

Growing renewable generation at Rottnest Island



**ROTTNEST
ISLAND
AUTHORITY**

Acknowledgement

Rottnest Island Authority kaadatj Wadjak Noongar moort. Baalap Wadjemup kaaradjiny,
RIA acknowledge Whadjuk Noongar families. They Wadjemup caring,

baalabang malayin nakolak-ngat wer wirn kalyakoorl noyinand koort boodja-k wer kep-ak.
their culture and spirits always connected Island-to and water-to.

Ngalak kaadatj nedingar, birdiya wer boordakan Noongar moort. Ngalak karnadjil kaadatj
We acknowledge ancestors, Elders and future Noongar families. We truly acknowledge men

maaman wer noba wirn ali kalka nginow noyiyang Wadjemap ngardak boodja-k.
and boys' spirits who still remain connected Wadjemup under ground-in.

Baalabang moort maambart-boort, ngooni-boort, kongk-boort wer Birdiya-boort.
Their family's father-without, brother-without, uncle-without and Elder-without.

Summary of situation

This presentation provides an update on progress of 2023-28 Rottnest Island Management Plan Strategic Initiative 2.1 “Support Renewable Energy and Electrical Infrastructure Upgrades”:

- **Initiative driver:** Rottnest Island electrical assets, essential for visitor amenity, are at the end of their life;
- **Modelling:** Optimization modeling was undertaken to determine type/quantity of replacement generation.

RESULT: identified replacement by high proportion of renewables will deliver the most favorable sustainability and economic outcomes.



Summary of situation

Studies: Numerous studies undertaken to determine best location overall for new generation assets with new sites requiring Environmental and Land Use Plan Approvals; and

Outcomes

IMPACT:

1% of island impacted

Predominantly sparser vegetation, no material impacts to significant fauna.

DELIVERS:

3x increase in renewable generation penetration

and improved reliability



Rottnest Island Management Plan 2023-28

The Rottnest Island Management Plan 2023–28 (RIMP) identifies the priorities that the Rottnest Island Authority will pursue during the five-year planning period;

- RIMP was developed following a dedicated stakeholder and public consultation process;
- Strategic Focus Area 2 – “Deliver Sustainable Island Infrastructure and Services” – is underpinned by Key Initiative 2.1 “Support Renewable Energy and Electrical Infrastructure Upgrades” to:

ACHIEVE: 75%
renewables penetration

ADDRESS: Aging and capacity
limited electrical infrastructure



Work completed to date

Solar farm refurbishment:

All panels replaced with new, higher efficiency panels to restore 0.5MW capacity, leaving 55% of structures for future augmentation;

Wind Turbine Feasibility:

An assessment is under way to extend life and restore to 0.6MW capacity;

Network replacements:

7 replacement power control kiosks, 10 new distribution boards, 2km of High Voltage cable, 9km of Low Voltage cable installed, and numerous smaller enabling works;



Work completed to date

Rooftop solar:

Investigation undertaken for installation on existing buildings (considering aspects such as shading, roof structure, heritage and electrical capacity) with tender for first stage now released in Geordie-Fays-Longreach along with local 'firming' batteries; and

Electrification program:

Gas appliances at Geordie Bay, Fay's Bay and Longreach Bay have been replaced with electric appliances as part of accommodation refurbishments.



Existing generation end-of-life

Rottnest Island Electrical Generation Assets, essential for keeping the island running to provide services for visitors, are at the end of their practical life and need to be replaced to ensure visitor services can continue to be provided via a more sustainable system:

- Existing control system at end-of-life;
- Existing wind turbine commissioned in 2005 (nominal 20-year life); and
- Current power house was commissioned; back in 1962;
- Network electrical infrastructure dating back to mid 1900s.

Existing sites are constrained and limited capacity for expansion.



Generation replacement optimisation

Economic modelling of generation determined a much higher proportion of renewables would produce a more sustainable and lowest cost outcome, noting the high cost of diesel, particularly when needing to barge it to Wadjemup from the mainland.

The new hybrid power system will consist of:

SOLAR: A more efficient 6MW solar system comprising:

A new **3.2MW** solar farm

Expanding capacity of the existing solar farm to **1.2MW**

1.6MW of new rooftop solar on existing buildings

WIND: Refurbishment of the existing **0.6MW** wind turbine.

BESS: A new **8MW/12MWh** Battery Energy Storage System

POWER STATION:

A new, more fuel efficient **5.6MW** back-up diesel power station

To replace the existing diesel Powerhouse and provide backup power when renewable generation is insufficient.

