

Yara Pilbara Fertilisers Pty Ltd
Terrestrial Fauna and Weed Management Plan

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JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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Acronyms and Abbreviations

Term	Definition or term
BC Act	<i>Biodiversity Conservation Act 2016 (WA)</i>
CAR	Compliance Assessment Report
CEO	Means: 'The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of Section 48 of the Environmental Protection Act 1986, or the CEO's delegate'.
DWER	Department of Water and Environmental Regulation
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Protection Act 1999 (Cwlth)</i>
Ground disturbing activities	Any ground disturbing activity undertaken in the implementation of the proposal, including any clearing, civil works or construction, other than preliminary works to which approval has been given under the EP Act.
IBRA	Interim Biogeographic Regionalisation for Australia
MAC	Murujuga Aboriginal Corporation
MNP	Murujuga National Park
MS	Ministerial Statement
PEC	Priority Ecological Community
PV	Photovoltaic
SRE	Short-range endemic [invertebrate fauna species].
TFB	Total Fire Ban
TFWMP	Terrestrial Fauna and Weed Management Plan
WA	Western Australia
weeds	Weeds are plants (not necessarily non-native) that grow in sites where they are not wanted, and which have undesirable environmental or economic impacts, or both. Weeds include, but are not limited to: <ul style="list-style-type: none"> • Any plant declared under section 22(2) of the <i>Biosecurity and Agriculture Management Act 2007</i>; • Any plant listed on a National Weeds List; and • Any weeds listed on the Department of Biodiversity, Conservation and Attractions Pilbara Impact and Invasiveness Ratings list as amended or replaced from time to time.
YPF	Yara Pilbara Fertiliser Pty Ltd

1. Executive Summary

This Terrestrial Fauna and Weed Management Plan (TFWMP) is prepared to support Yara Pilbara Fertilisers Pty Ltd develop the proposed Ammonia Plant, Murujuga (Burrup Peninsula) – Renewable Hydrogen Project (the Proposal).

The Proposal is located approximately 11 km northwest of Karratha, in the Pilbara region of Western Australia (WA). The Proposal is a significant amendment to the existing Ammonia Plant, which was referred to the Environmental Protection Authority (EPA) in 2001 and approved in February 2002 subject to conditions set out in Ministerial statement 586 (MS 586).

Table ES1.1 provides a summary of the Proposal details as relevant to this plan.

Table ES1.1: Summary of the Proposal

Proposal name	Ammonia Plant, Murujuga (Burrup Peninsula) – Renewable Hydrogen Project
Proponent name	Yara Pilbara Fertilisers Pty Ltd (YPF)
Ministerial Statement (MS)	MS 1194
Purpose of the TFWMP	To meet environmental outcomes and objectives of Condition 3 (Terrestrial Fauna and Weed Management) of MS 1194 as set out in Conditions 3-1 to 3-8.
Key environmental factors and EPA objectives	<p>Flora and Vegetation EPA Objective: <i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i></p> <p>Terrestrial Fauna EPA Objective: <i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i></p>
Key environmental factors, outcomes and objectives	<p>Terrestrial Fauna and Flora and Vegetation</p> <p><u>Environmental Outcomes</u></p> <p>The proposal will be implemented to meet the following environmental outcomes:</p> <ol style="list-style-type: none"> 1. Clearing in the fauna habitat type identified as Foothills shall not exceed 18.6 ha; 2. Clearing in the fauna habitat type identified as Minor Drainage Lines shall not exceed 1.06 ha; 3. Clearing in the fauna habitat type identified as Floodplain shall not exceed 0.16 ha; 4. Clearing in the fauna habitat type identified as Waterbody (tidal flats) shall not exceed 1.45 ha; and 5. Impacts to short-range endemic fauna species are avoided. <p><u>Environmental Objectives</u></p> <p>The proposal will be implemented to achieve the following environmental objectives:</p> <ol style="list-style-type: none"> 1. Avoid where possible and otherwise minimise direct and indirect impacts to EPBC Act and BC Act listed migratory/marine birds and the Pilbara olive python within the development envelope; and 2. No introduction of weeds into the development envelope, and no increase in the abundance or distribution of existing weeds within or outside the development envelope.

Condition clauses (if applicable)	<p>At least one (1) month prior to ground disturbing activities within the development envelope delineated in Figure 2, or such lesser time approved in writing by the CEO, the proponent shall, in consultation with the Murujuga Aboriginal Corporation submit to the CEO a Terrestrial Fauna and Weed Management Plan which shall:</p> <ol style="list-style-type: none"> 1. demonstrate how the environmental outcomes in condition 3-1 and environmental objectives in condition 3-2 will be achieved; 2. include details of the outcomes of a detailed short-range endemic fauna survey undertaken within the development envelope and surrounding region prior to ground disturbing activities; 3. include provisions to avoid where practicable and otherwise minimise impacts to significant terrestrial fauna species, including short-range endemic fauna and migratory and marine birds, including, but not limited to, impacts from: <ol style="list-style-type: none"> a. clearing of habitat; b. lighting; c. noise and vibration; d. dust; e. vehicle and machinery movement strike; f. entrapment in trenches or ponds; g. the attraction of feral animals; h. fire; and i. the introduction and spread of weeds; 4. provide for relevant traditional owners to be invited to observe any ground disturbing activities during construction, and take reasonable steps to facilitate the observation of those activities by those persons; 5. specify trigger criteria that will trigger the implementation of management and/or contingency actions to prevent direct or indirect impacts to significant terrestrial fauna species, including short-range endemic fauna and migratory and marine birds; 6. specify threshold criteria to demonstrate compliance with conditions 3-1 and 3-2; 7. specify monitoring methodology to determine if trigger criteria and threshold criteria have been met; 8. specify management and/or contingency actions to be implemented if the trigger criteria required by condition 3-3(5) and/or the threshold criteria required by condition 3-3(6) have not been met; and 9. provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that conditions 3-1 and 3-2 have been met over the reporting period in the Compliance Assessment Report required by condition 8-6.
Key EMP components	Refer to Section 3.1 (outcome-based) and Section 3.2 (objective-based)
Proposed construction date	October 2022
EMP required pre-construction?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

2. Context, Scope and Rationale

2.1 The Proposal

The Ammonia Plant, Murujuga (Burrup Peninsula) – Renewable Hydrogen Project (the Proposal) is a significant amendment to the existing proposal (existing Ammonia Plant) located approximately 11 km northwest of Karratha, in the Pilbara region of Western Australia (see Figure 1 in Attachment A). The existing Ammonia Plant was referred to the Environmental Protection Authority (EPA) in 2001 and approved subject to conditions set out in Ministerial statement 586 (MS 586) in February 2002.

The Proposal includes an electrolysis plant and a dedicated solar photovoltaic (PV) farm. Energy from the PV farm will be used in the electrolysis plant to split water into hydrogen and oxygen. The hydrogen will be piped to the adjacent Ammonia Plant. The Proposal will produce about 640 tonnes of ‘green hydrogen’ per annum for the Ammonia Plant. This is about 0.4% of the hydrogen required by the Ammonia Plant and is the commercial demonstration (Phase 0, pilot project) for a future longer-term, larger-scale renewable (green) hydrogen proposal.

The Proponent for the Proposal is Yara Pilbara Fertilisers Pty Ltd (YPF).

The elements of the Proposal which have been subject to the EPA’s assessment are included in Table 2.1 below. The approved Development Envelope and Disturbance Footprint are shown in Figure 2 in Attachment A.

Table 2.1: Location and proposed extent of Proposal elements

Proposal element	Location	Approved proposal (MS 586) (Ammonia Plant)	Proposal (significant amendment) (Renewable Hydrogen Project)	Combined proposal (Ammonia Plant and Renewable Hydrogen Project)
<i>Physical elements</i>				
<ul style="list-style-type: none"> Ammonia plant Laydown area Desalination plant Access road and product pipeline to plant PV solar plant, hydrogen production plant, site tracks, and associated infrastructure. 	Figure 2	Clearing of no more than 29 ha within a 73 ha development envelope	Increase in disturbance of 22.94 ha	Clearing of no more than 51.94 ha within a 73 ha development envelope
<i>Operational elements</i>				
Oxygen emissions	-	-	Approximately 14,400 kg/day	Approximately 14,400 kg/day

2.2 Key Environmental Factors

The key environmental factors for the Proposal are:

- Social surroundings;
- Flora and vegetation; and
- Terrestrial fauna.

The potential impacts associated with the Social Surroundings environmental factors are managed through a separate Cultural Heritage and Visual Amenity Management Plan (CHVAMP; JBS&G 2022).

