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AEMO

Via email: ISP@aemo.com.au

To whom it may concern

ASMC response to Draft 2022 Integrated System Plan

The Australian Sugar Milling Council (ASMC) welcomes the opportunity to comment on the AEMO Draft 2022 Integrated System Plan (ISP).

Our comments below are specific to two matters:

(1) The absence in the ISP of the (bagasse) co-generation potential of the Australian sugar industry and the associated consumer and network benefits; and
(2) The absence in the ISP of a credible approach to addressing variable renewable energy (VRE) social licence matters, including conflicting land-use.

Background to the ASMC

ASMC is the peak representative body for the sugar manufacturing sector, representing the five companies that collectively produce approximately 90% of Australia's raw sugar at 17 sugar mills across Queensland. The Queensland sugar industry alone – including millers and cane growers – is responsible for $4 billion in annual economic activity and 23,000 jobs in regional Queensland.

The ASMC with other industry stakeholders is currently developing a *2050 Industry Roadmap* to increase the Australian sugar industry's resilience and profitability. To be completed over the following months the Roadmap will concentrate, inter alia on initiatives that:

- Decrease the industry's 80% revenue and profits exposure to raw sugar exports (and exposure to volatile global sugar prices) by pursuing revenue diversification opportunities – such as more (bagasse) co-generation output, and
- Increase the amount of cane received by mills.

The ISP intersects critically with both objectives and is of importance to the industry.

Specific comments on the ISP

Matter # 1 - The absence in the ISP of the co-generation potential of the Australian sugar industry and the associated consumer and network benefits

Consistent with previous ISP reports, and with reference to the 2022 ISP and the statement that the NEM will require a very significant 60 GW (60,000 MW's) of additional firming capacity by 2050, the

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Australian sugar industry has recently evaluated the feasibility of increasing its co-generation to contribute to meeting this market need.

Australian sugar mill co-generation plants utilise the by-product cane fibre (bagasse) as fuel to generate steam that is used to power internal processes and for electricity generation. From 438 megawatts (MW) of installed capacity, our sector currently generates more than 900,000 MW hours (MWh) of electricity per annum, with approximately half being used internally and half exported to the grid.

This electricity is **renewable, dispatchable, and synchronous** and can assist with the reliability and security problems of the grid caused by wind and solar intermittency. Furthermore, given its baseload characteristics it is a viable alternative to coal when these assets are retired. Indeed, the power generated from the industry helped fill the electricity deficit immediately following the catastrophic failure of the Callide C power station in May 2021 and the more recent capacity shortages in Queensland from heatwave conditions in February 2022.

The Howard Government recognised co-generation from bagasse as an eligible renewable energy source under Section 17(1) of the *Renewable Energy (Electricity) Act 2000* and was therefore eligible to create Renewable Energy Certificates (RECs) under the Renewable Energy Target and more recently Large-scale Generation Certificates (LGCs) under the Large-scale Renewable Energy Target (LRET). The sector installed around 300 MW of cogeneration as a direct result of the LGC revenue streams becoming available.

L.E.K techno-economic study findings

ASMC recently commissioned L.E.K Consulting to conduct a detailed techno-economic assessment of the industry's energy diversification potential with the objective of ensuring that over time all waste products from sugar manufacturing (bagasse, molasses etc) are fully utilised and generate maximum returns.

The assessment indicates that at a Queensland industry-wide level there would be opportunity to significantly increase co-generation from bagasse from:

Scenario A (status quo) - 438 MW of capacity and 567 GWh's of export

to the totals at either Scenarios B, C or D below (differences reflect the extent of the upgrades to current plant and the type and rate of technology advances with the commissioning of new plant).

Scenario B - 680 MW of capacity and 2,120 GWh's of exported power
Scenario C - 1,054 MW of capacity and 3,922 GWh's of exported power
Scenario D - 1,736 MW of capacity and 7,588 GWh's of exported power

A summary of the indicative technologies, energy efficiencies, total generation capacity, carbon abatement and CAPEX of these scenarios is provided at in Attachment A.

