



DBCA Consultation

Arrowsmith Hydrogen Project (AHP)

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Project Acronym		AHP			
Project Title		Arrowsmith Hydrogen Project			
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Lead – Project Manager		Mr. Mick Hutt			
Environmental Manager		Mr. Peter Galloway			
Parent Company		Infinite Green Energy, Level 13, 99 St Georges Tce, Perth CDB WA 6000			
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Rev	Description	Date	Author	Checked	Appr
A	Changes as per EPA requirements	24/11/24	PG	MH	SG
1	Update for Re-submission to EPA	22/02/25	PG	MH	SG

IGE respectfully acknowledges traditional owners of the land and water it manages, and recognises their continuing connection to land, water and community

1 Beekeepers DBCA Consultation

Requested Meeting with DBCA to clarify Environmental Aspects for referral update

EPA Update:

Flora and Vegetation

Additional survey information to determine the potential impact to significant flora and vegetation required.

Evidence of consultation with the Department of Biodiversity, Conservation and Attractions (DBCA) regarding potential indirect impact to Beekeepers Nature Reserve.

Provide evidence of consultation with the Department of Biodiversity, Conservation and Attractions (DBCA) regarding potential indirect impact to Beekeepers Nature Reserve. Evidence must include a summary of the discussion and outcomes (including any concerns raised, resolutions, and agreement to mitigation and management actions).

IGE Agenda

Environmental Factors:

Inland Waters

- Beekeepers Reserve

Terrestrial Fauna

- Black Cockatoos and Bats

DBCA Stakeholder Meeting

Address: State Operation Headquarters

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Technology Park, Western Precinct

KENSINGTON Western Australia 6151

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Email: enquiries@dbca.wa.gov.au

Website: <https://www.dpaw.wa.gov.au>

Attendees: IGE	<p>Mick Hutt: Construction manager</p> <p>Peter Galloway: Environmental manager</p> <p>Dave Harwood: Project Director</p> <p>tim.walster@corporateaffairs.com.au;</p>
Attendees DBCA	<p>Cassie Reynolds <Cassie.Reynolds@dbca.wa.gov.au mhutt@igeh2.com>; Tim Walster Murray Baker murray.baker@dbca.wa.gov.au>; Beth Chapple beth.chapple@dbca.wa.gov.au>; Alanna Chant alanna.chant@dbca.wa.gov.au>; Steve Buitenhuis steven.buitenhuis@dbca.wa.gov.au></p> <p>Alison Smith: Environmental Officer</p>
Environmental Factor	Consultation and Management Actions
Inland Waters	<p>Surface Water</p> <p>There will be no construction within the natural drainage lines, wetlands or ephemeral water body areas within the project footprint.</p> <p>An updated surface water assessment will be provided to the EPA based on the revised site layout</p> <p>Clarification that the aquifer being utilised for process water abstraction will be the Yarragadee Aquifer and not the Superficial Aquifer</p> <p>Expected zero impact upon the Beekeepers Nature Reserve adjacent to the Arrowsmith project</p> <p>Discuss plan for water bore to confirm draw-down</p> <p>Department of Water engagement</p>

