



Australian Government



Queensland Government



DRAFT Brigalow Belt North bioregional guidance plan for public consultation

Focussed on wind farm developments in the Bogie River Hills and Northern Bowen Basin subregions

Prepared under the *Environment Protection and Biodiversity Conservation Act 1999*

Prepared by the Queensland Government Department of the Environment, Science, Tourism and Innovation and the Australian Government Department of Climate Change, Energy, the Environment and Water

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Acknowledgement of Country

The Queensland Government and Australian Government acknowledge Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and custodians of the land. We recognise their connection to land, sea and community, and pay our respects to Elders past and present.

Front cover images: Greater glider © Anders Zimny, Landscape of Eungella National Park © Emily Dart, wind farm turbines, farmer and daughter on their property.

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Snapshot

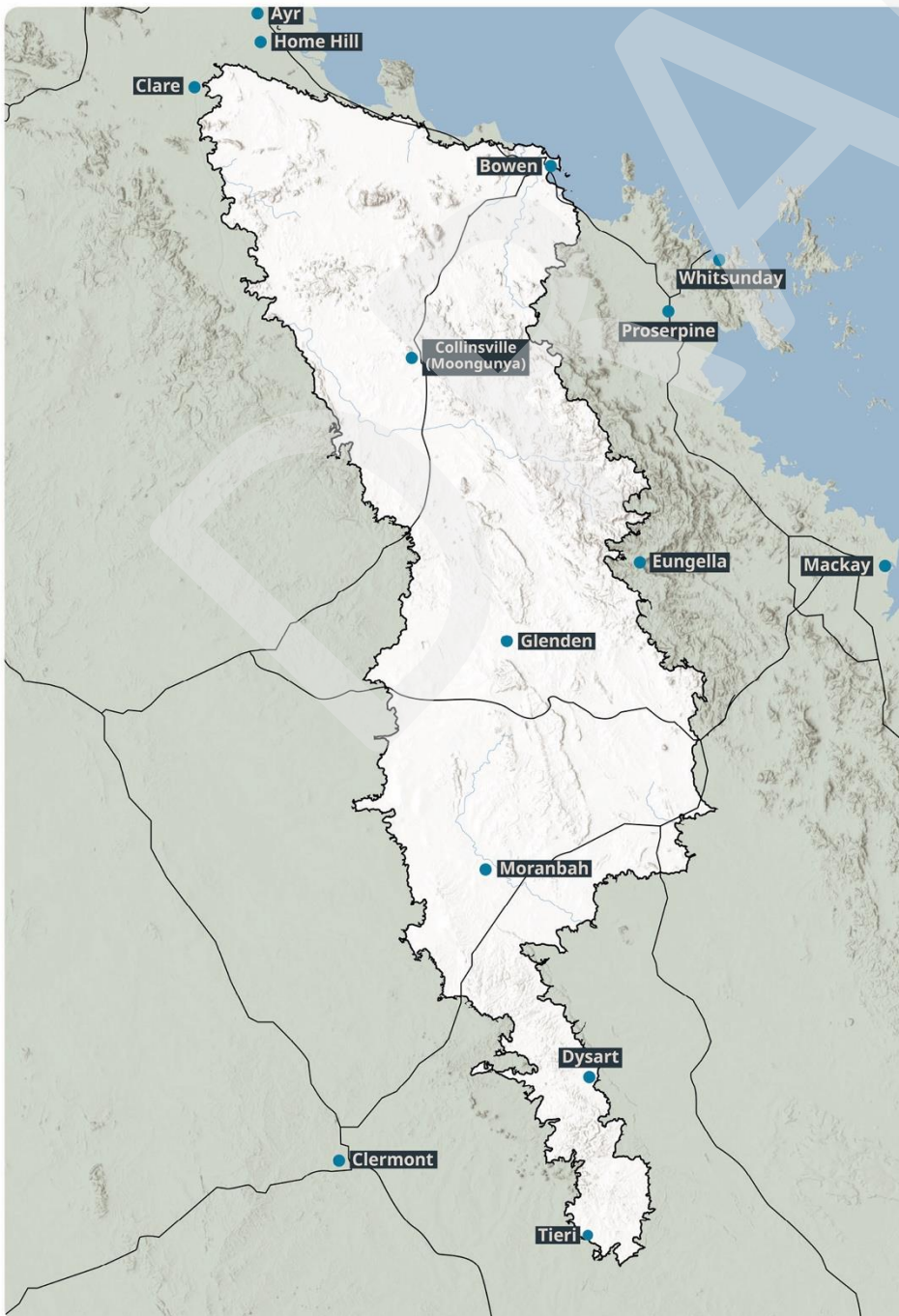
We are piloting a different approach to environmental planning in Queensland known as bioregional guidance plans. Instead of assessing projects individually, we look at the cumulative impacts of development across an entire region to better protect our nationally important biodiversity.

This strategic framework is a collaboration between the Queensland and Australian Governments under Australia's *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

Bioregional guidance plans aim to:

- Provide greater certainty for industry and facilitate responsible development,
- Improve outcomes for threatened species, migratory species and threatened ecological communities listed under the EPBC Act,
- Address other threats including pests, fires, and climate change.

The plan does not establish zones nor create new assessment or approval obligations for individual project assessment under the EPBC Act or Queensland frameworks.



Focus area

Focussed on wind farm developments in the Bogie River Hills and the Northern Bowen Basin subregions in Northern Queensland.

Notable areas of importance for MNES

- Around the Eungella Hinterland
- Montane areas between Bowen and Rangemore
- Near Eaglefield and Moranbah
- Blackwall Range
- Around the foothills of Mt Pring.

Key findings

Matters of National Environmental Significance

- There are 164 protected matters (92 most relevant to impacts from wind farm developments).
- Four protected matters (all plants) have a high or extreme reliance on the Plan area – Blackwall Range kurrajong, *Aristida granitica*, *Ptilotus uncinellus* and Granite nightshade.
- 55 protected matters are known to be declining, and 23 are assumed to be declining.

First Nations place names are in brackets where available¹

¹ Collinsville & Scottville History & Map n.d., map, Whitsunday Regional Council.

Key findings

Cumulative regional pressures



Invasive species



Inappropriate fire regimes



Mining



Grazing



Land clearing



Aerial collision or entanglement

Critical species and habitats

Some of the 92 relevant protected matters can cope with some additional impacts from pressures such as wind farm developments, mining, grazing, pests, and climate change.

Impact level	Number of protected matters	Example Protected Matters
Near zero impact	28	Star finch, Eungella spiny crayfish, Greater glider, Yellow-bellied glider, Loggerhead turtle, Allan's Ierista, Broad Leaf tea-tree Threatened Ecological Community (TEC), Blackwall Range kurrajong.
Impacts to be kept as low as possible with strict mitigation required	43	Black throated finch, Koala, Squatter pigeon, Square tassel fern, Granite nightshade, Poplar Box TEC, Fitzroy river turtle.
Can tolerate some impacts with appropriate offsets and good practices	21	Common greenshank, Water mouse, Fork-tailed swift, Saltwater crocodile, Black ironbox.

Key advice

Wind farm developments can directly impact protected matters and intensify other cumulative pressures.

- Proponents should make significant efforts to avoid impacts on sensitive habitats (such as those listed as 'notable areas of importance for MNES' above and important conservation areas shown in the Bioregional Planning interactive tool), protected matters that require near zero impacts (such as the greater glider and Blackwall Range kurrajong) and high-risk activities including land clearing and aerial collisions.
- Proponents are encouraged to coordinate mitigation measures including pest- and weed-, fire-management with other parties across the Plan area.
- Proponents and governments should consider indirect or downstream impacts of development within the Plan area on the Great Barrier Reef.
- Proponents are encouraged to consider implementation of adaptive management for collision risks and regular monitoring and reporting of the effectiveness of measures.
- Land and water managers are encouraged to expand coordinated management of grazing practices that cause habitat degradation, invasive weeds and pest animals, inappropriate fire regimes, erosion and sedimentation, and climate-driven changes in temperature, rainfall variability and drought.
- Proponents, governments and land and water managers could focus restoration efforts on riparian corridors and areas with high restoration potential including areas around Redcliffe Tableland National Park, Suttor to Winchester, around Bundoora, and in the area from Bowen to Mount Abbot National Park and south to Collinsville.
- Proponents and governments are encouraged to improve knowledge and spatial data for protected matters.



Have your say

Visit <https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning> or email us at bioregional.planning@detsi.qld.gov.au to share your feedback and learn more about the Brigalow Belt North bioregional guidance plan.

Executive Summary

About the Plan

The *Brigalow Belt North Bioregional Guidance Plan* (the Plan) is a strategic framework to protect biodiversity, manage cumulative impacts, and support more efficient federal assessment and approvals processes for wind farm developments under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

The Plan is non-regulatory. It provides advice to assist wind farm development proponents and regulators in making decisions about development that may impact Matters of National Environmental Significance (MNES) (e.g., threatened species or ecological communities listed under the EPBC Act) in the Plan area. The Plan is intended to help proponents to understand the likely expectations when seeking approval under the EPBC Act. In doing so, it will provide greater certainty for industry about where to invest their efforts when designing projects and preparing their applications. The advice is not intended to replace proponent-led site-specific investigations but will support proponents to better target them.

The Plan does not establish regulatory zones, nor remove or change the requirements for project assessment under the EPBC Act. As such, it will not increase regulatory burden.

The Plan is also intended to be useful for proponents of developments other than wind farm developers, strategic planners, conservation groups, natural resource management groups, First Nations peoples, land managers, investors and governments.

The [Bioregional Planning Interactive Tool](#)¹ (the Interactive Tool) provides improved spatial information about MNES and identifies opportunities for protection and improvement of environmental values, by identifying important conservation areas, areas with high potential for restoration, and areas important for representative protection. The [Interactive Tool](#) also provides improved information from the cumulative impact assessment about the ability of protected matters to tolerate impacts, and ways to mitigate impacts. Consistent with the EPBC Act, the Plan applies the precautionary principle and prioritises the protection of irreplaceable values to achieve net gain outcomes for protected matters.

Environmental matters listed under Queensland and local frameworks are outside the scope of the Plan. The Plan does not affect requirements under Queensland laws, such as the *Planning Act 2016* and *Vegetation Management Act 1999*.

¹ gld.gov.au/bioregionalplanninginteractivetool

Key findings

164 protected matters may occur within the Plan area, of which 92 are most relevant to impacts from wind farm developments. Key findings for these 92 protected matters are summarised below, with full findings provided in sections 4 and 5 of the Plan.

- Notable areas of importance to protected matters at the landscape-scale include:
 - Areas likely containing irreplaceable features occur extensively across the Plan area, particularly near Glenden, Coppabella, Winchester, Homevale National Park, Bogie to Eungella and south of Newlands.
 - Large areas of high restoration potential in and around Redcliffe Tableland National Park, Suttor to Winchester, around Bundoora, and from Bowen to Mount Abbot National Park and south to Collinsville.
 - Areas of high representative protection around Redcliffe Tableland National Park, between Eaglefield and Burton, from Bundoora State Forest to Tieri, around Rangemore, and from Eungella Hinterlands to the north of the Plan area.
- The conservation status of most protected matters is known (55) or assumed (23) to be declining.
- Most (88) protected matters are broadly distributed and have a limited² or moderate³ reliance on the Plan area. Four protected matters have high⁴ or extreme⁵ reliance on the Plan area – *Brachychiton guyeri* (Blackwall range kurrajong), *Aristida granitica*, *Ptilotus uncinellus* and *Solanum graniticum* (Granite Nightshade).
- Cumulative regional pressures such as mining, grazing, invasive species and inappropriate fire regimes will have strong influences on outcomes for protected matters.
- Impacts from wind farm developments are largely concentrated on a small number of sensitive protected matters and can intensify other cumulative pressures.
 - Most wind farm development activities are low to medium risk if effective project- and industry-wide mitigation is applied.
 - There is a high risk to many protected matters from land clearing and aerial collision or entanglement. There are other impact pathways that are high risk to a smaller number of protected matters, such as habitat fragmentation for gliders.
- Based on the cumulative impact assessment, protected matters have varied abilities to tolerate additional impacts:
 - 21 are likely to be able to tolerate some residual impacts, with appropriate offsets (category E2).
 - For 43, impacts should be kept as low as possible (category E3).
 - For 19, impacts should be near zero (categories E4 and E4+), such as *Neochmia ruficauda ruficauda* (Star finch) and *Lerista allanae* (Allan's lerista).
 - For 9, ability to tolerate impacts depends on the type of habitat (categories E4/E3 and E4/E2). Impacts should be near zero for direct impacts to individuals or some

² Less than 10% of their range within the Plan area

³ 10-50% of their range within the Plan area

⁴ 90% of their known range

⁵ Over 90% of their known range

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components of their habitat, such as denning habitat for *Tyto novaehollandiae kimberli* (masked owl (northern)).

Key advice

Achieving net gain outcomes for protected matters requires action both from individual wind farm developments and through coordinated landscape-scale approaches, especially for pests, weeds, grazing, and fire. The measures in Table 1 will be important to help achieve net gain outcomes and improve EPBC Act assessment processes. Full advice is in section 6 of the Plan.

