

# Is there a plan for the energy transition in Queensland?

Steven Nowakowski



2004



2004



Today



# Introduction to Kaban













What's next?

JUST NORTH QUEENSLAND – INGHAM TO LAKELAND

Mount Emerald Wind Farm \$380 million – *completed*

Kaban Green Power Hub \$350 million – *completed*

Atherton Solar Park \$100 million - *proposed*

Chewko Road Solar Park \$100m - *proposed*

Mareeba Solar Farm \$100 million - *proposed*

Cape York Solar Storage \$150 million - *proposed*

Lakeland Wind Farm \$200 million – *approved – awaiting construction*

Archer Point Wind Farm \$1 billion - *proposed*

Mt. Fox Wind Farm \$500 million – *under EPBC referral*

Mt. Fox BESS \$260 million - *proposed*

Forsyth Wind Farm \$1 billion – *proposed*

Windy Hill Wind Farm upgrade? – *proposed*

Karma Wind Farm \$1.5 billion – *proposed*

High Road Wind Farm \$500 million – *proposed*

Hidden Valley Wind Farm \$1 billion – *proposed*

Desaily Solar Park \$2 billion – *proposed*

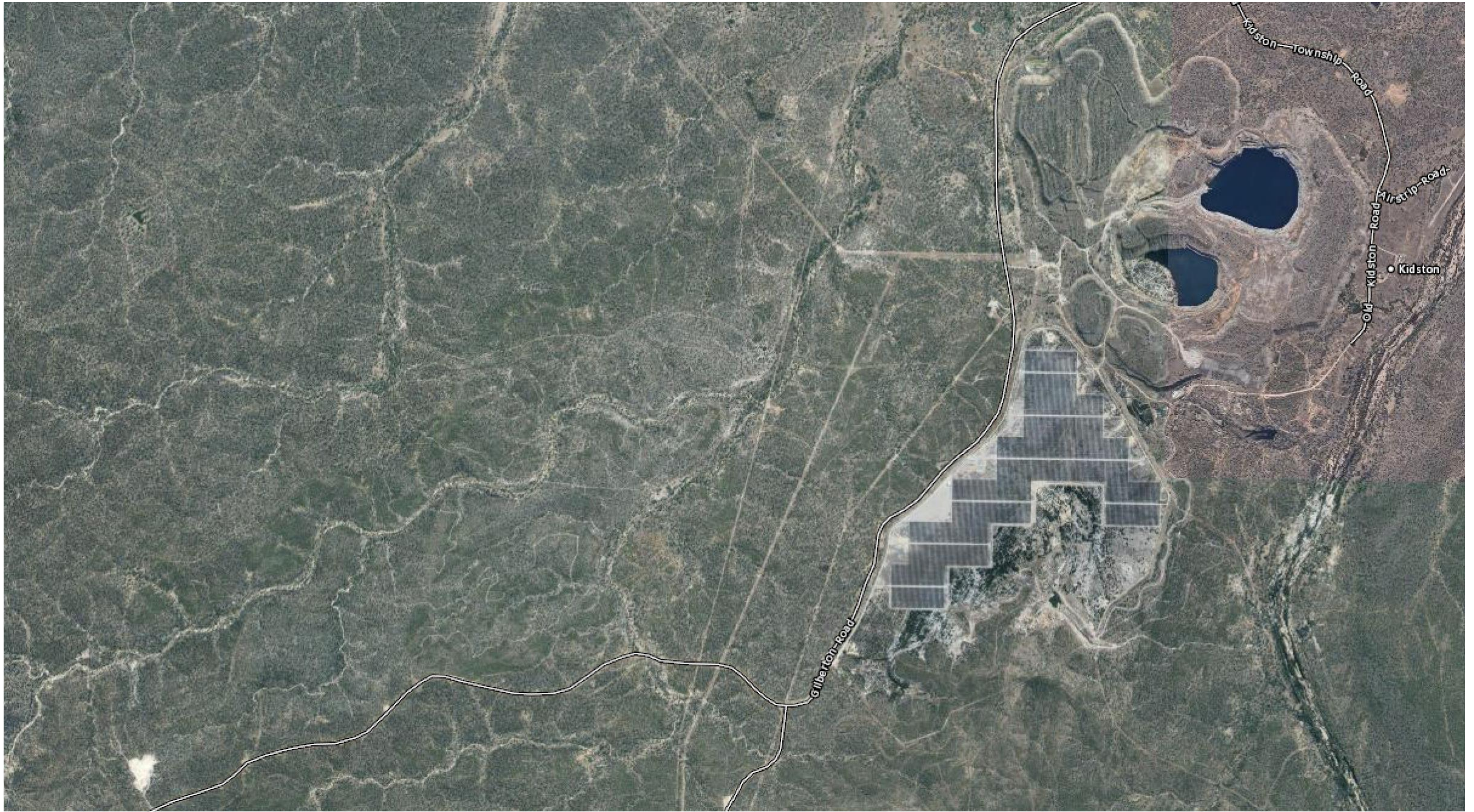
Kidston Pumped Hydro \$800 million – *in progress*

Upper Burdekin Wind Farm (Gawara Baya) \$1.5 billion – *approved*

**Total to be cleared approx. 13,500ha ‘remnant’**

**Total (approx.) = \$11.44 billion**

# Kidston Pumped-Hydro



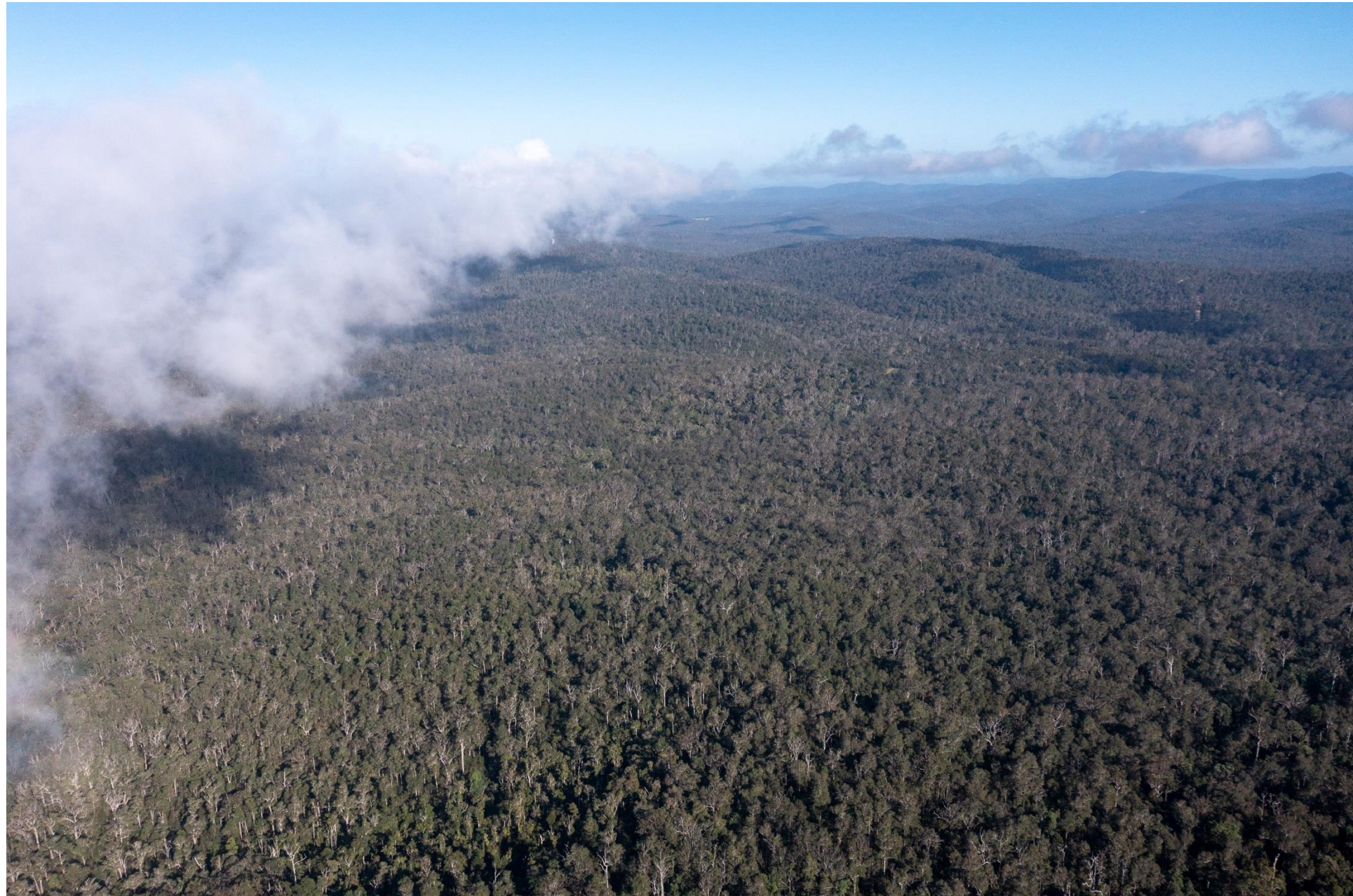


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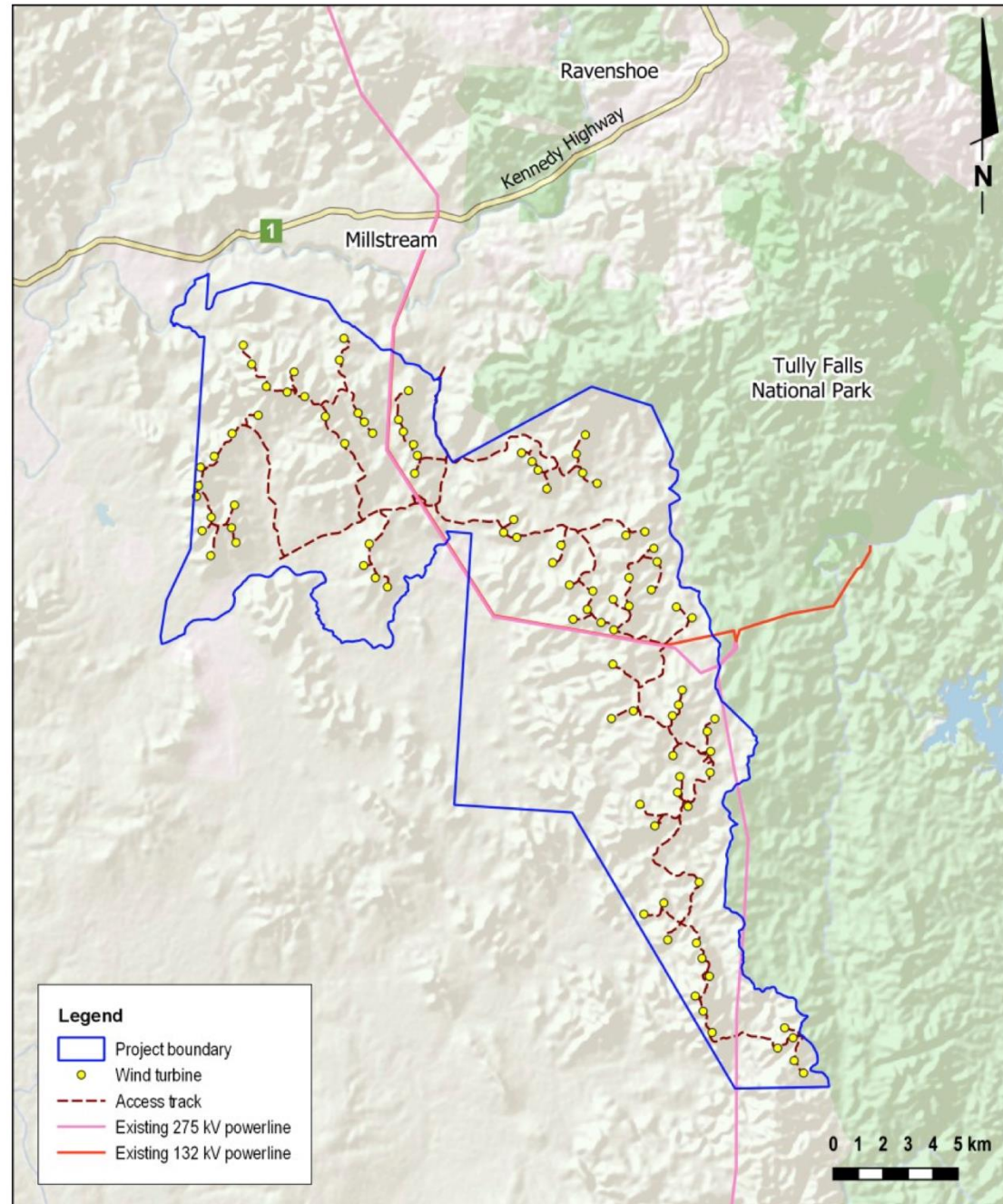




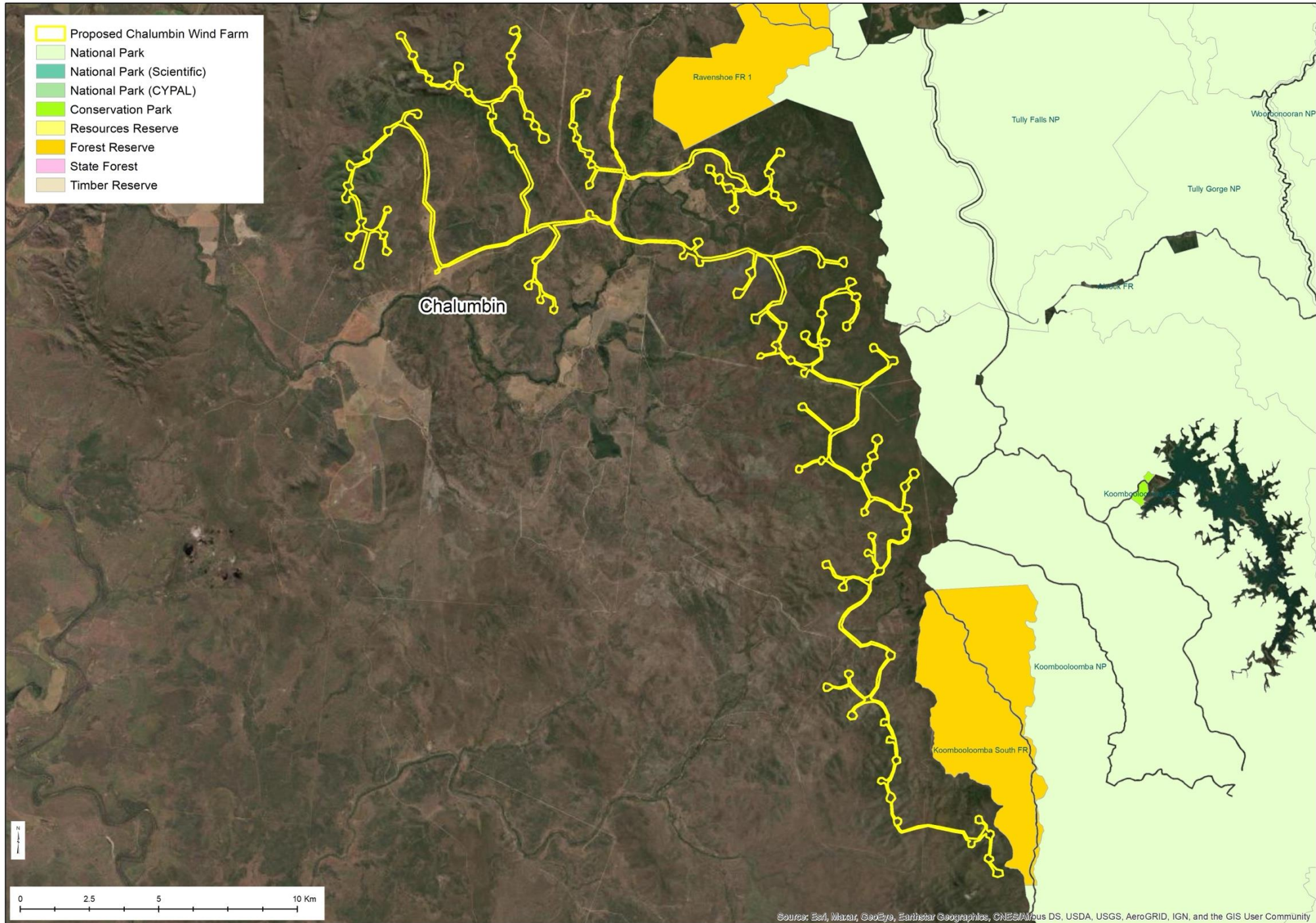
Have you heard of Chalumbin?