Terrestrial Fauna	<p>Carnaby's black cockatoo habitat assessment:</p> <p>Bird strike:</p> <p>Risk Assessment and Hierarchy of Controls</p> <ul style="list-style-type: none"> - List further controls - Curtailment - Light management - 3D Radar System <p>Allows continuous bird monitoring, delivering real-time actionable information and essential insights for operational, tactical, and strategic risk mitigation</p> <p>Survey Complete:</p> <p>Black cockatoo habitat and foraging areas assessment determining the extent and quality of the banksia species of concern.</p> <p>Reports: Avia fauna and Bat strike Assessment complete</p> <p>Flora and Fauna Survey Ecoscape</p> <ul style="list-style-type: none"> - The survey was undertaken in Spring 2022 and the report has been finalised to align with the current disturbance footprint. - This includes black cockatoo habitat and foraging areas assessment determining the extent and quality of the banksia species of concern. - The surface and groundwater water assessment will ensure appropriate designs can be implemented to prevent impact. - Water Management Strategies will be updated <p>Surveys and Reports:</p> <ul style="list-style-type: none"> - Arrowsmith Wind and Solar Farm Environmental Field Survey Ecoscape 2012 - Ecoscape Vegetation Survey 2021/2023 - Bamford Flora and Fauna survey 2021 - IBE Desk Top Avifauna and bats Survey 2023 - Bamford Black Cockatoo field survey 2021 - Ecoscape Flora and Fauna Field survey 2023: - EIA Exodus group: Surface Hydrology 2021 Mapping - Bat call analysis Arrowsmith report: Dr Kyle Armstrong, Specialised Zoological a scientific consultancy 2021
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Vegetation	<p>The Pastoral and Wetland habitats are considered significant for Carnaby's Cockatoo, noting that Heath and Shrubland may also represent foraging habitat, particularly areas with Banksia promotes trees that are considered as a premium food source</p>
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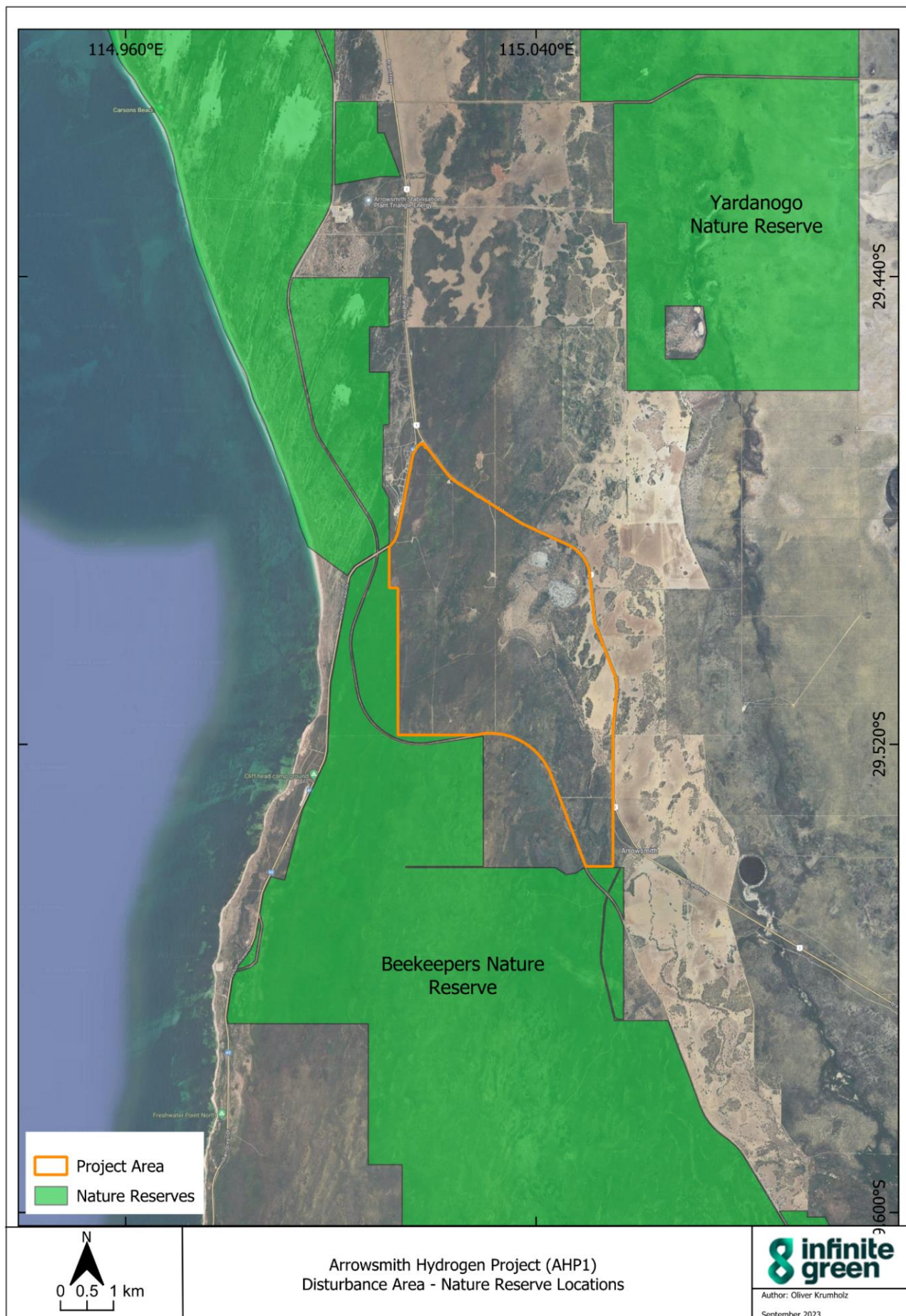