ASMC estimates that achieving Scenario C (~1,054MW) for example would result in:

- A renewable, firming option that can be readily despatched to improve electricity grid security and reliability;
- A renewable, baseload option (9pm-5am the most viable option) that could replace retired coal assets;
- Lower consumer costs as augmentations in cogeneration output would occur on milling sites where significant transmission and other electricity assets already exist;
- Around 2.9 million tonnes of additional carbon abatement per annum;
- $3-4 billion in potential new investment in regional Queensland as mills electrify and modernise their factories to make more bagasse available and for the installation of and commissioning of additional co-gen capacity;
- A strengthening of the sugar industry's financial position to help fund essential factory upgrades like boilers and other diversification opportunities; and
- A strengthening of the financial position of cane growers if co-generation profits are available to be shared with growers.

We would welcome the opportunity to further brief AEMO on our analysis and to discuss opportunities to integrate this potential into the 2022 and subsequent ISP reports.

Matter # 2 - The absence in the ISP of a credible approach to addressing variable renewable energy (VRE) social licence matters, including conflicting land-use

Appendix 3, page 12 of the ISP states that an enormous amount of solar and wind is due to be built in Queensland over the following three decades – that is, 'in Queensland over 47 GW of new utility-scale wind and solar VRE generation is projected as being required by 2050 to assist in replacing retiring generation'. Furthermore, the ISP states that 'the land needed for major VRE storage and transmission projects to realise these goals is unprecedented' (page 15).

Figure 1 of Appendix 3 shows the location of the Queensland REZ candidate regions. Of note and concern to the ASMC is that these zones cover almost all of the 390,000 ha's of current Queensland cane land (see comparison maps at Attachment B). The concern relates to the temptation of parties to cut costs and build renewable energy projects and transmission infrastructure on cane land given its low lying and flat topography and because of the sunk electricity infrastructure that exists.

Cumulative losses in cane land and volume can be highly problematic for mills. As 70 percent of all mill costs are fixed (e.g. maintenance, overheads and depreciation), small reductions in cane volume and increasing under-utilisation of the mill can have a significant and disproportionately large impact on earnings and sustainability.

For example, a 2% loss in cane area reduces a mill's earnings by around 4%. Regrettably, small losses of cane land to competing uses can create a domino 'no–confidence' effect where other cane growers also divest or move to other crops creating a large aggregate impact and leaving the viability of the mill uncertain.

Whilst the problems associated with ad hoc renewables development are well documented, and there is a need for improved planning and policies like Renewable Energy Zones (REZ's), ASMC remains concerned that the mechanisms designed to protect cane land from competing land uses in the Queensland planning regime remain deficient given the powers of Courts and Ministers to overturn planning decisions based on alternate criteria. As such, the **ASMC is looking for stronger protections in the REZ policy and legislative frameworks and/or a Government Directive to ensure renewable energy and sugar related activities occur in tandem.**

The Agricultural Land Classification (ALC) system is a land hierarchy that applies across Queensland - ranging from Class A (arable crop land) to Class D (land unsuitable for agriculture). The ALC framework takes into account the inherent characteristics of the land, such as its fertility and arability. Recent analysis of Queensland's cane land shows that out of 390,000 ha's, 87% is considered Class A and 6% Class B.

The protection of ALC Class A and B land for sustainable agricultural uses is a matter of state interest under the State Planning Policy (SPP). ALC Class C land is not included in the agriculture state interest as this land is considered suitable only for improved or native pastures due to limitations which preclude continuous cultivation for crop production.

Agriculture is one of 17 state interests that should be addressed in local government planning schemes, as the SPP seeks to ensure that the resources that agriculture depends on are protected to support the long-term viability and growth of the agricultural sector. Each local government area in Queensland has a planning scheme stating how it intends to manage land use and development into the future. Local governments must consider the state interests as outlined in the SPP when making, amending and implementing their local plans.

The State also uses the regional planning framework to identify matters that are important and specific to regional Queensland. Statutory Regional Plans attempt to reduce land use conflicts and improve land use certainty for community and industry sectors, and manage impacts on the natural environment in areas of regional interest, such as Priority Agricultural Areas (PAAs). Local governments in a region must consider a regional plan when preparing their local planning schemes. Theoretically, sugar cane grown in a PAA is protected from non-agricultural developments, including non-essential rural residential and commercial solar facilities that have the potential to contribute to a loss to overall agricultural productivity within the PAA.

