

Environmental Protection Authority

Environmental Protection Act 1986

Section 43A

NOTICE OF DECISION TO CONSENT TO AMEND A REFERRED PROPOSAL DURING ASSESSMENT

PERSON TO WHOM THIS NOTICE IS GIVEN

(a) Infinite Green Energy Pty Ltd (ACN: 80628842464)
Level 13/99 St Georges Terrace
PERTH WA 6000

PROPOSAL TO WHICH THIS NOTICE RELATES:

Arrowsmith Hydrogen Project
Assessment No. 2345

Pursuant to s. 43A of the *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) gives approval to the assessment of the proposal being completed in respect of the proposal as amended in accordance with the proponent's request:

- Updated proposal description and name.
- Addition of grid connection option to the green hydrogen production facility.
- Reduce the total development envelope by 23.52 hectares (ha) from 1929.68 ha, totalling 1906.16 ha.
- Inclusion of road verge widening and site access works along Brand Highway, within an envelope of 1.68 ha.
- Increase proposed disturbance footprint for solar farm by 0.85 ha from 139.85 ha, totalling 140.70 ha.
- Rename main plant / trucking loop element to Green Hydrogen Production Facility (GHPF).
- Reduce proposed GHPF footprint by 13.69 ha from 35.88 ha, totalling 22.19 ha.
- Identification of the types of infrastructure to be included within the GHPF, including:
 - Addition of the option to construct temporary accommodation facilities within the GHPF during construction phase.
 - Alkaline electrolyser units
 - Water treatment plant: RO filtration units, water storage tanks
 - Battery storage units
 - Grid connection
 - Hydrogen powered turbine

- Energy storage systems
- Compressed gas tanks
- Cryogenic liquid storage: hydrogen
- Hydrogen compression unit
- Cooling systems
- Power management systems
- Oxygen management
- Hydrogen liquefaction system
- Control and monitoring systems
- Hydrogen dispersing system
- Pipelines and distribution networks
- Safety and ventilation systems
- Waste management systems
- Office control centre and switch room
- Entry road and gate widening.
- Remove marl pits from the proposal.
- Amalgamate property boundary roads element with Project Fire /Roads element to form “Property Fire Roads Including Boundary (Shire of Irwin/Dfes)”.
- Increase total extent of Property Fire Roads Including Boundary by 0.58 ha from 27.54 ha, totalling 28.12 hectares (including amalgamation of boundary and fire roads).
- Remove electrical line route extent (overhead power reticulation lines) from proposal.
- Rename Wind Turbines element to Windfarm (Wind Turbines) and reduce proposed extent by 7.14 ha from 22.17 ha, totalling 15.03 ha.
- Addition of Sodar to existing Met Mast element and decreased required area by 0.31 ha from 2 ha, totalling 1.69 ha.
- Removal of a proposed met mast area of 0.91 ha.
- Addition of proposed Project Roads to Install totalling 19.02 ha.
- Addition of road upgrades to Brand Highway.
- Total native vegetation clearing reduced by 12.2 ha from 139.33 ha, totalling 127.13 ha.
- Permanent site disturbance footprint reduced by 9.65 ha from 242.28 ha, totalling 232.63 ha.
- Post construction rehabilitation (temporary clearing) reduced by 10.11 ha from 14.32 ha, totalling 4.21 ha.
- Addition of the option to construct above ground sewage treatment plant with capacity to support up to 15 operators.
- Addition of processed water disposal options including:
 - leach drain system,
 - zero liquid discharge system,
 - discharge to ground,
 - hybrid above ground treatment and leach drain system,
 - stock dam discharge, and
 - groundwater or soil infiltration basins within the GHPF.
- Decrease total number of wind turbines by 7 from 25, totalling 18

- Increase wind turbine capacity by 1.2 MW per unit from 6.0 MW, totalling 7.2MW per turbine. Total wind farm capacity rating up to 129.6 MW.
- Solar farm capacity redefined to 85MW maximum rating.
- Removal of battery storage capacity limit.
- Redefine the three proposed groundwater bores to abstract only from the Yarragadee aquifer and reduced maximum annual abstraction by 390.1 ML from 854.1 ML, totalling 464 ML per annum.
- The maximum groundwater extraction rate is reduced by 1,068,748 litres per day from 2,340,000 litres per day, totalling a proposed abstraction rate of 1,271,252 litres per day.
- Predicted GHG emissions have doubled during construction and operation, totalling 14,364t CO₂-e and 632t CO₂-e per annum respectively.
- Change to proposal layout within the development envelope, including transition to an indicative development approach compared to set layout proposed at referral.
- Reduced maximum production of hydrogen per day by 19 tonnes from 42 tonnes, totalling 23 tonnes per day.
- Addition of decommissioning and rehabilitation commitments to restore landscape with native vegetation, monitoring of rehabilitation including quantitative completion criteria and reporting.
- Administrative changes to wording.
- Added decommissioning phase of approximately three years.

