



Regional Joint Development Assessment Panel Agenda

Meeting Date and Time: Wednesday, 6 December 2023; 9.30am
Meeting Number: RJDAP/122
Meeting Venue: Electronic Means

To connect to the meeting via your computer -
<https://us06web.zoom.us/j/87343321885>

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+61 8 7150 1149

Insert Meeting ID followed by the hash (#) key when prompted - 873 4332 1885

This DAP meeting will be conducted by electronic means (Zoom) open to the public rather than requiring attendance in person.

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Attendance

DAP Members

Tony Arias (Presiding Member)
Kanella Hope (Deputy Presiding Member)
Justin Page (Third Specialist Member)

Officers in attendance

Ben Sharman (City of Karratha)
Chris Sayer (City of Karratha)

Minute Secretary

Tenielle Brownfield (DAP Secretariat)

Applicants and Submitters

Gemma Lynch (Woodside Energy Ltd)
Filipe Vieira (Rowe Group)

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being conducted by electronic means (Zoom) open to the public. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Cr Kelly Nunn (Local Government Member, City of Karratha)
Cr Travis McNaught (Local Government Member, City of Karratha)

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the [DAP website](#).

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.1, received on 1 December 2023.



The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.1, received on 5 December 2023

The Presiding Member notes an addendum to the responsible authority report was published in relation to Item 8.1, received on 5 December 2023.

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Member	Item	Nature of Interest
Cr Kelly Nunn	8.1	Indirect Pecuniary Interest – Cr Nunn is employed by Volunteering WA to undertake corporate volunteering activities on behalf of Volunteering WA corporate members in the Pilbara. Woodside is one of these partners.
Cr Travis McNaught	8.1	Indirect Pecuniary Interest – Cr McNaught is employed by the Murujuga Aboriginal Corporation who will receive a financial benefit through the terms of the Burrup and Maitland Industrial Estates Agreement, if this project proceeds.
Justin Page	8.1	Impartiality Interest – In the Schedule of Submissions, it is noted that DevelopmentWA (DWA) has provided a submission of no objection to the proposal. DWA manages the subject site on behalf of the State of Western Australia and will administer the lease agreement, should the proposal be approved. DWA is a client of Justin's employer (Element). Element was not involved with this proposed development and there is no anticipated involvement should the development be approved.

7. Deputations and Presentations

- 7.1 Filipe Vieira (Rowe Group) presenting in support of the recommendation for the application at Item 8.1. The presentation will address pre and post lodgement engagement with the city, relevant agencies and other stakeholders.

The City of Karratha may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.



8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 1502 on Deposited Plan 75876, Maitland

Development Description: Renewable Energy Facility - Solar Farm
Including Ancillary Infrastructure
Applicant: Woodside Energy Ltd
Owner: State of Western Australia
Responsible Authority: City of Karratha
DAP File No: DAP/23/02422

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

Nil.

10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications				
File No. & SAT DR No.	LG Name	Property Location	Application Description	Date Lodged
DP/14/00039 DR 65/2020	Shire of York	Lots 4869 (2256), 5931, 9926 (2948) and 26934 Great Southern Highway, St Ronans	Construction and Use of Allawuna Farm for the purposes of a Class II Landfill	28 July 2020
DAP/21/02063 DR241/2021	Shire of Dardanup	Lot 2 Banksia Road, Crooked Brook	Cleanaway Dardanup Landfill Facility	5 November 2021
DAP/23/02479 DR 146/2023	Shire of Capel	Lot 148 (No.168) Skippings Road, Boyanup	Extractive Industry Development Proposal	30 August 2023

11. General Business

In accordance with Section 7.3 of the DAP Standing Orders 2020 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

12. Meeting Closure



Direction for Further Services from the Responsible Authority

Regulation 13(1) and DAP Standing Orders 2020 cl. 3.3

Guidelines

A DAP Member who wishes to request further services (e.g. technical information or alternate recommendations) from the Responsible Authority must complete this form and submit to daps@dplh.wa.gov.au.

The request will be considered by the Presiding Member and if approved, the Responsible Authority will be directed to provide a response to DAP Secretariat within the form.

It is important to note that **the completed form containing the query, response and any accompanying documentation will be published on the DAP website** as an addendum to the meeting agenda.

DAP Application Details

DAP Name	Regional JDAP
DAP Application Number	DAP/23/02422
Responsible Authority	City of Karratha
Property Location	Lot 1502 Maitland

Presiding Member Authorisation

Presiding Member Name	Mr Tony Arias
Signature	<i>Tony Arias</i>
Date	30 November 2023
Response Due	1 December 2023; COB

Nature of technical advice or information required*

1	DAP query	The RAR indicates that the proposal is for a “Renewable Energy Facility (Solar Farm)” only and that the energy storage infrastructure does not form part of this application. The applicant’s Planning Report (page 3) states that the Solar Farm is “complemented by energy storage (Battery Storage) infrastructure” . Please confirm whether the energy storage infrastructure forms part of this application.
	Response	<i>The applicant’s statement on Page 3 is a broader statement about the overall proposal for the entire development. The term proposal within this report refers to the broader and larger proposal submitted to the EPA and approved through Ministerial Statement 1212.</i> <i>The applicants report on pages 8 & 9 specifies that it is only the Solar PV Farm that approval is being sought for within this JDAP application.</i>
2	DAP query	The RAR indicates that the Solar Farm will be developed over five stages with the application seeking

* Any alternate recommendation sought does not infer a pre-determined position of the panel.

		approval for Stages 1-5. Have plans been provided plans for Stages 4-5 of the proposed development.
	Response	<i>The applicant has provided the City with the overall areas each stage (Stages 1, 2, 3, 4 & 5) will cover, however the proponent has not yet finalised in detail the internal layout of solar arrays and internal roads for stages 2-5. Only plans for Stage 1 have been presented for consideration. These plans show the solar array, internal access roads, site access road and other associated infrastructure. Given that the proponent is seeking approval for the entirety of all five stages, the City has recommended a condition that further detailed plans be provided to the City for consideration prior to the implementation of each subsequent stage as they are finalised and ready to proceed to construction.</i>
3	DAP query	Condition 19 requires implementation of the Cultural Heritage Management Plan (prepared by Woodside Power Pty Ltd). The RAR indicates that the Cultural Heritage Management Plan formed part of the EPA referral application and that Ministerial Statement 1212 covers matters relating to protection of the registered Aboriginal Heritage sites. It is also noted that the Department of Planning, Lands and Heritage (DPLH) raised no requirement in the Cultural Heritage Management Plan. Please provide further information as to why the imposition of Condition 19 is considered necessary and its planning purpose given the matter is addressed by Ministerial Statement 1212.
	Response	<i>Under Cl. 67(2) of the Deemed Provisions, in considering an application for development approval, the local government shall have due regard to the following matters, to the extent that, in the opinion of the local government, those matters are relevant to the development of the application:</i> <i>Cl. 67(2)(l) relates to the effect of the proposal on the cultural heritage significance of the area in which the development is located.</i> <i>The Cultural Heritage Management Plan (CHMP) was provided in documentation submitted to the EPA in relation to the S38 referral of the application. Ministerial Statement 1212 is noted as covering Aboriginal Cultural Heritage within Condition B4 with the following condition/s being applied:</i> B4-1: The proponent must implement the proposal to meet the following environmental outcomes: 1. no disturbance to heritage sites ID 16590,16591, 21673 and 21674 and any heritage sites found in pre-clearance surveys, including no disturbance in a buffer of fifty (50) metres around any heritage site; 2. no significant adverse impacts to Aboriginal cultural heritage, including areas that are outside the development envelope where Aboriginal cultural heritage may be directly affected; and 3. subject to reasonable health and safety requirements, no interruption of ongoing access to land utilised for traditional use or custom by the Ngarluma People.

		B4-2: <i>The proponent must provide the Ngarluma People with the opportunity to be consulted on the Staged Disturbance Footprint Report under condition B1 and Waste Minimisation, Decommissioning and Rehabilitation environmental management plan under condition B5, at least three (3) months before they are submitted to the CEO.</i> <i>It is noted that the CHMP and more particularly the management actions contained within the CHMP were not specifically conditioned within Ministerial Statement 1212. The Ministerial Statement covers the core matters relating to the protection of the Aboriginal Heritage sites that are currently known and that may be identified during pre-construction surveys.</i> <i>The CHMP outlined more detailed management actions than covered by the abovementioned conditions of MS1212. For example, Management Action 3 is: 'Implement Chance Find Procedure with NAC if Aboriginal heritage features are accidentally uncovered during construction or operational activities'. This includes; 'heritage monitors authorised by NAC to be invited to be present during all ground disturbing works'. This period of the development (the construction phase), which follows the pre-construction surveys and is prior to operations beginning, is not considered to be adequately covered within MS1212 where it pertains to the protection of Aboriginal heritage. Construction over the 5 stages of the development is across a significant land area and it is considered relevant and important to have a mechanism to protect Aboriginal Heritage throughout the construction phase of the development. Therefore, Condition 19 is thought to be appropriate when considering Cl. 67(2)(l) of the Deemed Provisions and is recommended as per the Responsible Authority Report.</i>
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Direction for Further Services from the Responsible Authority

Regulation 13(1) and DAP Standing Orders 2020 cl. 3.3

Guidelines

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The request will be considered by the Presiding Member and if approved, the Responsible Authority will be directed to provide a response to DAP Secretariat within the form.

It is important to note that **the completed form containing the query, response and any accompanying documentation will be published on the DAP website** as an addendum to the meeting agenda.

DAP Application Details

DAP Name	Regional JDAP
DAP Application Number	DAP/23/02422
Responsible Authority	City of Karratha
Property Location	Lot 1502 Maitland

Presiding Member Authorisation

Presiding Member Name	Mr Tony Arias
Signature	<i>Tony Arias</i>
Date	4 December 2023
Response Due	5 December 2023; COB

Nature of technical advice or information required*

1	DAP query	Please provide alternative wording for Advice Notes b) – i) consistent with the intent that they are advisory and not conditions.
	Response	- Amend the wording of Advice Note b) as follows: b) It is the responsibility of the proponent to comply with the <i>Environmental Protection Act 1986</i> and any Works Approval required for the proposed development under <i>Schedule 1</i> of the <i>Environmental Protection Regulations 1987</i> issued by the Department of Water and Environmental Regulation. - Amend the wording of Advice Note c) as follows: c) It is the responsibility of the proponent to ensure that the approved development complies with the <i>Environmental Protection (Noise) Regulations 1997</i> at all times.

* Any alternate recommendation sought does not infer a pre-determined position of the panel.

		• Amend the wording of Advice Note d) as follows: d) In regard to Condition 1, the detailed plans referenced are recommended to include the following: i. elevations of a standard array of solar panels; ii. further details of the access road including dimensions and the material/s it is to be constructed of; iii. elevations and dimensions including type of fencing proposed; iv. elevations and floor plans of substation, plant area and site facilities area; and v. elevations and floor plans of the proposed water tanks for firefighting purposes. • Amend the wording of Advice Note e) as follows: e) In regard to Condition 3, it is recommended that the Solar Glare Impact Assessment and Management Plan include a review of any potential solar glare impacts that the approved development may have on road users of the North West Coastal Highway and any other areas that may be impacted. It is recommended that the proponent consult with MRWA and that mitigation measures for any determined potential impacts be included within the Solar Glare Impact Management Plan. • Amend the wording of Advice Note f) as follows: f) In regard to Condition 4, it is recommended that the Construction Environmental Management Plan should include, but not be limited to, the following matters: i) Contact details of essential site personnel, construction period and operating hours; ii) Community information, consultation and complaints management plan; iii) Public safety, security and amenity; iv) Traffic and parking management; v) Noise and dust management plan; vi) Waste management; vii) Earthworks, excavation; viii) Stormwater and sediment control; ix) Security fencing details; x) Revegetation / rehabilitation plan; xi) Cyclone preparedness. • Amend the wording of Advice Note g) as follows: g) In regard to Condition 9, it is recommended that the Operational Environmental Management Plan should include, but not be limited to, the following matters: i. Contact details for complaints management; ii. Cyclone preparedness; iii. Cleaning of panels; iv. Dust control;
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		v. Weed control; vi. Waste management. - Advice Note h) was included following consultation with MRWA who stated: <i>“The proponent is responsible for the removal and rehabilitation of the temporary access via North West Coastal Highway, once the new access road to the Maitland Strategic Industrial Estate has been developed. Prior to both construction of and removal of the temporary access the proponent is to gain the appropriate approvals from MRWA.”</i> As such, this referral comment was included as an advice note for the applicant. A slight amendment of the advice note as follows is provided: h) It is recommended the proponent consult with Main Roads WA in regard to Main Roads WA’s requirement for the removal and rehabilitation of the temporary access via North West Coastal Highway, once the new access road to the Maitland Strategic Industrial Estate has been developed. Main Roads WA have also advised that it is the responsibility of the applicant to gain the relevant MRWA approval/s for the construction of and removal of the temporary access. - Advice Note i) being removed with the relevant information being incorporated into Condition 18 as follows: 18. Three car parking bays, truck turnaround areas and internal vehicular access are to be constructed of compacted gravel, to the satisfaction of the City of Karratha, and once developed shall be maintained for the life of the development. Renumbering of Advice Notes j) & k) being renumbered to Advice Note i) and j) respectively.

LOT 1502 ON DEPOSITED PLAN 75876, MAITLAND – USE NOT LISTED (RENEWABLE ENERGY FACILITY – SOLAR FARM) INCLUDING ANCILLARY INFRASTRUCTURE

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Regional Joint Development Assessment Panel	
Local Government Area:	City of Karratha	
Applicant:	Rowe Group	
Owner:	State of Western Australia	
Value of Development:	\$100-\$300 million ☒ Mandatory (Regulation 5) ☐ Opt In (Regulation 6)	
Responsible Authority:	City of Karratha	
Authorising Officer:	Lee Reddell – Director Development Services	
LG Reference:	DA23-003	
DAP File No:	DAP/23/02422	
Application Received Date:	17 January 2023	
Report Due Date:	30 November 2023	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Location Plans 2. Development Plans 3. Planning Report 4. Schedule of Submissions 5. Bushfire Management Plan 6. DFES Comments and Responses 7. Social Impact Summary Report 8. Cultural Heritage Management Plan	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Regional Joint Development Assessment Panel resolves to:

- Accept** that the DAP Application reference DAP/23/02422 is appropriate for consideration as a “Use Not Listed (Renewable Energy Facility – Solar Farm)” land use and compatible with the objectives of the zoning table in accordance with Clause 3.2.5 of the City of Karratha Local Planning Scheme No. 8;
- Approve** DAP Application reference DAP/23/02422 and accompanying plans
 - Figure 3 – Site Plan

- Woodside Power – Solar Farm Indicative Staged Development Plan
- Woodside Stage 1 (50 MW) Solar Farm Layout

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Karratha Local Planning Scheme No. 8, subject to the following conditions:

Conditions

PRIOR TO COMMENCEMENT OF WORKS CONDITIONS

1. Prior to the commencement of works, revised plans of the Stage 1 portion of the approved development shall be submitted to and approved by the City of Karratha.
2. Prior to the commencement of works, an amended Bushfire Management Plan which reflects the final layout of the Stage 1 works shall be submitted to and approved by the City of Karratha.
3. Prior to the commencement of works, a Solar Glare Impact Assessment and Management Plan shall be submitted to and approved by the City of Karratha.
4. Prior to the commencement of works, a Construction Environmental Management Plan shall be submitted to and approved by the City of Karratha.
5. Prior to the commencement of works of each of the later stages (Stages 2 to 5) of the approved development, site plan/s, layout plan/s and elevations of each stage shall be submitted to and approved by the City of Karratha.
6. Prior to the commencement of works of Stages 2 through 5, a revised Bushfire Management Plan which reflects the final layouts of each of the subsequent stages shall be submitted to and approved by the City of Karratha.

PRIOR TO COMMENCEMENT OF USE CONDITIONS

7. Prior to the commencement of use, the recommendations within the approved amended Bushfire Management Plan shall be implemented to the satisfaction of the City of Karratha.
8. Prior to the commencement of use, a Section 70A Notification pursuant to the Transfer of Land Act 1893 (or as amended) shall be placed on the title of the land and/or lease (as appropriate), at the full cost of the proponent. The notification is to state as follows:

“This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to develop on this land.”

9. Prior to the commencement of use, an Operational Environmental Management Plan shall be submitted to and approved by the City of Karratha.

10. Prior to the commencement of use, access to the site via a temporary crossover from North West Coastal Highway shall be requested and approved by Main Roads WA, with the temporary crossover being implemented as per the MRWA approval.

GENERAL CONDITIONS

11. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
12. All development and use of the development site must be carried out in accordance with the approved plans and all information submitted as part of this application. These details shall not be altered without the prior written consent of the City of Karratha and/or the Joint Development Assessment Panel (as applicable). This approval does not relate to any other development on this lot.
13. The amended site plan/s, layout plan/s and elevations for both Stage 1 and subsequent stages (Stage 2-5) shall be implemented in accordance with the approved plans.
14. The approved Solar Impact Assessment and Management Plan shall be implemented to the satisfaction of the City of Karratha.
15. The approved Construction Environmental Management Plan shall be implemented throughout the construction phase of the development to the satisfaction of the City of Karratha.
16. The approved Operations Environmental Management Plan shall be implemented throughout the operational phase of the development to the satisfaction of the City of Karratha.
17. Access via the North West Coastal Highway is temporary until the Maitland Strategic Industrial Area access road is completed. Once this access road is completed, access to the site must then be via the Maitland Strategic Industrial Area access road.
18. Three car parking bays, truck turnaround areas and internal vehicular access are to be constructed of compacted gravel, to the satisfaction of the City of Karratha, and once developed shall be maintained for the life of the development.
19. The Cultural Heritage Management Plan (Prepared by Woodside Power Pty Ltd, Dated November 2021, Document No.: W0000RH1401290269) shall be implemented and adhered to through the construction and operational phases of the development to the satisfaction of the City of Karratha.

Advice Notes

- a) It is the responsibility of the proponent to manage any impacts on aboriginal heritage in accordance with the *Aboriginal Heritage Act 1972*.
- b) It is the responsibility of the proponent to comply with the Environmental Protection Act 1986 and any Works Approval required for the proposed

development under Schedule 1 of the Environmental Protection Regulations 1987 issued by the Department of Water and Environmental Regulation.

- c) It is the responsibility of the proponent to ensure that the approved development complies with the Environmental Protection (Noise) Regulations 1997 at all times.
- d) In regard to Condition 1, the detailed plans referenced are recommended to include the following:
 - i. elevations of a standard array of solar panels;
 - ii. further details of the access road including dimensions and the material/s it is to be constructed of;
 - iii. elevations and dimensions including type of fencing proposed;
 - iv. elevations and floor plans of substation, plant area and site facilities area; and
 - v. elevations and floor plans of the proposed water tanks for firefighting purposes.
- e) In regard to Condition 3, it is recommended that the Solar Glare Impact Assessment and Management Plan include a review of any potential solar glare impacts that the approved development may have on road users of the North West Coastal Highway and any other areas that may be impacted. It is recommended that the proponent consult with MRWA and that mitigation measures for any determined potential impacts be included within the Solar Glare Impact Management Plan.
- f) In regard to Condition 4, it is recommended that the Construction Environmental Management Plan should include, but not be limited to, the following matters:
 - i. Contact details of essential site personnel, construction period and operating hours;
 - ii. Community information, consultation and complaints management plan;
 - iii. Public safety, security and amenity;
 - iv. Traffic and parking management;
 - v. Noise and dust management plan;
 - vi. Waste management;
 - vii. Earthworks, excavation;
 - viii. Stormwater and sediment control;
 - ix. Security fencing details;
 - x. Revegetation / rehabilitation plan;
 - xi. Cyclone preparedness.
- g) In regard to Condition 9, it is recommended that the Operational Environmental Management Plan should include, but not be limited to, the following matters:
 - i. Contact details for complaints management;
 - ii. Cyclone preparedness;
 - iii. Cleaning of panels;
 - iv. Dust control;
 - v. Weed control;
 - vi. Waste management.

- h) It is recommended the proponent consult with Main Roads WA in regard to Main Roads WA's requirement for the removal and rehabilitation of the temporary access via North West Coastal Highway, once the new access road to the Maitland Strategic Industrial Estate has been developed. Main Roads WA have also advised that it is the responsibility of the applicant to gain the relevant MRWA approval/s for the construction of and removal of the temporary access.
- i) Where an approval has lapsed, no development shall be carried out without the further approval of the Joint Development Assessment Panel or the local government having first being sought and obtained.
- j) Should the proponent be aggrieved by this decision, or any of the conditions imposed, there is a right of review under the Planning and Development Act 2005. An application for review must be submitted in accordance with Part XIV of the Planning and Development Act 2005 within twenty-eight (28) days of the date of this decision to: the State Administrative Tribunal, GPO Box U1991, Perth, WA 6845. Further information regarding this right of review is available on the SAT website www.sat.justice.wa.gov.au or by phoning 1300 306 017.

Details: outline of development application

Region Scheme	N/A
Region Scheme - Zone/Reserve	N/A
Local Planning Scheme	City of Karratha Local Planning Scheme No. 8
Local Planning Scheme - Zone/Reserve	Rural
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	Use Not Listed (Renewable Energy Facility – Solar Farm)
Lot Size:	77,190ha
Existing Land Use:	Vacant land / Pastoral Lease
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The proposal seeks to develop a “Renewable Energy Facility (Solar Farm)” (referred to as a solar farm hereafter) for Woodside approximately 15km southwest of Karratha on a portion of Lot 1502 on Deposited Plan 75876 (subject site). The solar farm will supply energy for use by industrial customers on the Burrup Peninsula which will include the Woodside operated Pluto Liquid Natural Gas Facility.

Lot 1502 is approximately 77,190ha in size with the development footprint of the solar farm being approximately 943ha in size. The facility will generate electricity from a large scale solar photovoltaic farm, complemented by energy storage infrastructure (not subject of this application). The solar farm will be developed over five stages with the application seeking approval for the entirety of the development site/envelope (i.e., stages 1-5).

Stage 1 of the solar farm will be capable of supplying up to 100MW of energy and storing up to 400MWh. The maximum capacity of the facility (should all five stages be constructed) will generate up to 500MW of energy and store up to 1,000MWh.

This development application seeks approval for the solar farm component only and does not include any storage infrastructure. The proposed development includes the following elements:

- A solar farm, comprising approximately 1,000,000 solar panels.
- 1m x 2m panels mounted on supporting structures of between 0.5m to 4m above natural ground level;
- Associated infrastructure including a substation, site facilities and plant area;
- Temporary site access from North West Coastal Highway (NWCH);
- Internal access roads between solar arrays for maintenance purposes; and
- Fencing to the north of the site, adjacent to the substation area.

Proposed Land Use	Use Not Listed (Renewable Energy Facility – Solar Farm)
Proposed Net Lettable Area	N/A
Proposed No. Storeys	N/A
Proposed No. Dwellings	N/A

Background:

Discussions regarding the development requirements for the proposed solar farm have been on-going between the City and Woodside since 2019 and two separate scheme amendments to the City's Local Planning Scheme No. 8 (LPS8) were initiated to support the proposed development.

Scheme Amendment No. 55 (AM55) was lodged by Woodside with the City in November 2021 and initiated by Council at its December 2021 Ordinary Council Meeting (OCM). AM55 sought to introduce an Additional Use of 'Renewable Energy Facility' to a portion of Lot 1502 on DP 75876 to provide greater certainty for the development of a renewable energy facility within the Maitland Strategic Industry Buffer Area (MSIA Buffer). AMD55 did not progress due to advice from the Environmental Protection Authority (EPA) that the scheme amendment would require formal assessment. Subsequently, Scheme Amendment 57 (AM57) was lodged by Woodside in March 2022, initiated at the March 2022 OCM. AM57 sought to amend Clause 6.3.1(b) of LPS8, which prohibited development within the Industry Buffer areas (noted as being Special Control Areas under LPS8) that would attract persons, other than those working in the adjacent Maitland Strategic Industrial Area (MSIA). A new clause was introduced which specifically excluded development within the MSIA Buffer having to relate to development within the MSIA. AMD57 was formally approved by the Minister in September 2022.

Woodside referred the proposed development to the EPA in late 2021, with the EPA determining in February 2022 to formally assess the proposal. The application was lodged with JDAP on 17 January 2023. As the application was formally being assessed by the EPA, the JDAP was unable to make a determination on the application until such a time that a statement was published under the *Environmental Protection Act 1986*. Two subsequent extension of time requests were sought by the City and approved by the JDAP, with the final due date of the RAR being 30 November 2023.

The EPA recommended environmental approval of the proposed development in September 2023, subject to conditions. On 3 November 2023, the Ministerial Statement (Ministerial Statement 1212) advising that the proposal may be implemented, was released.

Lot 1502 is owned by the State of WA, with the Department of Planning, Lands & Heritage (DPLH) currently undertaking the land assembly required to transfer the subject portion of the lot to DevelopmentWA, who will then lease the land to the proponent. Woodside and Ngarluma Aboriginal Corporation formally registered an Indigenous Land Use Agreement covering the proposed development on 10 March 2023.

Sites and Surrounds

Lot 1502 is located on the northern side of NWCH in Maitland. The site is approximately 15km southwest of Karratha when measured in a straight line.

The site is bound by:

- NWCH to the south;
- Supagas Karratha gas plant to south-west;
- Pastoral Lease (Karratha Station) to the east and west;
- Reserve 48771 (Dampier to Bunbury Natural Gas Pipeline) to the north-west;
- Reserve 9701 (De Grey-Mullewa Stock Route) to the north; and
- Further to the southeast of the subject site (approximately 1.6km) the Boral Quarries Mount Regal quarry operations.

Legislation and Policy:

Legislation

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015*
- *Planning and Development (Development Assessment Panels) Regulations 2011*
- City of Karratha Local Planning Scheme No. 8 (the Scheme)

Relevant Planning Strategies

- City of Karratha Local Planning Strategy (2021)

Relevant Improvement Plans

- Improvement Plan No. 44: Maitland Strategic Industrial Area

State Government Policies

- State Planning Policy 2.5 – Rural Planning
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas
- State Planning Policy 4.1 – State Industrial Interface

Local Policies

- Local Planning Policy DP20 – Social Impact Assessments

Consultation:

As the land use “Renewable Energy Facility (Solar Farm)” is not a defined land use within the Scheme, it is considered to be a use not listed. If a use is not specifically referred to within the zoning table, then under the *Planning and Development (Local Planning Schemes) Regulations 2015* it is considered to be a complex application.

In accordance with Cl. 64 of the Deemed Provisions, a complex application must be published on the local government website, published in a newspaper, notify owners and occupiers within 200m of the proposed development and to any other owners or occupiers in the vicinity of the development that may be affected and erecting a sign on site.

Public Consultation

The application was advertised for the minimum period of 28 days as follows:

- 13 February 2023 - City’s website and application documents made available at the City’s offices.
- 14 February 2023 - Letters were sent to adjoining and nearby owners and occupiers; these included Ngarluma Aboriginal Corporation, DevelopmentWA, Dampier Salt, Department of Planning, Lands and Heritage and Hamersley Iron Pty Ltd.
- 22 February 2023 - The application was advertised in the Pilbara News.
- All forms of advertising closed on 22 March 2023.

The City formally requested that the requirement to erect a sign on site be waived by the WAPC due to the remote location of the site and passing traffic being unlikely to see a sign erected on the NWCH boundary of the site. The requirement to erect a sign on site was waived by the WAPC Chairman on 23 February 2023.

Submissions were received from Rio Tinto (Hamersley Iron Pty Ltd) and DevelopmentWA during the public consultation period.

The submissions from the public consultation are included within the Schedule of Submissions (**Attachment 4**).

External Referrals

External agencies have forty-two (42) days to respond to a referral as per Clause 66(1) of Part 9, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

The following external agencies and organisations were consulted:

- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Fire and Emergency Services (DFES)
- Department of Jobs, Tourism, Science and Innovation (JTSI)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Department of Planning, Lands and Heritage (DPLH)
- Department of Primary Industries and Regional Development (DPIRD)

- Department of Water and Environmental Regulation (DWER)
- Main Road WA (MRWA)
- Horizon Power (HP)
- Ngarluma Aboriginal Corporation (NAC)

Referral comments from seven external agencies were received during the consultation period. JTSI, HP and NAC did not provide responses to the initial referral of the application. The City followed up with these agencies/groups, however no further responses were received.

Where relevant, the external and internal referral comments have been addressed in the report, and a detailed outline, applicant comments and officer recommendations have been included within the Schedule of Submissions (**Attachment 4**).

Internal Referrals

The application was also referred to relevant internal departments within the City of Karratha, including Technical, Building and Environmental Health Services.

Design Review Panel Advice

Not applicable.

Planning Assessment:

Land Use

The subject site is zoned 'Rural' under LPS8 and is located within a Special Control Area, being an 'Industry Buffer' for the Maitland Strategic Industrial Area.

The proposed use of "Renewable Energy Facility (Solar Farm)" is not specifically listed within the zoning table of LPS8 therefore, Cl. 3.2.5 is applicable and states:

"If the use of the land for a particular purpose is not specifically mentioned in the zoning table and cannot reasonably be included in the definition of one of the development categories, the local government may determine:

- a) That the use is not consistent with the objectives and purposes of the particular zone or precinct and is, therefore, not permitted, or*
- b) That the proposed use may be consistent with the objectives and purposes of the zone and/or the precinct objectives and an application for development approval should be determined in accordance with clause 64 and Part 9 of the deemed provisions."*

It is considered that the proposed land use of "Renewable Energy Facility (Solar Farm)" is consistent with the objectives of the Maitland precinct as per the City's assessment below (see Cl. 4.9). The City has also advertised the proposal in accordance with clause 64.

LPS8 Clause 4.9

As the application is proposing a use not defined within the Scheme, the application is required to demonstrate that the use is consistent with the objectives of the Maitland Precinct. The objectives of the Maitland Precinct are:

- a) *Protect the access and environmental assets of Miaree Pool from the impacts of surrounding land uses;*
- b) *Facilitate the development of the Maitland Precinct as a strategic industry estate which:*
 - *allows for the efficient and effective processing of primary resources;*
 - *allows for the development of land uses compatible with and not restrictive to future development of strategic industry;*
 - *does not compromise the lifestyle and tourist assets of the City; and*
 - *has due regard to the environmental and heritage values of the area;*
- c) *Accommodate the development of additional port facilities, including public wharf facilities.*

The City considers that the proposal meets the objectives of the Maitland Precinct as follows:

- The proposal aligns with Maitland Precinct as it will facilitate and complement the future development of the MSIA.
- The proposal will not restrict the development of the MSIA for future strategic industry uses as the solar farm, once established, will have minimal ongoing traffic implications apart from occasional maintenance.
- Environmental implications of the proposal have been sufficiently addressed in Ministerial Statement 1212.
- The nature of the proposal will have no impact on the lifestyle and tourist assets of the City of Karratha noting that the proposal is several kilometres away from any nearby development or other assets.
- The proposed solar farm will have no impact to the access or environmental assets of Miaree Pool, noting that the proposal is approx. 7.5km to the east of Miaree Pool.
- Once established the operational phase of the development will have minimal ongoing environmental impacts on the wider area.
- The proposal will have no impact on the processing of primary resources within the MSIA as it is located out of the MSIA (located within the buffer) and it will involve a minimal operational workforce.
- The proposal does not restrict future development of the MSIA and surrounding buffer area as it is considered to not be a sensitive land use or likely to be adversely impacted by future industry uses.

Development Requirements

Part 5 of the Scheme sets about the general development requirements for applications in relation to the zone that they are located within. As stated previously in the report, the solar farm is proposed within the Rural zone and therefore has been assessed against the following applicable provisions of LPS8:

LPS8 Clause 5.9

- 5.9.1) *In considering any proposed development within the Rural zone, but in an area subject to strategic proposals for urban or industrial development, the local government shall only grant approval where that proposed development or use will not, in the opinion of the local government, prejudice the future development of those proposals.*

5.9.2) Prior to the local government considering subdivision or development applications on land within the rural zones, a structure plan may be prepared in accordance with Part 4 of the deemed provisions.

The proposal does not restrict future development of the MSIA and surrounding buffer area as it is not considered to be a sensitive land use or likely to be adversely impacted by future industry uses. The proposal will not adversely impact on the processing of primary resources as it proposes only to establish a solar farm with minimal operational workforce required.

A structure plan is not required to be prepared in relation to this development application. It is considered to be onerous given the straightforward nature of the proposal and it is having no impact on the future development of the MSIA or adjacent buffer area. It is noted that the area is subject to Improvement Plan No. 44, with the application also being referred to DPLH for comment. DPLH did not raise any concerns regarding the proposal, therefore the need for a structure plan within the improvement plan area is considered unnecessary.

City of Karratha Local Planning Strategy

The City's Local Planning Strategy was endorsed by the Western Australian Planning Commission (WAPC) on 2 February 2021. No changes to the existing zoning of either the subject site or the adjacent MSIA and associated buffer are proposed.

The proposal is consistent with the City's Local Planning Strategy, as it will contribute to the diversification of rural land and provide a climate-appropriate industry which capitalises on technological innovation and renewable energy.

Relevant Improvement Plans

Improvement Plan No. 44 – Maitland Strategic Industrial Area

The subject site is located within the Maitland Strategic Industrial Area (SIA) which is within an Improvement Plan Area. At the time of writing, an Improvement Scheme for the Maitland SIA is yet to be endorsed.

The Maitland SIA Improvement Plan identifies this area to be a suitable location for major industrial development to accommodate industries such as gas, petroleum processing, power production and other associated downstream processing industries including urea, ammonia and ammonium nitrate. This is also supported by the City's Local Planning Strategy.

The proposed development is not expected to have any adverse impact on the future development of the MSIA.

State Planning Policies

SPP 2.5 – Rural Planning

SPP 2.5 seeks to protect and preserve WA's rural land assets and achieve a broad compatibility between land uses. The proposed solar farm is not considered to have any adverse impacts on the nearby pastoral activities as the proposal does not create any significant ongoing noise, odour, construction or other polluting outcomes.

SPP 3.7 – Planning in Bushfire Prone Areas

The applicant has submitted a Bushfire Management Plan (BMP) and a Bushfire Risk Management Plan (BRMP) (**Attachment 5**). The BMP provided includes a BAL assessment which gave the footprint of the developable area of Stage 1 a BAL rating of BAL-29.

The application and the bushfire reporting documents were referred to DFES for review and comment due to the high-risk nature of the development, primarily due to the presence of high-voltage electrical infrastructure and the battery energy storage system (BESS). DFES advised there was insufficient information provided and that a further review was required. The main issues raised related to:

- Location, Siting & Design – BAL-29 calculation for battery containers;
- Vehicular Access – Plans reflecting internal road network recommended; and
- Water – Insufficient water for firefighting purposes for renewable energy facilities.

Full commentary and responses are set out in **Attachment 6**.

Following DFES comments the applicant consulted with DFES and then forwarded additional information to the City. DFES noted that the increase in the width of the APZ to 17m surrounding the BESS units will result in a reduction of the BAL rating from BAL-29 to BAL-12.5. Whilst capable of approval at a BAL-29 rating, the decrease in the BAL rating is an acceptable solution to reduce the bushfire risk to the proposed development and also to the broader surrounding area. The applicant's bushfire consultant advised in writing that there will be the provision of additional water tanks for firefighting purposes. These tanks are to be included in final detailed plans for Stage 1 (to be conditioned). The provision of additional water tanks for firefighting purposes is consistent with the requirements of the CFA Design Guidelines Model Requirements Renewable Energy Facilities.

It is considered that the final responses provided by the applicant sufficiently address the non-compliances identified by DFES within the Bushfire Protection Criteria contained within the Guidelines. At the time of writing the BMP had not been revised to reflect this. It is recommended a condition of any approval be included, requiring the submission of a revised BMP to be approved by the City and thereafter implemented at all times.

A condition for a revised BMP for Stages 2-5 of the solar farm has been recommended as the provided BMP has not included these stages due to the final layout of these stages yet to be determined. The BMP sets about a blueprint for future revisions of the BMP that can easily input the relevant data and layouts of future stages accordingly. Any revised BMP for Stages 2-5 shall also be referred to DFES for comment prior to the City considering them acceptable for each of the subsequent stages.

SPP4.1 – State Industrial Interface

Consideration of SPP4.1 is required in relation to the subject site being located adjacent to the 'Strategic Industry' zone to the west, its location with the Maitland SIA Industry Buffer Special Control Area (SCA) and due to its proximity to the Dampier to Bunbury gas pipeline infrastructure.

Matters to consider in the context of the proposal include whether the location is appropriate for the proposed development, the significant investment represented, and whether there is an appropriate interface between the subject land and any nearby sensitive land uses. In this regard, the following points are relevant:

- The site is located within an industrial buffer (Maitland SIA buffer);
- The subject site is situated adjacent to a 'Strategic Industry' zone (future Maitland SIA);

- The proposal is located at least 14km from Karratha, 16km from Dampier and 16km from Murujuga National Park;
- As outlined previously in the report, the site forms part of the MSIA buffer zone and as such are appropriate and suitable for large scale industrial development.
- The development does not propose to cross a DBNGP easement or corridor.
- The proponent will be required to comply with the *Dampier to Bunbury Pipeline Act 1997*.

City of Karratha Local Planning Policies

LPP DP20 – Social Impact Assessments

LPP DP20 provides guidance to the City, applicants and service agencies on social impacts (both negative and positive) from new large-scale developments on the local population and town/s. The policy is applicable to new proposals consisting of one or more of the following:

- 'Industry – Resource Processing',
- 'Transient Workforce Accommodation', or
- Land zoned 'Strategic Industry'.

The proposal does not fall into one of the mandatory SIA categories. However, under the policy, Council may also, at its discretion, require a Social Impact Assessment (SIA) to be completed and submitted for other forms of development/proposed land uses that are likely to have a significant local social impact.

The applicant has provided justification as to why the proposal should not require a SIA/SIMP be provided:

- The proposal is not a 'resource sector' proposal; and
- Given the nature of the land use and location, the proposal is not considered to have any significant social local impacts on the community.

The City agrees with the applicant's justification noting that proposal is not considered to have a large 'construction period' (12-18 months) impact on the wider Karratha region and once established, the ongoing operation and management of the solar farm will have a minimal impact on the City as it will not require a workforce from town or to be flown in (FIFO) to operate the solar farm, as it is remotely operated.

Whilst not required to submit a SIA/SIMP, Woodside is currently refreshing its existing SIA and SIMP's for its broader activities within Karratha and Roebourne. The scope considers the cumulative impact of all Woodside operations and developments (including this proposal).

Attachment 7 is a Social Impact Summary which has been provided by the proponent and identified consequences (both positive and negative) that may be experienced by the population due to the development.

The City supports this approach to reviewing and updating Woodside's SIA and SIMP's within the wider Karratha & Roebourne region to reflect current issues, opportunities and constraints.

Planning Discussion

Site, Elevation and Floor/Layout Plans

The applicant has provided a set of development plans which details the proposed five stages of the overall development envelope for consideration. The applicant has

advised that initially only Stage 1 will be developed in the short term. The remaining four stages will be progressed as market demand requires them to come online. The applicant is seeking approval for the entire development envelope.

The indicative Stage 1 layout has been included with the proposal however, the applicant has advised that the final layout of the remaining stages are still to be determined. The Stage 1 layout plan indicates general details of solar array locations, internal access roads, site access road, fencing, site facilities area, substation and main site entrance. Given the indicative nature of the provided plans for Stage 1, it is recommended that a condition for a final set of plans be provided which is to include the following:

- i. elevations of a standard array of solar panels;
- ii. further details of the access road including dimensions and the material/s it is to be constructed of;
- iii. elevations and dimensions including type of fencing proposed;
- iv. elevations and floor plans of substation, plant area and site facilities area; and
- v. elevations and floor plans of the proposed water tanks for firefighting purposes.

Given that site layout plans have not been provided for the remaining four stages, it is recommended that a condition be included on any approval requiring that prior to construction of each stage commencing, plans for that stage are to be submitted to and approved by the City. The plans are to depict the layout plan for each solar array and elevations/floorplans the solar arrays and of any associated infrastructure/development (including fencing).

Car Parking and Access

Access to the solar farm is proposed via a new temporary crossover from the NWCH and connecting to the western portion of the site. Internal to the site will be an access road running virtually parallel to the western boundary of the site. Internal access roads will branch off from this main western access road.

During the operational phase there will be minimal traffic and staff attendance on site with only occasional maintenance vehicles (as needed) requiring access to the site. Given this, a Traffic Impact Statement or Traffic Impact Assessment was not considered to be required.

MRWA provided referral comments noting that:

- The proposed access must receive formal approval through the access application process.
- The temporary solar farm access is only valid until the Maitland Strategic Industrial Area ultimate access is completed. At that stage the applicant will be required to rehabilitate the temporary access.
- All storm water from the development site must not impact NWCH.

MRWA provided conditional approval for highway access via NWCH on 25 November 2022.

It is recommended that the following condition be included as part of any approval granted stating that access via NWCH is temporary until such a time that the Maitland

Strategic Industrial Area access is completed. Once this access is completed, access to the site shall be via the Maitland SIA access road. Advice notes are recommended stating that temporary access to the subject site and the removal and rehabilitation of the temporary access to the NWCH are approved by MRWA.

It is noted that no traffic management has been proposed during the construction phase of the proposal. Any traffic management required during the construction period will require approval by Main Roads WA as NWCH falls under their control/jurisdiction. An advice note advising the requirement to seek MRWA approval for any traffic management required during the construction period is recommended.

LPS8 prescribes minimum required car parking bays for each land use, however as the proposal is not a listed use, there is no set car parking requirements. Once the proposal enters its operational phase, it is intended that the solar farm will be remotely operated with no occupied buildings or personnel on site. The solar farm will be subject to ongoing, infrequent maintenance comprising of inspections, cleaning of solar panels and maintenance of grounds. Given the above, it is considered three car parking bays and a truck parking and turnaround area are adequate to service the development.

No car parking has been detailed on the development plans, however there is sufficient room for car parking to be adequately provided adjacent to the site facilities area. It is recommended that a standard condition be included on any approval granted which states; three car parking bays, truck turnaround areas and internal vehicular access are to be of a minimum compacted gravel standard.

Surface Water

The applicant undertook hydrological and water quality impact studies as part of the EPA referral process. The EPA assessment report noted that the proposal includes raised access roads with stormwater drainage infrastructure and as such these roads are not expected to impact on surface water flows. The EPA assessment also concluded that the proponent is able to manage the potential for water and soil erosion within the development envelope through stormwater runoff and drainage management measures as outlined in the proponents Environmental Management Plan.

The Ministerial Statement 1212 provides numerous conditions that relate directly to these matters and puts in place measures and trigger points to ensure that these potential impacts are properly considered and mitigated. In this case, the Ministerial Statement 1212 is the appropriate mechanism/legislation to regulate these matters.

Flora and Fauna

The applicant as part of the EPA referral process undertook a number of studies/reports in relation to the impacts of the proposal on flora and fauna within the development envelope.

The solar farm will disturb up to 843ha of native vegetation within a 943ha sized development envelope. The proposal is noted as being located within the Horseflat land system of the Roebourne Plains, comprising of relatively flat topography covered by grasslands and dissected by ephemeral drainage lines with scattered trees. The development envelope has been subject to extensive grazing and disturbance by stock animals with flora surveys indicating possible over grazing of the area.

The development envelope is noted as containing no State or Commonwealth threatened ecological communities (TECs) or any within 10km of the proposed

development envelope. The DBCA database indicates that there are two priority ecological communities (PECs) within the Roebourne Plain in the vicinity of the proposed development envelope. These are the Roebourne Plains coastal grassland with Gilgai microrelief on deep crackling clays (Priority 1), and Horseflat land systems of the Roebourne Plains (Priority 3). The total amount of the development envelope containing the P1 PEC is 94.9ha (10%), and the P3 PEC is 496.7ha (52.6%). The proposal is noted as only having a very small reduction (approx. 0.3 – 0.4%) in extent of native vegetation within the Horseflat land systems within the Roebourne subregion.

As such, it is not considered that the proposal will cause any significant impact to remnant vegetation of Roebourne sub region.

Fauna studies undertaken for the EPA referral process identified 84 terrestrial vertebrate fauna species within the proposed development envelope of the solar farm. Whilst no Conservation Significant species were recorded in the survey area, six species were indicated as likely occurring within the development envelope.

The EPA's assessment report stated that the proposal may impact on minor drainage lines which function as local fauna corridors through the area. These impacts however are not expected to cause a significant impact to conservation significant species or terrestrial fauna populations of the region as more significant drainage lines will be avoided.

It is noted that Ministerial Statement 1212 has appropriate conditions protecting flora and fauna in accordance with the Environmental Management Plan provided by Woodside. Any issues pertaining to flora and fauna disturbances are best placed to be mitigated through the Ministerial Statement and relevant *EP Act*.

Aboriginal Heritage

The entirety of the proposed development envelope lies within Ngarluma/Yindjibarndi Native Title Determination Area (WCD 2005/001). The subject site falls within the Ngarluma Area as defined within WCD 2005/001.

The site is subject to two registered Indigenous Land Use Agreements (ILUA) as follows:

- RTIO Ngarluma ILUA (Body Corporate Agreement); and
- Ngarluma and Woodside Power Project ILUA.

The development envelope contains three lodged sites containing Aboriginal Cultural Heritage as follows:

- 21674 – Place – Artefacts / Scatter; Grinding areas / Grooves; Quarry
- 21675 – Place – Artefacts / Scatter
- 22608 – Place – Grinding areas / Grooves

The development envelope is also subject to 15 Aboriginal cultural heritage surveys.

The applicant prepared a Cultural Heritage Management Plan (CHMP) (**Attachment 8**) to support its EPA referral application. The CHMP was developed to assist with the management of cultural heritage values of the area. The CHMP will ensure that construction and operation of the solar farm does not compromise on the social values of the area and manage potential impacts of the proposal on cultural heritage. All

surveys undertaken for the formation of the CHMP were conducted with the input of Ngarluma participants.

The archaeological surveys undertaken to date have identified three sites across the MSIA and Industrial Buffer Area likely to be protected under the *Aboriginal Heritage Act 1972 (AH Act)* and a further four other 'places' that don't meet the threshold for protection but have been requested by NAC to be avoided.

Based on these surveys, the proponent has undertaken design and construction planning to avoid all identified heritage sites within the surveyed area (approx. 100ha or 10% of the solar farm). The proponent has advised that they will continue to work with NAC to conduct surveys of all remaining unsurveyed impact footprints to identify any un-recorded Aboriginal Heritage sites and undertake appropriate design and construction planning to avoid any identified sites.

The Ministerial Statement 1212 covers the core matters relating to protection of the registered Aboriginal Heritage sites. The CHMP prepared by the proponent outlines more detailed process and management actions than are listed in the conditions of the Ministerial Statement and are considered by the City to be management actions that should be undertaken by the proponent and be enforceable through the relevant approval mechanism. The CHMP is not mentioned or referred to specifically within the Ministerial Statement as having to be implemented. It is considered appropriate to include a condition on any approval granted, requiring the CHMP to be implemented throughout the construction and operational phases of the development.

Visual Amenity

The proposal will not be visible from Dampier or Karratha townsites, including associated recreational areas such as public open space, walk trails or coastal areas. The proposal will be visible from a portion of Dampier Road, however the visual impact will not be significant due to existing modified landscapes along Dampier Road (Gap Ridge Industrial Estate and RTIO railway yard), distance from public access, and the low elevation of the solar farm. The visual effects of the proposal are unlikely to result in significant impacts to the aesthetic, social or economic surrounding areas or to visitors.

It is noted that the solar farm will have some impact on visual amenity along the NWCH however, it is not considered to cause unreasonable or an adverse impact for the following reasons:

- The area is an undeveloped, sparsely vegetated area with no key views;
- The solar panels have a low elevation and will not cause distraction or distortion of the existing flat landscape along NWCH;
- The MSIA has been considered acceptable for future development of industrial processing operations and the downstream industries related to such uses, which will alter the visual amenity of the broader region greatly;
- The solar farm is proposed adjacent to the MSIA, noting this development will be a minor component in relation to the overall MSIA.

Given the above, the impact to visual amenity along the NWCH is considered to be acceptable noting the long term changes to the amenity of the region due to the development of the MISA.

The applicant has stated that the solar panels are to be mounted onto structures which will follow the trajectory of the sun throughout the day (track east to west). The solar panels will be facing north during this trajectory therefore not causing any solar glare

impacts to road users along NWCH. The City agrees that the solar panels are unlikely to affect traffic passing the subject site along NWCH immediately to the south as this portion of NWCH is almost in an east/west alignment. However, for traffic approaching the solar farm in a south-westerly direction, it is considered there is insufficient information provided about whether the solar panels when facing east to collect the morning sun will have any impact on this traffic. As such, a solar impact glare assessment and management plan is recommended to be conditioned. This assessment shall look at the broader impact of the glare on road users' approach to the solar farm, whether there is any likely adverse impact/s, and any management recommendations.