Industry investment in milling and cane farms has been based on the expectation that successive governments will recognise the planning instruments that protect the status of highly arable land such as that deemed ALC Class A and B. (previously referred to as Good Quality Agricultural Land or GQAL). That is, once declared Class A and B, a business or industry will not be required to continually defend the status of that land from alternative uses.

An example of an instrument relied upon by the milling sector was the former State Planning Policy 1/92, Development and the Conservation of Agricultural Land, Policy principles 1 and 2 which stated:

> *"Good quality agricultural land has a special importance, and should not be built on unless there is an overriding need for the development in terms of public benefit and no other site is suitable for the particular purpose (section 3); and*

The alienation of some productive agricultural land will inevitably occur as a consequence of development, but the government will not support such an alienation when equally viable alternatives exist, particularly where developments that do not have specific locational requirement (e.g. 'rural residential') are involved (Paragraphs 4.6- 4.7)".

Planning policies have evolved considerably since 1/92 as policymakers attempt to accommodate competing land uses. At the same time, renewable energy projects are highly competitive with proponents continuing to favour proximity to neighbouring sub-stations ,transmission and low and flat land to improve feasibility. As such, renewable energy generation is a new and emerging land use that is increasingly competing for land once exclusively considered GQAL (now ALC Classes A and B).

The now ambiguous and conflicting nature of state planning policies, the policy significance now given to renewable projects to achieve renewable energy targets and carbon abatement, the potential for strong commercial rates of return from renewables projects, and two recent precedents **means the sugar industry is increasingly vulnerable to area losses and mill closures from renewable energy developments.**

The precedents relate to one court and one government decision in favour of two separate solar developments on prime cane land:

(1) In 2018, the Queensland Planning and Environment Court in *Mirani Solar Farm Pty Ltd v Mackay Regional Council & Mackay Sugar Limited* overturned Council's non-approval thereby allowing the project to proceed despite alternative and suitable land being available 5-10 kilometres away. In this decision, the court believed that the loss of cane land from this development alone would not harm the viability of the mill and that addressing climate change was more important than manufacturing sugar and the associated regional jobs.
(2) In 2015, the Queensland Planning Minister overturned the Local Council's rejection of the Clare solar farm proposal and supported the development application on the grounds of land compatibility, renewable energy and job creation.

As a competitive sector, and in the pursuit of productivity and economic growth, the sugar milling sector acknowledges the need for the sugar industry to compete with other agricultural sectors to maximise the productive value of land within our growing regions.

We do however believe that competition for GQAL should be restricted to primary agriculture purposes only given the arable qualities of the land (i.e the land is going to its farming highest value use). This avoids the loophole of renewable projects also being considered agricultural projects due to mostly sub-economic, secondary activities like grazing and acknowledges that agriculture cannot often compete with other sectors on economic returns alone. Furthermore, this is unlikely to impede the development of renewables projects as the high likely returns of these projects means they can absorb higher CAPEX costs if they need to be moved further from existing infrastructure that may be on GQAL.

In summary, whilst the ASMC welcomes the statements in the ISP that 'early community engagement will be needed to ensure investments have an appropriate social licence' and 'proactive engagement and integrated land-use planning is also needed at a jurisdictional level' (page 15), ASMC's contention is that insufficient focus has been given to the social licence and land-use planning aspects of REZ development which in a Queensland context means the existing land-use planning regime in QLD may not protect QGAL from VRE developments and further protections are needed. In lieu of these protections being delivered through changes in the SPP, ASMC calls for the following changes in the REZ planning rules, or failing that, a policy directive from the Queensland Government instructing Powerlink to avoid GQAL entirely when planning where renewable energy projects and transmission infrastructure projects will be constructed.

ASMC requests that the following protections be inserted into REZ Planning rules:

(1) An 'equally viable locational requirement'. In effect, and in acknowledging Queensland's considerable land mass, transmission infrastructure and a renewable energy project cannot be developed by a REZ planning body if it would facilitate a renewable project on land that is important to existing industry reliant on GQAL, and moving to alternate and neighbouring land does not threaten the viability of the renewable project.