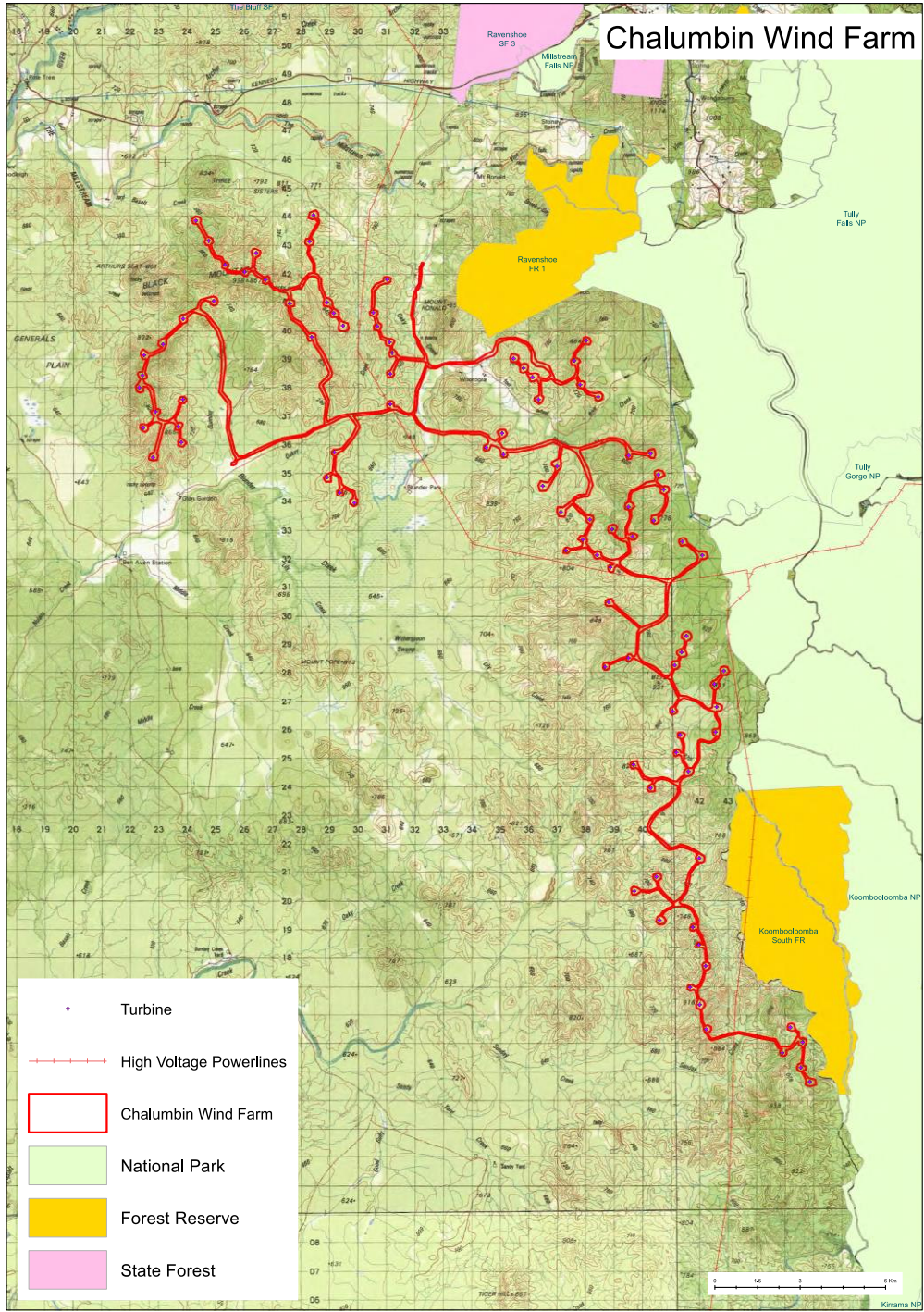
# Chalumbin Wind Farm proposed layout









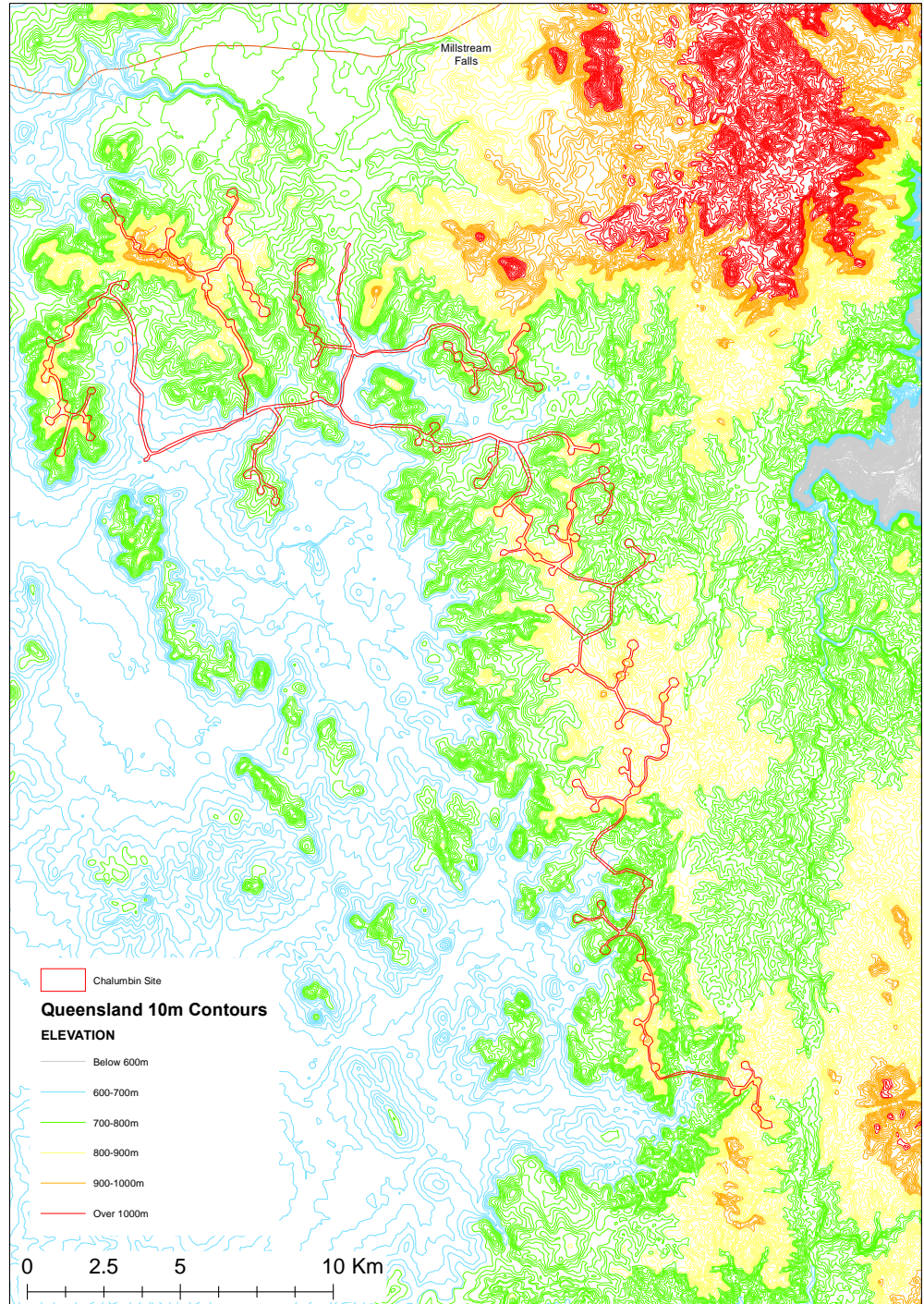
-  Proposed Chalumbin Wind Farm
-  National Park
-  National Park (Scientific)
-  National Park (CYPAL)
-  Conservation Park
-  Resources Reserve
-  Forest Reserve
-  State Forest
-  Timber Reserve



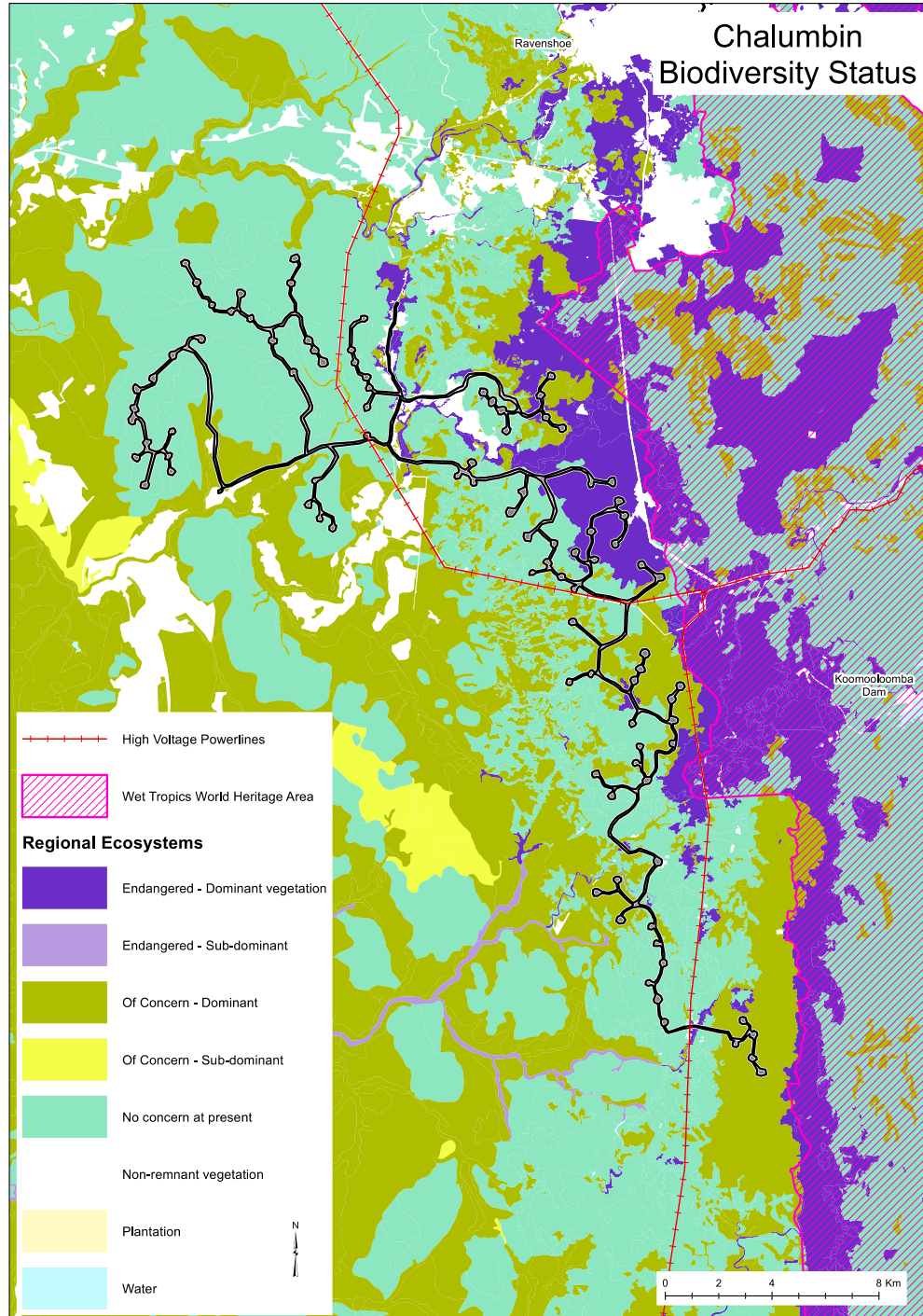
# Chalumbin Wind Farm



-  Turbine
-  High Voltage Powerlines
-  Chalumbin Wind Farm
-  National Park
-  Forest Reserve
-  State Forest



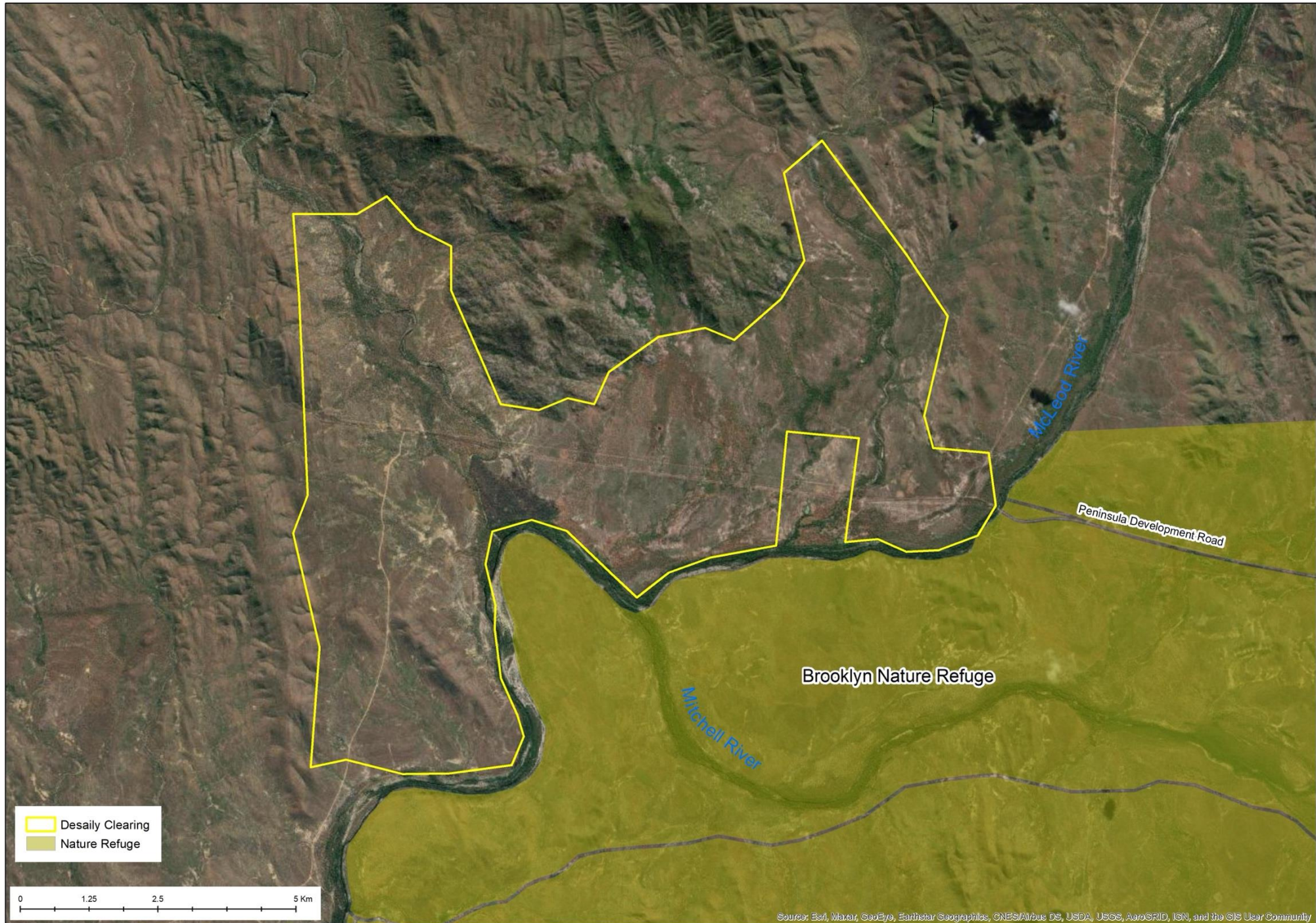
# Chalumbin Biodiversity Status







Desaily Energy Park  
Curraghmore Station



Desally Clearing  
Nature Refuge

0 1.25 2.5 5 Km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# Energy Park

Figure V2.04

## Project Design Layout

### Legend

-  Constrained Solar Areas
-  Project Site
-  Electrical/Construction Envelopes
-  Solar Arrays

**Notes:**  
LAYOUT INDICATIVE ONLY.  
SUBJECT TO DETAILED DESIGN.

Ver	Date	Drawn by	Checked	Approved
V1	15/12/2017	AM	LM	DB

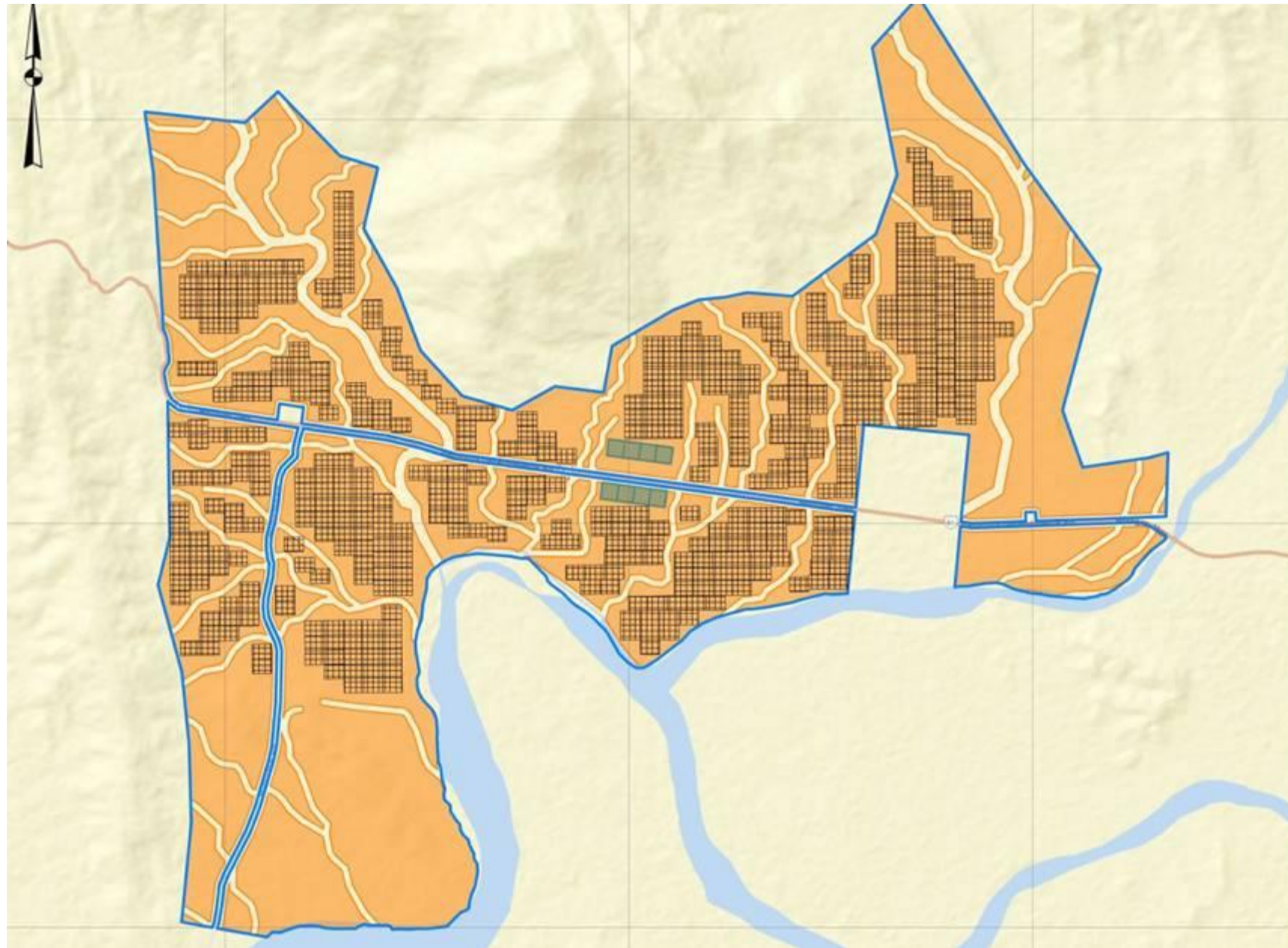
Coordinate System  
GDA94 MGA zone 55

Size  
A3

Scale 1:50,000 Printed @ A3

Filename:

Fg\_V2\_04





A monster of them all...

