



# Report and recommendations of the Environmental Protection Authority



## Pluto North West Shelf Interconnector Pipeline

DDG Operations Pty Ltd

Report 1639

June 2019

## Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
21/11/2018	Public comment on Referral Information commences	
27/11/2018	Public comment on Referral Information closed	1
23/01/2019	EPA decides to assess – level of assessment set	
12/02/2019	EPA issues notice for further information	3
04/03/2019	EPA received final information for assessment	6
18/04/2019	EPA completed its assessment	6
29/05/2019	EPA provided report to the Minister for Environment	6
04/06/2019	EPA report published	3 days
18/06/2019	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the Environmental Protection Authority decides to assess the proposal and records the level of assessment.

In this case, the Environmental Protection Authority met its timeline objective to complete its assessment and provide a report to the Minister.



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Chairman

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## Executive Summary

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment, on the outcomes of the EPA's environmental impact assessment (EIA) of the proposal by DDG Operations Pty Ltd (the proponent).

The proposal is to construct and operate a buried steel pipeline for natural gas at a length of 3.3 kilometres (km) in the Burrup Peninsula industrial area – which is adjacent to Murujuga National Park, containing rock art of international significance – in Western Australia's Pilbara region (Figure 1).

The proposed Pluto North West Shelf Interconnector (PNI) pipeline:

- starts at the Pluto Compressor Station (PCS) in the existing Dampier Bunbury Natural Gas Pipeline (DBNGP) corridor, and connects the Pluto Liquefied Natural Gas (LNG) plant with the Karratha Gas Plant (KGP);
- requires clearing and development of 10.69 hectares (ha) of land – including 3.26 ha within existing KGP and Buffer Zone leases, and 7.43 ha within the DBNGP corridor and Dampier facilities area; and
- involves construction within an indicative disturbance footprint 30 metres (m) in width within the KGP and Buffer Zone leases and DBNGP corridor, and within 0.6 ha adjacent to the DBNGP corridor and Dampier facilities area, including:
  - controlled blasting and trenching of the ditch to lay the pipe; and
  - development of two 10 m-wide tracks access tracks between the indicative disturbance footprint and Burrup Road.

The EPA assessment included targeted consultation with key Indigenous stakeholders and the proponent to minimise any potential disturbance to existing and unidentified Aboriginal heritage sites during all phases of construction.

The EPA has concluded that the proposal is environmentally acceptable and may be implemented subject to the conditions recommended in Appendix 3 of this report, including measures detailed in a Cultural Heritage Management Plan and a Construction Environmental Management Plan.

# 1. Introduction

The proposal by DDG Operations Pty Ltd (the proponent) is to construct and operate the Pluto to Northwest Shelf Interconnector (PNI), a buried steel pipeline for natural gas at a length of 3.3 kilometres (km), to connect the Pluto Compressor Station (PCS) to the Karratha Gas Plant (KGP). The proposal will require clearing of 10.69 hectares (ha) of native vegetation, including 3.26 ha within the existing KGP Lease and Buffer Zone Lease, and 7.43 ha within the existing Dampier to Bunbury Natural Gas Pipeline (DBNGP) corridor and Dampier facilities area (Figures 1 and 2).

The EPA has prepared this report in accordance with section 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA in November 2018. On 23 January 2019, the EPA decided to assess the proposal and set the level of assessment at 'Referral Information' (with additional information required under section 40(2)(a) of the EP Act). The additional information required under section 40(2)(a) of the EP Act for the proposal was received on 4 March 2019.

## 1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016*.

## 2. The proposal

### 2.1 Proposal summary

The proponent, DDG Operations Pty Ltd, proposes to construct and operate the Pluto to North West Shelf Interconnector (PNI) pipeline on the Burrup Peninsula in the City of Karratha, in Western Australia's Pilbara region. The proposed pipeline is to connect the Pluto Compressor Station (PCS) to the Karratha Gas Plant (KGP), enabling transfer of gas from the Pluto Liquefied Natural Gas (LNG) plant to maintain supply to the KGP for processing (Figure 1).

The proposed development of the PNI pipeline includes the following activities:

- clearing of an estimated 10.69 ha of land to install the pipe on a length-by-length basis, including 3.26 ha within the existing KGP Lease and Buffer Zone Lease, and 7.43 ha within the Dampier to Bunbury Natural Gas Pipeline (DBNGP) corridor and Dampier facilities area (Figure 2);
- controlled blasting and trenching of the pipe ditch;
- construction within a 30 metre (m) wide construction right of way (known as the indicative disturbance footprint) located within the KGP Lease, the Buffer Zone Lease, the DBNGP corridor, and an area of about 0.6 ha adjacent to the DBNGP corridor and Dampier facilities area; and construction of two tracks at a width of 10 m to facilitate access between the indicative disturbance footprint and Burrup Road (Figure 2); and
- rehabilitation of all disturbed areas.

The key characteristics of the proposal are summarised in tables 1 and 2 below. A detailed description of the proposal is provided in section 2 of the *Supporting Information Document* (Jacobs, 2018).