The amended proposal content document and figures are attached.

SUMMARY OF REASONS:

- Naming and description changes are unlikely to impact the assessment as the character of the proposal is maintained. The original naming convention will not be changed on the EPA website to retain accessibility and functionality.
- Incorporation of the option to connect to the grid is understood to be an engineering option for energy stability and project optimisation if such a connection became available. The character of the proposal remains as a renewably powered hydrogen facility and does not include the development of any overhead lines or other power reticulation infrastructure outside the development envelope. If the proposal were approved, development of any power transmission infrastructure outside the development envelope would require the assessment and approval from the relevant decision-making authority.
- The proposed changes to the development envelopes reduce the overall area that may be directly impacted by disturbance whilst incorporating the area of Brand Highway required for widening to enable truck and infrastructure access to site. The road widening was identified in the original referral supporting document but omitted the spatial impacts required to define the entire proposal for assessment.
- The proposed direct impacts from clearing of vegetation and habitat values are lower than originally referred due to reductions in total extent (12.2 ha) and layout modifications avoid known karst and cave systems.

- Marl pit removal is appropriate as it likely improves the environmental outcomes associated with dust impacts.
- Reducing the maximum number of wind turbines is appropriate reducing potential impacts to avifauna.
- Removal of battery storage capacity limit is unlikely to affect assessment as any scaling impacts associated clearing must remain within the scope of the proposed GHPF extent.
- Revised greenhouse gas predictions remain significantly lower than the EPA factor threshold of 100,000 tonnes of CO₂-equivalent per annum, consistent with the original referral.
- Additional processed water disposal options may result in additional or varying impacts that will need to be considered during assessment. However, the EPA recognises that Inland Waters, Terrestrial Fauna and Flora and Vegetation are already factors under assessment and the proposed options remain localised to the GHPF and existing stock dams within the Development Envelope. The proposed change is not so significant to warrant a new referral in this instance.
- Proposed layout change mitigates proposed impacts to caves, karst and CBC foraging habitat.
- Transition to an indicative layout approach is appropriate as it affords opportunistic avoidance and management of environmental values if the proposal were approved and implemented. The potential for variation within the revised indicative layout is understood to be constrained by the technical performance and spacing of wind turbines and geological morphology within the development envelope. The EPA requested additional information on Flora and Vegetation, Terrestrial Fauna, Inland Waters and Social Surroundings in 2022 which will be considered during assessment within the context of the revised footprint approach. there are no new environmental factors likely to be significantly impacted by the proposal.
- The effect of the amendment has been considered in the context of the existing proposal, cumulative and holistic impacts have been considered.
- The proposal will remain substantially the same character as the existing referred proposal. The EPA considers that the amendment may be significant if the proposal were already approved however, the EPA considers it will have enough information to reasonably proceed with assessment of the amended proposal without performing any additional functions at this stage.

EFFECT OF THIS NOTICE:

1. The assessment of the proposal is to be completed in respect of the proposal as amended in accordance with the decision set out in this notice.
2. The proposal as amended in accordance with this notice is taken to have been referred to the EPA under s. 38 of the EP Act.

RIGHTS OF APPEAL:

There are no rights of appeal under the EP Act in respect of this decision.

A handwritten signature in black ink, appearing to read 'Darren Walsh', located in the upper left quadrant of the page.

Darren Walsh
Delegate of the Environmental Protection Authority
CHAIR

29 January 2025

Attachment 1- Amended proposal content document and figure/s showing the new approved proposal

Arrowsmith Domestic Hydrogen Project PCD (Final)

Proposal Content Document (PCD)

Table 1 General Proposal Content Description

Proposal Title	Arrowsmith Hydrogen Project (AHP)
Proponent Name	Infinite Green Energy Limited
Short Description	<p>IGE is proposing to construct and operate a Green Hydrogen Production Facility (GHPF) and associated infrastructure (the Proposal), to be located at Arrowsmith, approximately 30 kilometres south of Dongara in the Shire of Irwin, Western Australia.</p> <p>The Proposal will utilise combined onshore wind and solar energy of approximately 225 (MW) capacity to produce Green Hydrogen which will be compressed and transported to various emerging green energy markets.</p> <p>The Proposal comprises the following major components:</p> <ul style="list-style-type: none">- PV Solar Array (Approx Maximum 85 MW)- Wind Farm (18 X 7.2 MW wind turbines)- GHPF (Anticipated Output Max 23 Tpd of hydrogen)- A multi-layered backup power strategy combining battery storage, hydrogen-powered turbines, and grid connection (Renewable Energy) ensures that the AHP remains operational under all conditions, including extended periods of low renewable energy availability- Associated AHP Infrastructure
Date	December 2024

