EXISTING DESIGN

PROPOSED DESIGN

KEY PLAN

View Direction:	13° - 73°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	11:08 am, 4th September 2020

Location:	Hearson Cove Rd, Burrup Peninsula Western Australia
Coordinates:	475881, 7718166 (GDA 1994 MGA Zone 50)
Viewpoint Elevation:	9 m
Date of Photomontage:	25th September 2020
Issue:	v02

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
Yara Pilbara Fertilisers Pty Ltd

Viewpoint 1: Hearson Cove Rd #1

GHD Pty Ltd
Level 8, 180 Lonsdale Street
Melbourne VIC 3000
T 61 3 8687 8000 **E** melmail@ghd.com.au **W** www.ghd.com

PROPOSED DESIGN
RED OUTLINE

PROPOSED DESIGN
INSERT

KEY PLAN

View Direction:	13° - 73°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	11:08 am, 4th September 2020

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Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
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Viewpoint 1: Hearson Cove Rd #1

GHD Pty Ltd
Level 8, 180 Lonsdale Street
Melbourne VIC 3000
T 61 3 8687 8000 **E** melmail@ghd.com.au **W** www.ghd.com

EXISTING DESIGN

PROPOSED DESIGN

KEY PLAN

View Direction:	302° - 2°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	10:46am, 4th September 2020

Location:	Hearson Cove Rd, Burrup Peninsula Western Australia
Coordinates:	475882, 7718164 (GDA 1994 MGA Zone 50)
Viewpoint Elevation:	25 m
Date of Photomontage:	25th September 2020
Issue:	v02

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
Yara Pilbara Fertilisers Pty Ltd

Viewpoint 3: Hearson Cove Rd #3

GHD Pty Ltd
Level 8, 180 Lonsdale Street
Melbourne VIC 3000
T 61 3 8687 8000 **E** melmail@ghd.com.au **W** www.ghd.com

PROPOSED DESIGN
RED OUTLINE

PROPOSED DESIGN
INSERT

KEY PLAN

View Direction:	302° - 2°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	10:46am, 4th September 2020

Location:	Hearson Cove Rd, Burrup Peninsula Western Australia
Coordinates:	475882, 7718164 (GDA 1994 MGA Zone 50)
Viewpoint Elevation:	25 m
Date of Photomontage:	25th September 2020
Issue:	v02

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
Yara Pilbara Fertilisers Pty Ltd

Viewpoint 3: Hearson Cove Rd #3

GHD Pty Ltd
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Yara Pilbara Fertilisers Pty Ltd

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project

Visual Considerations Report

September 2020

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Appendices

Appendix A – Photomontages

1. Introduction

1.1 Scope of this report

Yara Pilbara Fertilisers Pty Ltd propose to construct a renewable hydrogen plant (the Project) adjacent to their existing fertiliser plant at Lot 564, Village Road, Burrup, Western Australia. The purpose of this report is to outline the visual considerations of the Project in the context of the surrounding landscape. This will provide additional information in order to assist the Environmental Protection Authority (EPA) in its assessment decision for the Project.

1.2 Project description

The Project site is located 11 km north-west of Karratha, on the Burrup Peninsula within the Burrup Strategic Industrial area. The Burrup Peninsula is within the Pilbara Region in north-west Western Australia. The Project involves the development of a renewable hydrogen plant with an associated solar farm and will be located on the north side of the existing Yara Pilbara Fertiliser (YPF) Plant as shown in Figure 1-1. The renewable hydrogen plant footprint is approximately 24.78 hectares (ha) and lies completely within the existing YPF Development Envelope. This report only considers the visual elements relating to the solar farm infrastructure, as identified in the hatch area to the north of the existing YPF plant in Figure 1-1.

Paper Size ISO A3

0 25 50 75 100

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

Yara Pilbara Fertilisers Pty Ltd
Renewable Hydrogen Project

Proposal Footprint

Project No. **12520684**
Revision No. **2**
Date **20/07/2020**

FIGURE 1-1

G:\61\12520684\GIS\Maps\Working\12520684_Section38ReferralSupportingReport\12520684_Section38.aprx\12520684_1-2_ProposalFootprint_Rev
Print date: 20 Jul 2020 - 14:58

Data source: GHD: YPF Development Envelope, Disturbance Footprint - 20200624, Proposal Footprint - 20200709; Landgate: Roads - 20190128, Cadastre - 20200207, WMS: . Created by: bmorgan

1.3 Limitations

This report: has been prepared by GHD for Yara Pilbara Fertilisers Pty Ltd and may only be used and relied on by Yarra Pilbara for the purpose agreed between GHD and Yarra Pilbara as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Yara Pilbara Fertilisers Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Yara Pilbara Fertilisers Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

This report includes the following assumptions:

- This is an initial Visual Considerations Report and does not constitute a full Landscape and Visual Impact Assessment
- The author did not undertake a site visit or take the photographs within this report. The images were taken under the direction of the Project team by a GHD Karratha staff member.
- The report aims to be objective and describe any changes factually. While potential changes resulting from the solar farm associated with the renewable hydrogen plant are defined, the significance of these changes requires qualitative (subjective) judgements. This report's conclusion therefore combines objective measurement and professional interpretation. While this report aims to be objective, it is recognised that visual considerations and sensitive visual receptors can be subjective and individuals are likely to associate different visual experiences to the study area.
- The visual considerations report is based on the information provided to GHD at the time of writing.
- Only the visual elements for the proposed solar (PV) farm have been considered as a part of this report.

2. Methodology

The following methodology was undertaken in the preparation of this visual considerations report.