**Table 1: Summary of the proposal**

<b>Proposal title</b>	Pluto North West Shelf Interconnector Pipeline (PNI)
<b>Short description</b>	<p>Clearing and development of 10.69 ha, for the purpose of constructing and operating the 3.3 km-long, buried steel natural gas pipeline, in the industrialised section of the Burrup Peninsula in WA's Pilbara region.</p> <p>The proposed development starts at the Pluto Compressor Station (PCS) within the Dampier Bunbury Natural Gas Pipeline (DBNGP) corridor and connects the Pluto Liquefied Natural Gas (LNG) plant with the Karratha Gas Plant (KGP).</p>

**Table 2: Location and proposed extent of physical and operational elements**

Element	Location	Proposed extent
<b><i>Physical elements</i></b>		
Pipeline construction and associated infrastructure	Figure 2	<p>Clearing of up to 10.69 ha, including:</p> <ul style="list-style-type: none"> <li>• 3.26 ha within the Karratha Gas Plant (KGP) and Buffer Zone leases; and</li> <li>• 7.43 ha within the Dampier Bunbury Natural Gas Pipeline (DBNGP) corridor and Dampier facilities area.</li> </ul>



**Figure 1: Regional location**





**Figure 2: Development envelope and indicative disturbance footprint**

## 2.2 Context

The environmental assessment study area is in the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region, specifically within the Roebourne subregion (PIL4). The proposed PNI pipeline is within the mapped granitic land system.

The PNI pipeline is located within the Burrup Strategic Industrial Area (Figure 2). This industrial estate is adjacent to Murujuga National Park, which contains rock art of international significance. The *Murujuga Rock Art Strategy*, released by the Minister for Environment on 15 February 2019, establishes the framework for long-term management and monitoring of environmental quality to protect the rock art on the Dampier Archipelago and Burrup Peninsula from the impacts of anthropogenic emissions, consistent with the State Government's responsibilities under the *Environmental Protection Act 1986* (EP Act). The strategy builds on previous work undertaken on Murujuga to deliver a scientifically rigorous approach to monitoring, analysis, and management (DWER 2019).

The current zoned land use of the proposal is industrial, with the Pluto LNG plant and KGP operating adjacent to the proposal area. The PNI pipeline corridor extends along the eastern side of the KGP and adjacent Buffer Zone leases for about 1.1 km, then enters the existing DBNGP corridor for 2.2 km before connecting to the PCS.

### 3. Consultation

In November 2018, the EPA advertised the referral information for the proposal for public comment and received 130 submissions. All submissions requested 'Assess – Public Environmental Review' for potential impacts on Murujuga National Park rock art and proposed World Heritage listing.

The proponent consulted with key stakeholders including government agencies and Indigenous groups to prepare supporting information provided with the referral. The issues raised and the proponent's response are detailed in Section 4 of the proponent's *Supporting Information Document* (Jacobs 2018).

In February 2019, the EPA requested further information from the proponent. This included targeted consultation with key Indigenous stakeholder groups to review the Cultural Heritage Management Plan (CHMP) on the appropriateness of procedures to minimise any potential disturbance to existing and unidentified Aboriginal (archaeological and ethnographic) sites during all phases of construction.

In March 2019, the EPA received the required additional information from the proponent, including letters from key Indigenous stakeholder groups and an updated CHMP.

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

## 4. Key environmental factors

In undertaking its assessment of this proposal and preparing this report, the EPA had regard for the object and principles contained in s4A of the *Environmental Protection Act 1986* (EP Act) to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information, the Construction Environmental Management Plan (CEMP), and the Cultural Heritage Management Plan (CHMP)
- public comments received on the referral, and stakeholder comments received during preparation of the proponent's documentation
- the EPA's own inquiries
- the EPA's *Statement of environmental principles, factors and objectives*
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.3 of this report.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Social Surroundings (Aboriginal heritage and culture)** – potential impacts on Aboriginal heritage sites (loss or disturbance) through construction activities and vegetation clearing, including disturbance on archaeological and mythological Aboriginal heritage sites.
- **Flora and Vegetation** – clearing of 10.69 ha of native vegetation, including disturbance of Priority flora, and introduction or spread of weeds from vehicle and earthmoving activities.
- **Terrestrial Fauna** – potential impacts from vegetation clearing and construction may result in the loss of habitat for significant fauna and a potential trap for native animals from trenching. Significant fauna include the Northern Quoll and the Pilbara Olive Python.

The EPA considered other environmental factors during the course of its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent's referral documentation (Jacobs, 2018). Appendix 2 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principles were particularly relevant to its assessment of the proposal:

1. **The precautionary principle** – Biological and physical investigations have been carried out by the proponent to provide certainty in its assessment of potential impacts. The proponent has identified suitable measures to avoid and minimise impacts where practical.

2. **The principle of intergenerational equity** – The proponent has undertaken measures to avoid and minimise impacts, together with the recommended conditions, including drafting a CEMP to maintain the environment for future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – The proponent has identified management measures, including adaptive management, to mitigate the biodiversity and ecological impacts associated with the proposal.
4. **Principles relating to improved valuation, pricing and incentive mechanisms** – The EPA notes that the proponent will take responsibility for preventing pollution, particularly the containment of chemicals used for the proposal.
5. **The principle of waste minimisation** – The EPA notes that the proposal will apply the waste hierarchy to project operations.

Appendix 1 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 to 4.3 of this report. These sections outline whether the EPA considers the impacts on each factor are manageable. Section 5 provides the EPA's conclusion as to whether or not the proposal as a whole is environmentally acceptable.

## 4.1 Social surroundings (Aboriginal heritage and culture)

### EPA objective

The EPA's environmental objective for this factor is *to protect social surroundings from significant harm*.

### Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2018)
- *Environmental Factor Guideline – Social Surroundings* (EPA 2016a)

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016a).

### EPA assessment

The proposal's indicative disturbance footprint is located on the Burrup Peninsula, also known as Murujuga (meaning 'hip bone sticking out' in the Ngaluma-Yaburara language). Murujuga is home to one of the largest, most dense and diverse collections of rock art in the world, including more than one million images. While

rock art is difficult to date, the rock art on Murujuga is estimated at between 4,000 and 30,000 years in age. The Murujuga rock art displays a wide range of techniques, subjects and styles. Almost all the rock art is in the form of petroglyphs, rather than drawings or paintings. Petroglyphs are images created by removing part of a rock surface by hammering (pecking, pounding, bruising) and abrading (rubbing, incising, scraping) hard, granitic rocks. There are images of terrestrial and marine fauna, macropods, birds, extinct mammals, snakes and reptiles, fish, turtles, crabs and crayfish. Other images include tracks and groups of animal footprints, and a range of geometric and other abstract designs (DWER 2019).

The impact on the rock art has been the subject of consultation with key Indigenous stakeholder groups for the Burrup Peninsula (Murujuga), including the:

- Ngarluma People;
- Yindjibarndi People;
- Yaburara and Mardudhunera People; and
- Wong-goo-tt-oo People.

Each of these parties is signatory to the *Burrup and Maitland Industrial Estates Agreement (BMIEA) Implementation Deed*, executed with the State of Western Australia in 2003. The proponent acknowledges Murujuga Aboriginal Corporation (MAC) as the administrator for the implementation of contractual obligations of the BMIEA. The parties approached regarding the proposal are consistent with those comprising the MAC – the Ngarluma, Mardudhunera, Yaburara, Yindjibarndi and Wong-goo-tt-oo peoples (AGIG 2018).

### ***Cultural Heritage Management Plan (CHMP)***

The proponent has prepared a CHMP. The purpose of the CHMP is to outline appropriate procedures to minimise any potential disturbance to existing and unidentified Aboriginal (archaeological and ethnographic) sites during all phases of construction (AGIG 2018). The CHMP has been developed based on the findings of a recent Aboriginal heritage survey and associated consultation with key Indigenous stakeholder groups.

### ***Heritage survey***

The proponent invited all key Indigenous stakeholder groups to take part in the heritage survey. In July 2018, representatives of the Yaburara and Mardudhunera and Wong-goo-tt-oo peoples completed a site avoidance survey. Further consultation on the appropriateness of the CHMP was undertaken with all key Indigenous stakeholder groups. The proponent received letters from all four groups indicating they are satisfied with the consultation process and information provided to them, and the proposed actions to mitigate impacts on heritage values identified in the heritage survey by the proponent.

The July 2018 survey identified six Aboriginal sites within the proposal's indicative disturbance footprint, each previously recorded on the Department of Planning, Lands and Heritage (DPLH) database. The survey did not identify any new Aboriginal heritage sites (Jacobs 2018).

### ***Mitigation and management measures***

The EPA notes that the CHMP and the CEMP together have control measures to avoid disturbance to recorded or unrecorded Aboriginal heritage sites. Proposed measures by the proponent to manage and mitigate potential impacts to social surroundings include:

- continuous engagement with traditional owner groups during the construction process;
- avoidance of Aboriginal heritage sites during earthworks, excavation and construction of the proposal;
- avoidance of culturally and socially valuable granophyre outcrops found within and around the proposal;
- installation of physical barriers when constructing within 10 m of a heritage site;
- where unexpected finds occur, work will stop and an investigation undertaken to determine the nature of the finding;
- meeting with the key Indigenous stakeholder groups post-finalisation of the proposal; and
- construction will be managed in accordance with the CHMP, which includes cultural monitors being present during works being undertaken in the vicinity of culturally sensitive areas (Jacobs 2018).

The EPA recommends a condition requiring implementation of the CHMP (December 2018).

The proponent is required to comply with the requirements and expectations of the *Aboriginal Heritage Act 1972* to ensure that Aboriginal heritage can be appropriately protected and preserved.

### **Summary**

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2018)
- *Environmental Factor Guideline – Social Surroundings* (EPA 2016a)

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Social Surroundings, that the impacts to this factor are manageable and would no longer be significant provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 3); and
- implementation of condition 6, so that the proposal does not have long-term impacts on Aboriginal heritage values, through the implementation of the Cultural Heritage Management Plan (Appendix 3).

## **4.2 Flora and vegetation**

### **EPA objective**

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained*.

## Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2016)
- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b)
- *Technical Guidance – Flora and vegetation Surveys for Environmental Impact Assessment* (EPA 2016c)

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b).

## EPA assessment

The proponent has undertaken appropriate flora and vegetation surveys in accordance with EPA policy and guidance, including desktop analysis and a reconnaissance flora and vegetation survey.

The EPA notes that within the DBNGP corridor, the proposed PNI pipeline will be constructed at a minimum safe distance of 6.5 m from the existing DBNGP, also located within the existing DBNGP corridor. The DBNGP corridor has been disturbed historically during the original construction, and at sections along the corridor for subsequent inspection, maintenance and expansion activities.

### **Vegetation**

No Threatened Ecological Community (TEC) or Priority Ecological Community (PEC) vegetation or habitat was located within the development envelope. Two PECs are within, or adjacent to, the buffer of the development envelope, these being the Burrup Peninsula rock pile communities and the Burrup Peninsula rock pool communities.