Construction Environmental Management Plan (CEMP)

It is recommended that a condition be included requiring the submission of a CEMP to the City of Karratha for review and approval prior to construction beginning. Once approved the CEMP shall be implemented and adhered to through the construction phase of the development to the satisfaction of the City of Karratha. Matters to be considered but not limited too shall include:

- vi. Contact details of essential site personnel, construction period and operating hours;
- vii. Community information, consultation and complaints management plan;
- viii. Public safety, security and amenity;
- ix. Traffic and parking management;
- x. Noise and dust management plan;
- xi. Waste management, including the storage and disposal of substances, to be in accordance with the Department of Water and Environmental Regulation Guidelines and Water Quality Protection Notes;
- xii. Earthworks, excavation, land retention/piling methods and associated matters, all to be contained within the approved development site; and
- xiii. Stormwater and sediment control;
- xiv. Security fencing details;
- xv. Revegetation/ rehabilitation plan;
- xvi. Cyclone preparedness.

Operational Environmental Management Plan (OEMP)

The City recommends that a standard condition that an Operational Environmental Management Plan be submitted to and approved by the City. Once approved the OEMP shall be implemented and adhered to through the operational phase of the development to the satisfaction of the City of Karratha. Matters to be considered but not limited too shall include:

- i. Contact details for complaints management;
- ii. Cyclone preparedness;
- iii. Cleaning of panels;
- iv. Dust control;
- v. Weed control;
- vi. Waste management.

Conclusion:

The proposal to construct and operate a "Renewable Energy Facility (Solar Farm)" with a capacity of up to 500MW, with the first stage involving the construction and operation of a 100MW facility will provide efficient, renewable energy generation and contribute

to a clean energy economy. Based on an assessment against the Scheme and the relevant state and local planning framework, the site is considered capable and suitable of accommodating the proposed development without any significant impacts on and potential use of surrounding land. It is recommended, the proposal be approved, subject to conditions and advice notes.



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Filipe Vieira
Company (if applicable)	Rowe Group
Please identify if you have any special requirements:	YES ☐ NO ☒ If yes, please state any accessibility or special requirements:

Meeting Details

DAP Name	Regional JDAP
Meeting Date	6 December 2023
DAP Application Number	RJDAP/122
Property Location	Lot 1502 Northwest Coastal Highway, Maitland
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES ☒
Is the presentation in support of or against the <u>report recommendation</u> ? (<i>contained within the Agenda</i>)	SUPPORT ☒ AGAINST ☐
Is the presentation in support of or against the <u>proposed development</u> ?	SUPPORT ☒ AGAINST ☐
Will the presentation require power-point facilities?	YES ☐ NO ☒ If yes, please attach



Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> - Pre and post lodgement engagement with the City, relevant agencies, and other stakeholders. - Key matters that have been addressed.
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In accordance with Clause 3.5.2 of the [DAP Standing Orders](#), your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Refer Attachment



REGIONAL JOINT DEVELOPMENT ASSESSMENT PANEL

WEDNESDAY, 6 DECEMBER 2023 @9.30AM

ITEM 8.1 – PORTION OF LOT 1502 NORTH WEST COASTAL HIGHWAY, MAITLAND

PREAMBLE

Rowe Group acts on behalf of Woodside Energy Ltd (Woodside), the Proponent for the proposed Photovoltaic Solar Farm the subject of this Development Application.

The Solar Farm is located within a Special Control Area (Industry Buffer) for the Maitland Strategic Industrial Area, approximately 15 kilometres south-west of the Karratha townsite. The facility is intended to supply energy for customers on the Burrup Peninsula, including Woodside's own Pluto Liquid Natural Gas facility.

Lot 1502 is approximately 77,000 ha in size; the development footprint of the Solar Farm is just under 1000ha (943ha). Lot 1502 is owned by the State of WA, with the Department of Planning, Lands & Heritage (DPLH) currently undertaking the land assembly required to facilitate the transfer of the subject portion of the lot to DevelopmentWA, who in turn will lease the land to Woodside.

The Development Application seeks approval to all 5 Stages of the Solar Farm, with the development to occur on a staged basis as customer demand emerges. Subject to the Regional Development Assessment Panel's (JDAP) favourable consideration of the Development Application, Woodside expects to commence Stage 1 in 2024.

PRE-LODGEMENT CONSULTATION AND SUPPORTING ACTIVITIES

The Development Application was prepared by Rowe Group and lodged with the City of Karratha (the City) in December 2022. The Development Application followed an extensive period of dialogue and engagement between Woodside and key stakeholders on the Proposal, including the City, Department of Planning, Lands and Heritage, DevelopmentWA, Department of Jobs, Tourism, Science and Innovation, Main Roads Western Australia and the Department of Fire and Emergency Services (DFES). In that period, there were two separate Scheme Amendments initiated to the City of Karratha's Local Planning Scheme 8 (LPS8) to support development of the proposed Solar Farm.

Importantly, Woodside has acknowledged the Ngarluma people as the Traditional Owners of the land and, since the original inception of the Solar Farm concept in 2018, has worked very closely with the Ngarluma Aboriginal Corporation (NAC) to manage the cultural heritage with the proposed development footprint, including the completion of 3 Cultural Heritage Surveys. In October 2020, NAC issued a letter to Woodside summarising the consultation undertaken and advising it had no objections to the submission of the Environmental Referral Document. The City also referred the Development Application to the NAC for comment.



Woodside and the NAC have also formally registered an Indigenous Land Use Agreement (ILUA) in March 2023 to cover the proposed development.

ENVIRONMENTAL ASSESSMENT

Woodside embarked on the environmental assessment process in 2019 culminating in a referral of the Proposal to the EPA in late 2021. The Proposal was subsequently formally assessed by the EPA, with a Ministerial Statement (No. 1212) issuing in November 2023 advising the Proposal could be implemented subject to fulfilment of a number of conditions.

Woodside has accepted these conditions and is currently addressing the conditions of the Ministerial Statement.

RESPONSIBLE AUTHORITY REPORT

Rowe Group commends the comprehensive nature and thoroughness of the City's Responsible Authority Report (RAR), and is supportive of the City's recommendation that the JDAP approve the Development Application subject to a number of Conditions and Advice Notes. Rowe Group has reviewed these in consultation with our Client and, as a result of positive engagement with the City, is also supportive of the recommended Conditions and Advice Notes, with one minor exception.

We would ask the JDAP support a minor modification to the wording of **Advice Note b)** which reads:

b) *The proponent is required to comply with the Environmental Protection Act 1986 and any Works Approval required for the proposed development under Schedule Page 1 of the Environmental Protection Regulations 1987 issued by the Department of Water and Environmental Regulation at all times.*

To be replaced by....**and any Works Approval as applicable for the proposed development.....**

Our Client's assessment is that no Works Approval will be required under *Schedule 1 of the Environmental Protection Regulations* and accordingly we would prefer the words 'as applicable' be inserted after 'Works Approval' and the word 'required' deleted. The City has advised Rowe Group it has no objections to this proposed modification.

ATTENDEES

The following individuals will be in attendance at the RJDAP meeting:

- Mr Filipe Vieira - Rowe Group (Presenter)
- Mr Harold Yap - (Woodside Representative)
- Mr Michael Gibson - (Woodside Representative)
- Ms Renay Sheehan - (Woodside Representative)
- Ms Kate Gauntlett - (Woodside Representative)



CONCLUSION

On behalf of our Client, Rowe Group confirms its support of the RAR and the Officer recommendation and requests the JDAP approve the Development Application for the proposed Solar Farm subject to the recommended Conditions and Advice Notes (including the minor modification highlighted above).

Filipe Vieira
Principal Consultant
Rowe Group

LOT 1502 ON DEPOSITED PLAN 75876, MAITLAND – USE NOT LISTED (RENEWABLE ENERGY FACILITY – SOLAR FARM) INCLUDING ANCILLARY INFRASTRUCTURE

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Regional Joint Development Assessment Panel	
Local Government Area:	City of Karratha	
Applicant:	Rowe Group	
Owner:	State of Western Australia	
Value of Development:	\$100-\$300 million ☒ Mandatory (Regulation 5) ☐ Opt In (Regulation 6)	
Responsible Authority:	City of Karratha	
Authorising Officer:	Lee Reddell – Director Development Services	
LG Reference:	DA23-003	
DAP File No:	DAP/23/02422	
Application Received Date:	17 January 2023	
Report Due Date:	30 November 2023	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Location Plans 2. Development Plans 3. Planning Report 4. Schedule of Submissions 5. Bushfire Management Plan 6. DFES Comments and Responses 7. Social Impact Summary Report 8. Cultural Heritage Management Plan	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Regional Joint Development Assessment Panel resolves to:

1. **Accept** that the DAP Application reference DAP/23/02422 is appropriate for consideration as a “Use Not Listed (Renewable Energy Facility – Solar Farm)” land use and compatible with the objectives of the zoning table in accordance with Clause 3.2.5 of the City of Karratha Local Planning Scheme No. 8;
2. **Approve** DAP Application reference DAP/23/02422 and accompanying plans
 - Figure 3 – Site Plan

- Woodside Power – Solar Farm Indicative Staged Development Plan
- Woodside Stage 1 (50 MW) Solar Farm Layout

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Karratha Local Planning Scheme No. 8, subject to the following conditions:

Conditions

PRIOR TO COMMENCEMENT OF WORKS CONDITIONS

1. Prior to the commencement of works, revised plans of the Stage 1 portion of the approved development shall be submitted to and approved by the City of Karratha.
2. Prior to the commencement of works, an amended Bushfire Management Plan which reflects the final layout of the Stage 1 works shall be submitted to and approved by the City of Karratha.
3. Prior to the commencement of works, a Solar Glare Impact Assessment and Management Plan shall be submitted to and approved by the City of Karratha.
4. Prior to the commencement of works, a Construction Environmental Management Plan shall be submitted to and approved by the City of Karratha.
5. Prior to the commencement of works of each of the later stages (Stages 2 to 5) of the approved development, site plan/s, layout plan/s and elevations of each stage shall be submitted to and approved by the City of Karratha.
6. Prior to the commencement of works of Stages 2 through 5, a revised Bushfire Management Plan which reflects the final layouts of each of the subsequent stages shall be submitted to and approved by the City of Karratha.

PRIOR TO COMMENCEMENT OF USE CONDITIONS

7. Prior to the commencement of use, the recommendations within the approved amended Bushfire Management Plan shall be implemented to the satisfaction of the City of Karratha.
8. Prior to the commencement of use, a Section 70A Notification pursuant to the Transfer of Land Act 1893 (or as amended) shall be placed on the title of the land and/or lease (as appropriate), at the full cost of the proponent. The notification is to state as follows:

“This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to develop on this land.”

9. Prior to the commencement of use, an Operational Environmental Management Plan shall be submitted to and approved by the City of Karratha.

10. Prior to the commencement of use, access to the site via a temporary crossover from North West Coastal Highway shall be requested and approved by Main Roads WA, with the temporary crossover being implemented as per the MRWA approval.

GENERAL CONDITIONS

11. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
12. All development and use of the development site must be carried out in accordance with the approved plans and all information submitted as part of this application. These details shall not be altered without the prior written consent of the City of Karratha and/or the Joint Development Assessment Panel (as applicable). This approval does not relate to any other development on this lot.
13. The amended site plan/s, layout plan/s and elevations for both Stage 1 and subsequent stages (Stage 2-5) shall be implemented in accordance with the approved plans.
14. The approved Solar Impact Assessment and Management Plan shall be implemented to the satisfaction of the City of Karratha.
15. The approved Construction Environmental Management Plan shall be implemented throughout the construction phase of the development to the satisfaction of the City of Karratha.
16. The approved Operations Environmental Management Plan shall be implemented throughout the operational phase of the development to the satisfaction of the City of Karratha.
17. Access via the North West Coastal Highway is temporary until the Maitland Strategic Industrial Area access road is completed. Once this access road is completed, access to the site must then be via the Maitland Strategic Industrial Area access road.
18. Three car parking bays, truck turnaround areas and internal vehicular access are to be to the specification of the City of Karratha, and once developed shall be maintained for the life of the development.
19. The Cultural Heritage Management Plan (Prepared by Woodside Power Pty Ltd, Dated November 2021, Document No.: W0000RH1401290269) shall be implemented and adhered to through the construction and operational phases of the development to the satisfaction of the City of Karratha.

Advice Notes

- a) It is the responsibility of the proponent to manage any impacts on aboriginal heritage in accordance with the *Aboriginal Heritage Act 1972*.
- b) The proponent is required to comply with the *Environmental Protection Act 1986* and any Works Approval required for the proposed development under *Schedule*

1 of the Environmental Protection Regulations 1987 issued by the Department of Water and Environmental Regulation at all times.

- c) The development must comply with the *Environmental Protection (Noise) Regulations 1997* at all times.
- d) In regard to Condition 1, the detailed plans for Stage 1 shall include a set of revised plans providing:
 - i. elevations of a standard array of solar panels;
 - ii. further details of the access road including dimensions and the material/s it is to be constructed of;
 - iii. elevations and dimensions including type of fencing proposed;
 - iv. elevations and floor plans of substation, plant area and site facilities area; and
 - v. elevations and floor plans of the proposed water tanks for firefighting purposes.
- e) In regard to Condition 3, the Solar Glare Impact Assessment and Management Plan shall undertake a review of any potential solar glare impacts that the approved development may have on road users of North West Coastal Highway and any other areas that may be impacted, and is to include evidence of consultation with MRWA. Mitigation of any such impacts shall be included within the approved Solar Glare Impact Management Plan.
- f) In regard to Condition 4, the Construction Environmental Management Plan shall include, but not be limited to, the following matters:
 - i. Contact details of essential site personnel, construction period and operating hours;
 - ii. Community information, consultation and complaints management plan;
 - iii. Public safety, security and amenity;
 - iv. Traffic and parking management;
 - v. Noise and dust management plan;
 - vi. Waste management;
 - vii. Earthworks, excavation;
 - viii. Stormwater and sediment control;
 - ix. Security fencing details;
 - x. Revegetation / rehabilitation plan;
 - xi. Cyclone preparedness.
- g) In regard to Condition 9, the Operational Environmental Management Plan shall include, but not be limited to, the following matters
 - i. Contact details for complaints management;
 - ii. Cyclone preparedness;
 - iii. Cleaning of panels;
 - iv. Dust control;
 - v. Weed control;
 - vi. Waste management.
- h) In regard to Condition 17, the proponent is responsible for the removal and rehabilitation of the temporary access via North West Coastal Highway, once the new access road to the Maitland Strategic Industrial Estate has been developed.

Prior to both construction of and removal of the temporary access the proponent is to gain the appropriate approvals from MRWA.

- i) In regard to Condition 18, car parking bays, truck turnaround area/s and internal roads shall be constructed of compacted gravel as a minimum requirement.
- j) Where an approval has lapsed, no development shall be carried out without the further approval of the Joint Development Assessment Panel or the local government having first being sought and obtained.
- k) Should the proponent be aggrieved by this decision, or any of the conditions imposed, there is a right of review under the Planning and Development Act 2005. An application for review must be submitted in accordance with Part XIV of the Planning and Development Act 2005 within twenty-eight (28) days of the date of this decision to: the State Administrative Tribunal, GPO Box U1991, Perth, WA 6845. Further information regarding this right of review is available on the SAT website www.sat.justice.wa.gov.au or by phoning 1300 306 017.

Details: outline of development application

Region Scheme	N/A
Region Scheme - Zone/Reserve	N/A
Local Planning Scheme	City of Karratha Local Planning Scheme No. 8
Local Planning Scheme - Zone/Reserve	Rural
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	Use Not Listed (Renewable Energy Facility – Solar Farm)
Lot Size:	77,190ha
Existing Land Use:	Vacant land / Pastoral Lease
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The proposal seeks to develop a “Renewable Energy Facility (Solar Farm)” (referred to as a solar farm hereafter) for Woodside approximately 15km southwest of Karratha on a portion of Lot 1502 on Deposited Plan 75876 (subject site). The solar farm will supply energy for use by industrial customers on the Burrup Peninsula which will include the Woodside operated Pluto Liquid Natural Gas Facility.

Lot 1502 is approximately 77,190ha in size with the development footprint of the solar farm being approximately 943ha in size. The facility will generate electricity from a large scale solar photovoltaic farm, complemented by energy storage infrastructure (not subject of this application). The solar farm will be developed over five stages with the application seeking approval for the entirety of the development site/envelope (i.e., stages 1-5).

Stage 1 of the solar farm will be capable of supplying up to 100MW of energy and storing up to 400MWh. The maximum capacity of the facility (should all five stages be constructed) will generate up to 500MW of energy and store up to 1,000MWh.

This development application seeks approval for the solar farm component only and does not include any storage infrastructure. The proposed development includes the following elements:

- A solar farm, comprising approximately 1,000,000 solar panels.
- 1m x 2m panels mounted on supporting structures of between 0.5m to 4m above natural ground level;
- Associated infrastructure including a substation, site facilities and plant area;
- Temporary site access from North West Coastal Highway (NWCH);
- Internal access roads between solar arrays for maintenance purposes; and
- Fencing to the north of the site, adjacent to the substation area.

Proposed Land Use	Use Not Listed (Renewable Energy Facility – Solar Farm)
Proposed Net Lettable Area	N/A
Proposed No. Storeys	N/A
Proposed No. Dwellings	N/A

Background:

Discussions regarding the development requirements for the proposed solar farm have been on-going between the City and Woodside since 2019 and two separate scheme amendments to the City's Local Planning Scheme No. 8 (LPS8) were initiated to support the proposed development.

Scheme Amendment No. 55 (AM55) was lodged by Woodside with the City in November 2021 and initiated by Council at its December 2021 Ordinary Council Meeting (OCM). AM55 sought to introduce an Additional Use of 'Renewable Energy Facility' to a portion of Lot 1502 on DP 75876 to provide greater certainty for the development of a renewable energy facility within the Maitland Strategic Industry Buffer Area (MSIA Buffer). AMD55 did not progress due to advice from the Environmental Protection Authority (EPA) that the scheme amendment would require formal assessment. Subsequently, Scheme Amendment 57 (AM57) was lodged by Woodside in March 2022, initiated at the March 2022 OCM. AM57 sought to amend Clause 6.3.1(b) of LPS8, which prohibited development within the Industry Buffer areas (noted as being Special Control Areas under LPS8) that would attract persons, other than those working in the adjacent Maitland Strategic Industrial Area (MSIA). A new clause was introduced which specifically excluded development within the MSIA Buffer having to relate to development within the MSIA. AMD57 was formally approved by the Minister in September 2022.

Woodside referred the proposed development to the EPA in late 2021, with the EPA determining in February 2022 to formally assess the proposal. The application was lodged with JDAP on 17 January 2023. As the application was formally being assessed by the EPA, the JDAP was unable to make a determination on the application until such a time that a statement was published under the *Environmental Protection Act 1986*. Two subsequent extension of time requests were sought by the City and approved by the JDAP, with the final due date of the RAR being 30 November 2023.

The EPA recommended environmental approval of the proposed development in September 2023, subject to conditions. On 3 November 2023, the Ministerial Statement (Ministerial Statement 1212) advising that the proposal may be implemented, was released.

Lot 1502 is owned by the State of WA, with the Department of Planning, Lands & Heritage (DPLH) currently undertaking the land assembly required to transfer the subject portion of the lot to DevelopmentWA, who will then lease the land to the proponent. Woodside and Ngarluma Aboriginal Corporation formally registered an Indigenous Land Use Agreement covering the proposed development on 10 March 2023.

Sites and Surrounds

Lot 1502 is located on the northern side of NWCH in Maitland. The site is approximately 15km southwest of Karratha when measured in a straight line.

The site is bound by:

- NWCH to the south;
- Supagas Karratha gas plant to south-west;
- Pastoral Lease (Karratha Station) to the east and west;
- Reserve 48771 (Dampier to Bunbury Natural Gas Pipeline) to the north-west;
- Reserve 9701 (De Grey-Mullewa Stock Route) to the north; and
- Further to the southeast of the subject site (approximately 1.6km) the Boral Quarries Mount Regal quarry operations.

Legislation and Policy:

Legislation

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015*
- *Planning and Development (Development Assessment Panels) Regulations 2011*
- City of Karratha Local Planning Scheme No. 8 (the Scheme)

Relevant Planning Strategies

- City of Karratha Local Planning Strategy (2021)

Relevant Improvement Plans

- Improvement Plan No. 44: Maitland Strategic Industrial Area

State Government Policies

- State Planning Policy 2.5 – Rural Planning
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas
- State Planning Policy 4.1 – State Industrial Interface

Local Policies

- Local Planning Policy DP20 – Social Impact Assessments

Consultation:

As the land use “Renewable Energy Facility (Solar Farm)” is not a defined land use within the Scheme, it is considered to be a use not listed. If a use is not specifically referred to within the zoning table, then under the *Planning and Development (Local Planning Schemes) Regulations 2015* it is considered to be a complex application.

In accordance with Cl. 64 of the Deemed Provisions, a complex application must be published on the local government website, published in a newspaper, notify owners and occupiers within 200m of the proposed development and to any other owners or occupiers in the vicinity of the development that may be affected and erecting a sign on site.

Public Consultation

The application was advertised for the minimum period of 28 days as follows:

- 13 February 2023 - City’s website and application documents made available at the City’s offices.
- 14 February 2023 - Letters were sent to adjoining and nearby owners and occupiers; these included Ngarluma Aboriginal Corporation, DevelopmentWA, Dampier Salt, Department of Planning, Lands and Heritage and Hamersley Iron Pty Ltd.
- 22 February 2023 - The application was advertised in the Pilbara News.
- All forms of advertising closed on 22 March 2023.

The City formally requested that the requirement to erect a sign on site be waived by the WAPC due to the remote location of the site and passing traffic being unlikely to see a sign erected on the NWCH boundary of the site. The requirement to erect a sign on site was waived by the WAPC Chairman on 23 February 2023.

Submissions were received from Rio Tinto (Hamersley Iron Pty Ltd) and DevelopmentWA during the public consultation period.

The submissions from the public consultation are included within the Schedule of Submissions (**Attachment 4**).

External Referrals

External agencies have forty-two (42) days to respond to a referral as per Clause 66(1) of Part 9, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

The following external agencies and organisations were consulted:

- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Fire and Emergency Services (DFES)
- Department of Jobs, Tourism, Science and Innovation (JTSI)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Department of Planning, Lands and Heritage (DPLH)
- Department of Primary Industries and Regional Development (DPIRD)

- Department of Water and Environmental Regulation (DWER)
- Main Road WA (MRWA)
- Horizon Power (HP)
- Ngarluma Aboriginal Corporation (NAC)

Referral comments from seven external agencies were received during the consultation period. JTSI, HP and NAC did not provide responses to the initial referral of the application. The City followed up with these agencies/groups, however no further responses were received.

Where relevant, the external and internal referral comments have been addressed in the report, and a detailed outline, applicant comments and officer recommendations have been included within the Schedule of Submissions (**Attachment 4**).

Internal Referrals

The application was also referred to relevant internal departments within the City of Karratha, including Technical, Building and Environmental Health Services.

Design Review Panel Advice

Not applicable.

Planning Assessment:

Land Use

The subject site is zoned 'Rural' under LPS8 and is located within a Special Control Area, being an 'Industry Buffer' for the Maitland Strategic Industrial Area.

The proposed use of "Renewable Energy Facility (Solar Farm)" is not specifically listed within the zoning table of LPS8 therefore, Cl. 3.2.5 is applicable and states:

"If the use of the land for a particular purpose is not specifically mentioned in the zoning table and cannot reasonably be included in the definition of one of the development categories, the local government may determine:

- a) That the use is not consistent with the objectives and purposes of the particular zone or precinct and is, therefore, not permitted, or*
- b) That the proposed use may be consistent with the objectives and purposes of the zone and/or the precinct objectives and an application for development approval should be determined in accordance with clause 64 and Part 9 of the deemed provisions."*

It is considered that the proposed land use of "Renewable Energy Facility (Solar Farm)" is consistent with the objectives of the Maitland precinct as per the City's assessment below (see Cl. 4.9). The City has also advertised the proposal in accordance with clause 64.

LPS8 Clause 4.9

As the application is proposing a use not defined within the Scheme, the application is required to demonstrate that the use is consistent with the objectives of the Maitland Precinct. The objectives of the Maitland Precinct are:

- a) *Protect the access and environmental assets of Miaree Pool from the impacts of surrounding land uses;*
- b) *Facilitate the development of the Maitland Precinct as a strategic industry estate which:*
 - *allows for the efficient and effective processing of primary resources;*
 - *allows for the development of land uses compatible with and not restrictive to future development of strategic industry;*
 - *does not compromise the lifestyle and tourist assets of the City; and*
 - *has due regard to the environmental and heritage values of the area;*
- c) *Accommodate the development of additional port facilities, including public wharf facilities.*

The City considers that the proposal meets the objectives of the Maitland Precinct as follows:

- The proposal aligns with Maitland Precinct as it will facilitate and complement the future development of the MSIA.
- The proposal will not restrict the development of the MSIA for future strategic industry uses as the solar farm, once established, will have minimal ongoing traffic implications apart from occasional maintenance.
- Environmental implications of the proposal have been sufficiently addressed in Ministerial Statement 1212.
- The nature of the proposal will have no impact on the lifestyle and tourist assets of the City of Karratha noting that the proposal is several kilometres away from any nearby development or other assets.
- The proposed solar farm will have no impact to the access or environmental assets of Miaree Pool, noting that the proposal is approx. 7.5km to the east of Miaree Pool.
- Once established the operational phase of the development will have minimal ongoing environmental impacts on the wider area.
- The proposal will have no impact on the processing of primary resources within the MSIA as it is located out of the MSIA (located within the buffer) and it will involve a minimal operational workforce.
- The proposal does not restrict future development of the MSIA and surrounding buffer area as it is considered to not be a sensitive land use or likely to be adversely impacted by future industry uses.

Development Requirements

Part 5 of the Scheme sets about the general development requirements for applications in relation to the zone that they are located within. As stated previously in the report, the solar farm is proposed within the Rural zone and therefore has been assessed against the following applicable provisions of LPS8:

LPS8 Clause 5.9

- 5.9.1) *In considering any proposed development within the Rural zone, but in an area subject to strategic proposals for urban or industrial development, the local government shall only grant approval where that proposed development or use will not, in the opinion of the local government, prejudice the future development of those proposals.*

5.9.2) Prior to the local government considering subdivision or development applications on land within the rural zones, a structure plan may be prepared in accordance with Part 4 of the deemed provisions.

The proposal does not restrict future development of the MSIA and surrounding buffer area as it is not considered to be a sensitive land use or likely to be adversely impacted by future industry uses. The proposal will not adversely impact on the processing of primary resources as it proposes only to establish a solar farm with minimal operational workforce required.

A structure plan is not required to be prepared in relation to this development application. It is considered to be onerous given the straightforward nature of the proposal and it is having no impact on the future development of the MSIA or adjacent buffer area. It is noted that the area is subject to Improvement Plan No. 44, with the application also being referred to DPLH for comment. DPLH did not raise any concerns regarding the proposal, therefore the need for a structure plan within the improvement plan area is considered unnecessary.

City of Karratha Local Planning Strategy

The City's Local Planning Strategy was endorsed by the Western Australian Planning Commission (WAPC) on 2 February 2021. No changes to the existing zoning of either the subject site or the adjacent MSIA and associated buffer are proposed.

The proposal is consistent with the City's Local Planning Strategy, as it will contribute to the diversification of rural land and provide a climate-appropriate industry which capitalises on technological innovation and renewable energy.

Relevant Improvement Plans

Improvement Plan No. 44 – Maitland Strategic Industrial Area

The subject site is located within the Maitland Strategic Industrial Area (SIA) which is within an Improvement Plan Area. At the time of writing, an Improvement Scheme for the Maitland SIA is yet to be endorsed.

The Maitland SIA Improvement Plan identifies this area to be a suitable location for major industrial development to accommodate industries such as gas, petroleum processing, power production and other associated downstream processing industries including urea, ammonia and ammonium nitrate. This is also supported by the City's Local Planning Strategy.

The proposed development is not expected to have any adverse impact on the future development of the MSIA.

State Planning Policies

SPP 2.5 – Rural Planning

SPP 2.5 seeks to protect and preserve WA's rural land assets and achieve a broad compatibility between land uses. The proposed solar farm is not considered to have any adverse impacts on the nearby pastoral activities as the proposal does not create any significant ongoing noise, odour, construction or other polluting outcomes.

SPP 3.7 – Planning in Bushfire Prone Areas

The applicant has submitted a Bushfire Management Plan (BMP) and a Bushfire Risk Management Plan (BRMP) (**Attachment 5**). The BMP provided includes a BAL assessment which gave the footprint of the developable area of Stage 1 a BAL rating of BAL-29.

The application and the bushfire reporting documents were referred to DFES for review and comment due to the high-risk nature of the development, primarily due to the presence of high-voltage electrical infrastructure and the battery energy storage system (BESS). DFES advised there was insufficient information provided and that a further review was required. The main issues raised related to:

- Location, Siting & Design – BAL-29 calculation for battery containers;
- Vehicular Access – Plans reflecting internal road network recommended; and
- Water – Insufficient water for firefighting purposes for renewable energy facilities.

Full commentary and responses are set out in **Attachment 6**.

Following DFES comments the applicant consulted with DFES and then forwarded additional information to the City. DFES noted that the increase in the width of the APZ to 17m surrounding the BESS units will result in a reduction of the BAL rating from BAL-29 to BAL-12.5. Whilst capable of approval at a BAL-29 rating, the decrease in the BAL rating is an acceptable solution to reduce the bushfire risk to the proposed development and also to the broader surrounding area. The applicant's bushfire consultant advised in writing that there will be the provision of additional water tanks for firefighting purposes. These tanks are to be included in final detailed plans for Stage 1 (to be conditioned). The provision of additional water tanks for firefighting purposes is consistent with the requirements of the CFA Design Guidelines Model Requirements Renewable Energy Facilities.

It is considered that the final responses provided by the applicant sufficiently address the non-compliances identified by DFES within the Bushfire Protection Criteria contained within the Guidelines. At the time of writing the BMP had not been revised to reflect this. It is recommended a condition of any approval be included, requiring the submission of a revised BMP to be approved by the City and thereafter implemented at all times.

A condition for a revised BMP for Stages 2-5 of the solar farm has been recommended as the provided BMP has not included these stages due to the final layout of these stages yet to be determined. The BMP sets about a blueprint for future revisions of the BMP that can easily input the relevant data and layouts of future stages accordingly. Any revised BMP for Stages 2-5 shall also be referred to DFES for comment prior to the City considering them acceptable for each of the subsequent stages.

SPP4.1 – State Industrial Interface

Consideration of SPP4.1 is required in relation to the subject site being located adjacent to the 'Strategic Industry' zone to the west, its location with the Maitland SIA Industry Buffer Special Control Area (SCA) and due to its proximity to the Dampier to Bunbury gas pipeline infrastructure.

Matters to consider in the context of the proposal include whether the location is appropriate for the proposed development, the significant investment represented, and whether there is an appropriate interface between the subject land and any nearby sensitive land uses. In this regard, the following points are relevant:

- The site is located within an industrial buffer (Maitland SIA buffer);
- The subject site is situated adjacent to a 'Strategic Industry' zone (future Maitland SIA);

- The proposal is located at least 14km from Karratha, 16km from Dampier and 16km from Murujuga National Park;
- As outlined previously in the report, the site forms part of the MSIA buffer zone and as such are appropriate and suitable for large scale industrial development.
- The development does not propose to cross a DBNGP easement or corridor.
- The proponent will be required to comply with the *Dampier to Bunbury Pipeline Act 1997*.

City of Karratha Local Planning Policies

LPP DP20 – Social Impact Assessments

LPP DP20 provides guidance to the City, applicants and service agencies on social impacts (both negative and positive) from new large-scale developments on the local population and town/s. The policy is applicable to new proposals consisting of one or more of the following:

- 'Industry – Resource Processing',
- 'Transient Workforce Accommodation', or
- Land zoned 'Strategic Industry'.

The proposal does not fall into one of the mandatory SIA categories. However, under the policy, Council may also, at its discretion, require a Social Impact Assessment (SIA) to be completed and submitted for other forms of development/proposed land uses that are likely to have a significant local social impact.

The applicant has provided justification as to why the proposal should not require a SIA/SIMP be provided:

- The proposal is not a 'resource sector' proposal; and
- Given the nature of the land use and location, the proposal is not considered to have any significant social local impacts on the community.

The City agrees with the applicant's justification noting that proposal is not considered to have a large 'construction period' (12-18 months) impact on the wider Karratha region and once established, the ongoing operation and management of the solar farm will have a minimal impact on the City as it will not require a workforce from town or to be flown in (FIFO) to operate the solar farm, as it is remotely operated.

Whilst not required to submit a SIA/SIMP, Woodside is currently refreshing its existing SIA and SIMP's for its broader activities within Karratha and Roebourne. The scope considers the cumulative impact of all Woodside operations and developments (including this proposal).

Attachment 7 is a Social Impact Summary which has been provided by the proponent and identified consequences (both positive and negative) that may be experienced by the population due to the development.

The City supports this approach to reviewing and updating Woodside's SIA and SIMP's within the wider Karratha & Roebourne region to reflect current issues, opportunities and constraints.

Planning Discussion

Site, Elevation and Floor/Layout Plans

The applicant has provided a set of development plans which details the proposed five stages of the overall development envelope for consideration. The applicant has

advised that initially only Stage 1 will be developed in the short term. The remaining four stages will be progressed as market demand requires them to come online. The applicant is seeking approval for the entire development envelope.

The indicative Stage 1 layout has been included with the proposal however, the applicant has advised that the final layout of the remaining stages are still to be determined. The Stage 1 layout plan indicates general details of solar array locations, internal access roads, site access road, fencing, site facilities area, substation and main site entrance. Given the indicative nature of the provided plans for Stage 1, it is recommended that a condition for a final set of plans be provided which is to include the following:

- i. elevations of a standard array of solar panels;
- ii. further details of the access road including dimensions and the material/s it is to be constructed of;
- iii. elevations and dimensions including type of fencing proposed;
- iv. elevations and floor plans of substation, plant area and site facilities area; and
- v. elevations and floor plans of the proposed water tanks for firefighting purposes.

Given that site layout plans have not been provided for the remaining four stages, it is recommended that a condition be included on any approval requiring that prior to construction of each stage commencing, plans for that stage are to be submitted to and approved by the City. The plans are to depict the layout plan for each solar array and elevations/floorplans the solar arrays and of any associated infrastructure/development (including fencing).

Car Parking and Access

Access to the solar farm is proposed via a new temporary crossover from the NWCH and connecting to the western portion of the site. Internal to the site will be an access road running virtually parallel to the western boundary of the site. Internal access roads will branch off from this main western access road.

During the operational phase there will be minimal traffic and staff attendance on site with only occasional maintenance vehicles (as needed) requiring access to the site. Given this, a Traffic Impact Statement or Traffic Impact Assessment was not considered to be required.

MRWA provided referral comments noting that:

- The proposed access must receive formal approval through the access application process.
- The temporary solar farm access is only valid until the Maitland Strategic Industrial Area ultimate access is completed. At that stage the applicant will be required to rehabilitate the temporary access.
- All storm water from the development site must not impact NWCH.

MRWA provided conditional approval for highway access via NWCH on 25 November 2022.

It is recommended that the following condition be included as part of any approval granted stating that access via NWCH is temporary until such a time that the Maitland

Strategic Industrial Area access is completed. Once this access is completed, access to the site shall be via the Maitland SIA access road. Advice notes are recommended stating that temporary access to the subject site and the removal and rehabilitation of the temporary access to the NWCH are approved by MRWA.

It is noted that no traffic management has been proposed during the construction phase of the proposal. Any traffic management required during the construction period will require approval by Main Roads WA as NWCH falls under their control/jurisdiction. An advice note advising the requirement to seek MRWA approval for any traffic management required during the construction period is recommended.

LPS8 prescribes minimum required car parking bays for each land use, however as the proposal is not a listed use, there is no set car parking requirements. Once the proposal enters its operational phase, it is intended that the solar farm will be remotely operated with no occupied buildings or personnel on site. The solar farm will be subject to ongoing, infrequent maintenance comprising of inspections, cleaning of solar panels and maintenance of grounds. Given the above, it is considered three car parking bays and a truck parking and turnaround area are adequate to service the development.

No car parking has been detailed on the development plans, however there is sufficient room for car parking to be adequately provided adjacent to the site facilities area. It is recommended that a standard condition be included on any approval granted which states; three car parking bays, truck turnaround areas and internal vehicular access are to be of a minimum compacted gravel standard.

Surface Water

The applicant undertook hydrological and water quality impact studies as part of the EPA referral process. The EPA assessment report noted that the proposal includes raised access roads with stormwater drainage infrastructure and as such these roads are not expected to impact on surface water flows. The EPA assessment also concluded that the proponent is able to manage the potential for water and soil erosion within the development envelope through stormwater runoff and drainage management measures as outlined in the proponents Environmental Management Plan.

The Ministerial Statement 1212 provides numerous conditions that relate directly to these matters and puts in place measures and trigger points to ensure that these potential impacts are properly considered and mitigated. In this case, the Ministerial Statement 1212 is the appropriate mechanism/legislation to regulate these matters.

Flora and Fauna

The applicant as part of the EPA referral process undertook a number of studies/reports in relation to the impacts of the proposal on flora and fauna within the development envelope.

The solar farm will disturb up to 843ha of native vegetation within a 943ha sized development envelope. The proposal is noted as being located within the Horseflat land system of the Roebourne Plains, comprising of relatively flat topography covered by grasslands and dissected by ephemeral drainage lines with scattered trees. The development envelope has been subject to extensive grazing and disturbance by stock animals with flora surveys indicating possible over grazing of the area.

The development envelope is noted as containing no State or Commonwealth threatened ecological communities (TECs) or any within 10km of the proposed

development envelope. The DBCA database indicates that there are two priority ecological communities (PECs) within the Roebourne Plain in the vicinity of the proposed development envelope. These are the Roebourne Plains coastal grassland with Gilgai microrelief on deep crackling clays (Priority 1), and Horseflat land systems of the Roebourne Plains (Priority 3). The total amount of the development envelope containing the P1 PEC is 94.9ha (10%), and the P3 PEC is 496.7ha (52.6%). The proposal is noted as only having a very small reduction (approx. 0.3 – 0.4%) in extent of native vegetation within the Horseflat land systems within the Roebourne subregion.

As such, it is not considered that the proposal will cause any significant impact to remnant vegetation of Roebourne sub region.

Fauna studies undertaken for the EPA referral process identified 84 terrestrial vertebrate fauna species within the proposed development envelope of the solar farm. Whilst no Conservation Significant species were recorded in the survey area, six species were indicated as likely occurring within the development envelope.

The EPA's assessment report stated that the proposal may impact on minor drainage lines which function as local fauna corridors through the area. These impacts however are not expected to cause a significant impact to conservation significant species or terrestrial fauna populations of the region as more significant drainage lines will be avoided.

It is noted that Ministerial Statement 1212 has appropriate conditions protecting flora and fauna in accordance with the Environmental Management Plan provided by Woodside. Any issues pertaining to flora and fauna disturbances are best placed to be mitigated through the Ministerial Statement and relevant *EP Act*.

Aboriginal Heritage

The entirety of the proposed development envelope lies within Ngarluma/Yindjibarndi Native Title Determination Area (WCD 2005/001). The subject site falls within the Ngarluma Area as defined within WCD 2005/001.

The site is subject to two registered Indigenous Land Use Agreements (ILUA) as follows:

- RTIO Ngarluma ILUA (Body Corporate Agreement); and
- Ngarluma and Woodside Power Project ILUA.

The development envelope contains three lodged sites containing Aboriginal Cultural Heritage as follows:

- 21674 – Place – Artefacts / Scatter; Grinding areas / Grooves; Quarry
- 21675 – Place – Artefacts / Scatter
- 22608 – Place – Grinding areas / Grooves

The development envelope is also subject to 15 Aboriginal cultural heritage surveys.

The applicant prepared a Cultural Heritage Management Plan (CHMP) (**Attachment 8**) to support its EPA referral application. The CHMP was developed to assist with the management of cultural heritage values of the area. The CHMP will ensure that construction and operation of the solar farm does not compromise on the social values of the area and manage potential impacts of the proposal on cultural heritage. All

surveys undertaken for the formation of the CHMP were conducted with the input of Ngarluma participants.

The archaeological surveys undertaken to date have identified three sites across the MSIA and Industrial Buffer Area likely to be protected under the *Aboriginal Heritage Act 1972 (AH Act)* and a further four other 'places' that don't meet the threshold for protection but have been requested by NAC to be avoided.

Based on these surveys, the proponent has undertaken design and construction planning to avoid all identified heritage sites within the surveyed area (approx. 100ha or 10% of the solar farm). The proponent has advised that they will continue to work with NAC to conduct surveys of all remaining unsurveyed impact footprints to identify any un-recorded Aboriginal Heritage sites and undertake appropriate design and construction planning to avoid any identified sites.

The Ministerial Statement 1212 covers the core matters relating to protection of the registered Aboriginal Heritage sites. The CHMP prepared by the proponent outlines more detailed process and management actions than are listed in the conditions of the Ministerial Statement and are considered by the City to be management actions that should be undertaken by the proponent and be enforceable through the relevant approval mechanism. The CHMP is not mentioned or referred to specifically within the Ministerial Statement as having to be implemented. It is considered appropriate to include a condition on any approval granted, requiring the CHMP to be implemented throughout the construction and operational phases of the development.

Visual Amenity

The proposal will not be visible from Dampier or Karratha townsites, including associated recreational areas such as public open space, walk trails or coastal areas. The proposal will be visible from a portion of Dampier Road, however the visual impact will not be significant due to existing modified landscapes along Dampier Road (Gap Ridge Industrial Estate and RTIO railway yard), distance from public access, and the low elevation of the solar farm. The visual effects of the proposal are unlikely to result in significant impacts to the aesthetic, social or economic surrounding areas or to visitors.

It is noted that the solar farm will have some impact on visual amenity along the NWCH however, it is not considered to cause unreasonable or an adverse impact for the following reasons:

- The area is an undeveloped, sparsely vegetated area with no key views;
- The solar panels have a low elevation and will not cause distraction or distortion of the existing flat landscape along NWCH;
- The MSIA has been considered acceptable for future development of industrial processing operations and the downstream industries related to such uses, which will alter the visual amenity of the broader region greatly;
- The solar farm is proposed adjacent to the MSIA, noting this development will be a minor component in relation to the overall MSIA.

Given the above, the impact to visual amenity along the NWCH is considered to be acceptable noting the long term changes to the amenity of the region due to the development of the MISA.

The applicant has stated that the solar panels are to be mounted onto structures which will follow the trajectory of the sun throughout the day (track east to west). The solar panels will be facing north during this trajectory therefore not causing any solar glare

impacts to road users along NWCH. The City agrees that the solar panels are unlikely to affect traffic passing the subject site along NWCH immediately to the south as this portion of NWCH is almost in an east/west alignment. However, for traffic approaching the solar farm in a south-westerly direction, it is considered there is insufficient information provided about whether the solar panels when facing east to collect the morning sun will have any impact on this traffic. As such, a solar impact glare assessment and management plan is recommended to be conditioned. This assessment shall look at the broader impact of the glare on road users' approach to the solar farm, whether there is any likely adverse impact/s, and any management recommendations.

Construction Environmental Management Plan (CEMP)

It is recommended that a condition be included requiring the submission of a CEMP to the City of Karratha for review and approval prior to construction beginning. Once approved the CEMP shall be implemented and adhered to through the construction phase of the development to the satisfaction of the City of Karratha. Matters to be considered but not limited too shall include:

- vi. Contact details of essential site personnel, construction period and operating hours;
- vii. Community information, consultation and complaints management plan;
- viii. Public safety, security and amenity;
- ix. Traffic and parking management;
- x. Noise and dust management plan;
- xi. Waste management, including the storage and disposal of substances, to be in accordance with the Department of Water and Environmental Regulation Guidelines and Water Quality Protection Notes;
- xii. Earthworks, excavation, land retention/piling methods and associated matters, all to be contained within the approved development site; and
- xiii. Stormwater and sediment control;
- xiv. Security fencing details;
- xv. Revegetation/ rehabilitation plan;
- xvi. Cyclone preparedness.

Operational Environmental Management Plan (OEMP)

The City recommends that a standard condition that an Operational Environmental Management Plan be submitted to and approved by the City. Once approved the OEMP shall be implemented and adhered to through the operational phase of the development to the satisfaction of the City of Karratha. Matters to be considered but not limited too shall include:

- i. Contact details for complaints management;
- ii. Cyclone preparedness;
- iii. Cleaning of panels;
- iv. Dust control;
- v. Weed control;
- vi. Waste management.

Conclusion:

The proposal to construct and operate a "Renewable Energy Facility (Solar Farm)" with a capacity of up to 500MW, with the first stage involving the construction and operation of a 100MW facility will provide efficient, renewable energy generation and contribute

to a clean energy economy. Based on an assessment against the Scheme and the relevant state and local planning framework, the site is considered capable and suitable of accommodating the proposed development without any significant impacts on and potential use of surrounding land. It is recommended, the proposal be approved, subject to conditions and advice notes.

