Title of Proposal - Perdaman Urea Project

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Manufacturing

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Perdaman plans to construct and operate a state of the art 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 (Figure 1, Attachment A).
The project involves piping natural gas from the nearby Woodside operated LNG facilities to the project site under a long term commercial off-take agreement.
Natural gas is then converted to urea and the final product is transported by conveyor to the Dampier Port for export, all of these components being within the BSIA.
The proposal is expected to create approximately 2,000 jobs including 200 permanent at the plant, which will further stimulate the local economy.
The BSIA is the location of a number of established industrial facilities. Although not implemented, development proposals occupying Sites C and F have also previously been subject to assessment and were approved pursuant to Part IV of the EP Act and the EPBC Act with regard to MNES.
The area between Sites C and F is currently being examined by JTSI/LandCorp to establish the technical feasibility of amalgamating these two separate locations to a single industrial location. Based on the Phase 1 results of this feasibility study, the preferred site layout option is to split the urea plant footprint into two parts which are aligned with Sites C and F. The two sites would be connected by a 30m wide easement to accommodate an elevated service corridor for road and infrastructure requirements. The existing public access road to Hearson's Cove would be diverted to run along the southern boundary of Site F.
The proposed project plant footprint will be approximately 50ha with the product conveyor footprint through to the port of up to 5ha and the input gas pipeline footprint of 1ha. The road and infrastructure corridor easement connecting Site C and Site F is approximately 30m wide and 500m long (1.5ha). The indicative location of the proposed plant on the site is overlain on aerial photography shown in Figure 2 of Attachment A.
The following components broadly describe this scope:
130 terajoules per day of natural gas to be supplied by Woodside LNG facilities as feedstock;
Natural gas supply lateral;
3,500 tonnes per day ammonia synthesis unit;
6,200 tonnes per day urea synthesis and granulation plant;
Acid Gas Recovery unit to extract carbon dioxide from the raw synthesis gas;
Air Separation unit to extract 2,200 tonnes per day of oxygen from the atmosphere;
Gas turbine power plant to produce electricity using natural gas fuel;
Seawater circulation system for cooling the process units;
Water treatment plant to produce desalinated and demineralised water for plant use;

Wastewater treatment plant;
Flare and vent stacks;
Intermediate storages for chemicals, ammonia, oxygen and nitrogen;
Urea storage shed and conveyor loading facilities;
Urea export facilities including storage shed, ship loader and conveyor at Dampier Port; and
Associated support facilities.

The granulated urea product will be transported by closed conveyor along the East West Service through to Dampier Port, where new facilities will include a stockpile and loading arm. Approvals for the conveyor, storage and loadout facilities will be the responsibility of the Proponent. Dampier Port Authority will be responsible for the shipping berths.
Off-site infrastructure includes the sea water supply pipeline, natural gas pipeline from the Woodside LNG facilities to the site and the saline wastewater pipeline connecting the Urea Plant to the existing Water Corporation Brine discharge pipeline. The location of these corridors is shown in Figure 2, Attachment A.

This project is being developed on a commercial basis using proven process technology units and scales. The Plant will incorporate Haldor Topsoe reforming and gas treatment technology, Haldor Topsoe ammonia synthesis technology and Stamicarbon Urea melt and granulation technologies.
The conversion of natural gas (NG) to urea is a five step process
1. Gas reforming: The NG is catalytically reformed with oxygen and steam to syngas, which is purified to a hydrogen rich and CO2 stream.
2. Ammonia synthesis: The hydrogen and nitrogen mixture are compressed and reacted (with help of a catalyst) to form ammonia. This chemical reaction releases heat which is recovered as steam which improves the overall process thermal efficiency, and consequently lowers emissions.
3. Urea Synthesis: Ammonia and CO2 are reacted to form urea (solution) in a two stage process which includes a carbamate intermediate. The urea solution is concentrated to over 95 per cent.
4. Urea granulation: The concentrated urea solution is dried and granulated. Granules are a strong, easily handled product, which minimises potential dust formation during the logistics chain of taking the urea from the plant to the paddock.
5. Storage and warehousing: The urea granules are cooled and stored in a shed before being loaded on a conveyor and transported to Dampier Port. Here the urea granules are unloaded into a second storage shed and then loaded onto Panamax ships for export.

Proven technology underpins each of the key stages of this project. The technologies being considered for the plant are equivalent to the industry best for the specific applications and successfully operate elsewhere in the world.
The technology being utilised recovers much of the energy generated at various stages of the process and re-uses this energy in the process.

-Conveyor to Dampier Port
The urea granules are transferred from the Granulator section to the site storage shed. The urea will be loaded onto a covered conveyor and transported to Dampier Port for unloading.
-Storage at Dampier Port
A storage shed is to be constructed by PCF at Dampier Port. This shed will have the capacity to store at least 1/2 Panamax shipload of urea, which is approximately 30,000 tonnes. The shed

will be maintained to minimise moisture ingress to the urea product.
-Ship Loading
A conveying ship loader will be constructed at Dampier Port to allow ship loading from the storage shed. PCF will co-operate with the Pilbara Port Authority for provision of suitable loading facilities.
The ship loader will provide weather protection to prevent ingress of moisture (rain) and minimise dust.

PCF's preferred wastewater management approach is to treat and discharge wastewater from the Urea Plant via the existing saline ocean outfall (and complying with the stipulated ANSECC conditions). Excess salts would be crystallised and sent to a suitable solid waste disposal. Site waste water and rainwater will be recovered and treated and re-used to the extent possible.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
Site C	1	-20.630424638372	116.77079171155
Site C	2	-20.625946365252	116.77070588086
Site C	3	-20.625966447488	116.77111357663
Site C	4	-20.62562504911	116.77104920361
Site C	5	-20.624500437273	116.77302330945
Site C	6	-20.625504555382	116.77401036236
Site C	7	-20.626408256017	116.77295893643
Site C	8	-20.627673427893	116.77306622479
Site C	9	-20.627733673911	116.77441805813
Site C	10	-20.623938128239	116.77838772748
Site C	11	-20.630525046573	116.77832335446
Site C	12	-20.630444720017	116.77083462689
Site C	13	-20.630424638372	116.77079171155
Site F	1	-20.634551360835	116.76887124989
Site F	2	-20.634631685222	116.77170366261
Site F	3	-20.633085433312	116.77751869175
Site F	4	-20.63481241494	116.77747577641
Site F	5	-20.63485257707	116.77844137166
Site F	6	-20.636820508464	116.77841991398
Site F	7	-20.637643819148	116.77730411503
Site F	8	-20.637904867946	116.76942914937
Site F	9	-20.639772357825	116.76745504353
Site F	10	-20.6389892197	116.76625341389
Site F	11	-20.636559457805	116.76852792714
Site F	12	-20.634551360835	116.76887124989
Site F	13	-20.634551360835	116.76887124989

Area	Point	Latitude	Longitude
Elevated Infrastructure Corridor	1	-20.630575250648	116.77558750126
Elevated Infrastructure Corridor	2	-20.633527221175	116.7754802129
Elevated Infrastructure Corridor	3	-20.633627627329	116.77509397481
Elevated Infrastructure Corridor	4	-20.63055516902	116.77517980549
Elevated Infrastructure Corridor	5	-20.63055516902	116.77556604359
Elevated Infrastructure Corridor	6	-20.630575250648	116.77558750126

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Perdaman Urea Project is to be located within the BSIA on the Burrup Peninsula in northwest Western Australia. The BSIA is approximately 10km from Dampier and 20km north-west of Karratha on the north-west coastline of Western Australia (Figure 1, Attachment A)

The BSIA is a state designated area for industrial development managed by LandCorp.

Native Title was determined by the Federal Court of Australia not to exist over the Burrup Peninsula (refer to the Ngarluma-Yindjiabarndi Determination - Federal Court Number WAD6017/1996). However, prior to this determination, the State executed the Burrup Maitland Industrial Estates Agreement (BMIEA), which agreed the developable industrial sites and locations that would be subject to payments by eventual proponents developing those sites.

The BMIEA provided a variety of benefits to local Indigenous people through financial compensation, establishment of various employments, training, educational support, establishment of a Rock Art Study to monitor the industries emissions and the development of a Roebourne Enhancement Scheme. The Murujuga Aboriginal Corporation 2006 (MAC) is the approved body corporate for the BMIEA. It oversees the implementation and contractual obligations contained therein.

The proposed location (Sites C and F) falls within the industrial areas defined by the BMIEA. Site C and the intervening portion of land are both part of the area to which proponent payments under the BMIEA apply. Site F is not subject to these payments as it was treated as “existing industry” under the BMIEA (as it had previously been used as a laydown site).