Table 1 - Key advice

Advice	Potentially relevant parties
A. In determining the significance and acceptability of impacts of proposed actions, regulators should consider the extent to which the advice in the Plan applies and has been followed. The Plan provides guidance only and the advice should be considered in the context of the specifics of the project and the EPBC Act. As such, the advice in the Plan should not be taken as categorical statements of the significance or acceptability of impacts.	Governments
B. Proponents should apply the mitigation hierarchy in alignment with the impact thresholds for each relevant protected matter. This means, for protected matters with an impact threshold of: - Near zero impact (E4 or E4+) – Making significant efforts to avoid impacts. Offsets are unlikely to be effective. - Impacts as low as possible (E3) – Avoiding impacts in accordance with the mitigation hierarchy, then using strict mitigation and repair measures. Offsets should be used only as a last resort. - Some impacts with appropriate compensation (E2) – Avoiding impacts in accordance with the mitigation hierarchy, then using good practise mitigation and repair measures. Offsets should be used in accordance with the mitigation hierarchy.	Proponents Governments
C. Proponents and governments should consider indirect or downstream impacts of development within the Plan area, particularly on the Great Barrier Reef. Key ways wind farm developments within the Plan area could impact the Great Barrier Reef include barriers and interruptions to movement and pathways related to land-based run-off. Other indirect impacts, such as artificial light, will be particularly relevant where projects are adjacent to the Marine Park.	Proponents Governments
D. Proponents should coordinate with other parties when developing and implementing mitigation measures, particularly: - Where high risk impact pathways cannot be avoided, - For impact pathways that extend beyond the project site. This is to reduce the risk that cumulative effects undermine project mitigations, particularly when addressing landscape-scale pressures such as weeds, pests, grazing and fire. It could include, for example, coordinating pest management with adjacent landholders or collaborating on improving connectivity between existing habitat that will not be impacted.	Proponents Governments
E. Proponents and regulators should consider the complementarity of mitigation measures across projects, particularly for impact pathways that extend beyond the project site. Where multiple projects operate in similar landscapes, coordinated implementation can improve consistency, reduce duplication and increase effectiveness. This could include, for example, common monitoring frameworks for groundwater changes. This should be applied across all major developments in the Plan area, including wind farm developments and mines.	Proponents Governments Industry groups

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Advice	Potentially relevant parties
F. Proponents and strategic planners are encouraged to proactively engage with local communities, including First Nations peoples, from the very start of a project/process to improve: - Effectiveness and efficiency of mitigation measures, and - Outcomes of the project or process for social, cultural and economic values. Engagement should help inform mitigation measures, including project design and site selection. This could include engaging landholders in the provision of offsets.	Proponents Governments
G. Proponents and strategic planners should make significant efforts through strategic planning, early site selection and project design to avoid impacts: On the following areas: - Around the Eungella Hinterland. - Montane areas between Bowen and Rangemore. - Near Eaglefield and Moranbah. - Blackwell Range. - Around the foothills of Mt Pring. - Habitat for protected matters with a 'near zero impacts' threshold (E4 or E4+). - Important conservation areas shown in the Interactive Tool. - Representative protection areas shown in the Interactive Tool. On the following protected matters: Protected matters with an impact threshold of 'Near zero impacts' (E4 or E4+). At the time of writing the Plan, there were 19 E4 or E4+ protected matters – such as <i>Euastacus eungella</i> (Eungella spiny crayfish), <i>Taudactylus eungellensis</i> (Eungella day frog), Blackwall Range kurrajong, <i>A. granitica</i>, <i>Lerista vittata</i> (Mount Cooper striped skink), Star finch, and Broad Leaf Tea-tree TEC. Components that have an impact threshold of 'Near zero impacts' (partial E4). At the time of writing the Plan, these were specific habitat components for 9 protected matters – such as denning habitat for <i>Petauroides minor</i> (Greater glider (northern)), <i>Petauroides volans</i> (Greater glider (central and southern)) and <i>Petaurus australis australis</i> (Yellow-bellied glider). From high-risk impact pathways, particularly those with mitigation effectiveness of 'partial' or 'limited'. At the time of writing the Plan, these included, for example, aerial collision and entanglement, land clearing, and altered surface water hydrology.	Proponents Governments
H. Land and water managers could prioritise the areas and protected matters listed in Advice G for conservation, protection and active management. Proactive conservation, protection and active management of these areas and protected matters could increase resilience to ongoing pressures and capacity to tolerate further development.	Governments Conservation groups Regional NRMs First Nations groups Investors Landholders
I. Proponents and governments should implement adaptive management of aerial collision and entanglement risks for projects where birds and bats are known to fly at rotor swept heights. Due to the lack of data on collision risk and rapidly evolving technologies, measures to address aerial collision risk should be reviewed, monitored and updated regularly.	Proponents Governments

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Advice	Potentially relevant parties
J. Land and water managers are encouraged to increase coordinated management of invasive weeds and pest animals, inappropriate fire regimes, erosion and sedimentation, grazing practices that cause habitat degradation, and climate-driven changes in temperature, rainfall variability and drought. Long-term outcomes for protected matters in the Plan area will depend on more than effective project mitigation, because the strongest drivers of risk operate across the landscape and are expected to intensify over time. Broader efforts to address the dominant, compounding pressures, particularly those that erode habitat extent, condition and connectivity and affect wetland and aquatic systems via hydrological change, will need to continue and be expanded upon. These actions could be prioritised for investment by governments and other investors. This could be supported by proponents, governments, and other land and water managers providing opportunities for landholders in land and water stewardship that benefits or mitigates impacts to protected matters in a production landscape setting. There are opportunities for stewardship incentives to be provided to landholders to achieve benefits for protected matters while maintaining agricultural production in the landscape.	Proponents Governments Conservation groups Regional NRMs First Nations groups Investors Landholders
K. Proponents and governments should consider the effectiveness of offsets for impacts from aerial collision or entanglement. Land-based offsets are unlikely to be effective in compensating for direct impacts to bird species that do not land frequently.	Proponents Governments
L. Proponents and governments could use the following areas as a starting point for investigating offsets based on vegetation condition improvement: • Around Redcliffe Tableland National Park. • In the area from Sutton to Winchester. • Around Bundoora. • In the area from Bowen to Mount Abbot National Park and south to Collinsville. • High restoration potential areas shown in the Interactive Tool. These areas are likely to provide significant opportunities for co-benefits to multiple protected matters, which may provide efficiencies in restoration activities.	Proponents Governments
M. Land and water managers could prioritise the areas in Advice L for proactive restoration based on vegetation condition improvement.	Conservation groups Regional NRMs First Nations groups Investors
N. Governments, industry groups and researchers could develop additional information to support any future strategic planning mechanisms, such as quantitative analysis and information on environmental, social, cultural and economic values. This could include, for example, developing quantitative and spatialised development scenarios, refining data and information to reflect regional nuances, undertaking economic analysis of regional production and any impacts from projects including proposed offsets, and undertaking targeted on-ground surveys and further expert advice.	Governments Industry groups Researchers
O. Governments and other parties are encouraged to strengthen information and data about protected matters, to support more detailed guidance for impact assessments and conservation planning. Foci could include protected matters' distribution, habitat condition, connectivity of irreplaceable habitat features and critical life-stage sites. This would be particularly beneficial for <i>A. granitica</i>, Blackwall Range Kurrajong, and <i>P. uncinellus</i>.	Governments Industry groups Researchers Conservation Groups Regional NRMs First Nations groups Investors Landholders

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1. Introduction

This section provides an overview of how the Plan fits under the EPBC Act, including the reforms.

Bioregional planning under the EPBC Act

The Plan is proposed to be made under section 176 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), subject to the Queensland Government's endorsement before it is made by the Australian Government Minister for the Environment and Water.

Under s 176 of the EPBC Act, a bioregional guidance plan serves as a strategic framework for a specific region to protect biodiversity and manage cumulative impacts. Bioregional guidance plans are non-regulatory Plan, and as defined in the Act may include:

- The components of biodiversity, their distribution and conservation status
- Important economic, social and heritage values
- Objectives relating to biodiversity and other values
- Priorities, strategies and actions to achieve the objectives
- Mechanisms for community involvement in implementing the plan
- Measures for monitoring and reviewing the plan.

A bioregional guidance plan does not establish regulatory zones or create or remove requirements for an action to be assessed under the EPBC Act. However, EPBC Act decision-makers must have regard to the Plan when making a relevant decision, including project decisions and landscape-scale approaches. A bioregional guidance plan does not change related legislative or policy settings, such as offset requirements or standards.

A bioregional guidance plan is not intended to replace proponent-led site-specific environmental investigations to confirm the occurrence of protected matters or interaction with development activities.

EPBC Act referrals for wind farm developments that demonstrate that a proposed action has adequately considered the potential impacts on MNES, followed the mitigation hierarchy, and proposed offsets that align with the Plan, are more likely to benefit from a streamlined assessment. Industries, actions and/or areas that are not the focus of the Plan may still benefit from improved assessment and approvals processes due to better information and guidance.

The Plan is not fit-for-purpose as a regulatory bioregional plan under Part 12A of the reformed EPBC Act. However, it could be built upon to support future strategic planning exercises, such as a regulatory bioregional plan or strategic assessment under Part 10 of the EPBC Act.

EPBC Act reforms

The *Environment Protection Reform Act 2025* (Cth) (EP Reform Act) received Royal Assent on 1 December 2025. Some parts of the new laws are now in effect. Others will take longer to implement. The rest will take effect on 1 December 2026, or sooner if proclaimed by the Australian Government Minister for the Environment and Water.

Actions referred for assessment and approval under the EPBC Act will generally be assessed according to the provisions in force at the time of the referral. Noting that the reforms will be implemented in stages, proponents should ensure their application reflects the requirements of the law applicable at the time they refer their action.

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Once a bioregional plan (regulatory or guidance) has been approved, the Minister (or their delegate) will be required to have regard to the Plan when making any decision under the Act to which the Plan is relevant, including deciding whether or not approve the taking of an action, and what conditions to attach to an approval. This includes in relation to decisions on actions referred before the plan was made.

The new laws allow the Australian Government Minister for the Environment and Water to make National Environmental Standards. Standards will support the operation of a reformed EPBC Act by setting expectations for regulated activities and uplifting the quality and consistency of decision-making. For further information, including about timing of the commencement of the reforms and the introduction of the standards, see DCCEEW's webpage on the environment protection [reforms](#)⁶.

Related policies and legislation

For information about how the Plan relates to other Commonwealth policies and legislation see the [DCCEEW bioregional planning webpage](#)⁷.

For information about how the Plan relates to other Queensland policies and legislation, including the Queensland planning framework, see the [DETSI bioregional planning webpage](#)⁸.

⁶ <https://www.dcceew.gov.au/environment/epbc/epbc-act-reform/stronger-environmental-protection-restoration>

⁷ <https://www.dcceew.gov.au/environment/epbc/epbc-act-reform/regional-planning>

⁸ <https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning>

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2. About the Plan

This section describes the objectives, scope and key parts of the Plan. It also describes how to use the Plan.

Scope

The Plan is a strategic framework to protect biodiversity, manage cumulative impacts and support more efficient federal assessment and approvals processes for wind farm developments under the EPBC Act. It focuses on the expected impacts of wind farm developments on MNES in the Brigalow Belt North Bioregion. It also examines the cumulative context of other regional pressures across the Plan area such as other forms of development, pests, weeds and climate change.

The Plan area (see Figure 1) extends from Clare and Bowen in the north, through Collinsville, Glenden, Moranbah in the centre, and south to Tieri. The Plan area covers part of the Brigalow Belt North Bioregion, including both the Bogie River Hills and the Northern Bowen Basin Interim Biogeographic Regionalisation for Australia (IBRA) subregions. The IBRA system is commonly used to classify Australia's landscapes based on shared climate, geology, landform, native vegetation and species information.

The Plan focusses on wind farm developments, acknowledging the region's substantial wind resources and that renewables will continue to be built across the State to support energy demand growth. Renewable energy developments will be built in a responsible manner with the pace and scale of investment determined by market dynamics and the ability of proponents to secure social licence with host communities.

Other forms of development (e.g. mining) are not the focus of the Plan but are considered as part of the other regional pressures. A detailed analysis of these activities has not been undertaken. Nevertheless, the advice in the Plan could be considered for other development types. For example, advice regarding the ability of protected matters to tolerate impacts is likely to be directly applicable, while some advice regarding mitigation measures may vary depending on the impact pathways generated by other industries.

The Plan only considers impacts on MNES, per the EPBC Act. It focuses on anticipated development impact trends on MNES, and modelled climate scenarios to 2090.⁹ It does not consider protected matters under the EPBC Act that are not MNES (such as Commonwealth land) found within the Plan area. It also does not consider Matters of State Environmental Significance (MSES) or Matters of Local Environmental Significance, except to the extent that these matters are also MNES.

The Plan has not been designed for use in Queensland planning and environmental approval processes, for example under the *Planning Act 2016*, *Environmental Offsets Act 2014*, or *Environmental Protection Act 1994*. However, the information and guidance in the Plan may inform Queensland planning processes where relevant. It does not change Queensland legislative requirements, such as under the *Vegetation Management Act 1999*, *Native Title (Queensland) Act 1993*, *Aboriginal Cultural Heritage Act 2003* and *Torres Strait Islander Cultural Heritage Act 2003*, or the *Water Act 2000*.

⁹ See methodology documentation on the DETSI bioregional planning webpage:
<https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning>

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The Plan also considers the potential impacts and benefits of mitigation measures on social, cultural and economic values to understand the trade-offs or synergies between environmental and social, cultural and economic outcomes.

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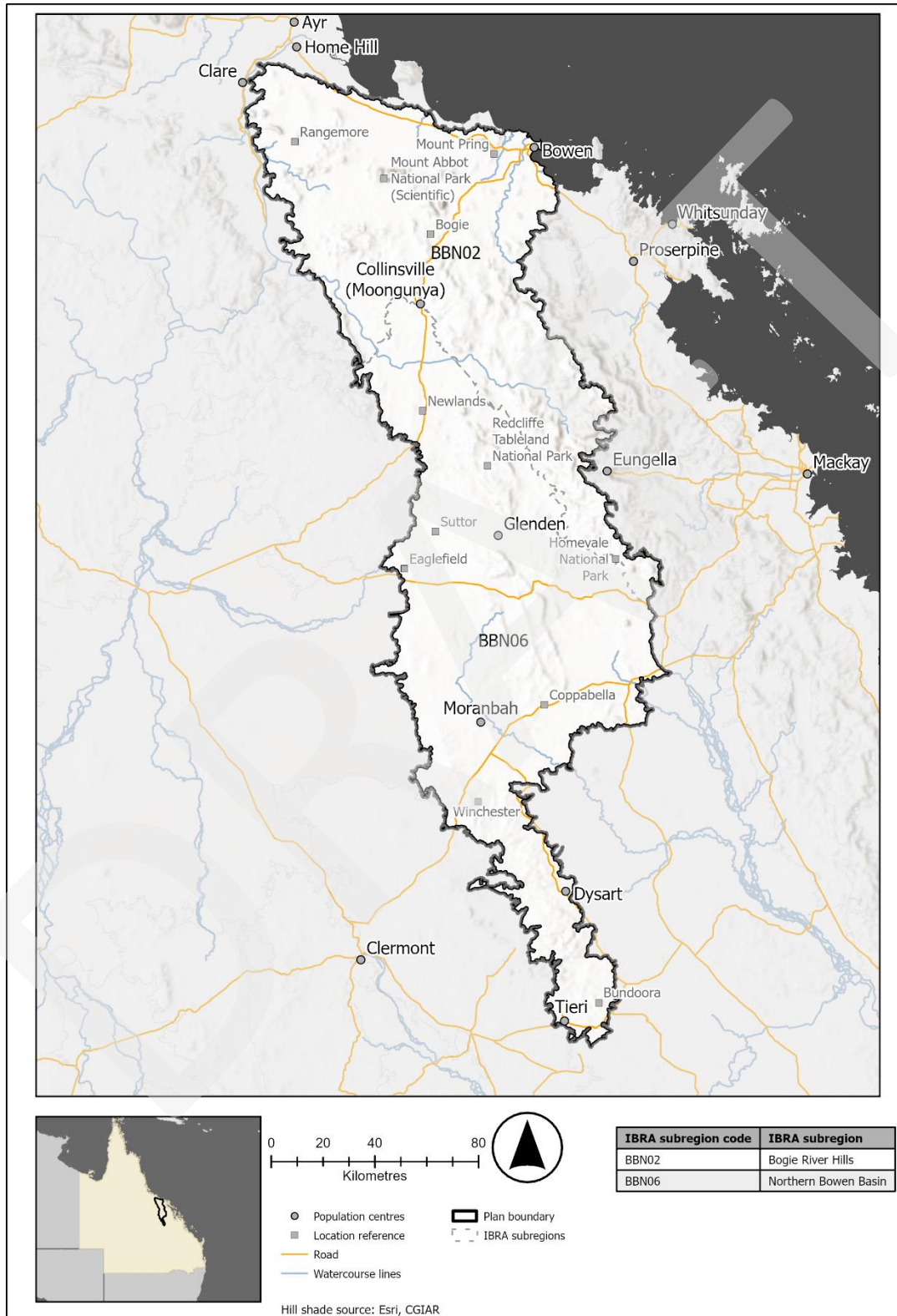


Figure 1 - Map of the Plan area. First Nations place names are in brackets where available¹⁰.