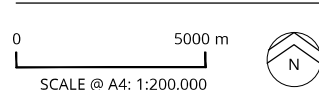
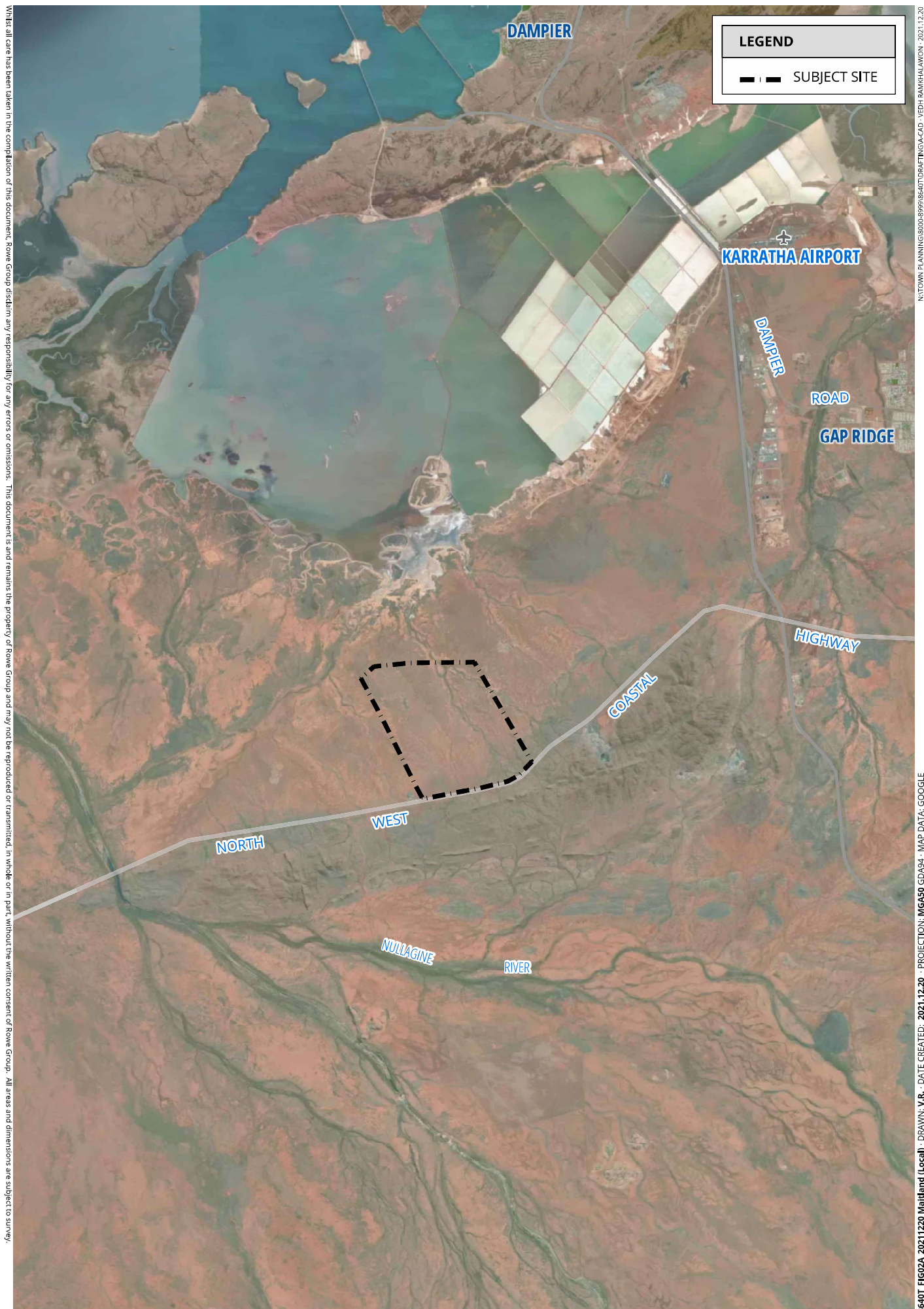


FIGURE 1
REGIONAL LOCATION



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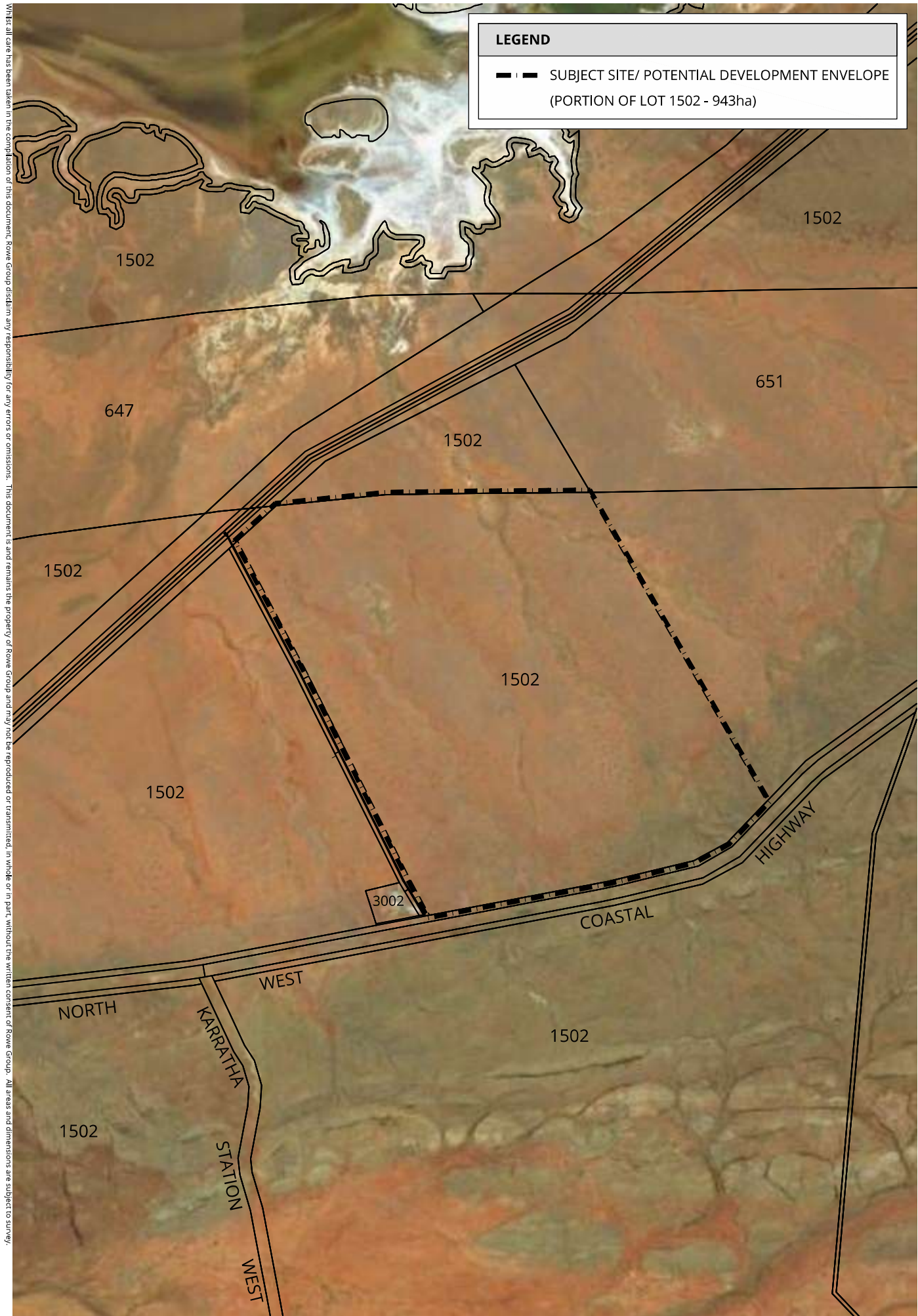
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FIGURE 2
LOCAL CONTEXT



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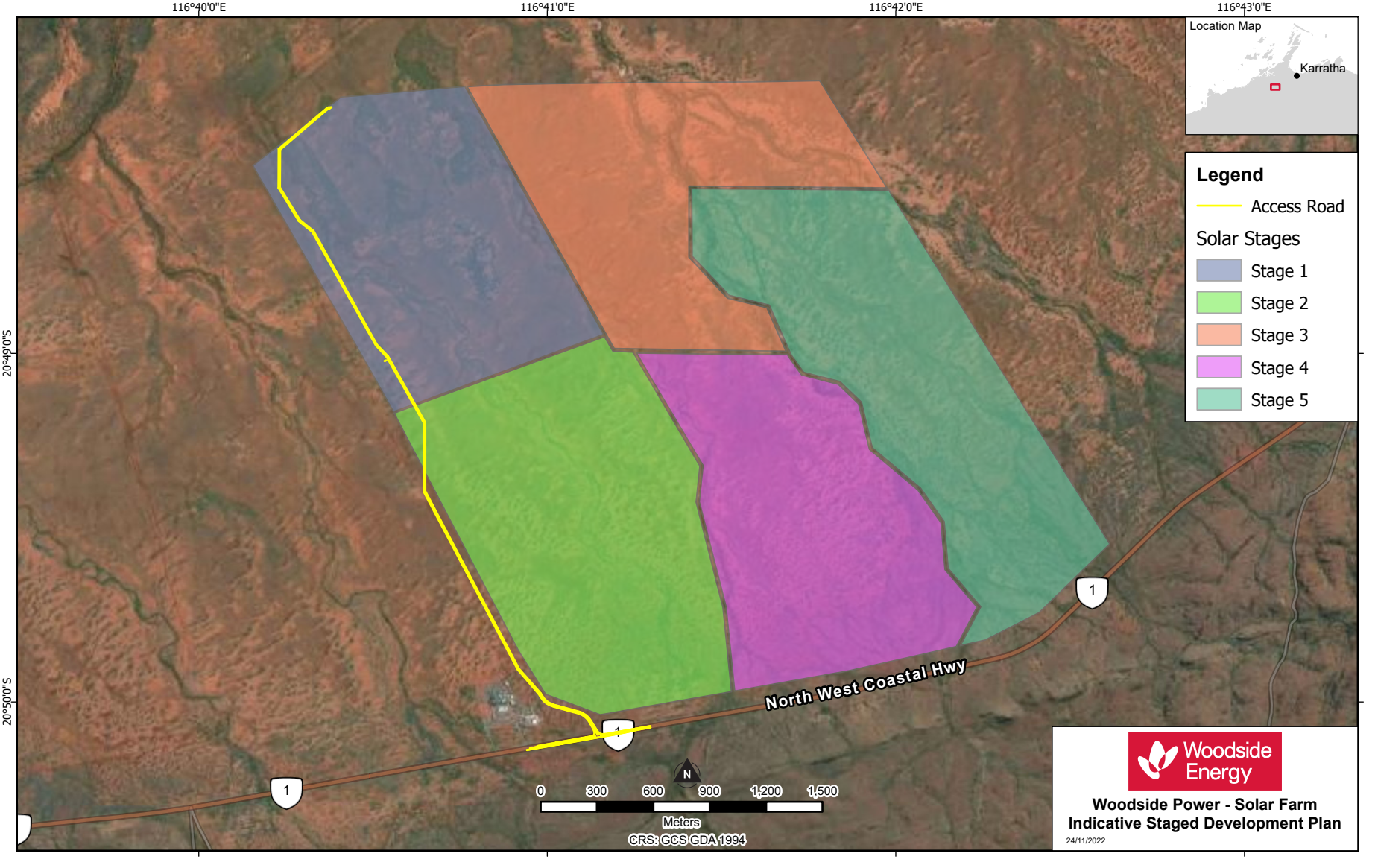
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FIGURE 3
SITE PLAN



116°40'0"E

116°41'0"E

116°42'0"E

116°43'0"E

20°49'0"S

20°50'0"S

Location Map

Karratha

Legend

Access Road

Solar Stages

Stage 1

Stage 2

Stage 3

Stage 4

Stage 5

North West Coastal Hwy

0 300 600 900 1,200 1,500

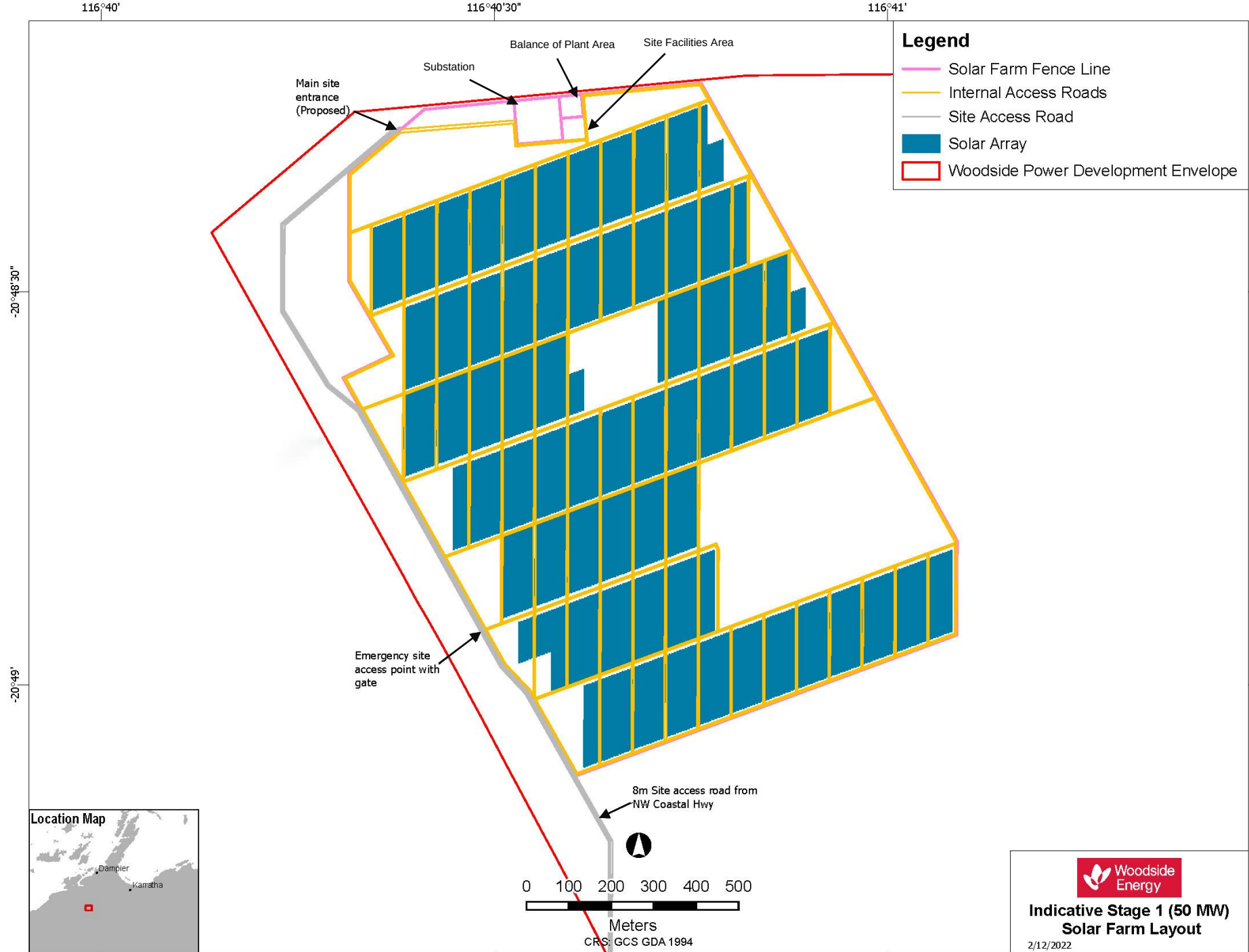
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**Woodside Power - Solar Farm
Indicative Staged Development Plan**

24/11/2022





ROWE
GROUP

DEVELOPMENT APPLICATION

PROPOSED WOODSIDE SOLAR FACILITY
LOT 1502 NORTH WEST COASTAL HWY
MAITLAND

DOCUMENT CONTROL

Printed 13 December 2022

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ATTACHMENTS

1. CERTIFICATE OF TITLE & DEPOSITED PLAN
2. DEVELOPMENT PLANS
3. SOCIAL IMPACT SUMMARY
4. SECTION 38 REFERRAL DOCUMENTATION
5. BUSHFIRE REPORTING

1. INTRODUCTION

Woodside Energy Ltd (Woodside) has engaged Rowe Group to prepare this report in support of a Development Application for a Solar Photovoltaic Farm (Solar PV Farm) at Lot 1502 North West Coastal Highway, Maitland (the subject site).

This Application seeks development approval for a Solar PV Farm that will generate electricity and be complemented by battery storage infrastructure to supply renewable energy for use by industrial customers on the Burrup Peninsula.

This report includes a description of the following matters:

- ▲ Location of the subject site;
- ▲ Description of the existing land use;
- ▲ Detailed explanation of the proposed development;
- ▲ Overview of relevant planning issues;
- ▲ Justification for the proposed development; and
- ▲ Environmental Referral information and documentation.

2. DESCRIPTION OF SITE

2.1 LOCATION

The subject site is located in the Municipality of the City of Karratha.

Refer **Figure 1 – Regional Location**.

The subject site is situated approximately 15 kilometres south-west of the Karratha city centre and is located north of the North West Coastal Highway in the locality of Maitland.

Refer **Figure 2 – Local Location**.

2.2 CADASTRAL INFORMATION

The subject site consists of one (1) land parcel, being:

- ▲ Lot 1502 on Deposited Plan 75876 (Certificate of Title Volume LR3165, Folio 962).

The subject site has a total land area of approximately 77,190.09 hectares. The portion of the subject site relative to this Development Application is approximately 943 hectares in area (i.e. the potential development envelope for the Proposal).

Refer **Figure 3 – Site Plan** and **Attachment 1 – Certificate of Title and Deposited Plan**.

2.3 EXISTING IMPROVEMENTS

Woodside has submitted an Environmental Referral to the Environmental Protection Authority (EPA) under Part IV (Section 38) of the *Environmental Protection Act 1986* (Section 38 Referral). As outlined in the Section 38 Referral the portion of the subject site relative to this Application consists of native vegetation that has been subject to extensive grazing and disturbance by stock animals. From a locational perspective the subject site represents a typical solar farm development site, i.e. has access to an excellent solar resource, a large area of flat, cleared land, good road access and efficient connection to the electricity grid.

The Section 38 Referral confirms that a potential disturbance footprint of up to 943 hectares is proposed for the Solar PV Farm Development Envelope (DE). As also outlined in the Section 38 Referral the Proposal the subject of the Section 38 Referral consists of two discrete DEs – one for the Solar PV Farm (the subject of this Application) and the second for the Solar Plant Supporting Infrastructure (SPSI), which does not form part of this Development Application.

Further details regarding the Section 38 Referral are summarised in Section 6 of this Report (below) and a copy of the Section 38 Referral documentation is contained as **Attachment 3**.



FIGURE 1
REGIONAL LOCATION



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FIGURE 2
LOCAL CONTEXT



0 1000 m
SCALE @ A4: 1:40,000



FIGURE 3
SITE PLAN

3. DESCRIPTION OF PROPOSAL

Woodside is proposing to develop a Woodside Solar Facility approximately 15 kilometres southwest of Karratha. This facility will generate electricity from a large scale solar photovoltaic farm (Solar PV Farm), complemented by energy storage (Battery Storage) infrastructure and associated transmission connection infrastructure (the Proposal). The Proposal will supply renewable energy for use by industrial customers on the Burrup Peninsula, which is expected to include the Woodside operated Pluto LNG Facility.

Woodside acknowledges the Ngarluma People, the Traditional Owners and Native Title holders of the land on which the Proposal is planned to be developed. Woodside has been engaging with the Ngarluma Aboriginal Corporation (NAC) regarding the development of a solar farm and other power generation facilities at this location since 2019.

Woodside and the Ngarluma Aboriginal Corporation (NAC) have entered into a bilateral Indigenous Land Use Agreement and a modern benefits-sharing and relationship agreement relating to lands being investigated for the Proposal.

The agreements set out a framework for the delivery of social and economic benefits to NAC and Ngarluma people in connection with the power opportunity. These agreements also outline how Woodside and NAC will work together to develop the power opportunity, including the management of cultural heritage. Early engagement with NAC has ensured the project will be designed to avoid heritage impacts.

Woodside proposes to implement the Proposal in a phased approach, expanding the development as customer demand arises. Initially, it is expected that the Proposal will consist of the following key elements allowing for the supply of up to 100MW of renewable energy to industrial customers, through the installation of one or more of the following key infrastructure elements:

- ▲ Solar PV Farm: Capable of generating up to 100 MWAC (instantaneous); and
- ▲ Battery Storage: Capable of storing up to 400 MWh.

Construction of the first phase of the Proposal is expected to commence in 2023 and be ready for start-up in 2024, with an intended operating life of approximately 30 years.

As additional customer demand is realised, the Proposal may be expanded in one or more phases.

The maximum expansion of the Proposal is expected to be capable of generating up to 500 MW of electricity from following key infrastructure elements:

- ▲ Solar PV Farm: Capable of generating up to 500 MWAC (instantaneous).
- ▲ Battery Storage: Battery storage capacity is estimated to be a maximum of 200 MWh for each 50MWAC of solar generation capacity.

Importantly, although the Proposal consists of the Solar PV Farm and Battery Storage (consistent with the Section 38 Referral to the EPA), this Development Application seeks approval for the Solar PV Farm component of the Proposal only.

Access to the PV Farm will be via an access road in the western portion of the subject site approximately two (2) kilometres east of the Karratha Station Road and North West Coastal Highway intersection. During the operation phase there will be minimal traffic and staff attendances with only occasional maintenance (as needed) requiring personnel to access the subject site.

Refer **Attachment 2 – Development Plans**.

With respect to the Stage 1 transmission infrastructure outside of the Proposal and the subject site, such infrastructure is being managed by Horizon Power and does not form part of this Development Application. Transmission for subsequent stages of the Proposal will be subject to further consideration including customer demand, customer location, and assessments to determine suitable transmission solutions at the time.



4. TOWN PLANNING CONSIDERATIONS

4.1 ZONING

4.1.1 CITY OF KARRATHA LOCAL PLANNING SCHEME NO. 8

Under the provisions of the City of Karratha Local Planning Scheme No. 8 (LPS 8) the portion of the subject site relative to this Application is zoned 'Rural' and is located within the Maitland Precinct. The subject site is also located within the Maitland Strategic Industrial Area (MSIA) Industry Buffer Special Control Area (SCA).

The objectives of the Maitland Precinct, as contained in LPS 8, are as follows (underlining for emphasis):

- (a) *Protect the access and environmental assets of Miaree Pool from the impacts of surrounding land uses.*
- (b) *Facilitate the development of the Maitland Precinct as a strategic industry estate which:*
 - *allows the efficient and effective processing of primary resources,*
 - *allows for the development of land uses compatible with and not restrictive to future development of strategic industry,*
 - *does not compromise the lifestyle and tourist assets of the City, and*
 - *has due regard to the environmental and heritage values of the area.*

The Proposal aligns with the above objectives given it will facilitate and complement development of the MSIA. The Proposal will not restrict development of the MSIA for strategic industry uses as the Solar PV Farm, once established, has minimal ongoing traffic implications apart from occasional maintenance.

Furthermore, given the nature of the Proposal, there will be no impact on the lifestyle and tourist assets of the City of Karratha and the environmental implications of the Proposal have been addressed in the Section 38 Referral to the EPA.

With respect to the MSIA Industry Buffer SCA, recently gazetted Scheme Amendment No. 57 modified Clause 6.3 (Industry Buffers) of LPS 8 to allow development within the MSIA Industry Buffer SCA which would attract persons other than those working in the adjacent strategic industrial area.

The Proposal is consistent with the objectives of Maitland Precinct, is consistent with Clause 6.3 of LPS 8 and is a suitable use at the subject site.

Refer **Figure 4 – LPS 8 Zoning**.

4.1.2 LAND USE PERMISSIBILITY

The most appropriate land use for the Solar PV Farm is 'Renewable Energy Facility' which, at the time of writing this Report, is a use not listed.

Notwithstanding, Scheme Amendment No. 55 has been initiated by Council (refer details in Section 4.1.3, below) which seeks to amend LPS 8 by introducing 'Additional Use 10' to Appendix 4 (Additional Uses). 'Additional Use 10' is specific to the subject site as it assigns a 'Renewable Energy Facility' land use as a permitted (P) use at the subject site.

Scheme Amendment No. 55 defines a 'Renewable Energy Facility' as follows:

renewable energy facility means premises used to generate energy from a renewable energy source and includes any building or other structure used in, or in connection with, the generation of energy by a renewable resource. It does not include anemometers, solar panels, wind turbines or other infrastructure used to generate energy located on a lot with a private rural use, single house or commercial premises where the energy produced principally supplies that use.

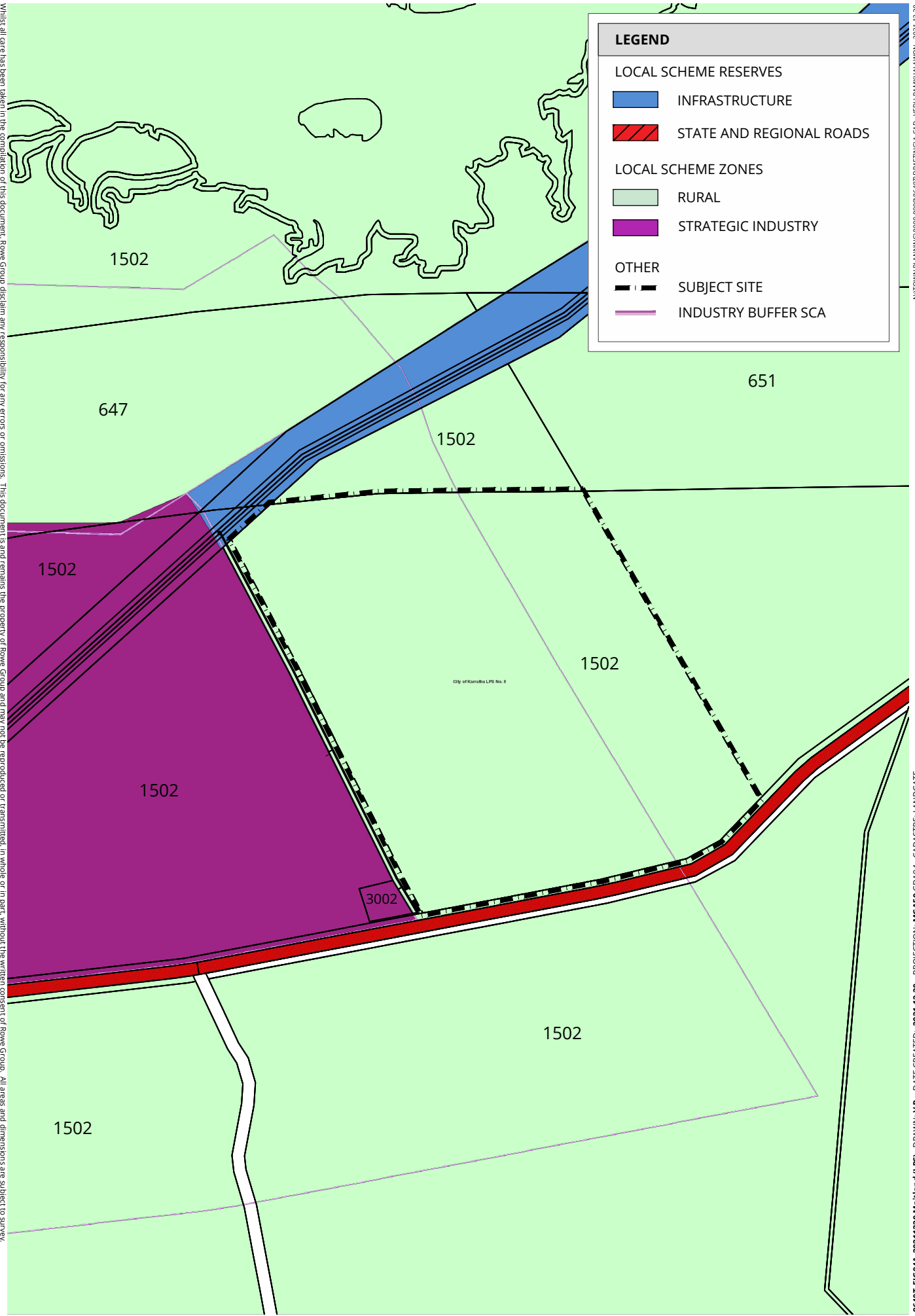
4.1.3 SCHEME AMENDMENT NO. 55 – MAITLAND STRATEGIC INDUSTRY BUFFER AREA

At its Ordinary Council Meeting on 13 December 2021, the Council of the City of Karratha initiated Scheme Amendment No. 55 which seeks to amend LPS 8 by introducing 'Additional Use 10' to Appendix 4 (Additional Uses). 'Additional Use 10' is specific to the subject site as it assigns a 'Renewable Energy Facility' land use to the subject site.

Scheme Amendment No. 55 defines a 'Renewable Energy Facility' as follows:

renewable energy facility means premises used to generate energy from a renewable energy source and includes any building or other structure used in, or in connection with, the generation of energy by a renewable resource. It does not include anemometers, solar panels, wind turbines or other infrastructure used to generate energy located on a lot with a private rural use, single house or commercial premises where the energy produced principally supplies that use.

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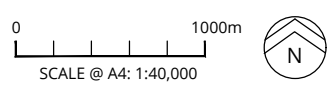


FIGURE 4
CITY OF KARRATHA LOCAL PLANNING SCHEME NO. 8

4.2 RELEVANT PLANNING POLICIES

4.2.1 STATE PLANNING POLICY 4.1 – INDUSTRIAL INTERFACE

The policy intent of State Planning Policy 4.1 – Industrial Interface (SPP 4.1) is: *to seek to prevent conflict and encroachment between industrial and sensitive land uses. It ensures planning decisions consider the locational constraints of land uses, the significant investments represented, and the current and future benefits and costs to communities when assessing proposals where land use conflict may exist or result.*

In the context of the subject site, consideration ought to be given to the content of SPP 4.1 given the subject site's location adjacent to the 'Strategic Industry' Zone (to the west) and its location within the MSIA Industry Buffer SCA.

The Proposal accords with the provisions of SPP 4.1 given the Solar PV Farm will facilitate and complement development of the MSIA. The Proposal will not restrict development of the MSIA for strategic industry uses as the Solar PV Farm, once established, has minimal ongoing traffic or staffing implications apart from occasional maintenance.

4.2.2 CITY OF KARRATHA LOCAL PLANNING POLICY DP 20 – SOCIAL IMPACT ASSESSMENTS

The City's Local Planning Policy DP 20 – Social Impact Assessments (DP 20) was adopted by Council for the purpose of providing guidance in the consideration of social impacts, both positive and negative, in relation to proposed new developments and extensions to existing developments associated with the resource sector. In this regard, DP 20 states (underlining for emphasis):

Given the scale and cyclical nature of the resource sector in the City of Karratha, major projects can have substantial direct and indirect impacts on the local community and available infrastructure and services. It is important that direct and indirect social impacts from such projects are clearly understood and that sufficient attention is directed to identifying the potential for positive impacts, and to mitigating and offsetting negative impacts, as part of the assessment process.

In addition to the above, DP 20 confirms that a Social Impact Assessment (SIA): *shall be completed for, and form part of, **new proposals** that consist of one or more of the following:*

- *Falling within the use class of 'Industry – Resource Processing;*
- *Falling within the use class of 'Transient Workforce Accommodation'*
- *Being on land that is zoned 'Strategic Industry'*

as established in the City of Karratha Town Planning Scheme No. 8.

The Council may, at its discretion, require a SIA to be completed and submitted for other forms of development/proposed land uses that are likely to have a significant local social impact.

DP 20 is not considered applicable to the Proposal, and consequently a SIA and associated Social Impact Management Plan (SIMP) have not been prepared for the Proposal, for the following reasons:

- ▲ The Solar PV Farm is not a “resource sector” proposal;
- ▲ Given the nature of the land use and location of the subject site, the Proposal is not considered to have any significant social local impacts on the community that would warrant the preparation of a SIA/SIMP;
- ▲ The Proposal does not fall within the land use categories outlined in DP 20 that mandate the preparation of a SIA/SIMP; and
- ▲ The subject site is not zoned ‘Strategic Industry’ under LPS 8.

Notwithstanding, Woodside is committed to meaningful engagement and consultation with all relevant stakeholders to ensure its approach to social impact management and the creation of shared value outcomes aligns with the expectations and aspirations of local communities. Social scanning and impact assessment work is an iterative process and Woodside is currently refreshing its existing social impact assessment (SIA) and social impact management plans for its activities in Karratha and Roebourne. This scope considers the cumulative impact of all Woodside operations and developments, including the Proposal. It will further inform our approach for managing potential impacts and maximising opportunities to previously identified focus areas including:

- ▲ Economic development, local business and employment;
- ▲ Housing and accommodation;
- ▲ Cultural heritage;
- ▲ Population growth;
- ▲ Community amenity and lifestyle; and
- ▲ Community safety, wellbeing and resilience.

While the SIA is still being finalised, we consider opportunities for shared value including local employment and contracting while key areas for mitigation include the impact of short-term construction workforces on local community and housing.

Refer **Attachment 3 – Social Impact Summary**.

5. TRAFFIC AND VEHICLE ACCESS

Access to the PV Farm will be via an access road in the western portion of the subject site approximately two (2) kilometres east of the Karratha Station Road and North West Coastal Highway intersection. During the operation phase there will be minimal traffic and staff attendances with only occasional maintenance (as needed) requiring personnel to access the subject site.

As such, no detailed traffic reporting (Transport Impact Statement (TIS) or Transport Impact Assessment (TIA)) has been prepared as the operational phase of the Proposal does not meet the development requirements/thresholds contained in the WAPC's Transport Impact Assessment Guidelines for requiring a TIS or TIA to accompany a Development Application.

It would be appropriate for traffic information with respect to the construction phase of the Proposal to be submitted to the City of Karratha as part of a Construction Management Plan, which is anticipated would be applied as a condition of Development Approval.

With respect to Main Roads WA (MRWA), a 'Conditional Approval for Highway Access – North West Coastal Highway H007 – 1087.30 SLK' was granted by MRWA on 25 November 2022. A copy of MRWA's approval correspondence can be provided to the City if required.

6. ENVIRONMENTAL REFERRAL

Woodside has submitted a Section 38 Referral to the EPA with respect to the Proposal. As outlined in the Section 38 Referral the portion of the subject site relative to this Application consists of native vegetation that has been subject to extensive grazing and disturbance by stock animals.

The Section 38 Referral confirms that a disturbance footprint of up to 943 hectares is proposed for the Solar PV Farm Development Envelope (DE). As also outlined in the Section 38 Referral the Proposal the subject of the Section 38 Referral consists of two discrete DEs – one for the Solar PV Farm (the subject of this Application) and the second for the Solar Plant Supporting Infrastructure (SPSI), which does not form part of this Development Application.

The Section 38 Referral contains information with respect to the following:

- ▲ Details regarding the Proposal;
- ▲ Stakeholder engagement;
- ▲ Environmental principles and key environmental factors;
- ▲ Other environmental factors (terrestrial environmental quality, inland waters and greenhouse gas emissions);
- ▲ Matters of National Environmental Significance; and
- ▲ Offsets.

In addition to the above, the Section 38 Referral contains the following appended documents:

- ▲ Environmental Management Plan;
- ▲ Cultural Heritage Management Plan;
- ▲ Flora and Vegetation Survey Report; and
- ▲ Fauna Survey Report.

A full copy of the Section 38 Referral submission is contained as **Attachment 4**.

6.1 ENVIRONMENTAL MANAGEMENT PLAN

Appendix A of the Section 38 Referral submission contains an Environmental Management Plan (EMP) for the Proposal. The EMP confirms the following:

This EMP has been developed to address potential impacts on key environmental factors and MNES relevant to the construction and operation of the Proposal. This EMP presents management criteria, monitoring and reporting requirements to be implemented to minimise potential impacts on the environment.

This EMP has been developed in accordance with the EPA 'Instructions on how to prepare EP Act Part IV Environmental Management Plans' (EPA 2020a). Additional management plans may be prepared including, but may not be limited to, those listed within this EMP.

6.2 CULTURAL HERITAGE MANAGEMENT PLAN

Appendix B of the Section 38 Referral submission contains a Social Surrounds (Cultural Heritage) Management Plan (CHMP) for the Proposal. The CHMP confirms the following:

This Social Surrounds (Cultural Heritage) Management Plan (CHMP) has been prepared to support environmental referrals for the Proposal under the WA Environmental Protection Act 1986 (EP Act). This CHMP demonstrates to the WA Environmental Protection Authority (EPA) how Woodside plans to manage the potential impacts and risks to Social Surroundings (Heritage) in a way that is consistent with the relevant EPA Factor guideline. The document addresses management provisions relating to both the construction and operational phases of the Proposal.

This CHMP has been prepared in accordance with the EPA 'Instructions on how to prepare EP Act Part IV Environmental Management Plans' (EPA, 2018) and will be implemented following receipt of approval under the EP Act.

6.3 HYDROLOGICAL ENVIRONMENT

Section 10.3 – Receiving Environment of the Section 38 Referral submission contains details with respect to the hydrological environment at the subject site and its surrounds. This component of the Section 38 Referral contains information regarding the regional hydrology and local surface hydrology of the subject site.

6.3.1 REGIONAL HYDROLOGY

Section 10.3.4.1 – Regional Hydrology of the Section 38 Referral submission states the following:

The Proposal DE is located within the Port Hedland Coast catchment area, which is distinct from the catchment of the nearby Maitland River (see Figure 10-2). Within the Port Hedland Coast catchment. The Proposal DE is located adjacent to the Dampier Salt Ponds, with local catchments discharging into the Dampier Salt Ponds.

The Proposal DE falls within the Pilbara Surface Water Area and Irrigation District proclaimed under the RIWI Act. There are no proclaimed rivers, major watercourses, or wetlands of national or international importance within the Proposal DE (DWER 2019a), nor is the Proposal located within the catchments of these wetlands. The closest major watercourse is the Maitland River, located approximately 7 km west of the Solar PV Farm and SPSI DE (Figure 10-2). The nearest Ramsar wetland is Eighty Mile Beach, located approximately 350 km to the north-east (AECOM 2013).

6.3.2 LOCAL SURFACE HYDROLOGY

Section 10.3.4.2 – Local Surface Hydrology – Solar PV Farm and Solar Plant Ancillary and Supporting Infrastructure of the Section 38 Referral submission states the following:

The Solar PV Farm and SPSI DEs are located on the Roebourne Plains (Horseflat land system), which extend between the Karratha Hills to the south and Dampier Salt Ponds to the north (Figure 10-2). The Karratha Hills form a watershed between the catchments of the Maitland River and the Port Hedland Coast. The Roebourne Plains are drained by

ephemeral creeklines that flow in a northwesterly direction, discharging into an un-named waterway. The un-named waterway has an estimated catchment area of 22.1 km² and flows to the north-east, discharging into Dampier Salt Pond Zero, approximately 2.5 km north of the Solar PV Farm DE (Figure 10-2).

The un-named waterway and its tributary creeklines are ephemeral, flowing intermittently for periods of up to several days during and following periods of high rainfall and thereafter being dry. The Roebourne Plains have a relatively flat topography, with elevations varying between 34 mAHD on the southern boundary adjacent the North West Coastal Highway, down to 8 mAHD on the northern boundary (Figure 10-2). The flat topography and low permeability soils (Qwb) render the area susceptible to flooding following intense rainfall events. The creeklines across the Solar PV Farm and SPSI DE are not expected to be fed by groundwater.

Hydrological and hydraulic modelling indicates that the ephemeral creeklines across the Solar PV Farm and SPSI DE are subject to flood depths ranging from 0.5-2 m for a 1% Average Exceedance Probability (AEP) event. One percent AEP discharges within the creeklines varied from approximately 11 to 15 m³/s on the southern boundary, up to approximately 17 to 75 m³/s on the northern boundary.

During major storm events, the creeklines are expected to both scour and deposit sediments along their length and potentially bifurcate across the floodplain. Shallow sheet-flow can also be expected in areas without a concentrated flow path. Soil loss, as determined by the RUSLE method, ranges from 1.3 ton/ha/year across the majority of the Solar PV Farm and SPSI DE, increasing to 4.5 ton/ha/year in the south-east corner.

RPS (2018a) modelled storm surge risk within the MSIA and surrounds, which indicated that at 0.2% AEP with 0.9 m sea level rise, the inundation extent is at least 0.8 km north of the Solar PV Farm and SPSI DEs.

7. BUSHFIRE MANAGEMENT

Detailed bushfire reporting has been prepared by Linfire Consultancy in support of the Proposal. In this regard a Bushfire Management Plan (BMP) and Bushfire Risk Management Plan (BRMP) have been prepared and are contained in **Attachment 5 – Bushfire Reporting**.

As outlined in the BMP and BRMP:

A Bushfire Management Plan (BMP) is required to accompany the development application, as per SPP 3.7 Policy Measure 6.5. The BMP prepared for the proposed development (Linfire 2022), identifies the project area as being located within an area of BAL-12.5 or greater.

Additionally, in accordance with SPP 3.7 Policy Measure 6.6, development applications for “high-risk land uses” located in areas between BAL-12.5 and BAL-29, are to have a bushfire risk management plan (BRMP) for any flammable on-site hazards to accompany the BMP. Linfire has prepared this BRMP to satisfy the requirements triggered under SPP 3.7 Policy Measure 6.6 and the Guidelines.

With respect to the BMP, the Proposal has been assessed as compliant against the Bushfire Protection Criteria of the Guidelines for Planning in Bushfire Prone Areas (Guidelines) which form part of State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7). The BMP contains a bushfire safety strategy which demonstrates compliance with the Guidelines and addresses the bushfire hazards identified at the subject site.

Furthermore, the BMP contains a detailed Acceptable Solutions Assessment against the Guidelines (refer Table 5 – Compliance with the bushfire protection criteria of the Guidelines as contained in the BMP in this regard).

The BRMP provides a risk assessment for each of the potential bushfire scenarios identified in the BRMP. The risk analysis and evaluation specifies the likelihood and consequence of each scenario with and without management measures to determine inherent and residual risks. The BRMP confirms:

Based on the risk assessment (see Table 7 [of the BMP]), Linfire expects that through implementation of the management measures detailed in Section 5 of the BMP, the residual bushfire risk to life and property within and surrounding the project area can be mitigated to acceptable levels.

8. CONCLUSION

Woodside seeks development approval under the City of Karratha Local Planning Scheme No. 8 for a Solar Photovoltaic Farm, complemented by energy storage infrastructure and associated transmission connection infrastructure at Lot 1502 North West Coastal Highway, Maitland. The facility will generate electricity from the Solar PV Farm with the intent to supply renewable energy for use by industrial or wholesale customers which is expected to include the Woodside operated Pluto LNG Facility.

The Proposal is considered appropriate and justified at the subject site for the following reasons:

- ▲ The Proposal is consistent with the objectives of the Maitland Precinct and is a suitable use at the subject site;
- ▲ The Proposal will facilitate and complement development of the Maitland Strategic Industrial Area by providing renewable energy for use by industrial or wholesale customers;
- ▲ The Proposal supports Sectoral Emissions Reduction Strategies for potential industrial customers aiming to integrate renewable energy into their operations;
- ▲ The Proposal supports the Woodside operated Pluto LNG Facility plans for decarbonisation as preparatory siteworks and installation of high-voltage cable were undertaken to support the potential future use of imported lower-carbon electricity in Pluto LNG operations;
- ▲ The Proposal is supported by the recently initiated Scheme Amendment No. 55 (Maitland Strategic Industry Buffer Area) and recently gazetted Scheme Amendment No. 57 to LPS 8;
- ▲ The Proposal is consistent with all relevant Planning Policies;
- ▲ The impact from ongoing operations of the Solar PV Farm is minimal as personnel accessing the subject site is only required for (as needed) maintenance;
- ▲ The Proposal is supported by a detailed Environmental Referral to the Environmental Protection Authority (EPA) under Part IV (Section 38) of the Environmental Protection Act 1986; and
- ▲ The Proposal is supported by a detailed Bushfire Management Plan and Bushfire Risk Management Plan.

On the basis of the above, we respectfully request the City of Karratha recommend the Regional Joint Development Assessment Panel grant development approval for this Application.

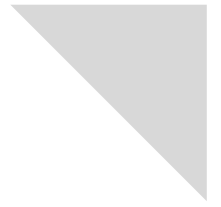
DA23-003 – External Referrals Comments & Submissions

No	Referral Agency	Category	Referral Comments	Applicant's Response	Officer Response
1	Department of Mines, Industry Regulation and Safety (DMIRS)	Support/non-objection	- DMIRS has determined that the proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials. - DMIRS lodges no objection to the above development application.	Noted	Noted
2	Department of Primary Industries and Regional Development (DPIRD)	Support/non-objection	DPIRD does NOT object to the proposal and offers the following comments: - The tenure of Lot 1502 North West Highway Maitland is expected to change as planning and environmental approvals are obtained for the solar PV farm. This will have minimal impact on the number of livestock supported on the Karratha pastoral lease. - Woodside Energy Ltd.'s Environmental Review Supporting Document (ERSD) has assessed the environmental impact and risks on the soil and land resources associated with land clearing, construction and operation of the solar farm and the battery storage facility (Reference: 23-003 Attachment 4a). - The ERSD and the Environmental Management Plan (Reference: 23-003 Attachment 4b) acknowledge the possibility that soil erosion may result from the development and propose mitigation measures to Avoid, Minimise and Rehabilitate the onsite and off-site impacts of erosion and deposition of sediment on inland waters. The measures and management actions proposed by Woodside Energy Ltd include: Vegetation - Minimise the extent of cleared vegetation to that required for each phase (i.e. not pre-clearing for future/prospective works). - Stage construction of the Solar Farm with up to 200 ha cleared per 100 MW installed. - Undertake vegetation rehabilitation, where required, e.g. for temporary laydown areas no longer required, as soon as practicable. - Retain low vegetation between the solar panels and prune to manage shading of panels. Surface water management - Retain existing major drainage lines within the PV Solar Farm in their current state, except for vehicle crossings. - Provide construction works within surface waterways with temporary erosion protection as required. - Use stormwater runoff and drainage management measures (e.g. stormwater infiltration or evaporation basins and controlled stormwater flows) where downstream erosion risk is identified. - Inspect stormwater drains including diversion drains, culverts and floodways, each year to identify where erosion and sediment build up is occurring. - Provide stormwater drains with remedial works to reinstate eroded areas, provide additional erosion protection, and remove sediment built up to ensure that drains convey flows to design specifications. Vehicle and machinery movements - Restrict vehicle / plant movements to approved disturbance areas and designated access tracks. - Restrict routine vehicles and machinery use to existing roads and access tracks. Construction and remediation - Most of the construction to occur outside the wet season. - Construction works (particularly those within and around surface waterways) are to be suspended or scaled back, in the event of a cyclone warning. Include temporary erosion protection as required to prevent washout of works areas. - Minimise soil disturbance when installing solar panels. - Visually assess all disturbed areas at completion of construction works for risk of compaction or erosion. Any disturbed areas deemed to be at risk of compaction or erosion to be provided with remedial works to reduce impact to soils, (e.g. scraping, ripping, contouring, grading, stabilising) - Inspect remedial work areas after first wet season, to check effectiveness, with any eroded areas provided with additional remedial works or reinstatement if required. Grazing - Fence solar panels to exclude grazing livestock (cattle). Decommissioning - After the solar farm is decommissioned (expected 70-year lifespan), rehabilitate land to allow for future use.	Noted	- Land tenure of the site is currently being resolved between the relevant state government agencies. It is understood that the subject site will be formally leased from DevelopmentWA. It is also noted that Woodside and Ngarluma Aboriginal Corporation (NAC) have registered an Indigenous Land Use Agreement (ILUA) over the development envelope area. - The EPA assessment report and subsequent Ministerial Statement 1212 outlines a raft of conditions pertaining to the relevant environmental matters to be addressed by Woodside during the construction and its operation of the Solar Facility. MS 1212 specifically contains conditions regarding: - minimisation of clearing of vegetation; - vegetation rehabilitation; - vegetation retention; - retention of major drainage lines - management of stormwater runoff and drainage management measures - erosion protection. - It is considered that the conditions imposed within MS1212 are the appropriate mechanism and sufficiently address the matters raised by DPIRD in their submission.