The BSIA is the location of a number of established industrial facilities. Although not

implemented, development proposals occupying Sites C and F have also previously been subject to assessment and were approved pursuant to Part IV of the EP Act and the Environmental Protection Biodiversity Conservation Act 1999 (EPBC Act).

The area between Sites C and F is currently being examined by the Department of Jobs, Tourism, Science and Innovation (JTSI) and LandCorp to establish the technical feasibility of amalgamating these two discontiguous land parcels to a single amalgamated industrial location. Based on the Phase 1 results of this feasibility study, the preferred site layout option is to split the urea plant footprint into two parts which are aligned with Sites C and F. The two sites would be connected by a 30m wide easement to accommodate an elevated service corridor for road and infrastructure requirements. The Proponent will address environmental and heritage impacts as a result of use of Sites C and F and the connecting elevated infrastructure corridor.

The project involves piping natural gas from the nearby Woodside LNG facilities to the project site under a long term commercial off-take agreement. The approvals for the connection from the plant battery limits to the Dampier to Bunbury Natural Gas pipeline (DBNGP) will be the responsibility of the gas supplier (Woodside).

The granulated urea product will be transported by closed conveyor along the East West Service Corridor through to Dampier Port, where new facilities will include a stockpile and loading arm. Approvals for the conveyor, storage and loadout facilities will be the responsibility of the Proponent. Dampier Port Authority will be responsible for the shipping berths.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

Footprint 114ha (only 79.5ha disturbed)

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Site C and F of the BSIA

1.8 Primary Jurisdiction.

Western Australia

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes

1.10.1 Is there a local government area and council contact for the proposal?

Yes

1.10.1.0 Council contact officer details

1.10.1.1 Name of relevant council contact officer.

City of Karratha – Ryan Hall

1.10.1.2 E-mail

ryan.hall@karratha.wa.gov.au

1.10.1.3 Telephone Number

(08) 9186 8555

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 03/2020

End date 07/2023

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The Perdaman Urea Project has been granted a Project of State Significance status under the Lead Agency Framework by the WA Government.

The Burrup Strategic Industria Area (BSIA) is a state designated area for industrial development managed by LandCorp under the Burrup and Maitland Industrial Estates Agreement (BMIEA). The BMIEA enabled the State to compulsorily acquire Native Title rights and interests in the area of the Burrup Peninsula and allowed for the establishment of the industrial areas including BSIA.

The BMIEA provided a variety of benefits to local Indigenous people through financial compensation, establishment of various employment and training opportunities, educational support, establishment of a Rock Art Study to monitor the industries emissions and the development of a Roebourne Enhancement Scheme. The Murujuga Aboriginal Corporation 2006 (MAC) is the approved body corporate for the BMIEA. It oversees the implementation and contractual obligations contained therein.

The BSIA is the location of a number of established industrial facilities.

The Proponent will address environmental and heritage impacts associated with this layout.

Although not implemented, development proposals occupying Sites C and F have also previously been subject to assessment and were approved pursuant to Part IV of the WA EP Act.

The proposal was referred to the Environmental Protection Authority (EPA) for assessment under Part IV, Section 38 of the Environmental Protection Act (1986) (EP Act).

The level of assessment was set on 28 November 2018 as Public Environmental Review, with a 12 week public comment period. The WA EPA has indicated a preference to conduct a joint assessment under the EPBC Act pursuant to bilateral arrangements between the State and Commonwealth.

Mr John Guld is the WA EPA assessment Officer assigned to the Perdaman Urea Project (ph: 08 6364 6457). An Environmental Scoping Document (ESD), prepared in accordance with the EPA's 'Instructions on how to prepare an Environmental Scoping Document', will be submitted to the EPA.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

As part of the Impact Assessment, community consultation will be undertaken and the outcomes discussed within the Environmental Review Document (ERD). Consultation will be by a combination of targeted presentation/workshops with identified stakeholders as well as broader public consultation through open days and distributed media. A list of the identified stakeholders is provided below:

Traditional Custodians of the Burrup Peninsula through MAC

WA Government agencies, including: The Conservation Commission; Department of Water and Environmental Regulation; Department of Jobs, Tourism, Science and Innovation; Department of Biodiversity Conservation and Attractions; Department of Aboriginal Affairs; Department of Planning, Lands and Heritage; Department of Mines, Industry Regulation and Safety; LandCorp; Pilbara Ports Authority; Water Corporation; Horizon Power; Main Roads Western Australia; Pilbara Development Commission; Murujuga Rock Art Stakeholder Reference Group.

Local Government: City of Karratha;

Commonwealth Department of the Environment and Energy;

Community and Environmental non-governent organisations, including: Hon Robin Chapple MLC; Hon Kevin Michel MLA; Hon Melissa Price MP; Conservation Council of WA; University of Western Australia Centre for Rock Art Research; Western Australian Museum; Friends of Australian Rock Art (FARA); DBNGP (WA) Nominees Pty Ltd; Quadrant Energy Australia Ltd; Telstra Corporation Ltd.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

An Environmental Impact Assessment (EIA) process will be undertaken and the impacts and potential risk of the Project will be predicted and evaluated, and mitigation measures developed.

Investigations proposed to identify potential environmental issues include, but are not limited to:

Flora and Fauna studies, including field investigations;

Air quality assessment;

Noise assessment; and

Stakeholder/Community engagement.

The EIA will be undertaken in parallel with the design of the project to ensure relevant risks from the proposed action are eliminated, mitigated or managed to a level that is as low as reasonably practicable (ALARP). The results of the EIA will be presented in an Environmental Review Document (ERD) which will be available for a 12 week public review period. The ERD will consider various mitigation measures to avoid or reduce potential impacts of the project.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

Yes

2.1.1 Impact table

Properties	Impact
The Burrup Peninsula which includes the project site is not currently a world heritage property. However, processes have been initiated seeking to gain listing. Key points include: • The State Government will commence a UNESCO World Heritage nomination process for the Burrup Peninsula and surrounds, following formal support from traditional owners. • The UNESCO World Heritage process involves the State Government submitting a nomination to the Commonwealth Government, with extensive consultation and identification of the potential World Heritage values of the area. • The Commonwealth Government will then progress the nomination to UNESCO for consideration. • The State Government indicated at the time it announced the decision to commence the	As the World Heritage nomination area surrounds the project area to the north and south, there is potential for air emissions to pass from the project area over the nomination area. Air quality monitoring was undertaken by CSIRO Marine and Atmospheric Research in 2004–2005 and 2007–2008 to assess the likelihood that air pollution from the industrial area may damage the petroglyphs. The study comprised a total of 10 sites: two of these were located on the northern Burrup area; one at Mardie Station 81km southwest of Dampier; one site was located in the town of Karratha, and the other five sites were located on the lower Burrup Peninsula, near to the industrial areas. The final report by the CSIRO (CSIRO, 2006, Burrup Peninsula Air Pollution Study: Final Report) noted that concentrations of

Properties	Impact
nomination, that industry, the environment and indigenous culture already co-exist on the Burrup, and it's expectation that this will continue with the World Heritage listing. • In August 2002 the Western Australian Government established the independent Burrup Rock Art Monitoring Management Committee. This committee was replaced by the Burrup Rock Art Technical Working Group (BRATWG) in 2010. BRATWG oversaw the ongoing studies conducted to establish whether industrial emissions could affect the rock art. BRATWG's term ended 1 July 2016. • The Burrup rock art monitoring program was managed by the former Department of State Development until 1 July 2010; the former Department of Environment and Conservation until 1 July 2013; and then Department of Environment Regulation until 1 July 2017. • On 8 September 2017, the Department of Water and Environmental Regulation (DWER) released a draft Burrup Rock Art Strategy, providing a long-term framework to protect Aboriginal rock art on the Burrup Peninsula (Murujuga). • The Murujuga Rock Art Stakeholder Reference Group was established by the State Government in September 2018 to oversee finalisation and implementation of the Murujuga Rock Art Strategy. There is also a general conservation management plan for Murujuga, as referenced in the APM document identifying all the conservation attributes of the Conservation Area (refer to APM report in Attachment C).	nitrogen gas were low at all sites. In addition, sulfur dioxide concentrations were also very low. The final report concluded that the observed deposition fluxes of all nitrogen and sulfur species in the gas and aqueous phases at the sites are unlikely to cause any deleterious effects to rock or rock art on the Burrup Peninsula. In November 2016, the Senate referred a range of matters to the Environment and Communications References Committee for inquiry in relation to Protection of Aboriginal rock art of the Burrup Peninsula. The final report of the Committee's inquiry was released in March 2018 [ISBN 978-1-76010-664-5].