### **Flora**

Two Priority flora species were identified within the development envelope, including *Terminalia supranitifolia* (P3) and *Rhynchosia bungarensis* (P4). These species are considered widespread on the Burrup Peninsula. Though not recorded during the survey, the desktop assessment noted potential for *Vigna triodiophila* (P3) to occur in the area. The EPA considers that, given avoidance measures taken by the proponent, direct impacts on flora and vegetation from the proposal are unlikely to be significant.

### **Mitigation and management measures**

Measures proposed by the proponent to manage the potential environmental impacts on flora include:

- positioning the proposal in an area to avoid disturbance to environmental values;
- designing the indicative disturbance footprint to maximise use of degraded and pre-disturbed areas (installed within the existing DBNGP corridor)



- avoiding the drainage line where possible; and
- inspecting vehicles for weeds and seed prior to mobilisation to site.

The indicative disturbance footprint has been designed to avoid known locations of Priority flora and ecological communities, and minimise potential impacts where practicable using the mitigation hierarchy (Jacobs 2018).

The EPA considers that direct and indirect impacts to flora and vegetation are not likely to be significant and indirect impacts can be managed through the implementation of the CEMP.

The EPA recommends a condition requiring implementation of the CEMP (April 2019).

## Summary

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2016)
- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016b)
- *Technical Guidance – Flora and vegetation Surveys for Environmental Impact Assessment* (EPA 2016c)
- the application of mitigation hierarchy to avoid and minimise impacts to flora and vegetation, where possible.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation, that the impacts to this factor are manageable and would no longer be significant provided there is:

- control of impacts through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 3); and
- implementation of recommended condition 7, to avoid or minimise direct and indirect impacts as far as practicable to Priority flora *Terminalia supranitifolia* (P3) and *Rhynchosia Bungarensis* (P4), through the implementation of a Construction Environmental Management Plan.

## 4.3 Terrestrial fauna

### EPA objective

The EPA's environmental objective for this factor is *to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*

### Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2018)

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d)
- *Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna* (EPA 2016e)
- *Technical Guidance – Terrestrial Fauna Surveys* (EPA 2016f)

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d).

## **EPA assessment**

The proposed development envelope of up to 10.69 ha would result in some loss of fauna habitat, a significant portion of which is already cleared and within the existing DBNGP corridor constructed in 1982. Terrestrial fauna may also be impacted from trenching, noise, and vibration from construction and operational activities.

The proponent has undertaken appropriate fauna surveys in accordance with EPA policy and guidance, including desktop analysis and a reconnaissance fauna survey.

## **Fauna habitat**

The proposal development envelope contains three broad fauna habitats based on the vegetation types and landforms:

- grassland
- open woodland/shrubland
- eucalypt woodland

Approximately 33 per cent of the development envelope is highly degraded, consisting of infrastructure and roads. Remaining vegetation within the development envelope ranged from disturbed (19 per cent) to high-quality (43 per cent) (Jacobs 2018).

## **Significant fauna**

The desktop survey found two significant fauna species considered to have a high likelihood of occurrence within the development envelope – the Northern Quoll (*Dasyurus hallucatus*) and the Pilbara Olive Python (*Liasis olivaceus barroni*).

No significant fauna species were recorded during the field survey. Three fauna species were recorded opportunistically during the survey, these were the Euro (*Osphranter robustus erubescens*), Short-beaked Echidna (*Tachyglossus aculeatus acanthion*), and the Corella (*Cacatua sanguinea*).

## **Potential impacts**

Terrestrial fauna would be impacted by the proposal from direct clearing of 10.69 ha for construction of the PNI pipeline. Construction has potential to impact fauna through activities including clearing and grading, trenching and excavation, and lowering-in and backfilling.

The following activities have the potential to affect fauna values within the indicative disturbance footprint:

- clearing of fauna habitats
- vehicle movements and earthmoving activities may result in injury or death of fauna species
- trenches can trap fauna and may result in injury or death
- noise during construction (Jacobs 2018).

### ***Mitigation and management measures***

The indicative disturbance footprint for the proposal has been designed to minimise the removal of quality and foraging habitat for the Pilbara Olive Python and the Northern Quoll by avoiding the drainage line, and being located where possible on degraded habitat (along the existing DBNGP corridor) to minimise population fragmentation.

Open trench length and location monitoring by the construction contractor will be recorded daily in the fauna intersection register to demonstrate compliance with time limits on trench open times. Daily trench inspections to rescue trapped fauna will occur within three hours of sunrise, again between 2pm and 3pm, and again prior to sunset, and will be recorded in the fauna interaction register. Inspections by personnel will occur immediately prior to lowering-in and backfill operations.

To manage potential direct and indirect impacts on fauna from the proposal, the proponent has drafted the CEMP (April 2019). The CEMP includes a detailed management program for the life of the proposal, including objectives, standards and measurement criteria, controls, monitoring and recording, to minimise indirect impacts from the proposal to fauna.

The EPA considers that direct and indirect impacts to fauna are not likely to be significant, and that indirect impacts can be managed through the implementation of the CEMP.

The EPA recommends a condition requiring implementation of the CEMP (April 2019).