			- Constructing solar panels on cracking clays may require additional footings due to soil instability. Construction of access tracks on these soils will also require additional engineering. As these soils support Priority P1 Roebourne Plains coastal grassland, Woodside Energy Ltd. has made commitments in the EMP to minimise their disturbance with clearing of these grasslands not to exceed a total of 40 ha. - The ERSD and EMP refers to the development of a Weed Management Plan (WMP). Although the WMP was not part of the documents provided by the City of Karratha, DPIRD has reviewed the WMP submitted by Woodside Energy Ltd. to the EPA Page 3 of 3 (Reference: Appendix E). The WMP acknowledges the need to monitor and control weeds inside the development envelope and propose mitigation measures to Avoid, Minimise and Rehabilitate the environmental impact of weeds. Measures and management actions proposed by Woodside Energy Ltd. include: - Minimise the risk of introduction and spread of weeds by cleaning earth moving equipment of soil and vegetation prior to entering site for the first time or moving between disturbed and undisturbed areas of the site. - Ensure no weed affected soil or fill is introduced or moved around the site. - Undertake weed inspections within disturbed areas following the first wet season rainfall event post construction works to record the weed species that have become established and record percentage cover. This inspection will be targeted to be undertaken within six weeks of significant rainfall (>25mm) when plants are actively growing and are more likely to be identifiable. - Remove high ecological impact weed species within rehabilitation areas manually (hand removal) or chemically (herbicide application), as necessary. Optimal removal times may vary for weed species, however, within six weeks of significant rainfall or when plants are actively growing is recommended. Control should also be undertaken within this period to attempt to target plants prior to seed set. - Control of any Declared Pest Plants or Weed of National Significance identified by the weed inspection is required using techniques specific to that plant as recommended by State or Federal biosecurity protocols.			
3	Department of Water and Environmental Regulation (DWER)	Comment	- The North West Region (NWR) of the Department is also currently providing advice to the Environmental Protection Agency on a section 38 referral from Woodside for the Woodside Solar Facility. - While the EPA is determining their response to the s38 referral we are not able to provide any advice to the Shire on the Development Application. We will be able to provide comments to you if still required once the EPA has made their determination.		Noted	Noted – the EPA assessment recommendation was provided to the Minister in September 2023, with MS1212 being released by the Minister for Environment on 3 November 2023. No further information from DWER is required.
4	Main Roads Western Australia (MRWA)	Comment	- The proposed access must receive formal approval through the access application process. - The temporary Solar Farm access is only valid until the Maitland Strategic Industrial Area ultimate access is completed. At that stage the applicant will be required to rehabilitate the temporary access. - All storm water from the development site must not impact North West Coastal Highway.		Noted. These terms are consistent with the <i>Conditions of Agreement for Highway Access</i> that has been agreed between Woodside and MRWA.	Noted. Conditions/Advice Notes to reflect comments received as appropriate.
5	Department of Planning, Lands and Heritage (DPLH)	Support/non-objection	DPLH Land Use Management Division has no specific comments in relation to this application and is generally supportive, noting the Crown land assembly actions and proposed tenure being progressed to support the Solar PV Farm at the Maitland Industrial Area.		Noted	Noted.
6	Department of Biodiversity, Conservation and Attractions (DBCA)	Comment	The Department of Biodiversity, Conservation and Attractions (DBCA) is providing advice on this proposal to the Environmental Protection Authority under Part IV of the <i>Environmental Protection Act 1986</i>.		Noted	The EPA has released the ministerial Statement following consultation with the DBCA.
7	Department of Fire and Emergency Services (DFES)	N/A	1. The BMP & RMP indicate that batteries in contained units would be located in BAL-29. It is noted that the BAL-12.5 location for those not in containers stems from testing documented in the RMP, however it is not clear how the BAL-29 calculation was derived. Clarity/confirmation to be provided that the separation provided by the BAL-29 ratings is sufficient to prevent ignition	Responses: Clarification #1 - As noted in Sections 1.1 and 5.3.1 and the Bushfire Risk Management Plan (BRMP), Linfire were advised that the Stage 1 Power Conversion Units (PCV), containing the BESS's, are to be a containerised product housed in a purpose-made steel container, that will provide resilience against bushfire impact, especially radiant heat impact. On this basis, the PCV (containing BESS) is able to be sited in BAL-29 or lower but only if there is a non-combustible container providing protection from radiant heat, otherwise it is to be sited in BAL-12.5 (which is noted under Future Stages of Development on Table 5 under A1.1, as well as Section 5.3.1). It is noted that almost all of the Stage 1 PCV/BESS is to be sited in areas of BAL-Low, other than one in BAL-29. Should this BESS not be provided with a suitable non-combustible container to protect from radiant heat, then the APZ would need to be increased to 17 m in that location to achieve BAL-12.5 separation. It is acknowledged this is not specifically noted under Stage 1 development in A1.1 and Section 5.3.1, and the BMP can be amended to reflect this requirement. - The Solar PV in BAL-29 or lower is based on guidance from CFA guideline for Renewable Energy Facilities requiring siting 10 m from vegetation (noting this is regardless of type of vegetation) OR where radiant heat		Noted. The City is satisfied that following the correspondence between both DFES and the proponent, the relevant provisions pertaining to SPP3.7 – Planning in Bushfire Prone areas have been satisfied.

			of a bushfire from the infrastructure. Linfire to advise how the BAL-29 rating was derived. 2. Section 6 of the Bushfire Management Plan (BMP) captures the need for the internal roads to be built to an acceptable specification. Council will likely condition the DA to require this internal road to be built in an acceptable location given the layout is yet to be agreed by Woodside. 3. Whilst compliance with the requirements in the Guidelines appear to be demonstrated (noting below comment), it is not clear that this would present sufficient water for response. Confirmation/clarity that the proposed firefighting water tank location and size is sufficient. Linfire to confirm tank size and location sufficient and to be installed in satisfactory area to service the development.	flux doesn't create potential for ignition of infrastructure. Given the solar PV construction is largely non-combustible material including the steel support posts, the siting in BAL-29 or lower is considered appropriate, especially given the limited surrounding fuel loads. It is noted that only the perimeter PV panels would be in BAL-29, with the vast majority in BAL-12.5 or BAL-Low. - Substation is in BAL-29 and is primarily non-combustible construction. - The Control Room, O&M building (and any other buildings) are to be in BAL-29 or lower, as per SPP 3.7 and the Guidelines. Clarification #2 - The vehicular access concepts detailed in Stage 1 of the proposed development are expected to be continued through to the future stages, including compliance with private driveway specifications of bushfire Guidelines as well as perimeter access around the proposed solar PV array, as well as through the array, and that access is provided to substations, plant areas, site facilities and fire water tanks. This is detailed in Table 5 (under A3.6 Private Driveways) and Section 5.5 of the BMP, and is noted as an implementation measure in Section 6. While it is noted that the layout for future stages is yet to be finalised, it is the expectation of the BMP that appropriate vehicular access be provided throughout the facility (Stage 1 and future stages) for firefighting activities. Clarification #3 - As detailed in Table 5 of the BMP (under A4.2), the sizing of the 100 kL tank has been based on guidance from the CFA guideline for Renewable Energy Facilities, which recommends 45 kL per 100 ha, accounting for 50 kL, with additional 50 kL capacity added for the substation, plant area and site facilities area. On this basis, there is considered to be sufficient firewater available for bushfire fighting purposes especially given the limited grassland vegetation within the project area, and especially around Stage 1. - Regarding the location of the tank, while there is limited guidance on suitability of siting tanks, under E4 (strategic Water Tanks) in the bushfire Guidelines accompanying SPP3.7, reference is made to strategic water tanks being no more than 10 mins travel time from the subject site. The proposed tank for Stage 1 is approximately 2.6 km from the furthest solar panel in Stage 1 (from the tank), which equates to a travel speed of 15.5 km/hr to reach it from the tank within 10 mins. Given the internal driveways will be devoid of other traffic and are relatively straight with good visibility, it is likely the speed of travel by fire appliances would be significantly quicker, thus would reach the furthest part of Stage 1 (from the tank) much quicker than 10 mins. On this basis, Linfire believe the proposed firewater supply is satisfactory to address the bushfire fighting water supply requirements for the proposed Stage 1 development, with future stages to provide additional firewater tanks as detailed in Table 5 (under A4.2), Section 5.4 and in Section 6.	
	Department of Fire and Emergency Services (DFES)	Follow Up Comments to Applicant Responses	1. The use of Non-combustible containers does not consider the hazard within it sufficiently. I.e. the heating of the steel container from a bushfire will heat the internal air temperature of the container through radiant heat. More analysis should be provided to reach the decision that the lithium batteries within the container do not experience a heat temperature sufficiently large enough to cause thermal runaway and ignite. This means that although a BAL-29 rating may be achieved from the outside (due to the container providing a barrier from the vegetation), the steel container could cause the BESS to ignite. Further hazard separation should be considered. 2. No additional comments. 3. As per CFA Design Guidelines Model Requirements Renewable	Responses: Clarification #1 - The APZs around the BESS units can be increased to achieve BAL-12.5 at the unit, which in Stage 1 is a 17 m wide APZ. - BAL-12.5 is a relatively low level of radiant heat (less than required for piloted ignition of combustible material). Given the majority of the site is low spinifex grassland, the impressed radiant heat would not be sustained for any length of time, and would only peak for a very short time as the head of the fire impacted, before subsiding quickly. Unlike other vegetation types (e.g. forest) there would be no sustained radiant heat output from the burning vegetation after the head fire as passed. - Additionally, we note that the BESS will have a battery management system to monitor and regulate internal battery performance, and thermal management system to regulate temperature of the BESS. Clarification #3 - Two 144 kL dedicated firewater tanks can be installed at the main entrance to the site - The tanks will be compliant with AS2419.1 and the requirements of the bushfire Guidelines, including suction connections adjacent to a hardstand. - The internal road will be widened to ensure sufficient room for fire appliance hardstand adjacent to the tank suction.	Noted – See above. The City is satisfied that correspondence between the proponent and DFES has satisfied the outstanding comments provided by DFES, noting that the proponent has also satisfied DFES regarding the relevant provisions of the FCA Design Guidelines Model Requirements Renewable Energy Facilities. Due to some lot layout amendments, a condition requiring an amended BMP to be provided prior to the commencement of works is recommended. The amended BMP and its recommendations shall thereafter be complied with. A Further condition requiring a revised BMP to be submitted to an approved by the City would update the existing report to reflect all commitments that have come out of consultation with DFES and stated within the above Clarifications. Finally, a condition requiring a S70A Notification being registered on the title of the Lot to notify future landowners/occupants of the presence of

			Energy Facilities on BESS & the <i>AS2419.1 open yard</i> requirements, tank sizing needs to be no less than 20l/s x 60minutes x 240 minutes = 288,000litres of water. The 45kL per 100 ha referenced below is to be considered as part of that. However, the total requirement is 288,000litres (6.2 Facility Design – Model Requirement page 18) and not the 100,000L (or 100kL) suggested in the BMP. Therefore, DFES considers that the proposed dedicated firefighting water amount has not been met.		a BMP over the site has been recommended.
	Submitter		Comment		
8	DevelopmentWA	Support/non-objection	As the estate manager for all of the Strategic Industrial Areas across the state, DevelopmentWA is aware and supportive of the proposed Solar Facility project.	Noted	Noted.
9	Rio Tinto	Comment	- As above, the land affected by the application is Lot 1502 on Deposited Plan 75876 (Certificate of Crown Land Title Volume 3165 Folio 962) (<i>Lot 1502</i>). The land is held as a pastoral lease, Karratha Pastoral Station (N50300), by Hamersley. As shown on the certificate of title, there is also a registered sublease (N173749) over Lot 1502 between Hamersley and Ngarluma Aboriginal Corporation (<i>NAC</i>). - It is noted that the DA has very little information regarding the status of the land, being currently held as a pastoral lease in the name of Hamersley. Before any tenure can be granted to Woodside for the proposed facility, a partial surrender of the pastoral lease will need to be negotiated and formalised. It is noted that the land in question operates as a pastoral station and the pastoral operation of the land needs to be protected. - It is also acknowledged that Rio Tinto Iron Ore has nearby State Agreement operations and infrastructure, and we reserve our right to provide comment on any possible implications that might arise due to this development. - Whilst it is acknowledged that this matter has been discussed over a number of years, there has been little consultation on this proposal since early 2022 and no correspondence advising of the proposed lodgement of this application. As such, Hamersley has not had an opportunity to fully consider the impact this would have to the operation of Karratha Pastoral Station, nor an opportunity to engage with NAC to arrange and discuss the particulars of the surrender of the sub-lease. - While this submission is not specifically an objection, Hamersley has reservations currently regarding the partial surrender of Karratha Pastoral Station and will be discussing this further with the relevant government agencies.	Noted. Woodside continues to work with the relevant government agencies and other relevant stakeholders to secure the land tenure it requires for the proposed development and notes that Rio Tinto will also continue to discuss the proposed surrender of part of its pastoral lease with relevant government agencies.	Noted. In the development application provided, it is noted that Woodside has been engaging with NAC regarding the proposal in this location since 2019. Both Woodside and NAC have entered a bilateral ILUA relating to the lands being investigated for the proposal. Land tenure is to be formalised through the relevant procedures as required by DPLH with any land tenures issues to be dealt with under the <i>Land Administration Act 1997</i> and to be resolved prior to the construction of the proposal.



ATTACHMENT 5

BUSHFIRE REPORTING



ROWE
GROUP

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 1502 North West Coastal Hwy, Maitland

Site visit: Yes ☒ No ☐

Date of site visit (if applicable): Day 20 Month January Year 2022

Report author or reviewer: Linden Wears

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☐ Level 3 practitioner ☒

If accredited please provide the following.

BPAD accreditation number: 19809 Accreditation expiry: Month June Year 2023

Bushfire management plan version number: Rev 0

Bushfire management plan date: Day 29 Month November Year 2022

Client/business name: Woodside Energy Ltd

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?	☐	☒

Is the proposal any of the following (see [SPP 3.7 for definitions](#))?

	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☐	☒
High risk land-use	☒	☐
Vulnerable land-use	☐	☒

None of the above ☐

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Renewable energy production and storage facilities and relevant ancillary facilities and infrastructure

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer



Date 29 Nov 2022



Solar Energy Facility
Lot 1502 North West Coastal Hwy, Maitland
Bushfire Management Plan

Date: 29 November 2022

Prepared For: Woodside Energy Ltd

Linfire Ref: 20220112178ROWE-BMP-001_0

Linfire Consultancy

ABN: 577 930 47299

Revision	Issue Date	Revision Description	Approved By
0	29 Nov 2022	Issued for Approval	Linden Wears (Level 3 BPAD 19809)



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1. claim, damage, loss or injury to any property and any person caused by fire or as a result of fire or indeed howsoever caused;
2. errors or omissions in this report except where grossly negligent; and the proponent expressly acknowledges that they have been made aware of this exclusion and that such exclusion of liability is reasonable in all the circumstances.

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Fire is an unpredictable force of nature. Changing climatic factors (whether predictable or otherwise) either before or at the time of a fire can also significantly affect the nature of a fire and in a bushfire prone area it is not possible to completely guard against bushfire. The mitigation strategies contained in this Bushfire Management Plan (BMP) are considered to be prudent minimum standards only, based on the standards prescribed by relevant authorities. It is expressly stated that Linfire do not guarantee that if such standards are complied with or if a property owner exercises prudence, that a building or property will not be damaged or that lives will not be lost in a bush fire.

Further, the achievement of the level of implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which Linfire has no control. If the proponent becomes concerned about changing factors then either a review of the existing BMP, or a new BMP, should be requested. Linfire accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material by any third party.

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1.0 Proposal details

1.1 Background

Woodside Energy Ltd is seeking to lodge a development application (DA) in relation to proposed development of a new solar photo-voltaic (PV) farm facility on a portion of Lot 1502 North West Coastal Highway (the project area) in the Maitland Strategic Industrial Estate, located approximately 15 km south-west of Karratha in the City of Karratha.

The proposal will generate electricity from a large-scale 500 MW solar PV farm, complemented by battery energy storage facilities. Electricity will be delivered to industrial customers via the North-West Interconnected System (NWIS), through existing, upgraded or new infrastructure constructed, owned and operated by Horizon Power (also included in this DA) for all users of the NWIS.

The proposed development will require the installation of the following infrastructure:

- Approximately 1,000,000 solar panels
 - each approximately 1 m by 2 m each attached to mounting structures (fixed or tracking) positioned 0.5 – 4 m above ground,
 - total output is expected to be up to 500 MW(AC)
 - Inverters and cabling
- Supporting electrical infrastructure including:
 - battery energy storage system (BESS)
 - electrical substations / transformers
 - switchrooms, control rooms, metering, controls
- Site facilities and plant such as switchroom/control rooms, sheds and ablutions
- Construction laydown areas
- Firewater tanks
- Internal roads (unsealed)
- Fencing

The overall development (see Figure 1) is to be delivered across a number of stages, likely five stages, with Stage 1 proposed in the north-west corner of the project area expecting to deliver 50 MW of solar PV and associated infrastructure (see Figure 2 showing Stage 1). Each stage is to contain the following elements:

- 50 MW to 100 MW of solar PV panels, each panel mounted on a tracking post, and divided by the internal road network a number of panel arrays
 - Supporting infrastructure such as inverters and cabling (connecting the panels to inverters, and the inverters to the substation)
- Power Conversion Units (PCUs) containing battery energy storage system (BESS), transformers, switchboards and other electrical monitoring and control equipment
 - Housed in custom made steel container
- Plant area containing
 - Switchroom/control room building (final location to be confirmed)
- Site facilities area containing the following (final locations to be confirmed within yard area)
 - Operation and Maintenance shed with ablutions
 - Firewater tanks

- Horizon Power substation (see Appendix 1 for indicative layout)
 - Voltage - 132 kV/33 kV
 - Transformer (mineral oil insulated) with surge arrestors, circuit breakers and insulators
 - Below-ground oil/water separator
 - Control room building with toilet
 - Diesel generator
 - Internal road and fencing
- Construction Layout area
- Internal roads (unsealed)
- Fencing around Stage 1 boundary and identified heritage sites

Currently only Stage 1 has been designed, however from a bushfire compliance perspective, the principles detailed in this BMP for this first Stage are expected to form the blueprint for future stages and this has been outlined where relevant.

An allocation of space has been provided for the Horizon Power substation within Stage 1, however power transmission and delivery to end-users is to be by others, via the transmission line located to the north of Stage 1.

The make/model of solar panels and inverters, BESS and substation has not been selected as the final design for these components will be undertaken by a third party. The following information has been provided regarding the anticipated products:

- Solar panels arrays
 - 390-550 W panels with dimensions of approximately 1.1 m x 2.3 m x 0.04 m.
 - Panels are to be mounted on a tracking system supported on ground-mounted steel posts
- BESS
 - Grid-scale, industrial strength energy storage product containing contain Li-ion batteries
 - Will typically be a containerised system (such as Stage 1 PCU)
 - Could be disseminated throughout solar PV arrays or be configured as a centralised system
- Substation
 - Oil or gas-insulated type substation
 - Voltage typically to be 132 kV / 33 kV
 - Control room typically co-located with substation

Regarding onsite personnel, once operational, there is expected to be minimal onsite personnel with staff attendance at the project area anticipated only when routine maintenance is required or to address any faults.

1.2 Site description

The project area comprises approximately 942.7 ha within Lot 1502 and is surrounded by (see Figure 3):

- Vacant and uncleared land immediately adjacent to the project area on all sides, other than the existing Supagas plant to the south-west

- North West Coastal Highway to the south

While Figure 3 depicts the overall project area, also shown is the proposed Stage 1 development in the north-west corner of the site (see Figure 4).

The project area is designated as bushfire prone on the *Map of Bush Fire Prone Areas* (DFES 2019; see Plate 1).

1.3 Purpose

This Bushfire Management Plan (BMP) has been prepared to address requirements under Policy Measure 6.5 of *State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015) and *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2021).

The proposed development is a high-risk land use which triggers additional requirements under Policy Measure 6.6 of SPP 3.7. This BMP has been prepared in accordance with Sections 5.4 and 5.6 of Guidelines for Planning in Bushfire Prone Areas (the Guidelines; WAPC 2017), which require development applications for high-risk land uses be accompanied by a BMP that includes the results of a Bushfire Attack Level (BAL) or BAL Contour Map assessment and a Bushfire Risk Management Plan (BRMP), which details the risk management plan for all flammable on-site hazards. The BRMP for the project accompanies this BMP.

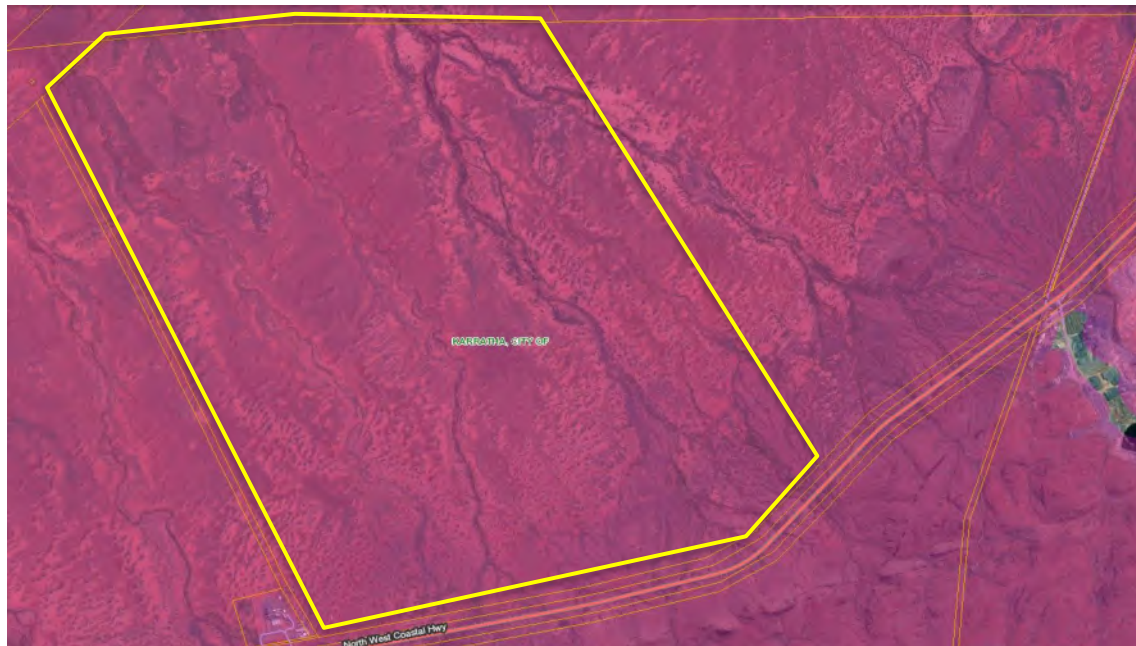


Plate 1: Map of Bush Fire Prone Areas (DFES 2021)

1.4 Other plans/reports

There are no known bushfire reports or assessments that have been prepared previously for the project area.

Linfire has prepared a BRMP (Linfire 2022) as a requirement of Policy Measure 6.6 of SPP 3.7. The BRMP should be read in conjunction within this BMP.

The project has been referred to the Environmental Protection Authority (EPA), and as such, the following reports that have been prepared for the proposal:

- Environmental Referral Supporting Document, November 2021



- Environment Management Plan
- Social Surrounds (Cultural Heritage) Management Plan
- Flora and Vegetation Survey
- Fauna Survey Report

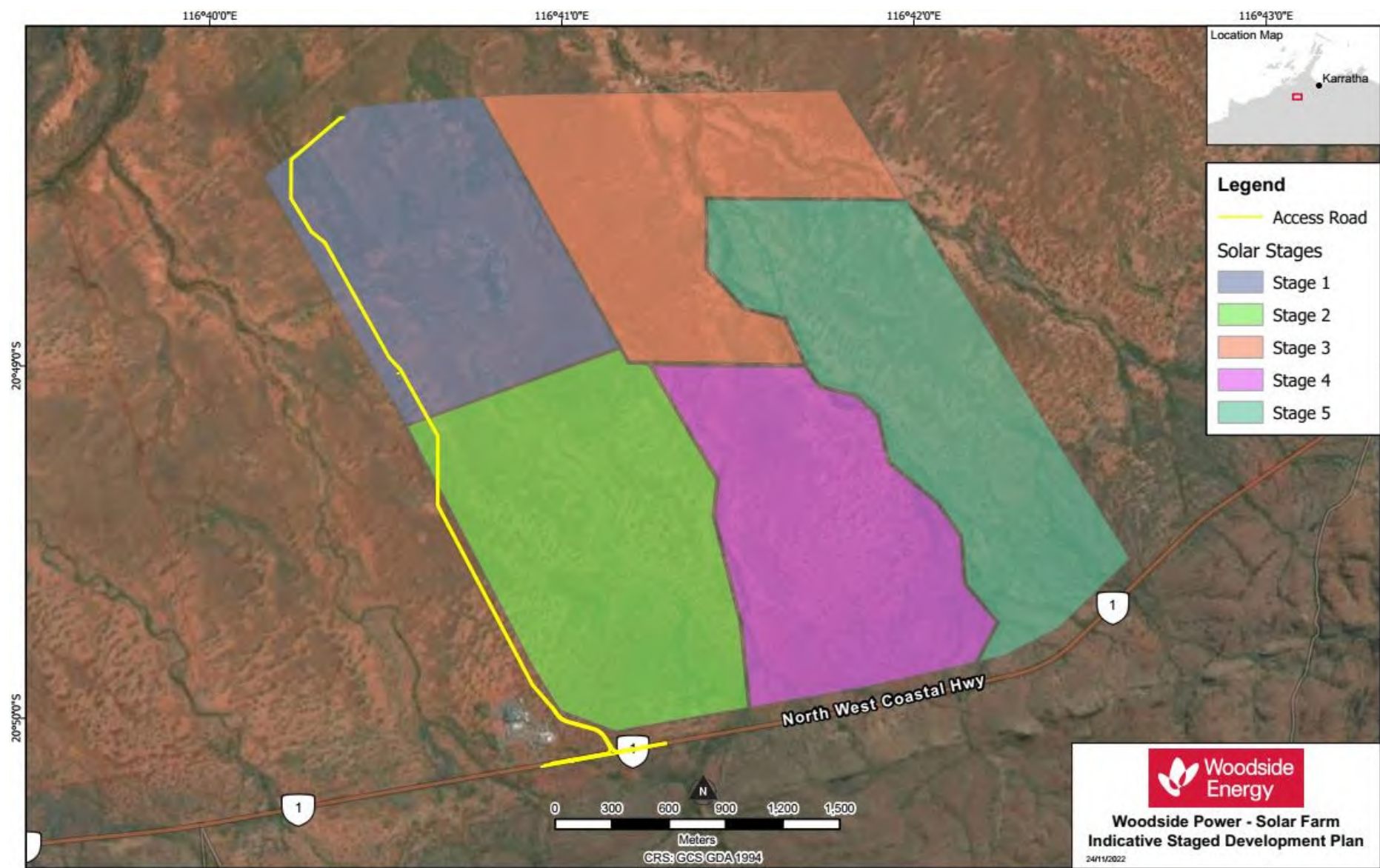


Figure 1: Overall Development Plan

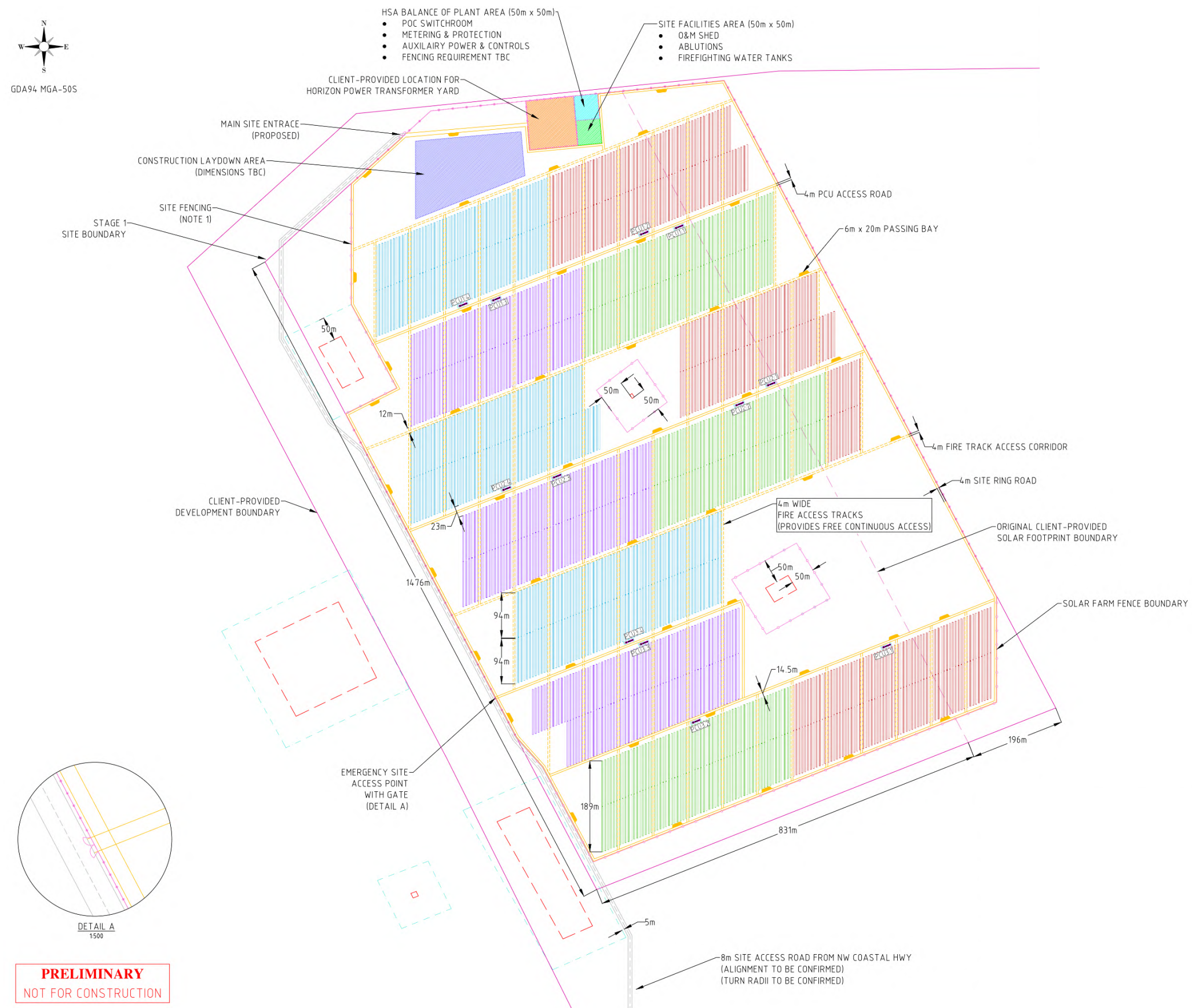
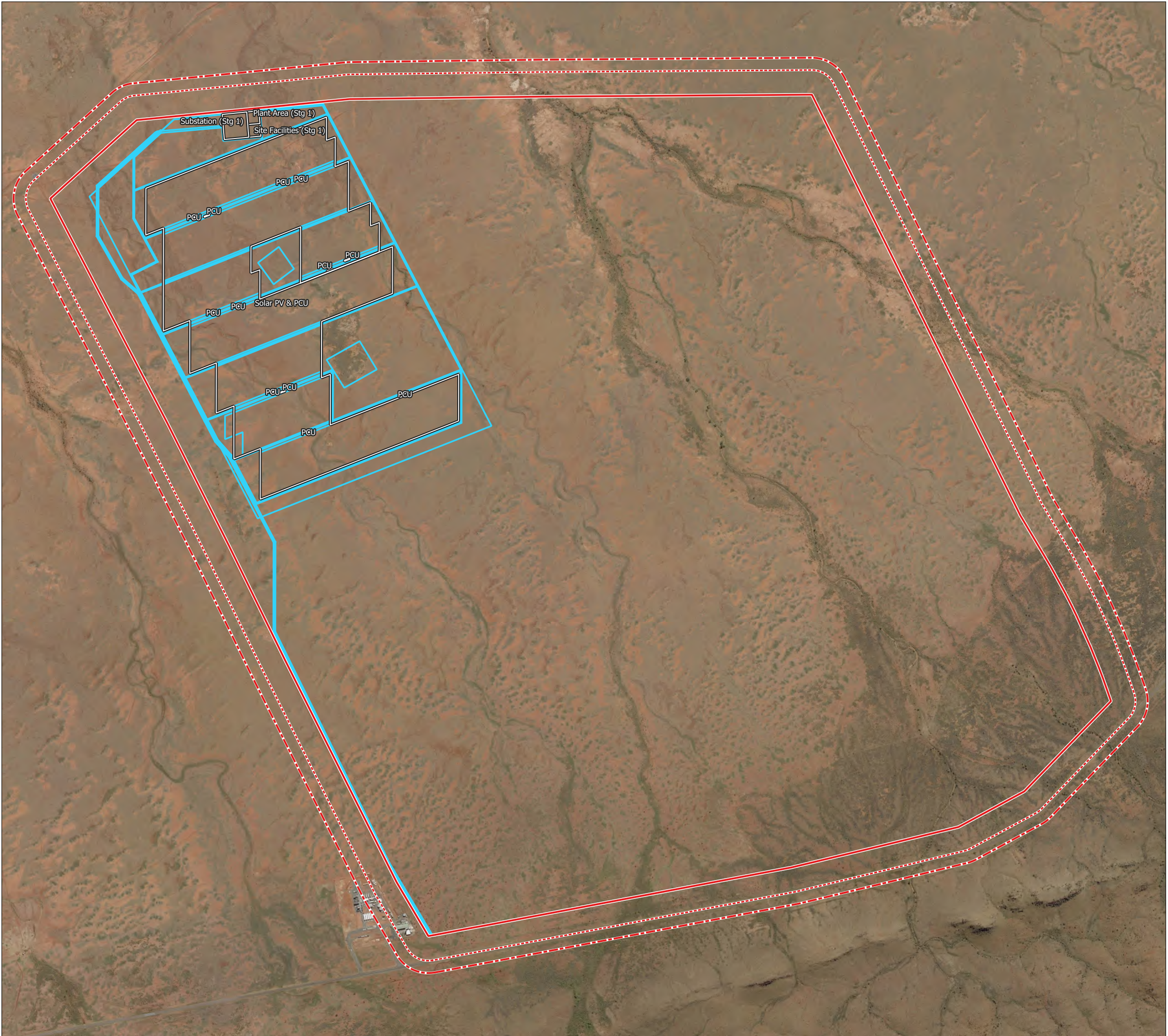


Figure 1: Stage 1 Development Plan



Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m

Scale 1: 16,000



0 200 400 600 Metres



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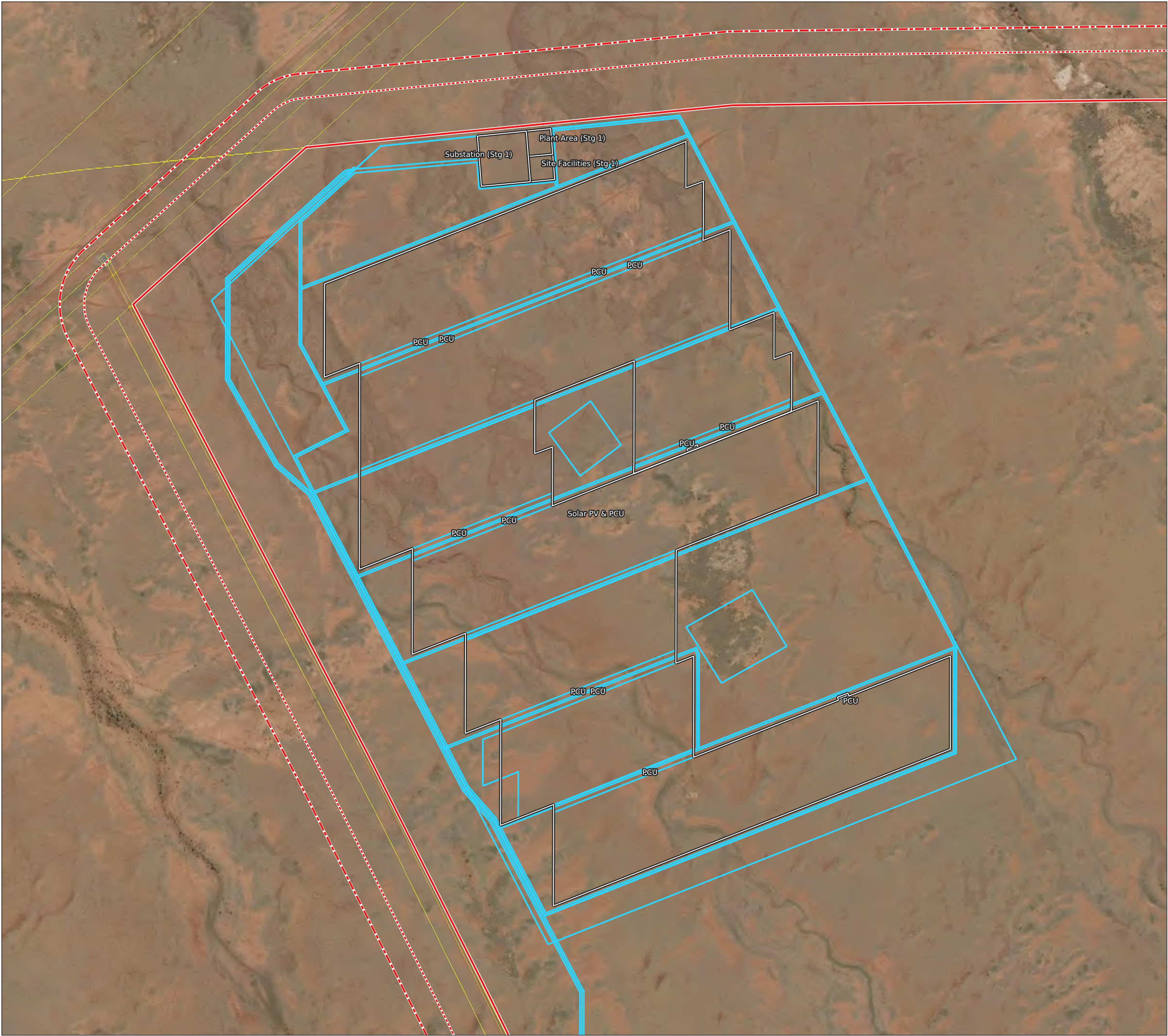
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Woodside Energy Ltd

Woodside Solar Farm

Figure 3: Site Overview (Overall)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre

Scale 1: 7,400



0 100 200 300 Metres



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Figure 4: Site Overview (Stage 1)

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2.0 Environmental considerations

2.1 Native vegetation - modification and clearing

The majority of the project area contains remnant vegetation, which will be cleared as part of the proposal. Table 1 provides a summary of a search of publicly available environmental data, supplemented by information in the Environmental Referral Support Document.

Table 1: Summary of environmental values

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
Environmentally Sensitive Area	✓	✗	✗	No part of the project area or adjacent land is identified as being an environmentally sensitive area.
Swan Bioplan Regionally Significant Natural Area	✓	✗	✗	No part of the project area or adjacent land is identified as being a regionally significant natural area.
Ecological linkages	✓	✗	✗	No part of the project area or adjacent land is designated as forming part of an Ecological Linkage.
Wetlands	✓	✗	✗	No wetlands were mapped as occurring with, or adjacent to, the project area.
Waterways		✓	✓	Several minor waterways were noted within the project and assessment areas, however these appeared to be minor and are not named waterways.
Threatened Ecological Communities listed under the EPBC Act	✓	✗	✗	No threatened ecological communities are mapped or identified within, or adjacent to, the project area. Further information is provided in the Environmental Referral Support Document.
Threatened and priority flora	✓	✗	✗	This layer is currently publicly available at a coarse level, but doesn't identify any threatened or priority flora occurring near the project area. The project Environmental Referral Support Document notes the flora survey did not identify any occurrence or potential habitat for

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
				Commonwealth or State listed threatened or priority flora species in the vicinity of the site.
Fauna habitat listed under the EPBC Act	✓	✗	✗	The project Environmental Referral Support Document notes there is no conservation significant fauna recorded.
Threatened and priority fauna		✓	✓	This layer is not currently publicly available on mapping services. The project Environmental Referral Support Document notes there are several fauna species that could occur in the project and assessment areas, and provides a detailed review of development impact on these fauna species.
Bush Forever Site	✓	✗	✗	No Bush Forever sites are located within, or adjacent to, the project area.
DBCA managed lands and waters (includes legislated lands and waters and lands of interest)	✓	✗	✗	No DBCA managed lands and waters were identified on the site.
Conservation covenants	✓	✗	✗	Linfire is not aware of any conservation covenant across the project area.
Aboriginal Heritage		✓	✓	Two lodged aboriginal heritage places (21674 and 22608) are located within the project area, along the western boundary. Several other lodged heritage places exist within, and adjacent to, the assessment area along the western boundary. There appear to be no register sites within the project or assessment areas, however they do exist to the north-east, north-west and south-east of

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
				the site. Further information is provided in the Environmental Referral Support Document.
Crown Reserves		✗	✓	No crown reserves were identified within the project area. A crown reserve (R 9701) is identified directly to the north of the site.

Environmental impacts resulting from implementation of the proposal will need to be addressed under relevant standard State and Federal environmental assessment and referral requirements under the Environmental Protection Act 1986 and Environment Protection and Biodiversity Conservation Act 1999, as required. The proposal has been referred to the EPA for assessment.

Linfire assumes that all relevant environmental and heritage studies and all required environmental approvals will be obtained prior to commencing any on-site vegetation modification or clearing required to construct the development or implement the onsite Asset Protection Zones. Should any constraints be identified as part of the environmental or heritage studies that would prevent vegetation clearing or modification, the design is to be tailored to ensure the implementation of compliant APZs can be achieved.

2.2 Revegetation / Landscape Plans

No revegetation is proposed as part of the proposal.

All nominated Asset Protection Zones are to comply with Schedule 1 of the Guidelines (refer to Appendix 3), with any other landscaping (if any) and vegetation management (outside of nominated APZs) to be low threat vegetation and managed gardens in accordance with AS 3959—2018 Clause 2.2.3.2 (f). Given the majority of the project area is unmanaged grassland, most onsite vegetation management is expected to be the clearing or slashing of grass, rather than removal of shrubs and trees.

3.0 Bushfire assessment results

3.1 Assessment inputs

The following bushfire assessment has only been conducted for the Stage 1 development, based on the indicative layout provided, with the vegetation management concepts detailed below, to be adopted by, and adapted to, the final layout.

3.1.1 Vegetation classification

Linfire assessed classified vegetation and exclusions within 150 m of the project area through on-ground verification on 20 January 2022 in accordance with AS 3959—2018 *Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and a description of the vegetation classifications and exclusions following Stage 1, are contained in Appendix 2 and Table 2, and depicted on Figure 5 depicting the overall development following Stage 1 development, and Figure 6 for a zoom in on Stage 1. Given the extent of future clearing as part of future stages is not yet fully known, only the Stage 1 clearing extent have been depicted, however the post-development clearing extent for each future stage is expected to follow the principles for Stage 1 including APZs and perimeter roads.

3.1.2 Effective slope

Linfire assessed effective slope under classified vegetation through on-ground verification on 20 January 2022 in accordance with AS 3959. Results were cross-referenced with Landgate 10 m contour data and are depicted in Table 2 and Figure 5 and 6.

Site observations indicate that land is elevated to the south and east, and descends to the north, result in in some vegetation having a gentle downslope in the south and eastern portions of the project area, and the remainder of the assessment area assessed as being flat/upslope.

3.1.3 Summary of inputs

Table 2 illustrates the anticipated post-development vegetation classifications and exclusions for the project and assessment areas, following completion of Stage 1 development works and implementation of Asset Protection Zones around the solar panel arrays and the various infrastructure. The post-development vegetation classifications/exclusions and effective slope are summarised in Table 2.

Table 2: Post-development vegetation classifications/exclusions and effective slope (following Stage 1)

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class G Grassland	Flat/upslope (0°)	Spinifex grassland, with isolated shrubs. Spinifex has been grazed in the north and north-west of the project area, especially around Stage 1. The proposed Stage 1 construction laydown area is expected to be cleared as part of the development, however it has classified as grassland on the basis that it may either be

Vegetation plot	Vegetation classification	Effective slope	Comments
			revegetated or not managed as part of ongoing operations.
2	Class G Grassland	Downslope >0–5°	Spinifex grassland, with isolated shrubs
3	Class C Shrubland	Flat/upslope (0°)	Spinifex grassland, with shrubs (<2 m high) forming 10-30% of foliage cover
4	Class C Shrubland	Downslope >0–5°	Spinifex grassland, with shrubs (<2 m high) forming 10-30% of foliage cover
5	Class D Scrub	Flat/upslope (0°)	Isolated plots of scrub vegetation (2 m to 6 m high) in waterways (drainage swales).
6	Class D Scrub	Downslope >0–5°	Isolated plots of scrub vegetation (2 m to 6 m high) in waterways (drainage swales).
7	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing non-vegetated elements (e.g. roads and buildings) and low threat vegetation (e.g. managed road verges).
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Land to be modified to low threat vegetation as part of Stage 1 development



Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Vegetation Plot
- Classified Vegetation
 - C. Shrubland
 - D. Scrub
 - G. Grassland
 - Excluded Clause 2.2.3.2(e&f)
 - Modified to non vegetated and low threat
 - Asset Protection Zone

Scale 1: 16,000



0 200 400 600 Metres



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Figure 5: Post-development vegetation and effective slope (Overall)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre
- Vegetation Plot
- Classified Vegetation
 - C. Shrubland
 - G. Grassland
 - Modified to non vegetated and low threat
- Asset Protection Zone

Scale 1: 3,700



0 60 120 180 Metres



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Figure 6: Post-development vegetation and effective slope (Stage 1 North)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre
- Vegetation Plot
- Classified Vegetation
 - C. Shrubland
 - G. Grassland
- Modified to non vegetated and low threat
- Asset Protection Zone

Scale 1: 3,700



0 60 120 180 Metres



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Figure 6: Post-development vegetation and effective slope (Stage 1 South)

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3.2 Assessment outputs

3.2.1 Bushfire Attack Level (BAL) contour assessment

Linfire has undertaken a BAL contour assessment in accordance with Method 1 of AS 3959 for the project area (see Figure 7 and 8). The Method 1 procedure incorporates the following factors:

- state-adopted FDI 80 rating
- vegetation classification
- effective slope
- distance maintained between proposed development areas and the classified vegetation.

The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed future development and subsequently informs the standard of building construction and/or setbacks required for proposed habitable development to potentially withstand such impacts.

The BAL contours are based on:

- the vegetation classifications and effective slope observed at the time of inspection
- the anticipated post-development vegetation based on proposed on-site clearing extent, and resultant vegetation exclusions and separation distances, achieved to implement Stage 1 (first phase) of the proposed development including APZ's

The results of the BAL contour assessment are detailed in Table 3 and illustrated in Figure 7, with a zoom in on Stage 1 depicted on Figure 8. Summarises the BAL impact on the proposed Stage 1 buildings and elements, with the highest BAL rating being BAL-29.

Table 3: BAL contour assessment results (following Stage 1)

Method 1 BAL determination				
Plot	Vegetation classification	Effective slope	Separation distance	Highest BAL
1	Class G Grassland	Flat/upslope (0°)	8 m	BAL-29
2	Class G Grassland	Downslope >0-5°	>100 m	BAL-Low
3	Class C Shrubland	Flat/upslope (0°)	13 m	BAL-29
4	Class C Shrubland	Downslope >0-5°	>100 m	BAL-Low
5	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
6	Class D Scrub	Downslope >0-5°	>100 m	BAL-Low
7	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	N/A

Table 4 lists the BAL applicable to each building or infrastructure element within Stage 1 of the proposed development. While this only addresses the initial stage, the onsite vegetation modification is to achieve BAL impacts no greater than what is depicted on Table 4 for all future development, which may also lessen the BAL impacts on development as more vegetation management occurs across the site. This is addressed further in Section 5.0 of this BMP.

Table 4: BAL applicable to each building/infrastructure element (following Stage 1)

Building / element	Initial BAL	APZ	Revised BAL
Solar panels	BAL-FZ	8 m wide APZ extending from the external perimeter of the solar PV panels and PCU's. Non-vegetated land and/or managed low threat vegetation throughout the entire area of solar panel arrays and PCU's.	BAL-29 to BAL-Low
BESS	BAL-FZ		BAL-29 to BAL-Low (primarily in BAL-12.5 & BAL-Low)
Plant area and Site Facilities area	BAL-FZ	APZ within the internal perimeter of these nominated areas over BAL-40/FZ areas to prevent habitable buildings on this land. Entire Plant Area and Site Facilities area to be non-vegetated land and/or managed low threat vegetation.	BAL-29 to BAL-12.5
Horizon Power Substation/Transformer Yard	BAL-FZ	APZ within the internal perimeter of these nominated areas over BAL-40/FZ areas to prevent habitable buildings on this land. Entire substation area to be non-vegetated land and/or managed low threat vegetation.	BAL-29 to BAL-12.5

Should there be any changes in development design or classified vegetation extent that results in a modified BAL outcome, then the BAL contours will need to be reassessed.



Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Vegetation Plot
- Asset Protection Zone
- BAL Contours
 - BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low

Scale 1: 16,000


0 200 400 600 Metres



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Woodside Solar Farm

Figure 7: BAL Contour Plan (Overall)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre
- Vegetation Plot
- Asset Protection Zone
- BAL Contours
 - BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low

Scale 1: 7,400

0 100 200 300 Metres



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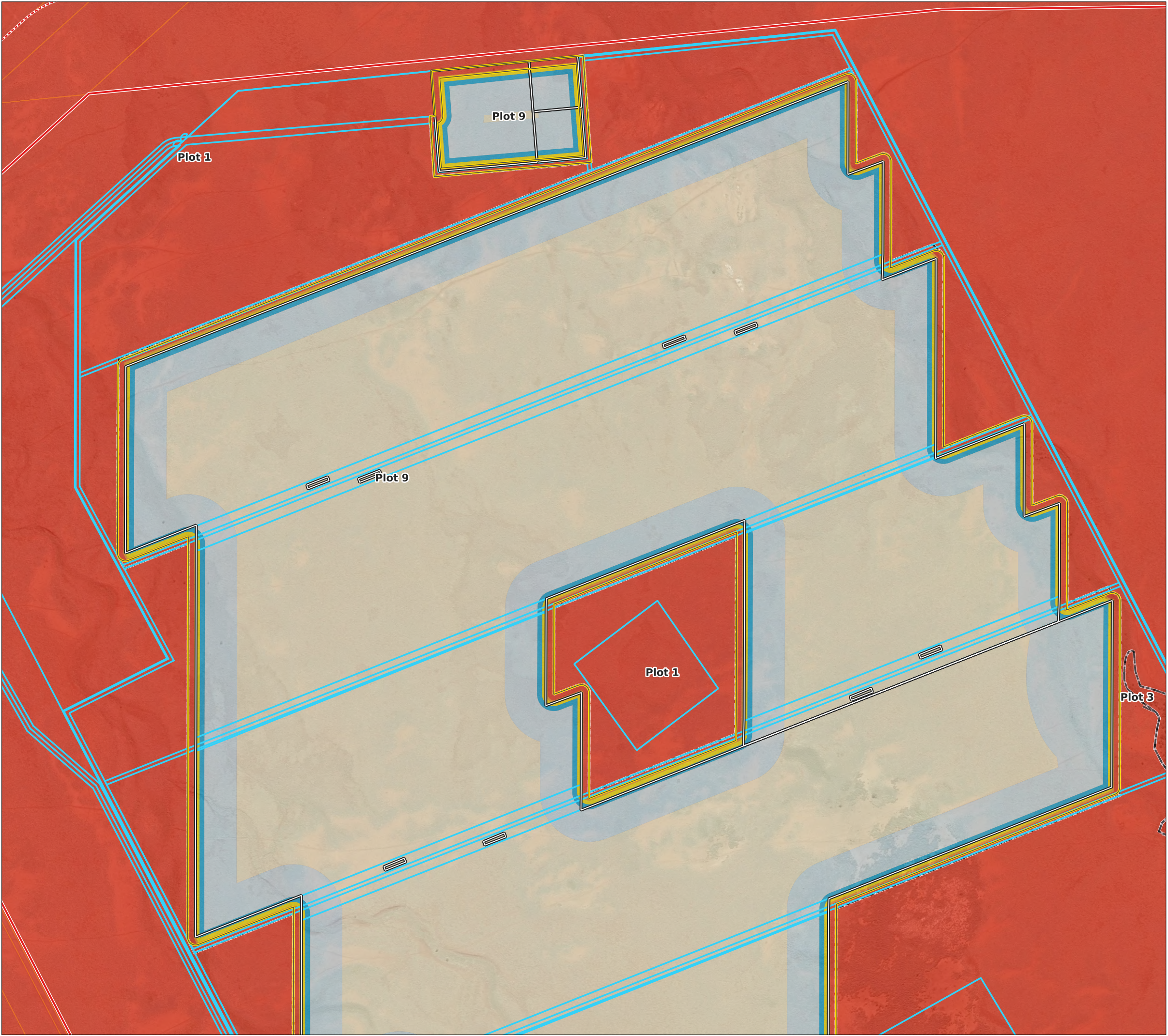
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Solar Energy Facility

Figure 8: BAL Contour Plan (Stage 1)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre
- Vegetation Plot
- Asset Protection Zone
- BAL Contours
 - BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low

Scale 1: 3,700



0 60 120 180 Metres



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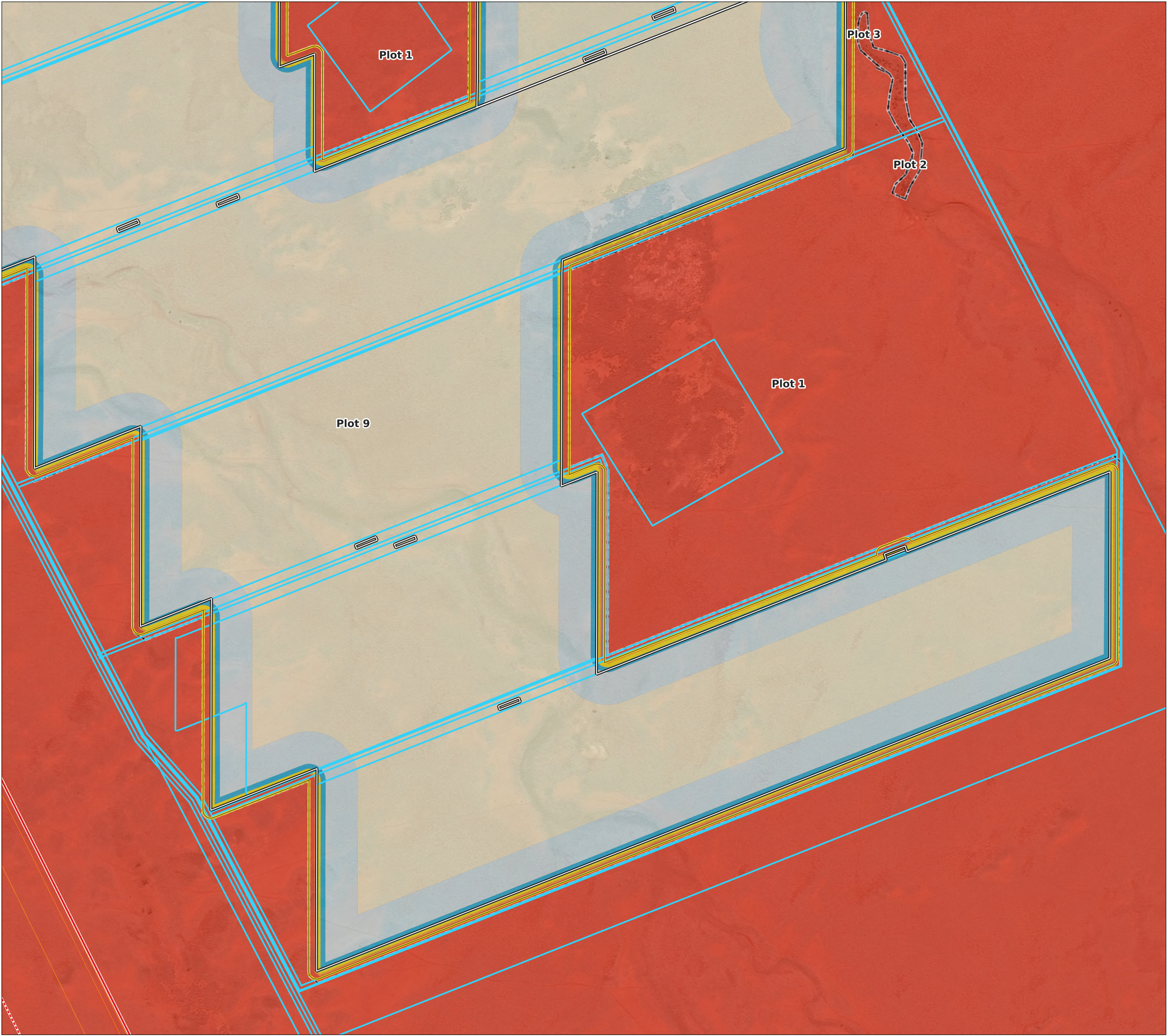
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Figure 8: BAL Contour Plan (Stage 1 North)

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Legend

- Proposed Development
- Building Outline
- Project Area
- Assessment Area
 - 100m
 - 150m
- Cadastre
- Vegetation Plot
- Asset Protection Zone
- BAL Contours
 - BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - BAL Low

Scale 1: 3,700



0 60 120 180 Metres



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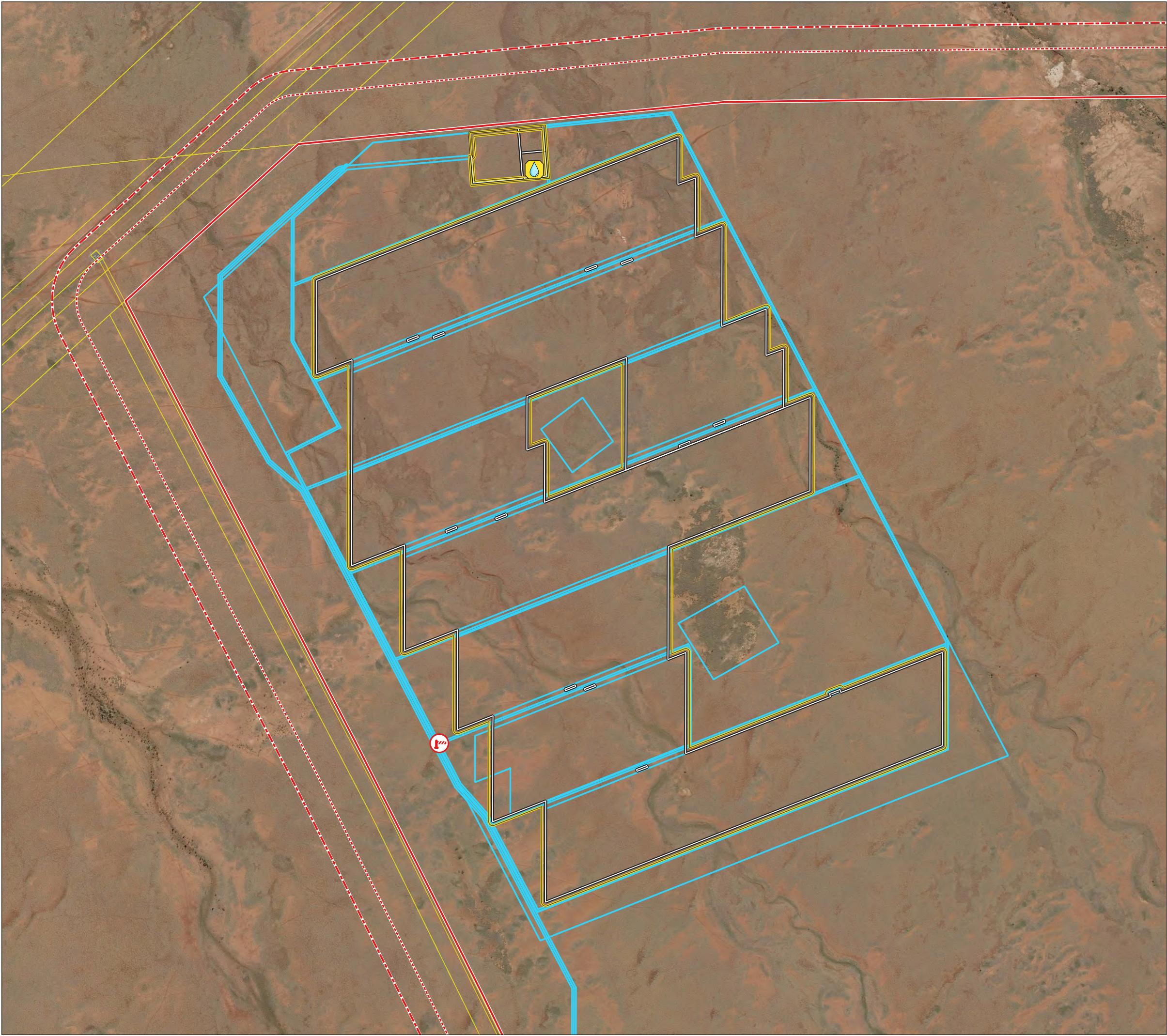
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Figure 8: BAL Contour Plan (Stage 1 South)

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Legend

Mitigation Measures

-  Emergency Access Gate
-  Firewater Tank
-  Proposed Development
-  Building Outline
-  Project Area

Assessment Area

-  100m
-  150m
-  Cadastral
-  Asset Protection Zone

Scale 1: 7,400



0 100 200 300 Metres



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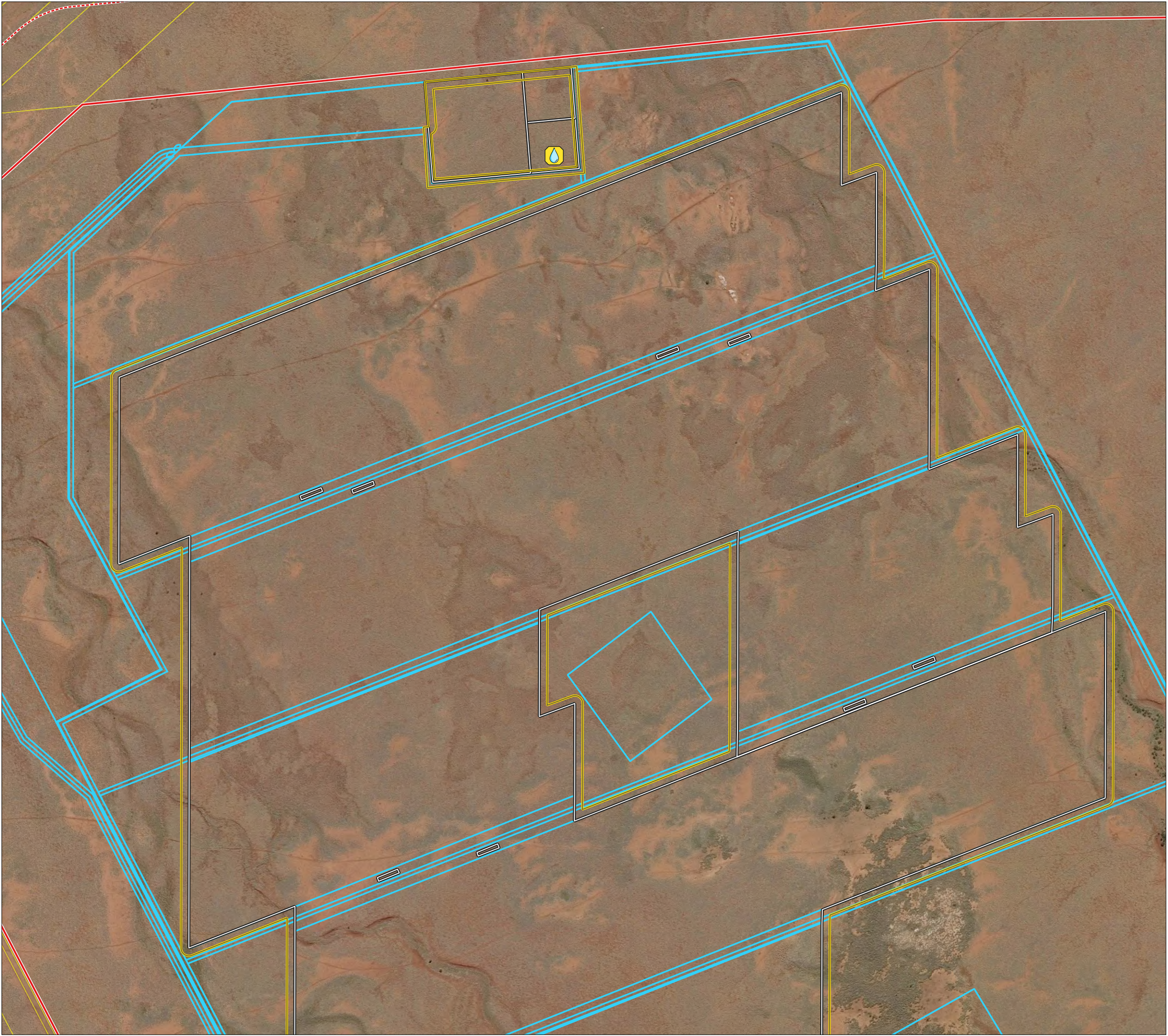
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Figure 9: Bushfire Management Measures (Stage 1)

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Legend

Mitigation Measures

-  Firewater Tank
-  Proposed Development
-  Building Outline
-  Project Area

Assessment Area

-  100m
-  150m
-  Cadastre
-  Asset Protection Zone

All land within the nominated APZs, is to be non-vegetated or managed low threat vegetation as per BMP

Scale 1: 3,700



0 60 120 180 Metres



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Figure 9: Bushfire Management Measures (Stage 1 North)

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Legend

Mitigation Measures

 Emergency Access Gate

 Proposed Development

 Building Outline

 Project Area

Assessment Area

 100m

 150m

 Cadastre

 Asset Protection Zone

All land within the nominated APZs, is to be non-vegetated or managed low threat vegetation as per BMP

Scale 1: 3,700



0 60 120 180 Metres



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Figure 9: Bushfire Management Measures (Stage 1 South)

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4.0 Identification of bushfire hazard issues

4.1 Bushfire context

The project area is predominantly surrounded by unmanaged vegetation in all directions, with extended fire runs available to the site through a combination of grassland and shrubland vegetation with isolated plots of scrub. The fire runs from the north are restricted to approximately 2 km by the coastline, however the runs from all other directions would exceed 10 km, and much greater to the south and west. There are few natural or man-made features that currently exist near the project areas which would prevent bushfire behaviour reaching steady-state conditions. On this basis, the potential threat of bushfire to the project could come from any direction, however the prevalence of ignition sources along North-West Coastal Highway, does make it more likely to be from the south than other directions. It is noted that as development progresses throughout the project area, future stages will remove classified vegetation which will protect some stages from bushfire threat from those directions.

Further review of the bushfire hazard is detailed in the BRMP (Linfire, 2022) that accompanies this BMP.

4.2 Bushfire hazard issues

Examination of the environmental considerations (Section 2.0) and the bushfire risk assessment (Section 3.0) has identified the following bushfire hazard issues:

1. Based on the existing extent of vegetation outside proposed infrastructure and roads, the proposed development is subject to an initial BAL of BAL-FZ. Onsite vegetation modification and management will be required to ensure sufficient separation between proposed buildings/infrastructure and unmanaged vegetation, to limit the impact of bushfires on the development and prevent ignition and spread of a fire from proposed infrastructure.
2. The proposed development constitutes a high-risk development, primarily due to presence of high-voltage electrical infrastructure and the battery energy storage system (Li-ion batteries). A BRMP has been prepared in accordance with Policy Measure 6.7 of SPP 3.7 to address the on-site electrical and flammable hazards in relation to bushfire risk (refer to Linfire 2022).
3. Ensuring sufficient internal vehicular access to the proposed development, to enable egress by onsite staff, but as importantly, providing sufficient access to the infrastructure to enable attending bushfire fighting appliances to control or suppress any fires.
4. Ensuring access to bushfire fighting water supply, to limit the travel time to water supplies for appliance refills.

4.3 Bushfire safety strategy

The following bushfire safety strategy is proposed to demonstrate compliance with the Bushfire Protection Criteria of the Guidelines and address the bushfire hazards identified above:

1. Create sufficient separation between buildings and infrastructure from surrounding classified vegetation by establishing suitably sized APZs to achieve a compliant rating of BAL-29 or less, and ensuring all land within the solar PV arrays, BESS (or PCU), plant area and substation areas for the relevant stage is either non-vegetated or managed low threat vegetation.
2. Provide compliant vehicular access to and from the proposed development from North-West Coastal Highway, relevant to the stage of development, to enable occupant egress and to facilitate fire fighter access.

3. To facilitate fire appliance access within each stage, construct an internal loop road around the perimeter of the solar PV arrays, and ensure there is sufficient access within each solar PV array, to enable attending firefighters to suppress any fire within the cell from the internal roads. Sufficient internal vehicular access is to be provided to the BESS (or PCU), substation and onsite firewater supplies. Additionally, the onsite emergency response plan is to ensure it includes measures to unlock all relevant internal gates to enable fire appliance access around the proposed development, but also to access the fire water supplies around the site.
4. Provide a secure bushfire fighting water supply, including use of firewater storage tanks on the hydrant system if available, to enable refill of bushfire fighting appliances.
5. Ensure the BESS (or PCU), substation and solar panel arrays have sufficient fire safety protection to avoid ignition of fire or uncontrolled explosions
6. Ensure appropriate bushfire emergency management procedures are incorporated into the site emergency plan, to enable onsite staff to appropriately manage a bushfire event impacting the proposed development or a fire igniting onsite.

Based on the above, Linfire considers the bushfire hazards within and adjacent to project area and the associated bushfire risks are manageable through standard management responses outlined in the Guidelines and AS 3959. These responses will be factored into proposed development as early as possible at all stages of the planning process to ensure a suitable, compliant and effective bushfire management outcome is achieved for protection of future life, property and environmental assets.

5.0 Assessment against the bushfire protection criteria

5.1 Compliance table

An acceptable solutions assessment against the bushfire protection criteria is provided in Table 5.

Table 5: Compliance with the bushfire protection criteria of the Guidelines

Bushfire protection criteria			Development response	
Performance Principle	Acceptable solutions	Planning Stage	Method of compliance	Proposed bushfire management measures
Element 1: Location				
<i>Intent: To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure</i>				
<u>Performance Principle P1</u> The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL-29 or below, and the risk can be managed. For unavoidable development in areas where BAL-40 or BAL-FZ applies, demonstrating that the risk can be managed to the satisfaction of the decision-maker.	<u>A1.1 Development location</u> The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.	All	<u>Acceptable Solution</u>	<u>Stage 1 development</u> The BAL contour map (see Figure 7 and Figure 8) demonstrates that following completion of Stage 1, including implementation of all nominated APZs and low threat vegetation: - The Stage 1 solar PV arrays and PCU (BESS) will be compliantly sited in areas of BAL-29 or less - While the exact locations of the switchroom/control room, O&M shed and firewater tank is not yet finalised, there is sufficient BAL-29 or lower areas within the nominated plant area and site facilities area, to compliantly site buildings and infrastructure. - While the exact locations of the proposed substation, including the control room and generator) are still to be finalised, there is sufficient BAL-29 or lower area within the nominated enclosure to compliantly site this infrastructure. <u>Future stages of development</u> All future stages will be implemented in a similar manner, with suitably sized APZs to be established to achieve the following BAL ratings in response to the classified vegetation nearby the relevant stage: - Solar PV panels - BAL-29 or lower - BESS - BAL-29 or lower (if housed in container protecting from fire e.g. PCU) - BAL-12.5 or lower (if not housed in container) - Substation and associated control room and generator - BAL-29 or lower - O&M Building (and any other buildings (if any) - BAL-29 or lower - Firewater tanks – BAL-29 or lower Should any other infrastructure be required in future stages, other than that nominated above, the required separation shall be assessed by an accredited Level 3 bushfire practitioner.
Element 2: Siting and design of development				
<i>Intent: To ensure that the siting and design of development minimises the level of bushfire impact.</i>				
<u>Performance Principle P2</u> The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. The proposal incorporates a defensible space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to	<u>A2.1 Asset Protection Zone (APZ)</u> Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where	All	<u>Acceptable Solution</u>	<u>Stage 1 development</u> On completion of Stage 1 development, sufficient separation from unmanaged vegetation will be provided by 8 m wide APZ around the perimeter of the Stage 1 solar PV panel arrays and PCUs - All vegetation throughout the solar PV panel arrays and PCUs (i.e. within the nominated perimeter APZ) is to be maintained in a low threat state during bushfire season, including maintaining grass to <100 mm high. 8 m wide APZ from classified vegetation into the Substation, Plant Area and Site Facilities areas over any BAL-40/FZ land within the nominated areas.

Bushfire protection criteria			Development response	
Performance Principle	Acceptable solutions	Planning Stage	Method of compliance	Proposed bushfire management measures
people, property and infrastructure, including compliance with AS 3959 if appropriate.	the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes) Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (see Guidelines Schedule 1).			- All other land throughout these areas is to be either non-vegetated or managed low threat vegetation. The preference is that these areas, especially the substation area, is kept as non-vegetated as possible. - No buildings, transformers, generators or firewater tanks are to be sited in BAL-40/FZ areas. The proposed APZs are to be implemented and maintained in accordance with Schedule 1 of the Guidelines (see Appendix 3) and the City's Firebreak and Fuel Hazard Reduction Notice (see Appendix 6). Future stages of development Future stages of the development will need to implement APZ's to achieve the BAL ratings for all infrastructure as summarised in A1.1 above. The APZs will need to be suitably sized to respond to nearby classified vegetation to achieve the nominated BAL ratings, and will need to comply with Schedule 1 of the Guidelines (see Appendix 3) and the City's Firebreak and Fuel Hazard Reduction Notice (see Appendix 6).
Element 3: Vehicular access				
Intent: To ensure that the vehicular access serving a subdivision/ development is available and safe				
Performance Principle P3i The design and capacity of vehicular access and egress is to provide for the community to evacuate to a suitable destination before a bushfire arrives at the site, allowing emergency services personnel to attend the site and/or hazard vegetation.	A3.1 Public Roads <i>The minimum requirements under this acceptable solution are applicable to all proposed and existing public roads.</i> Public roads are to meet the minimum technical requirements in Table 6, Column 1. The trafficable (carriageway/pavement) width is to be in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.	SP, Sb, Do	<u>Acceptable Solution</u>	Overall development including Stage 1 No public roads are proposed as part of this development. The existing public road to the project area is North-West Coastal Highway, which is a sealed two-way road and appears compliant with Guidelines and sufficient for occupant egress and emergency services access.
	A3.2a Multiple access routes Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access). If the public road access to the subject site is via a no-through road which cannot be avoided due to demonstrated site constraints, the road access is to be a maximum of 200 metres from the subject lot(s) boundary to an intersection where two-way access is provided. The no-through road may exceed 200 metres if it is demonstrated that an alternative access, including an emergency access way, cannot be provided due to site constraints and the following requirements are met: - the no-through road travels towards a suitable destination; and - the balance of the no-through road, that is greater than 200 metres from the subject site, is wholly within BAL-LOW, or is within a residential built-out area – Figure 23.	SP, Sb, Do	<u>Acceptable Solution</u>	Overall development including Stage 1 From the project area, North-West Coastal Highway provides for travel either east or west, with travel east to Karratha and Dampier the preferred option.
	A3.2b Emergency access way <i>Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable</i>	SP, Sb, Do	<u>Not Applicable</u>	Overall development including Stage 1 The proposed development does not require Emergency Access Ways (EAWs) to provide through access to a public road.

Bushfire protection criteria			Development response	
Performance Principle	Acceptable solutions	Planning Stage	Method of compliance	Proposed bushfire management measures
	<i>solution.</i> An emergency access way is to meet all the following requirements: - requirements in Table 6, Column 2; - provides a through connection to a public road; - be no more than 500 metres in length; and - must be signposted and if gated, gates must open the whole trafficable width and remain unlocked.			
	<u>A3.3 Through roads</u> All public roads should be through-roads. No-through roads should be avoided and should only be considered as an acceptable solution where: - it is demonstrated that no alternative road layout exists due to site constraints; and - the no-through road is a maximum length of 200 metres to an intersection providing two-way access, unless it satisfies the exempt ion provisions in A3.2a of this table. A no-through road is to meet all the following requirements: - requirements of a public road (Table 6, Column 1); and - turn-around area as shown in Figure 24	SP, Sb	<u>Acceptable Solution</u>	<u>Overall development including Stage 1</u> The existing public road access to the project area, namely North-West Coastal Highway, is a through road.
<u>Performance Principle P3ii</u> The internal layout, design and construction of public and private vehicular access and egress in the subdivision / development allow emergency and other vehicles to move through it safely and easily. The design of vehicular access and egress provides: - access and egress for emergency service vehicles while allowing the community to evacuate; - a defensible space for emergency services personnel on the interface between classified vegetation and development site; and hazard separation between classified vegetation and the subject site to reduce the potential radiant heat that may impact a lot(s).	<u>A3.4a Perimeter Roads</u> Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions. A perimeter road is a public road and should be provided for greenfield or infill development where 10 or more lots are being proposed (including as part of a staged subdivision) with the aim of: - separating areas of classified vegetation under AS3959, which adjoin the subject site, from the proposed lot(s); and - removing the need for battle-axe lots that back onto areas of classified vegetation. A perimeter road is to meet the requirements contained in Table 6, Column 1. A perimeter road may not be required where: - the adjoining classified vegetation is Class G Grassland; - lots are zoned for rural living or equivalent; - it is demonstrated that it cannot be provided due to site constraints; or - all lots have frontage to an existing public road	SP, Sb	<u>Not Applicable</u>	<u>Stage 1 development</u> No public roads are proposed as part of Stage 1 of the development. While a perimeter public road is not proposed, the intent of this clause is achieved as the internal roads (private driveways) shall be configured as a loop road to provide perimeter access around perimeter of Stage 1 as well as the perimeter of the Stage 1 solar PV array to enable fire appliance access between the solar panels and the bushfire hazard. <u>Future stages of development</u> No public roads are proposed as part of any future development stages. Similar to Stage 1, all internal roads (private driveways) are to be configured as a loop road to provide perimeter access around all solar PV arrays.
<u>Performance Principle P3iii</u> Vehicular access is provided which allows: - access and egress for emergency service vehicles; - defendable space for emergency services personnel on the interface between classified vegetation and development; and	<u>A3.4b Fire service access route</u> <i>Where proposed lots adjoin classified vegetation under AS3959, and a perimeter road is not required in accordance with A3.4a, a fire service access route can be considered as an acceptable solution to provide firefighter access, where access is not available, to the classified vegetation.</i> A fire service access route is to meet all the following requirements: requirements in Table 6, Column 3;	SP, Sb	<u>Not Applicable</u>	<u>Overall development including Stage 1</u> The proposed development does not require fire service access routes (FSARs) to achieve fire brigade access within and around the perimeter of the project area.

Bushfire protection criteria			Development response	
Performance Principle	Acceptable solutions	Planning Stage	Method of compliance	Proposed bushfire management measures
hazard separation between classified vegetation and the site to reduce the potential radiant heat that may impact a lot(s).	- be through-routes with no dead-ends; - linked to the internal road system at regular intervals, every 500 metres; - must be signposted; - no further than 500 metres from a public road; - if gated, gates must open the required horizontal clearance and can be locked by the local government and/or emergency services, if keys are provided for each gate; and - turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres.			
<u>Performance Principle P3iv</u> Vehicular access is provided which allows emergency service vehicles to directly access all habitable buildings and water supplies and exit the lot without entrapment	<u>A3.5 Battle-axe access legs</u> <i>Where it is demonstrated that a battle-axe cannot be avoided due to site constraints, it can be considered as an acceptable solution.</i> There are no battle-axe technical requirements where the point the battle-axe access leg joins the effective area of the lot, is less than 50 metres from a public road in a reticulated area. In circumstances where the above condition is not met, or the battle-axe is in a non-reticulated water area, the battle-axe is to meet all the following requirements: - requirements in Table 6, Column 4; and - passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres)	Sb	<u>Not applicable</u>	<u>Overall development including Stage 1</u> No battle-axe legs are proposed as part of the development and the project area is not serviced by an existing battle-axe.
	<u>A3.6 Private driveways</u> There are no private driveway technical requirements where the private driveway is: - within a lot serviced by reticulated water; - no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and - accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following requirements: - requirements in Table 6, Column 4; - passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and - turn-around area as shown in Figure 28 and within 30 metres of the habitable building.	Dd, Do	<u>Acceptable Solution</u>	<u>Stage 1 development</u> All internal roads constructed as part of Stage 1 are to be as follows: - comply with the requirements of Table 6, Column 4 from the Guidelines (see Appendix 4) - have any turnaround areas, where required, comply with A3.6 (see Appendix 4) - provide internal road access from North-West Coastal Highway to the Stage 1 boundary - provide at least two connections from Stage 1 to the internal road from the highway, to ensure fire appliances are able to access this road from the northern and southern parts of Stage 1. - be configured as a loop road around proposed solar PV array extend, preferably within the perimeter APZ where possible - provide compliant 4 m wide driveway access through the solar panel arrays on a regular basis (not less than 80 m apart), the enable fire appliances to traverse through the arrays. The 4 m clear width should be achieved regardless of the tilt angle of the solar panels - provide access to, and throughout, the Stage 1 Substation, Plant Area and Site Facilities areas including provision for fire appliance turnaround - provide access to the firewater tank or tank suction point, including sufficient locations for fire appliance turnaround. - provide access to the firewater tanks (or suction or booster connection) in accordance with A4.2, to enable attending fire appliances to refill, and provide sufficient locations for fire appliance turnaround. - all gates are to be double gates with minimum clear opening of 3.6 m wide, - If access to the project area is to be locked, keys are to be issued to onsite personnel and local firefighting brigade/s.

Bushfire protection criteria			Development response	
Performance Principle	Acceptable solutions	Planning Stage	Method of compliance	Proposed bushfire management measures
				Future stages of development All internal roads (private driveways) for future stages are to be configured to the same specifications as Stage 1, with emphasis on providing access around and throughout the solar PV arrays, with vehicular access provided to the Substation, Plant Area and Site Facilities areas including provision for fire appliance turnaround. All access should be interconnected to enable fire appliance movement through all developed stages within the project area.
Element 4: Water <i>Intent: To ensure that water is available to enable people, property and infrastructure to be defended from bushfire</i>				
No Performance Principle Applies	A4.1 Identification of future water supply	SP	Not applicable	Not applicable to this planning stage
Performance Principle P4 The subdivision, development or land use is provided with a permanent and secure water supply that is sufficient for firefighting purposes. Provide a permanent water supply that is: - sufficient and available for firefighting purposes; - constructed from non-combustible materials (e.g. steel), or able to - maintain its integrity throughout a bushfire; and accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles	A4.2 Provision of water for firefighting purposes Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority. Where these specifications cannot be met, then the following applies: - The provision of a water tank(s), in accordance with the requirements of Schedule 2; and - Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: - land to be ceded free of cost to the local government for the placement of the tank(s); - the lot or road reserve where the tank is to be located is identified on the plan of subdivision; - tank capacity, construction, and fittings, provided in accordance with the requirements of Schedule 2; and - a strategic water tank is to be located no more than 10 minutes from the subject site (at legal road speeds). Where a subdivision includes an existing habitable building(s) that is to be retained, a water supply should be provided to this existing habitable building(s), in accordance with the requirements listed above.	Sb, Dd, Do	Acceptable Solution	Stage 1 development A 100 kL firewater tank is required for bushfire fighting purposes, on the following basis: 50 kL has been allowed for firefighting in the solar panel arrays 50 kL is required per 100 ha (1 sq. km) for the solar panel arrays - Given there is approximately 0.95 sq.km of proposed solar panels in Stage 1, allowing for 50 kL of firewater is appropriate 50 kL has been allowed for bushfire fighting around the Substation, Plant Area and Site Facilities and any other parts of the Stage 1 development The onsite tanks are to comply with the relevant technical requirements of Schedule 2 from the Guidelines (see Appendix 5). Suction connections are to be located within 3 m of a hardstand to enable draughting from the static tanks by bushfire fighting appliances. The firewater tank/s are to be installed, filled and maintained for the life of the project by the Proponent. Future stages of development All future stages will need to review the firewater supply on the following criteria: - Ensuring no less than 50 kL of firewater is provided per 100 ha (1 sq. km) of solar panel arrays - Ensure no less than 50 kL of firewater is provided for each Substation, Plant Area and Site Facilities for bushfire fighting, - All firewater for each stage shall be stored in a firewater tank in close proximity to the Substation, Plant Area and Site Facilities and solar panel array (i.e. within that stage of development) and not generally amalgamated with existing supplies for other stages to ensure fire appliances have access to firewater close to the assets to avoid unnecessary travel time.

* **Applicable Planning Stages** (SP - Strategic planning and structure plan where lot layout is unknown; Sb - Structure plan where lot layout is known and subdivision application; Dd – Development application for a single dwelling, ancillary dwelling or minor development; Do – Development application for any other development)

5.2 Additional management strategies

Linfire makes the following additional bushfire management recommendations, informed by the bushfire hazard assessment in this BMP and the risk assessment in the project BRMP (Linfire, 2022), to inform ongoing planning stages of the development and increase the level of bushfire risk mitigation across the site.

5.3 Vegetation management

In order to manage the bushfire risk to the development, sufficient separation is to be provided between proposed infrastructure and unmanaged vegetation, including the following requirements:

- An APZ around the perimeter of the nominated Substation, Plant Area and Site Facilities areas
- An APZ around the perimeter of the solar panel arrays and PCU's, being either non-vegetated or managed low threat vegetation
- All land within the solar array perimeter APZ is to be either non-vegetated or managed low threat vegetation

Further information on vegetation management is provided in the sections below.

5.3.1 Asset Protection Zones

In order to ensure sufficient separation is maintained between proposed infrastructure and unmanaged vegetation, the following APZs will be required:

- A suitably sized APZ, is to be established around the perimeter of the solar panel arrays and PCU's (BESS), to achieve BAL-29 on the infrastructure.
 - For Stage 1, an 8 m wide APZ will be required from the arrays
 - These APZs may be either non-vegetated surfaces or managed low threat vegetation
- A suitably sized APZ, is to be established around the perimeter of the Substation, Plant Area and Site Facilities areas to achieve BAL-29 or lower within these areas.
 - For Stage 1, an 8 m wide APZ will be required from classified vegetation into the Substation, Plant Area and Site Facilities areas to prevent siting of buildings, transformers, generators or firewater tanks in BAL-40/FZ areas.
 - These APZs may be either non-vegetated surfaces or managed low threat vegetation

All APZs can be either non-vegetated or established in accordance with Schedule 1 of the Guidelines (see Appendix 3), however vegetation management around the substation would preferably be non-vegetated. All APZs are subject to regular ongoing management by the Proponent to ensure compliance in perpetuity, especially during bushfire season.

Regarding the APZ width, as detailed in the bushfire risk assessment in the project BRMP (Linfire, 2022), an APZ around a BESS should exceed the 9.1 m determined from large-scale fire testing to produce radiant heat flux of less than 10 kW/m² from a fully involved battery fire. Given the Stage 1 BESS sited within the PCU which houses the infrastructure in a purpose-made metal container, which also has a number of power management, fire detection and warning features, it is considered that BAL-29 separation is appropriate from the BESS given its containment. It is also noted that the PCUs are located within the solar PV arrays and will be separated from unmanaged vegetation by the vegetation management within these areas and by the proposed internal roads.

5.3.2 Low threat vegetation (solar panel arrays)

In order to limit the chance of electrical faults in the solar panels from igniting a bushfire, and reducing the potential damage and destruction of panels from a bushfire throughout the array area, the vegetation within APZ surrounding the panels is to be managed as follows:

- Be either non-vegetated surfaces (e.g. roads, mineral earth, crushed stone or rock etc), or
- Managed low threat vegetation, which for most of this site will be grass slashed to <100 mm in height

5.3.3 On-site staging buffers

If development (and therefore clearing) is to occur on a staged basis, clearing in advance will need to occur to ensure building or infrastructure construction is not inhibited by a temporary vegetation extent located within adjacent development stages yet to be cleared. This can be achieved by ensuring that each approved stage subject to construction is surrounded by a suitably sized, on-site cleared or low threat buffer to development (not including vegetation proposed to be retained). Once the buffers are created, they will need to be maintained on a regular and ongoing basis in accordance with AS 3959 Clause 2.2.3.2 (f) and Schedule 1 of the Guidelines (refer Appendix 3). Management will typically include slashing of grassland at 100 mm or lower, to achieve a low threat minimal fuel condition all year round, until such time that the buffer area is developed as part of the next development stage. This will assist in managing the current on-site temporary vegetation hazards.

5.4 Firewater supply

Bushfire fighting water supply is addressed under Element 4 in Table 5, and will consist of the following for bushfire fighting purposes:

- Ensuring no less than 50 kL of firewater is provided per 100 ha (1 sq. km) of solar panel arrays, with water stored in tanks in close proximity to the solar panel array (i.e. within that stage of development) to ensure fire appliances have access to firewater close to the array to avoid unnecessary travel time.
- Ensuring no less than 50 kL of firewater is provided for each Substation, Plant Area and Site Facilities and any other parts of the development
- All firewater for each stage shall be stored in a firewater tank in close proximity to the Substation, Plant Area and Site Facilities areas and solar panel array (i.e. within that stage of development) and not generally amalgamated with existing supplies for other stages to ensure fire appliances have access to firewater close to the assets to avoid unnecessary travel time.
- The onsite tanks are to be sited in areas of BAL-29 or lower, and comply with the relevant technical requirements of Schedule 2 from the Guidelines (see Appendix 5).
- Suction connections are to be located within 3 m of a hardstand to enable draughting from the static tanks by bushfire fighting appliances.
- The firewater tank/s are to be installed, filled and maintained for the life of the project by the Proponent.

Based on the above, the following is to be provided for Stage 1:

- 100 kL firewater stored in onsite tanks are to comply with the relevant technical requirements of Schedule 2 from the Guidelines (see Appendix 5) and be sited in BAL-29 or lower part of the Site Facilities Area.
 - 50 kL is for the solar panel array, which given there is approximately 0.95 sq.km of proposed solar panels in Stage 1,

- 50 kL has been allowed for bushfire fighting around the Substation, Plant Area and Site Facilities area and any other parts of the Stage 1 development

5.5 Vehicular access

Vehicular access is addressed under Element 3 in Table 5, and will consist of the following:

- An internal driveway network compliant with the specifications of a private driveway (see Appendix 4)
- Internal driveway access to, and throughout, the various stages, to form an interconnected network
- perimeter access around the solar panel array, with internal access throughout the array extent
- vehicular access to the Substation, Plant Area and Site Facilities area, including the firewater supplies, including sufficient turnaround areas for fire appliances.

5.5.1 Staging of access

If development (and therefore construction of vehicular access) is to occur on a staged basis, vehicular access arrangements will need to ensure that all occupants are provided with compliant access at all stages. This can be achieved via construction of access in advance of stages or through provision of temporary access roads where required.

5.5.2 Access gates

All access gates proposed in the fence surrounding the project areas, shall be double gates with a minimum width of no less than 3.6m to enable a fire appliance to pass through. As the gates will be locked to restrict access, keys are to be available to relevant site personnel to enable rapid unlocking in an emergency but also made available to local fire brigade personnel. Installation and ongoing maintenance of the gate is to be the responsibility of the Proponent.

5.6 Infrastructure Design, Construction, Installation, Commissioning and Maintenance

The proposed facility will need to incorporate various design and construction requirements to manage the risk of onsite fire and bushfire from the development:

- Remote monitoring for all facility infrastructure, to ensure that any electrical or equipment failures with the potential to ignite or propagate fire are rapidly identified and relevant personnel notified, including fire brigade
- Remote power management functionality, to enable the BESS to be placed into a low energy state prior to bushfire arrival, or full emergency shutdown of BESS and solar energy facility, should bushfire impact be imminent.
- All electrical equipment (e.g. electrical cabling, junction boxes, inverters and transformers) must comply with relevant design, construction and installation standards of electrical equipment including relevant Australian Standards, and manufacturers recommendations.
- The battery energy storage system represents the highest fire risk associated with the development, primarily from thermal runaway within the Li-ion battery packs. The following range of measures are to be incorporated in the BESS design to adequately manage the risk of fire or explosion from thermal runaway including:
 - Battery management/monitoring systems for monitoring the state of battery systems.
 - Detection systems for smoke, heat (thermal), fire and toxic gas (off-gassing)

within battery containers.

- Suppression systems for fire within battery containers.
- Systems to prevent heat/fire spread within battery containers (such as thermal barriers, shut-down separators, isolation systems, cooling systems).
- Systems to prevent explosion within battery containers (such as ventilation, pressure relief and exhaust systems).
- Warning and alarm systems within the battery containers, and/or the facility, to enable early warning for faults, operation of the battery energy storage system above 'normal'/safe parameters, smoke, off-gassing, and fire.
- Consideration of direct alarm monitoring to the fire brigade for BESS automatic detection systems
- BESS installation is on a non-combustible surface (e.g. concrete)
- Provide suitable ember protection to prevent embers from penetrating battery containers/enclosures (i.e. screening and sealing as part AS 3959 BAL-12.5 construction requirements)
- Where appropriate to the BESS type and design, ensure the learnings and proposed modifications from the VBB fire review, including those relating to system monitoring, battery module isolation loss and high voltage controller operation, are incorporated into the BESS design, construction and commissioning.
- Where appropriate to the BESS type and design, consider adopting current versions of UL 9540: Energy Storage System Requirements and FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems, for the design and operation of BESS's.
- Construction and installation is to be in accordance with the manufacturers recommendations
- Ensure the following elements are included in the solar panel array design and layout:
 - The panel mounting posts will also be on-combustible (likely steel), so will not contribute to the fuel load or support fire
 - Cabling is either designed to be below-ground or installed as high as possible above-ground.

The following shall be adopted during the construction and commissioning phases

- Any fire detection and suppression systems shall be installed and commissioned at the earliest possible stage of construction.
- Onsite staff and contractors
 - shall adhere to restrictions and guidance during days with a Fire Danger Rating of High to Catastrophic and/or Total Fire Ban days
 - regularly monitor for, and otherwise be aware of, bushfires in the local area, and evacuate offsite prior to bushfire impact onsite.

Regular and ongoing inspection and auditing is to be conducted by the Proponent, with any routine maintenance and any required repair activities to be conducted for all infrastructure, equipment and vehicles at the facility, especially the BESS.

5.7 Emergency Management and Evacuation

The Proponent is to incorporate the following response procedures into the emergency management plan for the facility, for both off-site bushfire, and on-site fire, emergencies:

- The immediate response to any fire onsite is to notify fire brigade immediately

- Detail safe locations for personnel to seek refuge onsite or evacuate offsite.
- Provide emergency procedures for isolation and shutdown where solar panels and/or related infrastructure are involved in fire.
- Detail emergency procedures for fires within the vicinity of solar energy facilities.
- Provide contact information for 24/7/365 specialist technical support for the BESS.
- Detail emergency procedures for identified risks and hazards of the BESS and related infrastructure, including but not limited to
 - Electrical infrastructure faults and fire.
 - BESS damage or faults, including battery monitoring faults, temperature increases above normal operating parameters, off-gassing, thermal events/runaway, smoke and fire.
- Specifications for safe operating conditions for temperature, and the hazards related to electricity generation at the facility.
- Adhere to restrictions and guidance during days of High to Catastrophic and/or Total Fire Ban days
- Upon becoming aware of a bushfire emergency within 20 km of development)
 - Consider reducing the facility to a low energy state (including discharging the BESS), in consultation with authorised DFES personnel (where possible), with consideration given to the location of the fire and the direction and rate of spread of the bushfire, as well as the duration required to discharge the batteries, which may be up to 2 hours.
 - Remove any staff from the area (if any are onsite)
- If bushfire impact on the development is imminent
 - Consider full emergency facility shutdown including the BESS and substation, in consultation with authorised DFES personnel (where possible)
 - Ensure staff evacuate to Karratha, but away from the bushfire.
- If there are signs of onsite fire, including thermal runaway at the BESS:
 - Immediately notify DFES to enable a rapid turnout
 - Notify neighbouring development including Supagas.
 - Ensure no staff approach the BESS (if there are any onsite). Staff should move to safe distance from the project area, no less than 20 m.
 - Strongly consider full emergency shutdown of the BESS and substation unless there are mitigating circumstances. This should be conducted in consultation with authorised DFES personnel (where possible).
 - If possible, contact Specialist Technical Support for further guidance.

5.8 Dangerous Goods

The proposed development may contain dangerous goods, with the storage and use of these onsite potentially increasing the risk of fire ignition at the proposed development.

The Proponent will be required to ensure there are strict controls on these potential ignition sources, such as storage and handling controls in accordance with the Dangerous Goods legislation and code, relevant Australian Standards and restrictions on hot works and electrical equipment within any on-site hazardous areas.

5.8.1 Manifest

Dangerous goods sites must maintain a current manifest and a dangerous goods site plan, to allow an appropriate response by DFES in the event of an emergency, such as a fire.

Information retained onsite should include the Emergency Plan, Dangerous Goods Manifest, Register of Dangerous Goods and Hazardous Materials, Safety Data Sheets for bulk products kept on site and dangerous goods site layout plan. Synergy already has this documentation in place for the existing Power Station, however these should be updated to reflect the new substation and battery storage, especially the site DFES Specials Risk Plan.

5.8.2 Ignition sources

Operators of dangerous goods sites are required to manage potential ignition sources, such as hot works and electrical equipment, within any on-site hazardous areas.

This is managed by a Permit System, with linkage to declared 'Total Fire Bans'. During a Total Fire Ban, hot works is deferred unless essential for plant operations. Documented additional fire safety provisions are required during Total Fire Ban days.

5.8.3 Placard and marking

A placard, readily visual for DFES personnel and providing visual warnings of the hazards associated with storage of flammable liquids, will be required at the proposed tank site in the northeast in accordance with DMP Storage and handling of dangerous materials Code of Practice (DMP 2010).

Signage and notices will also be required in accordance with AS 1940-2004.

5.9 Building construction standards

Bushfire construction provisions of the National Construction Code require that buildings comply with the A 3959 construction requirements, in accordance with the assessed BAL under AS 3959, provided the building is a Class 1, 2, 3 or associated Class 10a building.

The proposed buildings will not be Class 1, 2 or 3, therefore in accordance with the National Construction Code, and as such, there is no statutory requirement for proposed buildings to meet the construction requirements of AS 3959. Notwithstanding, given the high-risk nature of the proposed use, and like all buildings, potential vulnerability to ember attack, Linfire recommend that as a minimum, the requirements of BAL-12.5 are strongly considered for implementation as the construction requirements associated with this rating are primarily related to ember protection, especially to the BESS.

5.10 BAL compliance and/or BAL assessment report

A BAL compliance and/or BAL assessment report may be prepared at the discretion of the City or Building Certifier, following completion of construction works and prior to issue of certificate of occupancy, to validate and confirm the accuracy of the BAL contour assessment.

5.11 Compliance with annual firebreak notice

The Proponent is to comply with the current City of Karratha annual firebreak notice as amended (refer to Appendix 6).

The City of Karratha Firebreak Notice does not specify grassland maintenance requirements for



rural lots exceeding 2024 m², however required perimeter firebreaks (at least 3 m wide) immediately inside all external boundaries of the lot, however the proposed perimeter road around the infrastructure in each stage would satisfy this requirement. Additionally, 3 m wide firebreaks must also be provided immediately surrounding all buildings, which would be addressed by the proposed APZs.

6.0 Responsibilities for implementation and management of the bushfire measures

Implementation of the BMP applies to the developer, prospective landowners and the City to ensure bushfire management measures are adopted and implemented on an ongoing basis. A bushfire responsibilities table is provided in Table 6 to drive implementation of all bushfire management works associated with this BMP.

Table 6: Responsibilities for implementation and management of the bushfire measures

Implementation/management table	
<i>Proponent – prior to commissioning electrical infrastructure</i>	
No.	Implementation action
1	Establish APZs as detailed in Section 5.3.1, in accordance with the dimensions and standards in the BMP around the following: - BESS's - BAL-29 or lower (if housed in container protecting from fire e.g. Stage 1 PCUs) - BAL-12.5 or lower (if not housed in container) - Solar panel array extent to achieve BAL-29 or lower - Substation and any other buildings to achieve BAL-29 or lower
2	Establish low threat vegetation in the solar panel array area, within the perimeter APZ, in accordance the dimensions and standards in Section 5.3.2 of the BMP
3	If development is staged, establish on-site staging buffers to achieve exclusion Clause 2.2.3.2 (f) of AS 3959, including slashing/mowing of grassland and weeds to height of less than 100 mm.
4	Install static firewater tanks with 100 kL capacity for bushfire fighting purposes in accordance with the requirements of the BMP. Suction connections are to be located within 3 m of a hardstand to enable draughting from the hydrant tanks by bushfire fighting appliances.
5	Install the internal driveway network to, and throughout, the proposed development to private driveway technical requirements under the Guidelines (refer to Appendix 3), including passing bays and turn-around areas for fire appliances. The internal driveway network is to include: - An internal driveway network compliant with the specifications of a private driveway (see Appendix 4) - Internal driveway access to, and throughout, the various stages, to form an interconnected network - perimeter access around the solar panel arrays, with internal access throughout the array extent - access to the to the Substation, Plant Area and Site Facilities area, including the firewater supplies, including sufficient turnaround areas for fire appliances.
6	Construct the any access gates within fence to the standards stated in the BMP, with width no less than 3.6 m. Ensure keys to any locked gates are provided to all relevant staff and onsite personnel, as well as being made available to local fire brigade.
7	Incorporate all the infrastructure design, construction, installation and commissioning requirements detailed in Section 5.6 of the BMP for the BESS, substation and solar energy facility, including remote monitoring and power management functionality.
8	Incorporate the recommended procedures into the emergency management plan for the development, in accordance with Section 5.7 of this BMP.
9	Comply with all relevant Dangerous Goods legislation in accordance with Section 5.8 of this BMP.
10	If required by the City or Building Certifier, undertake individual BAL assessments prior to issuing of building permits.
11	Comply with the City of Karratha firebreak notice as amended annually

Implementation/management table	
<i>Proponent– ongoing</i>	
No.	Implementation action
1	Maintain the APZs as detailed in Section 5.3.1, in accordance with the dimensions and standards in the BMP
2	Maintain the low threat vegetation in the solar panel array area, within the perimeter APZ, in accordance the dimensions and standards in Section 5.3.2 of the BMP
3	Maintain the firewater tanks, in accordance with relevant Australian Standards and the requirements stated in the BMP.
4	Maintain the internal driveway network in accordance with the private driveway specifications from the Guidelines, and any requirements stated in the BMP.
5	Maintain the access gates to the standards stated in the BMP.
6	Conduct any required inspections and auditing to ensure the facility (especially BESS, substation and solar panels) comply with the original design parameters as detailed in Section 5.6 of the BMP, including remote monitoring and power management functionality. Undertake any routine maintenance and required repairs for all infrastructure, equipment and vehicles at the facility, especially the BESS.
7	Review emergency management response procedures on an annual basis, and amend as required.
8	Conduct ongoing review of the project Bushfire Risk Management Plan (BRMP), to ensure it still accurately reflects the risks posed by the development.
9	Comply with the City of Karratha firebreak notice as amended annually

7.0 References

Department of Fire and Emergency Services (DFES) 2019, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from:

<https://maps.slip.wa.gov.au/landgate/bushfireprone/>,

Department of Planning (DoP) 2016, *Visual guide for bushfire risk assessment in Western Australia*, Department of Planning, Perth.

Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

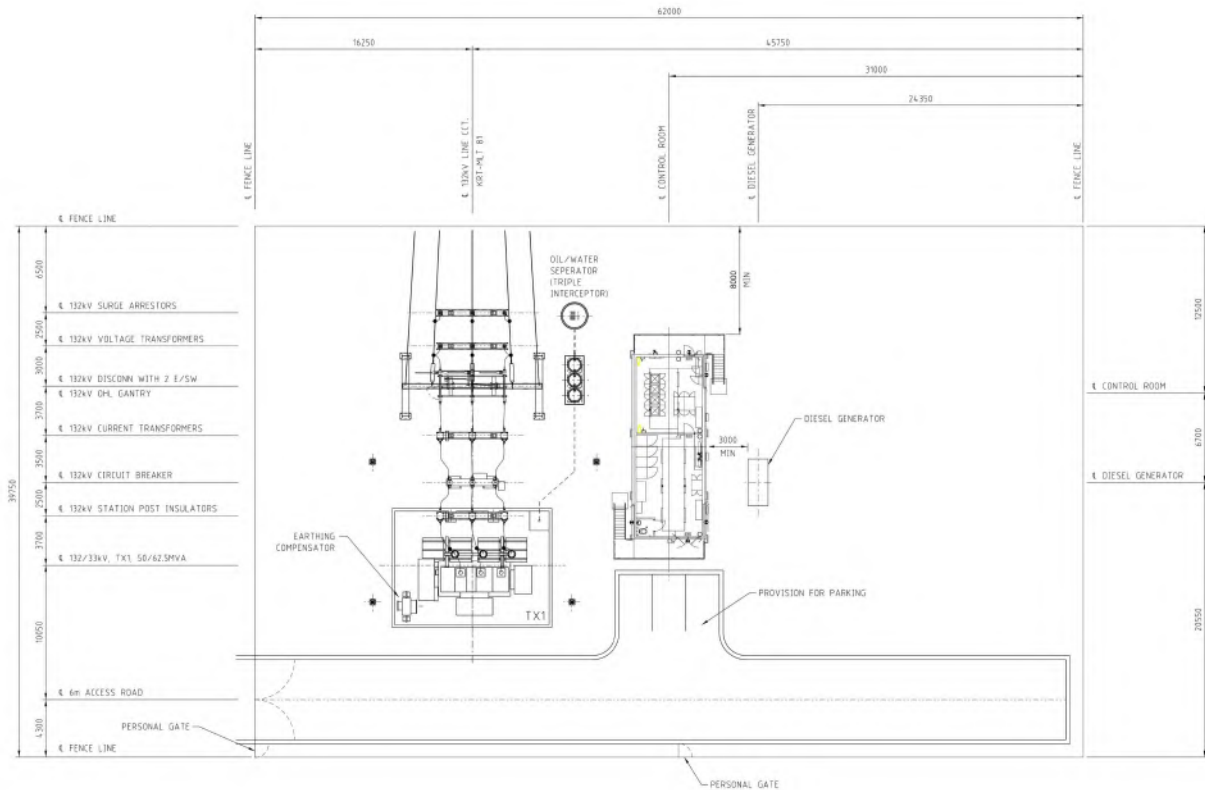
Linfire 2022, *Bushfire Risk Management Plan: Woodside Solar Farm*, Linfire Consultancy, Perth.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission (WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas*, Version 1.3 August 2017, Western Australian Planning Commission, Perth.



Appendix 1 Indicative Substation layout



SUBSTATION LAYOUT

Appendix 2 Vegetation plot photos and description



Photo ID: 1a



Photo ID: 1c



Photo ID: 1e



Photo ID: 1b



Photo ID: 1d



Photo ID: 1f

Plot number	Plot 1
Vegetation classification	Class G Grassland
Description / justification	Grassland greater than 100 mm in height

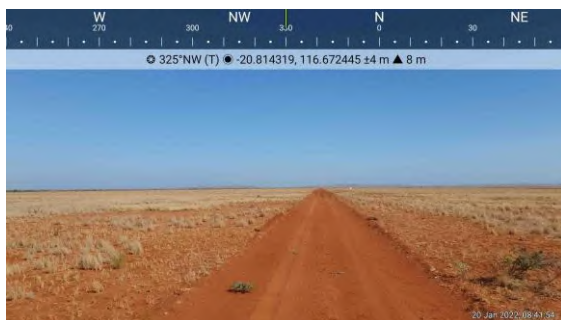


Photo ID: 1g



Photo ID: 1h



Photo ID: 1i



Photo ID: 1j



Photo ID: 1k



Photo ID: 1l



Photo ID: 1m

Photo ID: 1n

Plot number	Plot 1
Vegetation classification	Class G Grassland
Description / justification	Grassland greater than 100 mm in height



Photo ID: 1o



Photo ID: 1q



Photo ID: 1s



Photo ID: 1p



Photo ID: 1r

Plot number	Plot 1
Vegetation classification	Class G Grassland
Description / justification	Grassland greater than 100 mm in height



Photo ID: 2a



Photo ID: 2b



Photo ID: 2c



Photo ID: 2d



Photo ID: 2e



Photo ID: 2f

Photo ID: 2g

Photo ID: 2h

Plot number	Plot 2
Vegetation classification	Class G Grassland
Description / justification	Grassland greater than 100 mm in height



Photo ID: 2i



Photo ID: 2j



Photo ID: 2k



Photo ID: 2l



Photo ID: 2m



Photo ID: 2n

Photo ID: 2o

Plot number	Plot 2
Vegetation classification	Class G Grassland
Description / justification	Grassland greater than 100 mm in height



Photo ID: 3a



Photo ID: 3b



Photo ID: 3c



Photo ID: 3d



Photo ID: 3e



Photo ID: 3f



Photo ID: 3g

Photo ID: 3h

Plot number	Plot 3
Vegetation classification	Class C Shrubland
Description / justification	Shrub vegetation less than 2 m high at maturity



Photo ID: 4a

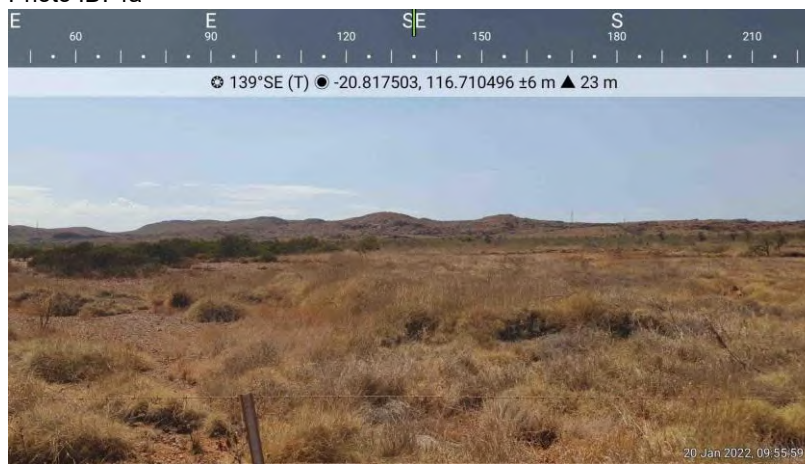


Photo ID: 4b

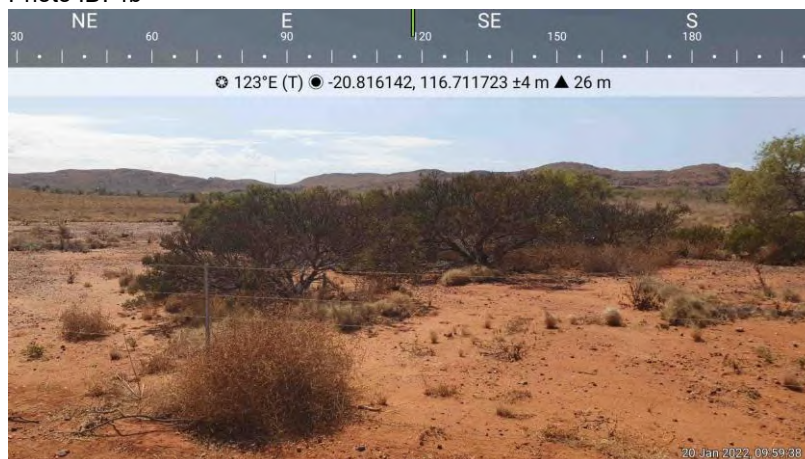


Photo ID: 4c

Plot number	Plot 4
Vegetation classification	Class C Shrubland
Description / justification	Shrub vegetation less than 2 m high at maturity



Photo ID: 5a



Photo ID: 5b

Plot number	Plot 5
Vegetation classification	Class D Scrub
Description / justification	Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 6a



Photo ID: 6b



Photo ID: 6c



Photo ID: 6d



Photo ID: 6e



Photo ID: 6f

Plot number	Plot 6
Vegetation classification	Class D Scrub
Description / justification	Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 7a



Photo ID: 7b

Plot number	Plot 7
Vegetation classification	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification	Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints

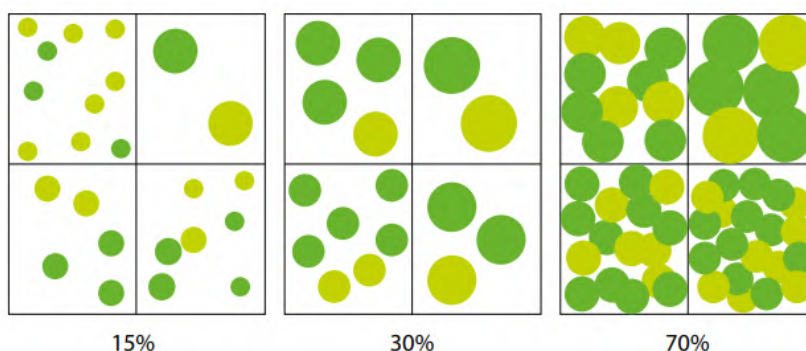
Appendix 3 APZ standards (Schedule 1 of the Guidelines)

An APZ is a low fuel area maintained around a habitable building to increase the likelihood that it will survive a bushfire, by providing a defensible space and reducing the potential for direct flame contact, radiant heat exposure and ember attack.

Vegetation management within an APZ should provide defensible space and be maintained to a low threat state, in perpetuity, in accordance with the requirements outlined in Schedule 1.

Schedule 1: Standards for Asset Protection Zones

- **Trees* (> 6 metres in height)**
 - Trunks at maturity should be a minimum distance of six metres from all elevations of the building.
 - Branches at maturity should not touch or overhang a building or powerline.
 - Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation.
 - Canopy cover within the APZ should be <15 per cent of the total APZ area.
 - Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.



- **Shrub* and Scrub* (0.5 metres to 6 metres in height)**
 - Should not be located under trees or within three metres of buildings.
 - Should not be planted in clumps >5 square metres in area.
 - Clumps should be separated from each other and any exposed window or door by at least 10 metres.
 - Shrub and scrub >6 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height)**
 - Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above.
 - Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
 - Ground covers >0.5 metres in height are to be treated as shrubs
- **Grass**
 - Grass should be maintained at a height of 100 millimetres or less, at all times.
 - Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
- **Fine Fuel load (combustible dead vegetation mater <6 mm in thickness)****
 - Should be managed and removed on a regular basis to maintain a low threat state.
 - Should be maintained at <2 tonnes per hectare (on average).
 - Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch

Schedule 1: Standards for Asset Protection Zones

>6 millimetres in thickness.

- **Defendable Space**
 - Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
- **Fences within the APZ**
 - Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959)
- **LPG Cylinders**
 - Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building.
 - The pressure relief valve should point away from the house.
 - No flammable material within six metres from the front of the valve.
 - Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

*** Fine fuel load should be maintained to less than two tonnes per hectare, however this is often a subjective assessment.*

- *Reducing fuel load levels does not necessarily require the removal of existing vegetation. A combination of methods can be utilised to reduce fuel load such as raking, weed removal, pruning, mulching and/or the removal of plant material.*
- *A simple method to estimate fuel load is to roughly equate one tonne of fuel load per hectare as 100 grams per square metre. For example, two tonnes per hectare of leaf litter is roughly 200 grams of leaf litter per square metre and eight tonnes per hectare is roughly 800 grams.*
- *Eucalyptus leaf litter is approximately 100 grams per handful, so two handfuls of litter per square metre will roughly equate to two tonnes per hectare.*
- *Different types of fine fuel, like mulch or pine needles may be more or less than a handful, however the 100 grams per square metre rule of thumb can still be used.*

E2 Plant flammability

There are certain plant characteristics that are known to influence flammability, such as moisture or oil content and the presence and type of bark. Plants with lower flammability properties may still burn during a bushfire event, but may be more resistant to burning and some may regenerate faster post-bushfire.

There are many terms for plant flammability that should not be confused, including:

- Fire resistant – plant species that survive being burnt and will regrow after a bushfire and therefore may be highly flammable and inappropriate for a garden in areas of high bushfire risk.
- Fire retardant – plants that may not burn readily or may slow the passage of a bushfire.
- Fire wise – plants that have been identified and selected based on their flammability properties and linked to maintenance advice and planting location within a garden.

Although not a requirement of these Guidelines, local governments may develop their own list of fire wise or fire retardant plant species that suit the environmental characteristics of an area. When

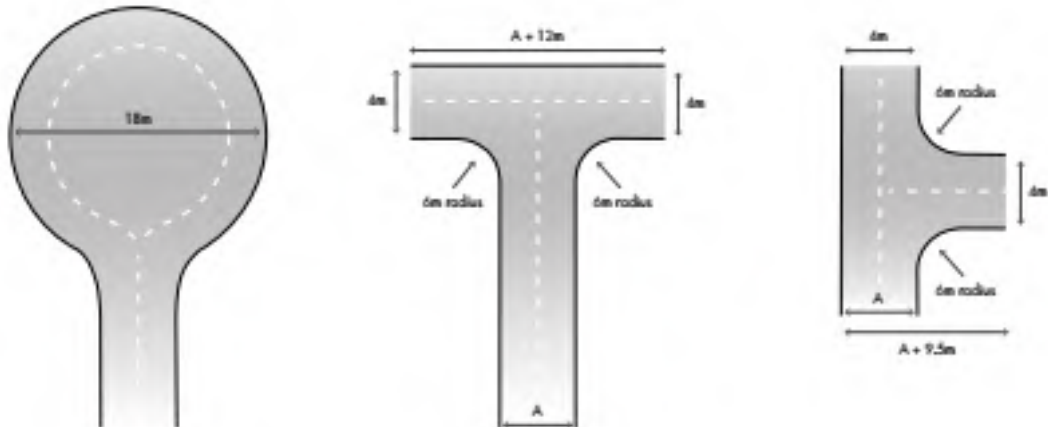
developing a recommended plant species list, local governments should consult with ecologists, land care officers or environmental authorities to ensure the plants do not present a risk to endangered ecological communities, threatened, or endangered species or their habitat.

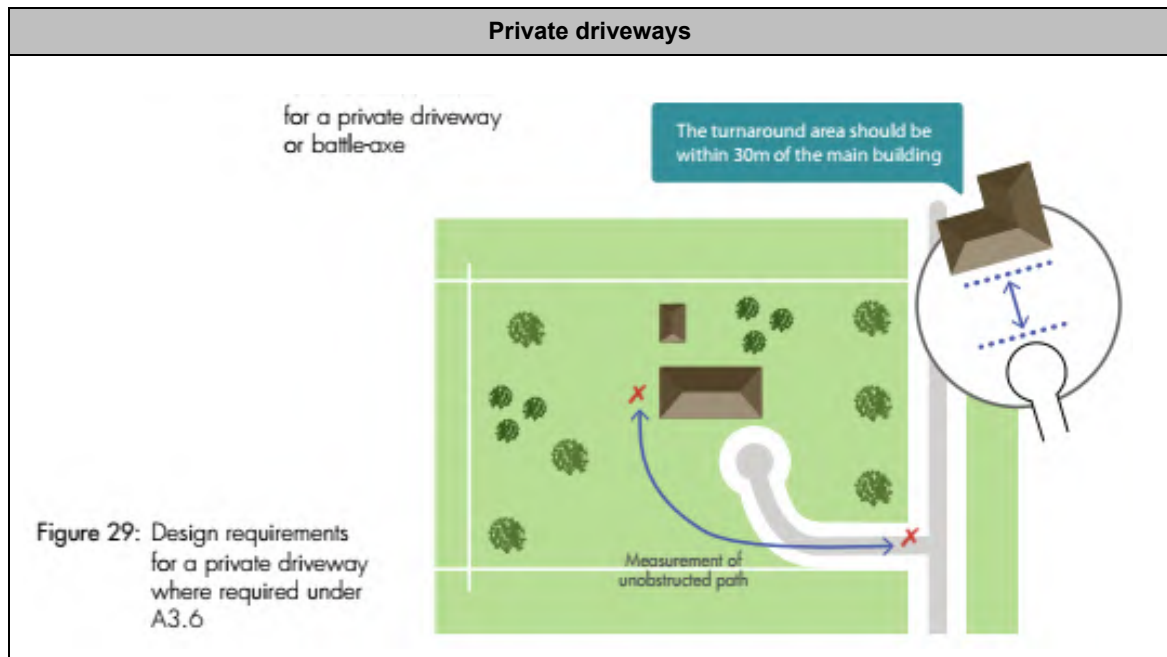
When selecting plants, private landholders and developers should aim for plants within the APZ that have the following characteristics:

- grow in a predicted structure, shape and height;
- are open and loose branching with leaves that are thinly spread;
- have a coarse texture and low surface-area-to-volume ratio;
- will not drop large amounts of leaves or limbs, that require regular maintenance;
- have wide, flat, and thick or succulent leaves;
- trees that have bark attached tightly to their trunk or have smooth bark;
- have low amounts of oils, waxes, and resins (which will often have a strong scent when crushed);
- do not produce or hold large amounts of fine dead material in their crowns; and/or
- will not become a weed in the area.

Refer to the WAPC Bushfire and Vegetation Fact Sheet for further information on clearing and vegetation management and APZ landscaping, design and plant selection reference material.

Appendix 4 Vehicular access technical standards of the Guidelines

Private driveways
Acceptable solution A3.6 There are no private driveway technical requirements where the private driveway is: • within a lot serviced by reticulated water; • no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and • accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following requirements: • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • turn-around area as shown in Figure 28 and within 30 metres of the habitable building. Explanatory note A3.6 In areas serviced by reticulated water, where the road speed limit is not greater than 70 km/h, and where the distance from the public road to the further part of the habitable building is no greater than 70 metres, emergency service vehicles typically operate from the street frontage. In the event the habitable building cannot be reached by hose reel from the public road, then emergency service vehicles will need to gain access within the property. Emergency service vehicles will also need to gain access within the property, where access to reticulated water (fire hydrants) is not possible. In these situations, the driveway and battle-axe (if applicable) will need to be wide enough for access for an emergency service vehicle and a vehicle to evacuate. Turnaround areas should be available for both conventional two-wheel drive vehicles of residents and Type 3.4 fire appliances. Turn-around areas should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered. Note that the design requirements for a turn-around area for a private driveway or battle-axe differ to a cul-de-sac.  Figure 28: Design requirements for a turn-around area for a private driveway or battle-axe



Technical requirement	1	2	3	4
	Public road	Emergency access way ¹	Fire service access routes ¹	Battle-axe and private driveways ²
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum horizontal distance (m)	N/A	6	6	6
Minimum vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum grade unsealed road ³	As outlined in the IPWEA Subdivision Guidelines	1 in 10 (10%)		
Maximum grade sealed road ³		1 in 7 (14.3%)		
Maximum average grade sealed road		1 in 10 (10%)		
Minimum inner radius of road curves (m)		8.5		

Notes

¹ To have crossfalls between 3 and 6%

² Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

³ Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle

Appendix 5 Water technical standards of the Guidelines

Schedule 2 – Water Supply Dedicated for Bushfire Fighting Purposes	
2.2 Technical requirements	
<u>2.2.1 Construction and design</u> An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018. Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419. Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply. <u>2.2.2 Pipes and fittings</u> All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government. <u>2.2.2.1 Fittings for above-ground water tanks:</u> • Commercial land uses: 125mm Storz fitting; or • Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or • Standalone water tanks: 50mm male camlock coupling with full flow valve; or • Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires. <u>2.2.2.2 Remote outlets</u> In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.	



Appendix 6 City of Karratha Firebreak Notice



[HOME](#)
[> APPROVALS & COMPLIANCE](#)
[> RANGERS](#)

LOCAL FIRE INFORMATION

If you observe a Fire/Bushfire anywhere please call Emergency Services by dialing 000.

TOP REQUESTS

Bush Fire Control

Restricted fire season exists all year within the City of Karratha. Fire permits are **required at all times** for any open air fires.

Lighting of fires in the open air within the City of Karratha for the purpose of camping or cooking is prohibited on days of Very High, Severe, Extreme or Catastrophic fire danger forecast (this includes gas cooking appliances).

To find out the current fire level warning in place visit www.bom.gov.au/wa/forecasts/fire-danger-ratings - refer to West Pilbara Coast

Penalties

Minor Offences (Infringement Notice)	Penalty
Failing to produce a Permit to Burn	\$100.00
Lighting a fire in the open air	\$250.00

Lighting a fire to destroy refuse contrary to conditions	\$250.00
Setting fire to bush during restricted burning times	\$250.00
Failure of the occupier of the land to extinguish a bush fire	\$250.00
Failure to comply with a notice to plough or clear firebreaks	\$250.00

****Major offences will result in court action with penalties ranging from \$500 to \$25,000 or imprisonment for twenty (20) years or both.****

Permit to Burn

Information required for a Permit to Burn:

- Name of the person conducting the burn
- The location, lot number and/or street address of the property to which the permit will apply to
- What fire fighting equipment and resources you have and whether or not it is in good working order
- A safety plan
- The size of the burn to take place
- Any fire breaks installation and access options for an emergency fire unit
- Materials proposed to be burnt

Note: Applying for a Permit to Burn does not mean it will be automatically issued, a permit will not be issued for the burning of green waste.

Please contact the Ranger Services on 9186 8535 for fire permits.

Fire break requirements

As an owner or occupier of land within the City of Karratha, you are hereby notified that you must comply with the Bush Fires Act 1954, (the Act) section 33, and carry out annual fire prevention work as set out in this notice.

It is the responsibility of the owner or occupier to maintain their property free of fire hazards and have all fire breaks installed as per the requirements of this notice and maintain the land in condition for the entire year.

Persons who fail to comply with the requirements of this order may be issued with an infringement notice which carries a modified penalty of \$250 and a maximum penalty of \$25,000.

In accordance with the Act, Council may carry out the required works at the expense of the land owner or occupier regardless if issued with an infringement notice or prosecuted.

For more information about firebreak requirements contact the City of Karratha on (08) 9186 8555.

Requirements

- 1 **Rural and Town-site Land (includes residential, commercial and industrial):**
 - a) Where the area of land is 2024m² (approximately half an acre) or less, remove all flammable material on the land except living standing trees from the whole land.
 - b) Where the area of land exceeds 2024m², provide fire breaks at least three (3) metres wide, immediately inside all external boundaries of the land and also immediately surrounding all buildings and haystacks situated on the land. Where several adjoining lots are held or used by the owner/occupier, the firebreaks may be provided inside and along the external boundaries of the group or lot.
- 2 **Special Rural Land:**

The owners of all small rural holdings, zoned as Special Rural under Town Planning Schemes, must maintain clear of all flammable materials a fire break at least three (3) metres wide, immediately inside all external boundaries of the land.

- 3 Fuel and/or Gas Depots:** In respect of land owned and/or occupied by you on which is situated any container normally used to contain liquid or gas fuel, including the land on which any ramp or supports are constructed, you shall have the land clear of all flammable material.

Please note:

Firebreaks must be maintained fuel-free year round. The City of Karratha is a designated "Restricted Burning" area and a 'Permit to Burn' is required from 1 January to 31 December (inclusive). On days of Very High, Severe, Extreme and Catastrophic Fire Danger Rating, as issued by Bureau of Meteorology, you are prohibited to burn-off or to use cooking fires. For more information on fire danger ratings and Total Bans please visit the [DFES website](#). For all other firebreak enquiries, please contact the City of Karratha on (08) 9186 8555.

CONTACT US

To provide feedback or get in touch with Council officers

[Visit the contact page](#)

OTHER WEBSITES

AUSTRALIA

- Karratha Airport
- Karratha Leisureplex
- Red Earth Arts Precinct
- Cossack Art Awards
- Red Earth Arts Festival
- Karratha is Calling

SITE DETAILS

Point Samson

Dampier Wickham Cossack

Karratha Roebourne

- Accessibility
- Site Map
- Site Feedback
- OWA



Solar Energy Facility
Lot 1502 North West Coastal Hwy, Maitland
Bushfire Risk Management Plan (Renewable Energy
Hazards)

Date: 29 November 2022

Prepared For: Woodside Energy Ltd

Linfire Ref: 20220112178ROWE-BRMP-002_0

Linfire Consultancy

ABN: 577 930 47299



Revision	Issue Date	Revision Description	Approved By
0	29 Nov 2022	Issued for Approval	Linden Wears (Level 3 BPAD 19809)

Disclaimer and Limitation

This report is prepared solely for the nominated client, and any future residents of the subject lot(s), and is not for the benefit of any other person and may not be relied upon by any other person.

To the maximum extent permitted by the law, Linfire Consultancy, its employees, officers, agents and the writer ("Linfire") excludes all liability whatsoever for:

1. claim, damage, loss or injury to any property and any person caused by fire or as a result of fire or indeed howsoever caused;
2. errors or omissions in this report except where grossly negligent; and the proponent expressly acknowledges that they have been made aware of this exclusion and that such exclusion of liability is reasonable in all the circumstances.

If despite the provisions of the above disclaimer Linfire is found liable then Linfire limits its liability to the lesser of the maximum extent permitted by the law and the proceeds paid out by Linfire's professional or public liability insurance following the making of a successful claim against such insurer.

Fire is an unpredictable force of nature. Changing climatic factors (whether predictable or otherwise) either before or at the time of a fire can also significantly affect the nature of a fire and in a bushfire prone area it is not possible to completely guard against bushfire. The mitigation strategies contained in this Bushfire Risk Management Plan (BRMP) are considered to be prudent minimum standards only, based on the standards prescribed by relevant authorities. It is expressly stated that Linfire do not guarantee that if such standards are complied with or if a property owner exercises prudence, that a building or property will not be damaged or that lives will not be lost in a bush fire.

Further, the achievement of the level of implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which Linfire has no control. If the proponent becomes concerned about changing factors then either a review of the existing BMP, or a new BMP, should be requested. Linfire accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material by any third party.

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1.0 Introduction

1.1 Background

Woodside Energy Ltd is seeking to lodge a development application (DA) in relation to proposed development of a new solar photo-voltaic (PV) farm facility on a portion of Lot 1502 North West Coastal Highway (the project area) in the Maitland Strategic Industrial Estate, located approximately 15 km south-west of Karratha in the City of Karratha.

The proposal will generate electricity from a large-scale 500 MW solar PV farm, complemented by battery energy storage facilities. Electricity will be delivered to industrial customers via the North-West Interconnected System (NWIS), through existing, upgraded or new infrastructure constructed, owned and operated by Horizon Power (also included in this DA) for all users of the NWIS.

The proposed development will require the installation of the following infrastructure:

- Approximately 1,000,000 solar panels
 - each approximately 1 m by 2 m each attached to mounting structures (fixed or tilting) positioned 0.5 – 4 m above ground,
 - total output is expected to be up to 500 MW(AC)
 - Inverters and cabling
- Supporting electrical infrastructure including:
 - battery energy storage system (BESS)
 - electrical substations / transformers
 - switchrooms, control rooms, metering, controls
- Site facilities and plant such as switchroom/control rooms, sheds and ablutions
- Construction laydown areas
- Firewater tanks
- Internal roads (unsealed)
- Fencing

The overall development (is to be delivered across a number of stages, likely five stages, with Stage 1 proposed in the north-west corner of the project area expecting to deliver 50 MW of solar PV and associated infrastructure. Each stage is to contain the following elements:

- 50 MW to 100 MW of solar PV panels, each panel mounted on a tracking post, and divided by the internal road network a number of panel arrays
 - Supporting infrastructure such as inverters and cabling (connecting the panels to inverters, and the inverters to the substation)
- Power Conversion Units (PCUs) containing battery energy storage system (BESS), transformers, switchboards and other electrical monitoring and control equipment
 - Housed in custom made steel container
- Plant area containing
 - Switchroom/control room building (final location to be confirmed)
- Site facilities area containing the following (final locations to be confirmed within yard area)
 - Operation and Maintenance shed with ablutions
 - Firewater tanks

- Horizon Power substation (132 kV/33 kV)
 - Transformer (mineral oil insulated) with surge arrestors, circuit breakers and insulators
 - Below-ground oil/water separator
 - Control room building with toilet
 - Diesel generator
 - Internal road and fencing
- Construction Layout area
- Internal roads (unsealed)
- Fencing around Stage 1 boundary and identified heritage sites

Currently only Stage 1 has been designed, however from a bushfire compliance perspective, the principles detailed in this BMP for this first phase are expected to form the cornerstone for future stages and this has been outlined where relevant.

An allocation of space has been provided for the Horizon Power substation within Stage 1, however power transmission and delivery to end-users is to be by others, via the transmission line located to the north of Stage 1.

Regarding onsite personnel, once operational, there will be minimal onsite traffic with staff attendance at the project area anticipated only when occasional maintenance is required.

1.2 Regulatory Context

The project area is designated as bushfire prone on the *Map of Bush Fire Prone Areas* (DFES 2021), due to native vegetation located within 100 m of the site which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015).

A Bushfire Management Plan (BMP) is required to accompany the development application, as per SPP 3.7 Policy Measure 6.5. The BMP prepared for the proposed development (Linfire 2022), identifies the project area as being located within an area of BAL-12.5 or greater.

Additionally, in accordance with SPP 3.7 Policy Measure 6.6, development applications for “high-risk land uses” located in areas between BAL-12.5 and BAL-29, are to have a bushfire risk management plan (BRMP) for any flammable on-site hazards to accompany the BMP. Linfire has prepared this BRMP to satisfy the requirements triggered under SPP 3.7 Policy Measure 6.6 and the Guidelines.

Under the *Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007*, the operator may also be required to complete a separate risk assessment that addresses risks other than bushfire for the proposed development and the associated Dangerous Goods.

1.3 Relevant Legislation and Guidance

- State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) and associated Guidelines.
- AS/NZS ISO 31000:20018 Risk management – Guidelines
- Australian Disaster Resilience - National Emergency Risk Assessment Guidelines (NERAG) 2020.
- AS 3745-2010 Planning for Emergencies in Facilities

- Dangerous Goods Safety Act 2004
- Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007 (the Regulations)
- Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.
- Building Code of Australia / National Construction Codes (BCA/NCC)
- WAPC Position Statement: Renewable energy facilities, 2020
- CFA – Renewable Energy Facilities, 2022

1.4 Aim and objectives

The Guidelines states that “...*certain land uses may potentially ignite a bushfire, prolong its duration or increase its intensity*” and that these land uses “...*may also expose the community, fire fighter and the environment to dangerous uncontrolled substances during a bushfire event*”.

The aim of this BRMP is to guide the appropriate mitigation of bushfire risk to, and from, the on-site flammable hazards within the proposed development, in order to protect people, assets and environmental values.

Key objectives include:

1. Identification of energised risks and on-site flammable materials that could ignite a bushfire, prolong its duration and/or increase intensity and/or release dangerous, uncontrolled substances
2. Undertake a bushfire risk assessment of the potential bushfire scenarios that could lead energised infrastructure and on-site flammable materials to increase bushfire risk.
3. Identify risk treatment measures that would mitigate the potential impact of the above bushfire scenarios to produce a tolerable level of risk that preserves life and reduced bushfire impact on property
4. Provide advice and recommendations on the implementation of the proposed risk treatment measures to support facility personnel who have corporate and emergency management accountability.

2.0 Bushfire risk assessment methodology

Australian Standard AS ISO 31000:2018 Risk Management–Principles and Guidelines (SA 2018) provides an internationally recognised approach to risk management. ISO 31000 has been broadly adopted by *Australian Disaster Resilience: National Emergency Risk Assessment Guidelines (NERAG) 2020*. Plate 1 provides a summary of the risk management process in accordance with AS ISO 31000, with each of the steps in the process are further described in the following subsections.

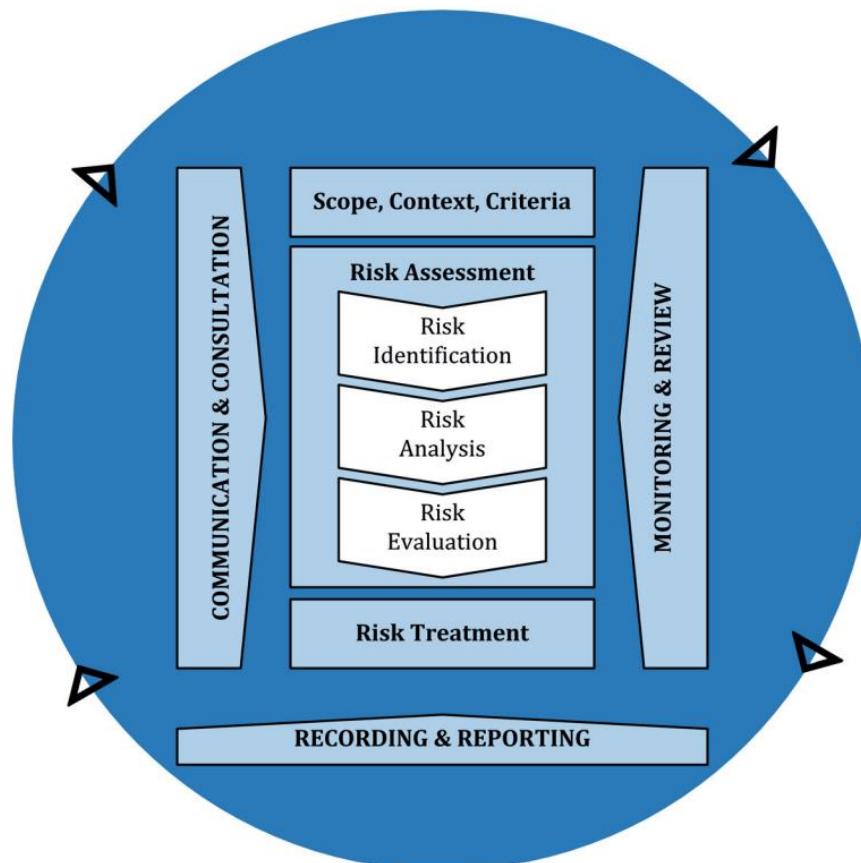


Plate 1: Risk management process (Source: AS ISO 31000, 2018)

Linfire has broadly adopted the methodology described in NERAG (2020), with some of the definitions for likelihood and consequence ratings have been modified to suit the scope of this risk assessment which is at the facility level, rather than the community level which is relevant to Local Governments.

From a bushfire management perspective, this methodology can be useful in determining:

1. The *inherent* bushfire risk (i.e. the initial level of risk prior to risk treatment and mitigation).
2. The *residual* bushfire risk (i.e. the level of risk remaining following risk treatment and mitigation).

2.1 Assessing likelihood

Likelihood is defined as the chance of a bushfire igniting, spreading and reaching an asset.

Table 1: Likelihood rating system

Likelihood rating	Description
Almost certain	- It is likely that the hazard will impact the asset during the timeframe - High level of recorded incidents and/or strong anecdotal evidence; and/or - Strong likelihood that event will recur; and/or - Great opportunity, reason or means to occur
Likely	- It is moderately likely that the hazard will impact the asset during the timeframe - Regular recorded incidents and moderate anecdotal evidence and/or - Considerable opportunity, reason or means to occur
Possible	- It is likely as not that the hazard will impact the asset during the timeframe - Few recorded incidents and limited anecdotal evidence; and/or - Some opportunity, reason or means to occur.
Unlikely	- It is moderately unlikely that the hazard will impact the asset during the timeframe - Infrequent, random recorded incidents and very little anecdotal evidence; and/or - Limited opportunity, reason or means to occur.
Rare	- It is unlikely that the hazard will impact the asset during the timeframe - No recorded incidents and almost no anecdotal evidence; and/or - Would only occur under exceptional circumstances

2.2 Assessing consequence

Consequence is defined as the outcome or impact of a bushfire event on people, property and the environment, taking into consideration the degree and severity of potential bushfire scenarios, location of bushfire hazard areas, assets present in the area and the level of management and suppression response available.

Table 2: Consequence rating system

Consequence rating	Life Safety (People)	Buildings, Assets, Infrastructure
Catastrophic	- Likely there would be multiple cases of fatalities - Extensive number of severe injuries or disabilities. - Significant hospitalisation. - Extensive displacement of persons for extended duration. - Extensive resources required for personal support.	- Destruction and damage to majority or all development, property, plant and equipment (>75% as a guide) - Long-term failure of significant infrastructure and service delivery affecting all parts of the facility. - Development would be non-operational and unable to function without significant support - Long term reconstruction and rebuild required using extensive external resources.
Major	- Isolated cases of fatalities. - Multiple cases of serious injuries or disabilities - Some hospitalisations. - Large number of persons displaced for moderate duration - Significant resources required for	- Destruction and damage to significant portion of development or property, plant and equipment (50% - 75% as a guide) - Potential failure or disruption of significant infrastructure and service delivery affecting significant parts of the

Consequence rating	Life Safety (People)	Buildings, Assets, Infrastructure
	personal support.	facility with services unavailable. - Development would be non-operational for a moderate period of time and unable to function without significant support - Major reconstruction and rebuild is required using significant external resources.
Moderate	- Very isolated (rare) fatalities - Isolated cases of serious injuries or disabilities - Limited hospitalisations required. - Isolated cases of displaced persons who return relatively quickly. - Personal support satisfied through facility arrangements.	- Partial loss or damage caused to development or property, plant and equipment (25% - 50% as a guide) - Potential disruption of significant infrastructure and service delivery affecting parts of the facility. - Parts of the development may be non-operational for a short period of time with the remainder remaining operational in the interim - Partial reconstruction is required to restore full operations with some external resources
Minor	- No fatalities. - Very isolated (rare) cases of serious injuries or disabilities - Isolated minor injuries with first aid treatment possibly being required. - Very few to no persons displaced. - Little or no personal support required.	- Localised minor damage caused to development or property, plant and equipment (10% - 25% as a guide). - Isolated cases of short-term disruption to significant infrastructure and service delivery. - Isolated cases of parts of the development being non-operational for very short periods of time with the remainder of the facility functioning as normal with some inconvenience - Minor rectification works required to restore full operations with limited external resources
Insignificant	- No fatalities. - No cases of serious injuries or disabilities - Very isolated (rare) minor injuries with first aid treatment possibly being required. - No persons displaced. - No personal support required.	- Little to no damage caused to development or property, plant and equipment (<10% as a guide). - Inconsequential or no disruption to significant infrastructure and service delivery. - The facility functioning as normal with minor inconvenience with little or no specific recovery effort required beyond the immediate clean-up. - Little to no rectification works required to restore full operations with limited external resources

2.3 Determining the risk rating

The bushfire scenarios discussed in Section 2.0 have been subject to bushfire risk assessment through determination of likelihood and consequence in accordance with the rating tables outlined

in Table 1 and Table 2.

This process determines the inherent bushfire risk of the event and informs the level of mitigation or management response required to reduce the risk to an acceptable level. The risk assessment matrix used to determine inherent and residual bushfire risk is outlined in Table 3.

Table 3: Risk assessment matrix and treatment priorities

Likelihood	Consequence rating				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium (5)	High (4)	High (3)	Extreme (2)	Extreme (1)
Likely	Medium (6)	Medium (5)	High (4)	High (3)	Extreme (2)
Possible	Low (7)	Medium (6)	Medium (5)	High (4)	High (3)
Unlikely	Very Low (8)	Low (7)	Medium (6)	Medium (5)	High (4)
Rare	Very Low (9)	Very Low (8)	Low (7)	Medium (6)	Medium (5)

The risk ratings also provide a treatment priority which determines the order, importance or urgency for allocation of resources to apply the treatment strategies, with treatment of assets with a priority of 1 being the highest priority, and a treatment of those with priority of 5 being the lowest priority. Treatment priority is most applicable on existing facilities where rationalising the treatments based on effectiveness, cost, ease of implementation etc, can be critical.

2.4 Risk evaluation

The purpose of evaluating risk is to confirm that the risk ratings for each asset are appropriate, identify treatment priorities (as discussed previously) and identify which assets require treatment.

The acceptability of a risk level can be evaluated using the criteria listed in Table 4. Some risk ratings may be acceptable without any treatment (e.g. Low risk ratings) while the risk to others may be suitable with standard management controls (e.g. Medium and High risk ratings). Determining the acceptability of risk allows decisions to be made on whether treatment is required or whether routine controls are sufficient.

Table 4: Risk acceptability

Risk rating	Priority	Risk acceptability	Acceptability/ Tolerability
Extreme	1, 2	Further (or immediate) treatment actions, with excellent controls and management measures, is required to eliminate or reduce residual risk to tolerable or acceptable levels	Intolerable
High	3, 4	- Further (or immediate to short-term) treatment actions, with significant controls and management measures, is required to eliminate or reduce residual risk to tolerable or acceptable levels - Tolerate residual risk in rare cases, where sufficient controls or treatment measures are employed to manage relevant aspects of risk (e.g. life safety), but the risk must be monitored regularly.	Intolerable (Tolerable in rare cases)
Medium	5, 6	Further (or short to medium-term) treatment actions, with adequate controls and management measures, could be implemented to reduce residual risk to acceptable levels, or	Tolerable

Risk rating	Priority	Risk acceptability	Acceptability/ Tolerability
		Tolerate residual risk, where sufficient controls or treatment measures are employed to manage relevant aspects of risk (e.g. life safety), but the risk must be monitored regularly.	
Low	7	- While no further treatment action is typically required, to reduce residual risk to acceptable levels, further (or medium to long-term) treatment actions, with adequate controls and management measures, could be implemented to reduce residual risk if desired, or - Accept residual risk with proposed controls and treatment measures, but the risk must be monitored, or - Tolerate residual risk in rare cases, where sufficient controls or treatment measures are employed to manage relevant aspects of risk (e.g. life safety), but the risk must be monitored regularly.	Acceptable (Tolerable in rare cases)
Very Low	8, 9	- No further treatment action is required, to reduce residual risk to acceptable levels - Accept residual risk with proposed controls and treatment measures, but the risk must be monitored.	Acceptable

2.5 Risk treatment

The purpose of risk treatment is to reduce the likelihood of a bushfire occurring and/or the potential impact of a bushfire on an asset or facility. This is achieved by implementing treatment strategies that modify the characteristics of the risk, the asset/facility or the environment.

Treatment strategies will depend on the level of risk to the asset and the type of asset being treated. Asset specific bushfire mitigation strategies are generally based on fuel management, ignition management, preparedness, planning and engagement of personnel.

2.6 Monitoring and review

The effectiveness of each stage and effectiveness of risks and treatment strategies are monitored and any new risks are detected.

3.0 On-site assets and asset analysis

3.1 Onsite assets

The proposed development will be delivered across multiple stages, and will likely include the following onsite hazards:

- Solar panels arrays
 - 390-550 W panels with dimensions of approximately 1.1 m x 2.3 m x 0.04 m.
 - Panels are to be mounted on a tracking system supported on ground-mounted steel posts
- Battery packs in the BESS (within Power Conversion Units in Stage 1)
 - New lithium-ion batteries (UN3480)
 - Class 9 Miscellaneous Dangerous Goods
 - HAZCHEM 2Y
- Substation
 - Oil or gas-insulated type substation
 - Voltage typically to be 132 kV / 33 kV
 - Control room typically co-located with substation
- Dangerous Goods
 - Potential for minor amounts of dangerous goods onsite, likely stored in the O&M shed
 - Might include diesel fuel (combustible liquid), compressed gases etc.

It is noted that the make/model of solar panels and inverters, BESS and substation has not been selected as the final design for these components will be undertaken by a third party.

3.2 Asset Hazard Analysis

3.2.1 WAPC Position Statement: Renewable Energy Facilities

WAPC have released a Position Statement on renewable energy facilities, in which they note the following with respect to bushfire risk management:

- Renewable energy facilities in Western Australia are principally wind turbine and solar array systems.
- The objectives of this position statement include facilitate appropriate development of renewable energy facilities while minimising any potential impact upon the environment, natural landscape, and urban areas
- Wind turbines and solar arrays in bushfire prone areas should be designed and maintained so they are not a bushfire risk to surrounding bushland, and where possible should not be in bushfire prone areas with an 'extreme' bushfire hazard level or bushfire attack level (BAL) - 40 or BAL- Flame Zone.
- A minimum 10 metres clearance to combustible vegetation in the form of an Asset Protection Zone (APZ) is recommended.
 - The APZ should be managed in a low threat state, in accordance with the Guidelines.

3.2.2 CFA Renewable Energy Facilities publication

In the CFA publication Renewable Energy Facilities (CFA 2022), they have nominated the following as potential hazards

- associated with solar energy facilities:
 - *Electrical hazards, such as panel/inverter electrical faults; power surges; lightning strikes; water ingress; retained DC electricity in solar panels after shut-down/isolation.*
 - *Potential fire spread and limited emergency response due to proximity of panel banks to each other, on-site infrastructure and vegetation (including screening vegetation).*
 - *Landscape hazards, such as bushfire/grassfire ignition from fire within the facility, or external ignition of site infrastructure from embers or radiant heat.*
- associated with BESS facilities:
 - *Electrical hazards, such as battery faults; overcharging; rapid discharge; loss of remote monitoring systems; internal short circuits; overheating; water ingress; lightning strike (leading to thermal events/runaway).*
 - *Chemical hazards, such as the inherent hazards of the stored dangerous goods; spills and leaks of transformer oil/diesel spills/leaks, refrigerant gas/coolant; chemical reactions from ignition.*
 - *Potential fire spread due to proximity of batteries (and containers/enclosures) to each other, on-site infrastructure and vegetation (including screening vegetation).*
 - *Mechanical damage to battery containers/enclosures due to vehicular impact.*
 - *Landscape hazards, such as bushfire/grassfire ignition from fire within the facility, or external ignition of site infrastructure from embers, radiant heat and flame contact*

Based on the above, the primary hazards are to ensure that these facilities are sufficiently protected from bushfire impact, while also being well-designed and constructed to avoid igniting a bushfire. The CFA provide a number of fire safety feature recommendations in the publication, with Table 5 providing a summary of the key ones relating to bushfire.