2.1.2 Do you consider this impact to be significant?

Yes

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

Yes

2.2.1 Impact table

Place	Impact
The Dampier Archipelago gained national heritage listing in 2007 under the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999. The National Heritage Listed (NHL) Area sits adjacent to Sites C and F on their northern and southern/south-eastern boundaries respectively. There is also an internal area of approximately 2,800m2 within site F that forms part of the NHL area. The site layout has been designed to exclude this NHL area from any disturbance.Table 2 of Section 1.2 provides location details of the excluded internal area that forms part of the National Heritage Listed (NHL) area. The NHL area is shown on Figure 2-2 of Section 2.3 and on Figure 2 of Attachment A. In early 2011, the Australian Government asked the Australian Heritage Council (AHC) to undertake an assessment of the Outstanding Universal Values of the Dampier Archipelago site and any threats to that site. The resulting report from the AHC is divided into two parts. • The first part describes the heritage environment of the Dampier Archipelago site and investigates the potential for elements of that environment to be of Outstanding Universal Value. • The second part of the report documents the threats to the heritage values of the Dampier Archipelago and undertakes a risk analysis of those threats. Below are extracts from the executive summary of the AHC's report: Part One Findings The Dampier Archipelago is home to one of the richest, most diverse and exciting collections of Aboriginal rock engravings in Australia. The heritage features also include quarries, middens, fish traps, rock shelters, ceremonial places, artefact scatters, grinding patches and stone arrangements. However, engravings are by far the most numerous type of heritage feature, with images potentially numbering in the millions. Large concentrations are found on inland plateaus, on steep valley inclines bordering waterways and on rock platforms next to the ocean. Created by pecking, pounding, rubbing and scratching, the engravings provide a fascinating insight into the past. The Ngarda-Ngarli people have a deep	As noted, Part Two of the AHC report assessed the significance of potential threats, a risk level has been given to each of the identified threats using a risk assessment approach. This risk assessment took into account the potential severity of the threat, the likelihood of it occurring and any risk controls or known factors which mitigate either the level of impact or the likelihood of the threat. The risk level for each threat is summarised on the Dampier Archipelago Risk Assessment Matrix (refer to Attachment B of the AHC report). No part of the proposed site layout is directly impacted by the NHL Area. However, the required expansion of the East-West Service Corridor will traverse the NHL Area for approximately 250m between the transfer station on the eastern side of Burrup road and the existing access track leading into Site C. Any works likely to impact on the heritage value of an NHL Area must be referred to the Commonwealth Department of the Environment and Energy. The AHC report has found that four categories of potential threats to the heritage values of the Dampier Archipelago site exist, these being: • industrial development; • secondary impacts from industrial development; • recreation, tourism and vandalism; and • knowledge, management and engagement of the Ngarda-Ngarli people. Of these four categories, industrial development and knowledge, management and engagement of the Ngarda-Ngarli people present the highest risk threat to the heritage values. The AHC report concludes that although the area surrounding the site has been heavily impacted by industrial development, the site itself maintains high integrity and is in a stable condition. Refer to Part two findings of AHC report for further information.

Place	Impact
cultural and spiritual connection to the engravings. Some depict ancestral beings or spirit figures, while others relate to sacred ceremonies and songs, but many are representations of the everyday life or events of the traditional ancestors. There is adequate existing research and data to justify that the heritage values of the Dampier Archipelago meet the threshold of Outstanding Universal Value against World Heritage criterion (i) i.e. The Dampier Archipelago represents a masterpiece of human creative genius. The heritage values of the Dampier Archipelago may also meet the threshold of Outstanding Universal Value against criterion (iii) i.e. The Dampier Archipelago bears a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living. However further work is required with Ngarda-Ngarli people to document the relationship between their beliefs and practices, and the images on the Dampier Archipelago.	

2.2.2 Do you consider this impact to be significant?

Yes

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Red Knot (Calidris canutus) Previously recorded in the Dampier region (DBCA, 2018), this species is known to follow tide edges when foraging, and can be seen with many other shore birds, such as the Red-necked Stint	Given the low numbers (one individual) of the associated Red-necked Stint recorded during the survey, it is highly unlikely that the Project is going to significantly impact populations of Red Knot. The loss of habitat as a result of

Species	Impact
which was recorded within the Project area during the APM Pre-Wet Season Survey within the Samphire shrubland/salt plains habitat type. This species was not recorded during the APM Pre-Wet Season Survey in November 2018 as it vacates the Pilbara and migrates across northern Australia prior to November (DoEE, 2018). Therefore, the nature and extent of impacts of the proposed Perdaman Urea Project on the Red Knot can only be predicted based on desktop information. In Western Australia there are scattered records of Red Knot in the south, and it is occasionally seen around Peron Peninsula and Carnarvon. It is widespread on the coast from Ningaloo and Barrow Island to the south-west Kimberley Division. Very large numbers are regularly recorded in north-west Australia, with 80 Mile Beach and Roebuck Bay being particular strongholds. There is a high likelihood that the Red Knot will be recorded utilising the site at a suitable time. The presence of vast expanses of estuarine/tidal flat in Nickol Bay, augmented by artificial habitat in the Dampier Salt works, attracts large numbers of migratory birds each year. Given the proximity to Hearson's Cove, and the presence of open flats within the Project Area, individuals radiating out from optimal feeding areas may use the area for both foraging and roosting.	construction of the urea processing facility is inconsequential given the expanses of other more suitable habitat nearby. Moreover, the loss of available habitat for this species has been dramatically reduced due to a redesign of the Project layout to reduce fragmentation. The outcomes of the biological survey report identifying habitat fragmentation as the greatest potential impact of the Project was the catalyst for the redesign of the layout. The original processing facility layout was forecast to impact 21.3 ha of the tidal flats and samphire habitat. This was approximately 84% of the available habitat type in the Project area and equivalent to the amount of this same habitat protected in the Murujuga National Park. However, the new layout is now forecast to impact only 2.32 ha of the tidal flats and samphire habitat.
Pilbara Olive Python (Liasis olivaceus barroni) The Olive Python is endemic to Australia and occurs as two distinct subspecies, Liasis olivaceus olivaceus which occurs from the Kimberley region to the Great Dividing Range in Queensland, and Liasis olivaceus barroni (the Pilbara Olive Python) which is restricted only to the Pilbara region, predominantly within the Hamersely Range and the Dampier Archipelago. Other populations of the L. o. barroni subspecies have also been recorded in Pannawonica, Tom Price, Millstream and also the Burrup Peninsula (DEC, 2018; Pearson, 2006). The Pilbara Olive Python has been recorded in areas with gorges, escarpments and particularly, in close proximity to water holes (DEC, 2018; Doughty et al. 2011; Astron Environmental, 2003). During the cooler months	Introduced predators represent the main threats to the Pilbara Olive Python. Foxes and cats will prey upon juvenile pythons and compete with adults for prey (DEC, 2018; Carwardine et al. 2014). Within isolated areas, such as the Burrup Peninsula, development of mining and industry infrastructure is another threat, due to loss of habitat and habitat fragmentation. The Project will contribute to the cumulative impacts and subsequent fragmentation of habitats either side of the King Bay / Hearson's Cove valley, separating the populations occupying habitat to the north and the south of the Project area. However, the built environment can often provide a refuge for this species and may even facilitate, to some extent, movement between sub-populations, particularly now as the Project layout has been completely redesigned to

Species	Impact
they will typically hide in caves, crevices and fissures away from water sources. However, in the warmer months they become active and tend to stay near rocky outcrops and water (DEC, 2018). Their preference for water holes is a function of higher prey abundance. On the Burrup Peninsula, Olive Pythons have a preference for the granophyre rock piles and occasionally are found in neighbouring spinifex grasslands. This species has been historically recorded on Dolphin Island, in King Bay, Hearson's Cove and in many locations around the Karratha Gas Plant and Pluto LNG facility, particularly where artificial water sources occur, such as open water pits or turkey's nests. It is often recorded around the built environment and highly disturbed areas.	reduce fragmentation by separating the processing facility into two smaller components rather than one large facility that extends across the King Bay / Hearson Cove valley and tidal flat. The new layout is now forecast to impact 4.29 ha of rock/scree habitat. Rock/scree habitat represents only 4% of the total Project area. There is 2811 ha of this same habitat vested for conservation in the Murujuga National Park (57% of the total area of the national park). Therefore the disturbance to rock/scree habitat within the Project area is 1:655 of what is available to fauna in the Conservation Zone. Increased development will also alter the availability of prey and increase the potential for road deaths from vehicles associated with construction and/or operation. Strict fauna management measures will be implemented to manage this species in and around the Project area during construction and operations to reduce the extent of impact and maintain the population that is likely utilising this area.
Northern Quoll (Dasyurus hallucatus) The Northern Quoll is listed as Endangered under Commonwealth and State legislation. In addition to its conservation significance, the species is considered a keystone species in the Pilbara, and one of many critical-weight range mammals under threat from anthropological influences. Northern Quolls are nocturnal, partially arboreal and omnivorous, primarily feeding on invertebrates, small mammals and reptiles (Schmitt et al. 1989). Once thought to have occupied almost the entire northern third of Australia, the distribution of Northern Quolls is suspected to have declined by over 75% (Braithwaite & Griffiths 1994). The Northern Quoll is present in a wide range of habitats including: rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert, and has been found to be most abundant in rocky and broken country within open Eucalypt forest. The Northern Quoll is arboreal and will usually den in hollow tree trunks (Hill & Ward, 2010) or in small caves and crevices in rocky outcrops (DoE, 2014). There are currently 6539	Management of the Burrup Peninsula population of Northern Quoll is critical to maintaining the security of the Pilbara mainland population. As a consequence researchers at the DBCA are strongly advocating the need for more research on the Burrup Peninsula population. The effects of predator control (wild dogs Canis lupus familiaris, feral cats Felis catus, red foxes Vulpes vulpes) has been identified as an absolute priority in the first instance, however, progress towards this goal is difficult on the Burrup Peninsula due to the number of stakeholders involved in decision-making. In the absence of predator control, maintaining available denning and foraging habitat is the next most important thing for sustaining this species. Though the species has been excluded from many areas as a consequence of industrial development, as much as 4913 ha of usable habitat has been vested as National Park (Murujuga National Park) making available approximately 44% of the Burrup Peninsula land mass for this species. Finally, the more fundamental aspects of the operating Project may have ongoing