2.1 Overview of existing landscape and visual environment

The following tasks were undertaken to provide an overview of the existing landscape and visual environment:

- High level desktop review of relevant legislation and policy
- Desktop review of existing information, and collation of relevant background information, including topography, land use and vegetation
- Zone of Theoretical Visibility (ZTV) modelling of the proposed infrastructure to understand the theoretical extent of visibility of the Project. For further information, refer to section 2.5
- High-level description of the existing landscape and visual environment and mapping of potential sensitive visual receptors.

2.2 Visual considerations

The following tasks were undertaken to provide an overview of the key visual considerations of the Project:

- Description of the visible elements of the Project
- A discussion of the visual considerations from sensitive receptor locations

2.3 Preliminary recommendations and mitigation measures

The following tasks were undertaken to provide recommendations and mitigation measures to address the key visual considerations:

- Discussion of visual considerations in relation to key policy objectives identified in the desktop review
- Provision of high-level recommendations which would enable avoidance or mitigation of potential unacceptable adverse impacts

2.4 Panoramas and photomontages

All photographic images were captured using a Nikon D5300 with a variable lens set to 55 mm focal length at a camera height at eye level (1.7 m). All photograph locations were recorded and mapped.

A series of six viewpoint locations were chosen and the existing views represented at these viewpoint using a panorama technique. This technique involved the stitching together of a number of adjoining images using the Adobe Photoshop software program. All panorama images are represented with an 80 degree horizontal field of view and an 18 degree vertical field of view. A number of single frame images have also been used throughout the report to illustrate landscape characteristics in section 3.4. Of the six viewpoint locations discussed in section 4.2, two viewpoints were selected for the production of photomontages to represent proposed views following the construction of the solar panels. The software used to model and render the photomontages was Autodesk 3D Studio Max. In order to achieve an accurate

photomontage of the Project and surrounding landscape, a digital terrain model with a five metre contour interval was used to model the surrounding landform.

Once the 3D model incorporating both the landscape and new Project elements was created, a virtual camera was placed in the software at the same location the photographs were taken. The focal length and height of the virtual camera matches the real camera utilised to take the photographs. The photographs of the site were used in 3D Studio Max as a background to accurately match the 3D model with the Project elements to the perspective of the photographs. From the camera view, rendered images of the Project were produced to match the daylight exposure of the photographs. The rendered images were imported into Adobe Photoshop for post-production editing and collation of the photomontages. The solar farm 3D model was developed from a generic design of solar panels layout at 4 m above natural ground surface. The engineering designs were not available at the time of reporting.

The final result is the 3D model of the Project shown in the correct 3D location in the photographs. The final images were produced to a high resolution, suitable for printing. Refer to Appendix A for photomontages of the Project.

Site photography, panorama and photomontage were prepared with reference to the following guidance:

- Visual Representation of Development Proposals, Technical Guidance Note 06/19 (Landscape Institute, 2019).

2.5 Zone of Theoretical Visibility Modelling

Zone of Theoretical Visibility mapping is a computer-generated analysis which identifies land from which it is theoretically possible to view the components of the Project. These have been used primarily to guide the area of site analysis and representative viewpoint selection. ZTV mapping was undertaken with reference to processes outlined in the following guidelines:

- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013).
- *Visual Representation of Wind Farms Guidance, version 2.2* (Scottish Natural Heritage, 2017).

ESRI ArcGIS software was used to model the ZTV of the Project. A digital terrain model was produced using the Geoscience Australia 1 second data. The ZTV was mapped using the following parameters:

- A viewing height of 1.7 m, which is the average within the typical viewing level range of an adult
- Height of solar panels at 4 m above natural ground surface.
- The same solar farm layout used for modelling the photomontages was used to model the ZTV.

The GIS software then digitally determines the likely extent over which the feature would be visible or not visible. In interpreting the ZTV, the following issues must be considered:

- The ZTV only takes into account the landform and does not include land cover factors such as the presence of buildings and trees, therefore it represents the worst-case scenario of potential visibility
- The ZTV does not take into account the effect of distance. The greater the distance from the Project, the lower the impact, as the development will take up a smaller portion of the view, and atmospheric conditions may reduce the visual prominence of the Project
- The ZTV is only accurate to the resolution of the elevation model.

3. Overview of existing landscape and visual environment

The following sections provide an overview of the existing landscape and visual environment in terms of legislation and policy, topography, land use and vegetation, ZTV and sensitive visual receptors.

3.1 Relevant Legislation and Policy

The following sections describe the relevant legislation and policies relating to the Project site.