(2) A 'minimum public consultation requirement'. In effect, and in acknowledging the threat to mill viability from lower cane area and volumes, transmission infrastructure cannot be developed by a REZ planning body through any expedited planning instrument that may diminish the minimum public consultation requirements contained in any relevant Planning Act.

We would welcome the opportunity to discuss these matters further with AEMO at a convenient time. Please don't hesitate to contact David Rynne, Director Policy, Economics & Trade on david.rynne@asmc.com.au or 0431 729 509 for further clarification on the matters raised in this submission.

Yours sincerely

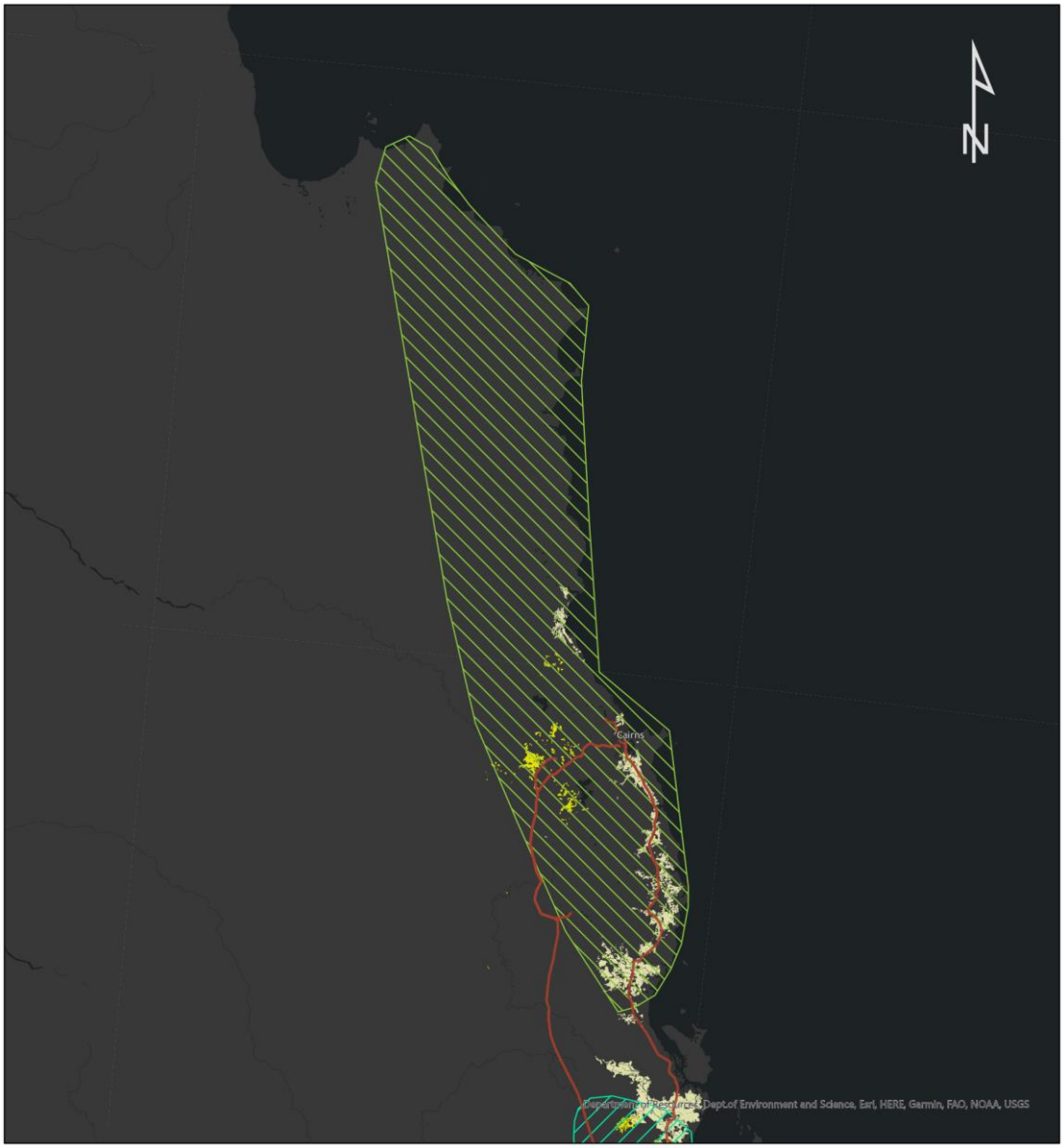
Rachele Sheard

Rachele Sheard
Chief Executive Officer

Attachment A: Increasing bagasse co-generation – scenarios and other impacts

Scenario	Technologies	Generation efficiency*		Total generation	Incremental carbon abatement	Capex (est.)	Comparison^
		Gross#	Net export#				
A) Status quo (ASMC members today)	Various	0.12MWH/t	0.07MWh/t	1,055GWh total 567GWh export 438MW (28% capacity factor)	Existing abatement by industry c.0.5Mt p.a. for export power	N/A	N/A
B) Optimise utilisation of existing energy assets with some upgrades to current plant	Electrification Steam on cane improvements Stored bagasse	0.5MWh/t bagasse	0.29MWh/t bagasse	3,572GWh total 2,120GWh export 680MW (60% capacity factor)	c. 1.4Mt p.a. CO_2 for export power	*tbd*	Partially displace Tarong North (c.2,380GWh p.a.)
C) significant new infrastructure to maximise utilisation of bagasse. Upgrades to best demonstrated Australian performance	Boiler upgrades Other tech as above	0.65MWh/t bagasse	0.47MWh/t bagasse	5,542GWh total 3,922GWh export 1,054MW (60% capacity factor)	c.2.9Mt p.a. CO_2 for export power	c.$3-4bn	Displace majority of Kogan Creek (c.5,230GWh p.a.)