### **Summary**

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2018)
- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016d)
- *Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna* (EPA 2016e)
- *Technical Guidance – Terrestrial Fauna Surveys* (EPA 2016f)
- the application of mitigation hierarchy to minimise impacts to terrestrial fauna

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna, that the impacts to this factor are manageable and would no longer be significant provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 3)

- implementation of recommended condition 7 to avoid or minimise impacts as far as practicable to significant fauna, including the Northern Quoll (*Dasyurus hallucatus*) and Pilbara Olive Python (*Liasis olivaceus barroni*), through implementation of a CEMP.

## 5. Conclusion

The EPA has considered the assessment outlined in previous sections and taken a holistic view of the likely residual impacts of the proposal. The EPA has considered the degree of connectivity and interrelatedness of processes operating across systems and communities that make up the environment.

### Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts, including:

- implementation of a CHMP and CEMP with performance objectives and measurement criteria for ongoing monitoring of environmental performance;
- continual targeted Indigenous key stakeholder consultation;
- minimising and managing disturbance to remnant vegetation;
- minimising the potential for new weeds to be introduced into the PNI corridor from external sources;
- minimising the direct impacts on fauna from vehicles, trench entrapment and exposure to predators;
- avoiding disturbance to Aboriginal heritage sites identified for protection near the PNI pipeline corridor; and
- manage new Aboriginal heritage sites / artifacts uncovered or identified in accordance with the requirements of the *Aboriginal Heritage Act 1972*.

### Conclusion

The EPA has taken the following into account in its assessment of the proposal as a whole, including the:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant EP Act principles and the EPA's objectives for Flora and Vegetation, Terrestrial Fauna and Social Surroundings (Aboriginal Heritage and Culture)
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are imposed.

Given the above, the EPA has concluded that the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 3.

## 6. Recommendations

That the Minister for Environment notes:

1. That the proposal assessed is for construction of a buried steel natural gas pipeline at 3.3 km in length, connecting the Pluto Interconnector Compressor Station to the Karratha Gas Plant on the Burrup Peninsula, with an indicative disturbance footprint including up to 10.69 ha of clearing.
2. The key environmental factors identified by the EPA in the course of its assessment, as set out in section 4 of this report, are:
  - a) Social Surroundings (Aboriginal heritage and culture);
  - b) Flora and Vegetation; and
  - c) Terrestrial Fauna.
3. The EPA has concluded that the proposal may be implemented, provided implementation is carried out in accordance with recommended conditions and procedures set out in Appendix 3. Matters addressed in the conditions include implementation of the Construction Environmental Management Plan and Cultural Heritage Management Plan to:
  - a) minimise direct and indirect impacts so the proposal does not have long-term impacts on Aboriginal heritage values;
  - b) minimise direct and indirect impacts as far as practicable to Priority flora, including *Terminalia supranitifolia* (P3) and *Rhynchosia Bungarensis* (P4); and
  - c) minimise direct and indirect impacts as far as practicable to significant fauna, including the Northern Quoll (*Dasyurus hallucatus*) and the Pilbara Olive Python (*Liasis olivaceus barroni*).

## References

AGIG 2018, *Pluto NWS Interconnector Pipeline Project Cultural Heritage Management Plan 2018*, Rev 1, Australian Gas Infrastructure Group, Perth, WA.

AGIG 2019, *Pluto-North West Shelf Interconnector Construction Environmental Management Plan*, Rev B, Australian Gas Infrastructure Group, Perth, WA.

DWER 2019, *Murujuga Rock Art Strategy*, Department of Water and Environmental Regulation, Perth, WA.

EPA 2016a, *Environmental Factor Guideline – Social Surroundings*, Environmental Protection Authority, Perth, WA.

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Horizon 2018, *Aboriginal Heritage Site Avoidance Survey report of the Pluto North West Shelf Interconnector Pipeline project with Aboriginal Stakeholder Groups for the Australian Gas Infrastructure Group*, Horizon Heritage Management, Perth, WA.

Jacobs 2018, *Pluto-North West Shelf Interconnector, S38 EP Act Referral – Supporting Information Document*, Jacobs Group (Australia) Pty Ltd, Perth, WA.

## Appendix 1: Consideration of principles

EP Act Principle	Consideration
<p><b>1. The precautionary principle</b></p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i></p> <p><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></p> <p><i>b) an assessment of the risk-weighted consequences of various options.</i></p>	<p>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna, and Social Surroundings (Aboriginal heritage and culture) could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>Investigations into the biological and physical environment undertaken by the proponent have provided sufficient scientific certainty to assess the risks and identify measures to avoid or minimise impacts. The EPA has recommended a condition to ensure these measures are undertaken by the proponent.</p> <p>From its assessment of this proposal, the EPA has concluded that there is no threat of serious or irreversible harm.</p>
<p><b>2. The principle of intergenerational equity</b></p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna, and Social Surroundings (Aboriginal heritage and culture) could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>In considering this principle, the EPA notes that the proponent has taken measures to avoid and minimise impacts. In assessing this proposal, the EPA has recommended conditions to manage impacts to the key environmental factors identified during the course of this assessment.</p> <p>From its assessment of this proposal, the EPA has concluded that that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.</p>
<p><b>3. The principle of the conservation of biological diversity and ecological integrity</b></p>	<p>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna, and Social Surroundings (Aboriginal heritage and</p>