Initial Site selection

A shortlist of possible sites to support the Rottnest Renewable Energy Project was determined from a longer list of sites by considering the following factors:

- Environment/Heritage;
- Functional performance;
- Site suitability; and
- Economic considerations.



Technical investigations

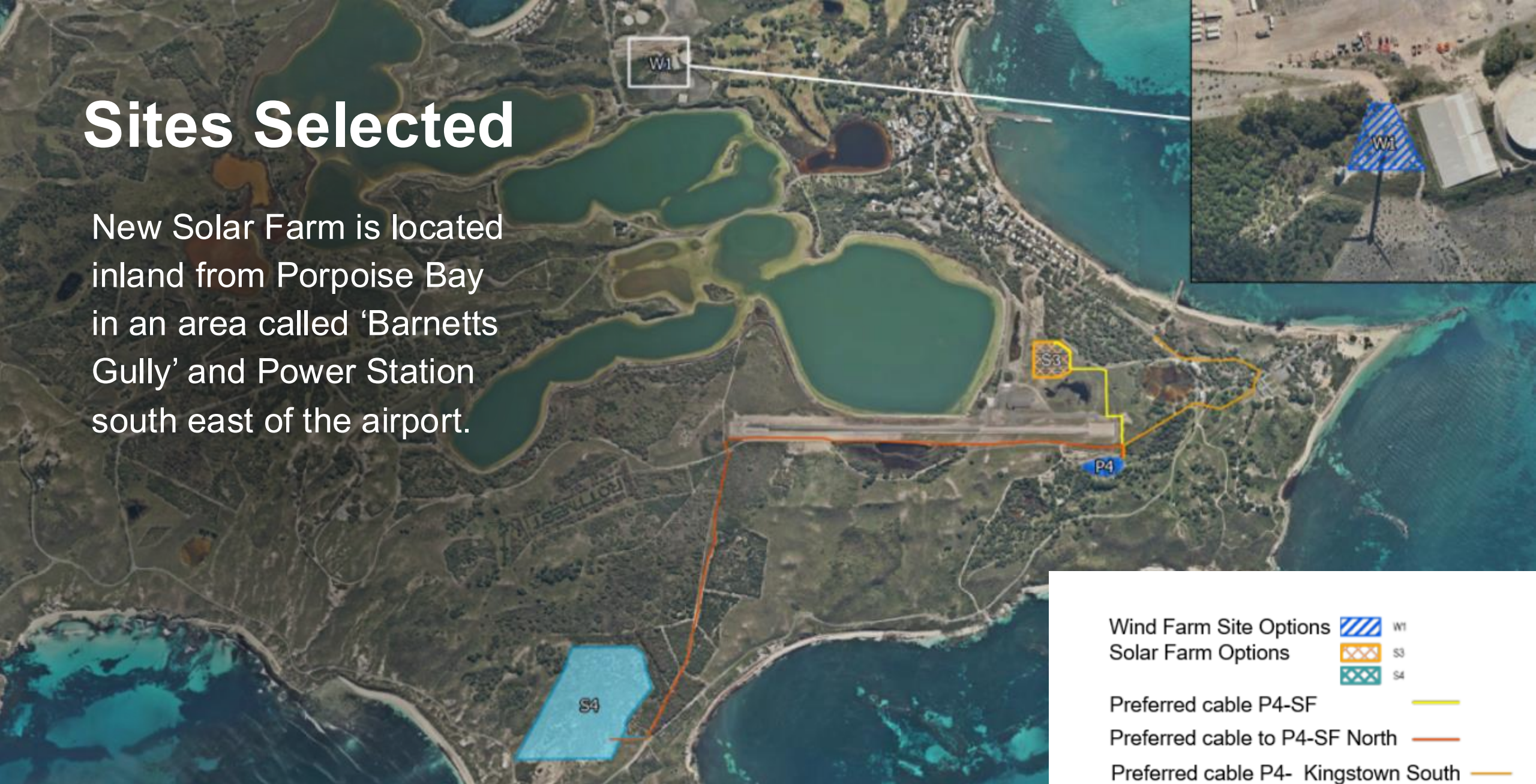
Numerous technical investigations have been completed to support the site selection, project development and environmental approvals:

- Aboriginal cultural heritage surveys;
- Aviation impact;
- Electromagnetic Interference;
- Fauna (includes species of national significance such as quokkas, Rottnest Island dugite and various birds);
- Geotech studies for preferred sites;
- Military heritage;
- Native vegetation and flora;
- Noise impact; and
- Visual impact assessment.



Sites Selected

New Solar Farm is located inland from Porpoise Bay in an area called 'Barnetts Gully' and Power Station south east of the airport.