¹⁰ *Collinsville & Scottville History & Map* n.d., map, Whitsunday Regional Council.

Vision and objectives

Figure 2 outlines the vision and objectives for the Plan.

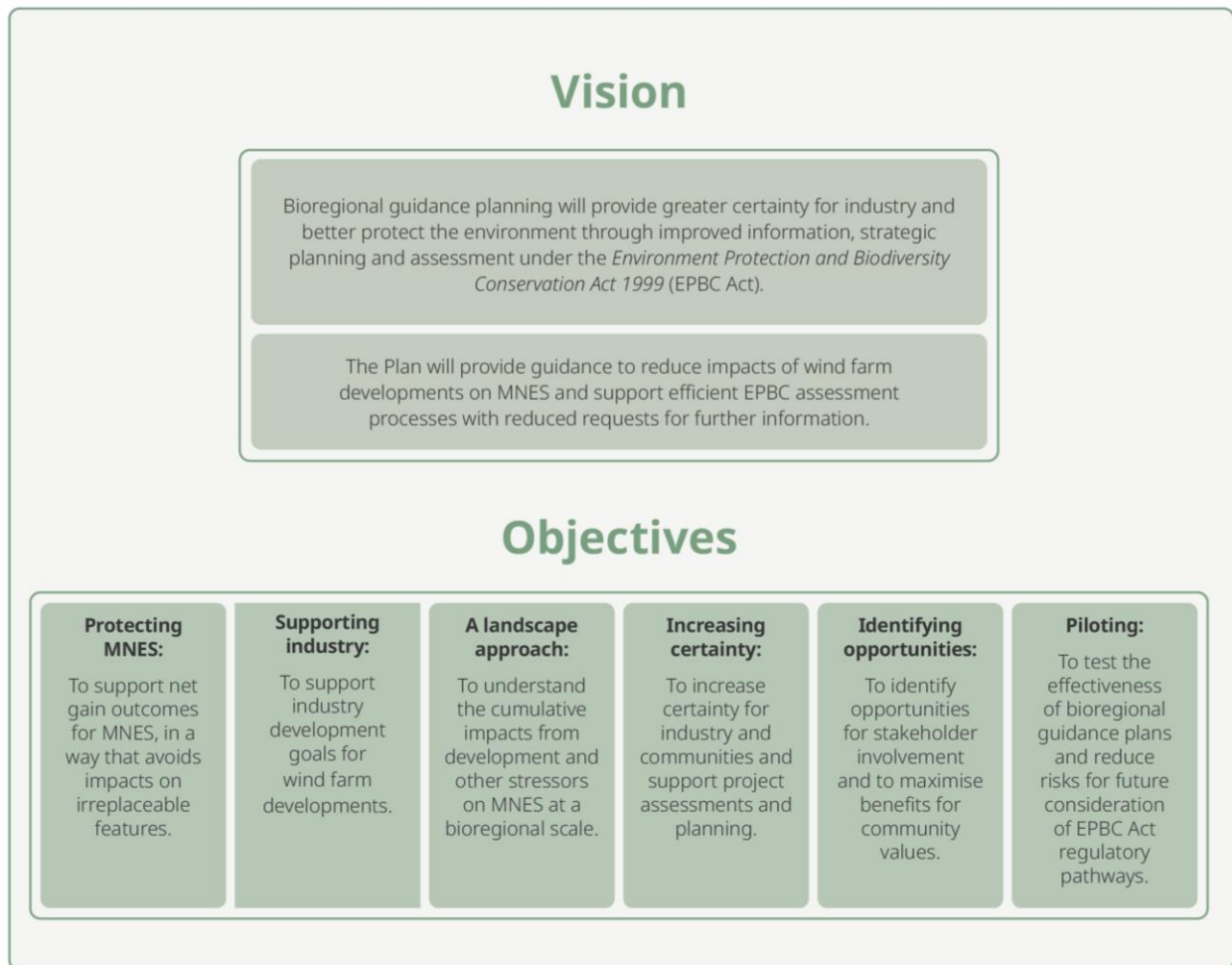


Figure 2 - Vision and objectives for the Plan

How the Plan was developed

Developing the Plan involved:

- Establishing the objectives, methods and the scope of the Plan, including the geographical boundaries, environmental matters considered, timeframes, and the activities considered part of the focus industry (wind farm developments);
- Understanding the protected matters in the Plan area;
- Identifying the social, cultural and economic values of communities within the Plan area;
- Assessing cumulative impacts on protected matters; and
- Understanding how the measures to manage impacts on MNES may interact with social, cultural and economic values.

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The key steps and inputs into the Plan are shown in Figure 3. Further information on key inputs is outlined below and available on the [DETSI website](https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning)¹¹.

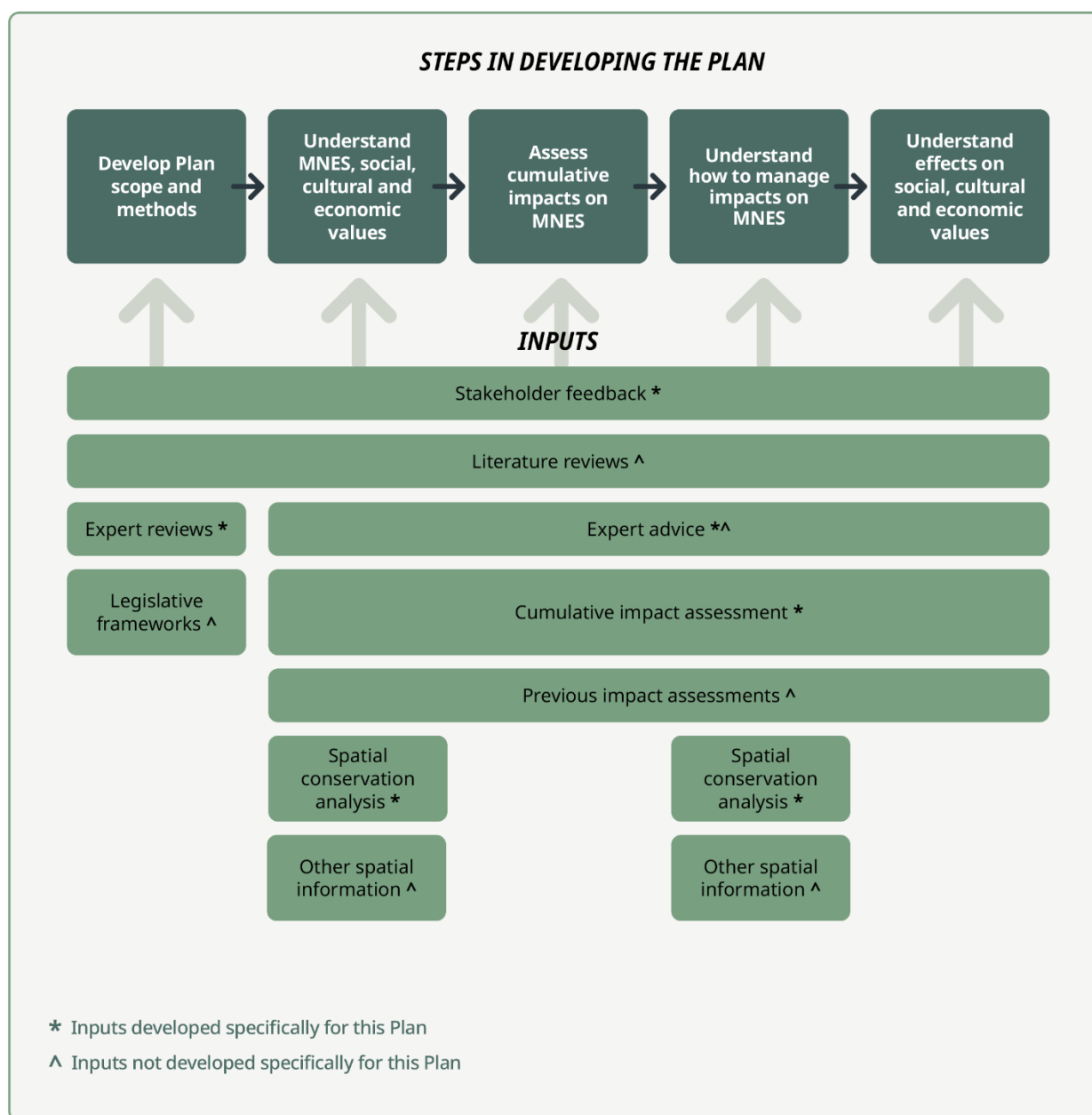


Figure 3 - Steps and inputs to the Plan

Stakeholder feedback

During 2025, targeted engagement was undertaken with stakeholders across Queensland in person and online. Engagement methods included information sessions, webinars, workshops, meetings,

¹¹ <https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning>

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email updates, and surveys. Over 600 people state-wide were reached in relation to the whole pilot bioregional guidance planning process for Queensland. See Attachment 1 for more information.

Spatial conservation analyses for MNES

To understand the spatial distribution and relative importance of areas important for achieving net gain outcomes for MNES, three spatial conservation analyses (SCA) were conducted, each with a specific objective:

- Objective 1: Identify important conservation areas
- Objective 2: Identify areas with high restoration potential for MNES species and communities.
- Objective 3: Identify areas important for achieving representative protection of MNES species and communities.

The spatial conservation analyses use existing data and information, with specific methodology for each objective. Data sources used are publicly available (for example [WildNet](#)¹² and [Biodiversity Planning Assessments](#)¹³) and most have been expert reviewed.

The analyses are designed to reflect values in the Plan area. They are not intended to be used to determine which protected matters are likely to be present at a project site or replace other site-specific investigations. When considering the occurrence of protected matters at a project site, proponents should refer to the [protected matters search tool](#)¹⁴ and existing guidance on site and species specific investigations, including survey guidelines (where applicable).

For further information on the methodology, interpretation, and uses of the SCA see the [DETSI bioregional planning webpage](#)¹⁵.

The results of the SCA are available to view in the [Interactive Tool](#) at a 6km hexagon resolution. They show the location of conservation values and indicate which protected matters or irreplaceable features contribute to the assigned conservation values.

Terminology

Irreplaceable means it is biologically, physically or technically impossible to reverse damage to habitat, or impossible to restore, recreate or replace the habitat in a relevant timeframe and location and with the function (including the complexity and scale) necessary to support the viability of the species or community (s 614 of the *Environment Protection Reform Act 2025* (Cth))

Net gain requires a measurable improvement for the affected protected matter relative to an agreed baseline. For offsetting, it is a mandatory legal test that replaces the "no net loss" standard.

Mitigation or mitigation measures are used in the CIA to mean the full range of actions under the mitigation hierarchy (avoid, mitigate, repair, offset) that can be used to avoid and reduce the likelihood that the impact pathways will have a significant impact on MNES.

¹² <https://www.qld.gov.au/environment/plants-animals/species-information/wildnet>

¹³ <https://www.qld.gov.au/environment/plants-animals/biodiversity/planning>

¹⁴ <https://pmst.environment.gov.au/>

¹⁵ <https://environment.qld.gov.au/management/planning-guidelines/bioregional-planning>

Cumulative impact assessment

The cumulative impact assessment (CIA) considered the potential effects wind farm developments will have on MNES combined with other regional pressures in each area. Its method is adapted to the Queensland context from the International Union for Conservation of Nature's (IUCN) *Guidance on biodiversity cumulative impact assessment for wind and solar developments and associated infrastructure*¹⁶.

Pressures from wind farm developments were assessed using a source–impact pathway–receptor model in context of cumulative impacts from other regional pressures (see Figure 4):

- **Sources:** activities or components of an action that may cause impacts, such as vegetation clearing and earthworks.
- **Impact pathways:** how the sources lead to impacts, such as introduction of weeds, barriers to movement or accidental fire.
- **Receptors:** the environmental values affected – in this case, MNES.

Lists of sources, impact pathways and mitigation measures were initially developed from research into environmental assessments across projects, industries and locations. The lists were then refined by rating their relevance, significance or effectiveness specifically considering potential wind farm developments in the Plan area.

The CIA assessed all other regional pressures impacting on MNES in the Plan area using following categories: major projects and land use change, ongoing land use and diffuse human activities, ongoing and pervasive threats, and climate driven pressures. Each pressure was rated based on its extent, trajectory, permanence and severity of impact. These ratings were combined to assign an overall risk level from other regional pressures for each protected matter. This assessment considered the intensity of each pressure combined with the degree to which the protected matter is known to be sensitive or exposed to that pressure, based on available national and other authoritative conservation documentation.