Species	Impact
records of northern quoll in the Pilbara region, the vast majority of which (nearly 80%) have been recorded in the past few years. Prior to 2009 there were only 300 records in the Pilbara. This was a reflection of the lack of survey work in the area. Biological surveys associated with mining environmental impact studies have contributed massively to the collection records, as have regional surveys by the DBCA (3027 records added between 2010 and 2017). This species has been previously recorded on Dolphin Island in the Dampier region and on the Burrup Peninsula in various locations, including a sighting at the port area of King Bay. Northern Quoll have been recorded in close proximity to the Project Area. One record in 1990 is less than 1 km from the proposed site, and another at a similar time is approximately 2.2km away. The King Bay record is the most recent record (2015), with that location being approximately 2.7 km from the Project area. There are few contemporary records of northern quoll on the Burrup Peninsula, with most of the records registered prior to 2000 when much development took place in association with the fertiliser plants and gas processing hubs. Although population density has most likely not changed significantly in recent years, it is reasonable to assume that the overall population has decreased commensurate with the amount of habitat that has been disturbed, as is commonly reported in the literature. As an outcome of the survey effort invested by DBCA, there is a well known and robust population on nearby Dolphin Island. It is reasonable to expect that the population on the Burrup Peninsula was similar to Dolphin Island, prior to land clearing, development and the introduction of feral predators. In terms of its species richness and ecology, Dolphin Island is a reflection of the Burrup Peninsula in an undisturbed state, as evident from the number of other allpatric species on Dolphin Island and the Burrup Peninsula including: Zyzomys (rock rat), Rothschild's Rock-wallaby, olive pythons and varanids.	impacts on this species. These aspects and impacts align more with the general impacts that have caused declines in this species across its distribution. For instance, the Burrup Urea Project may increase the frequency of local fires, and will certainly increase the potential for vehicle strikes (Cramer et al. 2016; Hill & Ward 2010). The construction of the proposed urea processing facility has the potential to increase the degree of separation of sub-populations of northern quoll, restricting movement of this species from the southern extent of the conservation zone to the northern extent. Linear clearing forms barriers within the landscape acting to reduce animal movements (Dennis et al. 2013) and the width of the barrier (independent of the surface structure and the intensity of traffic, noise light and fumes) influences the intensity of fragmentation and the likelihood of population exchange (Rico et al. 2007, McGregor 2004). Linear clearing also results in reduced habitat quality, landscape connectivity and can encourage the spread of invasive species that alter habitat value, or increase predation pressure by restricting movements (Taylor and Goldingay, 2010). Telemetry studies have also demonstrated on a number of occasions that the linear distance travelled by northern quoll over short periods of time far exceeds the width of the King Bay / Hearson Cove valley, reaffirming that physical barriers constructed in this valley will fragment populations. The maximum distance moved by northern quoll of both sexes on Koolan Island is very similar at around 6-7 km. Schmitt et al. (1989) indicated a maximum movement of 2.5 km in the north Kimberley and Begg (1981) of 1.2 km at Kakadu in the Northern Territory. King (1989) recorded a maximum movement, using telemetry, of 3.5 km between locations in the Fortescue River area of the Pilbara (Spencer et. al. unpublished).The cumulative construction of the fertiliser, nitrate and urea plants do present a significant barrier for this species, however, careful consideration of the layout of the proposed urea project can greatly reduce the extent of the impact. Construction will reduce habitat availability for local northern quoll that

Species	Impact
	occupy the immediate area. Areas of activity, as calculated from the convex polygon method, vary between populations reported in the literature. King (1989) reported five males and three females moving within average areas of 382 ha and 219 ha, respectively, in the Pilbara, while Schmitt et al. (1989) recorded males and females as occupying 1.8 ha and 2.3 ha, respectively, in the densest of trapping grids in the north Kimberley (Spencer et. al. 2016). Areas of occupation are highly variable and have not been investigated for Burrup Peninsula quoll. Nevertheless and within the reported range, the Project has the potential to impact foraging habitat for a number of individuals. In all cases this estimate of movement clearly shows the potential of the site to fragment habitat for Northern Quoll preventing genetic exchange. Fragmented populations with reduced habitat availability suffer more from the random effects of demographic and genetic changes combined with environmental variations which can drive local extinctions (Laurance 2009). Izawa et al. (2009) references eight endangered small cat species where populations have been reduced by clearing and fragmentation. However, consideration to the potential to fragment populations of terrestrial fauna has resulted in the redesign of the Project layout, significantly reducing broad extents of habitat loss and the creation of barriers preventing exchange of individuals between sub-populations. Landscape connectivity can be achieved or maintained by making available habitat corridors (Dennis et al. 2013) and the new Project layout achieves this. Connective corridors, even when utilised by a small proportion of the local population, can contribute to the maintenance of genetic diversity (Laurence 2009) and the stability of anthropogenically isolated populations. The new layout is now forecast to impact 4.29 ha of rock/scree habitat which has the potential to be used as denning or refuge by the Northern Quoll. Rock/scree habitat represents only 4% of the total Project area. There is 2811 ha of this same habitat vested for conservation in the

Species	Impact
	Murujuga National Park (57% of the total area of the national park). Therefore the disturbance to rock/scree habitat within the Project area is 1:655 of what is available to fauna in the Conservation Zone. Habitat value, in the context of natural vs. anthropogenic habitats, is an area that has received very little attention across all fauna groups. Many areas in the Pilbara are highly disturbed, resulting in a mosaic of natural and non-natural habitats across the island. Intuitively, disturbed or built environments are thought to preclude occupation, however, this is not always the case and appears less so for island or peninsula populations. This may be a function of the limited capacity for radiation on an island, forcing individuals to adapt to suboptimal habitats or investigate potential new habitat. On Koolan Island, Northern Quoll are commonly observed occupying disturbed habitats, particularly around the camps and work shop areas. Other top order predators, similar in many respects to the Northern Quoll, have adapted to changes in their natural environment. Though very rare and highly threatened, the Tsushima leopard cat has shown some degree of adaptation to increased agriculture across its very limited range by foraging within the agricultural areas (Izawa et. al. 1009). However, a conspecific on a nearby island that is equally threatened has not made such a transition and it’s numbers are continually under threat from development. On Koolan Island, quolls retain reasonable genetic diversity, and show no evidence of recent or long-term population decline despite the disturbance associated with mining. Therefore, there is strong evidence that mining across the middle of the island, though creating a physical non-natural habitat barrier, is not segregating populations or interrupting gene flow. This is reinforced with trapping records showing that some individuals have moved from one end of the island to the other. The development of the Urea Project may provide an opportunity to study this species and its capacity for sympatry with humans. Many native or non-pest species can benefit from anthropogenic influences