EP Act Principle	Consideration
<p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>culture) could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>In assessing the proposal, the EPA has considered these impacts and has taken into account measures proposed by the proponent to minimise impacts to the affected species. The EPA has recommended conditions to ensure relevant measures are undertaken by the proponent.</p> <p>From its assessment of this proposal, the EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.</p>
<p><b>4.Principles relating to improved valuation, pricing and incentive mechanisms</b></p> <p><i>(1) Environmental factors should be included in the valuation of assets and services.</i></p> <p><i>(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p><i>(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i></p> <p><i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p>	<p>In considering this principle, the EPA notes that the proponent would bear the cost relating to waste and pollution, including avoidance and ongoing management of the proposal which would be the responsibility of the proponent.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>
<p><b>5.The principle of waste minimisation</b></p>	<p>In considering this principle, the EPA notes that the proponent proposes measures to minimise waste and prevent contamination or environmental</p>

EP Act Principle	Consideration
<i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i>	<p>harm due to inappropriate disposal of waste, by using control measures and monitoring / recording for waste issues.</p> <p><i>Monitoring and recording</i> Weekly monitoring of waste management inspections, with the inspection of the adequacy of housekeeping and waste management on-site to be recorded on the waste transfer register.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>

## Appendix 2: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Targeted key Indigenous stakeholder comments	Evaluation of why the factor is not a key environmental factor
<b>LAND</b>			
Terrestrial Environmental Quality	<p>Potential impacts to Terrestrial Environmental Quality include the following:</p> <ul style="list-style-type: none"> <li>• Compaction of soils and release of hazardous substances from construction activities, erosion of soils from earthworks and excavation, and the exposure of acid sulphate soils (ASS).</li> <li>• In the southern extent near KGP, on the other side of Burrup Road (outside of the indicative disturbance footprint), is a moderate-to-low risk of ASS occurring within three metres of natural soil surface, and a high-to-moderate risk of ASS beyond three metres of natural soil surface.</li> </ul>	<p><b>Targeted key Indigenous stakeholder comments</b></p> <ul style="list-style-type: none"> <li>• No comments</li> </ul>	<p>Terrestrial Environmental Quality was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• Environmental Factor – <i>Terrestrial Environmental Quality</i>;</li> <li>• a desktop review from Department of Water and Environmental Regulation (DWER) Contaminated Sites Database identified no contaminated sites within the indicative disturbance footprint;</li> <li>• accidental releases of hydrocarbons and other substances being managed in accordance with the CEMP; and</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> <li>• the EPA considers it is unlikely that the proposal would have a significant impact on Terrestrial Environmental Quality and that the impacts to this factor are manageable.</li> </ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Targeted key Indigenous stakeholder comments	Evaluation of why the factor is not a key environmental factor
			Accordingly, the EPA did not consider Terrestrial Environmental Quality to be a key environmental factor at the conclusion of its assessment.
<b>AIR</b>			
Air Quality	<p>Air Quality has the potential to be directly impacted through:</p> <ul style="list-style-type: none"> <li>• impacts of dust that may occur from activities such as vegetation clearing, earthworks, excavation, blasting, materials handling and stockpiling; and</li> <li>• impacts to air quality that may occur from blasting and vehicle / machinery exhausts.</li> </ul>	<p><b>Targeted key Indigenous stakeholder comments</b></p> <ul style="list-style-type: none"> <li>• No comments.</li> </ul>	<p>Air Quality was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• Environmental Factor – <i>Air Quality</i>;</li> <li>• the impacts are expected to be temporary, occurring during construction activities and managed by applying water to dusty areas;</li> <li>• greenhouse gas emissions are expected to be minimal as this is a short-term construction project;</li> <li>• appropriate measures will be implemented to minimise and manage Air Quality impacts where applicable in the CEMP;</li> <li>• <i>guidelines for the management of dust and associated contaminants from land development sites</i> (DEC 2011); and</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Targeted key Indigenous stakeholder comments	Evaluation of why the factor is not a key environmental factor
			<ul style="list-style-type: none"> <li>the EPA considers it is unlikely that the proposal would have a significant impact on Air Quality and that the impacts to this factor are manageable.</li> </ul> <p>Accordingly, the EPA did not consider Air Quality to be a key environmental factor at the conclusion of its assessment.</p>
<b>PEOPLE</b>			
Social Surroundings (Light, Noise, Odour and Visual Amenity)	<p>Potential impacts to social surroundings include the following:</p> <ul style="list-style-type: none"> <li>Noise impacts during construction phase of the proposal.</li> <li>Impacts to visual amenity due to the disturbed nature of the area.</li> </ul>	<p><b>Targeted key Indigenous stakeholder comments</b></p> <ul style="list-style-type: none"> <li>No comments.</li> </ul>	<p>Social Surroundings (Light, Noise, Odour and Visual Amenity) was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>the legislative requirements for managing noise through the <i>Environmental Protection (Noise) Regulations 1997</i>;</li> <li>the legislative requirements for managing emissions under Part V of the EP Act;</li> <li>Environmental Factor Guideline – <i>Social Surroundings</i>; and</li> <li>the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>.</li> </ul>

<b>Environmental factor</b>	<b>Description of the proposal's likely impacts on the environmental factor</b>	<b>Targeted key Indigenous stakeholder comments</b>	<b>Evaluation of why the factor is not a key environmental factor</b>
			<p>the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings (Light, Noise, Odour and Visual Amenity) and that the impacts to this factor are manageable.</p> <p>Accordingly, the EPA did not consider Social Surroundings (Light, Noise, Odour and Visual Amenity) to be a key environmental factor at the conclusion of its assessment.</p>

## Appendix 3: Identified Decision-Making Authorities and Recommended Environmental Conditions

### Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with Decision-making Authorities (DMAs) and, if possible, agree on whether or not the proposal may be implemented and, if so, to what conditions and procedures, if any, that implementation should be subject.