The CIA assessed how effective and implementable mitigation measures are for each impact pathway and reached an overall conclusion on the ability to mitigate each impact pathway using the following categories:

- **Sound:** proven and reliable measures that avoid or substantially reduce impacts,
- **Partial:** measures dependent on good implementation and oversight and may not fully avoid or reduce impacts in all setting or for all protected matters, and
- **Limited:** measures that are technically difficult, uncertain or not feasible and unlikely to avoid impacts or achieve inconsistent results.

¹⁶ Bennun, L, Fletcher, C, Cook, A, Wilson, D, Jobson, B, Asante-Owusu, R, Dakmejian, A, Liu, Q, 2024, 'Guidance on biodiversity cumulative impact assessment for wind and solar developments and associated infrastructure', https://portals.iucn.org/library/sites/library/files/documents/2024-035-En_0.pdf, accessed March 2026.

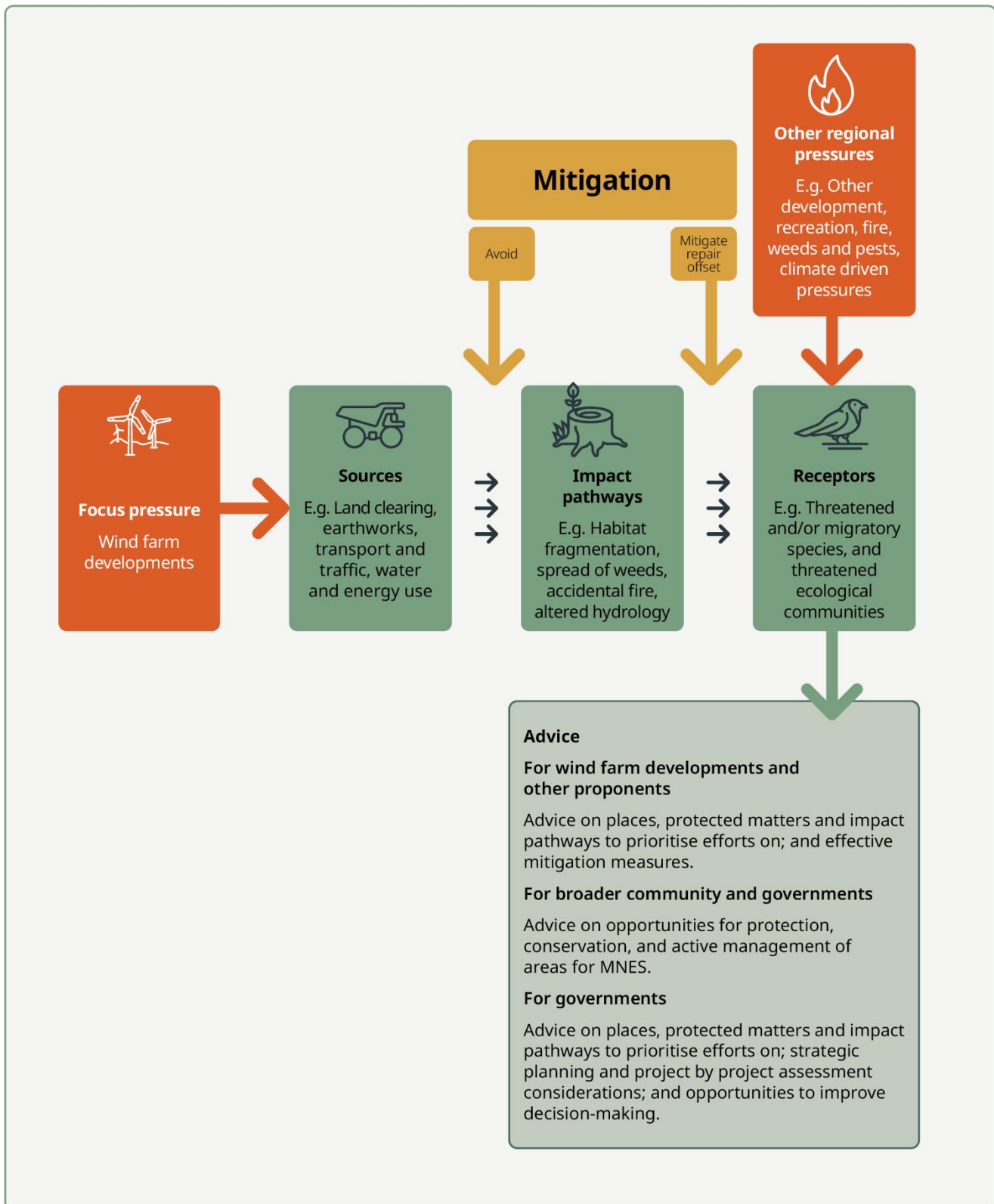


Figure 4 - Source-impact pathway-receptor model

The CIA then determined the residual risk of impacts to protected matters from each impact pathway (after wind farm development mitigation is applied) using the following categories:

Queensland Department of the Environment, Tourism, Science and Innovation and Australian Government Department of Climate Change, Energy, the Environment and Water

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- High risk: pathways that have limited effective mitigation and impacts are likely to be significant at both project and cumulative industry scales.
- Medium risk: pathways that can be avoided or reduced but may need additional mitigation measures and may have significant impacts for some projects or at the cumulative industry scale.
- Low risk: pathways that can be avoided or reduced to a level where impacts are unlikely to be significant at the project or industry scale.

For example, the residual risk of artificial light spill on reptiles was low, whereas for shorebirds it was medium.

Impact thresholds (E categories) were developed for each protected matter, taking into account the residual risk ratings. These describe how much additional impact each protected matter can tolerate, while still achieving a net gain outcome and avoiding impacts on irreplaceable features. This process was done twice – first without considering any pressures (a baseline impact threshold), and then again considering both wind farm developments and other regional pressures. For each protected matter, impact thresholds were assigned based on:

- Conservation status: whether it was currently meeting targets
- Trend: whether stable or declining
- Significance and restoration or recreation potential: the feasibility of restoration, recreation and/or offset potential for each protected matter
- Outcomes of the impact and mitigation assessments: whether future cumulative pressures from wind farm developments, other regional pressures or both posed enough risk to the protected matter that the impact threshold needed to be more stringent.

An analysis of the social, cultural and economic values in the Plan area was completed, to provide better information for proponents to help design projects that support environmental and community priorities and strengthen social licence. Using a variety of sources (such as stakeholder consultation, Queensland's planning framework, regional NRM plans, other social impact assessments, state government data/reports, and targeted stakeholder engagement), 'values statements' were determined and grouped under seven key themes. This process was not a full social impact assessment, and proponents should therefore use this information in context only.

Finally, the mitigation measures were assessed to determine potential effects on the values statements. The assessment included the number of mitigation effects, mitigation scale, likely scale of impact, and direction of impact (positive, negative, or both). Results of the assessment are summarised in Section 5 and details can be accessed in the [Interactive Tool](#).

Principles and limitations

The development of the Plan, including key inputs, was guided by the following key principles:

- Identify biodiversity objectives early and proactively.
- Consider the precautionary principle, so that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

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- Prioritise the retention of remnant ecological communities and existing biodiversity.
- Prioritise protection of irreplaceable values.
- Consider each area of vegetation within the context of the current and future pressures.
- Ensure data is fit for purpose.

The key limitations associated with the methods used to develop the Plan include:

- Information is appropriate for landscape-scale consideration, not for property-level analysis.
- On-ground ecological and cultural heritage surveys were not undertaken.
- The CIA and SCA rely on multiple information sources that vary in confidence, age and spatial specificity. Due to availability, most biodiversity information used is sourced from statewide or national datasets, which limits the ability to represent fine-scale habitat elements or capture specificity Plan wide.
- Definitive development footprints were not used as inputs into the Plan. While the CIA provides guiding metrics for MNES, the CIA is largely a qualitative approach. This aligns with similar large-scale CIA approaches used worldwide.
- Does not consider MSES; however, there is some overlap between protected matters under the EPBC Act and state legislation.
- The CIA does not address MNES that occur outside the Plan area that may be impacted by actions within the Plan area.

How to use the Plan

Appropriate uses

The Plan is primarily intended for wind farm development proponents and government regulators. It is also likely to be of benefit to other parties, such as local governments, environmental groups, land managers and investors, whose participation could support positive environmental outcomes. Table 2 shows how each type of user can use the Plan most effectively.

Table 2 - How to use the Plan

User	How to use the Plan	Limitations
Proponents (developers): wind farm developments	Informing project siting and design. Supporting site-specific environmental assessments. Guiding selection of mitigation measures to reduce impacts on MNES Focusing attention on higher risk impact pathways and less sound mitigation measures and streamlining the process for low-risk mitigations. Narrowing the search for areas appropriate for rehabilitation and offsets opportunities, thereby reducing investigation efforts.	Site- and project-specific environmental assessments, including ground-truthing, are still required. Mitigation proposed should be tailored to the specific project, site and relevant MNES.
Proponents (developers): other development	Informing project siting and design, noting that the SCA and impact thresholds are relevant regardless of industry. Using guidance in the Plan that is specific to wind farm developments (such as assessment of mitigation effectiveness) and tailoring it to the proposed development. Narrowing the search for areas appropriate for rehabilitation and offsets opportunities, thereby reducing investigation efforts.	

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Government / regulators	Determining appropriate assessment and approval pathways Guiding and coordinating conservation, protection and mitigation efforts at a scale relevant to the Plan area. Focusing attention on higher risk impact pathways and less sound mitigation measures and streamlining the process for low-risk impact pathways and mitigations. Providing additional confidence that areas proposed for rehabilitation and offsets are likely suitable. Guiding where future investment may be best allocated to achieve coordinated improvements at a scale relevant to the Plan area. Guiding broader land use planning, strategies and reform, such as regional planning and economic development policy.	The Plan should not be used as a replacement for on-ground environmental assessments. The spatial conservation analyses should not be interpreted as zoning.
EPBC Act decision-maker	Having regard to the Plan when making a relevant decision under the EPBC Act.	
Land managers, agriculture, natural resource management organisations, environment and community groups	Understanding protected matters likely to be present and the location of important areas for MNES across the landscape to inform land management. Validating and /or aligning existing land stewardship activities at a landscape-scale e.g. through managing weeds, pests and other pressures across the Plan area. Contributing to the protection of MNES through identified MNES restoration and rehabilitation opportunities (including offsets). Informing conservation actions and enabling negotiations with financial investors such as proponents, investors and government.	The Plan should not be used as a replacement for on-ground environmental assessments. The spatial conservation analyses should not be interpreted as zoning.
Private-sector investors	Guiding investment towards geographical areas, protected matters and key pressures important for protection and restoration of MNES values at a scale relevant to the Plan area.	The Plan should not be used as a replacement for on-ground environmental assessments.

Supporting tools

The Plan provides a summary of values for MNES and CIA results. Plan users should ensure they access the more detailed and up-to-date information the [Interactive Tool](#)¹⁷. This tool shows:

- The SCA, which identify areas important for MNES and the reasons they are significant, and
- The results of the CIA, such as interactive information on protected matters, their sensitivity to impacts, and the effectiveness of mitigation measures.

Users are encouraged to consult the Interactive Tool when considering a specific site or project. For example:

- If assessing a specific location of interest for a project, start with the SCA to inspect for the presence of landscape-scale conservation values. If conservation values are identified in the SCA, explore which protected matters may be important to consider, and review the Plan's advice on implications for development. The Interactive Tool can also be consulted to explore impact thresholds relevant to those specific matters.
- If assessing project risks or seeking an appropriate location for a project, use the Interactive Tool to identify high-risk activities and mitigation options associated with the project. The

¹⁷ qld.gov.au/bioregionalplanninginteractivetool

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SCA can then be used to locate areas with fewer matters likely to be impacted by project activities, and as a starting point to identify offset opportunities.

This approach helps proponents minimise impacts, reduce uncertainty, and improve project planning.

Updates to the Plan

The Plan is intended to be reviewed on a 5-yearly basis.

Updates to supporting materials, such as the [Interactive Tool](#) and SCA, may be made more frequently. This may be undertaken, for example, to reflect updates to the conservation status of a threatened species or updated species habitat models.

Updates that would significantly affect the findings or advice in the Plan will only be made through a review.

3. Overview of the Plan area

This section describes the landscape, land uses and the social and cultural characteristics of the Plan area, and occasionally includes nearby areas where they provide relevant context. It provides background for Sections 4 (Matters of National Environmental Significance) and 5 (Cumulative Impact Analysis).

Landscape features

The Plan area (Figure 1) includes the Bogie River Hills and Northern Bowen Basin IBRA subregions and covers an area of 23,712 km². The Plan area is considered variegated¹⁸, with 68% remnant vegetation cover. The Bogie River Hills has 78% remnant vegetation cover, compared with 59% in the Northern Bowen Basin. This difference is driven by the greater presence of igneous rock landforms in the Bogie River Hills area.

The Plan area is dominated by a variety of landscape features - from coastal dunes, wetlands and floodplains to undulating and montane landscapes along the Great Dividing Range. River basins including the Burdekin, Don and Isaac rivers form part of the Great Barrier Reef catchment. Wetlands are present across 2.7% of the Northern Bowen Basin and 4.5% of the Bogie River Hills subregions.

The Bogie River Hills subregion, which forms part of the Eastern Australia Tropical Forests and Woodlands conservation management zone, contains extensive eucalypt woodlands and open forests along the western slopes of the Great Dividing Range, with isolated patches of vine thickets. Riparian areas are generally characterised by eucalypt woodlands and open forests interspersed with melaleuca open woodlands. Coastal areas around Bowen and Gumlu have experienced substantial loss of remnant vegetation for agriculture and settlement; however, eucalypt woodlands, tussock grass and forblands remain on alluvial plains, and mangrove and saltmarsh ecosystems occur along the coast¹⁹.

The Northern Bowen Basin, which forms part of the Brigalow conservation management zone, retains eucalypt woodlands and open forests in its sandstone ranges. At lower elevations, on the depositional plains, extensive clearing for agriculture and coal mining has reduced the extent of the dominant brigalow (acacia), and dry eucalypt woodland communities. Basalt plains and hills are scattered throughout the region, with distinct vegetation communities such as vine thickets, tussock

Snapshot:

- Includes Bogie River Hills and Northern Bowen Basin IBRA Subregions.
- Contains parts of 4 local government areas and 3 Natural Resource Management areas.
- First Nations communities have strong connections to Country and Sea.
- Includes a variety of landscapes, including the Great Dividing Range, floodplains and coasts.
- Borders the Great Barrier Reef World Heritage Area
- Large areas of uncleared (remnant) land remain, particularly on ridges.
- Socio-economic disadvantage is more pronounced than the state average, especially in Bowen.
- Agriculture, resource extraction, tourism, recreation and fisheries are key industries.