Species	Impact
	(Sorace, 2002) particularly if the anthropogenic influence increases pest species that may be prey (Sorace, 2002; Shine and Fitzgerald 1996). Physical structures created by humans can also increase and improve habitat heterogeneity. Shine and Fitzgerald (1996) were able to show that large pythons were prepared to use artificial shelters if they offered the same characteristics (e.g. thermal stability) as natural shelters. The benefits of artificial habitat is strongly correlated with behavioural ecology, as was shown by Germaine and Wakeling (2001) who demonstrated that tree lizards (a species able to utilise walls, crevices and non-native vegetation) were prolific in urban areas where ground dwelling species were not due to the absence of soil and ground vegetation in built environments. It may be that Northern Quoll, rather than being displaced by disturbance, may occur in higher densities around developed areas that provide refuge in the form of buildings and other infrastructure. If this is so, then artificial habitats are contributing to the overall security of the Burrup population and may even be contributing to the carrying capacity of the island for Northern Quoll.
Ghost Bat (Macraderma gigas) The Ghost Bat is the largest microchiropteran bat in Australia and the second largest in the world (Woinarski et al. 2014; Richards et al. 2008). This species is Australia's only truly carnivorous bat, preying on frogs, birds, mice, small lizards, insects and other bats (Michael and Lindenmayer, 2018; Woinarski et al. 2014) and the sole residing member of the family Megadermatidae (False Vampires) in Australia. It is endemic to the continent (Woinarski et al. 2014; Richards et al. 2008). Originally widespread across mainland Australia, the species has experienced a range contraction, and now only persists in the Pilbara and Kimberley regions and patchily along coastal Queensland and the northern extent of the Northern Territory (Michael and Lindenmayer, 2018; BHP, 2017; Woinarski et al. 2008). This species has been recorded on the Burrup Peninsula about 4 km northeast of the Project area (DBCA, 2018). While it is daytime, they roost in deep, complex natural	The original processing facility layout was forecast to impact 21.3 ha of the tidal flats and samphire habitat. This was approximately 84% of the available habitat type in the Project area and equivalent to the amount of this same habitat protected in the Murujuga National Park. However, the new layout is now forecast to impact only 2.32 ha of the tidal flats and samphire habitat. As there are likely no roosts within the project area the reduction of impact to the tidal flats and samphire habitat resulting from the new design represents a less severe impact of foraging habitat. As the Project area is situated in a valley with potentially perching trees throughout, there is a high likelihood the area has some value for foraging. However, construction of the processing plant should not preclude foraging and may actually increase foraging opportunities, with 24/7 lighting certain to draw a high number of invertebrates to the site. Ghost Bats typically fly low to the ground, around fence height, and are prone to collisions

Species	Impact
cave systems and rock fissures with stable temperatures of 23°–28° and a relative humidity of 50-100% (Woinarski et al. 2014). Approximately 1 hour after sunset the bats will emerge from their roots and commence hunting for a period of 2 hours (BHP, 2017). The suitability of roost sites is the most influential and limiting factor for the distribution of these bats (BHP, 2017). Ghost bats have exploited abandoned mine shafts and underground pits and found these types of roost sites to be favourable, however this species is particularly sensitive to disturbance and are unlikely to return to a site once it has been disturbed in any way (Michael and Lindenmayer, 2018; BHP, 2017; Woinarski et al. 2014). No roost sites were observed in the Project area. Ghost Bats have an average foraging area of 61 ha, with individuals typically ranging as far out as 1.9 kilometres from their day roots (Woinarski et al. 2014). Given the landscape and topography it is unlikely that suitable roosts occur within 1.9 km of the Project area. Upon the commencement of mating season in July, Ghost Bats will congregate around relatively few roost sites to birth young. These sites are referred to as maternity roosts. The gestation period takes three months from which an offspring are born during September to November. Juveniles hunt with their mothers until they become completely independent. Colony sizes range from a few individuals to greater than 100, although large colonies are now rare. In the Pilbara, colony sizes in natural roosts are generally much smaller, often consisting of just a few animals. It is during the time of breeding and rearing young, that these bats are most sensitive to disturbance. There are no known maternity roosts within or near the Project area. The Ghost Bat uses a surface foraging strategy in which it will perch on vegetation with advantageous viewpoints to either ambush passing prey on the ground or in the air or it will glean prey from the ground whilst in flight (Woinarski et al. 2014). Bats change viewpoints frequently during foraging activity and may move up to 360 metres between viewpoints (Woinarski et al. 2014).	with wire fences. Given the low fecundity, even infrequent deaths due on fences can have a moderate impact on the populations (Woinarski et al. 2014). Planning prior to construction will require the consideration of wire fencing for security vs the potential for impact on local individuals.

2.4.2 Do you consider this impact to be significant?

No

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Australasian Pipit (Anthus novaeseelandiae) This species was recorded during the APM (2018) November survey. This species can be considered locally nomadic and common, and breeds between August and December.	Given its widespread distribution, and broad availability of suitable and undisturbed habitat in the greater Pilbara, the Project is not expected to impact populations of this species.
Red-necked Stint (Calidris ruficollis) This species was recorded during the APM (2018) survey. This species is not likely to use the Project Area exclusively, especially given the nearest major favoured feeding area is Roebuck Bay, 600 km northeast of the Burrup Peninsula.	The Project is not expected to impact populations of this species particularly as this is not a recognised feeding ground.
Red-capped Plover (Charadrius ruficapillus) This species was recorded during the APM (2018) survey. It is one of the most common shorebirds, and it breeds within northern Australia between September and December, where they create nests on beach or beside claypans or salt lakes.	This species is not dependent on specific habitat types and is not expected to be impacted locally or regionally by the Project.
Black-faced Cuckoo-shrike (Coracina novaehollandiae) This species was recorded during the APM (2018) survey. Given the lack of many overstorey trees in the Project Area, aside from scattered Eucalypts, this species is not likely to rely on the area for breeding, though it is possible. The wide diversity of its habitats mean that the species is not limited to select few habitats, especially habitat present in the Project Area, which is widespread elsewhere.	The Project is not expected to impact populations of this species.
Brahminy Kite (Haliastur indus) This species was recorded during the APM (2018) survey. This species is known to scavenge for carrion along the shoreline and shallows and is also an opportunist hunting for fish, and reptiles and	As this species would not nest in the Project area and is not specifically dependent on the area for feeding the Project will not impact this species.

Species	Impact
insects on land. The species likes to build its nests where mangroves meet the sea. The Project Area is not expected to provide ideal breeding habitat, though the species would use the area to forage, though extensive opportunities for feeding are present outside the Project Area.	
Whistling Kite (Haliastur sphenurus) Is primarily an opportunist, locating carrion and roadkill. This species breeds in tall trees within a woodland, near or standing in water, creek or dam. The Project Area is likely to provide some suitable breeding and foraging habitat, given the presence of some tall Eucalypt woodlands in gullies, and the addition of roads and paths within and nearby the site, that the species could feed within.	As this species is not specifically dependent on the area for feeding the Project will not impact this species.
Little Egret (Egretta garzetta) This species was recorded during the APM (2018) survey. It is a common species in northern Australia.	This species is common and well represented in suitable habitat. The Project will not impact populations of this species.
Nankeen Kestrel (Falco cenchroides) This species was recorded during the APM (2018) survey. The species breeds in the north between August and January. This species could use the area given the combination of large open areas for foraging, and tall Eucalyptus trees for nesting.	This is not an uncommon species and foraging opportunities, similar to that which occur in the Project area, occur elsewhere across the Burrup Peninsula.
Rainbow Bee-eater (Merops ornatus) This species was recorded during the APM (2018) survey. The species breeds before and after the Wet season. It digs long and narrow tunnels in soft, loamy soil of flat ground or banks that extends to a wide chamber where it nests. The species is likely to use the area for foraging and breeding within the mangrove, clay pans/salt lakes and creeklines. However, beach and dune systems adjacent and outside the Project Area could also provide suitable foraging and breeding habitat and the mangrove habitat is outside the development area.	It is highly likely that this species is breeding in the Project area. Particularly in areas where banks of soil are elevated and protected from flooding, but also have a vertical face, such as along the edge of the tidal area. Clearing of suitable nesting habitat should only take place outside of the breeding season, or (as a minimum) after a qualified zoologist has inspected the site to determine if any active nests are present in the site.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

As part of the APM Pre-wet season survey (refer to Attachment C), forty detailed survey plots were established within the Project Area. The field survey recorded 86 taxa, including species, subspecies and variants, from 31 families. Three hundred and ninety taxa have been recorded for the Burrup Peninsula (Astron Environmental, 2005). Astron Environmental (2005) recorded 143 taxa from 44 families in the vicinity of the Proposed urea Project Area. As the Astron Environmental (2005) survey area was much larger and contained more vegetation associations than the current Project Area, it is not expected that the same level of floristic richness will be obtained from the Project Area. A wet season survey will still be required, however, to obtain the full species complement from the Project Area. Full details of the outcome of the field survey is included in the Pre-wet season Biological Survey (APM, 2018) in Attachment C.

In total, across all database searches and published reports, 190 fauna species were identified that may occur within the Project Area and surrounds. This included 108 birds, 49 reptiles, 2 amphibians and 31 mammals. The multitude of developments situated on the Burrup Peninsula have resulted in a range of biological surveys extending back to the 1970s. However, many of these surveys are not freely available, but have been reviewed and included in previous desktop assessments of nearby projects. For example, Worley Astron (2006) synthesises the results of seven biological surveys. As a result, the current survey relies on these previous reviews, and all previous biological surveys that have been used in this survey are outlined in Table 2-2 of APM Pre-wet season Biological Survey (APM, 2018) in Attachment C.