2.2.1 Terrestrial Fauna

The following Proposal activities could impact significant terrestrial fauna species, including short-range endemic fauna and migratory and marine birds:

- loss of fauna habitat, including habitat for conservation significant fauna through vegetation clearing;
- habitat fragmentation;
- injury and/or death of fauna because of vehicle and machinery movement strike or entrapment in ponds;
- noise, vibration, dust and lighting during construction and operations;
- attraction of feral animals and introduction and spread of weeds; and
- fire.

Six broad fauna habitat types were recorded within the Proposal's Development Envelope (Figure 3), including:

- Rocky Outcroppings;
- Foothills;
- Minor Drainage Lines;
- Floodplain;
- Sandplain; and
- Waterbody (tidal flats) (GHD 2020).

Five of these fauna habitats are located within the Disturbance Footprint.

There were 113 terrestrial fauna species recorded within the Survey Area during the fauna survey, including 19 mammals, 57 birds, 36 reptiles, and one amphibian (GHD 2020). Eight conservation significant species comprising five migratory/marine bird species, one bat species, one reptile species, and one mammal species were recorded during the survey (GHD 2020).

The Disturbance Footprint avoids the Rocky Outcropping habitat in the northern portion of the Development Envelope and the Sandplain habitat in the southern part of the Development Envelope. However, the Proposal will require the clearing of 21.23 ha of native vegetation, which comprises the following fauna habitats:

- 18.56 ha of Foothills habitat;
- 1.06 ha of Minor Drainage Line habitat;
- 0.16 ha of Floodplain habitat; and
- 1.45 ha of Waterbody (tidal flats) habitat.

Of this 22.94 ha of native vegetation that will be cleared, approximately 20.43 ha is in 'Good to Excellent' condition, which consists of:

- 18.11 ha of Foothills habitat for the Pilbara olive python (Figure 4 in Attachment A);
- 1.06 ha of Minor Drainage Line habitat for the Pilbara olive python (Figure 4 in Attachment A);
- 0.16 ha of Floodplain habitat for marine and migratory bird species listed under the EPBC Act and the north-western free-tailed bat; and

- 1.1 ha of Waterbody (tidal flats) habitat for the Pilbara olive python, marine and migratory bird species listed under the EPBC Act, and the north-western free-tailed bat.

2.2.2 Flora and Vegetation

The Proposal can impact flora and vegetation through clearing of native vegetation, introduction and/or spread of weeds, and alteration of fire and surface water regimes.

The Proposal is located on the Burrup Peninsula, directly adjacent to the Murujuga National Park and within the Pilbara Interim Biogeographical Region for Australia (IBRA) and the Roebourne IBRA sub-region. The Burrup Peninsula lies within the Fortescue Botanical District, part of the biogeographical region known as the Eremaean Botanical Province.

No flora species listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Biodiversity Conservation Act 2016* (BC Act) were recorded during the flora and vegetation surveys. In addition, no Threatened Ecological Communities (TEC) listed under the EPBC Act or the BC Act were recorded in the survey area (GHD 2020).

The Flora and Fauna Survey report (GHD 2020) identified seven vegetation communities within the Development Envelope (Figure 5 in Attachment A). The Proposal will directly impact five of these communities during construction. The Burrup Peninsula Rock Pile Community (Priority 1) Priority Ecological Community (PEC) was recorded within the Development Envelope; however, it is not located within the Disturbance Footprint.

Three Priority flora species were identified within the Development Envelope (GHD 2020d):

- *Terminalia supranitifolia* (Priority 3);
- *Vigna triodiophila* (Priority 3); and
- *Rhynchosia bungarensis* (Priority 4).

Of these, only *Terminalia supranitifolia* (Priority 3) is in the Disturbance Footprint and will therefore be directly impacted (Figure 6 in Attachment A).

2.3 Weeds

Three introduced flora species were recorded during the field surveys:

- Buffel grass (*Cenchrus ciliaris*);
- Kapok bush (*Aerva javanica*); and
- Mimosa bush (*Vachellia farnesiana*).

None of these species are Weeds of National Significance (WoNS) or listed as Declared Pests under the *Biosecurity and Agricultural Management Act 2007*.

A weed map will be prepared prior to commencement of ground disturbing activities identifying weed risk areas within the Development Envelope, and an identification guide will be provided to site personnel to help with weed identification in the field, including species of concern for Murujuga National Park (MNP).

2.4 Condition Requirements

The condition requirements relevant to meeting the key environmental outcomes and objectives of Condition 3 of MS 1194 and the sections of the TFWMP addressing those conditions is detailed in Table 2.2.

Table 2.2: Condition Requirements

#	Condition Requirement	Plan section
3-1	The proponent shall implement the proposal to meet the following environmental outcomes: <ol style="list-style-type: none"> 1. clearing in the fauna habitat type identified as Foothills shall not exceed 18.6 ha; 2. clearing in the fauna habitat type identified as Minor Drainage Lines shall not exceed 1.06 ha; 3. clearing in the fauna habitat type identified as Floodplain shall not exceed 0.16 ha; 4. clearing in the fauna habitat type identified as Waterbody (tidal flats) shall not exceed 1.45 ha; and 5. impacts to short-range endemic fauna species are avoided, unless it is demonstrated and the CEO confirms in writing that it is reasonably likely that a population of the species occurs outside the development envelope in an area not under threat. 	Section 3.1
3-2	The proponent shall implement the proposal to achieve the following environmental objectives: <ol style="list-style-type: none"> 1. avoid where possible and otherwise minimise direct and indirect impacts to EPBC Act and BC Act listed migratory / marine birds and the Pilbara olive python within the development envelope; and 2. no introduction of weeds into the development envelope, and no increase in the abundance or distribution of existing weeds within or outside the development envelope. 	Section 3.2
3-3	At least one (1) month prior to ground disturbing activities within the development envelope delineated in Figure 2, or such lesser time approved in writing by the CEO, the proponent shall, in consultation with the Murujuga Aboriginal Corporation submit to the CEO a Terrestrial Fauna and Weed Management Plan which shall:	-
	1. demonstrate how the environmental outcomes in condition 3-1 and environmental objectives in condition 3-2 will be achieved;	Section 3.1 and Section 3.2
	2. include details of the outcomes of a detailed short-range endemic fauna survey undertaken within the development envelope and surrounding region prior to ground disturbing activities;	Table 2.3
	3. include provisions to avoid where practicable and otherwise minimise impacts to significant terrestrial fauna species, including short-range endemic fauna and migratory and marine birds, including, but not limited to, impacts from: <ol style="list-style-type: none"> a. clearing of habitat; b. lighting; c. noise and vibration; d. dust; e. vehicle and machinery movement strike; f. entrapment in trenches or ponds; g. the attraction of feral animals; h. fire; and i. the introduction and spread of weeds; 	Section 3.1 and Section 3.2
	4. provide for relevant traditional owners to be invited to observe any ground disturbing activities during construction, and take reasonable steps to facilitate the observation of those activities by those persons;	Section 2.4
	5. specify trigger criteria that will trigger the implementation of management and/or contingency actions to prevent direct or indirect impacts to significant terrestrial fauna species, including short-range endemic fauna and migratory and marine birds;	Section 3.1
	6. specify threshold criteria to demonstrate compliance with conditions 3-1 and 3-2;	Section 3.1
	7. specify monitoring methodology to determine if trigger criteria and threshold criteria have been met;	Section 3.1
8. specify management and/or contingency actions to be implemented if the trigger criteria required by condition 3-3(5) and/or the threshold criteria required by condition 3-3(6) have not been met; and	Section 3.1	