Table 2: General Proposal Content Description

Proposal element	Location / Description	Maximum extent, capacity or range	Current hectares
Physical Elements			hectares
Development Envelope (IGE Property Extent Lot 703)	Figure 3 Project Development Envelope	Maximum Extent	1904.48 ha
Development Envelope (Road verge widening and AHP Site Access)	Figure 4	Maximum Extent	1.68 ha
Solar Farm (PV Solar Array)	Figure 2 (Eastern Boundary)	Maximum Extent	140.70 ha
		Previously Disturbed Area	74.83 ha
		Clearing Required	65.87 ha
Green Hydrogen Production Facility (GHPF) <div><div><div>- Alkaline Electrolyser units</div><div>- Water Treatment plant: RO Filtration units, demineralisation units, and water storage tanks</div><div>- Battery Storage units</div><div>- Grid Connection</div><div>- Hydrogen powered Turbine</div><div>- Energy Storage Systems (e.g., batteries)</div><div>- Optional Temporary Accommodation facilities</div><div>- Compressed Gas Storage tanks.</div><div>- Cryogenic Liquid Storage: Cooled Hydrogen</div><div>- Hydrogen Compression Unit</div><div>- Cooling Systems</div><div>- Power Management System</div><div>- Oxygen Management</div><div>- Hydrogen Liquefaction System</div><div>- Control and Monitoring Systems</div><div>- Hydrogen Dispensing System</div><div>- Pipelines and Distribution Networks</div><div>- Safety and Ventilation Systems</div><div>- Waste Management Systems</div><div>- Office Control Centre and switch room</div></div></div> <div>Note: Clearing Extents include GHPF Entry Road and proposed Gate Widening</div>	Figure 2 Located near the Northern Boundary	Maximum Extent	22.19 ha
		Previously Disturbed Area	1.53 ha
		Clearing Required	20.66 ha

Property Fire Roads Including Boundary (Shire of Irwin/Dfes)	Figure 2	Maximum Extent	28.12
		Previously Disturbed Area	26.46
		Clearing Complete	0.00
		Clearing Required	0 ha
Windfarm (Wind Turbines)	Figure 2	Maximum Extent	15.03 ha
		Previously Disturbed Area	0.25 ha
		Clearing Required	14.78
Turbine Blade laydown area revegetated after assembly	Figure 2 Located adjacent to the access road	Maximum Extent	4.21 ha
		Revegetated after use	4.21 ha
		Clearing Required	4.21ha
Met Mast and Sodar	Figure 2	Maximum Extent	1.69 ha
		Previously Disturbed Area	1.69 ha
		Clearing Complete	0.00
Project Roads to Install	Figure 2	Maximum Extent	19.02 ha
		Previously Disturbed Area	0.00 ha
		Clearing Required	19.02
Vegetation Disturbance: Gate widening for AHP site access (MRWA Verge Side)	Figure 4	Maximum Extent	0.001
		Previously Disturbed Area	0.00
		Clearing Required	0.001
Road Widening (Brand Highway)	Figure 4	Maximum Extent	1.68 ha
		Previously Disturbed Area	0.78 ha
		Clearing Required (Ground Disturbance)	0.9 ha
Proposal Clearing Extent			127.13
Proposal Extents			
Proposal Maximum Extent, (Development Envelope Lot 703)	1904.48 ha		
Proposal Maximum Extent (Development Envelope, Road verge widening and Site Access)	1.68ha		
Combined DE Extents	1906.16		
Previously Disturbed Vegetation	105.5 ha		
Post Construction Rehabilitation	4.21ha		
Permanent Site Disturbance Footprint	232.63 ha		