¹⁸ *Biodiversity status of pre-clearing and 2021 remnant regional ecosystems - Queensland series*, Database, 2025, The State of Queensland, Version 13.1; The State of Queensland, 2014, 'Biodiversity assessment and mapping methodology: Version 2.2', https://www.qld.gov.au/data/assets/pdf_file/0032/93668/biodiversity-assessment-mapping-methodology.pdf, accessed February 2026.

As defined by the Biodiversity Assessment Mapping Methodology, calculated from remnant cover in Regional Ecosystem mapping version 13.1.

¹⁹ *Biodiversity status of pre-clearing and 2021 remnant regional ecosystems - Queensland series*, Database, 2025, The State of Queensland, Version 13.1

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grassland, and eucalypt woodland/open forests being represented. Riparian areas generally comprise eucalypt woodlands and open forests interspersed with melaleuca open woodlands²⁰.

The Plan area contains several Directory of Important Wetlands including Junction of the Bogie River and Kirknie Creek aggregation; Bowen River: Birralelee - Pelican Creek, Broken River, Urannah Creek and Massey Creek aggregation; Eungella Dam; and Lake Elphinstone.

The Plan area is also in the catchment for the Great Barrier Reef World heritage areas and Marine Park, and is part of the Lucinda-Mackay Coast marine bioregion. This intersects along the coast near Bowen. The coastal areas adjacent to the Plan area also include sections of the Townsville Plains IBRA subregion. These coastal areas include the Directory of Important Wetlands of Abbot Point - Caley Valley, and Southern Upstart Bay, and the southern portion of the Burdekin Delta.

Social and cultural characteristics

There is a deep historic and ongoing connection to country for First Nations peoples in the Plan area, extending into the adjacent marine environment. The Aboriginal and Torres Strait Islander Cultural Heritage Database and Register identify a range of groups that have specific cultural connection to the plan area. These Peoples include the Barada Barna, Birriah, Gia and Ngaro, Jangga, Juru, Widi. Some First Nations peoples within the Plan area may not be Traditional Owners, however their connection to the area may still be significant. The South-sea Islander community also have historic links to the Plan area, particularly in the Whitsunday Local Government area²¹.

Successful native title determinations in the Plan area include: Juru (Cape Upstart) People, Jangga People, Juru People (Part A and B), Birriah People, Barada Barna People, Widi People Of The Nebo Estate (1 and 2), Barada Barna People and Widi People of the Nebo Estate #2 Shared-Country, Barada Kabalbara and Yetimarala People #1. There are two current Native Title applications, including from the Western Kangoulu People, and Gia and Ngaro Peoples. There are no Indigenous land use agreements, Indigenous transfer lands, Indigenous freehold or reserves in the Plan area.

Early post-colonial settlement of this region was driven by the establishment of a Port at Bowen. Along the coast, major horticultural industries later developed near Bowen and Gumlu. Inland, the towns of Collinsville, Moranbah, Coppabella, Tieri, and Glenden grew as coal mining and transport hubs, while nearby Eungella was first established as a gold mining settlement. Mackay and Bowen are two major centres located within the Plan area, with other influential major centres nearby including Ayr, Home Hill, Townsville, Proserpine and Airlie Beach. Social identity and connectedness in the community is maintained through strong livelihoods, in particular the agriculture and mining sectors. This is balanced with Bowens identity as a coastal lifestyle and tourist destination with rich built heritage²².

²⁰ *Biodiversity status of pre-clearing and 2021 remnant regional ecosystems - Queensland series*, Database, 2025, The State of Queensland, Version 13.1

²¹ The State of Queensland, 2022, 'Australian South Sea Islanders in Queensland, census 2021', <https://www.qgso.qld.gov.au/issues/12031/aust-south-sea-islanders-qld-census-2021.pdf>, accessed February 2026.

²² Lucas, J 2025, 'Discover Bowen, Queensland: home of the Big Mango', <<https://www.slq.qld.gov.au/blog/discover-bowen-qld>> accessed February 2026.

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The Plan area includes parts of four local government areas including Isaac, Whitsunday, Mackay, and Central Highlands. The Plan area also includes three Natural Resource management groups including NQ Dry Tropics (Burdekin), Fitzroy Basin Association and a small area of Reef Catchments (Mackay/Whitsundays).

Across the Broomsound–Nebo, Collinsville, Bowen, Eungella Hinterland and Moranbah areas, the estimated population in 2024 was 34,209, with a median age of 36.8 years. Of this population, 7.5% identified as First Nations, with the largest proportion living in Bowen.

The unemployment rate in the June quarter of 2025 was 2.7%, with rates of 5% in Collinsville and Bowen, which is higher than the Queensland average of 4%. The top employment industries are mining (27.1%, with coal, gas and oil extraction making up 25%), agriculture, forestry and fishing (11%), accommodation and food services (6.7%), education and training (6.5%) and construction (6.2%).

There are 9,929 occupied dwellings of which 48.2% are rented, 45.5% are owned or being purchased and 4% occupied rent free or under life tenure scheme. Communities in the Plan area continue to face strong growth pressures from both residential and non-residential population increases. The non-residential growth is largely due to the rising fly-in/fly-out, drive-in/drive-out and bus-in/bus-out workforce associated with the resource sector²³.

Compared with other parts of Australia, the Plan area has higher levels of socio-economic disadvantage, with Bowen particularly affected. In contrast, Moranbah demonstrates comparatively greater socio-economic advantage²⁴.

Land uses and activities

The information below is based on publicly available information at the time of writing the Plan. Up to date data, regarding major projects and important land uses, can be found on [Queensland Globe](https://www.qldglobe.information.qld.gov.au/)²⁵. Figure 5, below details some of the regional context information that has been used in building the Plan, including the other regional pressures and spatial conservation analysis.

In total, 50% of the Plan area is held under a term lease (*Land Act 1994*). Additionally, 43% is freehold land, 7% consists of other tenures (such as roads, Reserve, State land and easement strata) and 3% is National Park, Forest Reserve or State Forest.

Grazing is the dominant land use (80%) in the Plan area and production within the Plan area is of national significance to Australia's beef industry. The southern part of the Plan area includes a portion of the Fitzroy basin, Australia's leading cattle production region, with the highest number of cattle of any region in Australia. The northern part of the Plan area includes the North Queensland Dry Tropics

²³ The State of Queensland, 2012, 'Mackay, Isaac and Whitsunday regional plan', <https://www.mackay.qld.gov.au/_data/assets/pdf_file/0017/240416/14_Mackay_Isaac_Whitsunday_Regional_Plan_2012.pdf> accessed March 2026.

²⁴ *Queensland Regional Profiles*, Database, The State of Queensland, Last updated 2025.

²⁵ <https://qldglobe.information.qld.gov.au/>

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region, the fourth largest cattle production region in Australia.²⁶ An average of approximately 88,128 head of cattle are sold each year.²⁷ Cropping, both dryland and irrigated, occupies 9% of the Plan area, mostly in the north around Bowen and Gumlu, but a small amount also occurs in the south and further inland.²⁸

With the large agricultural footprint within the plan area, agricultural landholders are positioned to provide offsets and other natural capital opportunities, where this can be integrated into the production landscape as a complementary activity to agricultural production.

There is limited plantation forestry in the Plan area. Native forestry is widespread and highlighted as a priority economic activity, mainly centred around the State Forests, three forestry consent areas and extensive Forestry management areas located in the Plan area. There are sawmills located adjacent to the Plan area at Nebo and Eungella. There are five active *Australian Carbon Credit Unit* areas within the Plan area centred on altering the stocking rate, duration or intensity of grazing to promote soil vegetation cover or improve soil health.

Due to the nature of the underlying parent geology of the Northern Bowen Basin sub-region, 19.6% of the sub-region makes up half of Queensland Coal mine operations currently under granted tenure. Directly employing approximately 25,000 people, 95% of the coal operations in the sub-region include metallurgical and pulverised coal injection coal important for steel making. There are also currently 18 coal mining lease applications, across 6 mine operations and a further 43 Mineral Development Licences for coal with defined resources of economic value.

Additionally, there are 8 approved petroleum leases in the Plan area, indicating an expanding industry into the future²⁹. There are a small number of other mineral mining operations in the Plan area mainly consisting of gold, silver and other minerals such as copper.

The coal extracted from the Plan area is partly exported to the deep-water port at Abbott Point incorporating the North Queensland Export Terminal, which is just outside the Plan area. Along the coast there are also several large-scale industries including the Coral Coast Barramundi farm, the salt evaporation pond operation, and to the south-east of the Plan area the Proserpine Prawn Farm.

There are major coal haulage rail lines including the Goonyella System that extends to Hay Point coal terminal and Newlands System that links to Abbott Point. Additionally, there is a passenger train line

²⁶ Meat and Livestock Australia Limited, 2021, 'Cattle numbers – as at June 2021: Natural resource management region, <https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/trends--analysis/fast-facts--maps/mla_cattle-distribution-map-june-2021_v02-final.pdf> accessed March 2026.

²⁷ Commonwealth of Australia, 2025, 'Australian gridded farm data: Version 1.5', https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1037601/0, accessed February 2026.

ABARES data (ABARES spatial grid, Head of cattle sold per ha averaged across all years, converted to number per cell size (25km²) then summed for the Plan area using zonal statistics to obtain total average head count sold)

²⁸ *Land use mapping - 2021 - Great Barrier Reef NRM regions*, Database, The State of Queensland, Last updated 2025, Reference period 2021; The State of Queensland, 2012, 'Mackay, Isaac and Whitsunday regional plan', <https://www.mackay.qld.gov.au/_data/assets/pdf_file/0017/240416/14_Mackay_Isaac_Whitsunday_Regional_Plan_2012.pdf> accessed March 2026; Isaac Regional Council, 2021, 'Investment attraction framework', <<https://www.isaac.qld.gov.au/files/assets/public/v2/business/economic-development/social-and-economic-data/investment-attraction-framework-doc-controlled-version.pdf>> accessed January 2026.

²⁹ Commonwealth of Australia, 2021, North Bowen and Galilee Strategic Basin Plan, <https://www.industry.gov.au/publications/north-bowen-and-galilee-strategic-basin-plan>, accessed March 2026

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and the Bruce Highway that run between Brisbane and Cairns along the coast. The Bruce highway extends through Bowen and Gumlu, with Peter Delemothe Road (Bowen Development Road) traversing to Collinsville. The Peak Downs Highway connects Moranbah with Sarina and Clermont.

Major electricity transmission lines in the Plan area support several existing energy generation projects. Near Collinsville, five solar farms operate with a combined capacity of 357.5 MW. Around Moranbah, three additional solar farms provide 260 MW, supported by a 63.8MW waste coal mine gas operation. Further south, near Tieri and Bundoora, three more solar farms contribute 341MW, along with an additional 45MW from a waste coal mine gas operation³⁰.

There are no wind farm developments approved in the Plan area; however several are in planning stage.

Water infrastructure in the Plan area is linked to the Bowen Broken Water supply scheme that sources its water from Eungella Dam. This supports irrigation downstream of the Bowen River Weir, urban supply for Collinsville and Moranbah, and industrial supply for coal mining. Water supply for Bowen is currently sourced from the Proserpine River Scheme and Peter Faust Dam.

The tourism sector is also an important industry in the Plan area, with notable priorities including Coal Face Experience in Collinsville, paddock-to-plate and agritourism in Bowen, and current expansion of the Bowen Foreshore³¹. There are small tourism operators in Bowen linked to the Great Barrier Reef, and coastal tourism areas such as Horseshoe Bay. Further inland, tourism focuses on mining heritage and outdoor recreation in natural areas, including Eungella National Park³². Activities such as pig hunting around Collinsville³³ are also popular.

National Parks that intersect the Plan area include Mount Abbott (Scientific), Mount Aberdeen, Redcliffe Tablelands, Homevale (National Park, Resources Reserve) Conservation Park (partial), Gloucester Island (partial), Eungella (partial), Cape Upstart (partial) and Crediton Forest Reserve (partial). There are also several Nature Refuges including Aberdeen, Blackjack Mountain, Flagstone, Hells Gate, Homehaven, and Sany Falls (partial). There are also four intersecting State forests including Bundoora, Crediton, Proserpine and Sonoma. Lastly, Plan area also adjoins the Great Barrier Reef Marine Park (state and national), which is considered a World Heritage property and a National Heritage place.

The Bowen Post office is listed as a Commonwealth heritage listed site. Under Queensland Heritage legislation there are nine State Heritage listed places including Tieri War Memorial; Flemington Road Cemetery; Bowen River Hotel; Bowen Court House; Strathmore Homestead; Collinsville Cemetery; Bowen Consolidated Colliery; Bowen Harbour Board Building (former); and Bowen State School.

³⁰ *Electricity generation map*, Database, The State of Queensland, Last Updated 2026

³¹ EarthCheck, 2024, 'The Whitsundays Region Destination Management Plan 2024-2028', <https://assets.tourismwhitsundays.com.au/ad24a7f634fe2/The-Whitsundays-Region-Destination-Management-Plan-2024-2028_FINAL-1.pdf> accessed March 2026.

³² DR Tourism, 2019, 'Mackay Isaac Destination Tourism Plan review (2019-2022)', <https://teq.queensland.com/content/dam/teq/corporate/corporate-searchable-assets/industry/strategies/destination-strategies/2024_MKY_Destination_Tourism_Plan.pdf> accessed March 2026.

³³ N&S Abrasive Blasting - Collinsville Bacon Busters, 2026 'Collinsville Bacon Busters', <https://collinsvillebaconbusters.com.au/>, accessed January 2026.