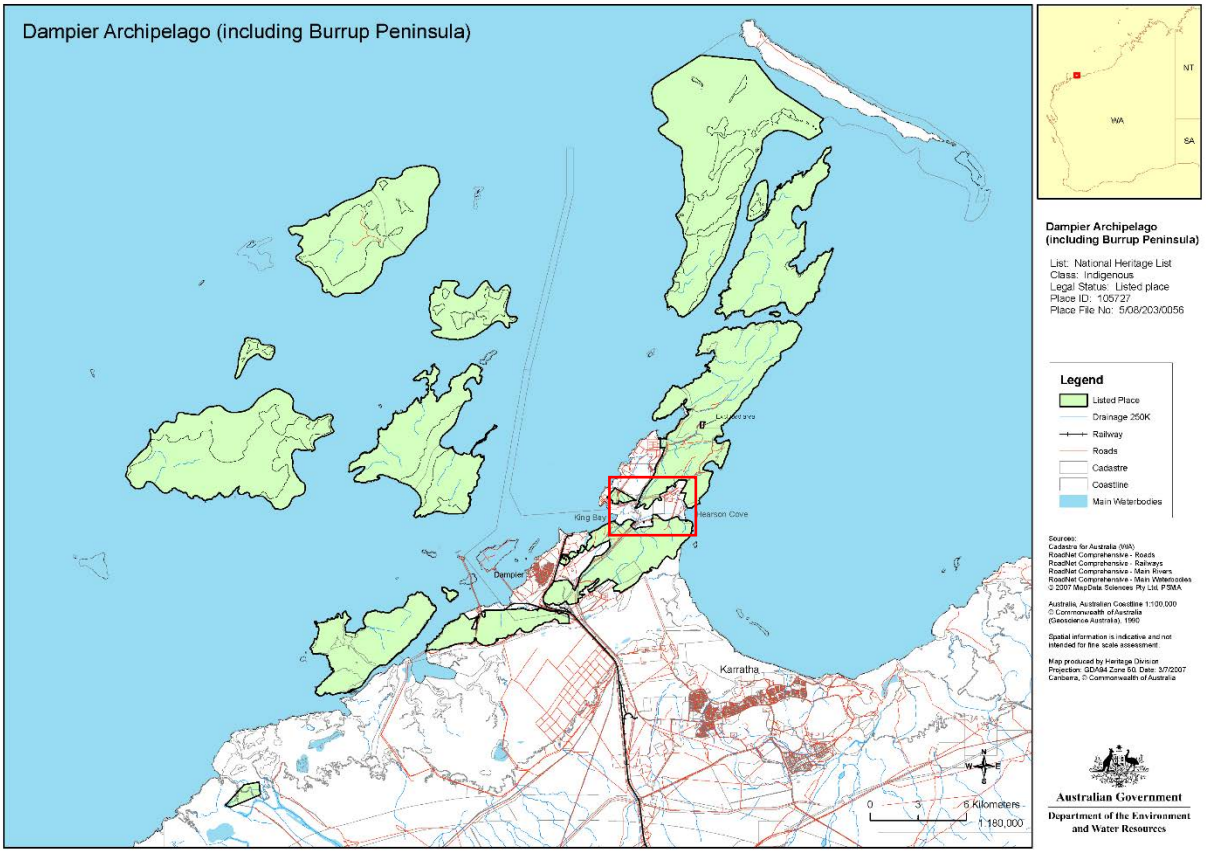
3.1.1 National heritage listing

The Project site is located within the Dampier Archipelago, which includes the Burrup Peninsula and Murujuga National Park. The Dampier Archipelago was listed as a National Heritage Listed Place on 3rd of July 2007. It has been home to Indigenous Australians for tens of thousands of years and has the largest collection of petroglyphs in Australia (Department of Agriculture, Water and the Environment, 2007).

The site does not meet the criteria for World Heritage listing however is still recognized for its cultural, artistic, religious and historical significance. (Source: Department of Agriculture, Water and the Environment, 2007)

Figure 3-1 shows the National Listed Place comprising approximately 36,860 ha of the Burrup Peninsula and surrounding area (Department of Agriculture, Water and the Environment, 2007). The Listed Place boundary traverses the industrial areas and zones of Dampier and Karratha where this Project is located.

The cultural and heritage significance and value of this area has been recognised in a number of strategic planning documents for the area.



(Source: Department of Agriculture, Water and the Environment, 2007)

Figure 3-1 National Heritage Listed Place - Dampier Archipelago

3.1.2 State Planning Strategy 2050

The State Planning Strategy (SPS) 2050 is WA's strategic planning response to the challenges Western Australia is likely to face over the next 30 years. The strategy provides a guide for the future land-use planning and development of the state. The Project area that is included within the strategy is a part of the Northern Sector. It is identified as an economic activity and infrastructure area, which is driven by increasing resource demand. The strategy also recognises the unique natural environment of the region and the need to balance conservation of the natural environment, and economic and infrastructure development (Western Australia Planning Commission , 2020).

3.1.3 Local Planning Strategies

The City of Karratha Local Planning Scheme No 8 is relevant to the Project site. The Scheme aims for community input for the balance between the economic and social development, conservation of natural environment and improvements to the liveability and lifestyle of its residents. Section 4.2 outlines objectives for the Burrup Peninsular, these objectives are as follows:

- Retain a balance between the Burrup's recreational, industrial, environmental and heritage assets
- Acknowledge Hearson Cove as a key recreational node
- Adopt the principles and policies of the Burrup Peninsular Land Use and Management Strategy.

3.1.4 Other relevant strategies

The Burrup Peninsula Land Use Plan and Management Strategy (1996 and revised 2005)

The Burrup Peninsula Land Use Plan and Management Strategy has informed the existing allocation of land at the Burrup Peninsula which is used for industry, conservation, recreation and heritage. The Land Use Plan divides the Burrup Peninsula into three conservation, heritage and recreation areas, and five industrial areas. The Project area within in the land use plan is identified as industrial Policy Area D (King Bay – Hearson Cove). Under the Land Use Plan and Management Strategy development within Policy Area D must be 'designed and allocated to minimise impacts on values (including landscape) of the adjoining conservation, heritage and recreational area'. Revisions of the Land Use Plan and Management Strategy in 2005 were to include areas previously zoned for industrial land to Conservation Zone.