Upper Burdekin Wind Farm

renamed

Gawara Baya Wind Farm













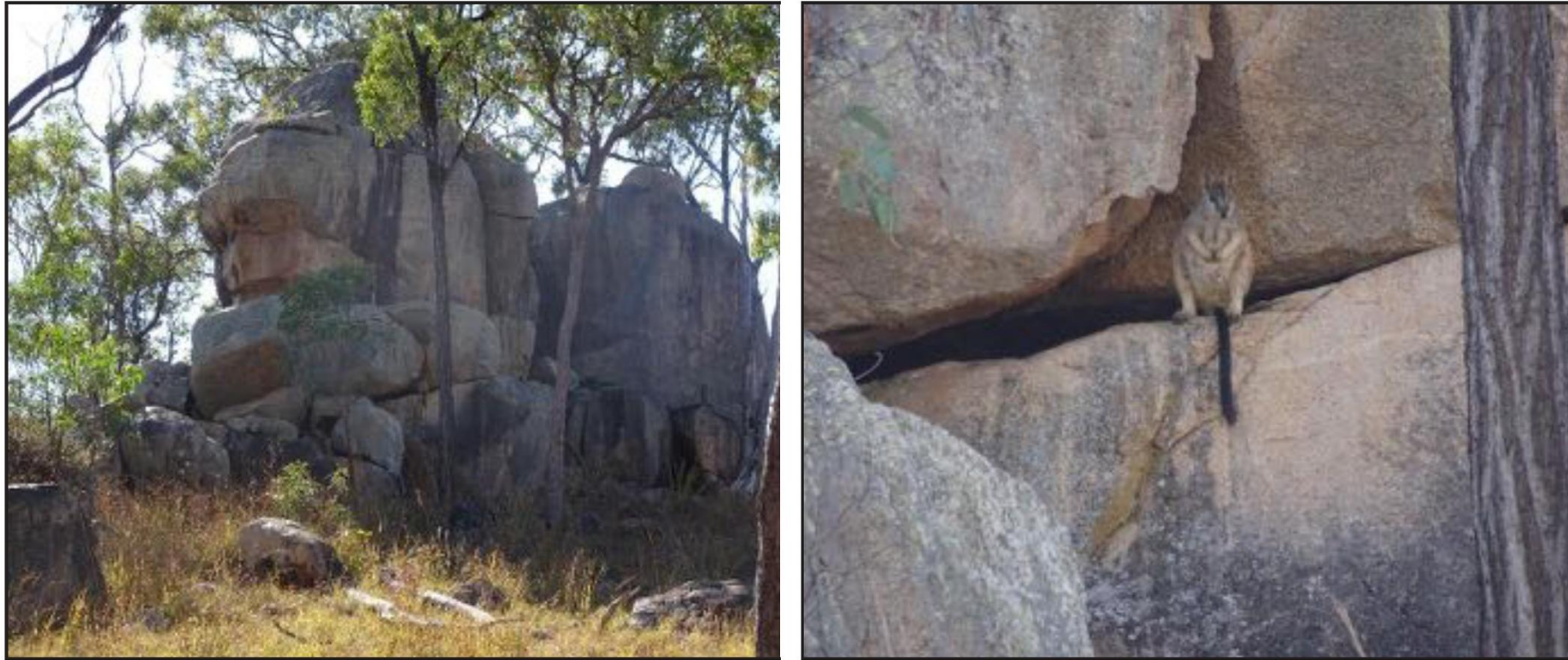


Figure 5-5: Sharman's rock-wallaby observed on granite boulders

**130** bird species including the red goshawk and masked owl  
**2** flying-fox and **25** microbat species

**16** terrestrial mammals including the Sharman's Rock-wallaby

**6** arboreal mammals including the koala and greater glider

**12** reptile species

**5** amphibian species

Girringun NP

Girringun RR

WAIRUNA PURCHASED 2010

Girringun NP

Girringun NP

OAK HILLS PURCHASE 2016

Girringun NP

UPPER BURDEKIN  
WIND FARM SITE

Girringun NP

Girringun NP

Abergowrie SF

Girringun NP

Lannercost SF

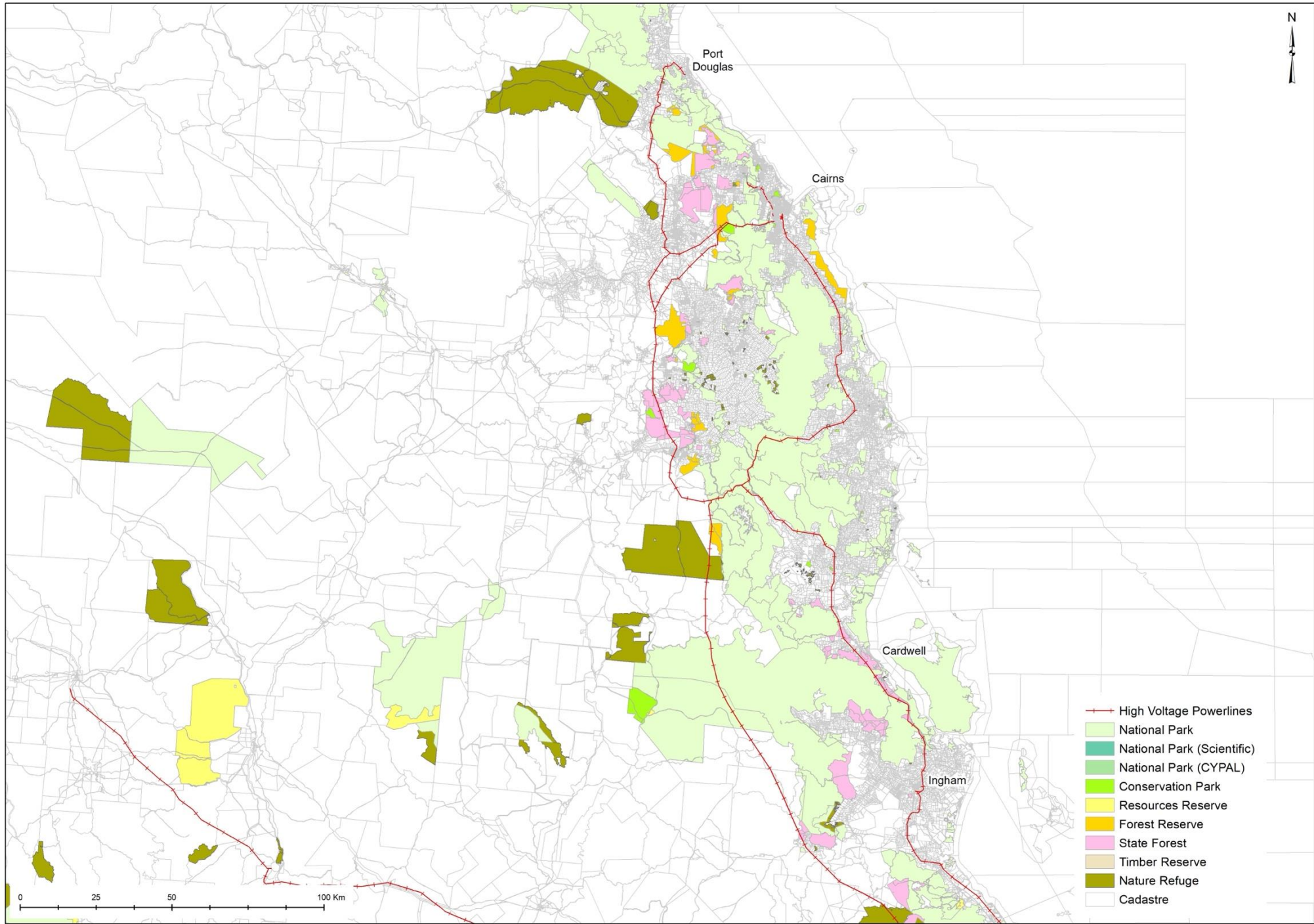
Lannercost SF

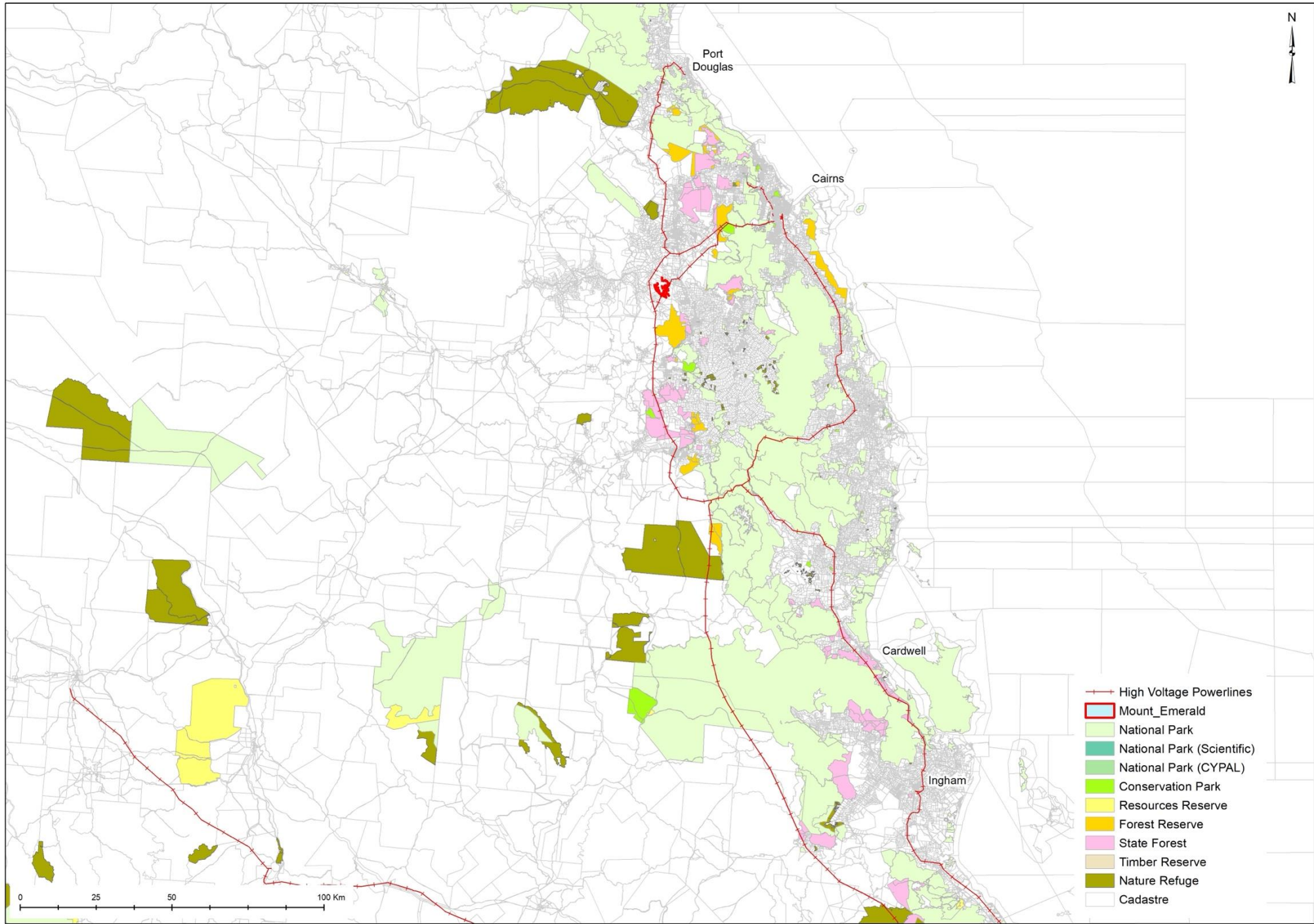
Paluma Range NP

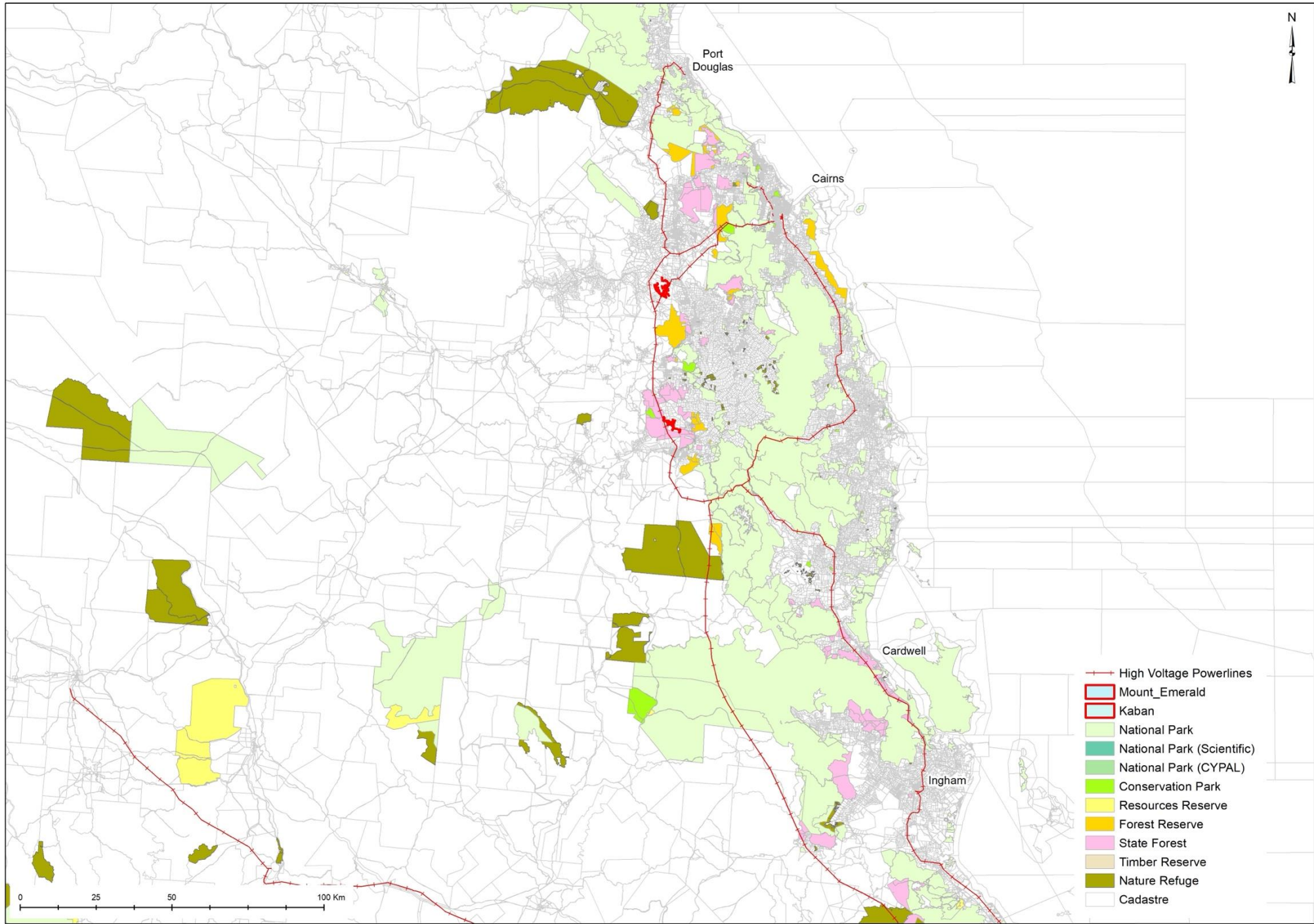
Paluma SF

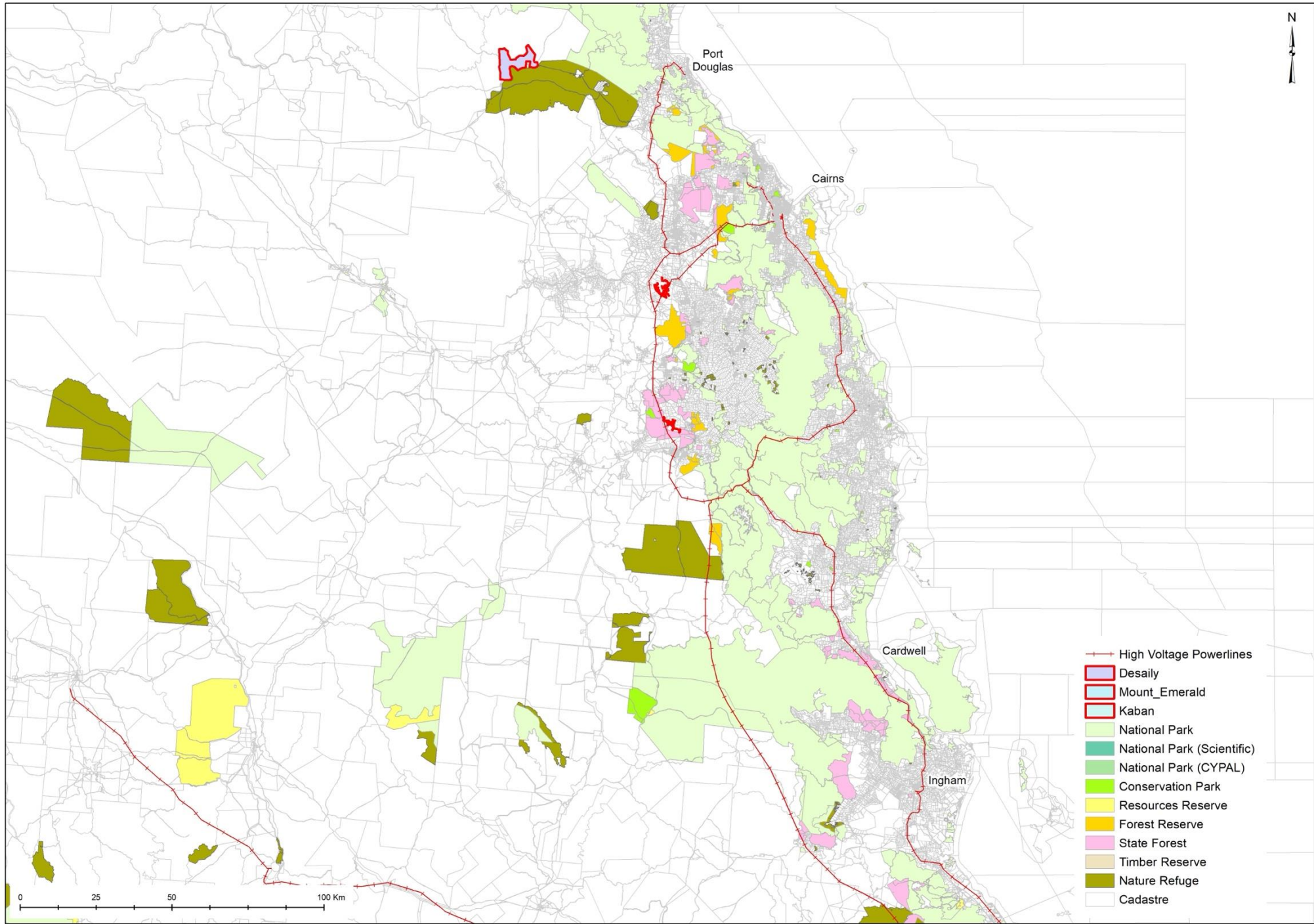
# Why here?

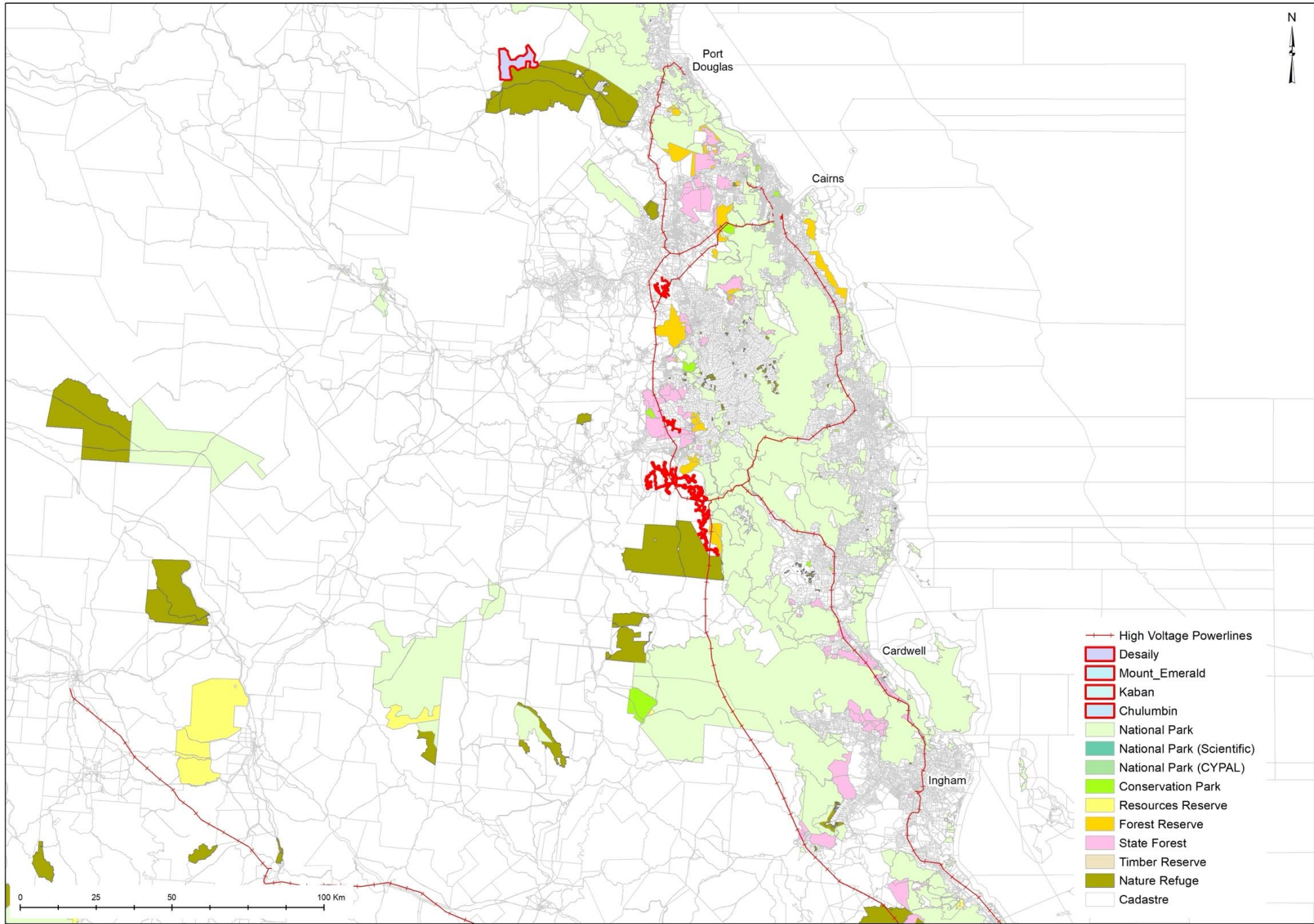
It's all about the transmission lines.