#	Condition Requirement	Plan section
	9. provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that conditions 3-1 and 3-2 have been met over the reporting period in the Compliance Assessment Report required by condition 8-6.	Section 3.3
3-4	The proponent must not commence ground disturbing activities until the CEO has confirmed in writing that the Fauna Management Plan satisfies the requirements of condition 3-3.	Strict requirement
3-5	The proponent shall implement the most recent versions of the confirmed Fauna Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated that the environmental outcomes in condition 3-1 and objective detailed in condition 3-2 have been met.	Strict requirement
3-6	In the event that the environmental outcomes in condition 3-1 are exceeded, or monitoring or investigations at any time indicate an exceedance of threshold criteria specified in the confirmed Fauna Management Plan, the proponent shall: <ol style="list-style-type: none"> 1. report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified; 2. implement the management and/or contingency actions required by condition 3-3(8) within seven (7) days of the exceedances being reported as required by condition 3-6(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and implementation of the management and/or contingency actions are no longer required; 3. investigate to determine the cause of the threshold criteria being exceeded; 4. investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; 5. provide a further report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 3-6(1) which report shall include: <ol style="list-style-type: none"> a. details of management and/or contingency actions implemented; b. the effectiveness of the management and/or contingency actions implemented against the threshold criteria; c. the findings of the investigations required by conditions 3-6(3) and 3-6(4); d. measures to prevent the threshold criteria being exceeded in the future; e. measures to prevent, control or abate the environmental harm which may have occurred; and f. justification of the threshold criteria remaining, or being adjusted based on better understanding, demonstrating that outcomes will continue to be met. 	Section 3.3
3-7	Without limiting condition 3-5 (implementation of the plans) and notwithstanding compliance with condition 3-6 (response to exceedance), the proponent must not cause or allow: <ol style="list-style-type: none"> 1. a failure to implement one or more management and/or contingency actions, if the relevant threshold criteria have been exceeded; 2. the exceedance of a threshold criteria (regardless of whether the relevant management and/or contingency actions have been or are being implemented); and/or 3. a failure to comply with the requirements of the confirmed Fauna Management Plan. 	Strict requirement
3-8	The proponent, in consultation with the Murujuga Aboriginal Corporation: <ol style="list-style-type: none"> 1. may review and revise the confirmed Fauna Management Plan and submit it to the CEO; and 2. shall review and revise the confirmed Fauna Management Plan and submit it to the CEO as and when directed by the CEO. 	Section 4 (adaptive management and review) and Section 5 (consultation)

2.5 Rationale and Approach

The plan has been prepared based on the environmental impact assessment carried out for the Proposal as documented in the Environmental Review Document (GHD 2021) and associated studies, surveys and management plans.).

The EMP components of this plan have been prepared in collaboration with the Murujuga Aboriginal Corporation (MAC) (refer to Section 5). Ensuring that MAC has access to the Development Envelope is important to YPF and facilitated by existing mutually agreed arrangements.

With the safety of all staff and visitors to the site being paramount, these arrangements take account of the condition of access to a Major Hazard Facility as set by State Government regulations, as well as the inherent risks associated with a construction site. Hence, to ensure personal safety is maintained during construction, arrangements will be in place to escort traditional owners around the Development Envelope to observe ground disturbing activities when requested or invited.

These arrangements will be less stringent in operations due to the decreased risk associated with static infrastructure. YPF has already facilitated independent 'swipe-card' access to the development envelope for traditional owners who have requested it and completed the appropriate inductions. YPF anticipates this close working association to continue.

Those traditional owners and custodians who have approved access to the Development Envelope are designated as MAC Heritage Monitors for the purposes of this TFWMP.

2.5.1 Environmental Outcome and Objectives

The Proposal will be implemented to meet the following environmental outcomes:

- Clearing in the fauna habitat type identified as Foothills shall not exceed 18.6 ha;
- Clearing in the fauna habitat type identified as Minor Drainage Lines shall not exceed 1.06 ha;
- Clearing in the fauna habitat type identified as Floodplain shall not exceed 0.16 ha;
- Clearing in the fauna habitat type identified as Waterbody (tidal flats) shall not exceed 1.45 ha; and
- Impacts to short-range endemic fauna species are avoided.

The Proposal will be implemented to achieve the following environmental objectives:

- Avoid where possible and otherwise minimise direct and indirect impacts to EPBC Act and BC Act listed migratory/marine birds and the Pilbara olive python within the Development Envelope; and
- No introduction of weeds into the Development Envelope and no increase in the abundance or distribution of existing weeds within or outside the Development Envelope.

2.5.2 Survey and Study Findings

The surveys outlined in Table 2.3 were used to inform the assessment of the potential impacts on terrestrial fauna (including SRE's) and flora and vegetation.

Table 2.3: Terrestrial fauna and flora and vegetation surveys

Key environmental factor	Report (Author Year)	Survey description	Survey findings
Flora and vegetation	GHD 2020	<ul style="list-style-type: none"> GHD completed a detailed flora and vegetation survey and targeted flora survey of areas within and adjacent to the YPF lease boundary (the survey area). The purpose of the survey was to identify and record key flora and vegetation values within the survey area, which includes the development envelope and disturbance footprint. The detailed flora and vegetation survey and targeted flora survey were undertaken during March 2020, which is during the recommended timing for flora and vegetation surveys in the Eremaean Botanical Province (March-June) (EPA 2016a). The survey methodology employed by GHD was undertaken with reference to the EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a). 	<ul style="list-style-type: none"> Seven vegetation types as well as cleared areas and seasonally inundated/open water were identified and described for the development envelope. Of these, five vegetation types occur within the disturbance footprint. The vegetation condition within the disturbance footprint ranged from Excellent to Degraded. The Burrup Peninsula Rock Pile Communities PEC was identified within the development envelope in Excellent Condition. The disturbance footprint has been selected to avoid this PEC; none of the Burrup Peninsula Rock Pile Communities PEC occurs within the disturbance footprint. <i>Tecticornia</i> sp. scattered to open low shrublands was mapped in the tidal inlet between Hearson Cove and King Bay. This vegetation may be considered significant as it has a restricted distribution and has been impacted by threatening processes. There are 6.21 ha of this vegetation type in the development envelope and 1.07 ha within the disturbance footprint. The field survey recorded a total of 141 flora taxa comprising 138 native taxa and three introduced taxa. The floristic diversity recorded during the survey is considered representative of the floristic diversity in the local area. The field survey recorded three Priority flora species, <i>Terminalia supranitifolia</i> (Priority 3), <i>Vigna triodiophila</i> (Priority 3) and <i>Rhynchosia bungarensis</i> (Priority 4). All three species occur within the development envelope, but only two individuals of <i>T. supranitifolia</i> occur within the disturbance footprint (note: since the survey, the disturbance footprint has been reduced and now avoids one of the individuals with the second on the boundary of the disturbance footprint). No Weeds of National Significance or Declared Pests as listed under the <i>Biosecurity and Agricultural Management Act 2007</i> were recorded during the survey.
Terrestrial fauna		<ul style="list-style-type: none"> GHD undertook a single season Level 2 fauna survey of areas within and adjacent to the Yara lease boundary (the survey area). The purpose of the survey was to identify and describe the dominant fauna habitat types present, assess habitats for conservation significant fauna, assess habitat connectivity, and identify and record fauna species opportunistically and through a trapping program. 	<ul style="list-style-type: none"> Six broad habitat types (excluding disturbed/cleared areas) were recorded within the development envelope, five of which occur within the disturbance footprint. The habitats within the disturbance footprint have moderate to high habitat value. The field survey recorded a total of 113 vertebrate fauna species, including 57 birds, 36 reptiles, 19 mammals and one amphibian. It was considered that terrestrial vertebrate fauna was adequately sampled and that the survey effort was adequate to provide a true representation of the fauna assemblage present at the time of the survey. Eight conservation significant fauna species were recorded during the field survey: <ul style="list-style-type: none"> Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) – Vulnerable under the Biodiversity and Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>) – Listed as Priority 4 by the Department of Biodiversity, Conservation and Attractions (DBCA)

