 ha within a Development Envelope of 106.7 ha.
Sites C & F	Figure 1	<p>Site C: Approximately 34.4 ha with clearing of up to 31.10 ha.</p> <p>Site F: Approximately 34.0 ha with clearing of up to 32.54 ha.</p> <p>Causeway: Approximately 3.6 ha with clearing of up to 1.36 ha.</p> <p>Access Road linking Burrup Road to Site C: Approximately 1.5 ha with clearing of up to 1.45 ha</p>
Ammonia Plant (Site C)	Figure 1	3,500 tpd nominal capacity - no 3rd party sales.
Urea Production Plant (Including Sites C and F, Causeway and access road (Excluding conveyor and port facilities)	Figure 1	<p>Footprint approximately 70.5 ha with clearing of up to 66.5 ha.</p> <p>6,200 tpd nominal capacity, granulated product nominal 2.05 Mtpa.</p>
Infrastructure and Logistics Buildings (Site F)	Figure 1	<p>including:</p> <ul style="list-style-type: none"> <li>▪ Administration buildings;</li> <li>▪ Operation control room;</li> <li>▪ Maintenance workshop;</li> <li>▪ Parts and materials warehousing; and</li> <li>▪ Plant security.</li> </ul>
Utility Block (Site C)	Figure 1	<ul style="list-style-type: none"> <li>▪ Air separation (~2,200 tpd);</li> <li>▪ Power generation (Installed Combined Cycle Gas Turbine ~ 100 MW capacity and installed solar ~ 3.5 MW capacity);</li> <li>▪ Water treatment;</li> <li>▪ Cooling water;</li> <li>▪ Flare;</li> <li>▪ Firefighting facilities; and</li> <li>▪ Other utilities.</li> </ul>
Hearson Cove Road realignment to the northern boundary of Site F	Figure 1	Approximately 4.4 ha with clearing of up to 4 ha including construction laydown.

Element	Location	Proposed extent
Laydown associated with Construction <b>and Operations</b> (Site F)	Figure 1	<p>Clearing/fill of approximately 50 ha comprising of up to 28.5 ha in Site F and with the balance of laydown clearing as part of temporary construction activities across other construction elements within the DE.</p> <p>Footprint approximately 6.8ha.</p>
Product Conveyor linking Site C to Dampier Port	Figure 1	<p>Portion of conveyor route between Site C boundary and the existing East West Service Corridor: Approximately 12.3 ha with clearing of approximately 2.60 ha.</p> <p>Remainder of conveyor route along the East West Service Corridor to Dampier Port: Approximately 11.3 ha (pre-disturbed).</p>
Port Infrastructure / Product Storage Areas	Figure 1	<p>Port Infrastructure (including Storage Shed and Ship-loader): Approximately 5.2 ha (pre-disturbed).</p> <p><u>Ammonia</u>: Storage of a maximum of 10,000 tonnes capacity on plant site in refrigerated tank.</p> <p><u>Urea (plant site)</u>: minimum 75,000 tonnes capacity, fully enclosed shed.</p> <p><u>Urea (port site)</u>: 75,000 tonnes capacity, fully enclosed shed.</p>
<b>Operational elements</b>		
Gas Supply (Natural Gas)		130 terajoules per day supplied via a gas pipeline.
Urea Formaldehyde Input		11 ktpa approximately.
Power Supply		Internal generation.
Water Supply		25.2 GLpa from existing sea water supply by Water Corporation.
Stormwater		Stormwater will be treated and re-used on site to the fullest extent practicable.
Wastewater		Domestic wastewater will be treated and re-used on site. Any excess will be combined with saline water prior to being discharged into the existing Multi-User Brine Return Line (MUBRL), subject to agreement with the Water Corporation.
Saline Water Discharge		Up to approximately 20 GL/yr (including excess treated wastewater) will be discharged into the existing MUBRL, subject to agreement with the Water Corporation.
Solid Waste		<p>Some solid waste from site water treatment residue to appropriate disposal site.</p> <p>Spent catalyst/resins to appropriate disposal sites.</p> <p>Construction waste streams to be recycled where such services are available from waste management contractors.</p> <p>Residual wastes to local landfill in accordance with landfill classification.</p>
Energy Efficiency		<p>Approximately 21 GJ/t urea (LHV).</p> <p>Approximately 5.1 Gcal/t urea (LHV).</p>
Material Transport	Figure 1	Transport of urea (granules) through conveyor to Dampier Port along existing service corridor.
Urea Shiploading System	Figure 1	<p>Travelling (closed) conveyor-fed, cantilever arm loader with direct discharge to ship hold via chute.</p> <p>Nominal loading capacity of 2,200 tonnes per hour.</p>
Shipping	Figure 1	Urea 50-100 times per year, depending on destination port limits on vessel capacity.
Noise		< 35 dB(A) at nearest noise sensitive premises.

Element	Location	Proposed extent
		< 65 dB(A) at plant boundary.
<b>Air Emissions</b>		
Oxides of Nitrogen (NO <sub>x</sub> ) (as NO <sub>2</sub> )		319 tpa approximately from power generation and fired heater.
Carbon Dioxide (CO <sub>2</sub> )		0.7 Mtpa approximately. Includes 0.07 Mtpa of CO <sub>2</sub> supplied in natural gas.
Sulphur Dioxide (SO <sub>2</sub> )		5 tpa approximately.
Methane (CH <sub>4</sub> )		Traces, < 1 tpa.
Ammonia (NH <sub>3</sub> )		400 tpa maximum, to be minimised as practicable during detailed engineering design.
Urea Particulates		353 tpa maximum, to be minimised as practicable during detailed engineering design.
Methanol		< 1 tpa.
Dust		Construction and fugitive operational emissions.



Figure 1: Development Envelope and indicative infrastructure footprint