Proposal Element	Location / description	Maximum Extent, Capacity or Range
Construction Elements		
Site Facilities	GHPF	<p>A Temporary onsite accommodation facility (10-15 Contractors) during construction phase is included as an option during construction only</p> <p>Optional on-site above ground sewage treatment plant or discharged to leach drain, are subject to change dependent on Geo-Tech engineering solutions.</p> <p>Supporting Max 10 -15 contractors. Sewage output: Approx 2000 Litres/day</p>
Salt and Brine Emissions	GHPF	<p>Salt solids volumes are dependence on further engineering analysis and infrastructure equipment design, to a maximum of 1100 kg per day</p> <p>Liquid Emission Volumes are based on current Geotechnical investigations and engineering solutions and are subject to change dependent on engineering outputs.</p> <p>Options are being considered to discharge processed brine onsite to:</p> <ul style="list-style-type: none"> - Leach Drain System, - A Zero Liquid Discharge System - Reverse Osmosis (RO) and Brine Minimisation - Advanced Filtration and Treatment conforms to groundwater discharge criteria - Hybrid System: Above-Ground Treatment with Leach Drain Discharge - Stock dams for Discharge and evaporation - Groundwater, or Soil Infiltration Basins, <p>Discharge options as required will be based on further geotechnical investigations and ongoing engineering solutions.</p> <p>Discharge and engineering options will be included within the Wastewater Management Plan</p>

Road Widening	Brand Highway	0.9 ha (Ground Disturbance)
AHP Site Gate Access Widening	Brand Highway	0.001 ha (Vegetation Clearing)
Operational Elements		
Wind turbines	Wind Farm	18 Turbines x 7.2 MW, maximum rating of 129.6 MW
Solar farm	PV Solar Array (Adjacent to Brand HWY)	85MW maximum rating
Groundwater Water Abstraction	GHPF	<p>Water extraction ranges from 232 million litres (ML) to a maximum estimated 464 ML per year to supply three proposed groundwater production bores, abstracted from the Yarragadee Aquifer.</p> <p>The maximum extraction rate is 1,271,252 litres per day.</p>
Hydrogen Production Electrolysis	GHPF	Production up to max. 23 tonnes per day.
Stormwater and Wastewater	GHPF/AHP	Stormwater and Wastewater Volumes Within impending Geotechnical, and Construction/Operational Engineering Details.

Proposal Elements with Greenhouse Gas Emissions

Construction Elements: Note Scope 3 Not Required.

Scope 1:	Not expected to be greater than 14,364t CO ₂ -e per annum
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Scope 2:	N/A
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Operation elements:

Scope 1:	Not expected to be greater than 632t CO ₂ -e -per annum
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Scope 2:	N/A
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Decommissioning and Rehabilitation

The decommissioning plan for the Arrowsmith Hydrogen Project will detail the required actions for safely dismantling and restoring the site at the end of its projected 25-year lifespan. It will also include provisions for asset life extensions or rehabilitation if the project does not proceed beyond this period.

The decommissioning plan includes:

- Removal of all vehicles, machinery, and buildings: All equipment, vehicles, and infrastructure utilised during the project's operation will be dismantled and removed from the site.
- Removal from site and recycling or appropriate disposal of all infrastructure and waste: This step involves the proper disposal or recycling of all infrastructure components and waste generated during the project's lifespan, ensuring minimal environmental impact.
- Decommissioning of water bores: Any water bores or wells drilled for the project's operations will be decommissioned, ensuring they are properly sealed to prevent contamination and pose no hazards.
- Remediation of any contaminated soil: If soil contamination has occurred during the project's operation, remediation measures will be implemented to restore soil quality, following regulatory requirements.
- Rehabilitation and revegetation of disturbed areas: Disturbed areas of the site will undergo rehabilitation, including revegetation efforts using native vegetation consistent with that from the local area to restore natural habitats and ecosystems. This aims to mitigate the environmental impact caused by construction activities.
- Vegetation reinstatement: In the event that the project does not continue beyond its 25-year lifespan and rehabilitation is initiated, vegetation reinstatement will commence. This involves replanting native vegetation to restore the landscape.
- Rehabilitation management procedures: The rehabilitation process will be conducted in accordance with established management procedures, ensuring that activities are carried out efficiently and effectively to achieve restoration goals.
- Monitoring: Monitoring activities will be undertaken annually to assess the progress of rehabilitation efforts. Quantitative completion criteria will be established, and monitoring will continue until these criteria are met, indicating successful rehabilitation.
- Reporting and Compliance:
 - Detailed documentation of all decommissioning activities to ensure compliance with regulatory standards.
 - Regular progress reports submitted to environmental regulators, documenting rehabilitation success and adherence to closure requirements.

By implementing these decommissioning and rehabilitation measures, the Arrowsmith Hydrogen Project (AHP) aims to minimise its environmental disturbance footprint and ensure the responsible management of the project site following the conclusion of operations.