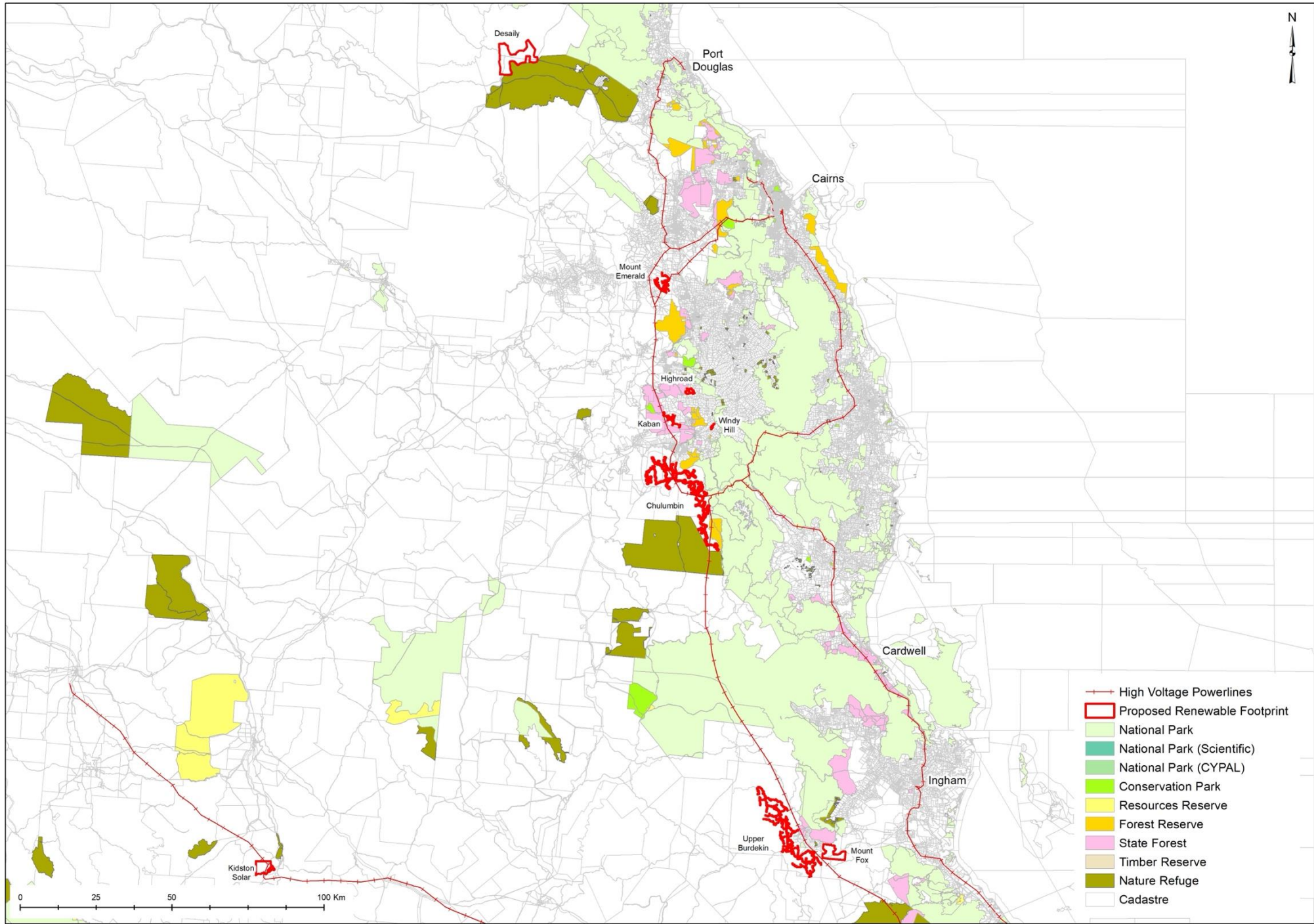


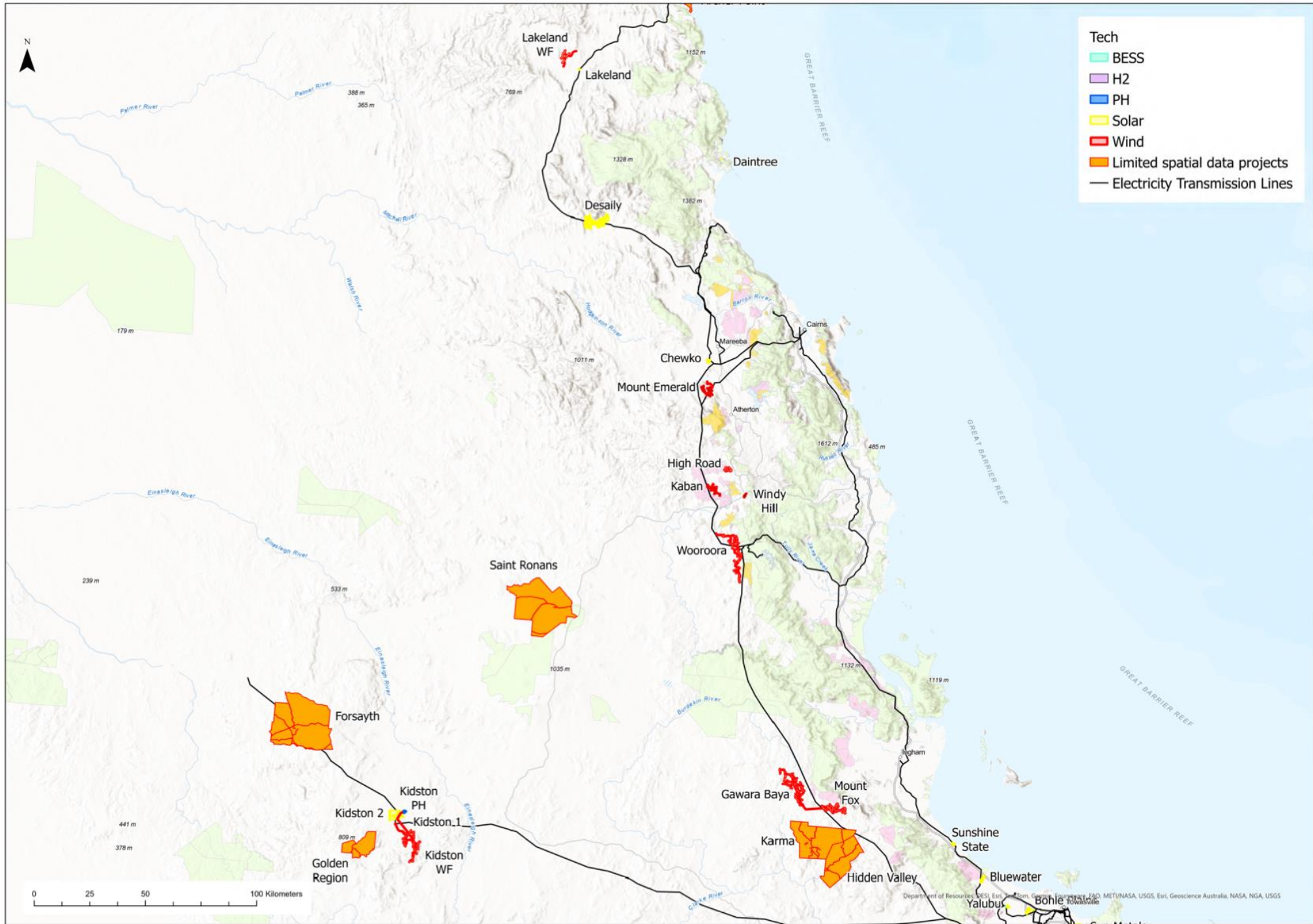


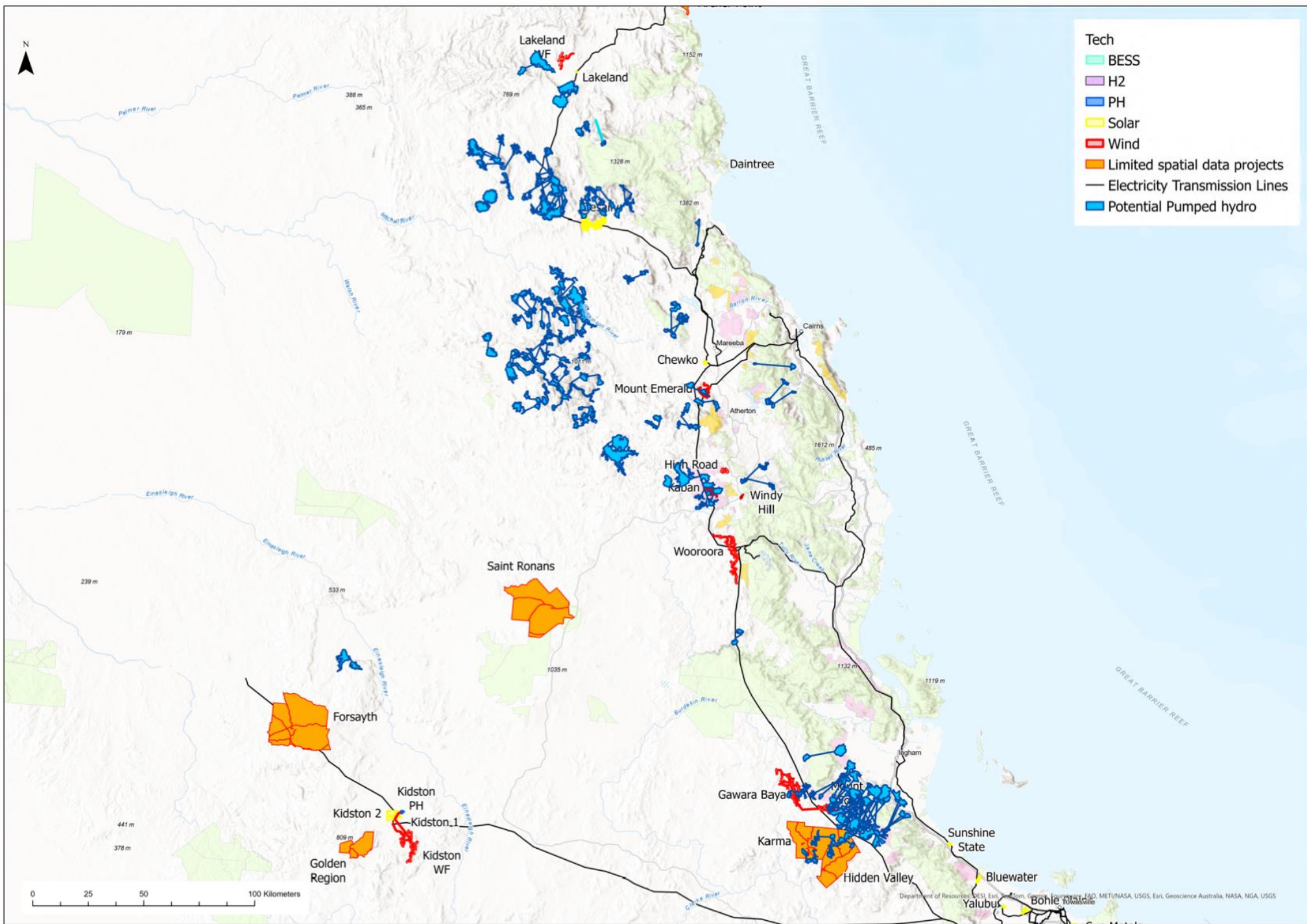












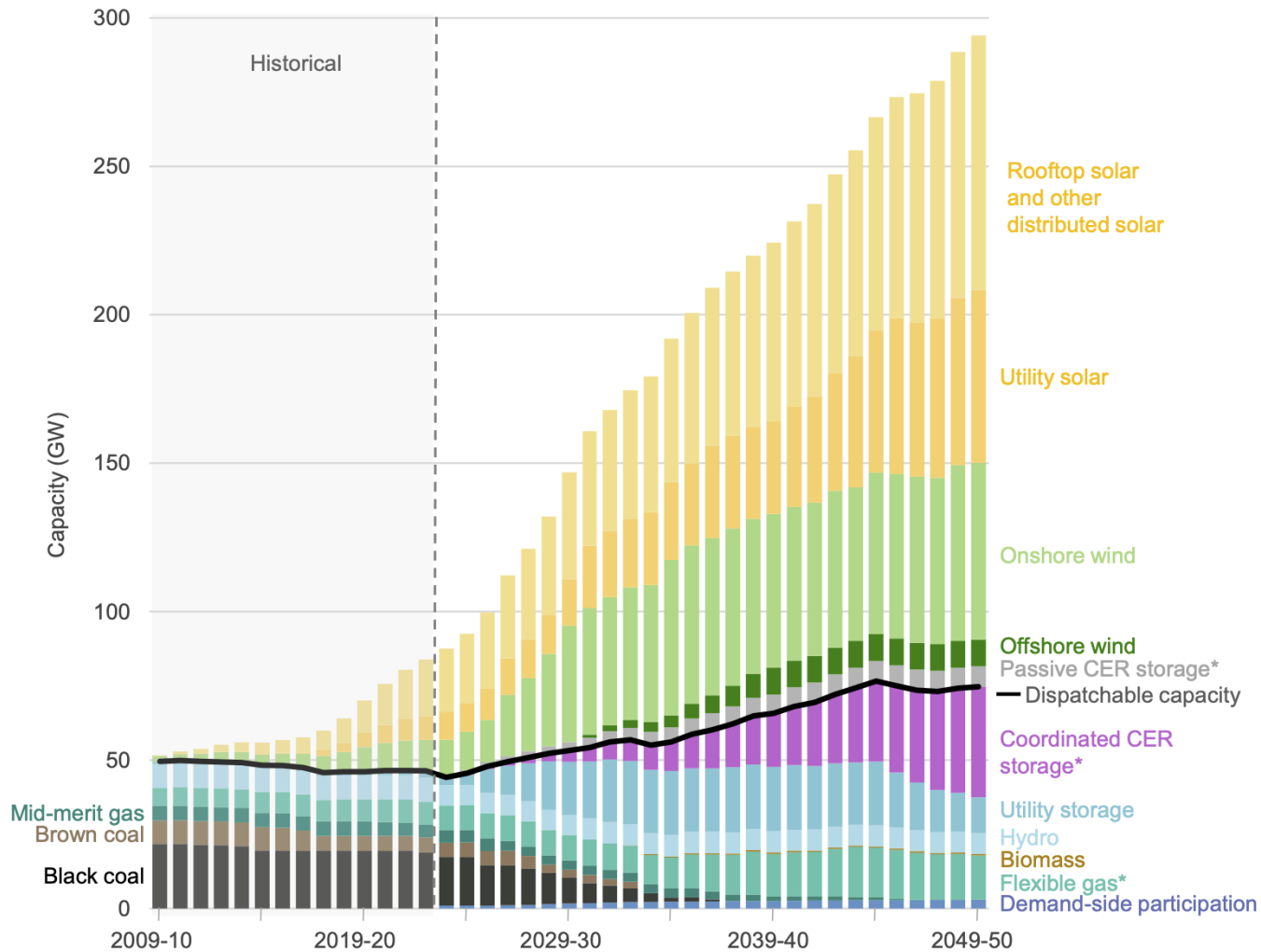
- Tech
- BESS
  - H2
  - PH
  - Solar
  - Wind
  - Limited spatial data projects
  - Electricity Transmission Lines
  - Potential Pumped hydro

0 25 50 100 Kilometers

Department of Resources, ESR, Esri, Google, IGN, JRC, METI/NASA, USGS, Esri, Geoscience Australia, NASA, NGA, USGS

This is what the  
conservation sector  
wants !