Murujuga National Park Management Plan, 2013

The Murujuga National Park covers an area of 4,913 hectares within the Burrup Peninsular. The management plan is a result of a native title settlement between the Murujuga Aboriginal Corporation (MAC) and the Government of Western Australia. The plan is intended to guide the management of the important cultural, heritage and biodiversity values for the area and the Aboriginal community. The management plan addresses the National Heritage values of the area as the majority of the park is included within the National Heritage List (Dampier Archipelago). The Murujuga National Park surrounds the industrial Project site area, refer to (Source: Department of Environment and Conservation, 2013)

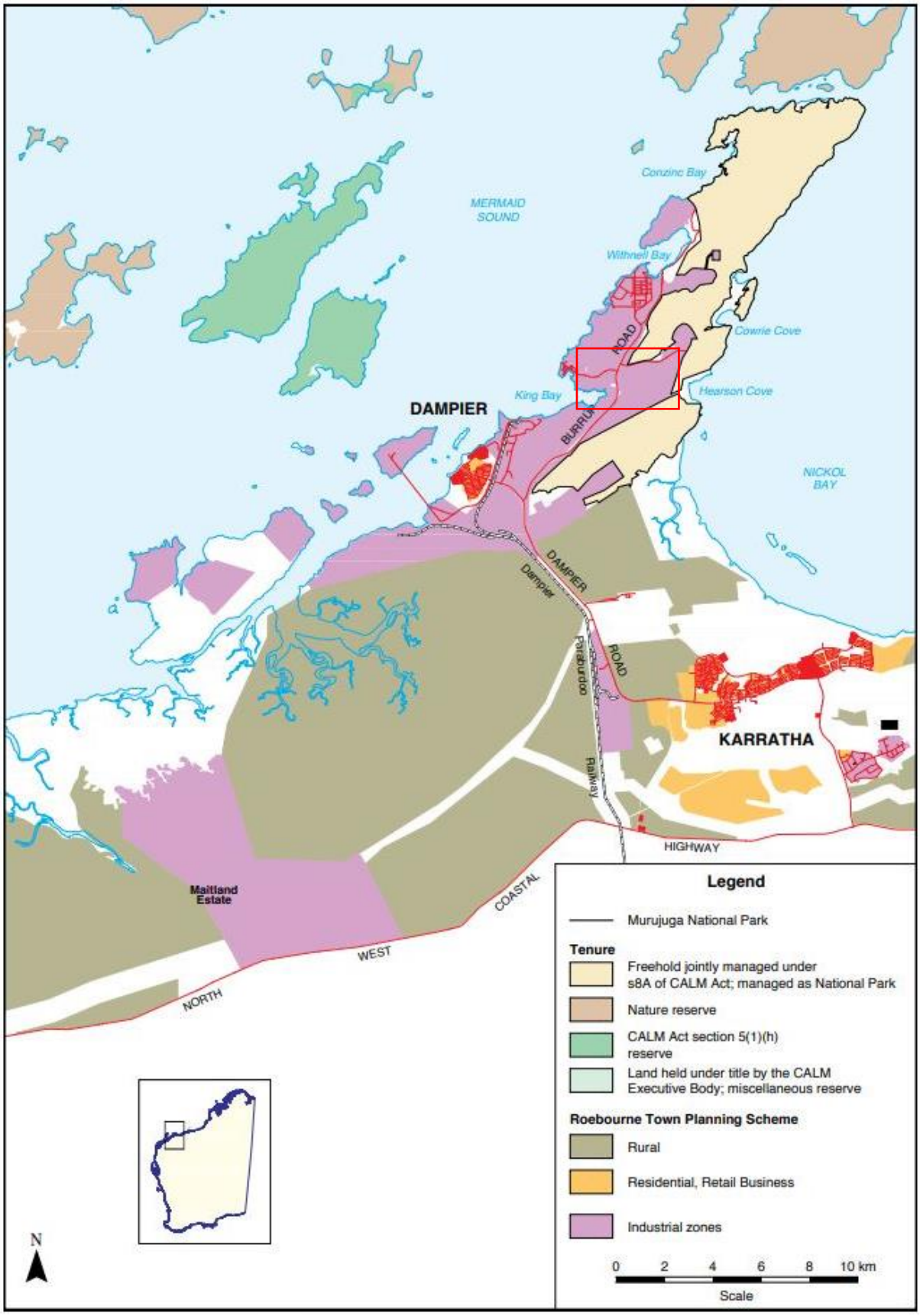
Figure 3-2. The two key values relevant to the visual impact assessment are as follows:

- Significant vegetation communities, including mangroves, pockets of tall dense vegetation, coastal grasslands, samphire communities, rock pile vegetation patches and seasonally wet areas and watercourses
- Outstanding scenic landscapes of great contrast. This includes the red rocky scree slopes and rock pules, narrow valleys, and extensive vistas provided by the ranges with adjacent bright blue coastal waters.

Section 31 of the management plan states that all uses and activities are planned and implemented to complement rather than detract from the inherent visual quality of the environment. Industrial developments would be restricted to the industrial zone that the Project site is located within. However, developments may still be visible from sensitive locations outside the industrial zone and this should be taken into consideration. The management plan states that views from within the park will be protected from industry wherever possible.

The management plan lists a number of strategies to achieve the objective of *"protect and enhance the park's visual landscape qualities".* Those relevant to the visual impact assessment are as follows:

- Ensure appropriate input into the assessment of proposed developments that impact on the park's landscape values
- Liaise with neighbouring land managers to ensure landscape management guidelines are considered in developments and participate in processes related to such developments.