Commissioning

The commissioning process of the AHP will be methodically executed in stages, with systems commissioned incrementally as they reach completion. A comprehensive commissioning plan will be devised to prioritise the commissioning of systems utilising non-hazardous products before transitioning to hydrogen production.

Upon the conclusion of construction activities, the construction contractor will formally hand over the site at 'construction completion' to the commissioning team designated by the Proponent. This commissioning team is envisioned to encompass a blend of contracting engineers, engineers from the Proponent, operational personnel, and specialized commissioning subcontractors.

Given the inherently hazardous properties of hydrogen and oxygen, coupled with the intricate nature of the facility's infrastructure, a robust commissioning and completions management system will be employed. The development of this system will be meticulously undertaken during the detailed engineering phase, ensuring meticulous planning and execution of the commissioning process to guarantee safety, operational efficiency, and regulatory compliance throughout the facility's lifecycle.

Critical Containment Infrastructure Report

A Critical Containment Infrastructure Report (CCIR) may be required for premises that include containment infrastructure (e.g. for the purpose of storage and containment of liquid hydrogen). The purpose of the CCIR is to confirm that the environmental controls regarding containment infrastructure are constructed to the correct engineering specifications before materials are deposited within the containment cell.

Facility Commissioning and activation will be staged; The anticipated order is as follows (subject to change):

- Power Generation – PV Solar Array, Wind Turbines, Battery Energy Storage System (BESS) and Hydrogen turbines
- Green Hydrogen Production Facility (GHPF) Utilities
- Hydrogen Production
- Hydrogen Liquefaction and Storage
- Liquid Hydrogen Offloading and transporting

Activation will commence when completion assurance is complete, and each area is approved "Ready for Start-Up" (RFSU). The commissioning team will begin with a mark-up of the key deliverables such as Piping and Instrumentation Diagrams to define the system boundaries. IGE will identify the subcontractors and vendors required for commissioning and develop the detailed scopes of work.

This will include:

- Leak Testing
- Testing, Cleaning and Drying Services
- Specialist Package Commissioning Engineers (e.g., Wind turbines, Electrolysers, LH2 and H2 Production)

Other Elements that Impact Extent of Effects on The Environment

Proposal time*	Maximum project life	Preliminary 25 years Every 25 years asset life extension review and possible extension works to be conducted.
	Construction phase	Approximately 24 months
	Commissioning phase	Approximately 6 months
	Operational phase	25 years
	Decommissioning	Approximately three years