3.2 Describe the hydrology relevant to the project area (including water flows).

The study area is located within the Port Hedland Coast basin and the Karratha Coast Catchment.

There is no permanent surface water bodies occurring at the site. The closest natural surface water features are King Bay, approximately 700m west of the site at its closest point and Hearson Cove (Indian Ocean) 2km east of the site.

During periods of heavy rains and extreme spring tides the tidal mud flats are subject to flooding.

Rainfall onto the site is generally expected to directly infiltrate during periods of low groundwater levels migrating vertically towards groundwater, evaporate at the site surface, and/or be taken up by vegetation (root uptake). During periods of heavy prolonged rainfall and high groundwater levels (i.e. wet season) surface water is expected to migrate via overland flow through existing

drainage channels in a westerly direction toward King Bay.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The proposed Urea plant is located within the Pilbara Interim Biogeographical Region (Department of the Environment and Energy, 2012) and the Roebourne sub-region (PIL04). The Pilbara bioregion is characterised by vast coastal plains and inland mountain ranges with cliffs and deep gorges. Vegetation is predominantly mulga low woodlands or snappy gum over bunch and hummock grasses.

A review of the Acid Sulfate Soils (ASS) risk mapping for the Pilbara Coastline indicates the Site occurs in an area of moderate to high probability of encountering ASS within 3 m of the natural soil surface. A high to moderate risk area occurs between Sites C and F within the mud flats.

Vegetation has been mapped to the level of Association across the Project Area by M. E. Trudgen & Associates (2002), and across much of the northern and all of the central sections of the Project Area by Astron Environmental (2005). As M. E. Trudgen & Associates (2002) mapped the region at the association scale. APM have prioritised retention of descriptions published in the 2002 report where they are still relevant. This is to facilitate impact assessment as many completed projects on the Burrup use the 2002 report associations which allows for calculation of cumulative impact. Astron Environmental (2005) provides a more detailed description and mapping of rocky outcrop and tidal inlet vegetation associations and has mapped the area of tidal inlet extensively beyond the current project. APM have prioritised retention of the 2005 report descriptions where relevant, to allow for calculations of local cumulative impact.

In a few situations neither the M. E. Trudgen & Associates (2002) or Astron Environmental (2005) mapping adequately described the vegetation present. Astron Environmental (2005) also notes discrepancies between the vegetation present in 2005 and that recorded by M. E. Trudgen & Associates (2002). It is considered that the

vegetation of the Burrup Peninsula is highly dynamic as a consequence of the stochastic nature of the magnitude and frequency of rainfall events. The dominance of short-lived perennial species in the vegetation composition means there can be significant fluctuations in the structure and floristic composition of specific locations over time.

35 vegetation associations were mapped by APM within the Project Area. These associations are shown in Figure 4-3 of APM report (Attachment C).

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

Table 4-5 of AMP report (Attachment C) details the vegetation associations that were recorded in the Project area that are poorly represented outside the Project area. Where vegetation associations are of local conservation value and are poorly represented on the Burrup Peninsula the potential impacts from the Perdaman Burrup Urea Project are compounded.

The area mapped by APM as AbHlCwTe contains Dolichandrone occidentalis (formerly heterophylla). Astron Environmental (2005) notes that this locality is the only known occurrence of Dolichandrone occidentalis on the Burrup Peninsula. The densest population areas lie to the north west of the APM mapped area and are not within the Project Area. The density of Dolichandrone occidentalis within the APM mapped area is scattered shrubs, whereas in the areas outside of the Project Area the species is a canopy dominant. The species also has a large distribution across the tropical regions to the east and north (Atlas of Living Australia, 2018). The Burrup Peninsula is close to the westernmost distribution of this species. The most western occurrence of the species is in the Barrow Island Class A Reserve (Atlas of Living Australia, 2018).

3.5 Describe the status of native vegetation relevant to the project area.

Vegetation ranges from Excellent condition to Completely Degraded. Vegetation condition is displayed in Figure 4-5 of APM report (2018) in Attachment C. Areas classified as completely degraded contain roads and infrastructure and are maintained in a vegetation free state. One narrow area in the south western part of the Project Area has been classified as Degraded condition. This is a rehabilitated road that has not returned to a good cover or diversity of vegetation.

44% or 4913 ha of the Burrup Peninsula has been vested as conservation reserve. These areas contain representative stands of the majority of vegetation on the Burrup Peninsula that has been impacted by development elsewhere.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The Project site extends up to elevations of approximately 40 mAHD on the northern part of Site C and drops to approximately 5 mAHD in the southern part of Site C.

3.7 Describe the current condition of the environment relevant to the project area.

The Burrup Peninsula is a narrow strip of land extending approximately 22 kilometres from the mainland and is part of the Dampier Archipelago, a group of 42 islands and islets. Large outcrops and ranges of fractured red/brown rock and spinifex?covered scree slopes dominate the landscape of the Burrup Peninsula and small patches of these rock outcrops occur within the Project area. The majority of the land is elevated from the typically low and flat coastal plains of the West Pilbara, however the Project area represents a unique landform feature of the Burrup Peninsula: tidal flats and samphire adjacent mangrove communities. Based on the outcomes of the biological survey the entire Project processing facility design and layout has been redesigned to greatly reduce the potential for impact on this unique landform feature.

Across the Burrup Peninsula there are numerous gorges, creeks and drainage lines cutting across the landscape, which provides heterogeneity in the topography and the vegetation communities it supports. However, there were no deeply dissected drainage lines or gorges in the Project area.

The proximity of the site to existing development and a major road has degraded the site to some extent and reduced the flora, vegetation and fauna habitat values. However, that does not take away from the fact that this rocky valley descending to tidal flats is a poorly represented feature in the local landscape. Even with 44% of the Burrup Peninsula vested as a conservation this tidal landscape is not secure due to lack of representation elsewhere.

The number of weed species and potential of the site to support feral fauna would be no different to other sites around the industrial estate and the nearby conservation areas. The Burrup Peninsula is a small and relatively uniform landscape with a high degree of connectivity between sites enabling the spread of weeds and ferals that is difficult to manage.

Management is also inhibited by the level of activity and the high number of stakeholders in the area.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

The presence of Heritage sites was investigated using the Western Australia's Heritage Council database.

The search identified one site, Dampier Archipelago (including Burrup Peninsula) (Heritage Place No 25086) which encompasses an extensive area of the Dampier Archipelago and Burrup Peninsula. This site is listed as National Heritage Place and is situated directly outside of the plant site boundaries. A 2,700m2 rectangular area of the Dampier Archipelago Heritage Site is located within the plant site area (Site F), just North of Hearson Cove Road (Figure 2, Attachment A).

The Dampier Archipelago Rock Art Precinct (Heritage Place No 16867) is also listed on the National Heritage List but does not include the Burrup SIA.

The Burrup Peninsula & Hearsons Cove Place (No 08663), is registered on the National Estate since 21 October 1980 but is not listed on the National Heritage List.

3.9 Describe any Indigenous heritage values relevant to the project area.

An online search of the Department of Indigenous Affairs (DIA) Aboriginal Heritage Inquiry System (AHIS) was undertaken. The search identified several Heritage Sites within the plant site. The AHIS reports are provided in Attachment D.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The Project site is within the BSIA which is a state designated area for industrial development managed by LandCorp under the Burrup and Maitland Industrial Estates Agreement (BMIEA) which extinguished native title over the BSIA through freehold grant of title to the native title parties being the Wong-Goo-Tt-Oo, Ngarluma Yindjibarndi and Yaburara Mardudhunera

peoples. LandCorp on behalf of the WA Government has a 99 year lease of this freehold within BSIA and will provide project access through a sublease arrangement to Perdaman.

3.11 Describe any existing or any proposed uses relevant to the project area.

The Project location (BSIA Sites C and F) is currently undeveloped with the exception of the Hearson Cove Road which currently runs along the northern boundary of Site F. Site F has previously been used for construction laydown and is therefore disturbed. An existing service corridor runs just below the southern edge of Site C, which currently accommodates the water supply and wastewater disposal pipelines from the nearby Yarra industrial facilities. Site C and F as well as the intervening land area is zoned ‘Strategic Industry’ under the City of Karratha Town Planning Scheme No 8.