(Source: Department of Environment and Conservation, 2013)

Figure 3-2 Burrup Peninsula locality, tenure and land use

3.2 Topography, land use and vegetation

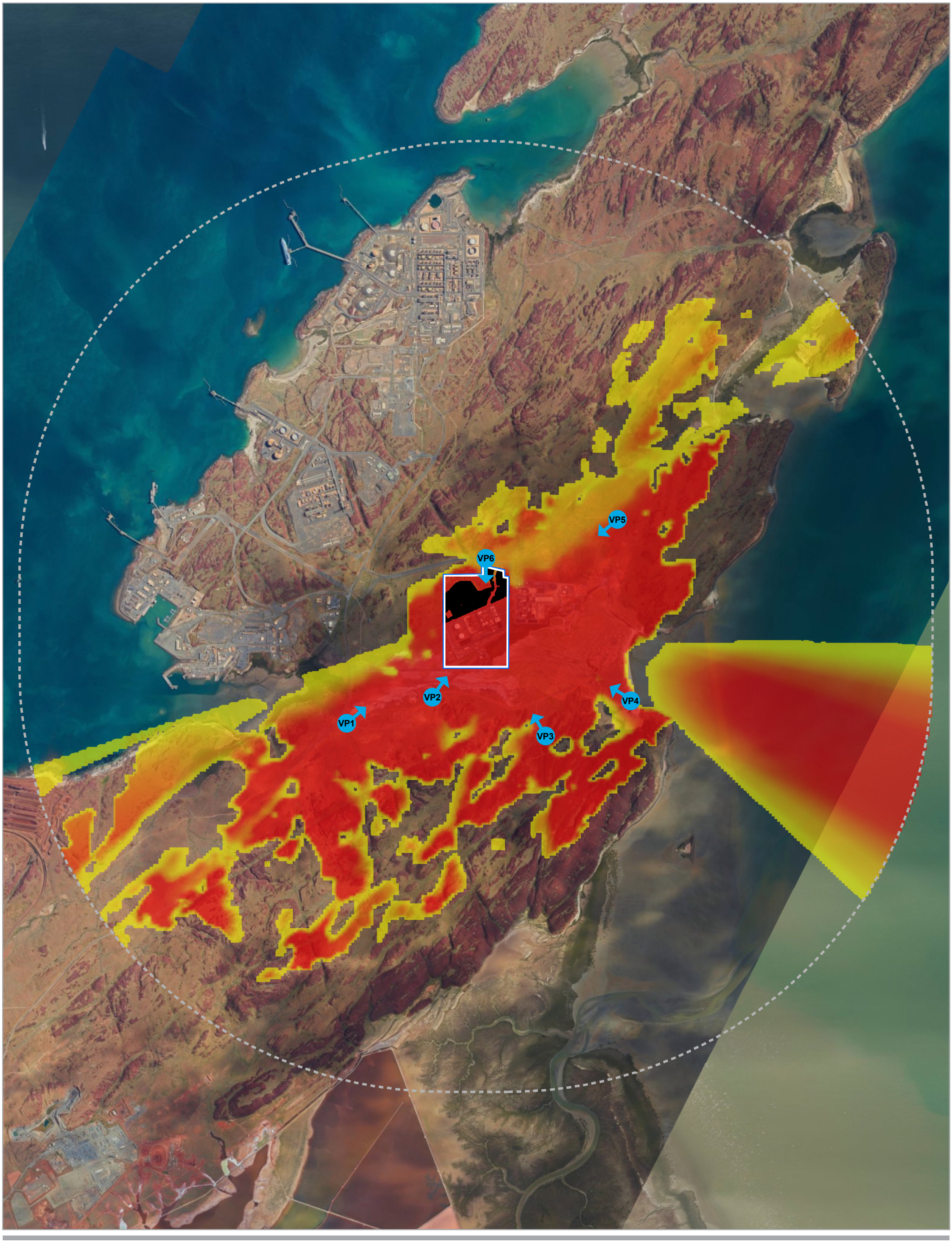
The Project site is located between Hearson Cove to the east, King Bay to the west and the significant rock art location Deep Gorge, now known as Ngajaril, to the south. Vegetation on Burrup Peninsula is characterised by hummock grasslands, acacia forests and low-lying shrublands as well as salt marshes and mangroves along the coastal areas. Mud-flats and narrow valleys within the rocky outcrops are also a key feature of the landscape and visual environment (Department of Environment and Conservation, 2013). Due to the flat topography and accessibility of the lowland coastal areas, parts of the landscape are used for industry and resource production. However the majority of the Burrup Peninsula remains undeveloped as low-lying coastal areas and National Parks.

Figure 3-3 Existing landscape, scattered vegetation, low-lying scrubland and rocky outcrops

3.3 Zone of Theoretical Visibility

The ZTV map illustrated the areas in the surrounding landscape where the solar farm would potentially be visible from. This map does not take account of vegetation or built form and is therefore a worst case scenario. The parameters used to in the analysis are outlined in Section 2.5.

Based on the ZTV six viewpoints were adopted for analysis (described in Section 4).



Legend

- Image direction
- Indicitive Solar Panel Locations
- YPF Development
- Buffer (4.5km)

Zone of Theoretical Visibility

- More Visibility
- Less Visibility

Paper Size ISO A3

0 200 400 600 800 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Yara Pilbara Fertilisers Pty Ltd
Renewable Hydrogen Project

Zone of Theoretical Visibility

Project No. **12520684**
Revision No. **A**
Date **16/09/2020**

FIGURE 3-4

Data source: Landgate / SLIP. Created by: kaadams

3.4 Sensitive visual receptors

The context analysis and site visit identified the following areas where sensitive visual receptors would be located.

- National Heritage Listed area Dampier Archipelago and surrounding National Park
- Low-lying coastal areas (Hearson Cove)
- Urban and industrial areas (Burrup Strategic Industrial)
- Main access roads

The following sections provide a description of each of these areas.