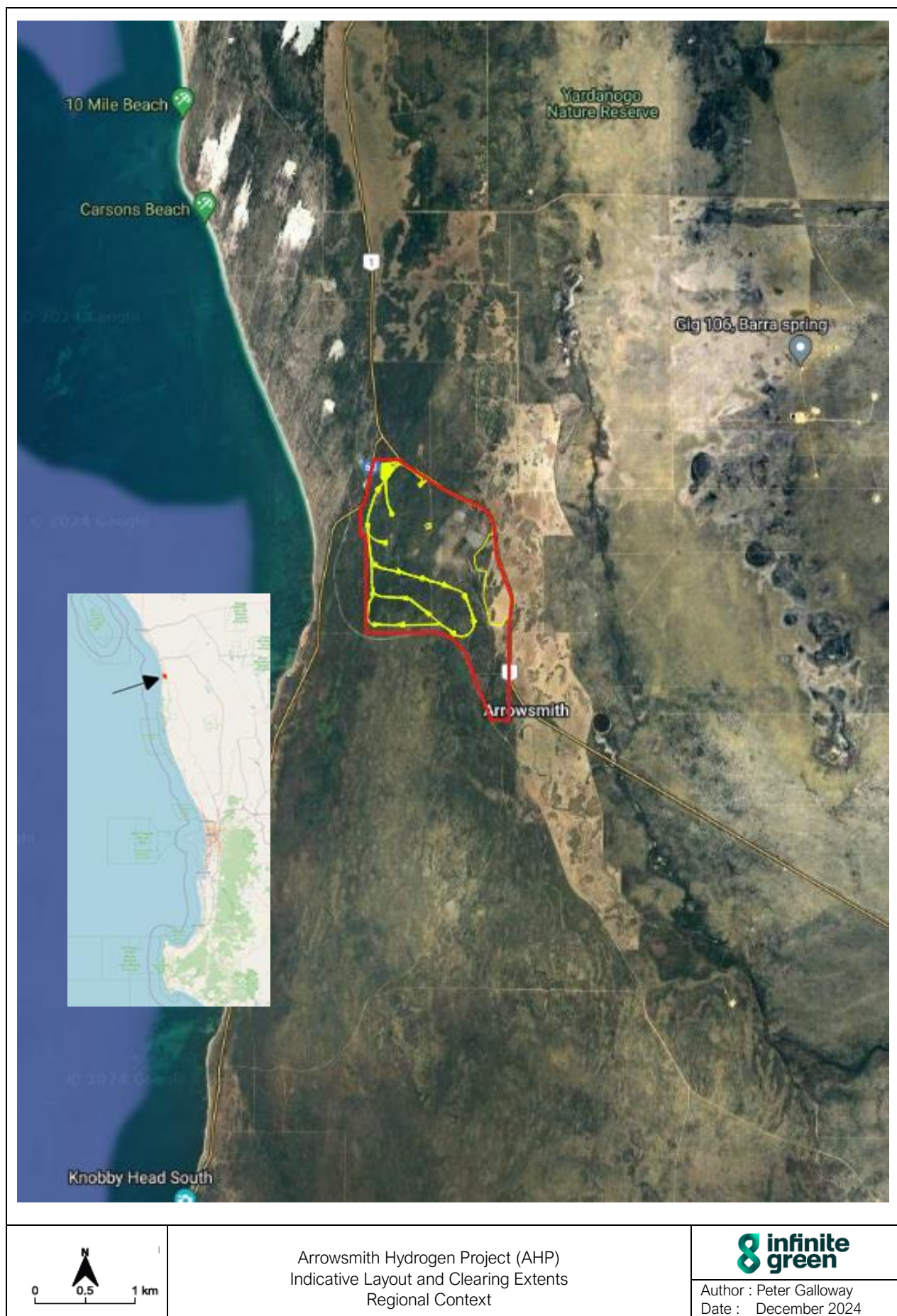


Figure 1 Proposed Site, Regional Location

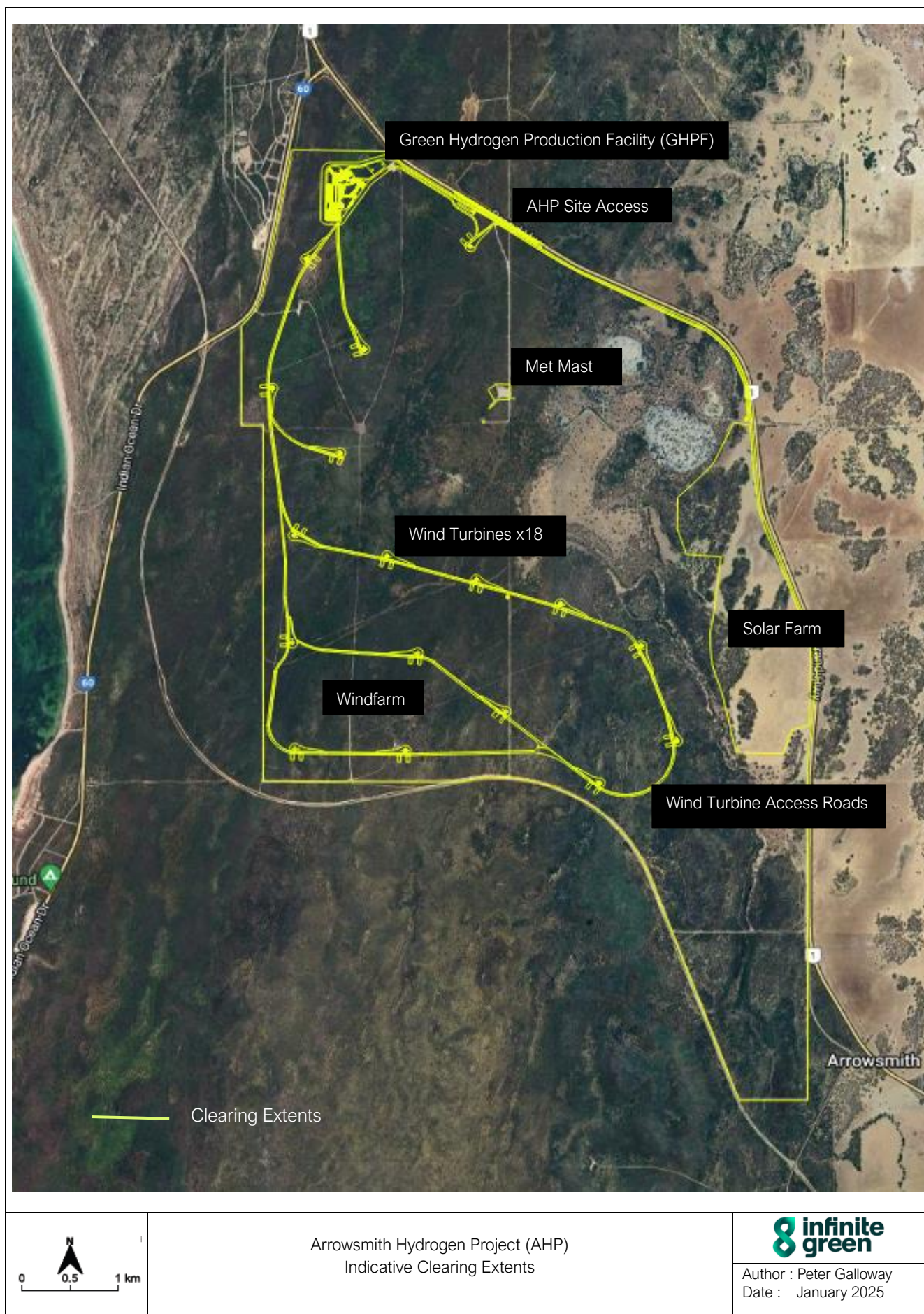


Figure 2 Indicative Project