The existing public access road to Hearson’s Cove would be diverted to run along the southern boundary of Site F.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The following measures will be put in place to avoid and/or minimise impacts of construction and operation of the project and associated infrastructure:

PCF will prepare Management Plans (MPs) for the construction and the operational phase of the project, including the following;

Environmental Management Plan comprising: Flora Management Plan; Weed Management Plan; Fauna Management Plan; Wastewater Management Plan; Air Quality Management Plan; Dust Management Plan; Drainage Management Plan; Acid Sulphate Soil Management Plan; Noise Management Plan; Fire Management Plan; and Rehabilitation Management Plan.

Aboriginal Heritage Management Plan.

Hazardous Materials Management Plan.

Emergency Response Management Plan.

Draft Project Closure Plan.

The EMP will be submitted to the Western Australian EPA for approval. The Flora and Fauna Management Plans will specifically include management of potential impacts associated with flora and fauna protected at a national level.

PCF will monitor liquid waste to ensure compliance with discharge license conditions.

PCF will develop and implement management measures relating to rock art sites.

Measures to Avoid or Reduce Impacts on Flora, Vegetation and Fauna protected under the EPBC Act 1999 (cth)

Flora and Vegetation

There are no proposed impacts to flora and vegetation Matters of National Environmental

Significance.

Fauna

Red Knot

Given the low numbers (one individual) of the associated Red-necked Stint recorded during the survey, it is highly unlikely that the Project is going to significantly impact populations of Red Knot as it too would be expected to occur in low numbers. The loss of habitat as a result of construction of the urea processing facility is inconsequential given the expanses of other more suitable habitat nearby. Moreover, the restructuring of the layout of the processing plant to avoid habitat fragmentation for terrestrial fauna, particularly non-marine gastropod snails and other potential short range endemic macro-invertebrate fauna associated with tidal flats, has resulted in a significantly reduced impact on this habitat type.

No management measures are proposed to mitigate impact on the Red Knot.

Pilbara Olive Python Liasis olivaceus barroni

Introduced predators represent the main threats to the Pilbara Olive Python. Foxes and cats will prey upon juvenile pythons and compete with adults for prey (DEC, 2018; Carwardine et al. 2014). Within isolated areas, such as the Burrup Peninsula, development of industry and infrastructure is a major threat, due to loss of habitat and habitat fragmentation. Increased development will, ultimately, alter the availability of prey and increase the potential for road deaths from vehicles associated with construction and/or operation.

Minimise

The entire project layout has been redesigned to minimse habitat fragmentation. No longer will the tidal flat be filled and raised to a level to support construction. Instead the processing plant will be designed as two smaller separate components joined across the tidal flats by an elevated infrastructure corridor, thus enabling access between the two components.

Limit clearing to that which is absolutely necessary.

Minimise clearing of rocky/boulder habitat that may contain micro-habitat suitable for refuge for this species.

Manage vehicle speeds on site and entry/exit at site to reduce the potential for vehicle strikes.

Initiate a feral fauna trapping and euthanasiation program to reduce the number of feral fauna around the site.

Introduce and implement waste management procedures which result in the reduction of food sources around the processing facility to ensure that feral predators are not attracted to the facility.

If practical do not disturb rock piles between the months of early November to late April as this is a time of inactivity for the Pilbara Olive Python and a period where individuals are slow to

move and unable to avoid impact from land clearing.

Rehabilitate

Following construction, ensure that any disturbed habitats not required for operational purposes are retuned to their natural state to reduce the overall impact of habitat loss; and

Attempt to reinstate valuable microhaabitat elements to the landscape to encourage use of the periphery of the site by these conservation dependant fauna. Construction of the processing facility on the slopes of Site C and F will require significant cut and fill to achieve the required level. The materials dumped for fill could be managed to ensure large boulders are grouped as conglomerates around the periphery of the retaining batters. These large boulders should then, by virtue of their position in the batter slopes, offer potential cave and crevice habitat for the Pilbara Olive Python, contributing to the availability of secure refuge in the local area.

Northern Quoll Dasyurus hallucatus

Minimise

Following review of the biological survey report Perdaman has reconsidered the layout of the proposed processing facility and separated the facility into two smaller sections to be built in Site F and Site C, either side of the tidal flat. This will significantly reduce the impact of habitat fragmentation by more freely continuing the exchange of individuals from the north to the south;

Predator control (wild dogs Canis lupus familiaris, feral cats Felis catus, red foxes Vulpes vulpes) has been identified as a priority to minimise the impact within the Project area;

Maintain denning habitat by minimising disturbance to rock piles on the upper slopes of the valleys;

Manage fire to reduce frequency and intensity around the Project area and the local area; and

Enforce strict vehicle speed limits during both construction and operation to reduce the potential for vehicle strikes.

Rehabilitation Research

With respect to the Northern Quoll, there are five research priorities which have been identified in the literature. These five priorities are:

To determine an appropriate standardised survey methodology to quantify the value of populations across the Pilbara and determine the potential impact of proposals.

The determination of Critical habitat and impacts to that habitat from developments.

Population dynamics of northern quoll across their broader distribution to best determine how populations are linked allowing the interpretation of impacts on sub populations.

Understanding of key threats to the northern quoll, these are traditional threating factors but

also more contemporary factors associated with the burgeoning development in the Pilbara in recent years.

The value of rehabilitated areas and artificial habitat to the northern quoll to determine what are the options that result in the best opportunities for recolonisation.

To date, none of these research priorities have focussed on populations in proximity to the Burrup Peninsula. As a means to offset disturbance and as an alternative to “Like for Like” offsets, Perdaman will consider funding of research with respect to the Northern Quoll (subject to financial closure). Research priorities 3 and 5 may be of particular interest as a research focus as the Project moves through construction and into operation. The trialing of artificial denning habitat (a key component to quoll survival) may also be worthy of consideration. If it proves successful, it could be incorporated into the design plan. Artificial denning habitat would improve the habitat value of rehabilitated and revegetated areas so that they may be useful beyond the requirements of foraging.

Ghost Bat Macraderma gigas

The Project will not impact maternity roosts which is the most critical micro-habitat for this species. It is also very unlikely that daytime roosts occur on the site. Acoustic recording during the pre-wet season survey failed to reveal the presence of ghost bats on site.

Minimise

There are no direct or secondary impacts of the project on ghost bat. Emissions from the plant may deter bats from foraging around the plant so emission control should be a priority for reducing impacts to this species.

Lighting of the plant and the possible attraction of feral rodents may increase foraging opportunities for the ghost bat if the bats are not deterred by noise or odours.

Horizontal wire strands or barb wire fences will not be used on site during or following construction. If the site must be fenced for security, barbed/razor wire should be placed at the base of the fence on the ground and the fence itself must be cyclone mesh.

Rehabilitate

Potential day time or even maternity roosts can be created in the rock batters used to elevate and stablilise the plant. This may be as simple as burying concrete, or steel structures of a suitable size to a suitable depth to achive the appropriate temperature and stability of support Ghost bats.

Other Migratory Birds Protected under international agreement.

There are no impacts requiring management for these species, particularly as the processing facility has been redesigned to significantly reduce the impact of construction on the tidal flats and samphire communities.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

The environmental outcomes to be achieved are stated below:

- Vegetation clearance will be minimised.

- To preserve Aboriginal heritage sites and cultural values, heritage sites will be avoided during earthworks, excavation and construction of the proposed action.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

World Heritage Properties - Yes

5.1.2 National Heritage Places

National Heritage Places - Yes

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not Applicable

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Vikas Rambal (Director of Perdaman) was previously the Managing Director of Burrup Fertilisers Propriety Limited (BFPL) and led the development and approvals of the Burrup Ammonia Project from a greenfields site through construction, commissioning and operation. The Burrup Ammonia project is now owned and operated by Yarra.

Subsequently, Vikas Rambal left BFPL to setup his own company (Perdaman Chemicals and Fertiliser or PCF) and managed the design and approvals of the Collie Urea Project, which successfully achieved environmental approvals at both state and federal level. The Collie Urea Project was assessed under the EPBC (referral number 2009/5067) through a public environmental review process and approved (PER 1358, May 2010).

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

We are unaware of any proceedings against the Proponent under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

Perdaman Chemicals and Fertlisers (PCF) adhere to the following policies:

Greenhouse Policy, which aims to increase its energy efficiency and reduce its greenhouse

emissions;

Environment Policy, which aims to seek continuous improvement in performance through the application of best industry practice to meet community expectations.

These PCF policies are available in Attachment E.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

The Collie Urea Project was assessed under the EPBC Act (referral number 2009/5067).

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Refer to Attachment G	Information included in this referral has been sourced from various government departments and reports prepared by reputable sources for the BSIA (including site C & F) between 2006 and 2018. Information sources are considered to be current and reliable.	There are no uncertainties in the information sources.