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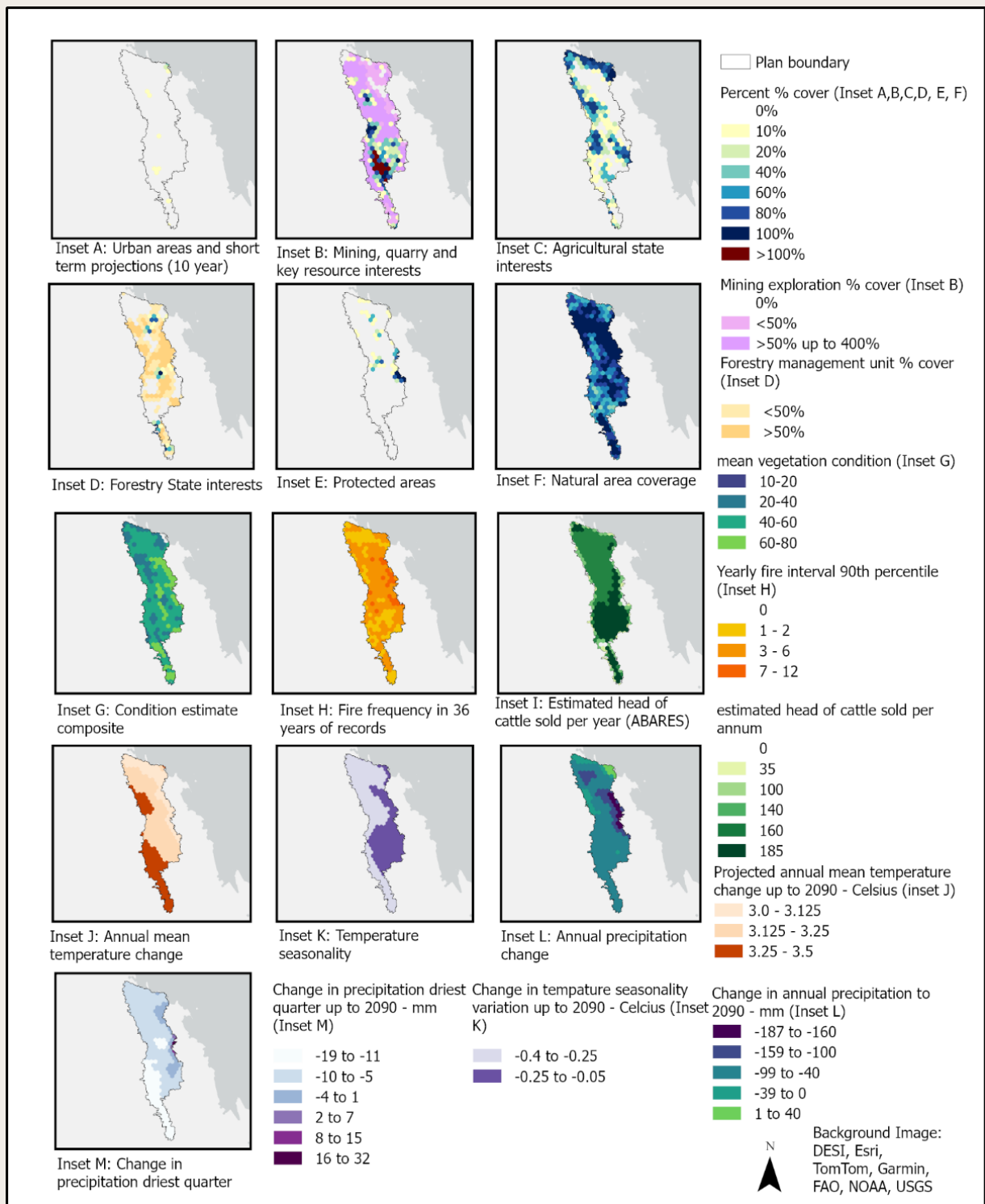


Figure 5 - Map Series demonstrating the types of spatial data used to assess baseline information, state interests, and regional pressures and to provide context to descriptions in the Plan.

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Figure 5 (continued) Data sources include: Inset A) Percent coverage of built-up areas, airports, and urban supply estimates³⁴, Inset B) Percent coverage of mining tenement data (including overlaps), quarry locations and Key Resource Areas³⁵, Inset C) Percent cover of combining Agricultural A and B, strategic cropping land and important agricultural areas³⁶, Inset D) Combination of State Forests, Timber Reserves, Forestry consent and entitlement areas, and forest management units³⁷. Inset E) Percent cover protected areas combining National Parks, Nature Refuges, Special Wildlife Reserves, Coordinated Conservation Areas, and Fish Habitat Areas³⁸, Inset F) Percent cover of remnant regional ecosystems, high value regrowth, and low to nil modification wetlands³⁹, Inset G) Condition estimate based on A standardisation of Habitat Condition Assessment Systems (multiplied by 100), spatial Biocondition, and vegetation mapping⁴⁰, Inset H) Frequency of fire scar mapping from 1987-2024 by the 90th percentile value (to account for outliers, but demonstrate the overall intensity in the Plan area)⁴¹, Inset I) Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) timeseries agricultural production data, focusing on the climate adjusted average head of cattle sold per hectare/year⁴². Inset J, K, L and M: Bioclim model 1, 4, 12, and 17 respectfully, taking the difference between the baseline year and projection to 2090 using the SSP3-7.0 scenario to measure change. Bioclim model 4 was divided by 100 to convert to Celsius⁴³.

³⁴ *Airports – Queensland*, Database, The State of Queensland, Last updated 2026; *Built up areas – Queensland*, Database, The State of Queensland, Last updated 2026, Version 1.0; *Residential land supply – Queensland*, Database, The State of Queensland, Last updated 2026, Version 1.0.

³⁵ *Key resource areas - Queensland series*, Database, The State of Queensland, Last updated 2026, Version 1.0; *Quarry reserves – Queensland*, Database, The State of Queensland, Last updated 2020; *Queensland mining and exploration tenure series*, Database, The State of Queensland, Last updated 2025.

³⁶ *Important agricultural areas – Queensland*, Database, The State of Queensland, Last updated 2024, Version 1.0; *Strategic cropping land series*, Database, The State of Queensland, Last updated 2025, Version 1.0; *Queensland agricultural land classes - land class A and B with urban mask*, Database, The State of Queensland, Last updated 2025, Updated annually.

³⁷ *Forest areas – Queensland series*, Database, The State of Queensland, Last updated 2020, Version 1.0; *Protected areas of Queensland series*, Database, The State of Queensland, Last updated 2025, Version 1.0.

³⁸ *Coordinated conservation areas - Queensland*, Database, The State of Queensland, Last updated 2021, Version 1.0; *Fish habitat areas - Queensland*, Database, The State of Queensland, Last updated 2024, Version 1.0; *Protected areas of Queensland series*, Database, The State of Queensland, Last updated 2025, Version 1.0; *Nature refuges – Queensland*, Database, The State of Queensland, Last updated 2025, Version 1.0; *Special wildlife reserves - Queensland*, Database, The State of Queensland, Last updated 2024, Version 1.0.

³⁹ *High value regrowth 2021 - Queensland*, Database, The State of Queensland, Last updated 2024, Version 13.1.1; *Remnant vegetation cover - 2021 - Queensland*, Database, The State of Queensland, Last updated 2024, Version 13.1; *Wetland data - version 7 - Queensland series*, Database, The State of Queensland, Last updated 2025, Version 7.

⁴⁰ *HCAS 3.3 (1988-2024) base model estimate of habitat condition (90m grid)*, *National Connectivity Index 2.0 (NCI) and annual time series for continental Australia*, Database, Valavi, R, Levick, SR, Lehmann, EA, Liu, N, Giljohann, KM, Williams, KJ, Collings, S, Johnson, S, Botha, EJ, Munroe, SEM, Van Niel, TG, Newnham, G, Paget, M, Malley, C, Carlile, P, Gunawardana, D, Lyon, P, Richards, AE, Tetreault Campbell, S, Ferrier, S, Last updated 2025, Reference Period 1988-2024; *Remnant vegetation cover - 2021 - Queensland*, Database, The State of Queensland, Last updated 2024, Version 13.1; *Statewide Landcover And Trees Study (SLATS) Sentinel-2 - 2019 woody vegetation extent – Queensland*, Database, The State of Queensland, Last updated 2023, Version 1; *Queensland Spatial BioCondition Series*, Database, The State of Queensland, Last updated 2025, Version 2.0.

⁴¹ *Landsat fire scars Queensland series*, Database, The State of Queensland, Last updated 2025, Version 1.0; *Sentinel-2 Queensland Fire Scars Series*, Database, The State of Queensland, Last updated 2026, Version 1.0.

⁴² *Queensland Future Climate Dashboard*, Database, The State of Queensland, Last updated 2025.

⁴³ Toombs, N, Chapman, S, Ma, S, Trancoso, R, Mackey, B, Wraith, J, Norman, P, Owens, D, Bhatt, T, Singh, AR 2026 'Downscaled projections of bioclimatic indices for species distribution modelling in Australia – a case study for the greater glider', *In Review*; *Queensland Future Climate Dashboard*, Database, The State of Queensland, Last updated 2025.

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4. Matters of National Environmental Significance (MNES)

This section presents a summary of the MNES values in the Plan area and key areas of importance to MNES at a landscape-scale, based on the spatial conservation analyses. This section should be read alongside Sections 5 (Cumulative Impact Assessment) and 6 (Advice).

Individual protected matters

The Australian Government Protected Matters Search Tool indicates 111 protected matters are likely or may occur within the Plan area (see Table 3), excluding purely marine species⁴⁴. The SCA takes a precautionary approach and identifies an additional 53 protected matters that may also be present based on additional data sources⁴⁵.

Table 3 - Number of protected matters in the Plan area per MNES, as per the Protected Matters Search Tool, at the time of writing the plan

MNES	Number	Examples
World Heritage properties	1	Great Barrier Reef
National Heritage places ⁴⁶	1	Great Barrier Reef
Great Barrier Reef Marine Park	1	Great Barrier Reef
Ramsar wetlands ⁴⁷	0	N/A
Commonwealth marine area	0	N/A
Water resources (that relate to unconventional gas development and large coal mining development)	N/A	N/A
Threatened ecological communities (TECs)	7	Brigalow, Poplar Box Grassy Woodland on Alluvial Plains
Threatened species	55	<i>Dasyurus hallucatus</i> (Northern quoll), <i>Phascolarctos cinereus</i> (Koala), <i>Macroderma gigas</i> (Ghost bat)
Migratory species	24	<i>Calidris tenuirostris</i> (Great knot), <i>Cuculus optatus</i> Oriental cuckoo, <i>Motacilla flava</i> (Yellow wagtail)
Threatened and migratory species	24	<i>Numenius madagascariensis</i> (Eastern curlew), <i>Pluvialis squatarola</i> (Grey plover), <i>Tringa nebularia</i> (Common greenshank)
TOTAL⁴⁸	111	

Where available from vetted data sources⁴⁹, lists of broad habitat attributes associated with protected matter presence (such as regional ecosystems) are provided in the [Interactive Tool](#). For

⁴⁴ Species that live exclusively in marine environments, and cannot survive in freshwater or on land

⁴⁵ Pintor, A, Graham, E 2018, 'Expert vetted distribution models and biodiversity hotspot maps of terrestrial and freshwater taxa of conservation concern in northern Australia', *Northern Australia Environmental Resources Hub*, viewed 21 February 2026; *Habitat suitability models series*, Database, The State of Queensland, Last updated 2022, Version 1.0; *Potential habitat models - 2022 - Queensland series*, Database, The State of Queensland, Last updated 2025, Version 2; *Flora and Fauna threatened and near threatened species records*, Internal Database, The State of Queensland, Last updated 2025, The State of Queensland (The Department of the Environment, Tourism, Science and Innovation); *Australia - Species of National Environmental Significance*, Database, Commonwealth of Australia, Last updated 2023, Reference period 3 September 2018.

⁴⁶ Great Barrier Reef is both a World Heritage Area and National Heritage Place

⁴⁷ "Within Ramsar site" counted only. Upstream and nearby distances excluded from counting

⁴⁸ This total excludes a triple count of Great Barrier Reef

⁴⁹ *Habitat suitability models series*, Database, The State of Queensland, Last updated 2022, Version 1.0; *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1.

Sources also include species specific habitat studies from CSIRO and DCCEW (internal).

specific information about the locations of individual matters, refer directly to the source distribution data, from sources such as DETSI Habitat Suitability Models⁵⁰ and Potential Habitat Models⁵¹, or DCCEEW Species of National Environmental Significance Database⁵².

Conservation values in the landscape

Conservation values for MNES have been analysed across the Plan area. Three key objectives are captured through SCA that support net gain outcomes for MNES:

- Objective 1: Identify important conservation areas
- Objective 2: Identify areas with high restoration potential for MNES species and communities
- Objective 3: Identify areas important for achieving representative protection of MNES species and communities

The analysis did not consider pressures from wind farm developments or other regional pressures across the Plan area, and is tenure-blind.

This section includes snapshots of the results. Higher resolution data should be accessed in the [Interactive Tool](#).

Important conservation areas

Important conservation areas are locations that contain irreplaceable features for

Terminology

Conservation values is a broad term referring to MNES protected matters, and the areas or features important to their persistence or achieving net gain outcomes (e.g., a threatened species, habitat for that species, or an irreplaceable habitat element for the species, such as hollow-bearing trees).

Important conservation areas are locations that contain irreplaceable features for protected matters (e.g., wetlands, high densities of hollow bearing trees, riffle zones) and connectivity pinch points.

BPAs are DETSI Biodiversity Planning Assessments¹. BPAs use spatial data and expert knowledge to identify ecological values according to their conservation significance.

Connectivity pinch points are areas important for maintaining connectivity between important conservation areas. These areas are the most constrained points in broader connectivity corridors.

Potential climate-stable habitat is the climate-stable (or most climate-stable) habitat for protected species at a high risk of climate change driven habitat loss, or with those with already highly restricted distributions.

High restoration potential areas are locations with the highest potential restoration benefits for MNES, especially through improving vegetation condition.

Areas important for representative protection are locations where protection of existing habitat could most benefit MNES outside of areas with protection mechanisms already applied.

⁵⁰ *Habitat suitability models series*, Database, The State of Queensland, Last updated 2022, Version 1.0.

⁵¹ *Potential habitat models - 2022 - Queensland series*, Database, The State of Queensland, Last updated 2025, Version 2.

⁵² *Australia - Species of National Environmental Significance*, Database, Commonwealth of Australia, Last updated 2023, Reference period 3 September 2018.