Key environmental factor	Report (Author Year)	Survey description	Survey findings
		<ul style="list-style-type: none"> The Level 2 fauna survey was conducted in March 2020, which is considered appropriate timing for the Pilbara IBRA bioregion. Furthermore, the survey was conducted following the wet season, which is considered appropriate timing according to the EPA <i>Technical Guidance – Terrestrial Fauna Surveys</i> (EPA 2016b). 	<ul style="list-style-type: none"> North-western Free-tail Bat (<i>Mormopetrus ozimops cobourgianus</i>) – Listed as Priority 1 by DBCA Caspian Tern (<i>Hydroprogne caspia</i>) – Marine and Migratory (International Agreements) under the BC Act and the EPBC Act Gull-billed Tern (<i>Gelochelidon nilotica</i>) – Marine and Migratory (International Agreements) under the BC Act and EPBC Act Common Sandpiper (<i>Actitis hypoleucos</i>) –Marine and Migratory (International Agreements) under the BC Act and EPBC Act Common Greenshank (<i>Tringa nebularia</i>) –Marine and Migratory (International Agreements) under the BC Act and EPBC Act Red-necked Stint (<i>Calidris ruficollis</i>) –Marine and Migratory (International Agreements) under the BC Act and EPBC Act. A further 23 conservation significant fauna species were considered likely to occur based on a likelihood of occurrence assessment. Of the 23 conservation significant species, 22 were considered likely within the development envelope due to the floodplain and water body habitats, but unlikely to occur within the disturbance footprint due to a lack of suitable habitat.
	Biologic 2022	<ul style="list-style-type: none"> Targeted short-range endemic (SRE) invertebrate survey, primarily focussed on land snails, within a Study Area including the Development Envelope. The Study Area was 96.23 ha in extent and adjacent (north) to the existing YPF Ammonia Plant. A single-season SRE Invertebrate survey was undertaken within and adjacent to the study area from the 16-18 February 2022. A total of 29 sites were visited and assessed for SRE habitat suitability, 23 within the Study Area and six outside the Study Area. Of these, 17 were sampled for invertebrate fauna. 	<ul style="list-style-type: none"> The Rocky Outcropping habitat was found to provide a highly suitable habitat for many SRE invertebrates, including confirmed SRE snails. The large number of snail shells found amongst the rocks indicates the importance of this habitat type for these significant species. It is likely that most, if not all, of the taxa found in this isolated rocky outcropping occur in the MNP adjacent to the Study Area. Both snail species, millipedes and Isopoda specimens were collected both inside the Study Area and at two sites outside the study area adjacent to MNP. Two potential SRE taxa were identified in the Disturbance Footprint (site SYAR-005) as indeterminate species – <i>Mecistocephalus sp. indet.</i> and <i>Boreohesperus sp. indet.</i> Three specimens of <i>Buddelundia sp. indet.</i> were also collected at the same site in the Disturbance Footprint along with one specimen that was identified through DNA sequencing as <i>Boreohesperus sp.</i> 'Biologic-ISOP075'. A large bunded road separates the Study Area from MNP, which could have the potential for isolating any populations in this section of outcropping. While there does not appear to be any SRE species that will be restricted to the Study Area rocky outcrops, all non-vagile species of the Burrup Peninsula are essentially isolated on an island formation. Hence, it would be important to preserve all genetic diversity available to any species extant on the peninsula.

2.5.3 Key Assumptions and Uncertainties

Key assumptions and uncertainties are detailed in Table 2.4.

Table 2.4: Key assumptions and uncertainties

Aspect	Assumptions and uncertainties
Flora and vegetation	The flora and vegetation survey (GHD 2020) reported nil to minor limitations in either desktop or field components and does not pose any substantial uncertainty with respect to this TFWMP. The survey is considered valid for the purposes of this plan. It is assumed that the survey undertaken has accurately identified and mapped vegetation associations and identified Priority flora and populations within the proposal disturbance footprint and surrounds.
Terrestrial fauna	The findings of the fauna surveys completed to date have formed the basis for the rationale and management approach adopted for the TFWMP. It is assumed that the surveys undertaken have accurately identified and mapped fauna habitat and recorded fauna occurrences.
SRE fauna	The Biologic (2022) survey identified three potential SRE species at one sample site in the Disturbance Footprint. However, the identification and distribution of the specimens collected from this site are unresolved and genetic analysis is being carried out. Therefore, uncertainty remains regarding whether these species occur outside the Development Envelope in an area not under threat.

2.6 Environmental Management Plan Components

The TFWMP has been prepared to align with EPA (2021) Instructions on *How to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans*. The plan includes the following components:

- **Outcome-based** EMP components for the avoidance of specific fauna habitats and for setting the maximum area of specific fauna habitats and native vegetation that must not be exceeded; and
- **Objective-based** EMP components for setting management actions and targets relating to:
 - The avoidance where possible and otherwise minimisation of direct and indirect impacts to fauna;
 - The avoidance where possible and otherwise minimisation of indirect impacts to native vegetation, including the introduction, abundance and distribution of existing weeds within or outside the Development Envelope.

2.6.1 Rationale for Choice of Indicators and/or Management Actions

The TFWMP adopts provisions that align with established industry practices for avoiding and minimising environmental impacts for developments in the Pilbara region. The overall management approach is to avoid disturbance of key environmental values as far as practicable. This includes:

- Avoidance (by exclusion from the Development Envelope and inclusion of a 50 m buffer) of the Rocky Outcropping habitat, which provides habitat for the Pilbara Olive Python and SRE fauna (refer to Figure 3 in Appendix A); and
- Temporary avoidance (by exclusion from the Disturbance Footprint with a 50 m buffer) of the sample site (SYAR-005) where potential SRE fauna were identified pending further investigation regarding the identification and distribution of the species (refer to Figure 7 in Appendix A).

Where avoidance is unachievable, the approach is to minimise and reduce disturbance of key environmental values.

The components of this TFWMP have considered the potential direct, indirect and cumulative impacts of the Proposal and the expected intensity and duration of these impacts during the

construction. Recommendations from the relevant surveys and studies have also been considered and included where possible.

No direct or indirect impacts on terrestrial fauna, flora, or vegetation are expected to occur through the operational phase of the Proposal.

The highest risk of introduction of weeds into the Development Envelope or increase in the abundance or distribution of known weeds within or outside the Development Envelope will be present during the ground disturbing phase of the Proposal. Therefore, most of the management targets, actions and monitoring that will be implemented to control the risk are associated with this phase. The ground disturbing phase will be relatively short (six weeks), minimising the likelihood of impacts occurring.

Post-ground disturbance, the management actions shall mainly involve regular weed inspection and control, which will be implemented through Yara's Weed Control Management Plan. An example of the plan is contained in Appendix B, which is based on an existing plan prepared by Yara for the Ammonia Plant and adjacent Technical Ammonium Nitrate Plant, and includes species previously identified in the area and those with the potential to occur in the vicinity. The operational version of the plan will be maintained outside this TFWMP to allow it to be adapted and updated as required.

3. EMP Components

This section identifies the outcome-based and objective-based components that the TFWMP will implement. The outcome-based components are provided in Section 3.1 and the objective-based components in Section 3.2.

3.1 Outcome-Based EMP Components

Management of ground disturbance activities and impacts to flora and vegetation and fauna habitat

Rationale: Ground disturbing activities will result in the loss of terrestrial fauna habitat and could directly and indirectly impact marine and migratory bird species listed under the EPBC Act, the Pilbara olive python, and conservation significant SRE species. Limits on the extent of the Disturbance Footprint will mitigate the potential impacts.

EPA factors and objectives:	Terrestrial Fauna: <i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained</i> Flora and Vegetation: <i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i>
Outcomes:	Terrestrial Fauna: Ensure direct impacts to fauna habitat do not exceed the maximum extents outlined in Condition 3-1 of MS 1194. Flora and Vegetation: Ensure direct impacts to native vegetation do not exceed the maximum extents outlined in MS 1194.
Key environmental values:	Conservation significant fauna species, including marine and migratory birds, Pilbara olive python, north-western free-tailed bat, western pebble-mound mouse, and short-range endemics which are likely to utilise the habitats within the Development Envelope that will be disturbed.
Key impacts and risks:	<ul style="list-style-type: none"> • Loss of fauna habitat, including habitat for conservation significant fauna through vegetation clearing; • Habitat fragmentation; • Injury and/or death of fauna because of vehicle strike; and • Noise and vibration during construction and operations.

Criteria	Response actions	Monitoring	Timing/frequency of monitoring	Records
Condition requirements:				
3-1 The proponent shall implement the proposal to meet the following environmental outcomes:				
1. Clearing in the fauna habitat type identified as Foothills shall not exceed 18.6 ha;				
2. Clearing in the fauna habitat type identified as Minor Drainage Lines shall not exceed 1.06 ha;				
3. Clearing in the fauna habitat type identified as Floodplain shall not exceed 0.16 ha;				
4. Clearing in the fauna habitat type identified as Waterbody (tidal flats) shall not exceed 1.45 ha; and				
5. Impacts to short-range endemic fauna species are avoided.				
Trigger criteria: The Disturbance Footprint will be clearly demarcated with appropriate visual markers prior to the commencement of construction and at all times during ground disturbing activities.	Trigger level action: If the Disturbance Footprint is not clearly demarcated with appropriate visual markers prior to the commencement of construction and during ground disturbing activities, then works will cease until the markers are installed.	Visual inspection within Disturbance Footprint	Prior to commencement of construction and daily during ground disturbing activities until completion	Visual inspection reports