Figure 1 Surrounding Nature Reserves

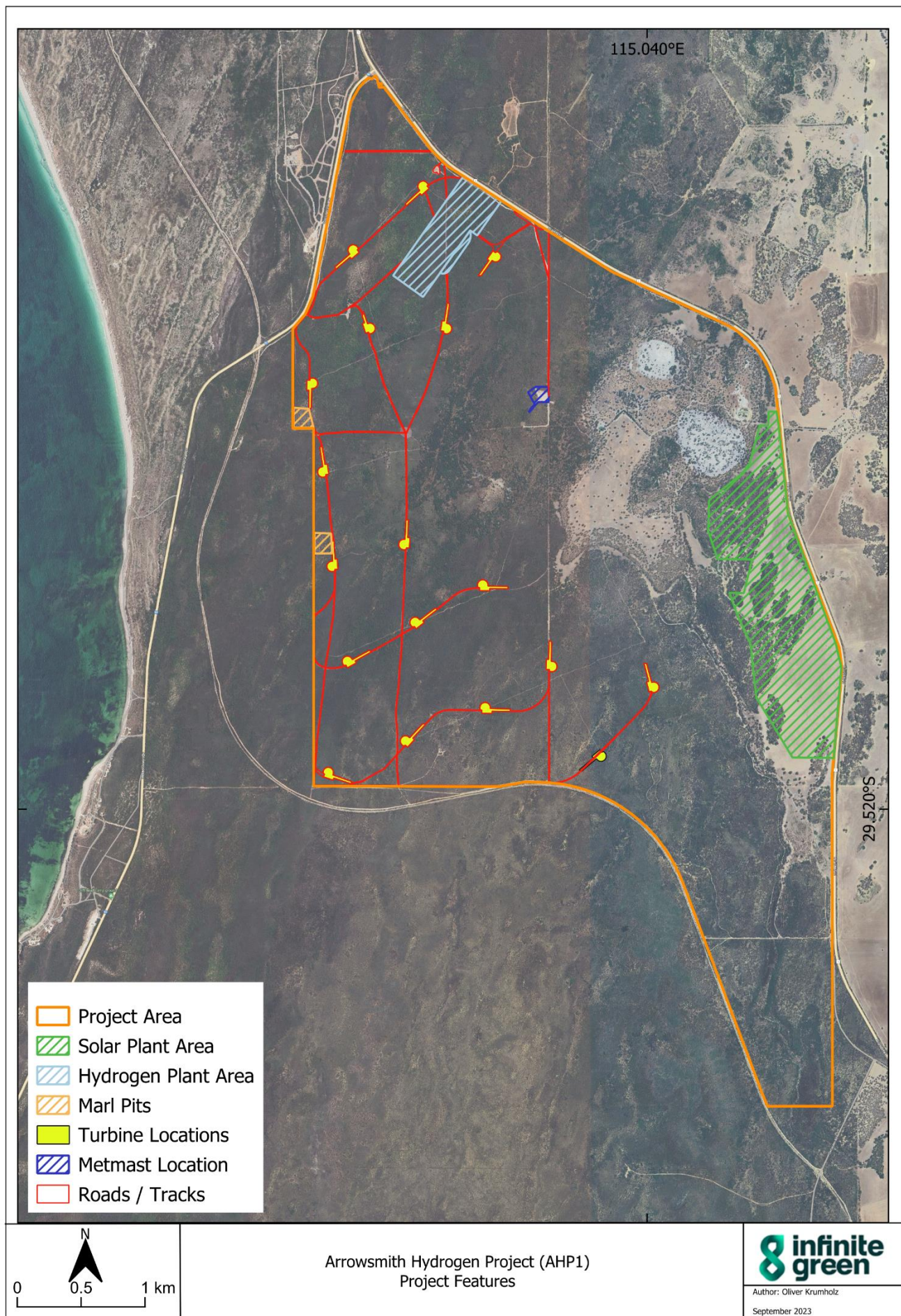


Figure 2 Previous AHP Layout: Project elements



Figure 3 Current AHP Layout

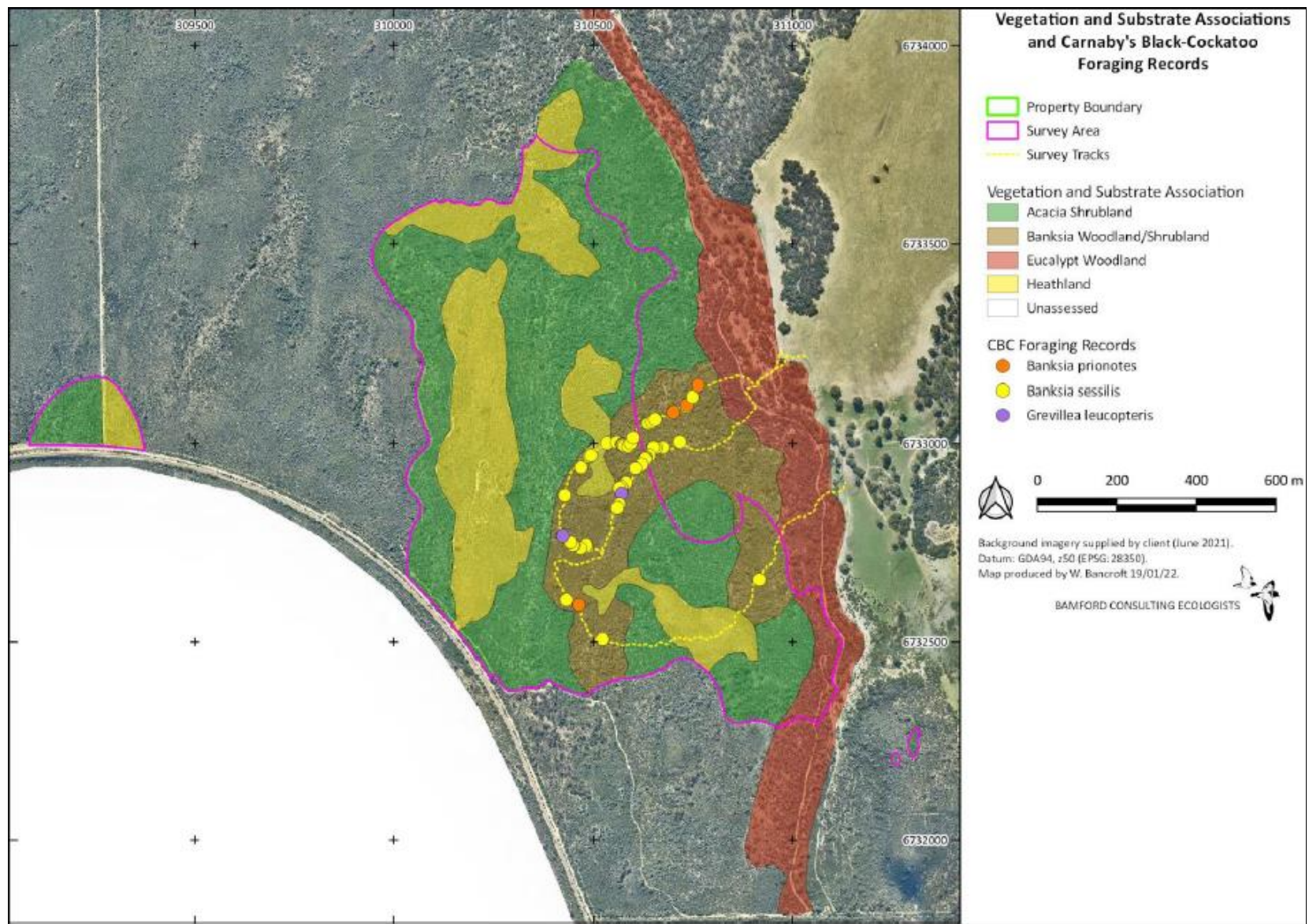


Figure 3 CBC Foraging Habitat

Beekeepers Impact Management Measures

2 Conservation and Attractions (DBCA) regarding potential indirect impact to Beekeepers Nature Reserve

DBCA Objective: To protect flora and vegetation to ensure biological diversity and ecological integrity are maintained within the Beekeepers nature reserve			
Assessment Objective: Assess the potential residual impact to flora and vegetation Provide Summary and outcomes Consultation with the DBCA regarding potential indirect impact to the adjacent Beekeepers Nature Reserve			
Key environmental values: Native vegetation including significant vegetation and flora : Beekeepers Carnaby's Black Cockatoo Foraging Flora and vegetation			
Direct Impacts		Indirect impacts	
Key Environmental Impacts <ul style="list-style-type: none"> • Loss of vegetation and flora through clearing and earthworks activities, including significant vegetation and flora • Fragmentation of native vegetation adjacent to Beekeepers nature Reserve 		<ul style="list-style-type: none"> • Introduction and spread of environmental weeds • Potential reduction in vegetation health as a result of dust generation • Changes to vegetation structure and floristic composition in surrounding/adjacent areas • Altered surface water drainage patterns and surface water flows due to clearing/ and construction of infrastructure • Contamination of soils from nearby potential hydrocarbon and chemical spills 	
Management action	Management Target	Monitoring	Reporting
Clearing			
Demarcate Development envelope boundary using appropriate visual markers prior to ground disturbing activities adjacent to Beekeepers reserve	Avoid clearing of vegetation outside of Development envelope during and attributable to construction Avoid impacts to significant vegetation and flora outside of Development envelope	Daily inspection of Development envelope boundary demarcation during clearing activities	Report unauthorised clearing as soon as practicable after identified Vegetation clearing records and annual environmental reporting Induction records