**Figure 2 Capacity, NEM (GW, 2009-10 to 2049-50, Step Change)**



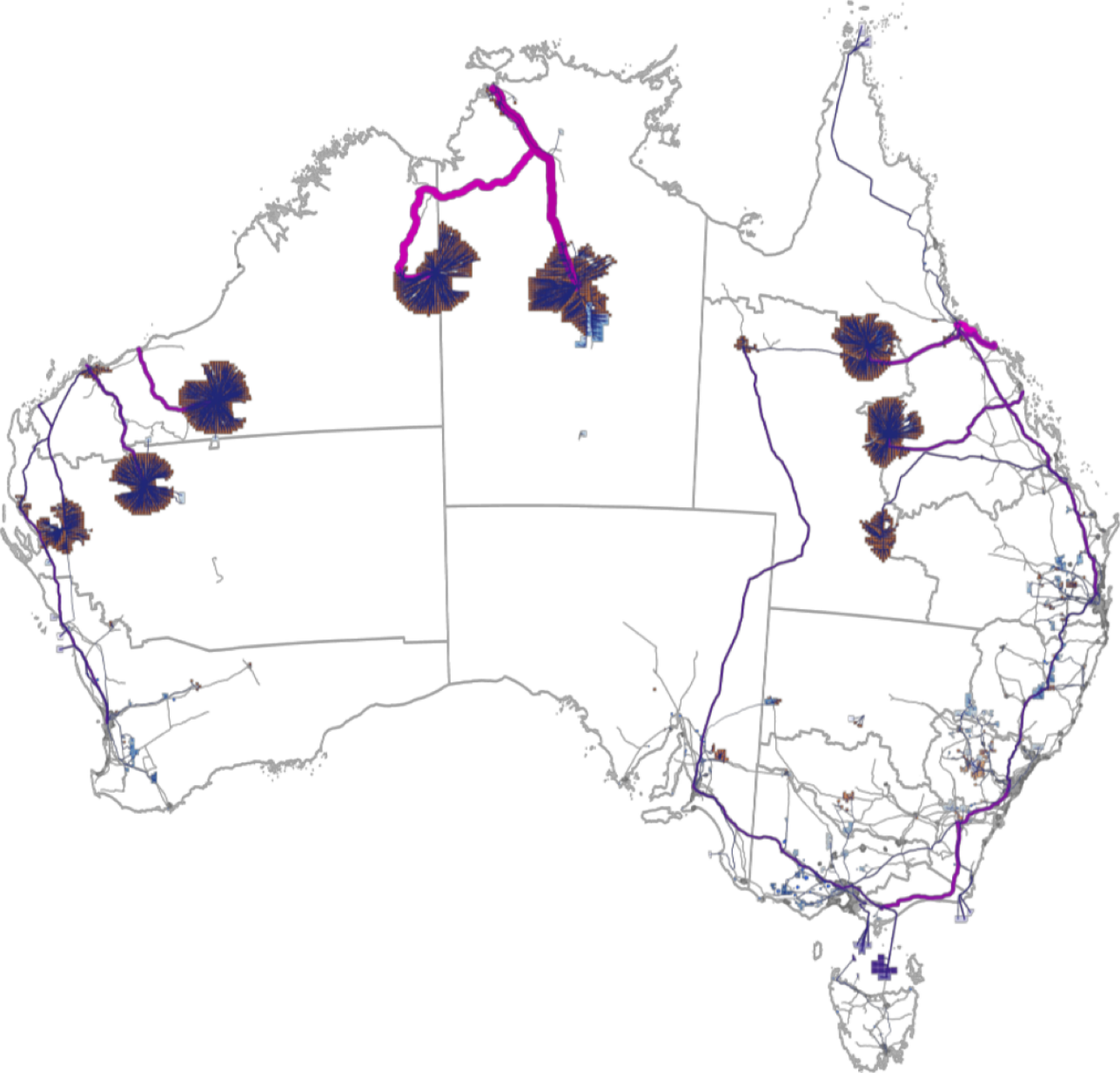
Notes: “Flexible gas” includes gas-powered generation and potential hydrogen capacity.  
 “CER storage” means consumer energy resources such as batteries and electric vehicles.  
 Projections for “Rooftop solar and other distributed solar” and “CER storage” are forecast based on unit costs, consumer trends and assumptions about payments received to participate in the electricity market.

Under the forecasts for the *Step Change* scenario, the ODP calls for investment that would:

- **Triple grid-scale variable renewable energy (VRE) by 2030, and increase it six-fold by 2050.**


# Solar, wind and electricity transmission siting.

E+ Scenario, 2060.



## NET ZERO REPORT

<https://www.netzeroaustralia.net.au>

<b>SPONSORS</b> Generous financial support has enabled this study	<b>ADVISORY GROUP</b> Crucial input is being provided by diverse advisers	<b>ENGAGEMENT</b> Numerous briefings have been provided to:
		COMMONWEALTH MINISTERS AND DEPARTMENTS  STATE MINISTERS AND DEPARTMENTS  NON-GOVERNMENT ORGANISATIONS  RESEARCH BODIES
Gift and grant agreements protect the project's independence	INDEPENDENT MEMBERS SPONSOR NOMINEES	For more, explore the website: <a href="https://www.netzeroaustralia.net.au">netzeroaustralia.net.au</a>

This is the reality!

Conservation sector  
is in la-la land.

Number	Name	TYPE	CAPACITY
1	Haughton	Solar	500
2	Barcaldine	Solar	25
3	Emerald	Solar	72
4	Middlemount	Solar	34
5	Rugby Run	Solar	65
6	Sun Metals	Solar	125
7	Susan River	Solar	95
8	Boulder Creek	Wind	360
9	Tuan	Wind	1200
10	Chinchilla	Solar	100
11	Cooper's Gap	Wind	453
12	Mount Fox	Wind	290
13	Mount Emerald	Wind	180
14	Chewko	Solar	60
15	Kennedy	Wind	50
16	Collinsville	Solar	43
17	Daydream	Solar	150
18	Hayman	Solar	50
19	Hamilton	Solar	138
20	Desaily	Solar	75
21	Lakeland	Wind	100
22	Lakeland	Solar	13
23	Clarke Creek	Solar	200
24	Clarke Creek	Wind	800
25	Chalumbin	Wind	400
26	Windy Hill	Wind	20
28	High Road	Wind	80
29	Kaban	Wind	157
30	Kidston 1	Solar	50
31	Kidston	PumpHydro	250
32	Kidston 2	Solar	270
33	Columboola	Solar	162
34	Oakey	Solar	75
35	Darling Downs	Solar	110
36	Borumba	PumpHydro	2000
37	Childers	Solar	120

38	Ross River	Solar	148
39	Clare	Solar	127
40	Clermont	Solar	93
41	Lilyvale	Solar	100
42	Aldoga	Solar	600
43	Banana Range	Wind	280
44	Calide	Wind	400
45	Specimen Hill	Wind	336
46	MacIntyre	Wind	1026
47	Wambo	Wind	252
48	Mount Hopeful	Wind	350
49	Karara	Wind	103
50	Lotus Creek	Wind	341
51	Aramara	Solar	140
52	Banksia	Solar	68
53	Beelbee	Solar	240
54	Bohle Plains	Solar	124
55	Bowen	Solar	120
56	Bluewater	Solar	100
57	Chances Plains	Solar	100
58	Delga	Solar	250
59	Dulacca	Solar	180
60	Eungella	PumpHydro	250
61	Mica Creek	Solar	44
62	Moura	Solar	110
63	Rolleston	Solar	90
64	Sanctuary	Solar	25
65	Sanctuary2?	Solar	75
66	Smokey Creek	Solar	540
67	Theodore	Solar	70
68	Kumbarilla	Solar	100
69	Wooderson	Wind	816
70	Goondiwindi	Solar	94
71	Mount James	Wind	1000
72	Eungella 2	PumpHy	5000
73	Stony Creek	Wind	160
74	Prairie	Wind	800

75	Everleigh	Solar	139
76	Brooyar	BESS	500
77	Mount Rawdon	PumpHydro	2000
78	Big T	PumpHydro	400
79	Herries Range	Wind	1,000
80	Proserpine	Wind	900
81	Eungella	Wind	500
82	Wongalee	Wind	1400
83	Moonlight Range	Wind	400
84	Springlands	Wind	800
85	Mt. Challenger	Wind	80
86	Captains Mountain	Wind	380
87	Tarong West	Wind	500
88	Karma	Wind	600
89	Boomer Range	Wind	1,000
90	Moah Creek	Wind	375
91	Moah Creek	Solar	285
92	Bouldercombe	Solar	285
93	Boulder Creek	Wind	372
94	Raglans	Solar	300
95	Mount Rainbow	Wind	270
96	Mt. Murchison	Solar	200
97	Upper Calliope	Solar	1000
98	Kariboe	Wind	1000
99	Callide	Wind	430
100	Forsyth	Wind	250
103	North Creek	Wind	330
104	Iveragh	Wind	340
105	Goomeri	Wind	250
106	Stoney Creek	Wind	166
107	Mannuem	Wind	57
108	Iron Leaf	Wind	500
109	Bottletree	Wind	420

# Why here?

It's all about the transmission lines.

# New and proposed wind and solar projects in Queensland

- Proposed Project (Footprint not publicly known)
- Solar
- Wind
- Proposed Projects
- Solar
- Wind



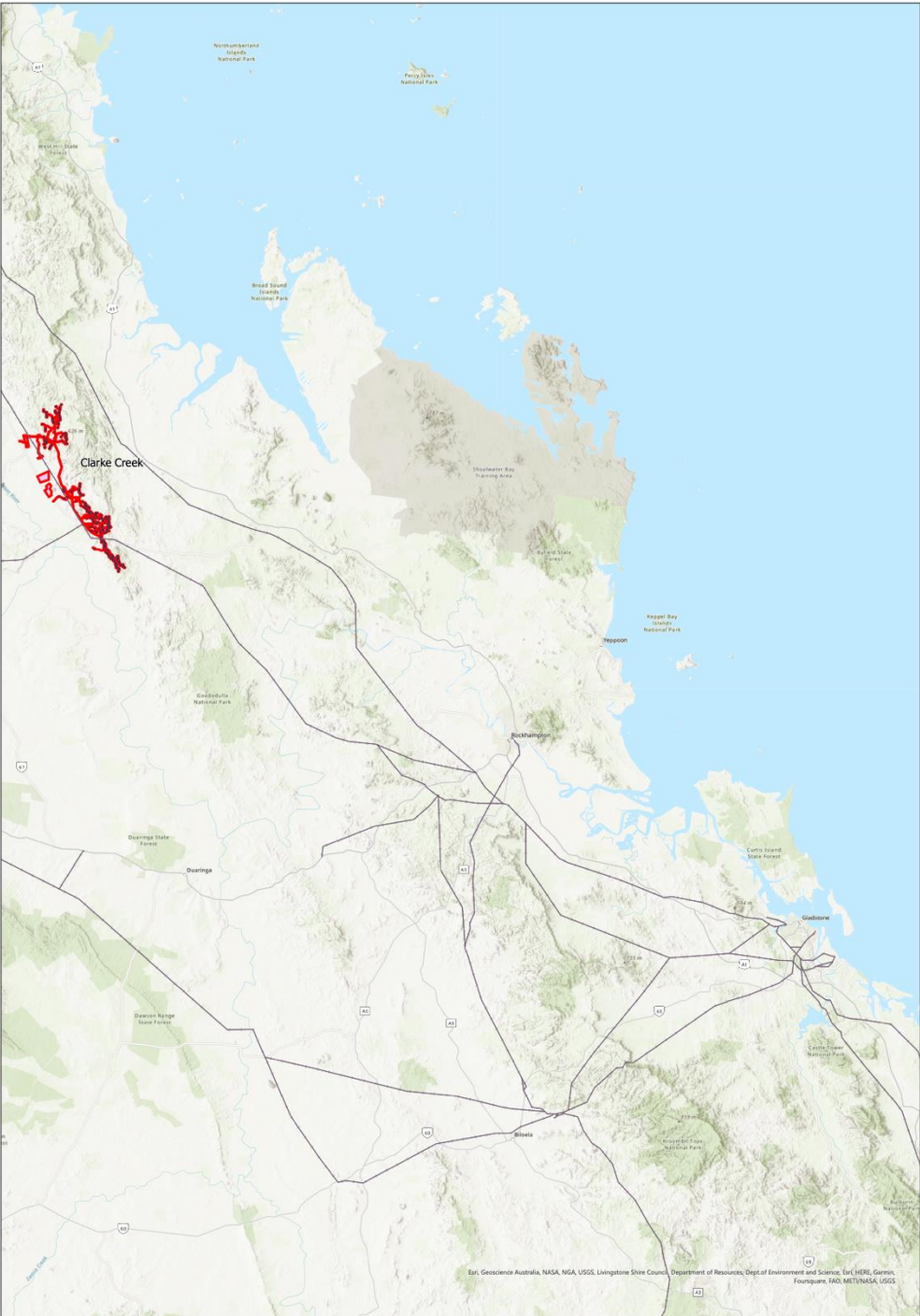
# New and proposed wind and solar projects in Queensland

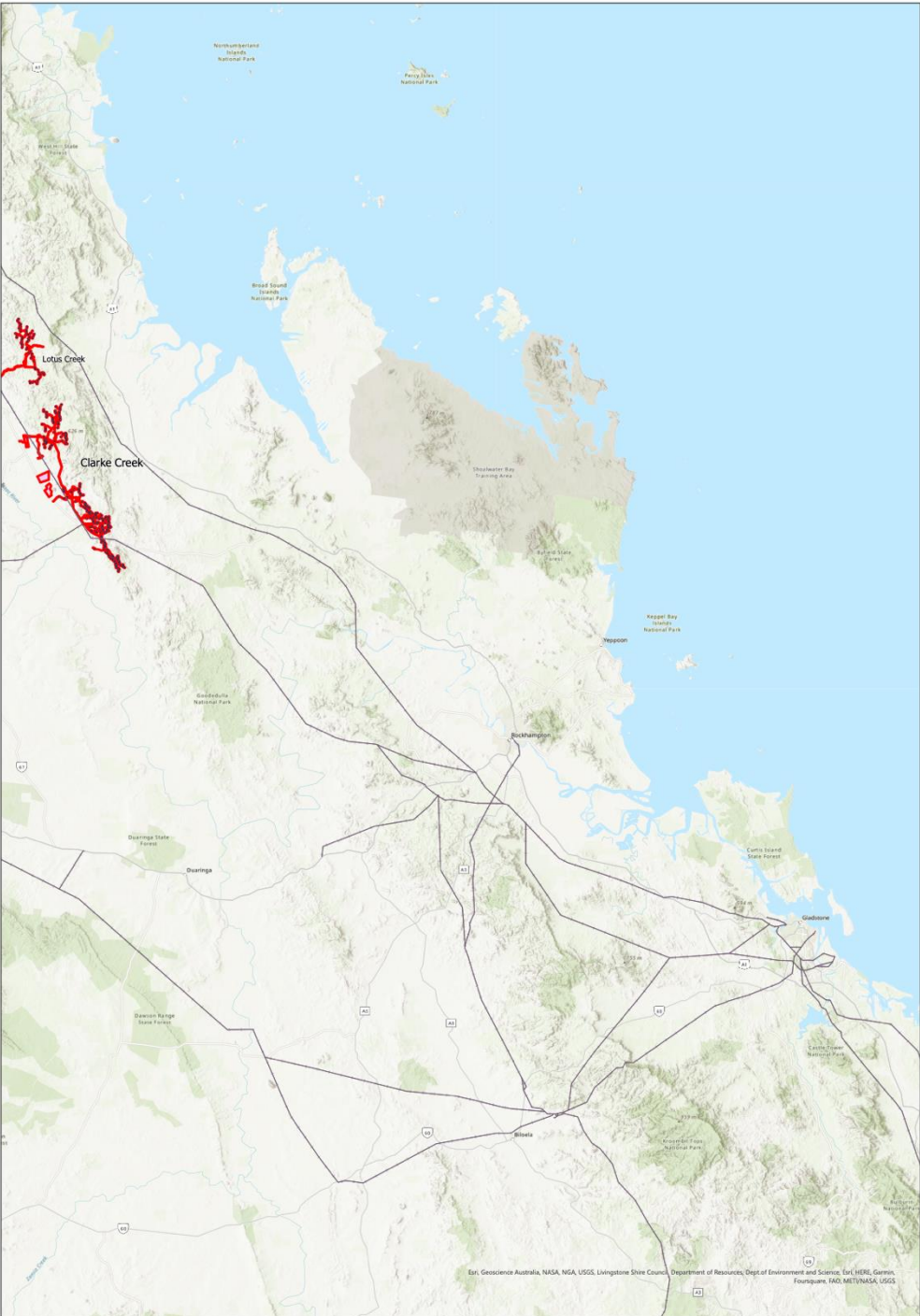
- Proposed Project (Footprint not publicly known)
- Proposed Projects