Infrastructure Layout

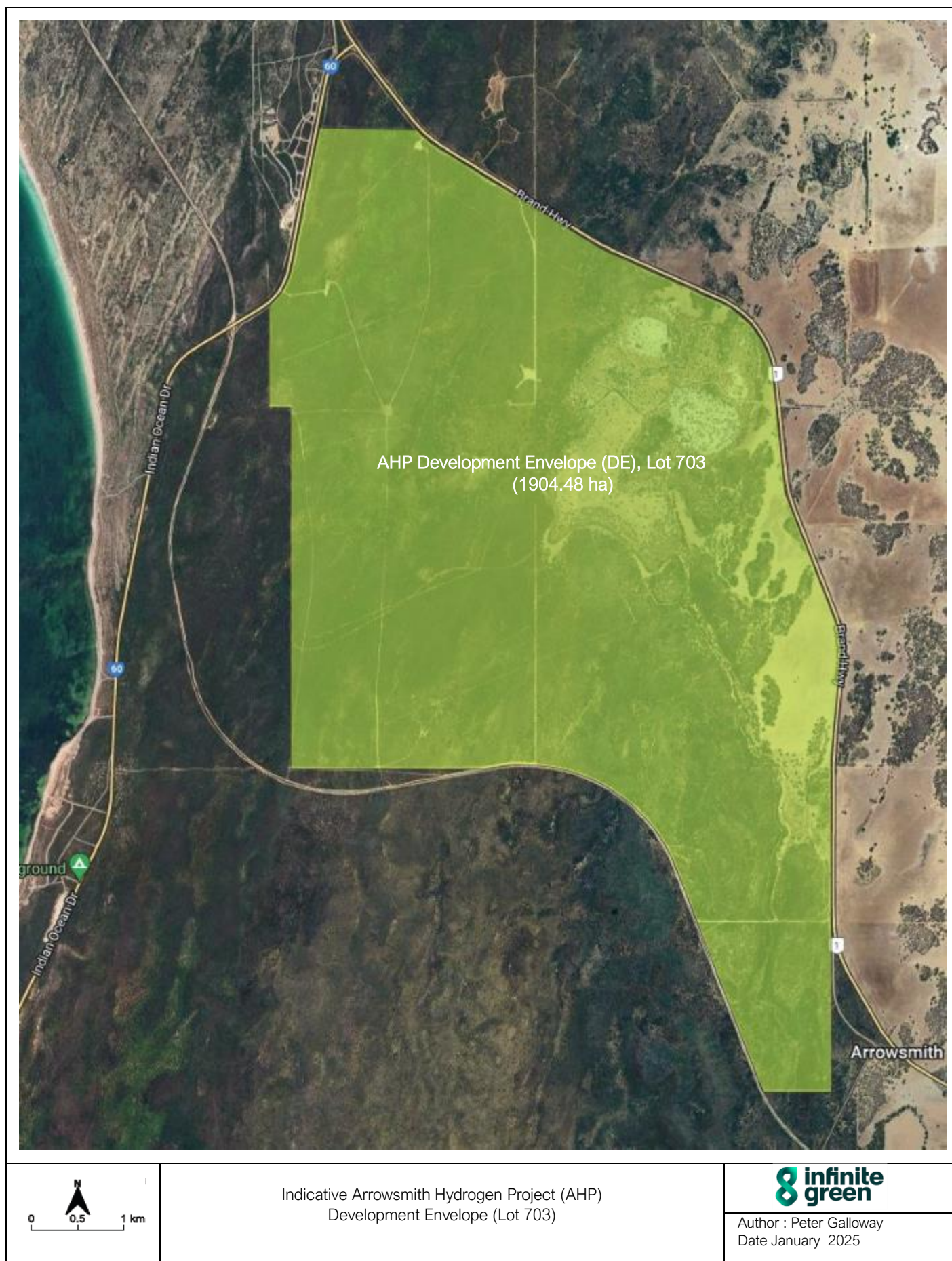


Figure 3 Indicative Development Envelope Lot 703



Figure 4 Indicative Development Envelope