Criteria	Response actions	Monitoring	Timing/frequency of monitoring	Records
<p>Threshold criteria: The area of habitat cleared during ground disturbing activities will not exceed:</p> <ul style="list-style-type: none"> • 18.6 ha of Foothills; • 1.06 ha of Minor Drainage Lines; • 0.16 ha of Floodplain; and • 1.45 ha of Waterbody (tidal flats). 	<p>Threshold contingency action: If the area of habitat cleared exceeds the relevant threshold criteria, then works will cease, and a rehabilitation plan will be prepared and implemented for the area of habitat cleared outside of the Disturbance Footprint.</p>	<p>Ground survey of ground Disturbance Footprint</p>	<p>At least twice during ground disturbing activities and once on completion</p>	<p>Survey plans</p>
<p>Trigger criteria: The SRE fauna exclusion zone (Figure 7) will be clearly demarcated with appropriate visual markers prior to the commencement of and at all times during ground disturbing activities.</p>	<p>Trigger level action: If the SRE fauna exclusion zone is not clearly demarcated with appropriate visual markers prior to the commencement of and during ground disturbing activities, then works will cease until the markers are installed.</p>	<p>Surveillance and inspection of exclusion zone.</p>	<p>Prior to commencement of construction and daily during ground disturbing activities.</p>	<p>Visual inspection reports</p>
<p>Threshold criteria: The SRE fauna exclusion zone will not be cleared until:</p> <ol style="list-style-type: none"> 1. Further investigation has determined if the SRE fauna species identified at sample site SYAR-005 (Figure 7) are represented outside the Development Envelope in an area not under threat; and 2. This TFWMP has been updated with the findings of the further investigation and relevant trigger criteria, management/ response actions and monitoring activities if the investigations indicate that it is reasonably likely that these species do not occur outside the development envelope in an area not under threat; and 3. The CEO has confirmed in writing that the revised TFWMP satisfies the requirements of condition 3-3. 	<p>Threshold contingency action: If the SRE fauna exclusion zone is directly disturbed, then works will cease and an incident declared. The response and reporting procedure detailed in Section 3.3.1 will be initiated.</p>	<p>Surveillance and inspection of exclusion zone.</p>	<p>Prior to commencement of construction and daily during ground disturbing activities.</p>	<p>Visual inspection reports. Incident response records.</p>

3.2 Objective-based EMP components

Management of ground disturbing activities and impacts to flora and vegetation and terrestrial fauna

Rationale: Ground disturbing activities could indirectly impact terrestrial fauna, including marine and migratory bird species listed under the EPBC Act, the Pilbara olive python, and conservation significant SRE species. YPF has proposed measures to minimise impacts to terrestrial fauna.

EPA factors and objectives:	<p>Terrestrial Fauna: <i>To protect terrestrial fauna so that biological diversity and ecological integrity are maintained</i></p> <p>Flora and Vegetation: <i>To protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i></p>
Outcomes:	<p>Terrestrial Fauna: <i>Ensure direct and indirect impacts to fauna habitat are minimised to the extent possible.</i></p> <p>Flora and Vegetation: <i>No indirect impacts to flora and vegetation, including through the introduction and/or spread of weeds, altered fire regimes and altered surface water flow regime.</i></p>
Key environmental values:	<ul style="list-style-type: none"> • Conservation significant fauna species, including marine and migratory birds, Pilbara olive python, North-western free-tailed bat, Western pebble-mound mouse, and SREs which are likely to utilise the habitats within the Development Envelope that will be disturbed; and • Locally significant vegetation communities and Priority flora species.
Key impacts and risks:	<ul style="list-style-type: none"> • Clearing of 21.23 ha of native vegetation within the 73 ha Development Envelope; • Introduction and/or spread of weeds, altered fire regimes and altered surface water flow regime; • Loss of fauna habitat, including habitat for conservation significant fauna through vegetation clearing; • Habitat fragmentation; • Injury and/or death of fauna because of vehicle strike; and • Noise and vibration during construction and operations.

Management target	Management action	Monitoring	Timing/frequency of monitoring	Records
Condition requirements:				
3-2 The proponent shall implement the proposal to achieve the following environmental objectives:				
1. avoid where possible and otherwise minimise direct and indirect impacts to EPBC Act and BC Act listed migratory/marine birds and the Pilbara olive python within the development envelope; and				
2. no introduction of weeds into the development envelope, and no increase in the abundance or distribution of existing weeds within or outside the development envelope.				
No unauthorised clearing or disturbance of vegetation to occur outside of disturbance footprint during and attributable to implementation of the proposal	Demarcate Disturbance Footprint boundary using appropriate visual markers prior to ground disturbing activities.	Visual inspection within Disturbance Footprint	Prior to commencement of and daily during ground disturbing activities	Inspection records
	Vehicles and equipment access limited to designated roads/access tracks and cleared areas.	Surveillance and inspection	Daily during construction activities	Inspection records Incident reporting system
	All site personnel to be inducted/trained on environmental responsibilities.	Review of induction and training records.	Monthly during construction activities	Induction and training records
No construction-related dust impacts to conservation significant fauna outside of Disturbance Footprint	Vehicles and equipment access limited to designated roads/access tracks and cleared areas.	Surveillance and Inspection	Daily during construction activities	Inspection records
	Dust generating activities to cease in the event of excessive dust generation until dust control measures are implemented.	Visual monitoring of the active work areas	Daily during construction activities	Inspection records
	Vehicle speed limits will be imposed and enforced on nominated routes and work areas.	Surveillance and inspection	Daily during construction activities	Inspection records
	Dust suppression, including use of water carts on access roads, must be implemented during construction activities as required.	Inspection of work areas	Daily during construction activities	Inspection records Annual compliance report
	All site personnel to be inducted on responsibilities to reduce dust generation during daily activities.	Review of induction and training records.	Monthly	Induction and training records

Management target	Management action	Monitoring	Timing/frequency of monitoring	Records
Minimise fauna injury/death during Proposal construction	Establish a fauna interaction log to document all occurrences of: <ul style="list-style-type: none"> • Observations of conservation significant fauna within Disturbance Footprint; • Observation of feral animals in the Development Envelope; and • Fauna interaction such as injuries, near misses and deaths within Disturbance Footprint. 	Review of fauna interaction log	Prior to commencement of and weekly during construction activities	Fauna interaction log
	Ground disturbing activities to occur outside of the Pilbara Olive Python breeding season (June to August).	Date of commencement of implementation of the Proposal	On commencement of ground disturbing activities	Written evidence of the commencement of the proposal reported to the CEO in accordance with Condition 7-2 of MS 1194.
	Trapping and relocation of conservation significant fauna will be conducted prior to ground disturbing activities. All fauna handling and relocation will be carried out by a licensed fauna handler and will be conducted in accordance with the conditions of their licence.	Completion of fauna trapping and relocation survey	No more than seven days prior to commencement of ground disturbing activities Trapping and capture of feral animals	Fauna trapping and relocation survey report
	A licensed fauna handler and MAC Heritage Monitors will be present to inspect and remove native fauna during ground disturbing activities.	Attendance of licensed fauna handler and MAC Heritage Monitor	Daily during ground disturbing activities	Site attendance log
	Prior to commencing ground disturbing activities, machinery will idle for at least half an hour to provide a warning and noise deterrent.	Surveillance and inspection	Daily during ground disturbing activities	Inspection records
	Ground disturbing activities will be conducted moving in a uniform direction appropriate for the site and to maximise fauna dispersal ability (i.e., linear zig-zag east to west for all machinery passes through vegetation).	Surveillance and inspection	Daily during ground disturbing activities	Inspection records

Management target	Management action	Monitoring	Timing/frequency of monitoring	Records
	Excavation and trenches will be kept open only as long as needed for the works. Egress points will be provided in appropriate size excavations and trenches. For trenches or excavations that can be covered by a fence panel, this will be completed to prevent animal egress. Trenches and excavations will be checked for trapped animals.	Surveillance and inspection	Daily during construction activities	Inspection records
	In the event vertebrate fauna are injured during ground disturbing activities, the management of the animal will be determined by the licensed fauna handler and MAC Heritage Monitor.	Review of fauna interaction log	In response to reported incidents	Fauna interaction log
	Vehicles and equipment access limited to designated roads/access tracks and cleared areas.	Surveillance and Inspection	Daily during construction activities	Inspection records
	Implement permit to work system for night-time vehicle movements.	Review of issued permits to work	Weekly during construction activities	Permit to work records
	No pets, traps, or firearms are to be allowed within the Development Envelope unless required for the control of feral animals.	Surveillance and inspection	Daily during construction activities	Inspection records
	No feeding or direct interactions are to occur with native fauna or feral animals.	Surveillance and inspection	Daily during construction activities	Inspection records
	All site personnel to be inducted on environmental responsibilities.	Review of induction and training records.	Monthly	Induction and training records
Minimise disturbance to native fauna from noise, vibration and lighting during Proposal construction	All construction works will comply with the Environmental Protection (Noise) Regulations 1997.	Noise monitoring using a handheld Class 1 or Class 2 sound level meter	Spot-check as determined by the site manager or delegate	Noise monitoring results
	All works conducted during the proposal construction will be subject to vibration mitigation actions.	Surveillance and inspection	Daily during construction activities	Inspection records
	Prevent mobile light sources shining into nocturnal habitat.	Surveillance and inspection	During night-time construction activities	Inspection records
	All site personnel to be inducted on environmental responsibilities.	Review of induction and training records.	Monthly	Induction and training records