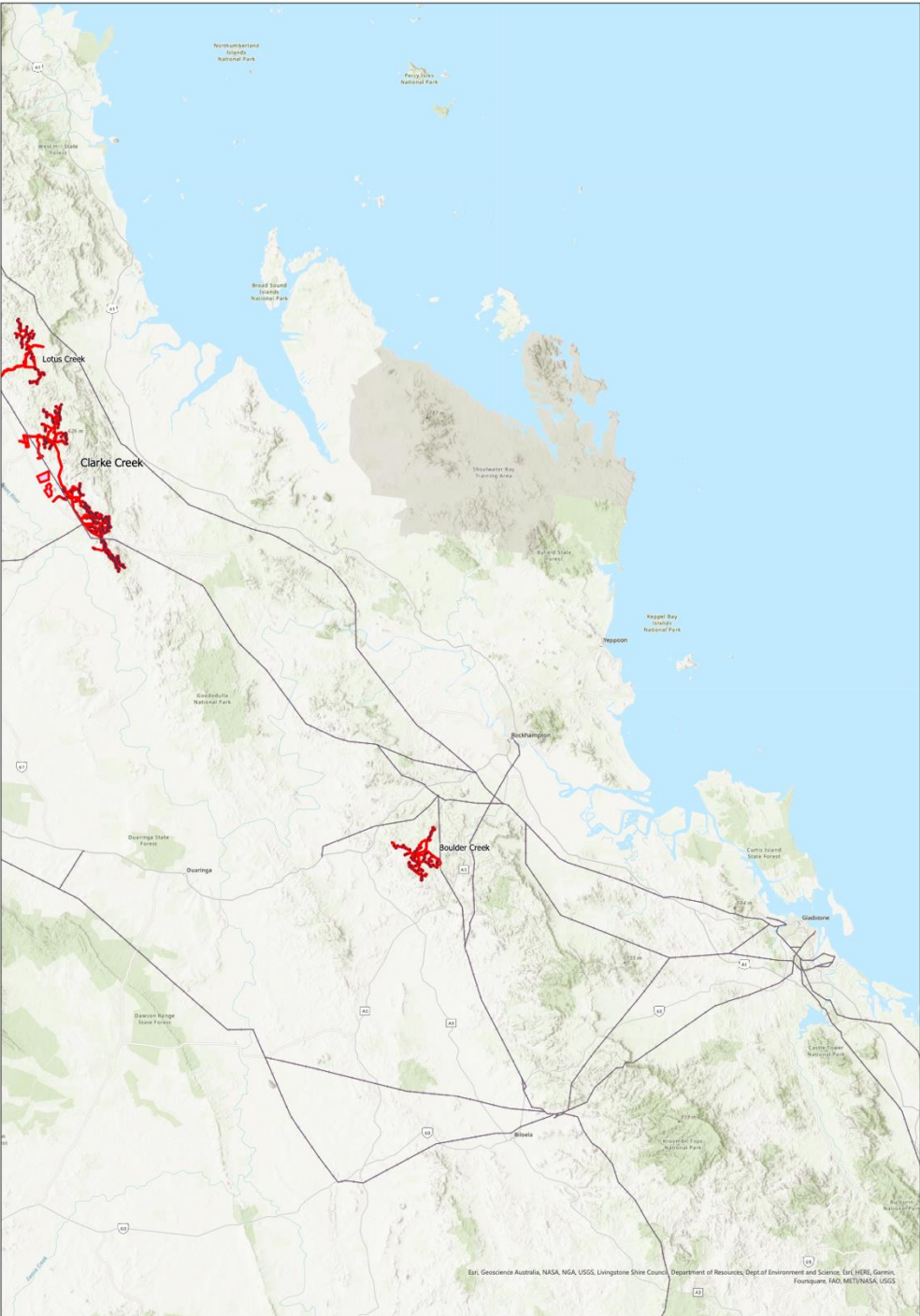


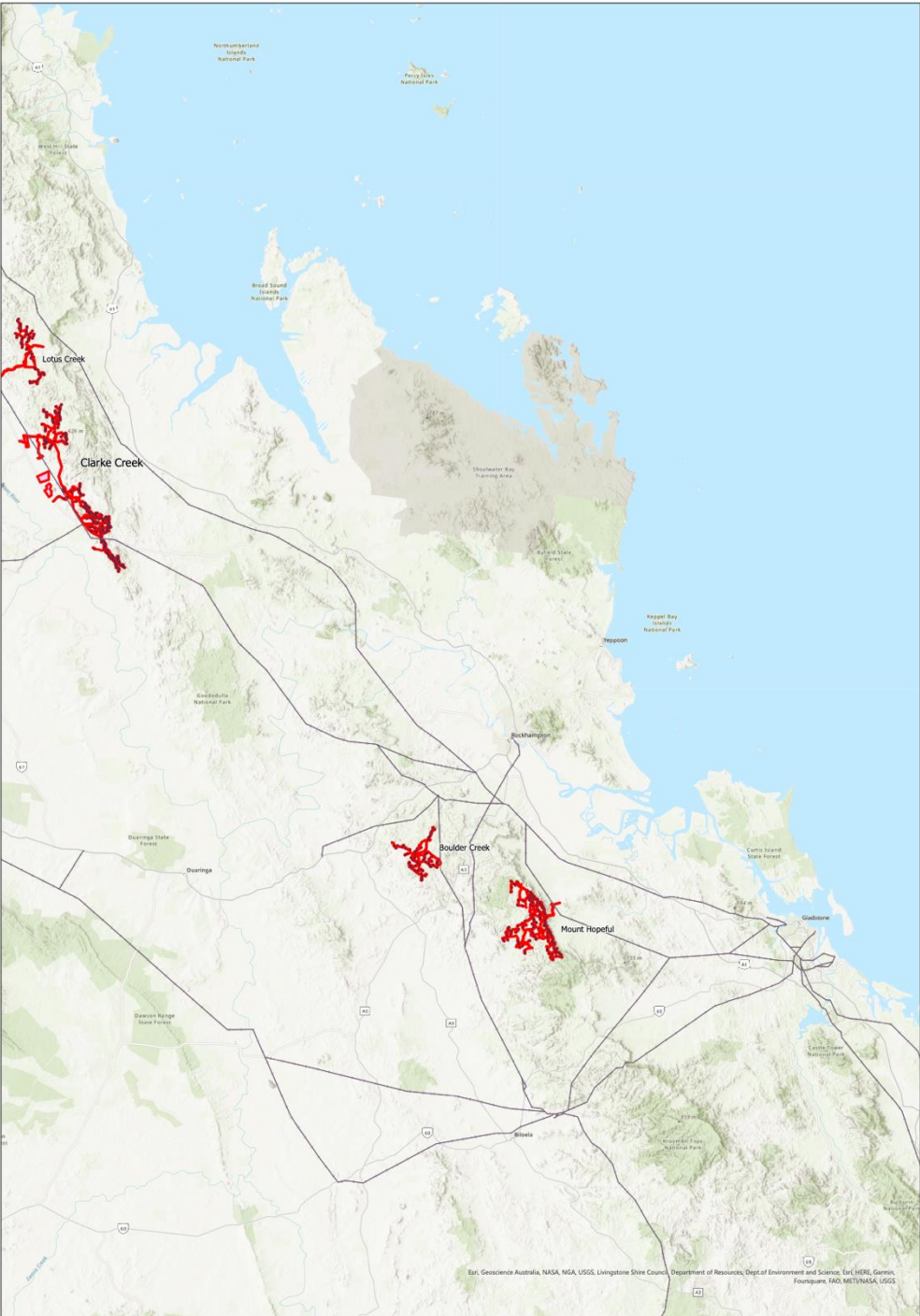
Esri, CSIRO, Livingstone Shire Council, Department of Resources, Dept. of Environment and Science, Esri, HERE, Garmin, FourQuare, IAG, METV, NASA, USGS