3.4.1 Rocky outcrops and steep stony scree slopes (National Heritage Listed area Dampier Archipelago)

The red-rock outcrops are the most prominent landscape feature of the Burrup Peninsula. The majority of the Peninsula has a National Heritage Listing due to the petroglyphs, or indigenous rock engravings, in this region. This area is rich in culture and history for Indigenous Australians, home to what is believed to be the highest concentration of petroglyphs in the world (Department of Agriculture, Water and the Environment, 2007). These engravings show humans and animals relating to sacred ceremonies, songs and representations of everyday life for Indigenous ancestors (Department of Agriculture, Water and the Environment, 2007). The rocky outcrops provide a backdrop to the industrial areas, refer to Figure 3-5. The Deep Gorge site to the south of the Project site is of particular significance to the traditional owners (Department of Environment and Conservation, 2013). Deep Gorge is a site frequented by tourists and locals and has a boardwalk for visitors to view the petroglyphs without risk of damage.

Figure 3-5 Red-rock backdrop to existing industry

3.4.2 Coastal areas (Hearson Cove)

Coastal areas are a key visual feature of the Burrup Peninsula. The striking red earth and the blue Indian Ocean provide a dramatic and spectacular landscape with significant scenic qualities, making it a major visitor destination in the region (City of Karratha, 2020). The Burrup Peninsula coastline includes King Bay, Dampier, Nickol Bay, Withnell Bay, Hearson Cove and the waters of the Dampier Archipelago and the Indian Ocean. The surrounding landscape is characterised by small coastal shrubs, foredunes, mangroves and beaches around the Peninsula (Cardino, 2020). Hearson Cove is located east of the Project site and is a key coastal attraction and popular beach spot for tourists and locals. Hearson Cove is surrounded by rocky outcrops, refer to Figure 3-6. It is one of the few places on earth where you can witness the natural phenomenon in October to April of the “staircase to the moon”. During this time of year the full moon reflects off the exposed mudflats and Hearson Cove at low tides and creates an optical illusion of a staircase reaching the moon (City of Karratha, 2020).

Figure 3-6 Hearson Cove

3.4.3 Urban and industrial landscape

Industry, port facilities and local mining townships also form part of the areas visual landscape character. The major industries for the area are iron ore, natural and liquefied natural gas (LNG), liquefied petroleum gas (LPG) and ammonia production. Within close proximity to the site are some of Australia's largest ports, longest private railways and largest iron ore and petroleum production facilities (Cardino, 2020).

3.4.4 Main access and tourist roads

Main roads within the study area include Hearson Cove Road, Village Road and Burrup Road. The primary purpose of these roads are for freight moving from the industry and port facilities and those locals and tourists visiting Murujuga National Park, surrounding bays and coastal regions Figure 3-7. These roads are accessed by tourists as well as locals.

Figure 3-7 Hearson Cove Road

4. Visual considerations

The following sections provide a description of the visible elements of the Project as well as a discussion of visual considerations from sensitive receptor locations. Based on an analysis of the areas identified in section 3.4, sensitive visual receptor viewpoints with views towards the Project site were identified.

4.1 Visual elements of the Project

The Project comprises the construction of a renewable Hydrogen Plant and associated infrastructure. The main visible elements considered as part of this report include the following elements:

- Dedicated solar photovoltaic (PV) farm (approximately 4 m tall panels), refer to Figure 4-1 for an indicative image similar to the Project.
- Supporting infrastructure, including site tracks

Figure 4-1 Indicative image of solar panels

4.2 Viewpoint analysis

Refer to Table 4-1 and Figure 4-2 for the location of viewpoints. Viewpoints are views toward the Project from sensitive receptor locations.

Legend

- Image direction
- YPF Development
- Proposal Footprint

Paper Size ISO A3

0 100 200 300 400

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

Yara Pilbara Fertilisers Pty Ltd
Renewable Hydrogen Project

Viewpoint locations

Project No. **12520684**
Revision No. **A**
Date **16/09/2020**

FIGURE 4-2

G:\61\12520684\GIS\Export\20200909_Landscape_Data\12520684_Landscape_View_Point.mxd
Print date: 16 Sep 2020 - 12:16

Data source: Landgate / SLIP. Created by: kaadams

Table 4-1 Viewpoint locations

Viewpoint	Location	Sensitive Receptor
VP01	Entry into Hearson Cove Road	Tourists, road users, local visitors and traditional owners
VP02	Hearson Cove Road	Tourists, local visitors and traditional owners
VP03	Deep Gorge, Murujuga National Park	Tourists, local visitors and traditional owners
VP04	Hearson Cove	Tourists, local visitors and traditional owners
VP05	Murujuga National Park	Tourists, local visitors and traditional owners
VP06	Village Road	Tourists, road users, local visitors and traditional owners

4.2.1 Viewpoint location 01 (VP01) Entry into Hearson Cove Road

Figure 4-3 VP01 – View north east towards existing fertiliser plant and Project

Figure 4-4 VP01 – Photomontage of Project

Table 4-2 Viewpoint location 01

Criteria	Comments
Location and view direction	Location: 477995, 7718027 (GDA 1994 MGA Zone 50) VP01 is located along Hearson Cove Road and shows a view north-east towards the existing fertiliser plant.
Description of the existing view	The view shows the existing fertiliser plant and associated infrastructure from Hearson Cove Road which is a sealed road with established native roadside shrubland and scattered vegetation. The lack of tall vegetation or rocky outcrops results in clear views across the open flat low-lying plains towards the existing industrial structures. The rocky outcrops in the north can be seen behind the existing facility. This road is frequented by locals and tourists travelling to Hearson Cove and Deep Gorge.
Change to view	The solar panels associated with the Project would be located to the left of this view and partially behind the exiting fertiliser plant. A significant portion of the solar panels would also be visible against the lower sections of the hill. Given that the solar panels would be facing north and away from this view, only the back of the panels would be visible. Due to the existing infrastructure in place and the industrial characteristics of this view it is expected that the view will not undergo significant change as a result of the Project.