Management target	Management action	Monitoring	Timing/frequency of monitoring	Records
No introduction of weeds into the Development Envelope and no increase in the abundance or distribution of existing weeds within or outside the Development Envelope	The Development Envelope will be inspected, and a weed map prepared showing weed risk areas in the Development Envelope.	Weed inspection survey	Prior to ground disturbing activities	Inspection records and weed map
	Weed risk areas within the Disturbance Footprint will be demarcated.	Visual inspection of demarcated areas	Prior to commencement of and daily during construction activities	Inspection records
	All earthmoving mobile plant and light vehicles will be inspected and declared free of soil, weeds and weed propagules prior to mobilisation to the Development Envelope.	Inspection certificates and declarations	Prior to mobilisation to Development Envelope	Inspection records
	All earthmoving mobile plant and light vehicles will be inspected and cleaned of soil, vegetative material and seeds on entry to and exit from the Disturbance Footprint.	Surveillance and inspection	Daily during construction activities	Inspection records
	Vehicle and equipment access will be limited to designated roads, access tracks and cleared areas.	Surveillance and Inspection	Daily during construction activities	Inspection records
	Vehicles and equipment working in weed risk areas will be inspected and cleaned of soil, vegetative material and seeds prior to traversing to other areas of the Disturbance Footprint.	Surveillance and inspection	Daily during construction activities	Inspection records
	Imported soil and fill material brought to site will be certified weed free by the supplier.	Certificate provided for each load of imported material	Prior to delivery of each load of material	Material specification certificates
	The Development Envelope will be periodically inspected for presence of weeds and the weed map updated.	Weed inspection surveys	In accordance with the Weed Control Management Plan (example in Appendix B).	Inspection records

Management target	Management action	Monitoring	Timing/frequency of monitoring	Records
Contain and control weed species present in the Development Envelope	Weeds in the Development Envelope will be controlled using methods relevant to the location, coverage and species of weed.	Weed inspection surveys Audit of Weed Control Management Plan	In accordance with the Weed Control Management Plan (example in Appendix B).	Inspection records
	All site personnel will be inducted on awareness and identification of high risk/priority weed species relevant to the proposal and weed hygiene management actions and monitoring requirements.	Audit of induction and training records.	Monthly	Induction and training records Weed identification guide
Minimise indirect impacts to surrounding/adjacent areas from altered surface water drainage and flows	Existing drainage channels will be left unaltered unless approved by the Site Manager.	Surveillance and inspection	Daily during construction activities	Inspection records
	Surface water running off construction areas will be managed to prevent pollution and erosion.	Surveillance and inspection	Daily during construction activities	Inspection records
	All non-essential work to cease if a Total Fire Ban (TFB) or bushfire Emergency Warning is issued for the locality.	Review EmergencyWA website (www.emergency.wa.gov.au)	Daily during construction activities	Website access records
No unplanned fires because of Proposal activities	All vehicles and machinery undertaking ground disturbing activities to be fitted with portable fire extinguishers.	Surveillance and inspection	Daily during construction activities	Inspection records
	Vehicles and equipment access limited to designated roads/access tracks and cleared areas.	Surveillance and Inspection	Daily during construction activities	Inspection records
	Implement permit to work system for hot-works.	Review of issued permits to work	Weekly during construction activities	Permit to work records
	Smoking will be confined to designated smoking areas only.	Surveillance and inspection	Daily during construction activities	Inspection records
	All site personnel to be inducted on environmental responsibilities, including hygiene management.	Review of induction and training records.	Monthly	Induction and training records

3.3 Reporting

3.3.1 Outcome-based EMP components

If monitoring or investigations specified at any time indicate the non-achievement of a threshold or trigger criteria specified in Section 3.1, YPF will:

1. Report the non-achievement in writing to the CEO within seven days of the exceedance being identified (as per Condition 3-6(1)).
2. Implement the relevant response actions within seven days of the non-achievement being reported and continue implementing those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the criteria are being met and implementation of the management and/or contingency actions are no longer required (as per Condition 3-6(2)).
3. Investigate to determine the cause of the criteria not being achieved (as per Condition 3-6(3)).
4. Investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to the criteria not being achieved (as per Condition 3-6(4)).
5. As per Condition 3-6(5), provide a further report to the CEO within twenty-one days of the exceedance being reported, which will include:
 - a. Details of the response actions implemented;
 - b. The effectiveness of the response actions implemented against the criteria;
 - c. The findings of the investigations required by steps 3 and 4 above;
 - d. Measures to prevent the criteria from not being achieved in the future;
 - e. Measures to prevent, control or abate the environmental harm which may have occurred; and
 - f. Justification for the criteria remaining or being adjusted based on better understanding, demonstrating that outcomes will continue to be met.

In the absence of any non-achievements of the threshold or trigger criteria, the specified records in Section 3.1 will be maintained by YPF and reported to the CEO annually as part of the annual Compliance Assessment Report (CAR) required by Condition 8 of MS 1194.

3.3.2 Objective-based EMP components

If monitoring or investigations specified at any time indicate that a management target specified in Section 3.2 is not being met, YPF will:

1. Report the management action not being met to the CEO in writing within seven days of it being identified.
2. Implement corrective actions within seven days of identifying the management target not being met.
3. Investigate to determine the cause of the management target not being met and to determine potential environmental harm or alteration of the environment that occurred due to the management action not being met.
4. Provide a report to the CEO within twenty-one days of the report provided under Step 1, which will include:
 - a. Details of the corrective actions implemented;
 - b. The effectiveness of the corrective actions implemented against the management target;

- c. The findings of the investigations required by steps 2 and 3 above;
- d. Measures to prevent the management target not being met in the future;
- e. Measures to prevent, control or abate the environmental harm which may have occurred;
and
- f. Justification for the management target remaining or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

In the absence of any management targets not being implemented, the specified records in Section 3.2 will be maintained by YPF and reported to the CEO annually as part of the annual Compliance Assessment Report (CAR) required by Condition 8 of MS 1194.

4. Adaptive Management and Review

YPF will implement an adaptive management approach to improving set outcomes and objectives during the implementation of the Proposal through the evaluation of the monitoring and management components of the TFWMP.

Adaptive management concerning this plan includes review, at a minimum, every six months. Reviews may also be initiated:

- At the direction of the CEO (as per Condition 3-8(1));
- In collaboration with MAC (as per Condition 3-8(2));
- On completion of an investigation into an exceedance of threshold criteria or a management target not being met;
- On completion of the annual CAR;
- Before any significant changes to construction activities; or
- On changes to any relevant legislation or approvals.

Each adaptive management review will include:

- Review of the outcomes and objectives that this TFWMP addresses;
- Review of the implementation of the response and management actions and associated monitoring, recording and reporting requirements;
- Review of the response and management actions based on evaluation of:
 - Monitoring data and records;
 - Review of assumptions, uncertainties and understanding (e.g., of the ecological system);
 - Risk assessment;
 - External changes (e.g., technical advances or innovation); and
- Collaboration with MAC.

Any revisions to this TFWMP will be submitted to the CEO for approval prior to implementation in accordance with Condition 3-8 of MS 1194.

5. Stakeholder Consultation

YPF consulted with relevant stakeholders during the preparation of this TFWMP and will continue to engage with them for the duration of the Proposal.

A summary of the stakeholders consulted, comments and advice received, and YPF's response is provided in Table 5.1.

Table 5.1: Stakeholder consultation

Stakeholder	Date	Issues/topics raised	Response/outcome
MAC	8 August 2022	Discussion held regarding consultation with MAC on the TFWMP.	Draft copy of the TFWMP provided for review.
MAC	26 August 2022	Discussion on outcomes of TFWMP review	No issues / comments with draft TFWMP. The document can be submitted to EPA for approval.

The TFWMP will be made publicly available on the Yara Pilbara website at:

- www.yara.com.au/about-yara/about-yara-australia/pilbara/Project-YURI/

6. Document Changes

YPF will implement the most recent versions of the approved TFWMP until the CEO has confirmed by notice in writing that the environmental outcomes in condition 3-1 and objectives detailed in condition 3-2 have been met.

This version of the TFWMP is the first version of the plan. Any future changes to the plan will be summarised in this section.