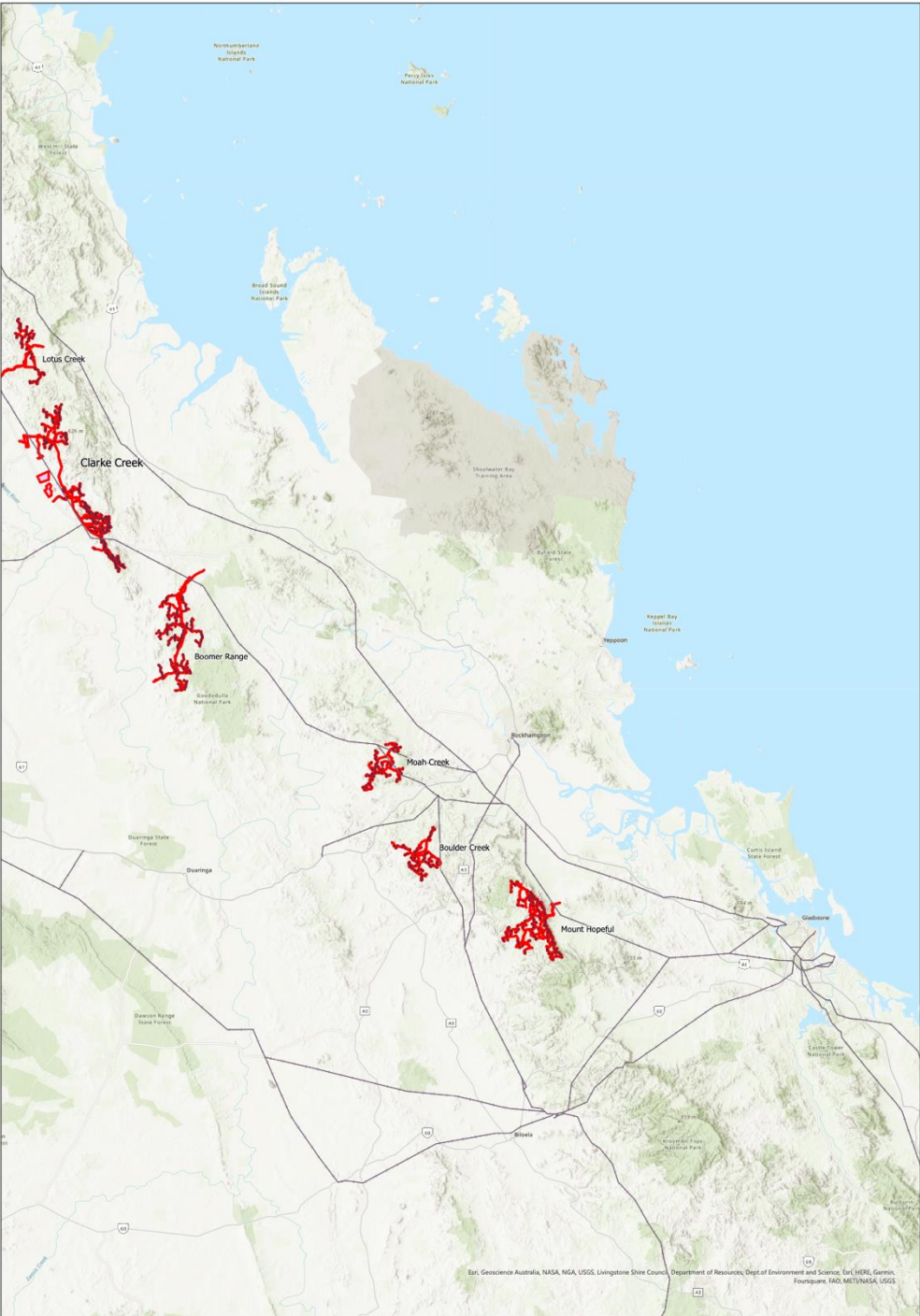


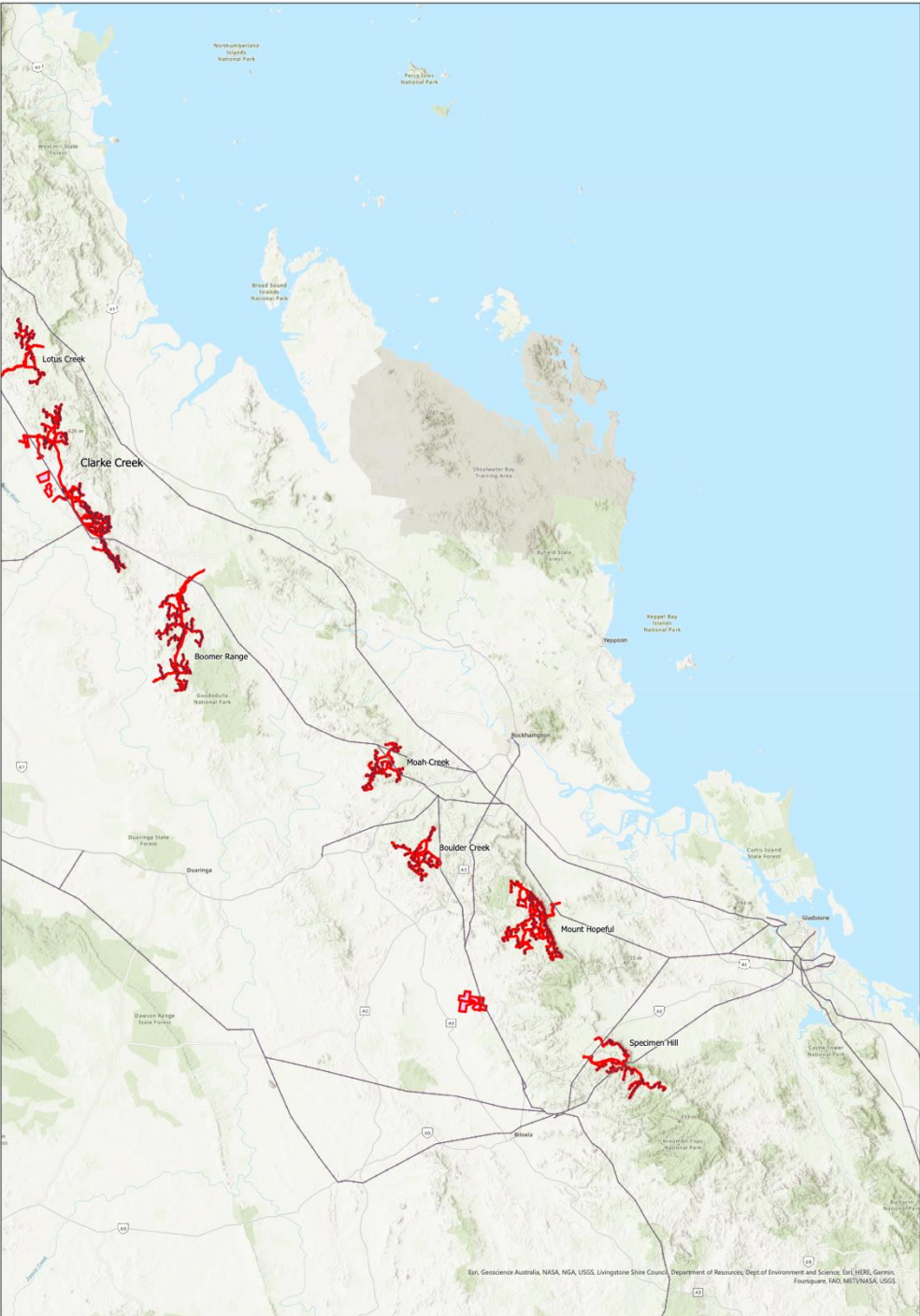




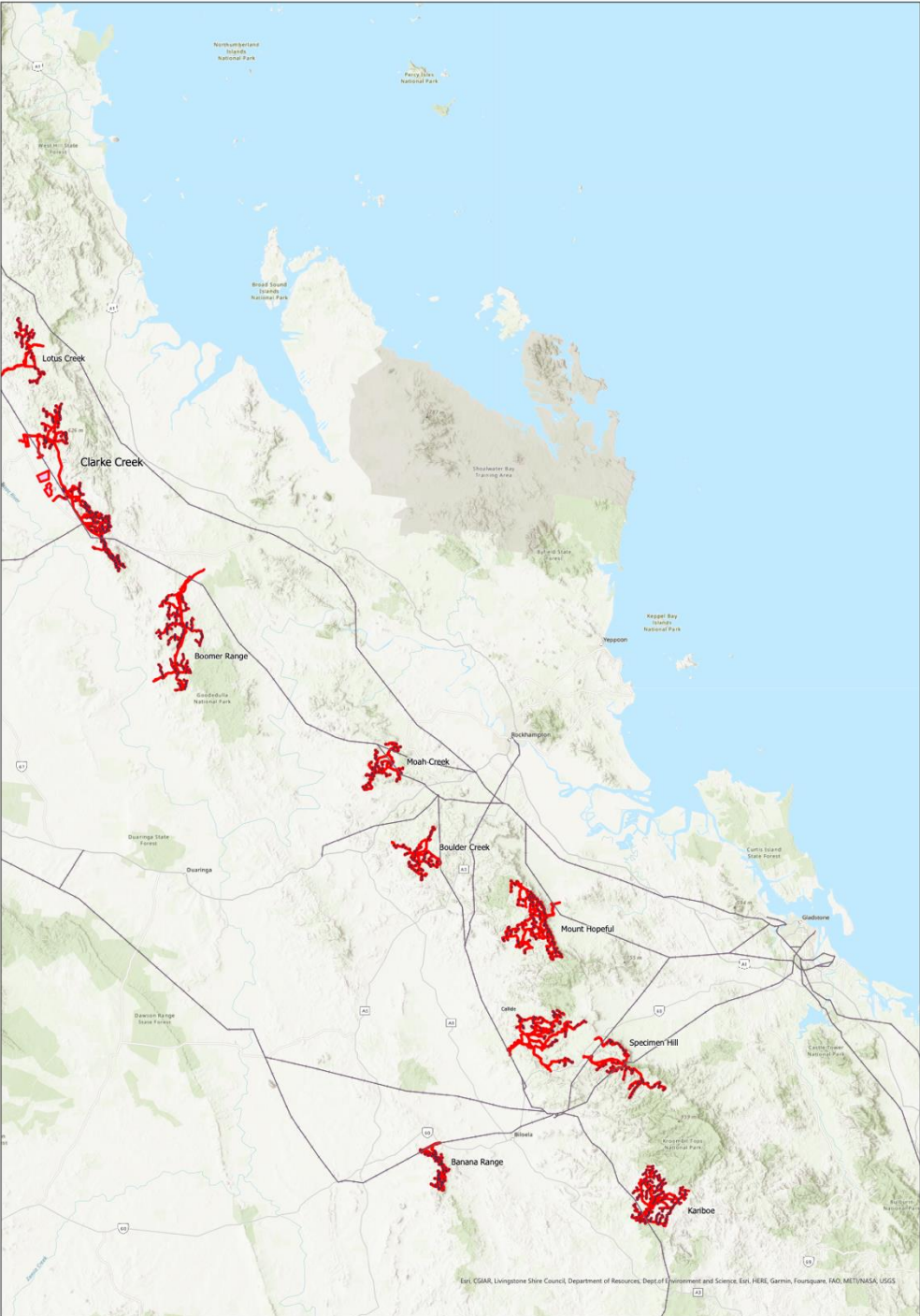




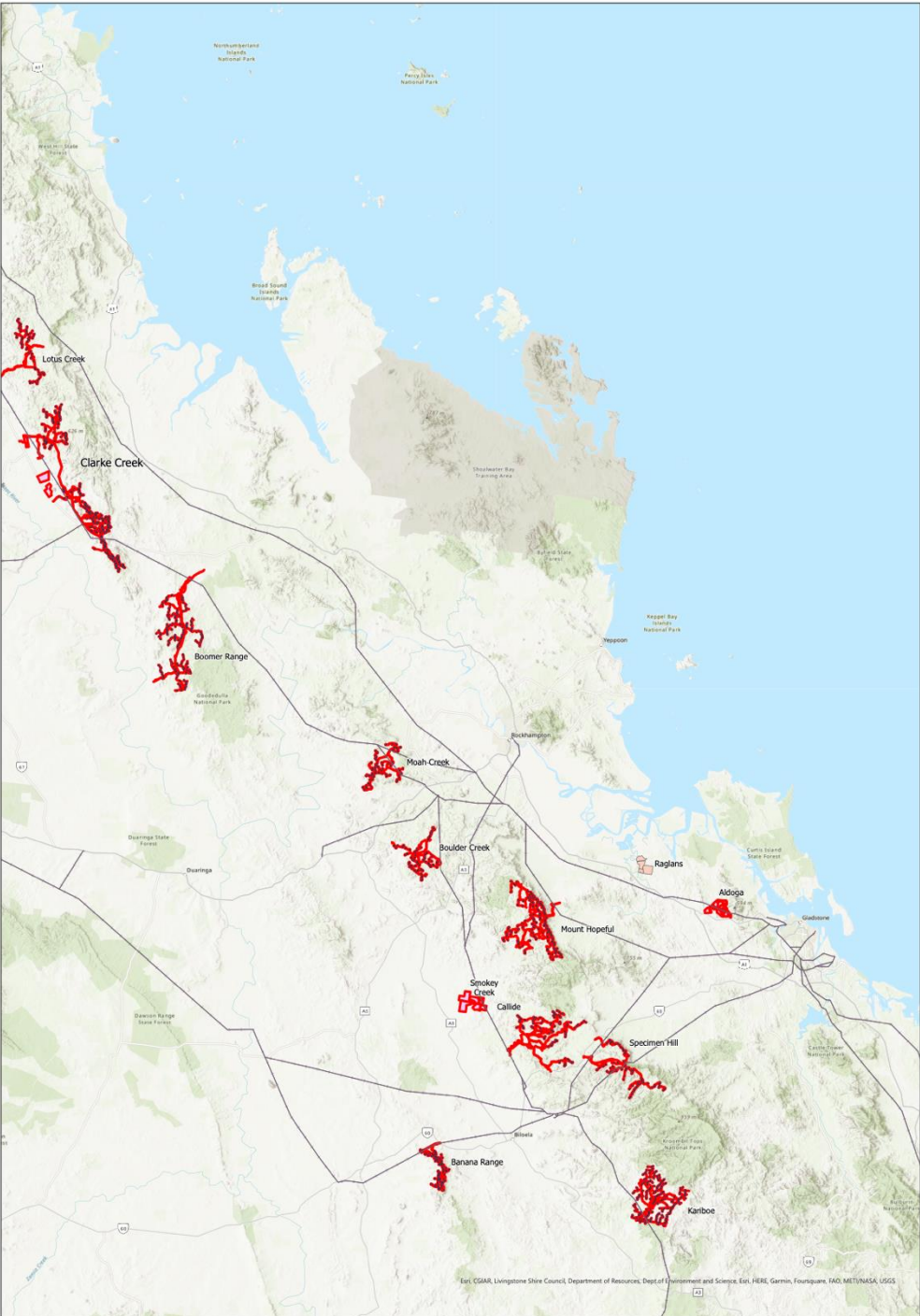




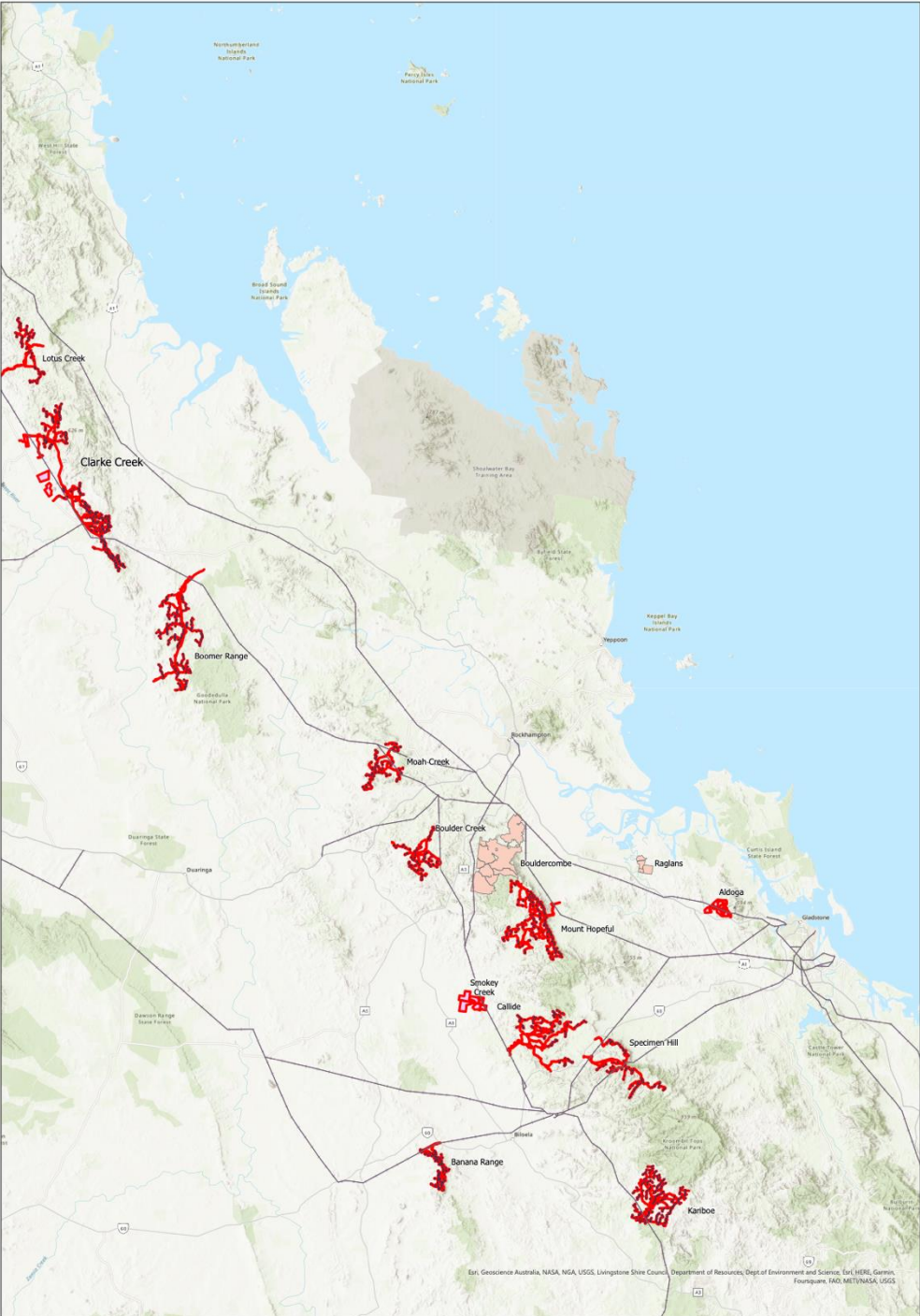


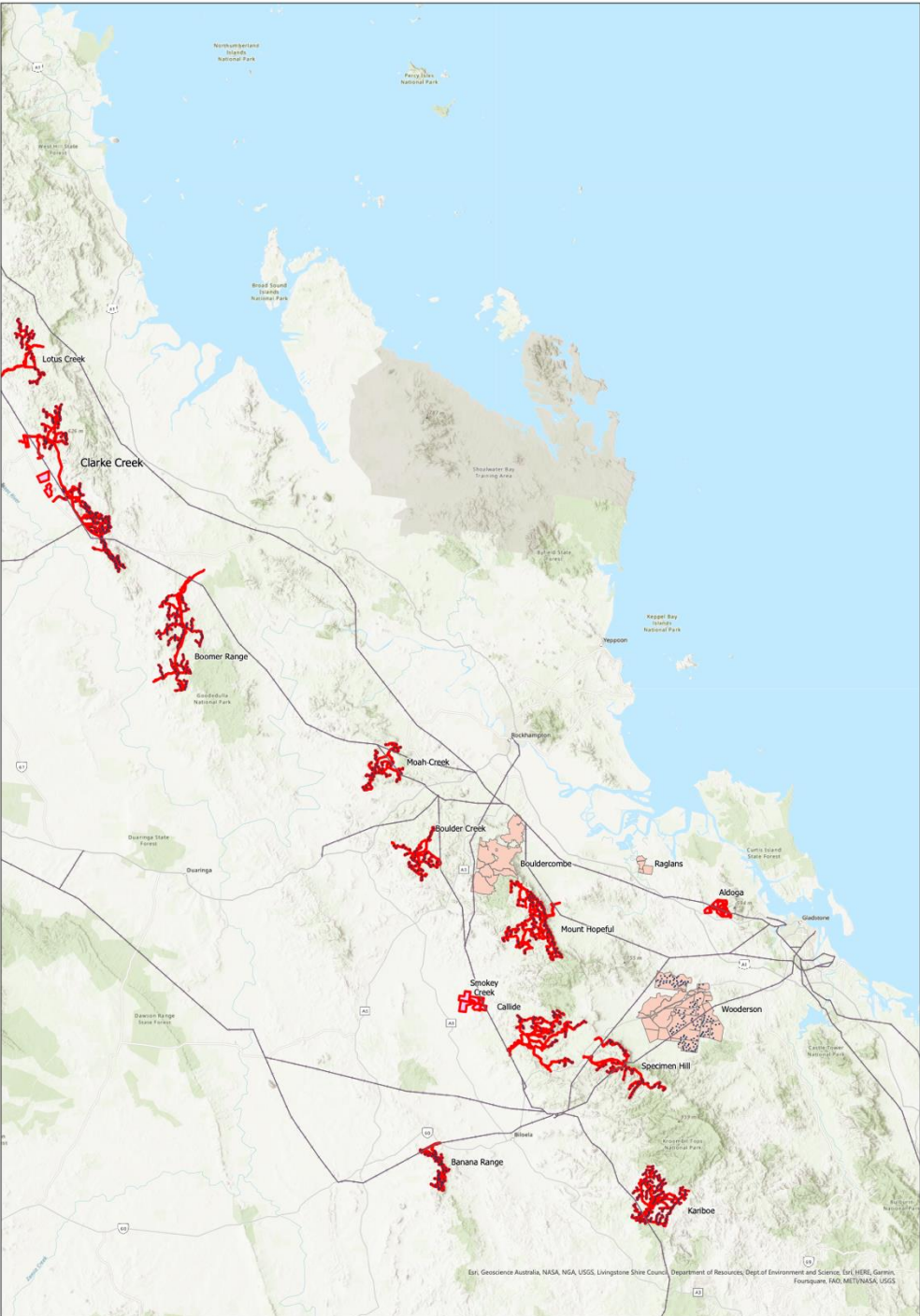


Esri, CGAIR, Livingstone Shire Council, Department of Resources, Dept. of Environment and Science, Esri, HERE, Garmin, FourSquare, FMO, METI, NASA, USGS

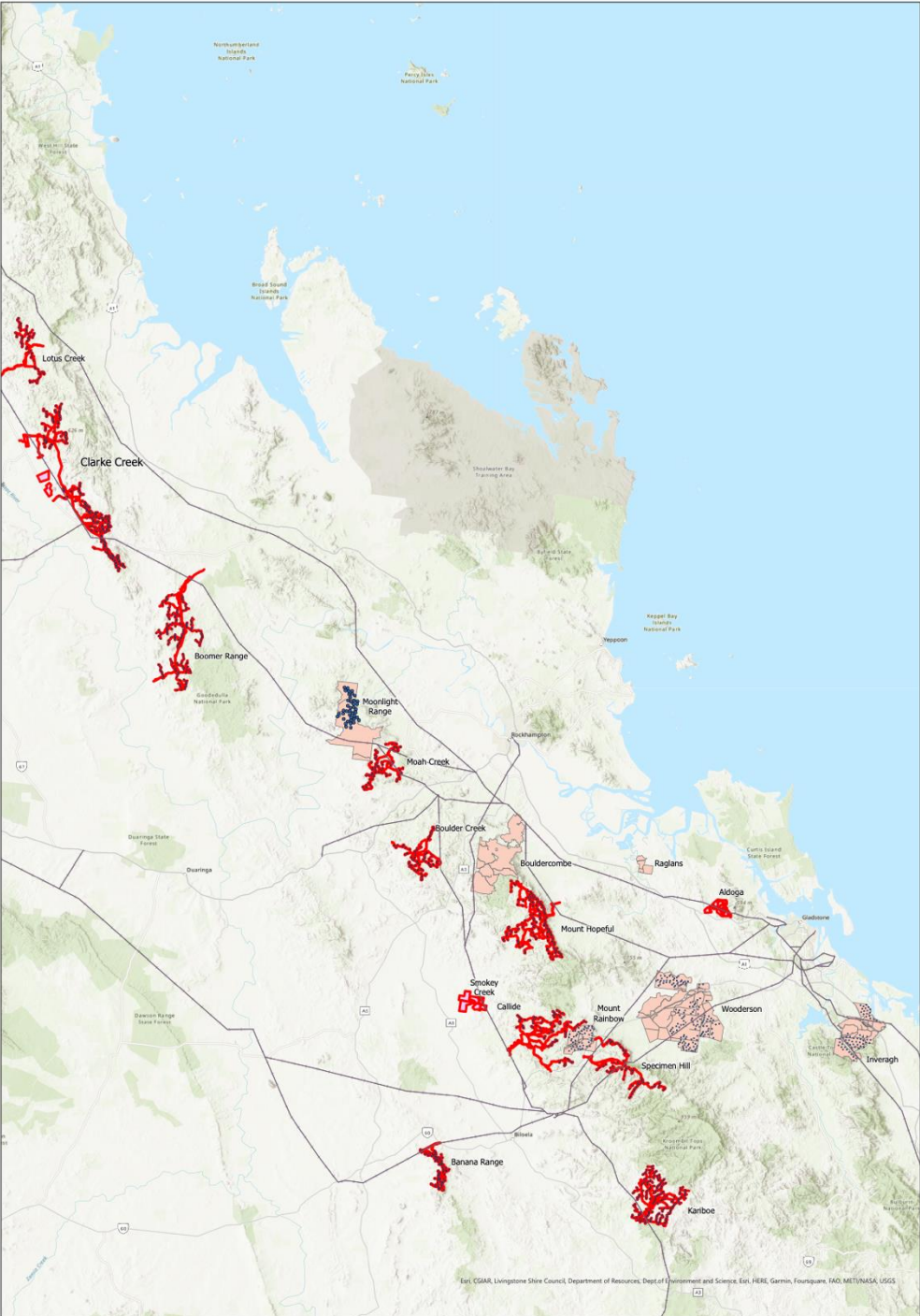


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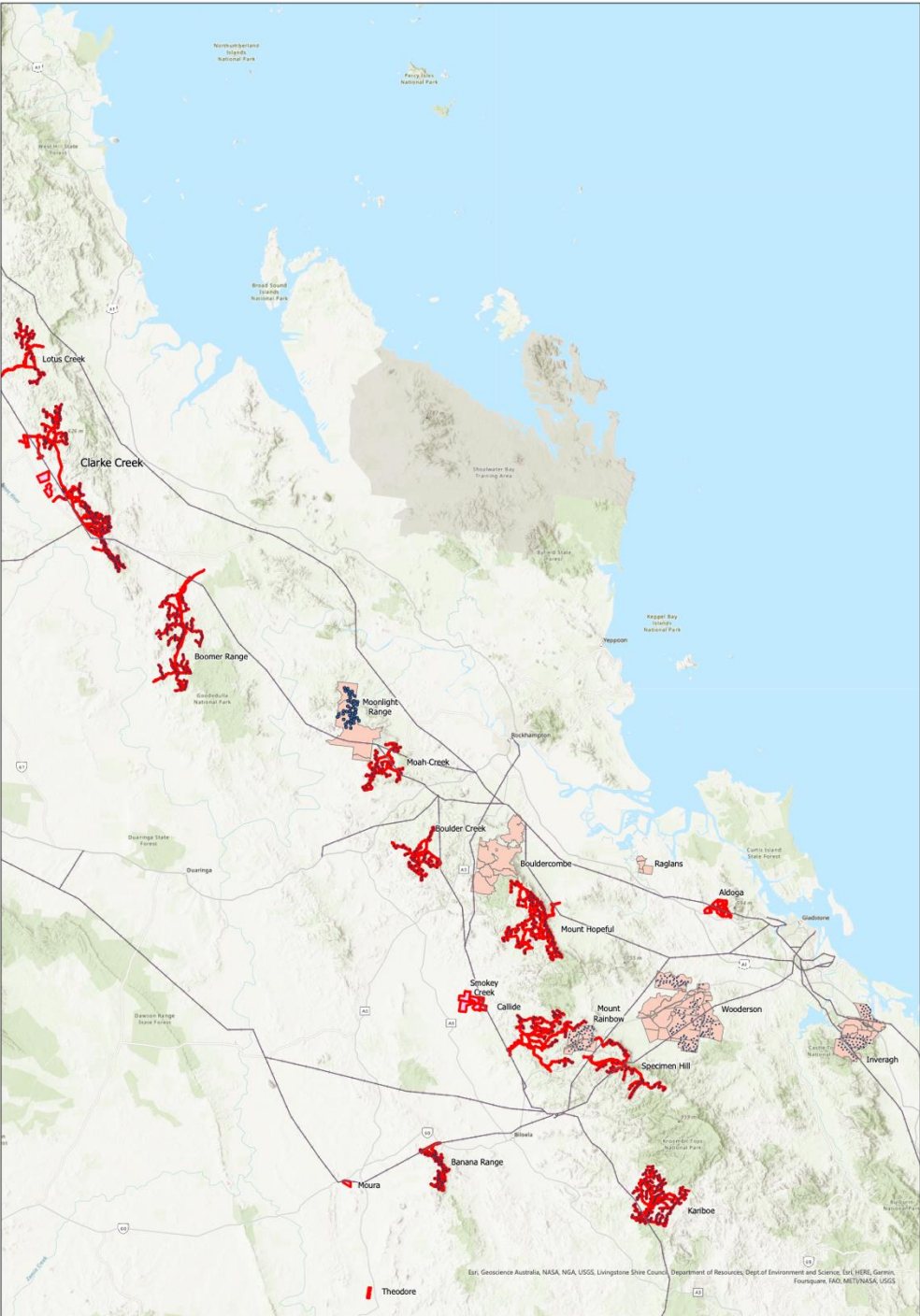








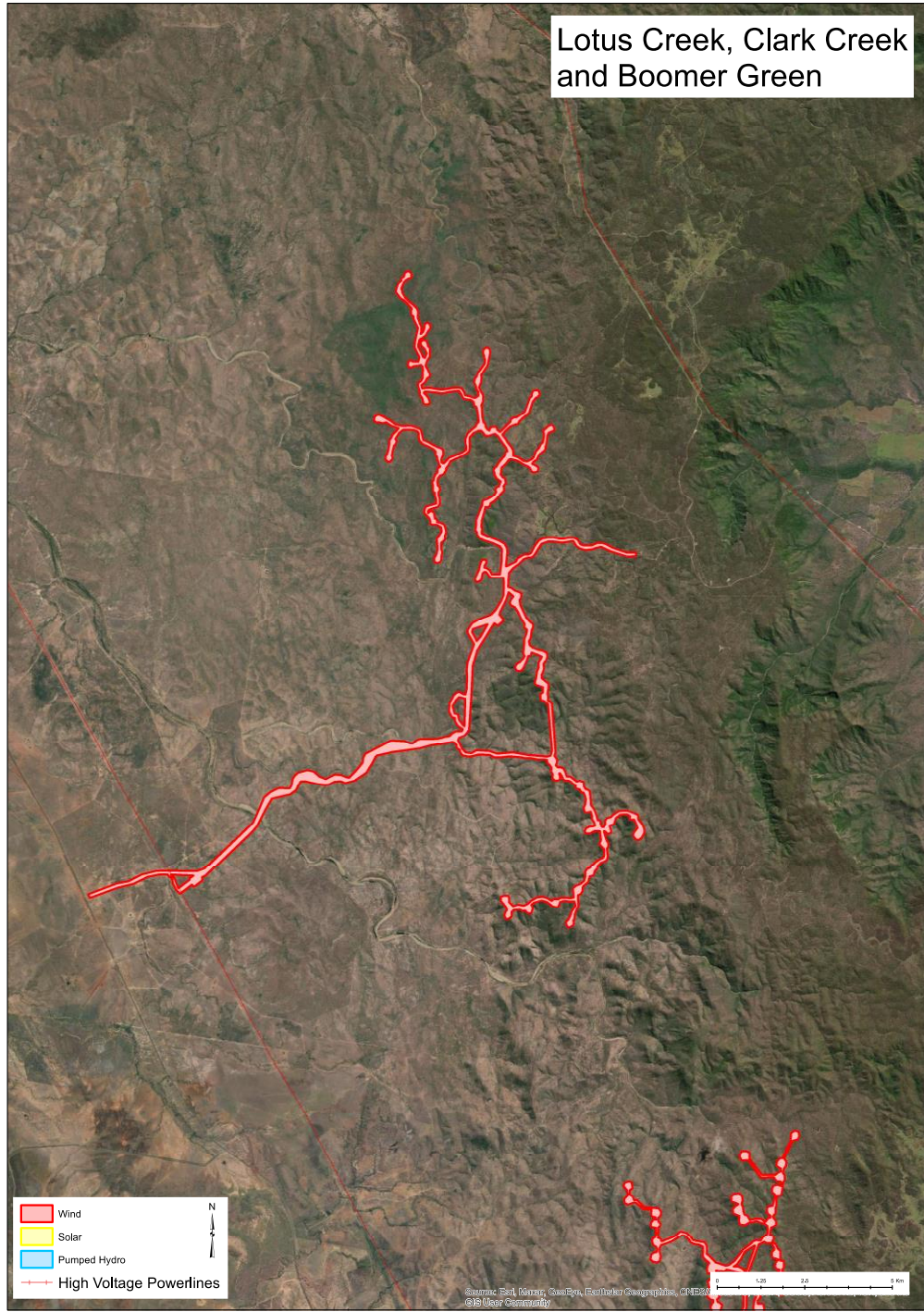
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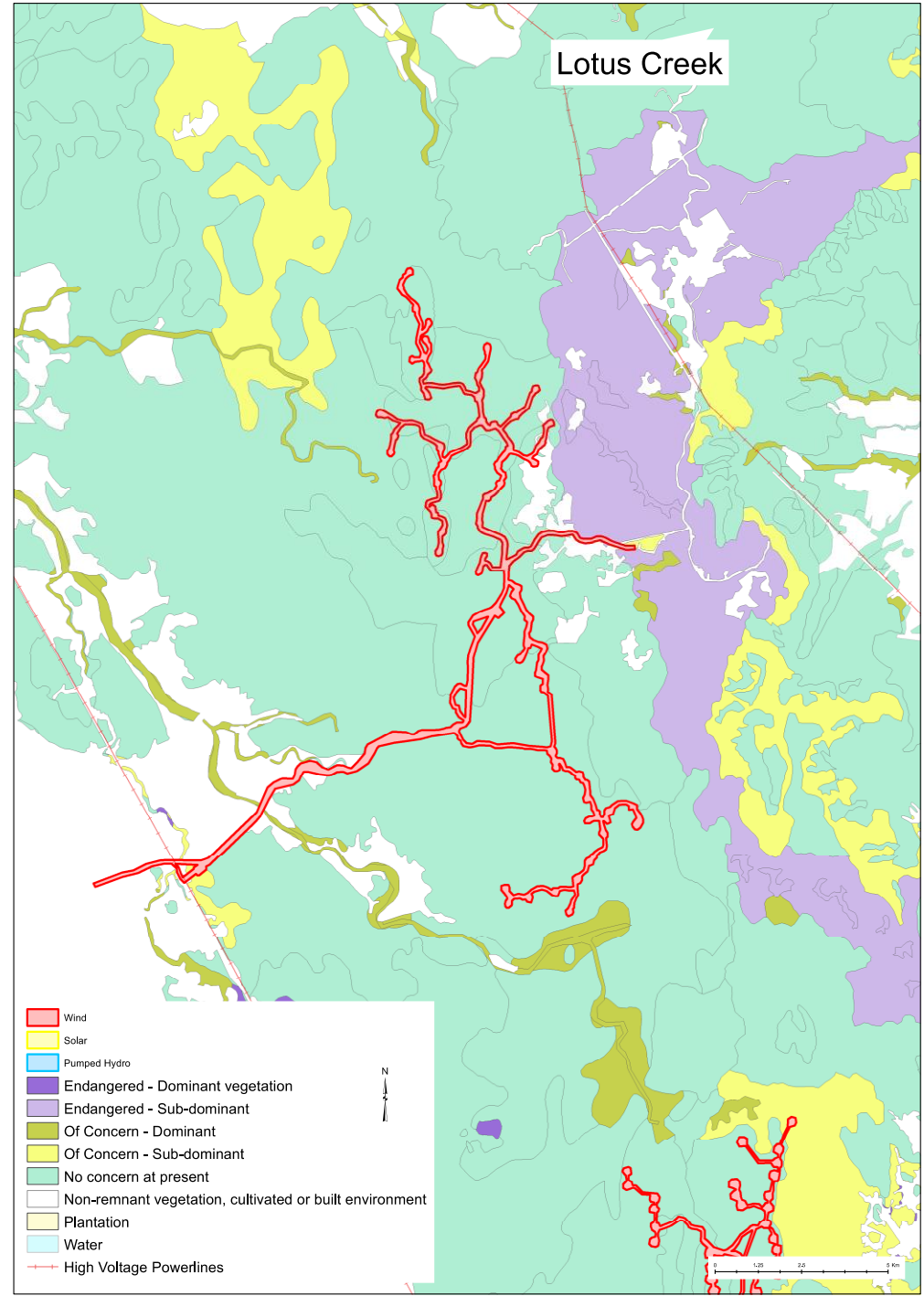