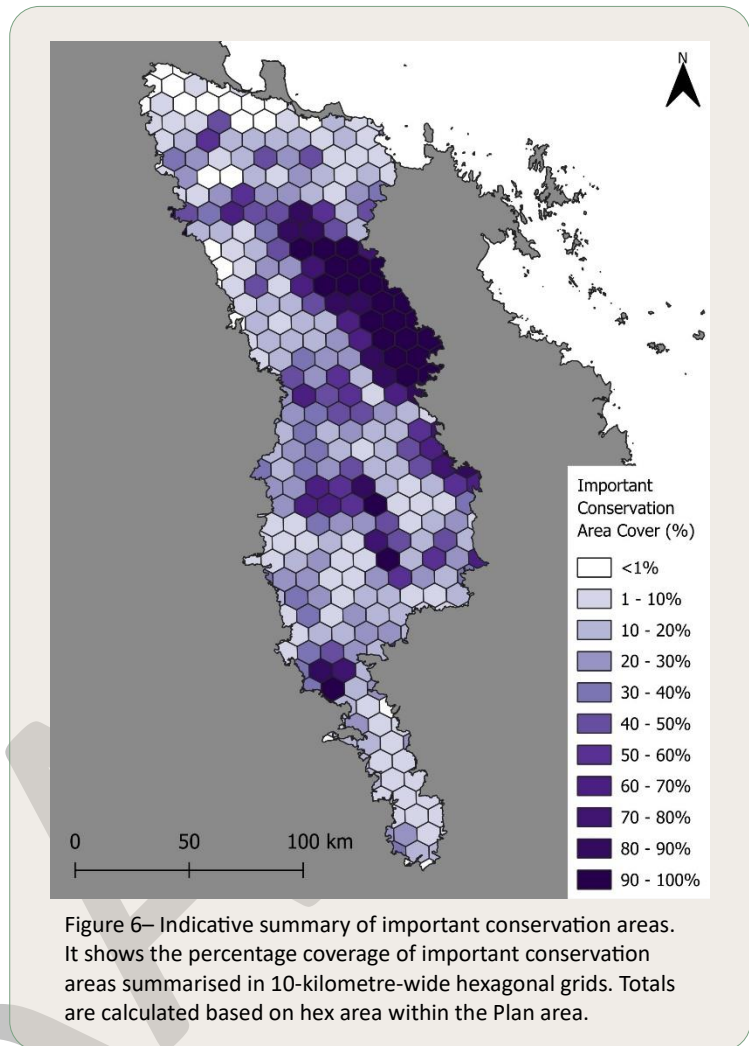
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protected matters (e.g., wetland complexes, high densities of hollow bearing trees, riffle zones) and connectivity pinch points.

As indicated in Figure 6, important conservation areas (ICA) occur extensively across the Plan area. There are several large clusters of ICAs and many moderately sized clusters of ICAs, with the largest containing TECs and/or irreplaceable values.

Some notable locations include:

- The largest contiguous ICA spans from around Bogie in the north to near Eungella in the south. This area has high terrestrial vertebrate richness (>300 species recorded), contains high condition habitat for many threatened species, including the Northern Quoll, *Petauroides minor* (Greater Glider (northern)), *Petauroides volans* (Greater glider (central and southern)) and *Falco hypoleucos* (Grey Falcon), and has a high hollow-bearing tree density⁵³. This ICA also has smaller areas of potential climate-stable habitat for protected matters.
- A cluster of large ICAs located toward the western edge of the Plan area, between Glenden and Coppabella. This includes areas containing irreplaceable values and two TECs (the Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin TEC, and the Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions). The largest ICA in this location has unique flora, fauna and geomorphological features (providing potentially refugial habitat for some species), and has a high presence of hollow-bearing trees.⁵⁴
- A large ICA located west of Winchester that contains core wildlife refugia for species including *Lerista allanae* (Allan's lerista).⁵⁵ This and some of the surrounding ICAs also contain two TECs



⁵³ BPA decision number brbn_I_80

⁵⁴ BPA decision number brbn_I_84

⁵⁵ BPA decision number brbn_I_27

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(Poplar Box Grassy Woodland on Alluvial Plains and Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin).

- A large ICA overlaps Homevale National Park and surrounds, forming a cluster with surrounding smaller ICAs. It contains irreplaceable values such as high richness of endemic species, unique ecological gradients, and potential climate change refugia⁵⁶. This area also overlaps with potential climate-stable habitat for protected matters, and areas of two TECs (Weeping Myall Woodlands and Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions).
- A cluster of moderate to large ICAs south of Newlands (extending towards Turrawulla and Suttor) which contains Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC. Moderately sized clusters here also contain irreplaceable values such as potentially refugial habitat for some protected matters and have many hollow-bearing trees.⁵⁷
- There are scattered, moderately sized clusters of ICAs between Bowen, Clare and Bogie. These generally contain irreplaceable features, such as areas with high endemic richness and important habitat for altitudinal endemic species such as *A. granitica* (only found around Mt. Pring⁵⁸). Some of the ICAs identified in this location provide potential climate-stable habitat or likely contain the Weeping Myall Woodlands TEC.

Important connectivity pinch points are not widespread in the landscape. They occur in high densities around the more fragmented areas in the landscape, particularly around urban centres such as Bowen and Collinsville, and areas associated with other intense land uses (e.g., mining), including Suttor and north of Moranbah. Outside of those areas, they are sparse, and the pinch points are small.

⁵⁶ BPA decision number brbn_fa_07

⁵⁷ BPA decision number brbn_i_84

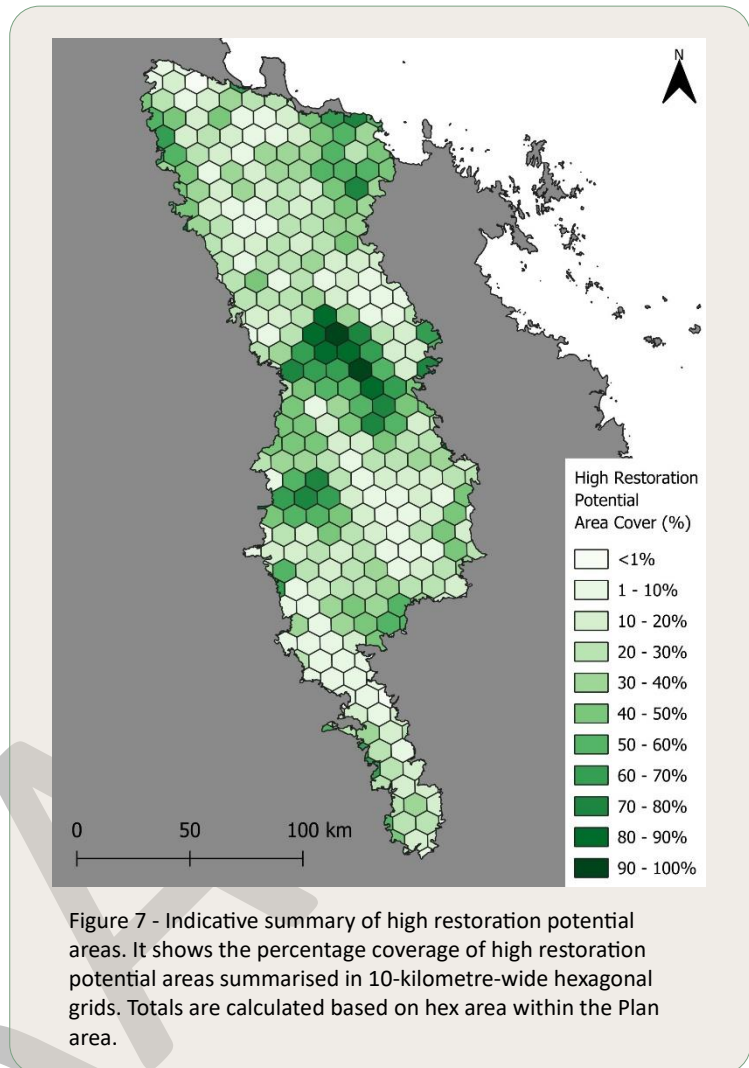
⁵⁸ BPA decision number brbn_fl_05

Areas with high restoration potential

High restoration potential areas are locations with the highest potential restoration benefits for MNES, especially through improving vegetation condition.

As indicated in Figure 7, high restoration potential areas occur both in large clusters and in scattered smaller areas across the Plan. Some notable locations include:

- A very large cluster of high restoration potential areas in and surrounding Redcliffe Tableland National Park, extending from the Bowen River in the north to Glenden in the south. This consists of both very large and very small scattered high restoration potential areas.
- A large cluster extending from Suttor, south to Winchester that includes many large and small high restoration potential areas. However, these are more scattered in the centre of this range (north of Moranbah).
- Scattered high restoration potential areas of various sizes form loose clusters with high overall coverage around Bundoora State Forest.
- Scattered clusters of high restoration potential areas of various sizes with high overall coverage between Bowen and Mount Abbot National Park in the north to Collinsville in the south.



Areas important for representative protection

Areas important for representative protection are locations where protection of existing habitat could most benefit MNES (excluding areas with protection mechanisms already applied e.g. National Parks).

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As indicated in Figure 8, important representative protection areas follow similar patterns to high restoration potential areas, though representative protection areas tend to be more condensed and contiguous. Some notable areas include:

- A very large cluster in and around Redcliffe Tableland National Park, extending from the Bowen River in the north to Glenden in the south. This extends to the eastern edge of the Plan area, covering substantial parts of the Eungella Hinterlands. Some individual representative protection areas in this cluster are very large.
- A cluster resulting in high overall coverage between Eaglefield and Burton.
- A large cluster from Bundoora State Forest to Tieri in the south.
- A moderately sized cluster south of Rangemore.
- Scattered clusters occur from around Bowen to south of the Eungella Hinterlands.

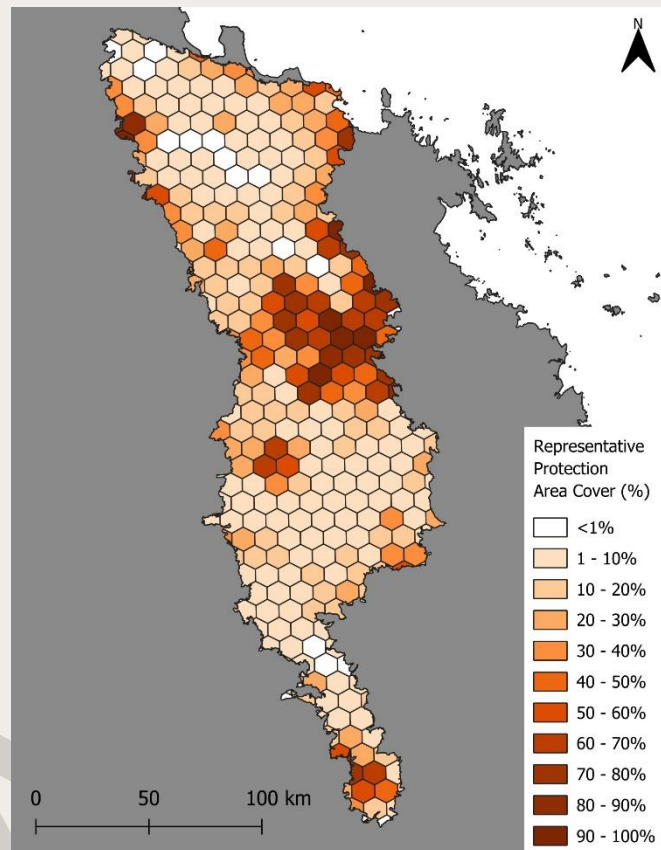


Figure 8 - Indicative summary of representative protection areas. It shows the percentage coverage of representative protection areas summarised in 10-kilometre-wide hexagonal grids. Totals are calculated based on hex area within the Plan area.

Areas important for multiple objectives

Areas that are identified as important for multiple objectives are likely to be especially important for conservation because they are significant in several different ways. Most notably, an overlap between important conservation areas and areas important for representative protection indicates both the presence of features that are irreplaceable, and a convergence of protected matters, making these areas critical for conservation.

There are many locations where representative protection areas and high restoration potential areas overlap in the landscape, though representative protection areas are more scattered by nature. There are also substantial overlaps between representative protection areas and ICAs. Some notable areas include:

- In a large area extending from the Eungella Hinterland in the east to Eaglefield and Burton in the west, there are many large overlaps between clusters of ICAs and representative protection areas. There are also scattered spots where all three objectives (ICAs, representative protection areas and high restoration potential areas) overlap in these areas.

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- There is moderate overlap between large clusters of representative protection areas and smaller areas of high restoration potential areas around Bundoora State Forest. This also includes some smaller overlaps of all three objectives.
- There are isolated locations extending from Bowen in the east to Rangemore in the west where ICAs and representative protection areas overlap. These clusters are associated with montane areas, such as Mount Roundback, Mount Pring and Mount Abbot. There are also scattered, smaller areas where all three objectives overlap.

Areas with fewer landscape-scale conservation values

Consideration of all three objectives indicates there are areas with fewer landscape-scale conservation values located:

- Around Kemmis, excluding riparian areas.
- Around Dysart, excluding riparian areas. Outside of riparian areas, the areas associated with objectives are sparse and small.
- North of Mount Abbot and east of Mount Leslie.



5. Cumulative impact assessment

This section is a summary of the Cumulative Impact Assessment. It describes pressures and impacts on protected matters, and evaluates the effectiveness of mitigation measures. This section informs the advice in Section 6 (Advice) and should be considered alongside Section 4 (MNES). Users should access the [Interactive Tool](#) for more detailed information.

Sources

Cumulative pressures on MNES in the Plan area arise from both wind farm developments and other regional pressures, such as other forms of development, invasive species and climate-driven effects. While the Plan focuses on impacts from wind farm developments, considering all pressures acting more broadly is essential to ensure project-level impacts do not compound or undermine best practice mitigation. Addressing cumulative impacts also presents opportunities for co-ordinated, landscape-scale actions or actions in the Plan area to be undertaken by proponents and other parties.

Figure 9 provides an overview of the key sources considered and their overall risk rating. These risk ratings consider each pressure holistically – for example, reflecting the cumulative risk from all anticipated wind farm developments in the Plan area, rather than the risk from each individual development. Further information about the risk rating for each pressure is outlined below.