The following Decision-making Authorities have been identified:

<b>Decision-making Authority</b>	<b>Legislation (and approval)</b>
1. Minister for Water	<i>Rights in Water and Irrigation act 1914</i> (water abstraction licence)
2. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> (Section 18 clearances)
3. Minister for Mines and Petroleum	<i>Petroleum Pipelines Act 1969</i> (construction and operation)
4. Minister for Lands	<i>Petroleum Pipelines Act 1969</i> (Section 16 easement)
5. DBNGP Land Access Minister	<i>Dampier to Bunbury Pipeline Act 1997</i> (Section 34 right in respect of land in the DBNGP corridor)

Note: In this instance, agreement is required with DMAs 1–5, since these DMAs are Ministers.

**RECOMMENDED ENVIRONMENTAL CONDITIONS**  
**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED**  
**(*Environmental Protection Act 1986*)**

**PLUTO NORTH WEST SHELF INTERCONNECTOR PIPELINE**

- Proposal:** Clearing and development for the purpose to construct and operate the Pluto North West Shelf Interconnector (PNI), a 3.3 kilometre (km) long steel buried natural gas pipeline, in the industrialised section of the Burrup Peninsula in the Pilbara Region in Western Australia (WA).
- The Project will commence at the Pluto Compressor Station (PCS) within the Dampier Bunbury Natural Gas Pipeline (DBNGP) corridor and connect the Pluto Liquefied Natural Gas (LNG) Plant with the Karratha Gas Plant (KGP).
- Proponent:** DDG Operations Pty Ltd  
Australian Company Number 166 900 170
- Proponent Address:** Level 6, 12-14 The Esplanade, Perth WA 6000
- Assessment Number:** 2192

**Report of the Environmental Protection Authority:** 1639

Pursuant to section 45 of the *Environmental Protection Act 1986*, it has been agreed that the proposal described and documented in Table 1 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

**1 Proposal Implementation**

- 1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

**2 Contact Details**

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation



or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

### **3 Time Limit for Proposal Implementation**

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

### **4 Compliance Reporting**

- 4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan shall indicate:
  - (1) the frequency of compliance reporting;
  - (2) the approach and timing of compliance assessments;
  - (3) the retention of compliance assessments;
  - (4) the method of reporting of potential non-compliances and corrective actions taken;
  - (5) the table of contents of Compliance Assessment Reports; and
  - (6) public availability of Compliance Assessment Reports.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2, the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

- 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

## **5 Public Availability of Data**

- 5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

- 5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

## **6 Cultural Heritage Management Plan Implementation**

- 6-1 The Proponent shall implement the proposal to meet the following environmental objective:

- (1) Avoid, where possible, and minimise direct and indirect impacts so that the proposal does not cause long term impacts on Aboriginal heritage values.
- 6-2 In order to meet the requirements of condition 6-1, the proponent shall implement the *Pluto - NWS Interconnector Cultural Heritage Management Plan (version 1, December 2018)*.
- 6-3 The proponent shall implement the most recent version of the Construction Environmental Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1.
- 6-4 The proponent shall continue to implement the Construction Environmental Management Plan (Rev B, April 2019), or any subsequent revisions as approved by the CEO in condition 6-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 6-1.

## **7 Construction Environmental Management Plan Implementation**

- 7-1 The Proponent shall implement the proposal to meet the following environmental objective:
  - (1) Avoid, where possible, and minimise direct and indirect impacts as far as practicable to Priority flora; *Terminalia supranitifolia* (P3) and *Rhynchosia Bungarensis* (P4).
  - (2) Avoid, where possible, and minimise direct and indirect impacts as far as practicable to significant fauna; *Dasyurus hallucatus* (Northern Quoll) and *Liasis olivaceus barroni* (Pilbara Olive Python).
- 7-2 In order to meet the requirements of condition 7-1, the proponent shall implement the *Pluto North West Shelf Interconnector Construction Environmental Management Plan (Rev B, April 2019)*.
- 7-3 The proponent shall implement the most recent version of the Construction Environmental Management Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 7-1.
- 7-4 The proponent shall continue to implement the Construction Environmental Management Plan (Rev B, April 2019), or any subsequent revisions as approved by the CEO in condition 7-3, until the CEO has confirmed by notice in writing that the plan meets the objective specified in condition 7-1.