D) Achieve world-leading performance through application of new emerging technologies with full asset replacement	Biomass Gasifiers Gas Turbines 110 bar boilers	1.07MWh/t bagasse	0.89MWh/t bagasse	9,123GWh total 7,588GWh export 1,736MW (60% capacity factor)	c.6.1Mt p.a. CO_2 for export power	*tbd*	Displace majority of Tarong (All units) (c.9,220GWh p.a.)

Attachment B: Overlap of REZ zones with cane area, sugar mills and transmission infrastructure



Powerlink Public

Powerlink transmission line

Current sugarcane areas

Sugar

Irrigated sugar

Renewable Energy Zone (2020)

Development status

Development in phase 3

Does not have any projected development.

Sugarcane production and renewable energy zones

Far North Queensland (Q1)

0 37.5 75 150 Kilometers

COORDINATE SYSTEM: MAP PRODUCTION 16 February 2022

DISCLAIMER: This map is compiled from publicly available information. Whilst all care is taken in the preparation of this map, we take no responsibility for any loss or damage which may result from inaccuracy or omission in the map or from the use of the information contained therein.

Power link data retrieved from "look up and live": https://www.arcgis.com/apps/webappviewer/index.html?id=5a53f6f37db84158930f9909e4d30286. Sugar production data was retrieve from DAF AgTrends Spatial: https://qldspatial.information.qld.gov.au/AGTrendsSpatial/ . REZ data was retrieved from the Australian Energy Market Operator map service: https://www.aemo.com.au/aemo/apps/visualisations/map.html