# Lotus Creek, Clark Creek and Boomer Green



# Lotus Creek







Approx. 3,365 turbines are in the pipeline for Queensland!

Millions and millions and millions of solar panels.

Upper Calliope Solar Farm alone will have 2 million panels.

Total 'renewable' nameplate capacity in the pipeline with wind = 22,874 MW

Queensland needs 13,000 MW (peak at 6pm with no solar)

Capacity factor of wind is 15-35% efficiency  
Assume 25% capacity this will deliver 5,718MW

THEREFORE, WE NEED TO MULTILPY THESE 53 WIND PROJECTS  
BY THREE TO REACH TARGETS!  
(WHEN THE WIND BLOWS)

NOTE:

This excludes all the critical mineral mining and  
rare earth mining to facilitate this rollout.

It also excludes vast transmission infrastructure and back up  
storage and gas peaking plants when all fails.

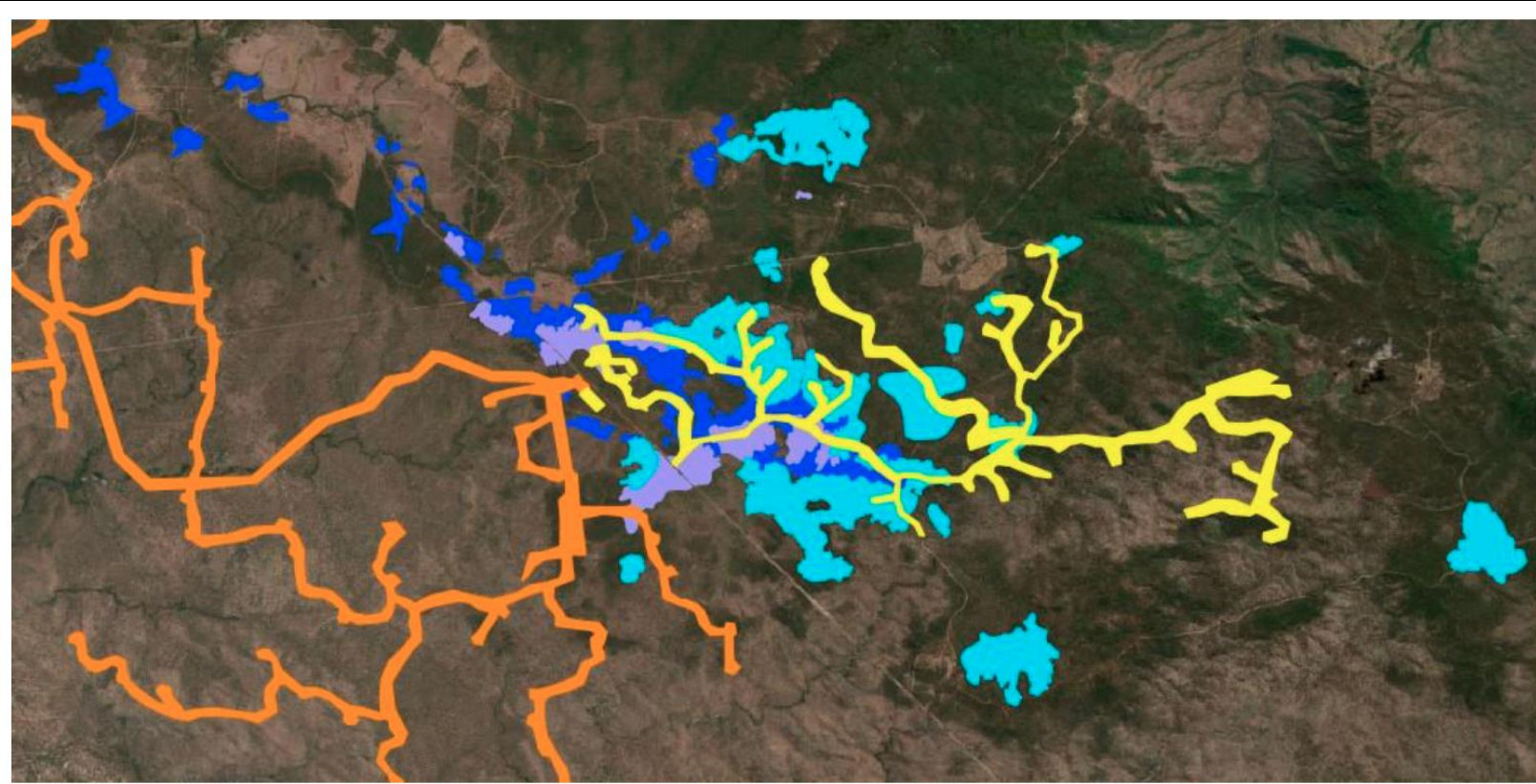
The breakdown is (just for wind) – study by Jeanette Kemp  
(former Queensland Government Principal Botanist):

**Table 2.** Area of Endangered, Of Concern and Least Concern, according to the Queensland Biodiversity Status, which is within the renewables clearing footprint. Table also includes area with 200 m buffer (i.e. the area likely to undergo secondary impacts).

<b>Biodiversity Status</b>	<b>Area of Clearing (Ha)</b>	<b>Area of Clearing with 200 m buffer (Ha)</b>
Endangered	370	1,935
Of concern	2612	1,1402
No concern at present	25956	100,671
<b>Grand Total</b>	<b>28,938</b>	<b>114,007</b>

**4,132km** of new haulage roads (this excludes transmission easements) will be built within remnant and non-remnant forests across the state, a total area of disturbance is 114,007ha.

Mt. Fox Wind Farm  
Jeanette Kemp (former Queensland Government Principal Botanist)



**Fig. 1** Regional Ecosystems 7.8.18a (dark blue), 7.8.18c (purple) and 7.5.4f (light blue) are rare or restricted ecosystems listed as Of Concern under both the Vegetation Management Act and Biodiversity Status ranking. Mount Fox Energy Park clearing footprint is shown in yellow, and parts of the Gawara Baya Wind Farm are shown in orange. The Mount Fox Energy Park will fragment the largest, most intact examples of these ecosystems remaining.

## Impacts on threatened and restricted plants

There is a large number of threatened or restricted plant species that will be affected by the renewable energy proposals. For example, the following 52 Queensland listed threatened or near- threatened species are likely to (or known to) occur within or close to the footprint of one or more of the renewables proposals. Note that for several of these species, their core habitat lies in the rugged ridges and knolls of the coastal ranges, which is precisely where the windfarms are proposed.

### Note:

CE = Critically Endangered

E = Endangered

V = Vulnerable

NT = Near Threatened

Species	Qld Status
Calotis glabrescens	CE
Melaleuca uxorum	CE
Prostanthera albobirta	CE
Zieria fordii	CE
Acacia <u>pedleyi</u>	E
Comesperma anemosmaragdinum	E
Cycas megacarpa	E
Cycas <u>ophiolitica</u>	E
Glossocardia orthochaeta	E
Macrozamia pauli-guilielmi	E
Macrozamia serpentina	E
Melaleuca sylvana	E
<u>Prostanthera clotteniana</u>	E
Rhodamnia sessiliflora	E
Solanum <u>graniticum</u>	E
<u>Vincetoxicum forsteri</u>	E
<u>Vincetoxicum rupicola</u>	E
Acacia crombiei	V
Acacia purpureopetala	V
Acacia tingoorensis	V
Capparis thozetiana	V
Coleus <u>amoenus</u>	V
Coleus eungallensis	V
<u>Commersonia reticulata</u>	V
Corchorus subargenteus	V
<u>Corunastylis alticola</u>	V

<u>Corymbia leptoloma</u>	V
Cycas couttsiana	V
Cycas terryana	V
Eucalyptus infera	V
Gastrodia urceolata	V
Goodenia <u>stirlingii</u>	V
Grevillea glossadenia	V
Homoranthus porteri	V
Leichhardtia brevifolia	V
Macrozamia cardiacensis	V
Macrozamia conferta	V
Ozothamnus eriocephalus	V
Samadera bidwillii	V
Thesium australe	V
Triplarina nitchaga	V
Zieria obovata	V
Achronychia eungellensis	NT
Aggreflorum pallidum	NT
Cerbera dumicola	NT
Calochlaena villosa	NT
Chiloglottis longiclavata	NT
Corybas abellianus	NT
Corybas cerasinus	NT
Diuris oporina	NT
Dodonaea uncinata	NT
Sannantha brachypoda	NT

There are around seven North Queensland plant species that could now be considered for listing as a threatened species given their very restricted occurrence, and possible occurrence within the proposed windfarm footprints:

<i>Caldesia reniformis</i>
<i>Comesperma rhyoliticum</i>
<i>Hibbertia concinna</i>
<i>Hibbertia malacophylla</i>
<i>Pterostylis borealis</i>
<i>Synostemon anemoniflorus</i>
<i>Schoenus thedae</i>
<i>Zieria whitei</i>

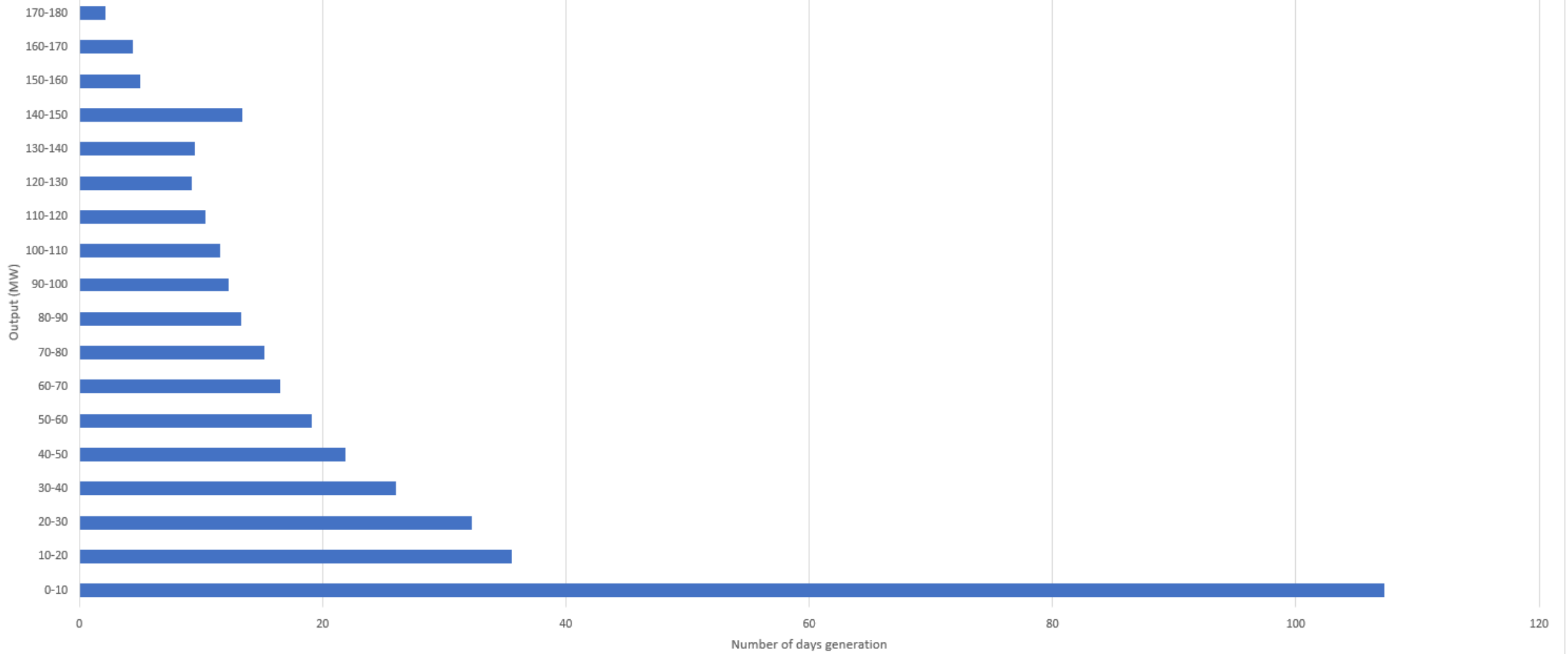
There are at least three plant species which are significant outliers from southern populations (and may be genetically significant) which may occur in the proposed windfarm footprints:

<u><i>Lindsaea incisa</i></u>
<u><i>Boronia bipinnata</i></u>
<u><i>Zieria cytisoides</i></u>

There are at least 18 restricted plant species for which their core habitat lies overlaps with the North Queensland windfarm proposals, and which will result in substantial habitat fragmentation for these species:

<i>Arthrochilus oreophilus</i>
<i>Coronidium fulvidum</i>
<i>Corymbia abergiana</i>
<i>Cryptandra debilis</i>
<i>Dodonaea uncinata</i>
<i>Eucalyptus lockyeri</i> subsp. <i>lockyeri</i>
<i>Pimelea chlorina</i>
<i>Platysace</i> sp. (Watsonville P.I.Forster PIF6259)
<i>Pterostylis aquilonia</i>
<i>Pterostylis stricta</i>
<i>Pterostylis taurus</i>
<i>Sannantha angusta</i>
<i>Stylidium oviflorum</i>
<i>Styphelia piliflora</i>
<i>Synostemon aphyllus</i>
<i>Thelymitra queenslandica</i>
<i>Trachymene tenuifolia</i>

Mount Emerald Ouput 2022



## MOUNT EMERALD WIND FARM OUTPUT FOR 2022

**Max capacity = 180 MW**

Actual 2022 average output = 48.3 MW (26.8% capacity factor)

**Median = 32.6MW (18.1% capacity factor)**

(50% of the time i.e. 182 days, the generators produced this or less output)

**63 days** Mount Emerald produced zero MW (0% capacity factor)

**107 days** Mount Emerald produced less than 10 MW (<5.5% capacity factor)

## ATO large business tax stats 2021-22

ATO business tax stats 2021-22  
ratch

<b>Business</b>	<b>Total income \$</b>	<b>Taxable income \$</b>	<b>Tax payable \$</b>
RATCH-AUSTRALIA CORPORATION PTY LTD	161,859,092		

ABC News / Source: [ATO](#) / [Get the data](#)

OUR LATEST DATA RELEASED THIS WEEK:

Australia Wide 18,364 on-shore wind turbines proposed

Lotus Creek Wind Farm just purchased by the state  
for \$1.3b for 46 turbines =  
\$28 million/turbine

Therefore, to roll out 18,364 turbines =  
approx. \$514b (half a trillion)

# My thoughts...

**Should we be clearing and fragmenting forests for renewables?**

**Are we going down the wrong path that has failed elsewhere?**

**Where is our model for 100% renewables?**

**Which countries are carbon free?**

Solutions...

## 1) Some good renewables

i.e. rooftop solar (however at saturation point now), small community grids, locally owned wind farms and some industrial with social license on altered or degraded land.

## 2) Nuclear

# Nuclear must be part of our solution.

I agree that nuclear, as depicted in the media, appears to have some scary shortcomings (waste, radiation, nuclear weapons, cost and slow rollout speed). However, my research has led me to understand I was misled about nuclear. Most, if not all, of the apparent scary shortcomings are not supported by the scientific literature.

I now see nuclear as an important piece of the solution to the climate crisis. Nuclear combined with appropriately placed renewables is a safe, cost-effective way to rapidly reduce fossil fuel generation.

**James Hansen** – first warned of global warming in 1988. he says, “Nuclear Power must make a comeback for climate’s sake.”

**Dalai Lama** – “A role for Nuclear in the absence of more efficient alternative energy sources. He added that energy sources like wind and solar are too inefficient to put into realistic practice to meet the needs of developing nations.”

**James Lovelock** – author of *Gaia Hypothesis* says  
“Nuclear is the only green solution.”

**Dick Smith** – “There's no alternative to nuclear power, I'm a big fan of renewables but the longer we delay going to nuclear, the more carbon we'll have in the atmosphere”.

**Bill Gates** – is transforming the coal plant in Kemmerer, USA  
with his companies new SMR.

And even our very own **Prof. Bill Laurance** signed *An Open Letter to Environmentalists on Nuclear Energy*.

Nuclear must be part of our solution.

Nuclear eliminates the need for new transmission lines and provides enormous power generation in a tiny footprint.

400 MW within 18ha

I think you will find over time,  
more people like myself will come out and support  
nuclear energy as the best way to protect  
biodiversity.

# Thank You



Thank you to Rainforest Reserves Australia, Jeanette Kemp, Carolyn and Phil Emms, Dr. Michael Seebeck, Simon Thompson, Anastasia Klose, and the thousands of supporters who have helped in many ways.