7. Limitations

Scope of services

This report (“the report”) has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report (“the data”). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (“conclusions”) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

Strategen-JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by Strategen-JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

8. References

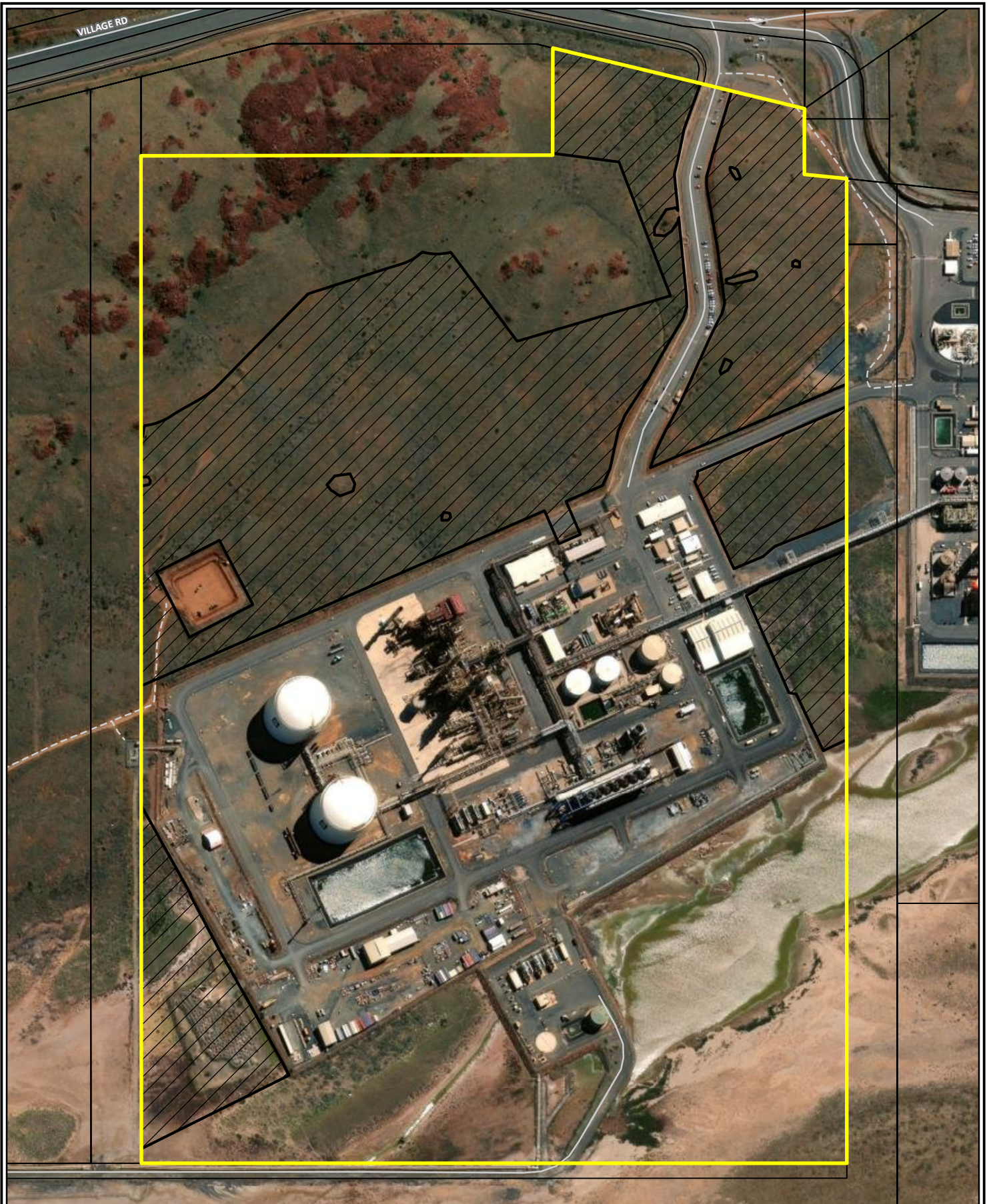
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Appendix A Figures



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Figure 1: Regional location of the proposal



Legend Development envelope Proposal footprint Cadastral boundary Minor road Track	Scale 1:5,000 at A4			Renewable Hydrogen Project		
	Coord. Sys. GDA2020 MGA Zone 50			PROPOSAL FOOTPRINT		
	Job No: 61171				FIGURE 2	
	Client: Yara Pilbara Fertilisers Pty Ltd					
	Version: A	Date: 07-Apr-2022				
Drawn By: cthatcher	Checked By: JB					

File Name: \\008PMPMR004V001.jbsg.aust\JBS Perth\Projects\1)\Open\Yara Pilbara\61171 Project Yuri General Support\GIS\Maps\R01_Rev_A\61171_01_ProposalFootprint.mxd
 Image Reference: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



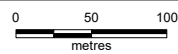
Legend Development envelope Proposal footprint Fauna habitat Cleared Floodplain Foothills Minor Drainage Lines Rocky Outcropping Sand Plain Water	Scale 1:5,000 at A4		Renewable Hydrogen Project
	Coord. Sys. GDA2020 MGA Zone 50		FAUNA HABITATS
	Job No: 61171		
	Client: Yara Pilbara Fertilisers Pty Ltd		FIGURE 3
	Version: A	Date: 08-Apr-2022	
Drawn By: cthatcher	Checked By: JB		



Legend

- Development envelope
- Proposal footprint
- Core habitat
- Supportive habitat

Scale 1:5,000 at A4



Coord. Sys. GDA2020 MGA Zone 50



Job No: 61171

Client: Yara Pilbara Fertilisers Pty Ltd

Version: A

Date: 08-Apr-2022

Drawn By: cthatcher

Checked By: JB

Renewable Hydrogen Project

PILBARA OLIVE PYTHON HABITAT

FIGURE 4



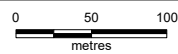


Legend

- Development envelope
- Proposal footprint
- Vegetation mapping
- VT01: Acacia open shrubland
- VT02: Brachychiton or Terminalia scattered low trees
- VT03: Triodia hummock grassland

- VT04: Triodia closed hummock grassland
- VT05: Tecticornia scattered to open low shrubland
- VT06: *Cenchrus tussock grassland
- VT07: Mixed shrubland
- Seasonally inundated
- Cleared

Scale 1:5,000 at A4



Coord. Sys. GDA2020 MGA Zone 50



Job No: 61171

Client: Yara Pilbara Fertilisers Pty Ltd

Version: A

Date: 07-Apr-2022

Drawn By: cthatcher

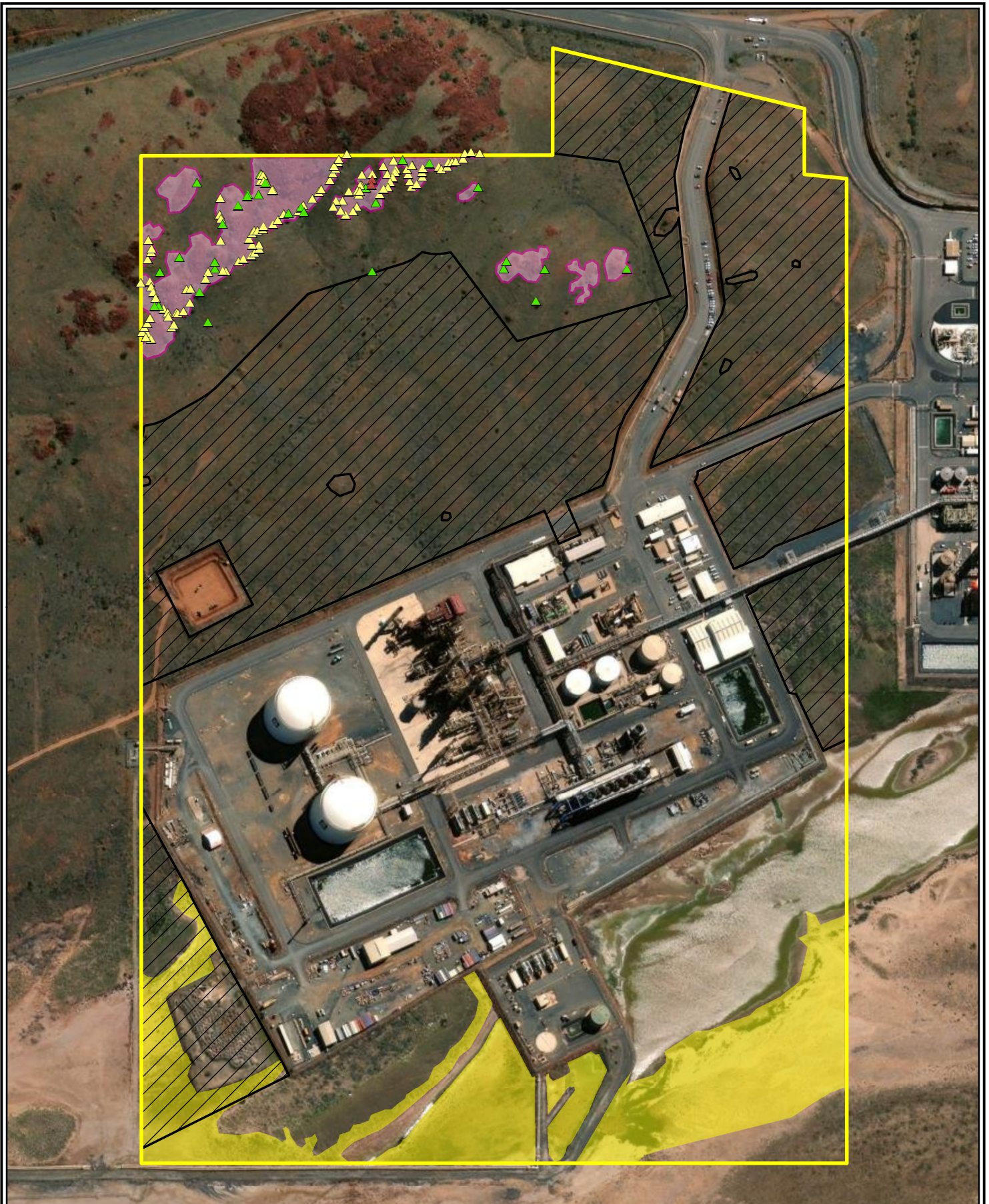
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Renewable Hydrogen Project