<p>Visual inspection and approval of Development envelope boundary prior to ground disturbing activities Visual inspection and record of cleared areas to be undertaken post-clearing to ensure no impact to Beekeepers Reserve</p> <p>Vehicles and equipment access limited to designated roads/access tracks and cleared areas</p> <p>All site personnel to be inducted on environmental responsibilities.</p>	<p>Avoid impacts to Carnaby's Black Cockatoo foraging habitat</p>	<p>Pre-clearance inspections, with any variations between pegged clearing area and approved plans to be investigated and resolved prior to clearing</p> <p>Inspection of clearing extents during clearing activities to confirm no over clearing Monitor potential impact to significant flora and vegetation</p>	
Surface/Groundwater Drainage			
<p>Groundwater-Dependent Ecosystems (GDE)</p> <p>Consider the groundwater requirements for as many components of a GDE within the development envelope</p>	<p>Minimise indirect impacts to surrounding/Beekeepers reserve from altered surface water drainage and flows</p>	<p>Monthly visual inspections for environmental compliance Groundwater Monitoring Bores Regular site monitoring: Groundwater/Surface water Vegetation monitoring</p>	<p>Minimise indirect impacts to surrounding/adjacent areas from altered surface water drainage and flows</p>
<p>Outcomes</p> <p>Individually, developments may have minimal impact on the national environment, but their combined impact can result in significant long-term damage. Where assessed, the impacts are most often considered in isolation of other current or anticipated projects. These project-level decisions fail to fully factor in other pressures on the environment, resulting in an underestimation of the broadscale cumulative impacts on a species, ecosystem, or region (DCCEEW)</p> <p>Avoid Cumulative impacts upon Beekeepers Nature Reserve Avoid vegetation impacts upon Beekeepers Nature Reserve Avoid drainage impacts upon Beekeepers Nature Reserve Avoid CBC impacts</p> <p>The DBCA understand that there is an increasing number of proposals for resource extraction within and adjacent to Beekeepers Nature Reserve, including petroleum projects, extractive industry, and renewable energy project developments. It is important to ensure that the conservation values of the nature reserve are not adversely impacted by surrounding development activity within the Arrowsmith Development Hub (ADH). The</p> <p>It is essential that proposals in the area are monitored and managed to avoid or minimise impacts to fauna and native vegetation within Beekeepers nature reserve or the underlying groundwater aquifers. Should residual impacts remain, then appropriate environmental offset measures can be considered with the aim of ensuring there is no net loss of biodiversity values within the Arrowsmith Development Hub area.</p>			

3 Residual Impact Assessment

No significant residual impacts to Beekeepers Nature Reserve from the Proposal

Decision-Making Authority: Chief Executive Officer, Department of Biodiversity, Conservation and Attractions

Decision-Making Authority Legislation (and approval): Conservation and Land Management Act 1984 (section 101 granting a licence to use the land reserved as Nature Reserve)

Cumulative Impacts

- A Seismic Survey By Norwest Energy NL Which Disturbed 55 ha Of Native Vegetation
- A Seismic Survey By ARC Energy Limited And Origin Energy Developments Pty Ltd Limited Which Disturbed Up To 117 ha Of Native Vegetation
- An Exploration Well By Origin Energy Resources Limited Which Disturbed Up To 6.5 Ha Of Native Vegetation.

No clearing from the Proposal within Beekeepers Nature Reserve, therefore no significant cumulative impacts will occur.

Potential Impact to Groundwater

Groundwater recharge into the Yarragadee aquifer is mostly by direct rainfall infiltration over outcrop areas as well as downward leakage from overlying aquifers. Concentrated recharge from rivers and streams is also important in some areas. Due of the proposed water take from the Yarragadee aquifer, the volume (635 ML/a) and the location of the proposed bores no impacts on the vegetation within Beekeepers Reserve is expected. Furthermore, groundwater modelling has shown no significant drawdown in the superficial aquifer to the west of the Proposal from a greater water abstraction than required by IGE (Cardno, 2021a).

In summary, no significant impacts on groundwater levels within Beekeepers Nature Reserve are expected during AHP-1 operations.