4.2.2 Viewpoint location 02 (VP02) Hearson Cove Road

Figure 4-5 VP02 - View north east towards existing fertiliser plant and Project from Hearson Cove Road

Table 4-3 Viewpoint location 02

Criteria	Comments
Location and view direction	Location: 478760, 7720322 (GDA 1994 MGA Zone 50) VP02 is located east on Hearson Cove Road almost directly south of the existing fertiliser plant.
Description of the existing view	The view shows the existing fertiliser plant and associated infrastructure from across Hearson Cove Road which is a sealed road with established native roadside shrubland and scattered vegetation. The lack of tall vegetation or rocky outcrops results in unimpeded views towards the existing infrastructure. The rocky outcrops in the north can be seen behind the existing industrial facility. This road is frequented by locals and tourists travelling to Hearson Cove and Deep Gorge.
Change to view	The Project site would be located mainly behind the existing fertilizer plant. A portion of the solar panels and associated infrastructure would be visible to the left of the view. The addition of the solar farm and associated infrastructure would not represent a substantial change to the existing view. This is due to the presence of the existing infrastructure which would filter and visually absorb views of the Project.

4.2.3 Viewpoint location 03 (VP03) Deep Gorge, Murujuga National Park

Figure 4-6 VP03 - View north towards existing fertiliser plant and Project site from the Deep Gorge boardwalk

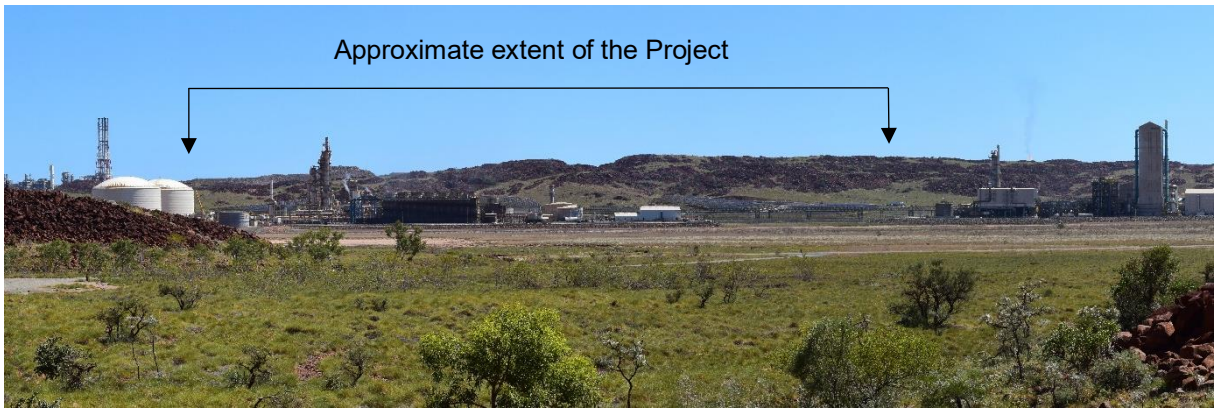


Figure 4-7 VP03 Photomontage of project

Table 4-4 Viewpoint location 03

Criteria	Comments
Location and view direction	Location: 476796, 7718439 (GDA 1994 MGA Zone 50 VP03 is located at the highest and clearest viewpoint at the northern end of the boardwalk at Deep Gorge, located within Murujuga National Park.
Description of the existing view	The view looks north towards the existing industrial facility. Scattered vegetation and shrubland is visible from this point as well as the surrounding hills which behind the industrial facilities. This is a site frequently visited by tourists and locals due to the cultural significance of the area.
Change to view	The existing industrial structures would generally screen views to the Project. Most of the solar panels that would be visible would be located behind the gantry that links the YPF fertiliser plant to the west (left of the image), with the industrial facility to the east (right of the image). These solar panels are also elevated to a degree as they are located on the lower sections of the hill in the background. Some of the solar panels would also be visible to the right of the white storage tanks associated with the YPF Plant. Views to the rocky hills in the background would not be interrupted. The addition of the Project

	would not represent a substantial change to the existing view for these reasons.

4.2.4 Viewpoint location 04 (VP04) Hearson Cove

Figure 4-8 VP04 – View west from Hearson Cove towards the Project and existing fertiliser plant

Table 4-5 Viewpoint location 04

Criteria	Comments
Location and view direction	Location: 478900, 7718398 (GDA 1994 MGA Zone 50 VP04 is located at Hearson Cove. Figure 4-8 shows a view looking west towards the existing fertiliser plant from the unsealed public carpark.
Description of the existing view	The view from this location is characterised by low-lying shrub land and grass in the foreground as well as the beach. The rocky outcrops of the surrounding National Park are visible behind the existing industry. This is a popular visitor area due to the scenic coastal location.
Change to view	The existing fertiliser plant and vegetation on the dune foreshore would likely screen most if not all views to the solar farm from this location.

4.2.5 Viewpoint location 05 (VP05) Murujuga National Park

Figure 4-9 VP05 – View south-west from Murujuga National Park towards the exiting fertiliser plant and Project site

Table 4-6 Viewpoint location 05

Criteria	Comments
Location and view direction	Location: 475883, 7718160 (GDA 50 MGA Zone 50 VP05 is located within the Murujuga National Park looking south-west towards the existing fertiliser plant.
Description of the existing view	The view looking south-west shows scattered vegetation and shrublands in the foreground with rocky outcrops in the background surrounding the existing infrastructure. The rocky outcrops partially filters views towards the Project site.
Change to view	The Project is not likely to be visible from this location given the intervening terrain and vegetation in front of the existing facility.