New power station

The new power station site (1ha) offers the best solution due to:

- Largely unseen from prominent lookouts and limited visibility from nearby roads;
- Close proximity to existing electricity network to reduce electrical losses, and to new barge landing for diesel deliveries; and
- Sufficiently removed from accommodation to avoid noise issues.



New power station

The new power station site (1ha) offers the best solution due to:

- No Aboriginal Heritage sites have been identified;
- Avoids Threatened Ecological Communities (TEC) and Environmental Sensitive Areas (ESA):

It is mostly a cleared site with minimal native vegetation. While it has mature tuart trees likely planted by Army, tuarts are not native to Wadjemup and were previously cut-off at the base and have resprouted;



New solar farm

The new solar farm site (14.5ha) offers the best solution due to:

- No Aboriginal Heritage sites have been identified;
- Avoids TEC and ESA – has sparser vegetation (site is predominantly a former dune-blowout now comprising shrubland);
- Good proximity to new power station and its battery storage and settlement – for efficiency of electricity generation and distribution to location of most electricity demand;



New solar farm

The new solar farm site (14.5ha) offers the best solution due to:

- Largely unseen from prominent lookouts and limited visibility from nearby roads; and
- Facilitates future augmentation for additional decarbonisation.



Artist Impression
(View from Parker Point Road)

Existing renewable sites

Existing solar farm:

Will be augmented (from 0.5MW to 1.2MW) within the same footprint on predominantly existing structures, and with the installation of additional control and network connection equipment;

Existing wind turbine:

Will be refurbished within the same footprint to restore to nameplate capacity (0.6MW):

New wind turbines were considered however were removed from scope due to unresolvable aviation risks at shortlisted sites and longer environmental study and approval periods.



Cable Routes

An additional 2.7ha of land will be disturbed for the installation of the cables to connect the new solar farm and power station to the existing Wadjemup electricity network. These cable routes:

- Are predominantly (74%) on existing cleared or vegetation managed areas (e.g. fire trails, airport); and
- Avoids Aboriginal Heritage sites, avoids TEC and the areas of ESA that are being impacted will have that impact reduced through the use of Horizontal Directional Drilling.



Environmental Approvals

- While the impacts to the environment are not expected to be significant – and not result in any material flora or fauna impacts to threatened species – a Section 38 submission to EPA WA will be undertaken;
- If the EPA's decision is to 'not assess' then a Section 51E Clearing Permit application to DWER will be submitted for the native vegetation required for the new solar farm, new power station and the cables to connect them;
- The following key Environmental approvals are required to support the project:

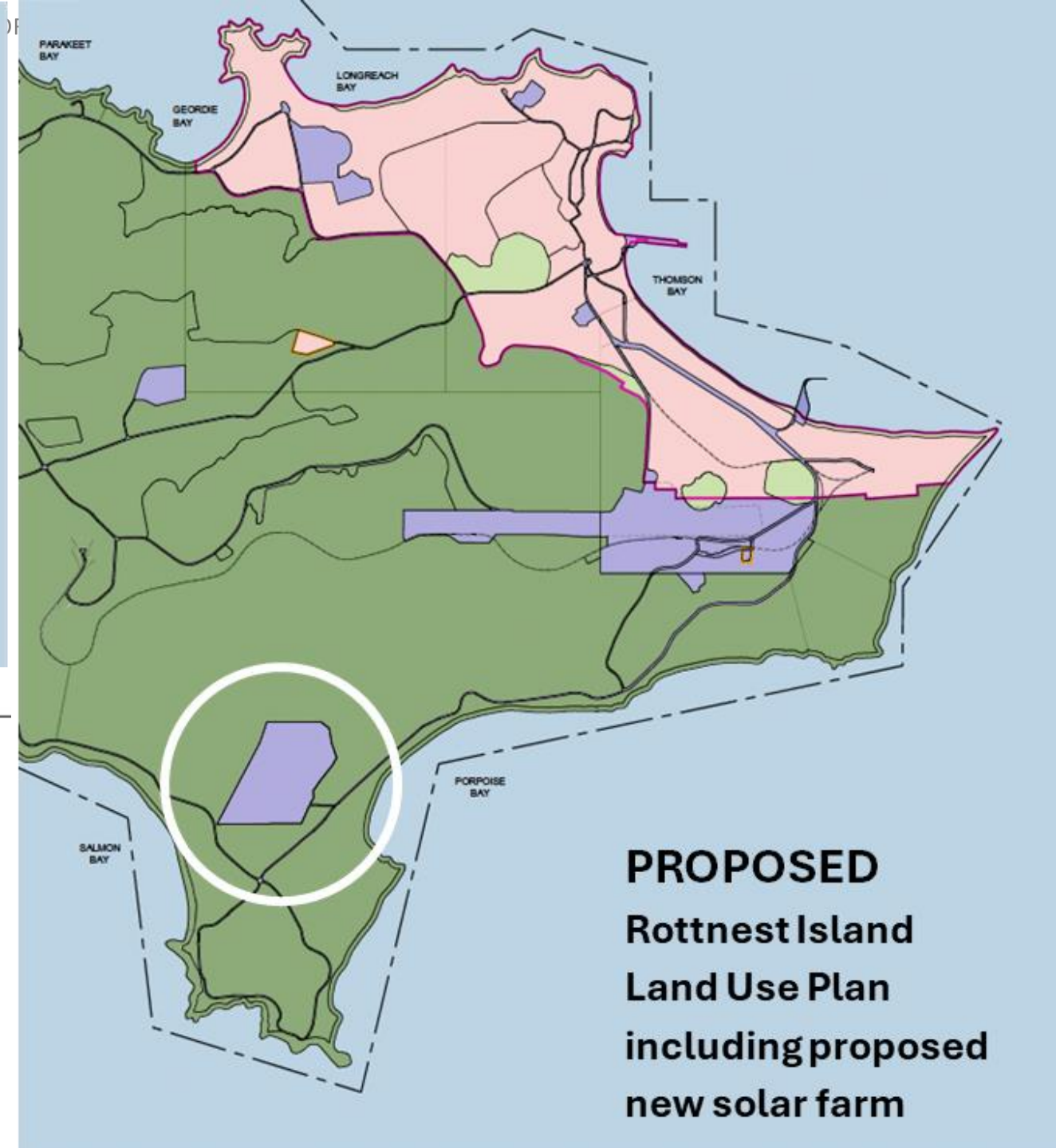
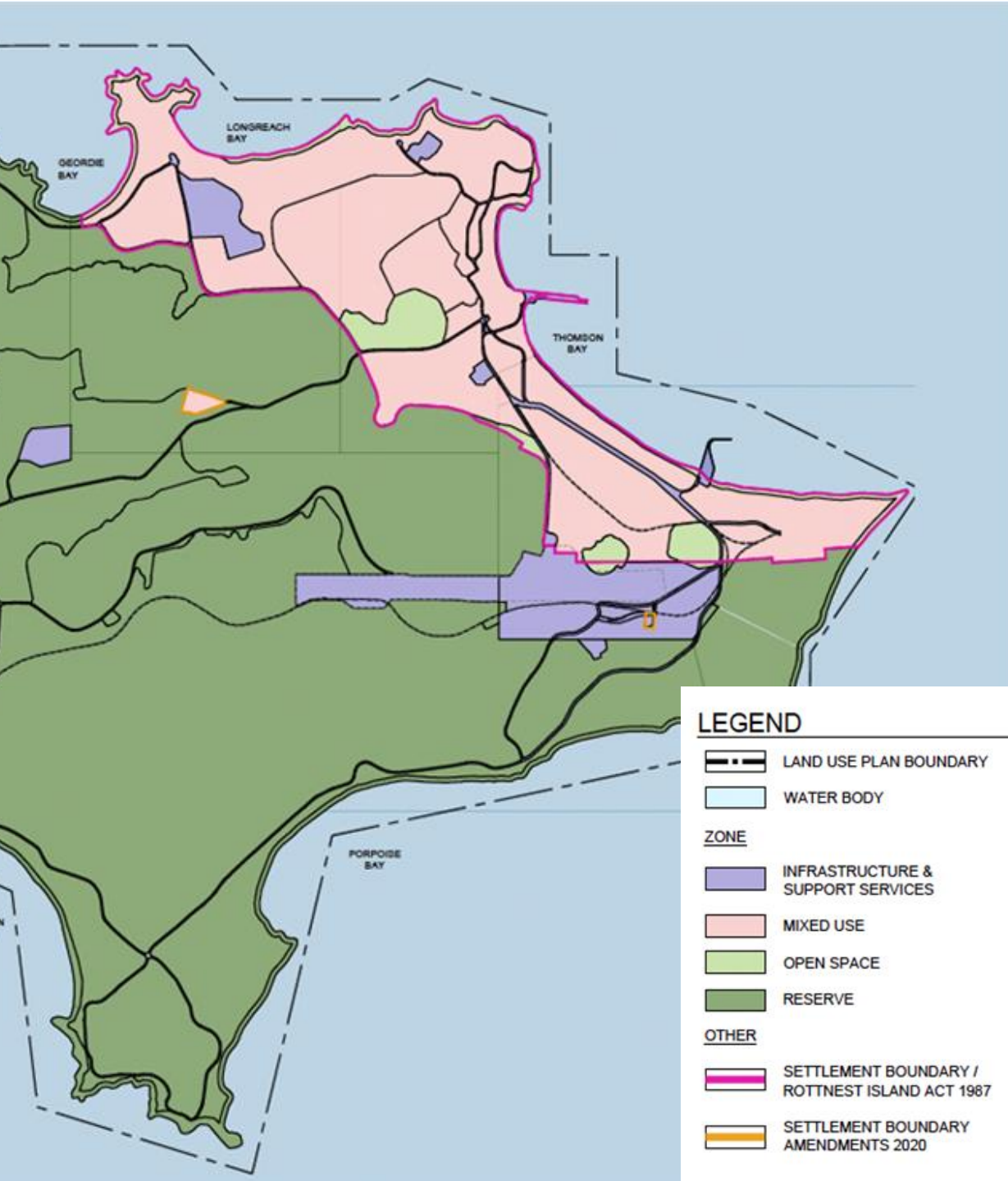
Type of approval	Legislation	Regulatory Authority	Description
Section 38 Approval	<i>Environmental Protection Act</i> 1986 (EP Act)	Environmental Protection Authority (EPA)	A mechanism where a proposal that is likely to have a significant effect on the environment requires a proponent to refer the proposal to the EPA WA for a decision on whether or not it requires assessment under the EP Act.
Clearing Permit, section 51E	<i>Environmental Protection Act</i> 1986 (WA)	Department of Water and Environmental Regulation (DWER)	Application to undertake native vegetation clearing, using the approved form and including specific details about the proposed clearing.