Table 5: Summary of Renewable Energy Facility requirements relating to bushfire (CFA, 2022)

Category	Requirement
Siting	• <u>Solar Energy Facilities</u> ○ Where practicable, site on grazed paddocks or vegetation can be managed • <u>BESS and Substations</u> ○ Where possible, BESS's to be sited in low-risk environments or risk-assessed
Firewater	• <u>Solar Energy Facilities</u> ○ recommend at least one (1) x 45,000L static water tank for every 100ha. • <u>BESS</u> ○ Recommend either a fire hydrant system compliant with AS 2419.1 with coverage to all parts of the BESS, with full size tanks where there is no reticulated water supply • <u>Substations</u> ○ Firewater must be provided to cover buildings, control rooms, substations and grid connections
Asset Protection	• <u>All</u> ○ An Asset Protection Zone (APZ; referred to as a fire break by CFA) is a gap in

Category	Requirement
Zones, landscaping and onsite vegetation	vegetation that reduces the potential for fire to enter or leave an area, and must be established and maintained around the perimeter of the facility and any control rooms, electricity compounds, substations and all other buildings onsite. ○ APZ width to be a minimum of 10m, or at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure. ○ APZs to be non-combustible (constructed of concrete, mineral earth or non-combustible mulch) and largely free of vegetation and obstructions at all times. No plant or equipment of any kind is to be stored in APZs ○ APZs may also be used for emergency vehicle access • <u>Solar Energy Facilities</u> ○ Must have grass maintained to no more than 100mm under solar panels during bushfire season ○ Low-flammability vegetation could be considered under solar panels, provided foliage does not extend beyond the panel footprint • <u>BESS</u> ○ An APZ must be established and maintained around BESS's and related infrastructure ○ The APZ width to be no less than 10 m or to be sufficient to reduce radiant heat flux from vegetation, and so the radiant heat flux (output) from the BESS fully involved in fire does not create the potential for ignition of vegetation. • <u>Substations</u> ○ The entire substation must be surfaced to eliminate all vegetation including grasses.
Specific Design Requirements	• <u>All</u> ○ Appropriate monitoring for facility infrastructure must be provided, to ensure that any shorts, faults or equipment failures with the potential to ignite or propagate fire are rapidly identified and controlled, • <u>Solar Energy Facilities</u> ○ Needs a minimum six (6) metre separation between solar panel banks (i.e. a bank of solar panels connected to a single power conversion unit/inverter) • <u>BESS</u> ○ Facility design to reduce the potential for ignition and the consequences of fire should it occur, with the ultimate goal to be of fire prevention. ○ The battery management and safety systems within the chosen battery technology will largely dictate whether thermal runaway will occur and its initial management. ○ Recommend BESS installation is on a non-combustible surface (e.g. concrete) ○ Consider non-combustible, floor-to-ceiling partition 'walls' (thermal barriers) between battery racks (stacked modules) within battery containers/enclosures (refer to FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems for details). ○ Separation between the BESS's must be at least the distance where the radiant heat flux (output) from a BESS container/enclosure fully involved in fire, does not create the potential for ignition of these site elements (adjacent battery containers/enclosures, on-site buildings, substations, vegetation) ○ Provide suitable ember protection to prevent embers from penetrating battery containers/enclosures ○ While safety and protective systems will vary in BESS's based on battery technologies, chemistries and the preferences of manufacturers, the following elements are recommended: ▪ Battery management/monitoring systems for monitoring the state of battery systems to ensure safe operation. ▪ Detection systems for smoke, heat (thermal), fire and toxic gas (off-gassing) within battery containers. ▪ Suppression systems for fire within battery containers.

Category	Requirement
	▪ Systems to prevent heat/fire spread within battery containers (such as thermal barriers, shut-down separators, isolation systems, cooling systems). ▪ Systems to prevent explosion within battery containers (such as ventilation, pressure relief and exhaust systems). ▪ Warning and alarm systems within the battery containers, and/or the facility, to enable early warning for faults, operation of the battery energy storage system above 'normal'/safe parameters, smoke, off-gassing, and fire. ▪ Direct alarm monitoring to the fire brigade should be considered for BESS automatic detection systems ○ For BESS's dispersed through solar or wind facilities, the BESS's must be separated from adjacent infrastructure (e.g. solar panel arrays), with sufficient separation to address radiant heat flux from BESS fully involved in fire. ○ Consider adopting the current versions of UL 9540: Energy Storage System Requirements and FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems, for the design and operation of BESS's.
Vehicular Access	• <u>All</u> ○ Provide adequate vehicular access to and within facilities assists firefighters in responding to and managing fires ○ Recommend the following vehicular access requirements: ▪ Minimum 4m perimeter road within perimeter APZ with 4m vertical clearance and passing bays every 600m, providing access to all areas of facility ▪ The provision of at least two (2) but preferably more access points to the facility, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire • <u>BESS</u> ○ Provided with suitable access roads for emergency services vehicles, to and within the site, including to BESS's and fire service infrastructure
Construction and Commissioning	• <u>All</u> ○ Install and commission fire detection and suppression systems for the facility at the earliest possible stage of construction. ○ Adhere to restrictions and guidance during days of High FDR (and above) and Total Fire Ban days
Operation and Maintenance	• <u>All</u> ○ Adhere to restrictions and guidance during days of High FDR (and above) and Total Fire Ban days ○ Ensure ongoing vegetation management is undertaken including APZs, to ensure ongoing separation from surrounding vegetation, and management of vegetation beneath solar panels ○ Inspection, maintenance and any required repair activities must be conducted for all infrastructure, equipment and vehicles at the facility so they are maintained in safe and effective working order. ▪ Maintenance must be in line with any relevant Australian Standards and the manufacturer's requirements ▪ The battery management system, and any associated safety systems, must be regularly inspected for signs of mechanical damage and regularly serviced to the manufacturer's specifications. Any identified issues are to be immediately rectified
Emergency Management Planning	• <u>All</u> ○ An Emergency Management Plan must be developed specific to the facility, prior to commissioning of the facility, and include to responses to various onsite hazards ▪ The immediate response to any fire onsite is to notify fire brigade immediately • <u>Solar Energy Facilities</u> ○ The EMP for a solar energy facility must include: ▪ Emergency procedures for isolation and shutdown where solar panels and/or

Category	Requirement
	related infrastructure are involved in fire. ▪ Emergency procedures for fires within the vicinity of solar energy facilities. ▪ Specifications for safe operating conditions for temperature, and the hazards related to electricity generation at the facility. • BESS ○ The EMP for a BESS must include: ▪ Contact information for 24/7/365 specialist technical support for the BESS. ▪ Emergency procedures for identified risks and hazards of the BESS and related infrastructure, including but not limited to: • Electrical infrastructure faults and fire. • BESS damage or faults, including battery monitoring faults, temperature increases above normal operating parameters, off-gassing, thermal events/runaway, smoke and fire. • Bushfire

3.2.3 Fires in Solar PV facilities

There appear to have been a limited number of bushfires in Australia resulting from solar PV facilities, at least those being reported. One occurred in Queensland in 2019 as a result of a rubbish fire, which produced a grassland fire. Another bushfire in NSW occurred in early 2022, burned out 5 ha of land beneath the panel array, with attending firefighters mainly controlling the spread from the facility and concluded that while there was no structural damage, there was likely damage to the panels and wiring.

Given the limited history of solar PV bushfires in Australia, it could be surmised that the instance of fires from solar PV is relatively low, however it is unclear whether this is due in part to a lack of reporting. It is also clear that the vegetation surrounding the solar panels is also a key consideration in reducing the risk associated with solar PV facilities, both from the perspective of being able to support fire spread from faulty solar panels or infrastructure, but also with respect to minimising the impact of bushfire on the solar panels themselves. The solar panels are predominantly constructed of glass and metal parts which are unlikely to support significant fires, however they do contain plastics and wiring, which can be damaged. Additionally, the panel mounting posts will also be on-combustible (likely steel), so will not contribute to the fuel load or support fire.

The only other element of the solar PV array is the cabling between panels, inverters and back to the BESS and substation, which could also be involved in a bushfire. To avoid or limit this, it is recommended that vegetation management also occur around areas where there is exposed cabling, and should also be designed to either be below ground or as high as possible.

All electrical equipment (e.g. electrical cabling, junction boxes, inverters and transformers) must comply with relevant design, construction and installation standards of electrical equipment including relevant Australian Standards.

3.2.4 Li-ion Battery Thermal Runaway Risk

Thermal runaway describes a process that is accelerated by increasing internal temperature, in turn releasing energy that further increases temperature. In Li-ion batteries thermal runaway is a situation where the current flowing through the cell or battery on charge or overcharge causes the cell temperature to rise, which increases the current with a further rise in temperature, which could potentially result in fire ignition or explosion. This process represents the most significant risk within the development which could present a firefighting challenge if a bushfire approaches the site.

3.2.5 Victorian Big Battery Fire Review Findings (2021)

This process represents the most significant risk within the development which could present a firefighting challenge if a bushfire approaches the site. A recent example of thermal runaway occurring in Australia, was the Victorian Big Battery fire in 2021.

- In July 2021, a single Megapack at Victorian Big Battery (VBB) in Geelong caught fire and spread to a neighbouring Megapack during the initial installation and commissioning. The fire did not spread beyond these two Megapacks (212 Megapacks on the project in total) and they burned themselves out over the course of approximately six hours. Plate 2 depicts the timeline of events for the fire.
- There were no injuries to the general public, to site or emergency services personnel as the Megapacks failed safely (i.e., slowly burned themselves out with no explosions or deflagrations), as they are designed to do in the event of a fire.

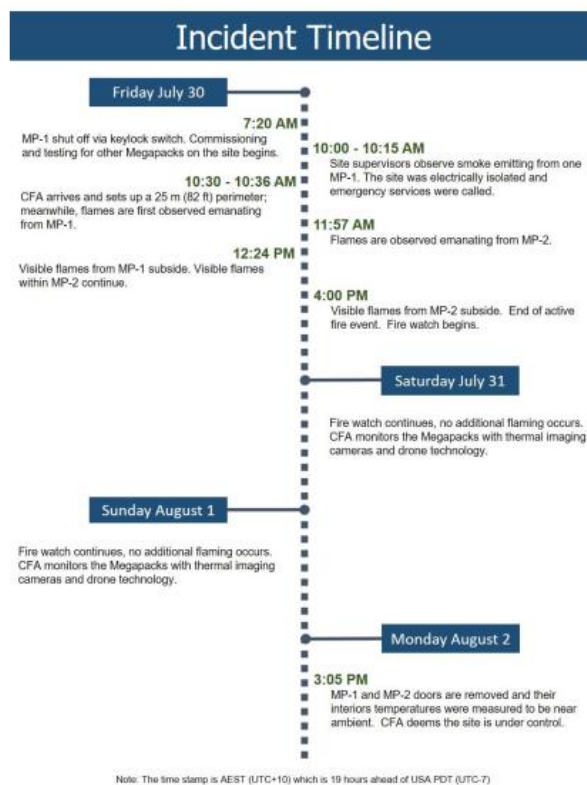


Plate 2: Victorian Big Battery Fire: Incident Timeline (Source: FEI 2022)

- Fisher Engineering Inc (FEI) conducted the independent review of the fire, with Energy Safe Victoria (ESV) producing a summary of the technical findings.
- The cause was identified as being a leak within the cooling system that caused a short circuit that led to a fire in an electronic component which led to a thermal runaway and fire in an adjacent battery compartment within one Megapack, which spread to an adjacent second Megapack.
- Factors that contributed to this incident included:
 - The supervisory control and data acquisition (SCADA) system took 24 hours to 'map' the Megapack and provide full data and oversight functionality to

- operators. The Megapack that caught fire had been was not yet mapped before being switched into an off-line mode, which prevented the receipt of alarms at the control facility.
- A key lock was operated correctly to switch the Megapack to off-line service mode (which was no longer required for ongoing commissioning) but this caused:
 - telemetry systems for monitoring the condition of the Megapack to shut down and so remove visibility of the developing event
 - the battery cooling system to shut down
 - the battery protection system to shut down, including the high voltage controller (HVC) that could have operated a pyrotechnic fuse to disconnect the faulty battery unit.
 - Based on the cause and contributory factors, the following remediation measures have been put in place to prevent a recurrence of this incident:
 - Each Megapack cooling system is to be fully functionally and pressure tested when installed on site and before it is put into service
 - Each Megapack cooling system in its entirety is to be physically inspected for leaks after it has been functionally and pressure tested on site
 - The SCADA system has been modified such that it now 'maps' in one hour and this is to be verified before power flow is enabled to ensure real-time data is available to operators
 - A new 'battery module isolation loss' alarm has been added to the firmware; this modification also automatically removes the battery module from service until the alarm is investigated
 - Changes have been made to the procedure for the usage of the key lock for Megapacks during commissioning and operation to ensure the telemetry system is operational
 - The high voltage controller (HVC) that operates the pyrotechnic fuse remains in service when the key lock is isolated
 - The proposed mitigation procedures to be rolled out to applicable Megapacks globally.
 - ESV concluded that the incident was most likely initiated by a Megapack coolant leak. The absence of a number of monitoring and protection systems that would have been available had the initial Megapack not been subsequently switched to off-line service mode allowed the initial fault to go undetected and resulted in the total loss of two Megapacks. The affected Megapacks failed safely despite total loss.

3.2.6 Fire Protection Research Foundation Li-ion battery energy storage system fire testing

In 2015, internal and external fire testing was undertaken on a Tesla Powerpack as part of a hazard assessment of lithium-ion battery energy storage systems conducted by the Fire Protection Research Foundation (FPRF, 2016). A high-level summary of the testing methodology and results is provided below:

External Fire Test

- *Methodology*
 - The test was conducted on a Tesla Powerpack battery pack that was at full 100% state of charge

- The Powerpack was exposed to a 400 kW propane burner located adjacent to the steel enclosure, producing temperatures approaching 1100 °C and direct flame contact
- The enclosure was exposed to the propane burner for a duration of 60 minutes, with monitoring occurring for 3 hours and 45 minutes from the start.
- A variety of temperature, pressure and gas measurements were taken, in addition to video, photography and visual observations.
- **Key Results**
 - It was approximately 35 min into the test before visible signs of impact were observed, namely white smoke.
 - Sustained flaming occurred after 47 minutes, with steady popping sounds consistent with thermal runaway. Flaming from the cabinet continued until 3 hours and 41 minutes from the start of the test.
 - No projectiles or explosions were observed at any time

Internal Fire Test

- **Methodology**
 - The test was conducted on a Tesla Powerpack battery pack that was at full 100% state of charge
 - During the internal fire test, multiple battery cells were forced into thermal runaway by multiple internal ignition sources (small heaters)
 - The test aims to overwhelm the Powerpack safety features and induce cascading thermal runaway.
- **Key Results**
 - Popping sounds from the interior of the Powerpack were heard sporadically after 12 minutes from the start, with smoke commencing after 15 minutes and ceasing after 1 hour and 30 minutes.
 - No flames, projectiles or explosions were observed at any time
 - Thermal runaway was restricted to the module in which the runaway event was initiated, and did not propagate outside the cells where the heaters (ignition source) were installed.

From this fire testing, the following outcomes are considered important from a bushfire risk management perspective:

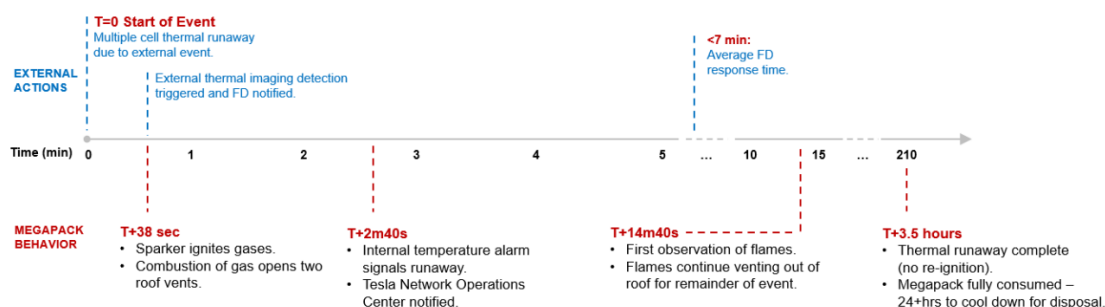
- The external fire test demonstrated that sustained impact from an external heat source, could induce the Powerpack into thermal runaway and result in the ignition of electrolyte material and other combustibles within the Powerpack cabinet.
 - The time for this to occur appear to be approximately 35 minutes which is significantly greater than the expected residence time for a bushfire impacting this development
 - Direct flame impingement on the cabinets is not expected at this development
- Flaming from the cabinet enclosure can occur in the Powerpack following externally induced thermal runaway, with flames not expected further than 3 m from the cabinet.
- Safety features within the battery packs appears to limit the spread of thermal runaway throughout the modules, even when during multiple internal ignition events
- No projectiles or explosions were observed at any time from either internal or external ignition sources.

3.2.7 Fisher Engineering Inc Megapack fire testing

- Fisher Engineering, Inc. (FEI) performed an analysis of the Megapack energy storage system, including review of the construction, design, fire safety features and UL9540A large-scale fire test data against the regulatory requirements in International and US fire codes and standards, including:
 - 2021 International Fire Code (IFC)
 - 2021 National Fire Protection Association (NFPA) 1 Fire Code
 - 2020 National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems
 - 2019, UL9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems, Edition 4
- Linfire note that the FEI analysis is not specifically related to management of bushfire risk, however some observations and outcomes are considered relevant.

Analysis Results and Comments

- Suitable protection against deflagration (heating substance until it burns away rapidly) is to be provided where required (where BESS exceeds certain sizes)
- US Fire codes require areas within 10 ft (3 m) on each side of outdoor BESS shall be cleared of combustible vegetation and other combustible growth.
 - Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted to be exempt provided that they do not form a means of readily transmitting fire.
- A large-scale UL9540A fire test was conducted in May 2020, to evaluate thermal runaway and fire propagation. This test is referenced in both the IFC and NFPA 1 as a fire test method capable of providing key fire safety information of a BESS.
 - The test was performed on a 3 MWh Megapack (with 17 battery modules which is the maximum number of battery modules), with cells fully charged.
 - This is considered the worst-case scenario of all the Megapack variations that can be installed, as they can be as few as 6 battery modules (about 1MWh) and due to the smaller capacity, would not be expected to perform worse from this worst-case scenario.
- Plate 3 summarises the key events that occurred during the UL9540A fire testing
- Radiant heat flux levels recorded during the test were as follows:
 - between minutes 38 and 43, at distances of 20 feet (6.1 m) and 30 feet (9.1 m) in front of the Megapack, the highest values measured during this 5-minute stretch of time was 28.8 kW/m² and 9.8 kW/m² respectively.
 - at 30 feet (9.1 m), the radiant heat fluxes were between 1.5 kW/m² and 9.8 kW/m² with an average value of 4.9 kW/m².
 - A brief secondary heat flux peak was recorded between minutes 53 and 58; however, the heat fluxes never reached as high as the initial peak that occurred between minutes 38 and 43.



Time (h:mm:ss)	Event
0:00:00	Start of test. First cells go into thermal runaway.
0:00:38	Internal sparker ignites localized concentration of flammable gases and over-pressure roof vents open.
0:00:38	External thermal imaging detector alarm goes into alarm.
0:02:40	Internal module temperature alarm signals thermal runaway at the BMS and notifies the Tesla Network Operations Center.
0:08:25	Ongoing constant stream of hot smoke and gases coming out of the over-pressure roof vents.
0:14:40	First observation of external flames. Continuous flaming event from this time until test end.
0:38:00 – 0:43:00	Peak heat flux measured 20-30 feet in front of Megapack.
3:30:00	End of test. Last observation of visible flames. Fire consumed the Megapack slowly spreading from module bay to module bay until all cells were combusted. All doors remain shut throughout the event. No projectiles, explosions or flying debris were observed.

Plate 3: UL9540A Megapack Fire Testing: Timeline of Key Event (Source: FEI 2020)

- Fire never spread to the target Megapacks installed 150 mm to the side and to the back of the Megapack nor were the cells of the neighbouring Megapacks damaged by the heat.
- During the test, and afterwards during clean-up, no liquid runoff (such as from glycol) was observed.
- The UL9540A large-scale fire testing demonstrated that in the event of a thermal runaway of the Li-ion cells, the Megapack has safety features installed to mitigate the risks of an explosion. During the test, the fire consumed the Megapack slowly, spreading from module bay to module bay until all cells were combusted. All doors remain shut throughout the event and no projectiles, explosions or flying debris were observed; only flames were observed emanating from the roof vents.

Transformer and Switchgear Hazard

The main risk associated with the transformer and switchgear, relates primarily to the oil used in transformers (where oil-filled) for insulation and cooling, which could potentially leak and be ignited. The ground mounted transformers are oil-filled and contains a hermetically sealed steel tank that contains the transformer core surrounded with windings and connecting leads which are separated, insulated and cooled by mineral oil (oil impregnated upgraded wood pulp insulation).

Potential failure of the transformer can occur if the ambient temperature is raised above the rating of the transformer (typically 105°-140°) for an extended time, with short-term heating able to be addressed through power supply reduction or shutdown. While overheating can result in degradation of the transformer, the main risk is the potential for cracking of the tank and resultant oil loss and potential pool fire of the flammable mineral oil.

Previous correspondence from power supply providers has been there are historically very few transformer fires, with most associated with lightning strikes on pole-top transformers in non-built up areas. They have assessed the likelihood of a transformer fire occurring as being approximately 0.1%, or with accumulated probability of 4% per transformer over its typical service life.

While this is not a high probability of transformer fires, it could result in transformer loss and/or damage to adjacent infrastructure or combustible items. As such, fire protection measures are considered a critical part of the design of Horizon transformers which include the following:

- Transformers are designed in accordance with various standards, including AS 2067 (Substations and High Voltage Installations) to reduce risk of fire, with a variety of measures incorporated to minimise potential for fire ignition
- Cable clamps and support to limit leaking bushings
- Managing limits for transformers to prevent overloading
- Providing sufficient clearances to transformers based on oil volume, incorporation of oil containment and/or flame trap, or provision of a fire screening wall
 - The incorporation of an oil bund and/or flame trap enables a reduction in minimum separation distance as it contains the spread of any leaked oil and reduces the size of the oil pool exposed to oxygen, which limits combustion.
 - Provision of a fire screen wall (2 hr FRL) also enables reduced minimum separation distances as it shields the transformer from adjacent buildings and combustible items and ignition risks.

3.3 Summary of recommended measures to manage bushfire risk

Based on the information provided above, the following measures are recommended to manage bushfire risk, both to and from, the proposed solar energy facility, BESS and substation:

- Vegetation management and separation
 - Establish APZs around electrical infrastructure (solar panels, BESS, substations) and buildings. This is to protect infrastructure but also to reduce potential for fires ignited onsite to spread offsite.
 - APZ are to be:
 - Sufficiently sized so radiant heat flux from the vegetation does not create the potential for ignition of on-site infrastructure, especially the BESS and substations. Providing sufficient separation to achieve BAL-29 on the infrastructure is considered appropriate in this instance given the low grassland fuel load.
 - Sufficient so the radiant heat flux from the BESS fully involved in fire does not create the potential for ignition of vegetation.
 - If the BESS is not enclosed with non-combustible construction, testing has shown that 9.1 m of separation ensures radiant heat remains below 10 kW/m², which is sufficient to achieve this objective.
 - If the BESS is enclosed with non-combustible construction with sufficient internal fire and safety measures to avoid escape of fire or explosion, then the BAL-29 APZ would be considered sufficient separation.
 - Manage the vegetation beneath the solar panels (ideally grass less than 100 mm in height) to limit the potential for ignition and spread of fire from an electrical fault, or damage to panels from an external bushfire.
 - Low-flammability vegetation could be considered under solar panels, provided it resists bushfire growth and spread and foliage does not extend beyond the panel footprint
 - APZs around BESS and substations should be non-combustible (constructed

- of concrete, mineral earth or non-combustible mulch) and free of vegetation and obstructions at all times, with no plant or equipment unless totally non-combustible
- Separation between the BESS's, substation, solar panels arrays and any other electrical infrastructure, must be at least the distance where the radiant heat flux from a fully involved in fire in the infrastructure, does not create the potential for ignition of these site elements (adjacent battery containers/enclosures, on-site buildings, substations).
 - This is to be addressed by complying with relevant Australian Standards and any manufacturers recommendations.
 - Firewater supply
 - Recommend 45 kL of firewater for every 100ha of solar PV array.
 - Bushfire water supply for centralised facilities such as substations, site facilities and other plant should be by
 - a fire hydrant system compliant with AS 2419.1, with coverage to all parts of the BESS substation and associated infrastructure, with full size tanks where there is no reticulated water supply, or
 - Should a fire hydrant system not be installed, provide a static firewater supply no less than 50 kL to enable onsite bushfire fighting suppression
 - Electrical Infrastructure Design
 - Appropriate monitoring for all facility infrastructure must be provided, to ensure that any electrical or equipment failures with the potential to ignite or propagate fire are rapidly identified and relevant personnel notified.
 - All electrical equipment (e.g. electrical cabling, junction boxes, inverters and transformers) must comply with relevant design, construction and installation standards of electrical equipment including relevant Australian Standards, and manufacturers recommendations.
 - Ensure the following elements are included in the BESS:
 - Battery management/monitoring systems for monitoring the state of battery systems.
 - Detection systems for smoke, heat (thermal), fire and toxic gas (off-gassing) within battery containers.
 - Suppression systems for fire within battery containers.
 - Systems to prevent heat/fire spread within battery containers (such as thermal barriers, shut-down separators, isolation systems, cooling systems).
 - Systems to prevent explosion within battery containers (such as ventilation, pressure relief and exhaust systems).
 - Warning and alarm systems within the battery containers, and/or the facility, to enable early warning for faults, operation of the battery energy storage system above 'normal'/safe parameters, smoke, off-gassing, and fire.
 - Consideration of direct alarm monitoring to the fire brigade for BESS automatic detection systems
 - BESS installation is on a non-combustible surface (e.g. concrete)
 - Provide suitable ember protection to prevent embers from penetrating battery containers/enclosures

- Where relevant and appropriate to the type of BESS installed, consider adopting
 - current versions of UL 9540: Energy Storage System Requirements and FM Global Property Loss Prevention Data Sheet 5-33 (2020) Electrical Energy Storage Systems, for the design and operation of BESS's.
 - the learnings and proposed modifications from the VBB fire review, including those relating to system monitoring, battery module isolation loss and high voltage controller operation, are incorporated into the BESS design, construction and commissioning.
 - Ensure transformer is designed to minimise fire risk, incorporates either oil bund or flame trap, and is provided with required separation from adjacent infrastructure and the combustible vegetation, in accordance with relevant Australian Standards and Horizon Power specifications.
 - Ensure the following elements are included in the solar panel array design and layout:
 - the panel mounting posts will also be on-combustible (likely steel), so will not contribute to the fuel load or support fire
 - Cabling is either designed to be below-ground or installed as high as possible above-ground.
- Vehicular access
 - The provision of at least two (2) but preferably more access points to the facility, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire
 - Ensure suitable vehicular access to all areas of facility, including to BESS's, substations and fire service infrastructure
 - Include a perimeter road around the solar panel arrays (4 m minimum width), complete with and passing bays every 600m.
- Emergency Management Measures
 - Ensure an Emergency Management Plan specific to the facility is developed, prior to commissioning of the facility, with responses to various onsite hazards including:
 - The immediate response to any fire onsite is to notify fire brigade immediately
 - Detailing safe locations for personnel to evacuate to, ideally offsite.
 - Emergency procedures for isolation and shutdown where solar panels and/or related infrastructure are involved in fire.
 - Emergency procedures for fires within the vicinity of solar energy facilities.
 - Contact information for 24/7/365 specialist technical support for the BESS.
 - Emergency procedures for identified risks and hazards of the BESS and related infrastructure, including but not limited to
 - Electrical infrastructure faults and fire.
 - BESS damage or faults, including battery monitoring faults,

temperature increases above normal operating parameters, off-gassing, thermal events/runaway, smoke and fire.

- Specifications for safe operating conditions for temperature, and the hazards related to electricity generation at the facility.
- Construction and Commissioning
 - Install and commission fire detection and suppression systems at the earliest possible stage of construction.
 - Adhere to restrictions and guidance during days of High Fire Danger Rating (and above) and Total Fire Ban days
 - Regularly monitor for, and otherwise be aware of, bushfires in the local area, and evacuate offsite prior to bushfire impact onsite.
- Operation and Maintenance
 - Adhere to restrictions and guidance during days of Fire Danger Rating of High to Catastrophic, and Total Fire Ban days
 - Ensure ongoing vegetation management
 - Ensure inspection, maintenance and any required repair activities are conducted for all infrastructure, equipment and vehicles at the facility, especially the BESS

4.0 Potential fire scenarios

The BMP (Linfire, 2022) identifies and classifies the existing bushfire hazards within 150 m of the development, based on separation of the proposed development from existing vegetation and effective slope below classified vegetation.

Based on this information, Linfire has assessed the potential bushfire scenarios that could affect the project area. The potential bushfire scenarios have been used to inform a bushfire risk assessment (refer to Section 5.0) and assist in development of appropriate bushfire mitigation responses (refer to Section 5 of BMP). The following bushfire scenarios were assessed:

1. Bushfires approaching the development.
2. Fire originating within the development (solar farm, BESS, substation, O&M building)

A description of each potential bushfire scenario is provided in Table 6.

Table 6: Bushfire scenarios

Bushfire Scenario	Scenario information (e.g. History, Vegetation, Fire Run, Proximity)	Anticipated impact (if unmanaged)
<u>Scenario 1</u> <i>Bushfire approaching the development</i>	- There have been a number of historical bushfires in the local area, however not many have tended to occur north of the highway, potentially due to the grazed landscape. Notwithstanding, it seems there is potential for a bushfire to occur in the area, based on past history. - Bushfire from any direction outside areas of developed as part of this proposal would largely be through grassland vegetation, with isolated plots of shrubland and scrub vegetation especially to the south of the project area - Very long fire runs of ten's of kilometres long are possible - Fully-developed grassland and shrubland fires are possible, which could move very quickly and would be susceptible to wind direction and speed.	- If there wasn't any vegetation management measures, bushfires could impact proposed infrastructure including solar panels, BESS and substation. - Fully-developed bushfires would produce elevated radiant heat and potential for some direct flame impingement, however this would for a short time given the grassland and shrubland vegetation - Ember attack from this grassland and shrubland vegetation would be limited, but there is potential for some minor ember attack.
<u>Scenario 2</u> <i>Fire originating within project area</i>	- The main hazards identified with potential to igniting a bushfire or otherwise exposing the occupants or firefighters to dangerous uncontrolled substances during a bushfire event include: - Ignition of on-site fire or explosion from faulty electrical infrastructure or thermal runaway in the battery packs, which could spread to nearby unmanaged vegetation,	- While there is generally only low-level grassland throughout most of the project area, a fire from electrical infrastructure could spread and grow, and result in a significant bushfire, if the development is not well-designed and sufficient separation and management of vegetation isn't implemented. - There could be a risk to onsite personnel, should they be in

Bushfire Scenario	Scenario information (e.g. History, Vegetation, Fire Run, Proximity)	Anticipated impact (if unmanaged)
	○ High voltage substation could ignite nearby vegetation should a fire or sparks be created by the infrastructure ○ Electrical faults in the solar panels or cabling resulting in ignition of a bushfire ○ Ignition of nearby unmanaged vegetation from activities such as hot works • While there isn't a strong history of fires in solar energy facilities and BESS's, it is noted that facilities on this scale are in their infancy, and a lack of reporting could be reasons for this.	attendance, as well as those located in adjacent facilities (e.g. Supagas), and potentially those travelling on North-West Coastal Highway. • In addition to the risk to people, there is a bushfire risk to onsite infrastructure as well as adjacent facilities (e.g. Supagas), which may not be as well prepared for bushfire impact.

4.1 Summary of potential bushfire scenarios

Due to the close proximity of unmanaged vegetation to the proposed development, both scenarios are considered to pose to present a risk to life and property assets within, and adjacent to, the project area. Scenario 1 could result in bushfire impact on the proposed infrastructure, primarily from grassland fires, and could present a risk to life at the development if onsite staff (if any are onsite) are unprepared for a bushfire emergency. The risk with Scenario 2 is that a fire in the infrastructure could spread to unmanaged grassland and potentially escalate to a fully-developed bushfire which presents a risk to life and property in adjacent facilities (e.g. Supagas).

5.0 Bushfire risk assessment

5.1 Risk context

Risk is being assessed to inform bushfire mitigation for the project area for the protection of life and property within and adjacent to the site. The risk assessment adopts a broad area and supports a tenure blind approach to ensure wider risk impacts and adjoining lands are captured to suitably address potential risk.

5.2 Risk identification

Bushfire risk is identified in the potential bushfire scenarios outlined in Section 4.0, which indicate the potential bushfire events that could impact life and property within the project area and adjacent land. These scenarios are considered to cover the majority of bushfire events that could occur in order to develop suitable mitigation and manage as much of the bushfire risk as possible.

5.3 Risk analysis and evaluation

Risk analysis and evaluation for each of the potential bushfire scenarios is provided in Table 7, which specifies the likelihood and consequence of each scenario with and without management measures to determine inherent and residual risks.

Due to the energised infrastructure within the project area, the potential consequence of a bushfire entering the site would be greater than if this electrical infrastructure were not present.

The highest inherent risk of fire originating onsite (Scenario 2) is from thermal runaway in the Li-ion battery packs, which could ignite a fire in the adjacent vegetation. The potential for disruptions in the internal heat levels of the batteries, could produce a self-perpetuating event, where they overheat and ignite or explode (if unmanaged). Whilst this potentially presents a firefighting challenge, most fire events (but not all) were associated with early versions of these battery system, with significant advances having been made in battery construction, detecting thermal runaway, managing the workload of the batteries and cooling the battery pack enclosures, which reduce the likelihood of this event occurring. While there is some potential for ignition of a bushfire from the solar PV arrays, this appears to be relatively minor, but there could be significant damage to panels from a fire in this area. The substation also represents a potential ignition risk, however the design of the transformers, in conjunction with having appropriately sized APZs to ensure sufficient separation from unmanaged vegetation, manage the risk of this occurring.

The inherent risk from bushfires impacting the electrical infrastructure (Scenario 1) is from bushfire spreading to vegetation, resulting in direct flame impingement and elevated radiant heat, which can damage the BESS including increase the internal heat levels within the Li-ion batteries, damage the substation, solar panels, cabling and inverters, or impact proposed buildings.

The bushfire risk management measures to reduce residual risk (outlined in Section 5 of the BMP) focuses on ensuring sufficient separation from unmanaged vegetation through the implementation of an APZ around the electrical infrastructure, to avoid creating an on-site ignition risk and to minimise radiant heat impact from approaching bushfire to optimise the effectiveness of the measures incorporated into the solar facility, BESS and substation design and construction. Firefighting water supply will be provided by the onsite static water supplies. Emergency management measures will also be employed to ensure rapid notification of DFES to enable quick firefighter turnout. Given the presence of fire brigade and emergency services near the project area in Karratha, it is anticipated that fire brigade will attend and address any onsite fires relatively quickly. In addition to fire brigade notification, the Proponent will also ensure any onsite personnel are not to

attempt to intervene the fire (especially in the BESS) and are to relocate to a place of safety. Additionally, the Proponent will be able to place the facility into a low energy state with minimum power transfer to the network or conducting full emergency shutdown should it be required.

5.4 Risk treatment

Risk treatment is detailed in Section 5 of the BMP (Linfire, 2022), which outlines the management measures that will be implemented to prevent loss of life and reduce the risk to property and infrastructure, and includes the following:

- Vegetation management
- Firewater supply
- Vehicular access
- Infrastructure design, construction, installation and maintenance requirements
- Emergency management and evacuation procedures
- Dangerous Good management
- Compliance with firebreak notice

5.5 Residual bushfire risk

Based on the risk assessment (see Table 7), Linfire expects that through implementation of the management measures detailed in Section 5 of the BMP, the residual bushfire risk to life and property within and surrounding the project area can be mitigated to acceptable levels.

Following implementation of management measures, the likelihood of bushfire ignition (Scenario 1) will not be reduced, however the proposed bushfire risk management measures will reduce the level of consequence resulting from the bushfire event. Life safety is protected by providing early warning of offsite bushfires to enable offsite evacuation, with protection of infrastructure to be achieved through separation from unmanaged vegetation through onsite management, provision of onsite firewater and emergency services access, and considered infrastructure design.

For Scenario 2, the likelihood of onsite fire ignition is reduced considerably by incorporating safety systems into the infrastructure design, in addition to the onsite vegetation management and rapid notification of fire brigade and neighbouring development.

Table 7: Bushfire risk assessment

Bushfire scenario	Risk to People or Infrastructure/Property	Inherent Risk			Mitigation/management	Residual Risk		
		<i>Likelihood</i>	<i>Consequence</i>	<i>Risk</i>		<i>Likelihood</i>	<i>Consequence</i>	<i>Risk</i>
<u>Scenario 1</u> <i>Bushfire approaching the development</i>	People*	Possible	Major	High (4)	Implementation of management measures identified Section 5 of the BMP	Possible	Insignificant	Low (7)
	Infrastructure/Property*	Possible	Catastrophic	High (3)		Possible	Insignificant	Low (7)
<u>Scenario 2</u> <i>Fire originating within project area</i>	People*	Likely	Catastrophic	Extreme (2)		Unlikely	Insignificant	Very Low (7)
	Infrastructure/Property*	Likely	Catastrophic	Extreme (2)		Unlikely	Minor	Low (7)
	People**	Likely	Catastrophic	Extreme (2)		Unlikely	Insignificant	Very Low (7)
	Infrastructure/Property**	Likely	Catastrophic	Extreme (2)		Unlikely	Minor	Low (7)

* People and infrastructure within the project area only

** People and infrastructure outside the project area

6.0 References

Country Fire Authority (CFA) 2022, *Renewable Energy Facilities: Design Guidelines and Model Requirements*, CFA, Melbourne.

Department of Mines and Petroleum (DMP) 2010, *Storage and handling of dangerous goods - code of practice (2nd edition)*, Resources Safety, Department of Mines and Petroleum, Western Australia.

Department of Fire and Emergency Services (DFES) 2021, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from:
<https://maps.slip.wa.gov.au/landgate/bushfireprone/>.

Fire Protection Research Foundation (FPRF) 2016, *Hazard assessment testing of Lithium-Ion battery energy storage systems*, NFPA, Massachusetts

Standards Australia and Standards New Zealand (SA & SNZ) 2018, *Australian Standard/New Zealand Standard AS/NZS ISO 31000:2018 Risk management – Principles and guidelines*, Standards Australia/Standards New Zealand, Sydney/Wellington.

Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Linfire 2022, *Bushfire Management Plan Woodside Solar Farm*, Linfire Consultancy, Perth.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission, Department of Planning and Fire and Emergency Services Authority (WAPC et al.) 2021, *Guidelines for Planning in Bushfire Prone Areas*, Western Australian Planning Commission and Fire and Emergency Services Authority, Perth.

Attachment X – DFES Comments & Responses

Initial Comments to Proposal:

1. Location & Siting & Design – A1.1 & A2.1: The BMP & RMPO indicate that batteries contained in units would be located in BAL-29. It is noted that the BAL-12.5 location for these not in containers stems from the testing documented in the RMP, however it is not clear as to how the BAL-29 calculation was derived. Modification to the BMP is required.
2. Vehicular Access – A3.6: It is noted that the internal road network will comply with requirements. Plans should be provided to support this description to ensure that the standards are achieved and that the location of passing bays and turn around areas satisfy the requirements. This could be achieved through imposition of a condition. Clarification required with Decision Maker to be satisfied with proposal details.
3. Water – A4.2: While compliance with the requirements within the Guidelines appear to be demonstrated, it is not clear that this would present sufficient water for response. The RMP has generally followed the guidance set out within the Victorian Country Fire Authority document *Renewable Energy Facilities* (March 2022). However, it is not clear if sufficient water is provided that reflects requirements under section 6.2 Facility Design, specifically 6.2.2 Firefighting Water Supply.

The BMP described the dedicated firefighting water tank position as “not yet finalised” however the BMP does show a location within the BAL-29 area. The decision maker should be satisfied on approval the water tank is located in the area described within the BMP. Modification to BMP is required.

Applicant Response to Initial Comments:

Clarification #1

- As noted in Sections 1.1 and 5.3.1 and the Bushfire Risk Management Plan (BRMP), Linfire were advised that the Stage 1 Power Conversion Units (PCV), containing the BESS's, are to be a containerised product housed in a purpose-made steel container, that will provide resilience against bushfire impact, especially radiant heat impact. On this basis, the PCV (containing BESS) is able to be sited in BAL-29 or lower but only if there is a non-combustible container providing protection from radiant heat, otherwise it is to be sited in BAL-12.5 (which is noted under Future Stages of Development on Table 5 under A1.1, as well as Section 5.3.1). It is noted that almost all of the Stage 1 PCV/BESS is to be sited in areas of BAL-Low, other than one in BAL-29. Should this BESS not be provided with a suitable non-combustible container to protect from radiant heat, then the APZ would need to be increased to 17 m in that location to achieve BAL-12.5 separation. It is acknowledged this is not specifically noted under Stage 1 development in A1.1 and Section 5.3.1, and the BMP can be amended to reflect this requirement.
- The Solar PV in BAL-29 or lower is based on guidance from CFA guideline for Renewable Energy Facilities requiring siting 10 m from vegetation (noting this is regardless of type of vegetation) OR where radiant heat flux doesn't create potential for ignition of infrastructure. Given the solar PV construction is largely non-combustible material including the steel support posts, the siting in BAL-29 or lower is considered appropriate, especially given the limited surrounding fuel loads. It is noted that only the perimeter PV panels would be in BAL-29, with the vast majority in BAL-12.5 or BAL-Low.

- Substation is in BAL-29 and is primarily non-combustible construction.
- The Control Room, O&M building (and any other buildings) are to be in BAL-29 or lower, as per SPP 3.7 and the Guidelines.

Clarification #2

- The vehicular access concepts detailed in Stage 1 of the proposed development are expected to be continued through to the future stages, including compliance with private driveway specifications of bushfire Guidelines as well as perimeter access around the proposed solar PV array, as well as through the array, and that access is provided to substations, plant areas, site facilities and fire water tanks. This is detailed in Table 5 (under A3.6 Private Driveways) and Section 5.5 of the BMP, and is noted as an implementation measure in Section 6. While it is noted that the layout for future stages is yet to be finalised, it is the expectation of the BMP that appropriate vehicular access be provided throughout the facility (Stage 1 and future stages) for firefighting activities.

Clarification #3

- As detailed in Table 5 of the BMP (under A4.2), the sizing of the 100 kL tank has been based on guidance from the CFA guideline for Renewable Energy Facilities, which recommends 45 kL per 100 ha, accounting for 50 kL, with additional 50 kL capacity added for the substation, plant area and site facilities area. On this basis, there is considered to be sufficient firewater available for bushfire fighting purposes especially given the limited grassland vegetation within the project area, and especially around Stage 1.
- Regarding the location of the tank, while there is limited guidance on suitability of siting tanks, under E4 (strategic Water Tanks) in the bushfire Guidelines accompanying SPP3.7, reference is made to strategic water tanks being no more than 10 mins travel time from the subject site. The proposed tank for Stage 1 is approximately 2.6 km from the furthest solar panel in Stage 1 (from the tank), which equates to a travel speed of 15.5 km/hr to reach it from the tank within 10 mins. Given the internal driveways will be devoid of other traffic and are relatively straight with good visibility, it is likely the speed of travel by fire appliances would be significantly quicker, thus would reach the furthest part of Stage 1 (from the tank) much quicker than 10 mins.
- On this basis, Linfire believe the proposed firewater supply is satisfactory to address the bushfire fighting water supply requirements for the proposed Stage 1 development, with future stages to provide additional firewater tanks as detailed in Table 5 (under A4.2), Section 5.4 and in Section 6.

DFES Comments to Applicant Responses:

1. The use of non-combustible containers does not consider the hazard within it sufficiently i.e. the heating of the steel container from a bushfire will heat the internal air temperature of the container through radiant heat. More analysis should be provided to reach the decision that the li-ion batteries within the container do not experience a heat temperature sufficiently large enough to cause thermal runaway and ignite. This means that although a BAL-29 rating may be achieved from the outside (due to the container providing a barrier from the vegetation), the steel container could cause the BESS to ignite. Further hazard separation should be considered.
2. No additional comments.

3. As per CFA Design Guidelines Model Requirements Renewable Energy Facilities on BESS & the AS2419.1 *open yard* requirements, tank sizing needs to be no less than 20l/s x 60minutes x 240 minutes = 288,000litres of water. The 45kL per 100 ha referenced below is to be considered as part of that. However, the total requirement is 288,000litres (6.2 Facility Design – Model Requirement page 18) and not the 100,000L (or 100kL) suggested in the BMP. Therefore, DFES considers that the proposed dedicated firefighting water amount has not been met.

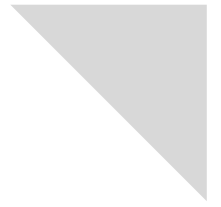
Applicant Response to Updated DFES Responses:

Clarification #1

- The APZs around the BESS units can be increased to achieve BAL-12.5 at the unit, which in Stage 1 is a 17 m wide APZ.
- BAL-12.5 is a relatively low level of radiant heat (less than required for piloted ignition of combustible material). Given the majority of the site is low spinifex grassland, the impressed radiant heat would not be sustained for any length of time and would only peak for a very short time as the head of the fire impacted, before subsiding quickly. Unlike other vegetation types (e.g. forest) there would be no sustained radiant heat output from the burning vegetation after the head fire as passed.
- Additionally, we note that the BESS will have a battery management system to monitor and regulate internal battery performance, and thermal management system to regulate temperature of the BESS.

Clarification #3

- Two 144 kL dedicated firewater tanks can be installed at the main entrance to the site.
- The tanks will be compliant with AS2419.1 and the requirements of the bushfire Guidelines, including suction connections adjacent to a hardstand.
- The internal road will be widened to ensure sufficient room for fire appliance hardstand adjacent to the tank suction.



ATTACHMENT 3

SOCIAL IMPACT SUMMARY



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Social impacts are consequences, both positive and negative, that may be experienced by people due to the development of the Project. Table 1 summarises the social impacts identified in relation to the Project and the mitigations that have been undertaken or are proposed to be undertaken to minimise negative impacts.

Woodside is currently refreshing its existing social impact assessment (SIA) and social impact management plans for its activities in Karratha and Roebourne. This scope considers the cumulative impact of all Woodside operations and developments, including the Proposal.

Table 1

Social Impact	Description of Impact	Nature of Impact	Mitigations (Negative Impacts Only)
Increased supply of renewable energy and reduction in emissions intensity	The proposed development will deliver a long-term positive impact through the delivery of significant renewable energy into the North West Interconnected System	Positive	Not applicable
Solar energy will displace and/or augment existing gas-based generation on the Burrup, resulting in lower emissions	Solar energy from the Woodside Power Project will be used to displace and/or augment existing gas-based generation on the Burrup, resulting in lower emissions on the Burrup	Positive	Not applicable
Increased and diversification of local employment and procurement opportunities	Employment and procurement opportunities will exist in both the construction and operational phases of the project. The Project offers an opportunity for the diversification of jobs in the Karratha region into large-scale renewable energy facility construction and operation. This has the potential to contribute to population growth in the region. Woodside's sustainable development objective is to seek to pursue local content opportunities for the regions in which we operate. This includes local procurement of	Positive	Not applicable

	goods and services wherever practicable. In pursuit of this objective Woodside will: • Seek to ensure contracts for supply chain activities in connection with the Project provide full, fair and reasonable opportunity for local industry participation where it is capable and competitive based on health, safety, environment, quality, cost and delivery. • Continue to actively participate in the delivery of the Pilbara Collaboration Charter with a focus on maximising positive local employment and contracting outcomes in the Pilbara		
Increased Indigenous employment opportunities	Woodside's Agreements with the Ngarluma Aboriginal Corporation and commitments associated with the BMIEA will create Indigenous employment opportunities through the construction and operations phases of the Project. Woodside will continue to execute its Reconciliation Action Plan and other relevant agreements, including working with contractors to improve Indigenous resourcing outcomes, local employment and training solutions.	Positive	Not applicable

Renewable energy development and the availability of electricity network infrastructure have the potential to attract further commercial interest in the Maitland Industrial Estate	The Project will be the first significant development in the Maitland Strategic Industrial Area (MSIA) since the EDL/Supagas facility. The Project will bring renewable energy and electricity transmission infrastructure to the MSIA which has the potential to attract further investment through developed infrastructure.	Positive	Not applicable
Increased demand for local infrastructure, accommodation, and services during construction.	The temporary construction workforce population may place additional pressure on the local infrastructure, accommodation, and services. • Each 50 MW phase is expected to have a construction period of 12-18 months • Workforce for construction of the solar farm is estimated to peak at 100 and with an average of 20 to 50 personnel. • Construction commencement is targeted in 2023. • Start-up is targeted in 2024	Negative	• Woodside has established a Karratha Local Jobs Portal, upon which job candidates with local residency in the City of Karratha (or those willing to become residents), can register their skills and availability. Contractors must use the Portal to advertise all relevant Pilbara job opportunities. • Non-local construction workforce to be accommodated in existing workforce accommodation facilities. Engagements with existing local accommodation facilities have determined adequate accommodation is available for the initial project construction period
Increased traffic on North West Coastal Highway during Project construction	Transportation of equipment and materials for Project construction is likely to result in increased traffic on the North West Coastal Highway during the project.	Negative	A traffic management plan for the construction phase will be prepared before the commencement of construction. The traffic management plan will address construction vehicle access arrangements and identify traffic management measures to address traffic safety and access issues inherent in using oversized vehicles and general construction traffic.
Anti-social workforce behaviour	Potential for FIFO workforce impacting ongoing community cohesion and participation, and increase in anti-social	Negative	Woodside and contractor workforce to be subject to applicable Code of Conduct / Fit for Work policy.

	behaviour due to the presence of FIFO workforce		Communication of community grievance mechanism for community members to raise concerns and feedback.
Potential for impact on both known and unknown heritage sites.	Heritage sites may be impacted by construction and/or operational activities associated with solar farm	Negative	Project activities will be undertaken in line with a detailed Cultural Heritage Management Plan. Mitigation measures include but are not limited to: • Heritage surveys conducted by Traditional Owners for Project's initial project have been completed • Establishment of working buffers around identified Heritage sites • Project designed to avoid identified Heritage sites • Authorised Heritage monitors are invited to be present during all ground-disturbing works



Woodside Power Solar Facility

Social Surrounds (Cultural Heritage) Management Plan

Woodside Power Pty Ltd

November 2021

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1. SUMMARY

This Social Surrounds (Cultural Heritage) Management Plan (CHMP) has been developed to minimise the impacts of the proposed Woodside Power Solar Facility (the Proposal) on Aboriginal cultural heritage. This CHMP details the measures required to manage the potential impacts to Social Surroundings (Cultural Heritage) from the Proposal. This CHMP addresses potential impacts on cultural heritage including through ground disturbance and loss of/restricted Traditional Owner access.