4.2.6 Viewpoint location 06 (VP06) Village Road

Figure 4-10 VP06 – View south from Village road towards existing fertiliser plant and Project site

Table 4-7 Viewpoint location 06

Criteria	Comments
Location and view direction	Location: 475883, 7718160 (GDA 1994 MGA Zone 50) VP06 is located on Village Road. The view looks towards the existing fertiliser plant to the south.
Description of the existing view	The view looking south across Village Road, a sealed road primarily used by freight travelling from the Project site. Scattered vegetation and shrublands are visible in the foreground with rocky outcrops in the background surrounding the existing infrastructure. There is minimal tall vegetation, however scattered shrubland and grasses are visible across Village Road at the base of the rocky-outcrops
Change to view	The solar panels associated with the Project would generally be concealed from view given the intervening terrain in the foreground. However the tops of some of the solar panels may be visible above the pipeline to the left of the view. Views toward the rocky formations associated with Deep Gorge would not be interrupted.

5. Preliminary recommendations and mitigation measures

This section provides an outline of some high level mitigation measures that would aid in reduction of the visual prominence of the Project from sensitive receptors locations including views from and to key cultural such as Deep Gorge and tourist drives towards Hearson Cove. These are as follows:

- Where structures are required they should be sympathetic in design, materials and colour to complement surrounding landscape elements and be carefully sited away from major viewpoints, vegetation or landform screening should be used where appropriate.
- Infrastructure should be designed so that it complements the surrounding landscape elements and siting it away from major viewpoints and sensitive visual receptors. Vegetation or landform screening should be used where appropriate.
- Locate and design roads, walk tracks, fire breaks and trails and utility corridors to minimise visual impacts on surrounding visual receptors.
- The majority of the solar panels should be located on lower elevations as far as practical. This will limit the views of solar panels further up the hill which would have a greater visual prominence.

6. Conclusion

The purpose of this report was to outline the visual considerations of the proposed solar farm associated with the renewable hydrogen plant proposed to be located adjacent to the existing YPF plant. This report provides additional information to the EPA to assist its assessment decision.

A review of relevant legislation and policy documents for the Burrup Peninsula identified that there are significant cultural, environmental and heritage values to the surrounding area of the Peninsula and all future industry development should consider the potential impacts to any culturally significant sites.

The report identified that the rocky hills and associated heritage listed sites as well as the coastal region of Hearson Cove are areas that would have sensitive visual receptors. The visual considerations report found that due to the flat low-lying landscape and limited filtering from existing vegetation, there will be visibility towards the Project site from most viewpoints. However, the existing industrial facility would impede views of the Project to varying degrees from most viewpoints.

The Project would be visible from VP01, VP02, VP03 and to a limited extent from VP06. However the change in the visual environment from these locations would be minimal. This is due to the existing infrastructure concealing and visually absorbing the Project. The Project is not likely to be visible from VP04 or VP05. Generally views to the surrounding rocky hills and formations would not be affected as the solar panels are largely located in the lower slopes adjacent to the existing industrial facilities.

7. References

Cardino. (2020). *Perdaman Urea Project: Landscape and Visual Impact Assessment .* Western Australia: Cardno.

City of Karratha. (2020, September 15). *Hearsons Cove*. Retrieved from City of Karratha: https://karratha.wa.gov.au/map-listing/hearsons-cove

Department of Agriculture, Water and the Environment. (2007, September 09). *National heritage Places - Dampier Archipelago.* Retrieved from National Heritage List: https://www.environment.gov.au/heritage/places/national/dampier-archipelago

Department of Environment and Conservation. (2013). *Murujuga National Park Management Plan.* Western Australia: Department of Environment and Conservation.

Landscape Institute. (2019). *Visual Representation of Develoepment Proposals, Technical Guidance Note 06/19.*

Scottish Natural Hertiage. (2017). *Visual Representation of Wind Farms Guidance, version 2.2.*

Western Australia Planning Commission . (2020). *State Planning Strategy 2050.* Western Australia: Government of Western Australia.

Appendices

Appendix A – Photomontages

EXISTING DESIGN

PROPOSED DESIGN

KEY PLAN

View Direction:	13° - 73°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	11:08 am, 4th September 2020

Location:	Hearson Cove Rd, Burrup Peninsula Western Australia
Coordinates:	475881, 7718166 (GDA 1994 MGA Zone 50)
Viewpoint Elevation:	9 m
Date of Photomontage:	16th September 2020
Issue:	v01

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
Yara Pilbara Fertilisers Pty Ltd

Viewpoint 1: Hearson Cove Rd #1

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EXISTING DESIGN

PROPOSED DESIGN

KEY PLAN

View Direction:	302° - 2°
Horizontal Field Of View:	60°
Camera Height:	1.7 m
Camera Type:	Nikon D5300
Lens Type:	55 mm
Photograph Time & Date:	10:46am, 4th September 2020

Location:	Hearson Cove Rd, Burrup Peninsula Western Australia
Coordinates:	475882, 7718164 (GDA 1994 MGA Zone 50)
Viewpoint Elevation:	25 m
Date of Photomontage:	16th September 2020
Issue:	v01

Ammonia Plant, Burrup Peninsula - Renewable Hydrogen Project
Yara Pilbara Fertilisers Pty Ltd

Viewpoint 3: Hearson Cove Rd #3

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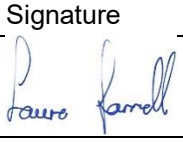
12520684-32978-134/https://projectsportal.ghd.com/sites/pp18_04/yarapilbararnh3proje/ProjectDocs/12520684_REP_Visual Considerations Report.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	D Dharmaraj E Gannon	L Farrell		M Brook		21/9/2020

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