Road widening and Access

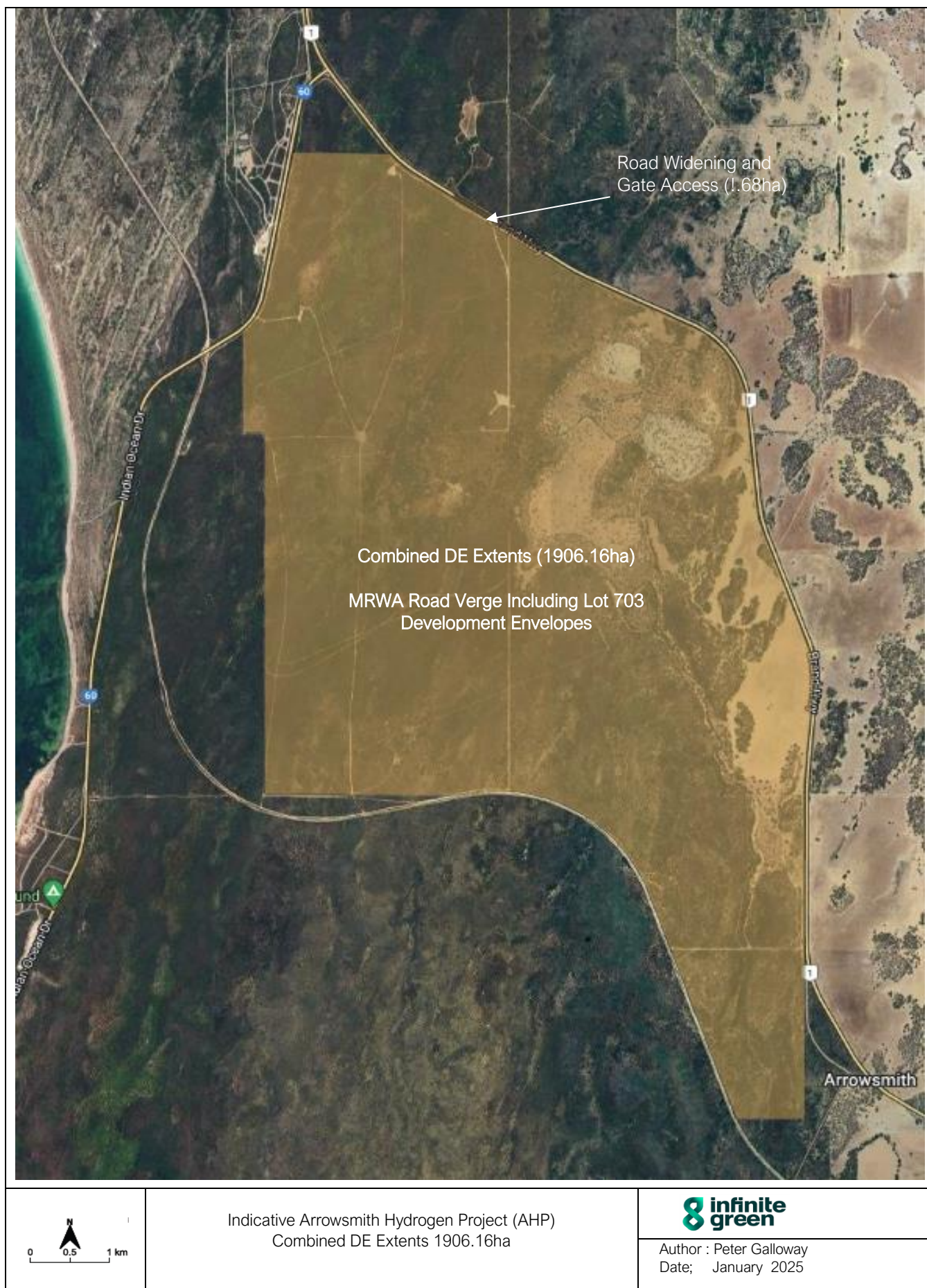


Figure 5 Indicative Development Envelope Including, Road widening and Site Access