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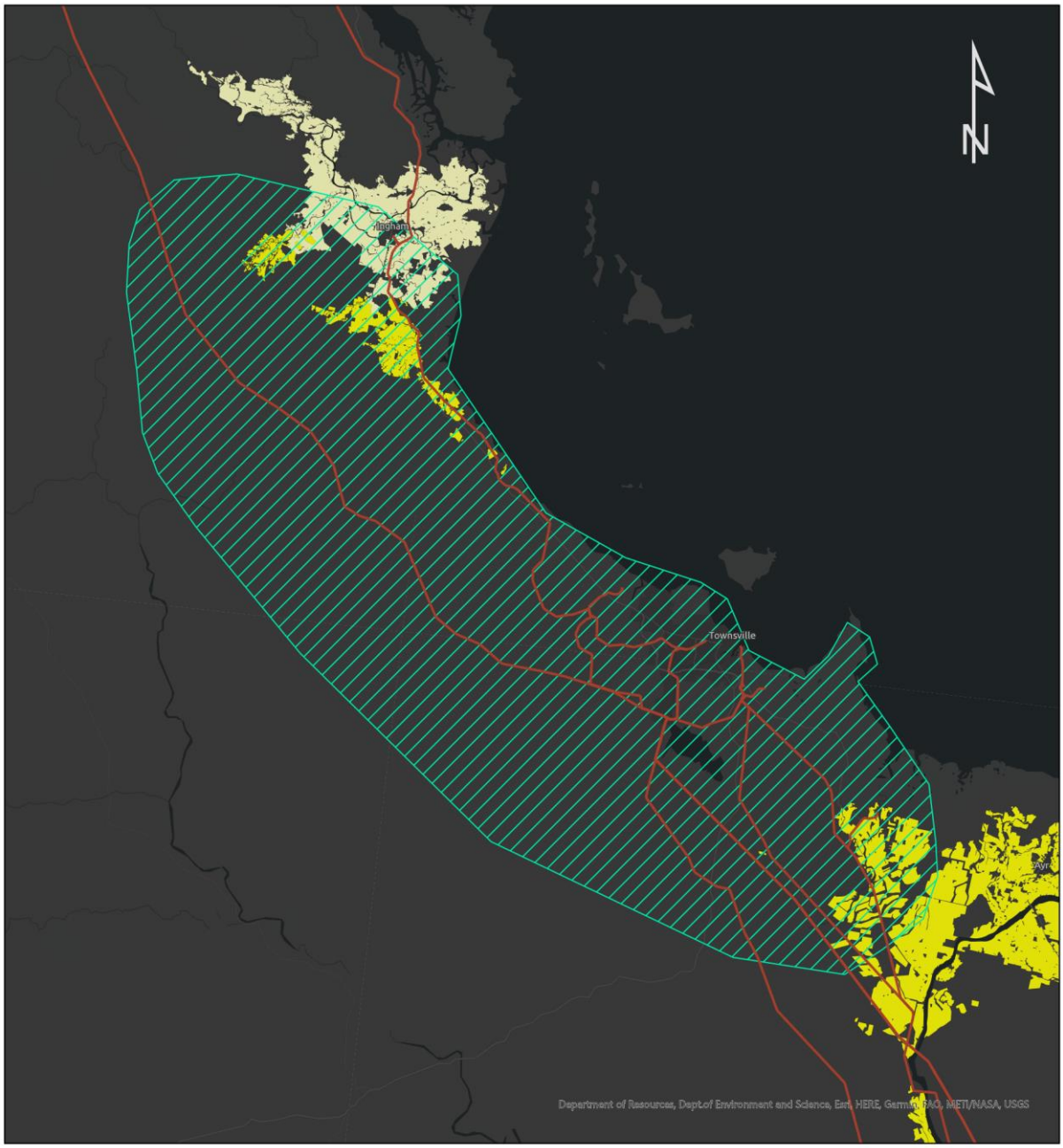

Powerlink Public

Powerlink transmission line

Current sugarcane areas

Sugar

Irrigated sugar

Renewable Energy Zone (2020)

Development status

Development in phase 3

Does not have any projected development.