Woodside Energy Ltd (Woodside) is proposing to develop a Woodside Solar Facility (the Proposal), approximately 15 kilometres (km) south-west of Karratha, Western Australia (WA).

In summary, the Proposal is to generate electricity from a large-scale solar photovoltaic farm (Solar PV Farm), complemented by energy storage (battery) infrastructure. The energy storage infrastructure is proposed to be located at the Maitland Strategic Industrial Area (MSIA) with the Solar PV Farm located on the adjacent MSIA Industry Buffer Special Control Area (Buffer Area).

Woodside proposes to commence construction of the Proposal in 2022, subject to required approvals being secured, commercial arrangements being finalised and a positive final investment decision.

This CHMP was prepared in accordance with the 'Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans' published by the Western Australian (WA) Environmental Protection Authority (EPA) (EPA, 2018).

Table 1-1 summarises the information contained in this CHMP.

Table 1-1: CHMP Summary Table

Title of Proposal	Woodside Solar Facility
Proponent Name	Woodside Energy Ltd
Purpose of the CHMP	To identify management and mitigation measures that could be implemented over time to reduce potential impacts to heritage features over the Proposal development envelope.
Key Environmental Factor/s and Objective/s	Key Environmental Factor: Social Surroundings (Heritage) EPA Objective: To protect social surroundings from significant harm
Key Provisions in the CHMP	Management of any: • Direct, physical disturbance of Aboriginal and municipal heritage features from construction and operational activities • Constraints on access to heritage features or use of land for traditional activities • Disturbance to flora that will result in impacts to species used for cultural purposes Through the implementation of the following key provisions: • Conducting pre-construction heritage surveys to define acceptable disturbance zone within the development envelope • Implement a <i>Chance Find Procedure</i> if Aboriginal heritage features are accidentally uncovered during construction. • Ensuring all personnel employed or engaged to undertake work, or otherwise accessing sites in respect to the proposed Woodside Power Project are made aware of their obligations under the <i>Aboriginal Heritage Act 1972 (WA)</i> and this CHMP. • Providing access for Traditional Owners to Aboriginal cultural heritage sites within the Proposal development envelope, subject to safety and operational requirements, when requested • Prior to undertaking clearing activities, provide opportunities for Traditional Owners to collect traditional resources within the planned disturbance zone. • Reporting compliance of this CHMP at the end of construction to ensure management targets have been met.

2. CONTEXT, SCOPE AND RATIONALE

2.1 Introduction

Woodside Energy Ltd (Woodside) is proposing to develop a Woodside Solar Facility, approximately 15 kilometres (km) southwest of Karratha, Western Australia (WA). This will generate electricity from a large scale solar photovoltaic farm (Solar PV Farm), complemented by energy storage (battery) infrastructure (the Proposal). The Proposal will supply renewable energy for use by industrial customers, expected to include the Woodside operated Pluto LNG Facility.

Woodside is referring this Proposal to the WA Environmental Protection Authority (EPA) under Part IV (Section 38) of the *Environmental Protection Act 1986* (WA) (EP Act), as a Proposal that has potential to have a significant impact on the environment.

The Proposal is described in its entirety in Section 3 of the Woodside Power Woodside Solar Facility Referral Supporting Document (Woodside, 2021) and is summarised in Section 2.2 of this CHMP.

This Social Surrounds (Cultural Heritage) Management Plan (CHMP) has been prepared to support environmental referrals for the Proposal under the WA *Environmental Protection Act 1986* (EP Act). This CHMP demonstrates to the WA Environmental Protection Authority (EPA) how Woodside plans to manage the potential impacts and risks to Social Surroundings (Heritage) in a way that is consistent with the relevant EPA Factor guideline. The document addresses management provisions relating to both the construction and operational phases of the Proposal.

This CHMP has been prepared in accordance with the EPA 'Instructions on how to prepare EP Act Part IV Environmental Management Plans' (EPA, 2018) and will be implemented following receipt of approval under the EP Act.

2.2 Summary of the Proposal

Woodside proposes to implement the Proposal through a phased approach, expanding the development as additional customer demand arises. Initially, it is expected that the Proposal will consist of the following key elements allowing for the generation of up to 100 MW of renewable energy, through the installation of one or more of the following key infrastructure elements:

- Solar PV Farm: Capable of generating up to 100 MW_{AC} (instantaneous); and
- Battery Storage: Capable of storing up to 400 MWh.

The Proposal is scheduled to commence construction in 2022 and be ready for start-up (RFSU) by approximately 2023, with an intended operating life of approximately 30 years.

As additional customer demand is realised, the Proposal may be expanded, in one or more phases.

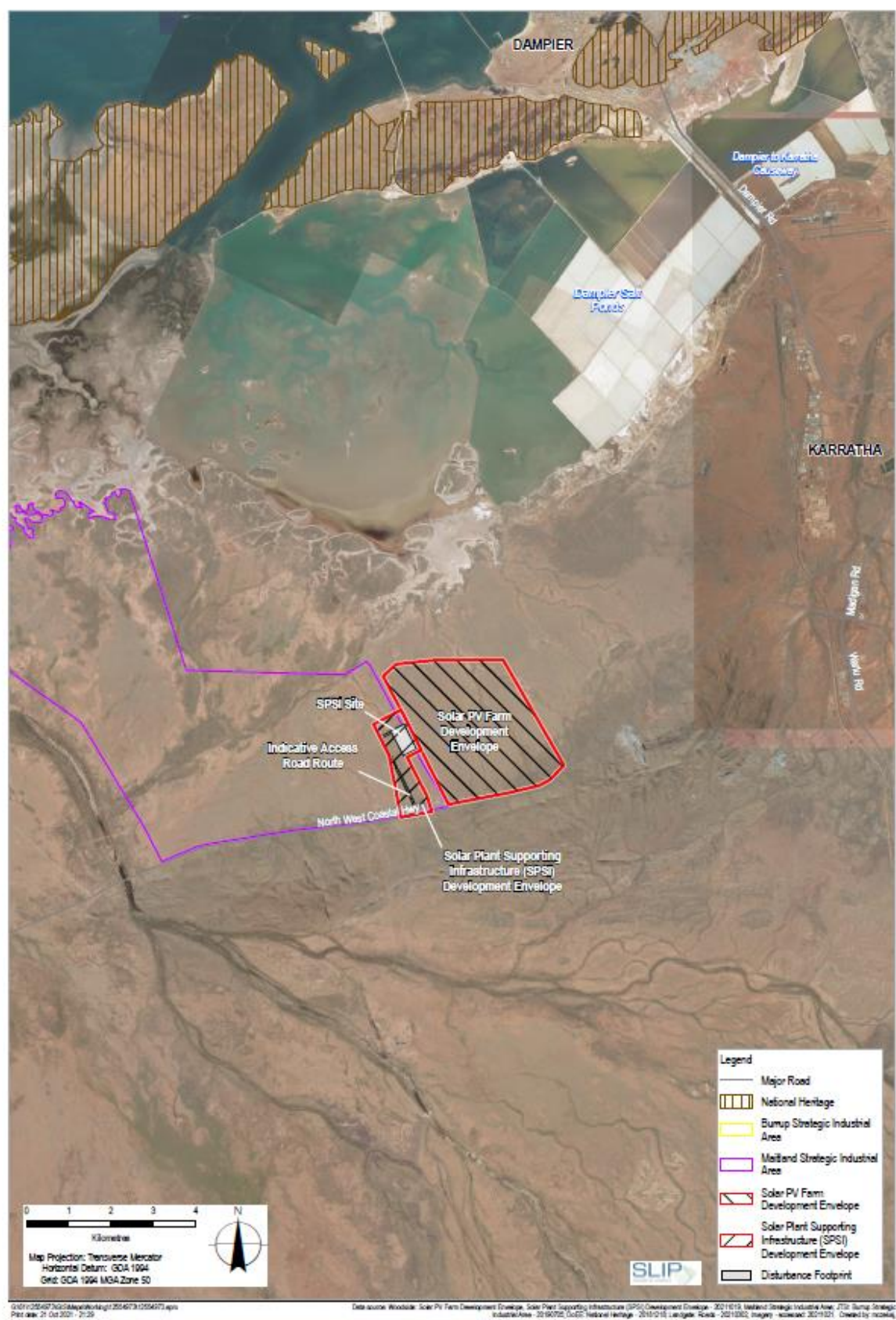
The maximum expansion of the Proposal is expected to be capable of generate up to 500 MW_{AC} of electricity from Solar PV as follows:

- Solar PV Farm: Capable of generating up to 500 MW_{AC} (instantaneous).
- Battery Storage: Battery storage capacity is estimated to be a maximum of 200 MWh for each 50MW_{AC} of solar generation capacity.

Subject to various factors, such as the customer's existing electricity source and demand profile, the initial phase of the Proposal has the potential to reduce up to 100 kt of greenhouse gas emissions per annum. Through future expansions of electricity generation and storage capability, the Proposal provides a potential pathway for further de-carbonisation of customers electricity needs. The Proposal may also lead to reductions in other potentially harmful emissions, such as NO_x and SO_x, which is particularly relevant to potential customers on the Burrup Peninsula.

The project will be developed in close consultation with Traditional Owners and will lead to shared benefits to native title holders. Woodside acknowledges the Ngarluma People, the Traditional Owners of the land on which the Proposal is planned to be developed.

Figure 2-1 Proposal Location



2.3 Overview

2.3.1 Purpose of Management Plan

This Social Surrounds (Cultural Heritage) Management Plan (CHMP) has been developed to assist with the management of cultural heritage values associated with the construction and operation of the Woodside Power Woodside Solar Facility Proposal, as described in **Section 2.1**.

This CHMP has been prepared to ensure construction and operation of the Woodside Solar Facility does not compromise the social values of the area and to manage potential impacts of the Proposal on cultural heritage. The approach to managing the Proposal in a way that achieves the objective of avoiding significant harm to social surroundings is based on a combination of impact assessment (refer to **Section 8** in the Woodside Solar Facility - Environmental Referral Supporting Document (Woodside, 2021), early response indicators and adaptive management.

This CHMP outlines how aspects of the Proposal that have the potential to impact heritage places and objects (referred herein as heritage features) will be monitored and managed so that the relevant environmental values are protected. The provisions of this CHMP manage the potential impacts of the activities from the Proposal that are not otherwise managed under other regulatory instruments, including other Proposal management plans.

2.3.2 Woodside Solar Facility Scope of Management Plan

This CHMP applies to both construction and operational activities of the Proposal that have the potential to impact cultural heritage features within and adjacent to the Proposal development envelope (DE), as defined in **Figure 2-1**. The Woodside Solar Facility – Environmental Referral Supporting Document (Woodside, 2021) assesses the potential impacts and risks to the social surroundings (Heritage) from the following activities:

- clearing of native vegetation, earthworks and installation of infrastructure
- presence and activity of people, vehicles, and equipment

Therefore, the scope of this CHMP addresses the following:

- Direct, physical disturbance of heritage features from construction and operational activities
- Disturbance to flora and vegetation that will result in impacts to species used for cultural purposes
- Constraints on access to heritage features or use of land for traditional activities

The potential impacts of the Proposal to the visual amenity of heritage places are outside the scope of this CHMP.

3. EXISTING ENVIRONMENT

3.1 Maitland Strategic Industrial Area and Karratha Station

The Maitland Strategic Industrial Area (MSIA) is located approximately 15 km south west of Karratha and comprises of approximately 2,500 ha of land strategically located to promote and facilitate processing of the Pilbara region's resources. The MSIA has a substantial buffer to sensitive land uses being over 14 km west of Karratha town, over 16 km south of Dampier town and over 16 km south-west of Murujuga National Park. Under the City of Karratha Local Planning Scheme No. 8, the MSIA is provided with a 2 km Industry Buffer Special Control Area, which restricts development of sensitive land uses.

Approximately 1,100 ha of the MSIA and adjacent Industrial Buffer Area is proposed to be utilised for the Solar PV Farm. This area is connected to the North West Coastal Highway with close access to the Dampier and Bunbury Natural Gas Pipeline and major road connections to Dampier Port.

The MSIA is subject to non-exclusive Native Title rights of the Ngarluma people which were recognised under the Native Title Claim WCD2005/001. The Ngarluma Aboriginal Corporation RNTBC (NAC) is the relevant Registered Native Title Body Corporate.

Karratha Station pastoral lease surrounds [and currently includes part of] the MSIA and is leased by Rio Tinto and sub-leased and operated by NAC. The station extends north from the MSIA to the Dampier Salt Ponds, which were established in the 1960s. The portion of Karratha Station between the MSIA and Dampier Island causeway is traversed by gas, power and transport infrastructure, including Rio Tinto's 220 kV transmission lines and freight railway linking the Port of Dampier with iron ore mines in the Pilbara region. Karratha Station has been subject to historical grazing by stock animals.

The MSIA and Karratha Station sits within the Roebourne Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the Pilbara IBRA region. This landscape consists primarily of Quaternary coastal and sub-coastal plains divided by active floodplains from larger river systems with igneous extrusions and ranges and metamorphosed sedimentary rock hills. This landscape provides a range of source materials for stone tools including banded ironstones (or BIF), BIF derived cherts and shales, diagenetic (chalcedonic) cherts, igneous basalts, dolerites, rhyolites, dacites, stratified tuffs, siltstones, mudstones, and agglomerates.

The vegetation of the Roebourne subregion falls within Beard's Fortescue Botanical District (1979 & 1990). A basic spatial analysis query of Beard's Vegetation Classification (WA) and the Ngarluma portion of the subregion establishes that there are four different vegetation systems within the subregion. The major vegetation classification of the subregion consists of Mixed shrubland; Mosaic: Bunch-grass-spinifex. This vegetation unit is principally associated with the coastal and sub-coastal plains.

A flora and vegetation survey conducted by Vicki Long (2019) over the Proposal DE describes the vegetation within Karratha Station and the MSIA as predominately grassland areas with mostly annual species. The area is characterised by areas of hummock grassland, areas of sandy surfaced alluvial soils and tussock grasslands over weakly gilgaied clays, intersected by both shallow grassy and deeper incised wooded drainage lines.

Sporadic heritage surveys have been conducted over parts of Karratha Station and MSIA since at least 1979. One of the earlier surveys highlighted some mound middens and a historic pearling camp. The Department of Resources Development and Landcorp commissioned heritage surveys of the proposed MSIA, and island areas affected by the proposals.

In 2019, Woodside commissioned new surveys over a portion of the Proposal DE to identify any heritage values that may be impacted by the Proposal. These surveys included flora and fauna surveys to identify natural resources of importance to Traditional Owners as well as archaeological and ethnographic site-avoidance surveys. All surveys were conducted with the input of Ngarluma

participants. A supplementary vegetation survey was conducted in 2020 to capture differences present in post-rain conditions.

The archaeological surveys to date have identified three sites across the MSIA and Industrial Buffer Area likely to be protected under the *WA Aboriginal Heritage Act 1972* (AH Act) and a further four other “places” unlikely to meet the standards of a site under Section 5 of the AH Act but which will be avoided at the request of NAC. These sites and places included a combination of stone tools, grinding patches, plant resources, quarries and middens. Further surveys are required to complete coverage of the development entire envelope.

Review of the archaeological information undertaken as part of the archaeological surveys and assessment places the inhabitation of the MSIA and Karratha Station in the broader context of Pilbara occupation dating back to the Pleistocene at least 45,000 - 50,000 years ago, with a possible sudden population increase and introduction of new tool types in the Holocene.

The ethnographic survey sought the input of Traditional Owners on the broader landscape for heritage values but did not identify any new sites in the landscape. The survey also conducted specific ethnographic assessments of all archaeological places known in the Proposal DE, including those discovered in Woodside-commissioned surveys.

The environmental review of Ngarluma Country presented here was concluded to demonstrate that past Indigenous people who utilised the local landscape had sufficient supplies of raw materials for the production of stone tools, reasonable supplies of water in the major river catchments after seasonal rains and natural springs and gorges to rely on in drier times. The vegetation species noted in the local landscape also could provide wood for implements, and seeds and fruits for food. The grassland environments would also support both small and large game.

3.2 Historical Heritage

There are no sites in the vicinity of the Proposal DE that have statutory heritage listings or protection under the *Heritage Act 2018* (WA). The closest State Heritage sites are located in the vicinity of Roebourne and Cossack, to the east of Karratha.

The Proposal DE lies in proximity to two Municipal Inventory heritage sites:

- De-Grey – Mullewa Stock Route No. 9701 (Place No. 05113, City of Greater Geraldton, Category 3). This is a historic stock route and wells extending from the Midwest Region, east of Geraldton, to the Pilbara, terminating west of Pardoo.
- Old Stock Route Wells (Place No. 25267, City of Karratha Category B/D). These are isolated sites in various condition that may contain water tanks, troughs, fences and camping areas.

3.3 Key Environmental Factors

This CHMP relates to the ‘Social Surroundings’ environmental factor, specifically Aboriginal heritage and culture. The EPA objective for this environmental factor is:

To protect social surroundings from significant harm

This objective is intended to ensure that social surroundings are not significantly affected by a proposal.

The Environmental Factor Guideline – Social Surroundings (EPA, 2016) acknowledges that social surroundings include: Aboriginal heritage and culture; natural and historical heritage; amenity; and economic surroundings. For the purpose of this CHMP, the only aspect of the social surroundings environmental factor that is relevant to the Proposal is Aboriginal heritage and culture.

As part of the social surroundings environmental factor and specifically in relation to Aboriginal heritage and culture, the EPA states that the EP Act complements the *Aboriginal Heritage Act 1972*

(WA) to preserve Aboriginal heritage sites, particularly when ‘actual physical protection of the environment is required to protect sites of heritage significance’ (EPA, 2016).

EPA guidance also states that in addition to Aboriginal heritage, ‘matters of Aboriginal cultural associations, including traditional Aboriginal customs, directly linked to the physical or biological aspects of the environment, may also be considered significant.’

3.3.1 Proposal Activities Potentially Affecting Key Environmental Factors

3.3.1.1 Clearing of Vegetation, Earthworks and Installation of Infrastructure

Direct, Physical Disturbance of Heritage Sites

The Proposal DE lies within the vicinity of Aboriginal heritage sites registered and lodged with the Registrar of Aboriginal Sites under the *Aboriginal Heritage Act 1972* (AH Act). A search of the Aboriginal Heritage Inquiry System (AHIS) was conducted for the Proposal DE in November 2019. In summary, there were no registered heritage sites listed and 7 lodged heritage places were identified as within the Proposal DE (**Table 3-1**) (BWA, 2019 and DB-Consulting, 2019).

Table 3-1: Summary of Aboriginal Heritage Registered and Lodged Sites

Proposal Component	Registered Sites	Lodged Sites	Type of Sites
Solar PV Farm	0	4	Artefacts/Scatters, Grinding Patches/Grooves, Quarries
Solar PV Farm - Ancillary and Supporting Infrastructure	0	3	Artefacts/Scatters, Grinding Patches/Grooves, Shell Middens
Total	0	7	

Physical disturbance of heritage sites may occur from any clearing or ground disturbance activities which have the potential to unearth objects and/or move them across the landscape. Uncontrolled vehicle movement, for example where tracks are not already in place, can have similar impacts. In addition to potentially impacting the spiritual values of the heritage (Traditional Owners often caution against disturbing some objects in case spirits or other entities follow people home), this can impact the scientific and academic values of these places by removing them from their original context. Even minimal movement of artefacts may completely disrupt the ability to distinguish a site from a background scatter or the natural environment, erasing sites from the landscape and their historic, archaeological or anthropological significance as evidence of past human behaviour.

These activities also have the potential to damage some objects such as shells and fragile stone artefacts causing disruption to heritage values of a similar nature to that outlined above but of a greater magnitude.

Woodside has conducted Aboriginal ethnographic and archaeological surveys with full support and participation from NAC. Extrapolating from the surveys to date these surveys have targeted proposed disturbance sites associated with initial phases of the Proposal (approximately 100MW) within the DE. Based on the heritage surveys, Woodside have undertaken design and construction planning to avoid all identified heritage sites within the surveyed portion of the DE. This will ensure that direct impacts are avoided and the maintenance of 50m working buffers from sites will minimise the risk of indirect impacts occurring during construction. The surveys cover, approximately 62% of the Solar Plant Supporting Infrastructure (SPSI), and approximately 100ha (~10%) of the Solar PV Farm.

Woodside will work with NAC to conduct surveys of all remaining unsurveyed impact footprints to identify any un-recorded Aboriginal Heritage sites and undertake appropriate design and construction planning to avoid any identified sites. Based on the surveys undertaken to date, it is expected that unsurveyed portions of the Proposal DE on the Roebourne Plains will have limited occurrence of

heritage sites and there will be ample opportunity to adjust the Solar PV Farm layout as required to avoid sites.

The Proposal is not expected to result in impacts to European heritage sites listed on Municipal Inventories. There is potential for isolated structures (e.g. water tanks, troughs, fences) associated with Old Stock Route Wells to be present in the stock route to the north of the SPSI and Solar PV Farm DEs, which are not expected to be subject to indirect impacts from construction or operation of the SPSI or Solar PV Farm.

Disturbance to flora and vegetation that will result in impacts to species used for cultural purposes

Some native plants found in the DE are used by Aboriginal people, including *Acacia coriacea*, *A. pyrifolia*, *Avicennia marina*, *Ficus brachypoda* and various *Solanum* species (City of Karratha 2013). The Murujuga Cultural Management Plan (MAC 2016) identifies heritage values of vegetation on the Burrup Peninsula (which may also occur within the DE) including tree species that provide medicine for colds and flus, shade for shelter, and ceremonial tools; use of mangroves for fishing; and use of spinifex seeds for damper.

Clearance of vegetation has the potential to remove these plants from the area, or at least those examples most easily accessible to Traditional Owners.

3.3.1.2 Physical Presence of Infrastructure, Vehicles and Equipment in the Development Envelope

Constraints on access to or use of land for traditional activities

Infrastructure proposed to be constructed on the MSIA and adjacent Buffer Area requires that some areas be closed to the public for safety reasons. This includes the Solar PV Farm and any ancillary infrastructure, which will be fenced. Although fencing will be limited, there is the potential that this may create physical barriers to Traditional Owners seeking to access traditional areas or places favourable for hunting or gathering bush tucker.

Traditional Owners have advised that the Solar PV Farm location, in particular, may limit land used for grazing cattle under NAC's current sub-lease of the Karratha Station pastoral lease.

4. REGULATORY MECHANISMS

4.1 Internal Management Mechanisms Relevant to this CHMP

4.1.1 Woodside Management System

The Woodside Management System (WMS) defines how Woodside delivers its business objectives and the boundaries within which all Woodside employees and contractors are expected to work. Environmental and cultural heritage management are components of the overall WMS.

The overall direction for management of Aboriginal heritage is set through Woodside's corporate Indigenous Communities Policy. The policy provides a public statement of Woodside's commitment to building long-lasting relationships with Indigenous communities in which Woodside operates and to demonstrate respect and act with integrity as we generate positive economic, social and cultural outcomes. It sets out the principles for achieving the objectives and how these are to be applied. The policy is applied to all Woodside activities, and employees, contractors and Joint Venture partners engaging in activities under Woodside's operational control.

4.1.2 Cultural Heritage Management Procedure

Woodside's Cultural Heritage Management Procedure (Woodside ID WM0000PG10178231) defines:

- requirements to meet statutory obligations and commitments for cultural heritage
- requirements for stakeholder engagement, cultural heritage assessment and cultural heritage management
- accountabilities for reputation, cultural risk assessments, cultural heritage assessments and cultural heritage management
- processes for escalating and reporting non-compliance with the requirements.

4.1.3 Incident Reporting

An incident is defined as any event that breaches or threatens the ability of any person or company to meet the objectives or management actions listed in this CHMP.

Specifically, an incident is defined as one or a combination of the following:

- Non-compliance with this CHMP
- Unexpected damage or loss to any heritage site or item within the DE
- Discovery of a new heritage site within the DE
- Discovery of skeletal remains within the DE
- Any trespass outside of the operational area of the DE without appropriate authorisation.

Incidents are reported to Woodside's Senior Heritage Adviser or equivalent corporate heritage representative and in accordance with the Health Safety and Environment Event Reporting and Investigation Procedure (Woodside ID WM0000PG9905421). Community grievances are handled through Woodside's Community Grievance Mechanism Procedure (Woodside ID WM0000PG9539696). Non-compliances with this CHMP will be reported as outlined in **Section 5.1**.

4.2 Regulatory Management Mechanisms Relevant to this CHMP

The following pieces of Commonwealth and State (WA) legislation contain provisions for the protection of Aboriginal heritage.

4.2.1 Commonwealth Legislation

Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) provides a mechanism for the Commonwealth Environment Minister to make declarations regarding the protection of an Aboriginal site when the Minister is satisfied that, under State or Territory law, there is ineffective protection of the area from a threat of injury or desecration. Declarations made under this Act may involve restricting activities and/or access to an Aboriginal site.

If the requirements of the *Aboriginal Heritage Act 1972* (WA) are adhered to, the ATSIHP Act is unlikely to have relevance for Aboriginal sites found to exist within the DE.

Native Title Act 1993 (Cth)

The Native Title Act 1993 (NT Act) adopts the common law definition of native title, defined as the rights and interests that are possessed under the traditional laws and customs of Aboriginal people in land and waters, and that are recognised by the common law. These rights may exist over Crown Land but do not exist over land held as freehold title.

The NT Act recognises the existence of an Indigenous land ownership tradition where connections to country have been maintained and where acts of government have not extinguished this connection.

4.2.2 State Legislation

Aboriginal Heritage Act 1972 (WA)

The *Aboriginal Heritage Act 1972* (WA) (AH Act) is the principle legislation for providing protection and preservation of all Aboriginal cultural heritage places and objects within WA. This Act is currently administered by the WA Department of Planning, Lands, and Heritage (DPLH). Under Section 17 of the AH Act it is an offence to excavate, destroy, damage, conceal, or in any way alter any Aboriginal site or artefact, unless conducted with the authorisation of the Registrar of Aboriginal Sites under Section 16 or with the consent of the Minister for Aboriginal Affairs under Section 18 of the AH Act.

The AH Act is the most relevant piece of Aboriginal heritage legislation to consider when planning ground disturbance activities. Aboriginal heritage features are protected regardless of whether they have been previously identified and recorded or not. Archaeological and ethnographic field surveys will record all visible Aboriginal heritage features within a proposed disturbance area and any unplanned discovery of unrecorded (buried/obscured) features are covered by the legal mechanisms of the AH Act.

5. MANAGEMENT PROVISIONS

This section describes the provisions of this CHMP which, when implemented, achieve the objective of the Social Surrounds (Heritage) environment factor and the objective of the CHMP, to uphold the relevant environmental values and avoid potential impact to heritage values from the Proposal.

Table 5-1 lists the management-based provisions that will be implemented with the Proposal. These are based on the rationale and approach described in **Section 5.2**.

5.1 Management Based Provisions Summary

Table 5-1: Management-based Provisions

Management Actions	Targets	Monitoring	Reporting
MA 1: Conduct pre-design heritage surveys in collaboration with Traditional Owners, to define non-disturbance zones.	All infrastructure will be designed to have no planned impact to any known Aboriginal heritage sites. Surveys of all planned disturbance areas will be conducted in association with nominated Traditional Owners from Ngarluma Aboriginal Corporation, to identify potential Aboriginal Heritage Sites or other non-disturbance zones.	Heritage survey reports and resulting maps of Proposal infrastructure demonstrate no direct impacts to known heritage features as far as practicable and subject to the AH Act and all other relevant regulatory requirements.	Pre-design heritage surveys used to prepare and maintain a register of non-disturbance zones within the DE.
MA 2 All construction and operational activities to be contained within defined disturbance zones unless specifically authorised, to avoid direct, physical disturbance to identified Aboriginal heritage features.	No disturbance to Aboriginal heritage features. No unauthorised disturbance zone boundary transgression.	To be supervised by project manager and/or Senior Heritage Adviser or their delegate(s). Heritage monitors authorised by NAC to be invited to be present during all ground disturbing works.	Sites to be re-inspected after construction to confirm no impacts have occurred subject to all relevant regulatory requirements. Transgression of disturbance zone boundary to be reported through Woodside's Health, Safety and Environment Event Reporting and Investigation Procedure. Post construction compliance report to be issued to relevant regulating agencies.

Management Actions	Targets	Monitoring	Reporting
MA 3: Implement Chance Find Procedure agreed with NAC if Aboriginal heritage features are accidentally uncovered during construction or operational activities	No accidental disturbance to heritage features.	Heritage monitors authorised by NAC to be invited to be present during all ground disturbing works.	Report any Aboriginal heritage features identified during construction activities to the DPLH and in accordance with Section 15 of the AH Act.
MA 4: All persons employed or engaged to undertake work or otherwise accessing Woodside Power sites shall be made aware of their obligations under the <i>Aboriginal Heritage Act 1972</i> and this CHMP	100% compliance with legal obligations and this CHMP. All personnel entering the Project facilities attend relevant inductions.	Induction attendance is recorded and confirmation that all personnel have attended as required. Senior Heritage Advisor to undertake review of compliance with this CHMP at conclusion of construction.	Post construction compliance report to be issued to relevant regulating agencies. Records of induction attendance.
MA 5: Prior to undertaking clearing activities, provide opportunities for Traditional Owners to collect traditional resources within the planned disturbance zone.	Traditional Owners provided opportunity to collect traditional resources from DE prior to any clearing or construction.	Requests for access and outcomes to be recorded in a register and monitored for unaddressed/unmet requests.	Record of instances of Traditional Owners requests for access and outcomes of those requests reported in post-construction CHMP compliance report.
MA 6: Provide access for Traditional Owners to traditional areas within the developed site, subject to safety and operational requirements, when requested	Access provided to the Woodside Power Project Area to Traditional Owners when requested. TO's will be able to access non-restricted areas within the DE at any time.	Requests for access and outcomes to be recorded in a register and monitored for unaddressed/unmet requests.	Record of instances of Traditional Owners requests for access and outcomes of those requests are maintained and reported in post-construction CHMP compliance report.

Management Actions	Targets	Monitoring	Reporting
MA 7: Establish a commitments register for this CHMP to ensure compliance against management targets during construction and operations.	100% compliance with this plan.	Senior Heritage Advisor to undertake reviews of compliance with this plan after construction and regularly during operations, and record findings in commitments register.	Post construction compliance report to be issued to relevant regulating agencies.

5.2 Management Actions

5.2.1 MA1 – Conduct pre-design heritage surveys in collaboration with Traditional Owners, to define non-disturbance zones.

In WA, Aboriginal Objects and Places are protected under the AH Act. It is an offence under Section 17 of the AH Act to excavate, destroy, damage, conceal or in any way alter any Aboriginal site without the authorisation of the Registrar of Aboriginal Sites under Section 16 of the AH Act or the consent of the Minister of Aboriginal Affairs under Section 18 of the AH Act.

The location of all infrastructure associated with the initial phase of the Proposal will be designed to avoid any sites identified as requiring protection during extensive cultural heritage surveys conducted across the DE, incorporating Traditional Owner advice and requests. The Proposal's final disturbance zone will not interfere with any Aboriginal Objects or Places protected under the AH Act. Areas outside of this area that require particular care, (i.e. as they are in close proximity to construction or operational areas) may be permanently or temporarily cordoned off, as addressed in **MA2** (See **Section 5.2.2**).

To avoid these sites, cultural heritage surveys have been conducted across the locations within the Proposal DE that are expected to be disturbed through construction works associated with the initial phase of the Proposal. These surveys included both archaeological (BWA 2019) and ethnographic (DB-Consulting 2019) components. Archaeological surveys of the Solar Farm DEs were conducted by the Ngarluma Aboriginal Corporation's preferred consultants and Ngarluma participants through pedestrian transect and in-field recording to a 'site identification' level. This involved a determination of any site boundaries and sufficient information to make assessments of significance and management recommendations. Ethnographic survey over these areas involved on-country discussions regarding the landscape generally as well as seeking comment on any archaeological sites or landscape features identified as important by the participants.

Reports for the heritage surveys were produced by the heritage consultants and approved by NAC prior to being provided to Woodside. The cultural heritage information collected remains the intellectual property of the Ngarluma participants, and the reports provided to Woodside are stored in the company's secure document management system at the 'Confidential' level with access available only to Woodside's Indigenous Affairs and Heritage, Environment, Senior Project Management, Corporate Affairs and Project Design staff. They are not included as appendices to this management plan.

Should disturbance to an object or place be identified as being unavoidable as a result of heritage surveys or further engineering design work, the disturbance will be planned and executed in accordance with the AH Act and this management plan will be updated to describe the planned disturbance and management process. No such disturbance has been identified as being necessary at the time of preparation of this plan. Woodside will not submit any applications under S18 of the AH Act, without the consent of NAC.

Prior to any further expansion of the Solar PV farm beyond the initial phase, any areas in which disturbance is planned will be subject to heritage surveys, which will be performed in collaboration with NAC. Any non-disturbance zones will then be avoided, as managed through MA 2.

5.2.2 MA2 – All construction and operational activities to be contained within defined disturbance zones unless specifically authorised, to avoid direct, physical disturbance to identified Aboriginal heritage features.

Woodside has developed a spatial register of all identified cultural heritage sites within the Proposal DE informed by cultural heritage surveys, including the disturbance zones agreed with Traditional Owners. All construction activities will be planned to not intersect with cultural heritage sites or to occur outside of disturbance zones. Any location within the DE which has not yet been subject to a

heritage survey will be considered a non-disturbance zone until surveys (as per MA 1) have been completed.

Before any construction activities begin in close proximity to a cultural heritage site, the site will be visually marked and construction personnel will be informed. Ensuring protection of a cultural heritage site during construction may include erecting temporary barriers or fences beyond a designated buffer zone. All activities must remain within the designated disturbance zones unless a heritage permit has been provided.

A Heritage Permit must be obtained before any deployment of personnel or issue of a 'Contractor Direction' (CD) notice to access areas outside of a designated disturbance zone. To obtain a Heritage Permit, the proponent of the proposed access must provide a completed Heritage Permit Application Form (Woodside ID 1401317357) to Woodside's Senior Heritage Adviser with the following information:

- a description or map indicating the area for which access is requested;
- the start and end dates for access;
- the names and contact details of the Woodside or contractor employee responsible for the works; and
- confirmation that access is required for a Woodside Power site or, if access is required for a third-party lease, the name of the lessee and contact within the lessee's organisation.

After receiving the above information and before issuing a Heritage Permit, the Senior Heritage Adviser must:

- assess the potential or impact to heritage values from the execution of the proposed activity;
- document the Heritage Permit conditions required to prevent disturbance to heritage values;
- ensure compliance with government issued heritage approvals (including heritage consents and environmental approval conditions where relevant/applicable);
- ensure that access to gender restricted areas is managed; and
- update the register of heritage permits.

A Heritage Permit will take the form of a permit signed by the Senior Heritage Adviser, Woodside's on-site contact, VP Technology and the proponent undertaking the activity.

The Heritage Permit shall require the proponent to provide a log of their activities outside of the designated disturbance zone to the Senior Heritage Adviser on a weekly basis (time in and out, location of activities outside of the disturbance zone boundary).

The Senior Heritage Adviser must be notified when the activity has been completed in order to formally close the Heritage Permit and confirm that all conditions of the Heritage Permit have been met.

5.2.3 MA3 – Implement Chance Find Procedure agreed with NAC if Aboriginal heritage features are accidentally uncovered during construction or operational activities.

Although pre-construction heritage surveys have been conducted to identify cultural heritage features within the DE, there is always the possibility that previously unrecorded or unidentified features may be discovered during construction work.

In the event there is a discovery of heritage features during construction works, the following relevant procedures must be followed.

5.2.3.1 Procedure if Skeletal Remains are discovered

In the unlikely event that human remains are discovered during any stage of the works, the following steps must be followed:

1. Personnel must cease all works in the vicinity immediately. Best efforts should be made to preserve any human remains in situ and to cordon off the area from other works. No photographs of the remains may be taken except under the instruction of the Western Australian Police Service or (in connection with a suspected traditional burial) with the permission of Traditional Owners (e.g. to provide to a consultant archaeologist for advice).
2. The work supervisor must inform the Western Australian Police Service and Woodside's Senior Heritage Adviser, who must notify the Traditional Owners, the Registrar of Aboriginal Sites and a qualified archaeologist if not already present. When informing Police of a suspected traditional burial, indicate that the remains are likely to be of Aboriginal origin and that an archaeologist and Traditional Owner representatives should be present during any handling of the remains. All Woodside personnel and contractors must comply with any reasonable instruction from the Western Australian Police Service. Notification must also be given to the Minister responsible for the Aboriginal and Torres Strait Islander Heritage Protection Act 1984. At present this is the Minister for Environment.
3. Where the Western Australian Police Service is satisfied that the remains do not constitute a crime scene, the qualified archaeologist must record the find (if still in situ). Traditional Owners, the archaeologist and Woodside's Senior Heritage Adviser must meet and discuss the find and the management measures required.
4. Work must not recommence in the area until approved by Woodside's Senior Heritage Adviser on the advice of Traditional Owners, the Registrar of Aboriginal Sites (in writing) and the qualified archaeologist.

5.2.3.2 Procedure if a new heritage feature is located

In the event of the discovery of archaeological materials (e.g. intact subsurface deposits including midden lenses, sacred items, buried/covered petroglyphs etc.) within a designated disturbance zone during any stage of works, the following steps must be followed:

1. Personnel must cease all works in the vicinity immediately. Where practicable, the work area must be cordoned off from other works.
2. The work supervisor must inform Woodside's Senior Heritage Adviser, who must notify Traditional Owners, the Registrar of Aboriginal Sites and a qualified archaeologist.
3. A qualified archaeologist must record the find and Traditional Owners, the archaeologist and Woodside's Senior Heritage Adviser must meet and discuss the find and the management measures required.
4. Work must not recommence in the area until approved by Woodside's Senior Heritage Adviser on the advice of Traditional Owners, the Registrar of Aboriginal Sites (in writing) and the qualified archaeologist.

5.2.3.3 Incident Management

Heritage incidents, including near misses, must be reported to the Indigenous Affairs team through Woodside's Health Safety and Environment Event Reporting and Investigation Procedure. The Indigenous Affairs team will inform the Traditional Owners of any actual impacts on heritage sites or values and organise an inspection with Traditional Owners and a qualified heritage consultant to:

- Ascertain the extent of any damage;
- Determine what cultural procedures, if any, are required; and

- Establish what steps, if any, must be taken to rehabilitate the area.

A heritage incident is defined as any event that breaches or interferes with compliance with this CHMP. An 'incident' may include any of the following:

- Non-compliance with this CHMP,
- Unexpected damage or loss to any heritage site, object or values,
- Discovery of a new heritage site or object,
- Discovery of human remains,
- Any trespass outside of the disturbance zone without a signed permit, or
- A 'near miss' that threatened to cause any of the above.

5.2.4 MA4 – All persons employed or engaged to undertake work, or otherwise accessing Woodside Power sites shall be made aware of their obligations under the *Aboriginal Heritage Act 1972 (WA)* and this CHMP.

All personnel, including third party contractors and visitors are required to undertake cultural awareness and heritage induction training. The induction must inform personnel of the values, sensitivity and appearance of the cultural heritage features within the Proposal DE and their obligations under this CHMP and the AH Act.

Induction attendance is to be recorded and confirmation that all personnel have attended is required prior to accessing any of the Woodside Power sites.

5.2.5 MA5 – Prior to clearing for construction, provide opportunities for Traditional Owners to collect traditional resources within the planned disturbance zone.

Traditional Owners have requested that Woodside provides opportunity for the harvesting of traditional resources within the planned disturbance zone prior to any native vegetation clearing. Woodside supports this request and agrees to facilitate access subject to site access protocols, operational and HSE considerations. Harvesting of traditional resources such as seeds and plants will only be permitted within the approved disturbance zone where Woodside are legally authorised to undertake native vegetation clearing.

To ensure this request is met, Woodside will issue notifications detailing when and where clearing will take place no less than one month prior to any work starting. Woodside will provide administrative support where possible to facilitate site access.

To arrange access, Traditional Owners may contact Woodside's Karratha or Roebourne offices. Woodside endeavours to meet each request, noting that on-site activities may influence the timing, number of visitors and/or duration of any visit.

Requests by Traditional Owners to access the planned disturbance zone for harvesting traditional resources should be communicated to Woodside's Senior Heritage Adviser. Access must be facilitated by the Senior Heritage Adviser (or nominee) who must:

- confirm the area to be visited, duration of the visit and the names of people attending,
- develop a Job Hazard Analysis prior to the visit in accordance with Woodside's Golden Safety Rules, WMS and take appropriate steps to manage gender restrictions using archaeological and ethnographic survey reports, and
- be present during the visit as safety focal point but must comply with any request from the Traditional Owners not to enter a heritage area or that they be allowed to discuss any heritage matter in private. However, the Senior Heritage Adviser or nominee is to stay in visual contact with the visiting party to ensure safety obligations are met and an immediate response can be enacted in the case of an emergency.

5.2.6 MA6 – Provide access for Traditional Owners areas within the Proposal facilities.

Infrastructure proposed to be constructed on the MSIA and adjacent Buffer Area, requires that some areas be closed to the public for safety reasons, but way of a fence or secure gates. Although fencing will be limited, there is the potential that this may create physical barriers to Traditional Owners and Custodians seeking to access traditional areas or places favourable for hunting or gathering bush tucker.

Only areas within the DE that have been required for facility infrastructure (and a reasonable buffer) will be fenced. Traditional Owners have requested ongoing access to fenced areas within the DE, to visit heritage sites and other areas of cultural significance. Woodside supports this request and agrees to facilitate access subject to site access protocols, operational, security and Health, Safety and Environment considerations.

To arrange access, Traditional Owners may contact Woodside's Karratha or Roebourne offices. Woodside endeavours to meet each request, noting that on-site activities may dictate the timing, number of visitors and/or duration of any visit.

Requests by Traditional Owners to access any heritage place should be communicated to Woodside's Senior Heritage Adviser. Access must be facilitated by the Senior Heritage Adviser (or nominee) who must:

- confirm the area to be visited, duration of the visit and the names of people attending,
- develop a Job Hazard Analysis prior to the visit in accordance with Woodside's Management System and take appropriate steps to manage gender restrictions using archaeological and ethnographic survey reports, and
- be present during the visit as safety focal point but not attend cultural areas unless permitted by the Traditional Owners. However, the Senior Heritage Adviser or nominee is to stay in visual contact with the visiting party to ensure safety obligations are met and an immediate response can be enacted in the case of an emergency.

5.2.7 MA7 – Establish a commitments register for this CHMP to ensure compliance against management targets during construction

Woodside's Senior Heritage Advisor or equivalent corporate heritage representative will conduct annual reviews of compliance with this CHMP throughout the construction phase of the Proposal. Once construction has been completed, Woodside will prepare a report detailing compliance against the management provisions outlined in this plan. Any incidents impacting on heritage prior to the completion of the construction phase will be reported to relevant authorities and stakeholders.

Incidents defined as a non-compliance with this CHMP include;

- Unplanned/unauthorised damage or loss to any heritage feature within the DE
- Lasting negative impact on intangible heritage values reported by stakeholders
- Discovery of a new heritage feature within the DE
- Discovery of skeletal remains within the DE
- Any trespass outside of the operational area of the DE without appropriate authorisation
- A "near miss" or activity that threatens the occurrence of an incident listed above.

6. Adaptive Management and Review of the CHMP

In line with the concept of adaptive management, the management actions presented in this CHMP shall be monitored, reviewed, evaluated and updated, as required, considering:

- new and relevant data/information gained as a result of implementing this CHMP, or from external sources.
- changes in State or Commonwealth legislation or policy.

Relevant updates will be included in a revised CHMP.

In addition, this CHMP may be reviewed:

- based on EPA requirements identified during assessment of the project in accordance with the EP Act.
- if a significant incident occurs related to the protection of Aboriginal heritage.
- if Traditional Owners reasonably request that a review is undertaken.
- if relevant legislative requirements are updated or amended in relation to Aboriginal heritage.

Technical review and evaluation of the management actions outlined in this CHMP will be conducted at least every five years (if not initiated prior to that time) to ensure the management actions are adequately addressing the key risks and meeting EPA objectives. If, as a result of any review, significant changes are required to be made to this CHMP, a revised CHMP will be provided to the EPA for approval.

When the five-yearly review cycle is triggered, or if a significant change to either the facility, activity, or risk is identified, a revised CHMP will be submitted to the EPA. When approved, the revised plan will be made publicly available.

7. Stakeholder Consultation

This CHMP is included as an appendix to the referral for the Proposal (Woodside, 2021) and therefore will be reviewed by the EPA and other designated stakeholders at the request of EPA. Prior to referral, comments on the CHMP have been sought from the Ngarluma Aboriginal Corporation. Their feedback has been incorporated into this document.

Stakeholder consultation and engagement is an integral component of the environmental impact assessment and environmental approvals process. This section describes Woodside's approach to stakeholder consultation broadly and for the Proposal specifically.

Woodside's objectives for stakeholder consultation are to:

- improve stakeholder awareness and understanding of the Proposal
- provide stakeholders with opportunities to obtain information about the Proposal including the physical, ecological, socio-economic and cultural environment that may be affected, the potential impacts that may occur, and the prevention and mitigation measures proposed to avoid or minimise those impacts
- gain feedback from stakeholders on their concerns in regard to the Proposal and, where possible, address stakeholder concerns through further activities, or by implementing additional mitigation measures.

Stakeholder engagement in relation to this Proposal includes engagement with identified stakeholders undertaken specifically in relation to the Proposal including engagement undertaken as part of development of the Woodside Power Project Social Surrounds (Cultural Heritage) Management Plan.

8. References

Black Wattle Archaeology Pty Ltd (BWA) 2019, Archaeological Site Avoidance Survey for Woodside Power Project, Stages 1, 2 & 3 the Pilbara, Western Australia, November. Prepared for the Ngarluma Aboriginal Corporation & Woodside Energy Limited. Blewett, R.S. 2001 "Archaean tectonic processes: a case for horizontal shortening in the North Pilbara granite-greenstone terrane, Western Australia". *Precambrian Research* 113.

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Department of Environment and Conservation (DEC) 2013. *Murujuga National Park Management Plan 78*. Department of Environment and Conservation, Bentley WA. Available from: <https://www.dpaw.wa.gov.au/images/documents/parks/management-plans/decarchive/murujuga-national-park-management-web-final.pdf> [Accessed May 2019].

Environmental Protection Authority (EPA) 2016. *Environmental Factor Guideline: Social Surroundings*. Environmental Protection Authority, Perth WA. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Guideline-Social-Surroundings-131216_2.pdf [Accessed March 2019].

Environmental Protection Authority (EPA) 2018. *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans*. Environmental Protection Authority, Government of Western Australia, Perth, WA. Available from: <http://www.epa.wa.gov.au/forms-templates/instructions-part-iv-environmental-management-plans> [Accessed May 2019].

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9. TERMS

Terms	Definitions
AER	Annual Environment Report
AH Act	<i>Aboriginal Heritage Act 1972 (WA)</i>
AHIS	Australian Heritage Inquiry System
ATSIHP Act	<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)</i>
Buffer Area	The 2 km 'Industry Buffer Area' surrounding the Maitland Strategic Industrial Area
CALM Act	<i>Conservation and Land Management Act 1984 (WA)</i>
CHMP	Cultural Heritage Management Plan
DBCA	Western Australian Department of Biodiversity, Conservation and Attractions
Development Envelopes (DE)	The Development Envelopes represent the area within which development of the Proposal is to occur. The two Development Envelopes for this Proposal include: - Solar PV Farm - Solar Plant Supporting Infrastructure (SPSI)
DMA	Decision-making Authority
DPLH	Western Australian Department of Planning, Lands and Heritage
DWER	Western Australian Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EP Act	<i>WA Environmental Protection Act 1986 (EP Act)</i>
EPA	Western Australia Environmental Protection Authority
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
EQMF	Environmental Quality Management Framework
ha	Hectares
km	Kilometre
kV	Kilovolt
MA	Management Action
MAC	Murujuga Aboriginal Corporation
MSIA	Maitland Strategic Industrial Area
Murujuga	Traditional name for the Burrup Peninsula and surrounding islands of the Dampier Archipelago
MW	Megawatt
NAC	Ngarluma Aboriginal Corporation
National Heritage Place	National Heritage Place – Dampier Archipelago (including Burrup Peninsula)
NEPM	<i>Commonwealth National Environmental Protection (Ambient Air Quality) Measure 2016</i>
NT Act	<i>Native Title Act 1983 (Cth)</i>
RNTBC	Registered Native Title Body Corporate

Terms	Definitions
WA	Western Australia
WMS	Woodside Management System
Woodside	Woodside Power Pty Ltd