**Schedule 1****Table 1: Summary of the Proposal**

<b>Proposal Title</b>	Pluto North West Shelf Interconnector Pipeline
<b>Short Description</b>	<p>Clearing and development for the purpose to construct and operate the Pluto - North West Shelf Interconnector (PNI), a 3.3 kilometre (km) long steel buried natural gas pipeline, in the industrialised section of the Burrup Peninsula in the Pilbara Region in Western Australia (WA).</p> <p>The Project will commence at the Pluto Compressor Station (PCS) within the Dampier Bunbury Natural Gas Pipeline (DBNGP) corridor and connect the Pluto Liquefied Natural Gas (LNG) Plant with the Karratha Gas Plant (KGP).</p>

**Table 2: Location and authorised extent of physical and operational elements**

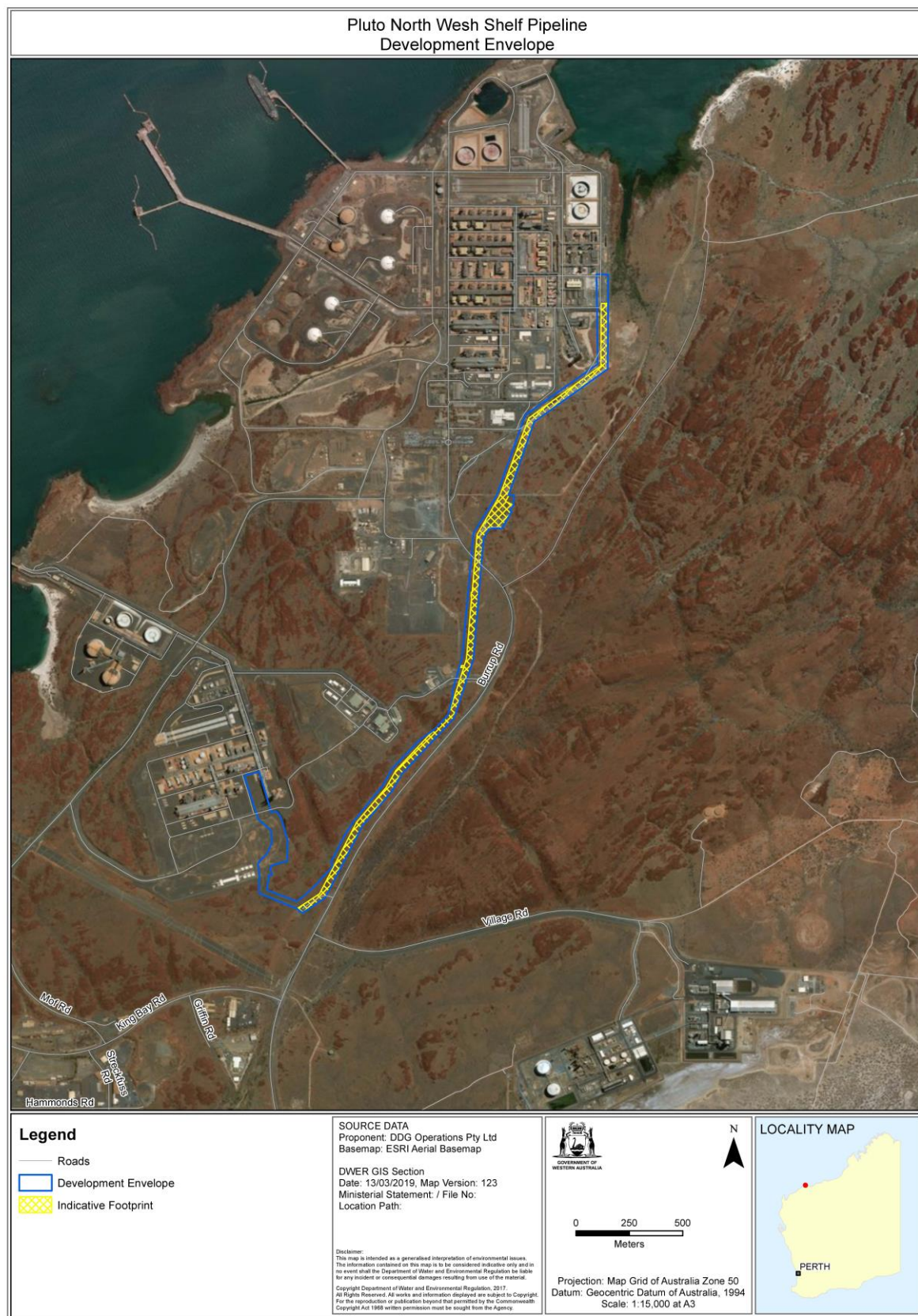
<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Element</b>	<b>Location</b>	<b>Authorised Extent</b>
Pipeline construction and associated infrastructure	Figure 1	Clearing of no more than 10.69 ha of which 3.26 ha is within the Karratha Gas Plant (KGP) Lease and Buffer Zone Lease and 7.43 ha within Dampier Bunbury Natural Gas Pipeline (DBNGP) Corridor and Dampier facilities area.

**Table 3: Abbreviations and Definitions**

<b>Acronym or Abbreviation</b>	<b>Definition or Term</b>
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
DBNGP	Dampier Bunbury Natural Gas Plant
EP Act	<i>Environmental Protection Act 1986</i>
Ha	Hectare
KGP	Karratha Gas Plant
Km	Kilometre
LNG	Liquefied Natural Gas
NWS	North West Shelf
PCS	Pluto Compressor Station
PNI	Pluto to North West Shelf Interconnector

**Figure 1 (attached)**

Figure 1 Pluto North West Shelf Interconnector Pipeline Development Envelope and Indicative Footprint



**Figure 1: Pluto North West Shelf Interconnector Pipeline development envelope and indicative disturbance footprint**

## **Schedule 2**

Co-ordinates defining areas shown in Figure 1 are held by the Department of Water and Environmental Regulation (DWER) under the following reference number:

- Pluto North West Shelf Interconnector Pipeline Development Envelope and Indicative Footprint – 2019 – 1552445756786