Sugarcane production and renewable energy zones

North Queensland (Q3) REZ

0 12.5 25 50 Kilometers

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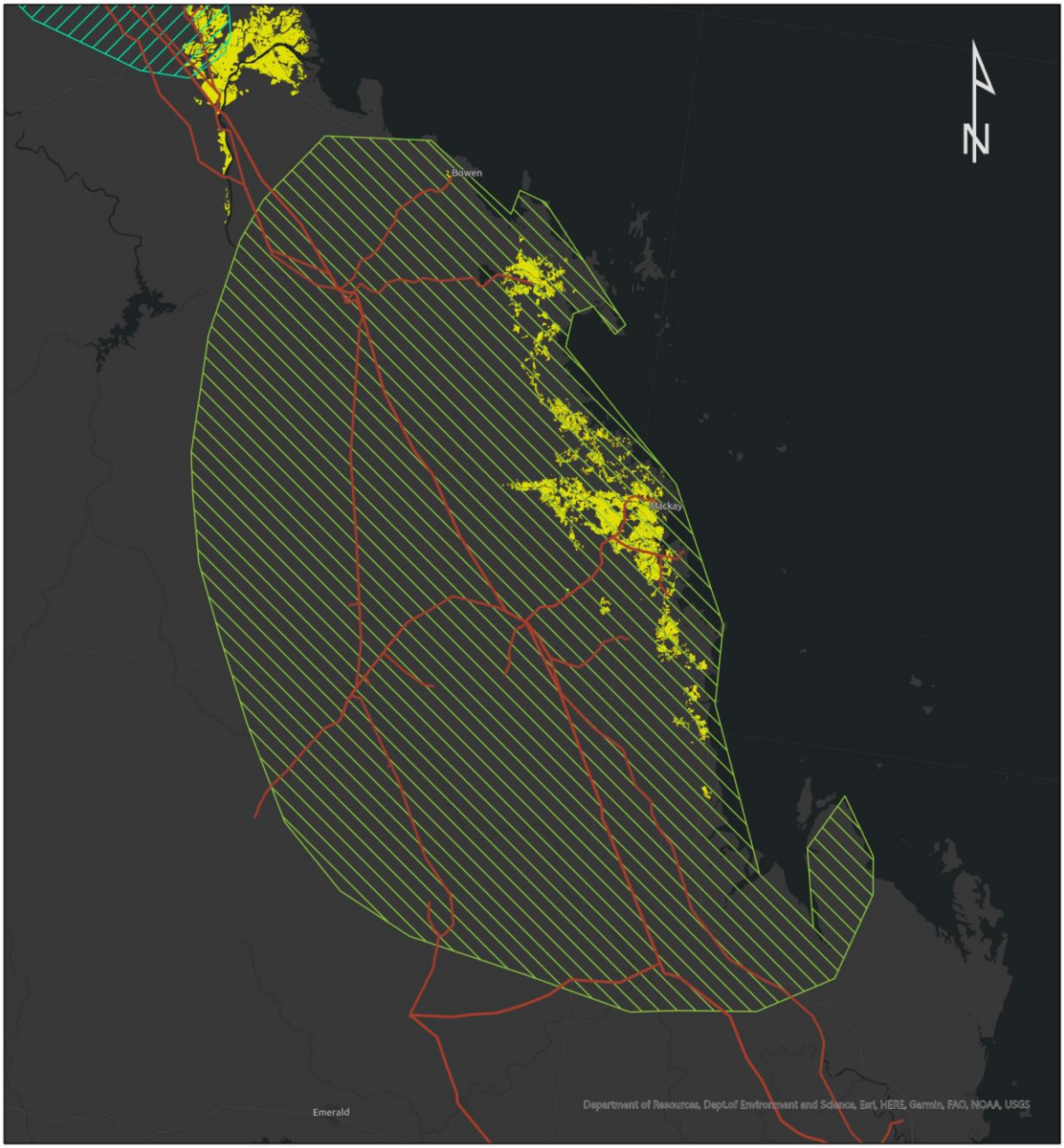


Powerlink Public

Powerlink transmission line

Current sugarcane areas

Sugar

Irrigated sugar

Renewable Energy Zone (2020)

Development status

Development in phase 3

Does not have any projected development.