VEGETATION TYPES

FIGURE 5

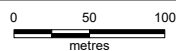




Legend

- Development envelope
- Proposal footprint
- Significant vegetation
- Priority ecological communities
- Burrup Peninsula rock pile communities (Priority 1)
- Conservation significant flora
- Rhynchosia bungarensis* (Priority 4)
- Terminalia supranitifolia* (Priority 3)
- Vigna triodiophila* (Priority 3)

Scale 1:5,000 at A4



Coord. Sys. GDA2020 MGA Zone 50



Job No: 61171

Client: Yara Pilbara Fertilisers Pty Ltd

Version: A

Date: 07-Apr-2022

Drawn By: cthatcher

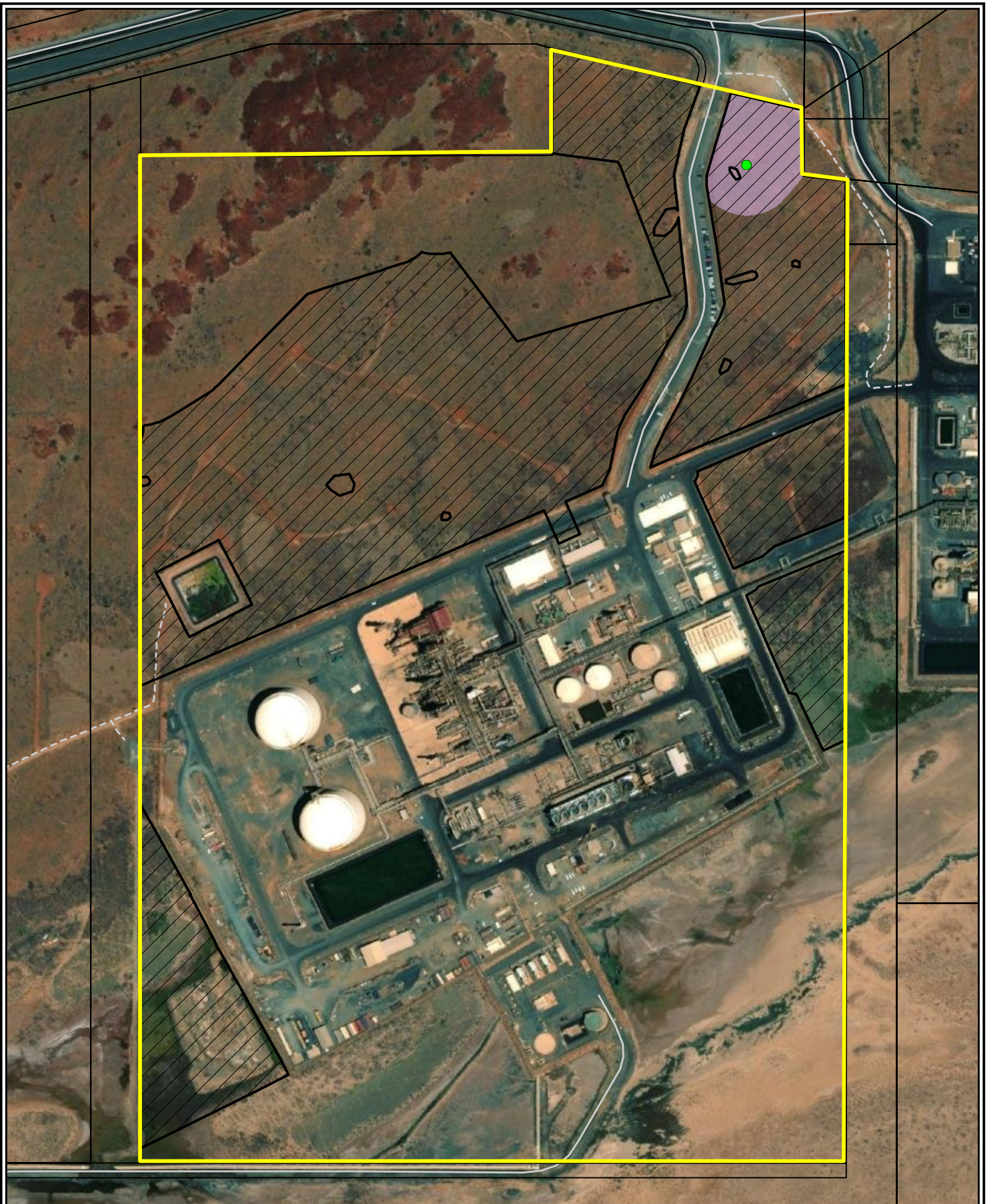
Checked By: JB

Renewable Hydrogen Project

SIGNIFICANT VEGETATION AND FLORA

FIGURE 6





Legend Development envelope Proposal footprint Cadastral boundary Minor road Track SRE Fauna Exclusion Zone SYAR-005	Scale 1:5,000 at A4				Renewable Hydrogen Project	
	Coord. Sys. GDA2020 MGA Zone 50				SRE FAUNA EXCLUSION ZONE	
	Job No: 63183					
	Client: Yara Pilbara Fertilisers Pty Ltd				FIGURE 7	
	Version: A	Date: 18-Nov-2022				
	Drawn By: jcrute	Checked By: JB				

File Name: W:\Projects\1)\Open\Yara Pilbara\63183 Project Yuni EMP\GIS\Maps\R01_Rev_A\63183_07_SRE_FaunaExclusionZone.mxd
 Image Reference: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Appendix B Example Weed Control Management Plan

Common name	Scientific name	Monitoring and planning		Control	
		Identified in GHD (2020) survey	Monitoring frequency	Control frequency	Recommended control actions
Kapok	<i>Aerva javanica</i>	Yes	Two weeks after rain	Four weeks after rain, prior to seed set	Spray green foliage with herbicide as much as possible. Target Disturbance Footprint and outer boundaries of Development Envelope.
Buffel Grass	<i>Cenchrus ciliaris</i>	Yes	Two weeks after rain	Four weeks after rain when leaves are bright green and glossy.	Spray green foliage with herbicide as much as possible. Target outer boundaries of Development Envelope.
Mimosa Bush	<i>Vachellia farnesiana</i>	Yes	Annual	As soon as possible.	Spray green foliage with herbicide.
Purple top chloris	<i>Chloris barbata</i>	No	Quarterly	As soon as possible.	Hand grub/pull and dispose in sealed bag as general waste. Spray next emergent plants.
Indigofera sessiliflora	<i>Indigofera sessiliflora</i>	No	Quarterly	As soon as possible.	Hand grub/pull and dispose in sealed bag as general waste. Spray next emergent plants.
Bull Rush	<i>Typha</i>	No	Quarterly	Apply herbicide between male flowers opening and six weeks post female flowers opening (flowering usually occurs from November to January).	Spray green foliage with herbicide.
Chinee Apple	<i>Ziziphus mauritiana</i>	No	Annual	As soon as possible.	Fell plants as close to ground as possible and paint stump immediately (<15 seconds). Dispose of vegetative matter in general waste. Apply herbicide to stump regrowth.


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