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

Feedstock options - Coal gasification versus natural gas

Perdaman had previously considered a urea project of a similar product magnitude based on coal gasification as the primary feedstock, located at the Shotts Industrial Park near Collie. The Collie Urea Project was assessed under the EPBC (referral number 2009/5067) through a public environmental review process and approved (PER 1358, May 2010). The Project was also recognised as using best available technology (BAT) by an independent Nexant benchmarking study. Notwithstanding, the Project proved not to be feasible due to lack of a commercially feasible stable long term supply of coal as the principal required process input.

The current proposal is considering a gas-based fertiliser plant rather than coal-based, to be located in the Karratha region rather than Collie. Whilst Karratha has a hotter climate than Collie, the conversion from a coal feed to a gas feed is seen to have many environmental, social and economic benefits for the project including the following:

Gas has a lower thermal consumption rate than coal, to produce urea;

The process is simpler, resulting in reduced solids handling;

Considerably lower SO_2 emissions;

Eliminated H_2S emissions;

Lower NO_x emissions;

Lower dust emissions;

Significantly less net CO_2 is produced;

Lower water usage per tonne of product;

Reduced power consumption;

Sea water circulation versus Wellington dam raw water usage;

Reduced waste handling;

Reduced conveyor lengths; and

Reduced distance to export Port.

Location alternatives

The selection of the Burrup Strategic Industrial Area (BSIA) (sites C & F) near Karatha is underpinned by:

Proximity to existing DBNGP gas supply (±1 km);

Proximity to existing WaterCorp sea water supply (±1 km);

Proximity to existing WaterCorp brine water return (±1 km);

Proximity to Dampier port wharf (±3 km), allowing conveyor transfer of 2Mtpa of urea;

Neighbouring downstream gas-processing plants; and

Availability of a skilled labour force.

Other potential industrial sites in the region which were considered include Maitland and Ashburton (Onslow). However, both of these locations were rejected due to their remoteness and distance from a gas supply as well as an export harbour (Maitland is 40km from Dampier Port). A 40km conveyor would add considerable cost, lead to potential water ingress to the urea product as well as increased spillage risk. Locating a urea plant at either of these sites would therefore require transhipment with trucks and large storage shed requirements at both the port and plant site. Both Maitland and Ashburton would require new permitting for sea water supply and brine disposal. The absence of adjacent industrial facilities could result in additional project risk due reduced availability of a skilled workforce.

The fundamental requirement for the urea project is a stable and relatively large gas supply, and the proximity of the BSIA to the North West Shelf and Pluto gas plants is considered to provide an excellent stability.

Design alternatives

A number of design options were considered, in order to minimise potential environmental impacts:

Water system: The proposed predominantly seawater cooled water system was selected as fresh water is scarce in the region, and this approach minimises fresh make-up water required, thus minimising desalination as well as power input costs. Whilst air cooling was considered (such as with the LNG trains), the condensing temperature of water is more effective and allows a better approach over ambient air temperatures. This seawater approach is in line with the existing Yara Fertilisers plant, and would utilise the WaterCorp seawater plant, which was sized for several industrial users.

Reforming process: Catalytic reforming has been selected over conventional steam reforming, as for large plants this provides an environmental advantage in terms of a 3% lower overall energy usage, as well as a substantial reduction in the steam and water make-up flows. This

approach uses oxygen, with an ASU, and the autothermal reforming allows a higher carbon retention in the syngas compared to conventional ammonia plants. This allows full conversion of all ammonia produced to urea, rather than some ammonia exports, and additional equipment to increase CO2 capture.

Power Generation: Power is also a significant utility, and the approach is to apply a combined cycle gas turbine with cogeneration mode to balance plant steam requirements. This offers material efficiency improvements over a steam raising boiler and condensing steam turbine approach for plant power requirements. With natural gas on tap the start-up of the plant is relatively simple, reducing dependence on a diesel fired mode.

Site Planning Considerations

Site Layout: The site layout has been optimised to minimise the loss of habitat, fragmentation and obstruction of surface water flows, whilst considering the operational safety aspects of a major hazard facility MHF). Further details are provided below.

The total area of Site C & F is around 72ha. Of this around 50ha would require clearing to accomodate the required processing plants, along with supporting roads and laydown areas. The initial basis for the site layout was taken from the Collie plant layout (covering around 100ha), allowing for reduced and smaller units based on converting to gas.

The first of two ecological assessments undertaken in November 2018 was based on this initial site layout which would have required significant infill of the amalgamation area between Sites C and F of the BSIA. The impacts associated with this initial site layout would have included a large loss of habitat, fragmentation and obstruction of surface water flows. This would have resulted in a potential negative impact on the associated ecological communities.

As a consequence, the decision was made to limit the location of the process plant infrastructure within Sites C and F, and to construct an elevated infrastructure corridor between the two areas (Figure 2 of Attachment A). This corridor will allow for construction and maintenance access, via a piled structure approximately 12m wide, within an easement of 30m. The footprint of this proposed layout has significantly reduced the impact on the coastal ecology by avoiding fragmentation and will not impede surface water flow associated with tides and surface run off from surrounding areas. The proposed plant layout conceptual plan is shown on Figure 3 of Attachment A.

The design and layout of the facility has also taken into account the known location of heritage sites including that located near the northern boundary of Site F. This NHL area will be protected from any construction or operational impacts with a suitable buffer zone (in the order of 0.3ha).

Product Conveyance and Shipping – Options for Considering

The granulated urea product will be transported by closed conveyor along the East West Service through to Dampier Port, where new facilities will include a stockpile and loading arm.The location of Dampier Port with respect to the urea plant site is shown on Figure 2 of Attachment A.

There are three options under consideration for the conveyor connection from the urea plant to the East West Service Corridor:

westward to the Burrup Highway, and then northwards within the highway reserve (760m);

westward towards the Burrup Highway, and then straight northwards to the East West Service Corridor (660m);

straight northwest to join the East West Service Corridor (280m).

Option 1 is least preferred, being the longest distance and most visible to passing traffic. Option 3 is most preferred, being the shortest distance and least visible to passing traffic.

The overall conveyor length from the Site C property boundary through to the Dampier Port is around 3km, most of this within the existing East West Service Corridor. Based on a 16m wide easement, the total area of disturbance for the product conveyor would be approximately 5ha.

With respect to port facilities, PCF intends to install unloading, warehouse and conveying systems as well as a multi-user shiploader that will have a nominal loading capacity of up to 2,500 tonnes per hour. The exact location of these port facilities is not yet defined, however there are two options under consideration, as shown on Figure 2 of Attachment A. Preliminary layout is shown on Figure 4 of Attachment A. Approvals for the conveyor, storage and loadout facilities will be the responsibility of the Proponent. Dampier Port Authority will be responsible for the shipping berths.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Chairman and Managing Director

9.2.2 First Name

Vikas

9.2.3 Last Name

Rambal

9.2.4 E-mail

Vikas.Rambal@perdaman.com.au

9.2.5 Postal Address

Level 17, Alluvion Building

58 Mounts Bay Road
PERTH WA 6000
Australia

9.2.6 ABN/ACN

ACN

121263741 - PERDAMAN CHEMICALS AND FERTILISERS PTY LTD

9.2.7 Organisation Telephone

08 9429 5111

9.2.8 Organisation E-mail

Vikas.Rambal@perdaman.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, Vikas Rambal, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:... .. Date: ..16-01-2019.....

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: .....

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Chairman and Managing Director

9.5.2 First Name

Vikas

9.5.3 Last Name

Rambal

9.5.4 E-mail

Vikas.Rambal@perdaman.com.au

9.5.5 Postal Address

Level 17, Alluvion Building
PERTH WA 6000
Australia

9.5.6 ABN/ACN

ACN

121263741 - PERDAMAN CHEMICALS AND FERTILISERS PTY LTD

9.5.7 Organisation Telephone

08 9429 5111

9.5.8 Organisation E-mail

Vikas.Rambal@perdaman.com.au

Proposed designated proponent - Declaration

I, VIKAS RAMBAL, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature..... Date: 21.12.2018

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Project Director, Planning & Approvals

9.8.2 First Name

Lorie

9.8.3 Last Name

Jones

9.8.4 E-mail

lorie.jones@cardno.com.au

9.8.5 Postal Address

11 Harvest Tce
West Perth WA 6005
Australia

9.8.6 ABN/ACN

ABN

77009119000 - CARDNO (WA) PTY LTD

9.8.7 Organisation Telephone

08 9273 3888

9.8.8 Organisation E-mail

lorie.jones@cardno.com.au

Referring Party - Declaration

I, Lorie Jones, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: ..... Date: 21/12/2018

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. AttachmentA_Figures.pdf
2. AttachmentC_APM2018_Part1.pdf
3. AttachmentC_APM2018_Part2.pdf
4. AttachmentC_APM2018_Part3.pdf
5. AttachmentD_AHIS_Registered_and Other_Sites.pdf
6. AttachmentE_PCF_Policies.pdf
7. Attachment F - GIS files.zip