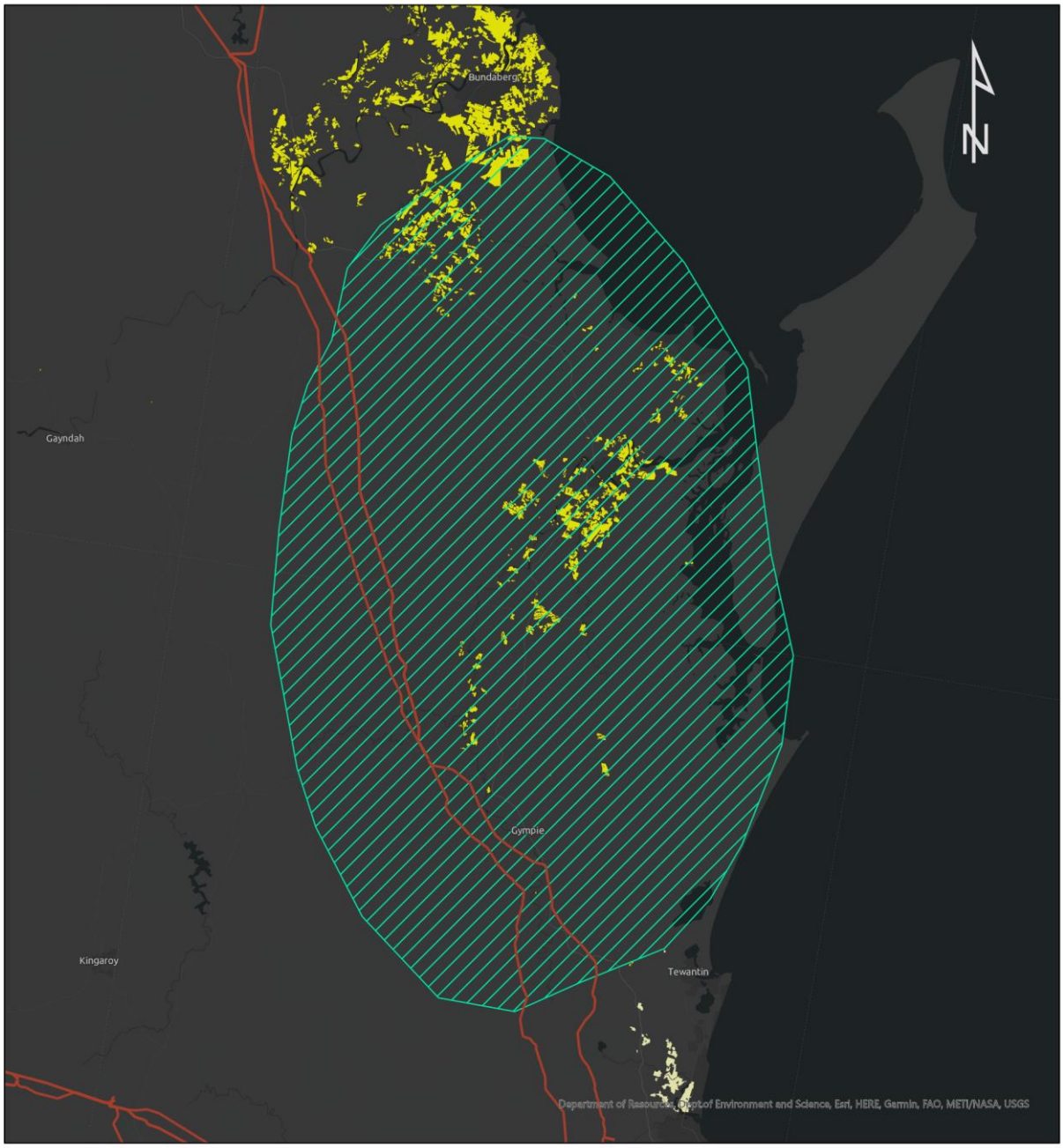
COORDINATE SYSTEM: MAP PRODUCTION 16 February 2022

Sugarcane production and renewable energy zones

Isaac (Q4) REZ

0 30 60 120 Kilometers

Power link data retrieved from "look up and live": https://www.arcgis.com/apps/webappviewer/index.html?id=5a53f6f37db84158930f9909e4d30286. Sugar production data was retrieve from DAF AgTrends Spatial: https://qldspatial.information.qld.gov.au/AGTrendsSpatial/ . REZ data was retrieved from the Australian Energy Market Operator map service: https://www.aemo.com.au/aemo/apps/visualisations/map.html



Powerlink Public

Powerlink transmission line

Current sugarcane areas

Sugar

Irrigated sugar

Renewable Energy Zone (2020)

Development status

Development in phase 3

Does not have any projected development.

Sugarcane production and renewable energy zones

Wide Bay (Q7) REZ

0 15 30 60 Kilometers

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