Land use plan

- The new solar farm is located in an area currently designated as Reserve in the Land Use Plan (LUP);
- To enable the new solar farm to proceed, this will require an amendment to the RIMP/LUP which requires Public Consultation and Minister approval; and
- This will bring infrastructure allocation to 5% and reduce reserve by 1% to 84%.

Type of approval	Legislation	Regulatory Authority	Description
Amendment to Rottnest Island Management Plan (RIMP) Land Use Plan	<i>Rottnest Island Authority Act</i> 1987 (WA)	Rottnest Island Authority	A statutory planning document that provides a framework for managing the island, including land use, environmental protection, infrastructure, transport, visitor services and commercial activity





Timeframes

Q3 2026	Q4 2026	2027	2028
Preparation of EPA referral – including stakeholder engagement EPA Referral submission and assessment	EPA Referral assessment and approval	Project implementation (subject to approvals)	Commissioning completed
Preparation of clearing application Clearing application submitted to DWER	Clearing application assessment and approval	Project implementation (subject to approvals)	
Proposed amendment to Rottnest Island Management Plan (RIMP) Land Use Plan – public feedback (two months)	Proposed amendment to Rottnest Island Management Plan (RIMP) Land Use Plan – submit for Ministerial approval	Amendment enacted to support HEGS implementation	

Environmental impacts

Flora:

In total 15.5ha of land will be permanently impacted for the solar farm and power station site combined (0.5ha already cleared) and 2.7ha temporarily impacted for new cable routes (0.7ha vegetated outside of existing infrastructure);

Fauna:

Non-material impact to significant species, for example less than 1% of Quokka population impacted, Rottnest dugite and bobtail were identified in low numbers, listed seabirds and shorebirds small impact due to site location;

Water:

Sites are not in a surface water management area or Public Drinking Water Supply Area, will not directly impact the "Rottnest Island Lakes" (Wetland of National Importance) and limited, short duration dewatering is unlikely to significantly impact the wetland;

Environmental impacts

Light emissions:

Future light emissions are expected to be minimal and limited to daytime construction and minor safety lighting once operational;

Noise:

Potential issues identified will be resolved to acceptable levels during detailed design; and

Visual:

limited visibility (other than existing wind turbine) from key vantage points.

Sustainability outcomes

4,000

tonnes of carbon pa



The new solar farm and generation system will achieve an estimated abatement of more than **4,000 tonnes** of carbon emissions per year.

Equivalent to:

900



Cars removed from road

Saves:

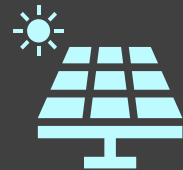
1.5M



Litres of Diesel

Enabling RIA to achieve:

75%



Renewable energy

& reduce the emissions intensity per visitor to Rottnest Island

4.9 → 1.8

kg CO2 / visitor