Snapshot

The CIA is based on *the source-impact pathway-receptor* method and details:

- Sources of cumulative pressures on MNES
 - The contribution of wind farm developments and other regional pressures
 - Risk from the each of the pressures
- Impact pathways
 - Comparison of different stages of wind farm developments
 - The overall ability to mitigate each impact pathway
- Receptors likely to be affected
 - Overview of the most relevant protected matters
 - Impact thresholds for protected matters
- Mitigation
 - How effectively mitigation measures can avoid and reduce impacts on MNES
- Social, cultural and economic values
 - Overview of values
 - Effects of mitigation measures

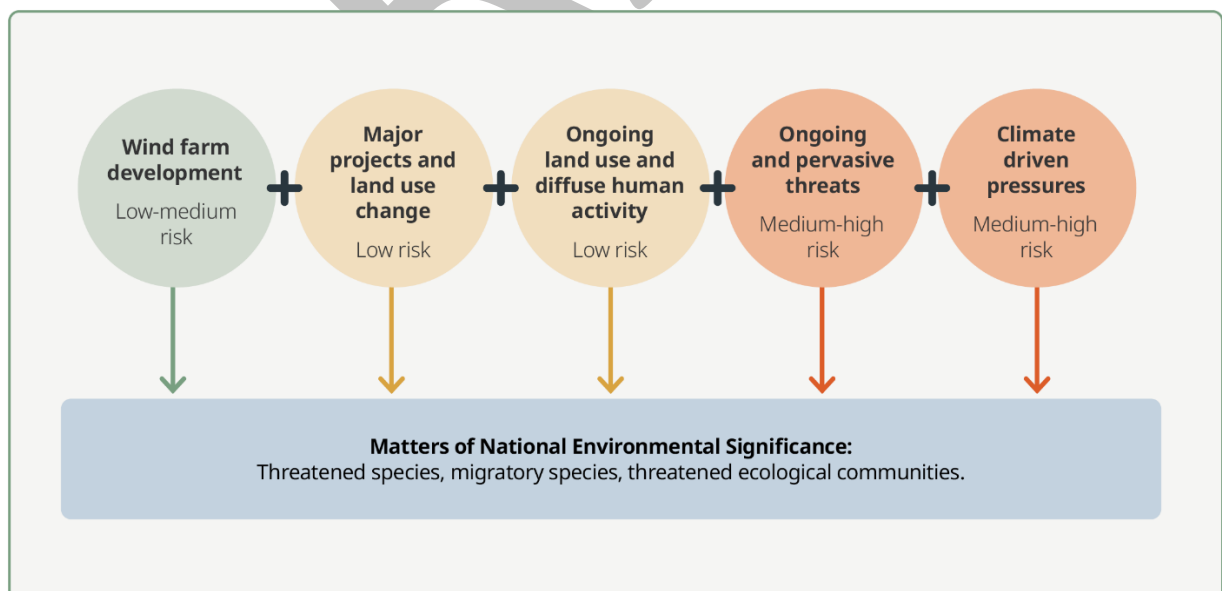


Figure 9 - Overview of sources

Other regional pressures across the Plan area

In addition to wind farm developments, MNES are impacted by a range of other regional pressures across the Plan area. These have been grouped into four categories: major projects and land use change, ongoing land use and diffuse human activities, ongoing and pervasive threats, and climate driven pressures.

Compared to the potential expansion of wind farm developments, other pressures are predicted to dominate the cumulative impact load on MNES. Key sources include resource extraction, grazing, weeds, pest animals and altered fire regimes. These pressures act continuously and compound over time.

Major projects and land use change

The overall risk rating for major projects and land use change, excluding wind farm developments, is low to high. This reflects the range of intensities from activities within this group:

- Resource extraction – high intensity,
- Energy and industrial development – medium intensity,
- Infrastructure – medium intensity,
- Urban and commercial development – low intensity.

Overall, the intensity of resource extraction is high, particularly in the lowland areas of the Northern Bowen Basin, with new mines and coal seam gas expected (Figure 5 Inset B). Cumulatively this industry dominates land use where there are mining resources, due to their intensity and area requirements. This results in an overall loss of vegetation in the Plan area at higher rates compared to other sectors, including grazing.⁵⁹ Although long-term mine rehabilitation is a key focus of the Queensland Government, this requires consideration of final landforms, post mining land use and water management and will not see benefit to protected matters over a reasonable timeframe.⁶⁰ Downstream impacts during flood events have been recorded. Within the Bogie River Hills, some isolated mineral mining interests are present (Figure 5 Inset B).

Energy and industrial development area expected to have a medium intensity, which is primarily related to energy infrastructure such as solar farm developments and pumped hydropower. This is particularly given there is good access to existing energy transmission infrastructure.

Roads, rail, water, and power infrastructure are expected to expand as needed to support industry and domestic use, leading to an intensity rating of medium. Dam expansion for water security, has been proposed, however its future trajectory is unclear.⁶¹

⁵⁹ *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1.

⁶⁰ The State of Queensland, 2025, 'Native ecosystem rehabilitation in Queensland: Implications for leading practice', <https://www.qmrc.qld.gov.au/data/assets/pdf_file/0015/323052/implications-leading-practice-native-ecosystem-rehabilitation-in-qld.pdf> accessed March 2026.

⁶¹ Bowen River Utilities, 2023, 'Urannah water scheme', <https://bowenriverutilities.com/urannah-water-scheme/>, accessed February 2026; Capricornia Pumped Hydro, n.d., 'Capricornia pumped hydro', <https://www.capricorniapumpedhydro.com.au/>, accessed February 2026; *Electricity generation map*, Database, The State of Queensland, Last Updated 2026.

Details of existing power infrastructure is sourced from Queensland Treasury energy mapping accessed on 2 March 2026.

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Urban and commercial development is a low overall intensity and is centred mainly around Bowen, with limited expansion in the foreseeable future (Figure 5 Inset A).

Ongoing land use and diffuse human activity

The overall risk rating for ongoing land use and diffuse human activity is low to high. This reflects the range of intensities from activities within this group:

- Grazing – high intensity,
- Cropping – medium intensity,
- Forestry – medium intensity, and
- Recreation and tourism – low intensity.

These are activities, including development, that do not necessitate land use change, however they can be considered more dispersed across the landscape.

Grazing is a dominant industry and is widespread and intensive across the Plan area. Outcomes for MNES are heavily dependent on the stewardship of landholders aligning with natural resource management priorities including stocking patterns and behaviour. Woody vegetation clearing has a variable impact depending on the habitat value of the vegetation. Land degradation and impacts on riparian areas can have high impacts due to diffuse sedimentation and nutrient losses that impact water quality. Grazing may also cause interaction with wildlife, and the introduction of cattle fodder species which have spread such as Buffel grass and Indian Cooch.²⁹ Grazing is a major pressure across the Plan area that requires active management to ensure future sustainability and productivity of the sector.⁶² The intensity of this pressure is not uniform across the Plan area due to advances in effective stewardship and land management practices aligned with natural resource management principles. Net gain outcomes for MNES across the Plan area will be highly reliant on restoration on grazing lands to counterbalance the expansion of other development types.

Cropping is primarily located in the Bowen area, and has led to historic contraction of coastal ecosystems.⁶³ There has been some expansion based on recent evidence, however compared to other sectors this expansion has been minor.²⁹ Further inland, cropping is expanding in already cleared landscapes for the most part; however, expansion is likely constrained by mining interests (Figure 5 Insets B and C). The ongoing pressure from this activity is considered medium overall as an ongoing activity into the future.

Forestry interests include scattered State Forests and Forestry consent areas, with other State forestry interests across lands lease tenure (Figure 5 Inset D). The available evidence from this region suggests this is an ongoing economic activity, with sawmills adjacent to the plan area⁶⁴. Some

⁶² Fitzroy Basin Association, 2021, 'Central Queensland sustainability strategy 2030', <<https://cqss2030.com.au/wp-content/uploads/2021/12/CQSS2030-OurPlan.pdf>> accessed March 2026; NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource management plan 2016-2026', <<https://www.nrmr.org.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf>> accessed March 2026.

⁶³ *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1.. Regional Ecosystem Description Database 13.1 identifies loss of regional ecosystem cover to cropping in its condition attribute particularly on the alluvium and other fertile areas.

⁶⁴ Commonwealth of Australia, 2018, 'Australia's state of the forests report 2018', <https://www.agriculture.gov.au/sites/default/files/abares/forestsaustralia/documents/sofr_2018/web%20accessible%20pdfs/SOFR_2018_web.pdf> accessed March 2026; NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource

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ecosystems have experienced reduced number of larger trees, including those that are important habitat⁶⁵. Future timeframes and priority for harvesting are unclear. Based on the evidence this pressure is considered widespread with a medium future intensity.

Localised fishing, camping, and pig hunting are noted as the dominant recreational activities inland. Along the coast, recreation is focused on the interaction with Great Barrier Reef, and coastal recreation. Recreational access along watercourses and in and adjacent to reserves can spread rubbish, and weeds and contributes to land and riparian degradation⁶⁶. Overall, the intensity of this pressure is considered localised and of low pressure overall compared to other diffuse activities.

Ongoing and pervasive threats

The overall risk rating for ongoing and pervasive threats is medium to high. This reflects the range of intensities from threats within this group:

- Weeds and pests – high intensity,
- Flooding – medium intensity, and
- Inappropriate fire regimes – medium intensity.

Weeds and pest species are a major threatening process in the Plan area. These require management to ensure outcomes for MNES, potentially requiring significant investment and resources. Many pest and weed species are identified as key threats to MNES.⁶⁷ Some notable pests and weeds include cats, pigs, cane toad, fox, deer, yellow crazy ant, Buffel grass, Indian cooch, Parthenium, rubber vine, Chinese apple, prickly acacia, Parkinsonia, and lantana. The pressure from weeds and pests is likely to be exacerbated by climate change.⁶⁸

management plan 2016-2026', <<https://www.nrmq.org.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf>> accessed March 2026; The State of Queensland, 2012, 'Mackay, Isaac and Whitsunday regional plan', <https://www.mackay.qld.gov.au/_data/assets/pdf_file/0017/240416/14_Mackay_Isaac_Whitsunday_Regional_Plan_2012.pdf> accessed March 2026.

⁶⁵ NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource management plan 2016-2026', <<https://www.nrmq.org.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf>> accessed March 2026; *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1.

⁶⁶ NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource management plan 2016-2026', <<https://www.nrmq.org.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf>> accessed March 2026.

⁶⁷ Commonwealth of Australia, 2015, 'Conservation management zones of Australia: Brigalow Woodlands', <<https://www.dcceew.gov.au/sites/default/files/env/resources/db417e06-eace-443f-b484-2726a7d567fb/files/cmz-brigalow-woodlands.pdf>> accessed February 2026; *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1; *Queensland pest distribution surveys*, Database, The State of Queensland, Last updated 2024, Version 1.0; The State of Queensland, 2009, 'Aquatic conservation assessments (ACA) using AquaBAMM: for the riverine wetlands of the Great Barrier Reef catchment', <<https://wetlandinfo.detsi.qld.gov.au/resources/static/pdf/assessment-monitoring/aquabamm/riverine-v1-1/gbr-aca-full-report-v1-1-final-for-web.pdf>> accessed February 2026; The State of Queensland, 2012, 'Aquatic conservation assessments (ACA) using AquaBAMM: for the non-riverine wetlands of the Great Barrier Reef catchment', <<https://wetlandinfo.detsi.qld.gov.au/resources/static/pdf/assessment-monitoring/aquabamm/non-riverine-11-07-13/aca-gbr-non-riverine-v1-3.pdf>> accessed February 2026.

⁶⁸ The State of Queensland, 2019, 'Climate change in the Whitsunday, Hinterland and Mackay region: Version 1', <https://www.qld.gov.au/_data/assets/pdf_file/0026/68561/mackay-whitsunday-climate-change-impact-summary.pdf> accessed March 2026; The State of Queensland, 2024, 'Climate change in the Whitsunday, Hinterland and Mackay region: Version 2',

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Bushfire risk is pronounced in the Plan area. Increased persistent extremes in wet and dry seasons, increase difficulty to plan and conduct strategic fire management actions.⁶⁹ Widespread fires are present during peak bush fire risk periods such as notable drought years, particularly in during spring months.⁷⁰ Change to fire frequency depends on the variability of future rainfall, temperatures, humidity, evaporation and wind. Fire risk is predicted to become more extreme.⁷¹ Exotic weed species also provide increased fuel loads, which leads to increased wildfire and associated damage to ecosystems.

Extended drought periods have also resulted in some observed tree canopy dieback, degraded ground cover, and decrease water availability for wildlife.⁷²

Flooding events are a feature of the Burdekin and Fitzroy Basins, with riverine creek flooding and cyclones mainly along the coast⁷³. Historic land use change and altered hydrology have long term implications for the resilience of ecosystems and erosion, and lead to increased sediment loads downstream, and degradation of riverine systems. Flooding can provide competitive advantage for weeds and pests and expand infestation.

Climate driven pressures

The overall risk rating for climate driven pressures is medium to high. This reflects the range of intensities from pressures within this group:

- Increased temperatures – high intensity,
- Rainfall variability – high intensity, and
- Sea level rise – medium intensity.

Climate driven pressures result in large-scale environmental shifts which influence ecosystem condition and species persistence. Temperatures are likely to increase, with increased prevalence of heatwaves and evapotranspiration.⁷⁴ There is projected to be major declines in precipitation along the Great Dividing Range, with some minor increases along the coast and further inland (Figure 5 Inset L). The intensity of rainfall events such as cyclones is likely to increase.⁷⁵

https://data.longpaddock.qld.gov.au/static/Regional%20Impact%20Summaries/Qld%20Climate%20Change%20Impact%20Summary_Mackay%20Whitsunday.pdf accessed March 2026.

⁶⁹ NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource management plan 2016-2026',

<https://www.nrmr.qld.gov.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf> accessed March 2026.

⁷⁰ *Landsat fire scars Queensland series*, Database, The State of Queensland, Last updated 2025, Version 1.0; *Sentinel-2 Queensland Fire Scars Series*, Database, The State of Queensland, Last updated 2026, Version 1.0; *Queensland Future Climate Dashboard*, Database, The State of Queensland, Last updated 2025.

⁷¹ The State of Queensland, 2024, 'Climate change in the Whitsunday, Hinterland and Mackay region: Version 2', https://data.longpaddock.qld.gov.au/static/Regional%20Impact%20Summaries/Qld%20Climate%20Change%20Impact%20Summary_Mackay%20Whitsunday.pdf accessed March 2026

⁷² *Regional Ecosystem Description Database*, Database, The State of Queensland, Last updated 2024, Version 13.1.

⁷³ The State of Queensland, 2022, 'Greater Whitsundays regional resilience strategy', https://www.qra.qld.gov.au/sites/default/files/2022-09/greater_whitsundays_regional_resilience_strategy_high_res.pdf, accessed March 2026.

⁷⁴ *Queensland Future Climate Dashboard*, Database, The State of Queensland, Last updated 2025.

⁷⁵ The State of Queensland, 2019, 'Climate change in the Whitsunday, Hinterland and Mackay region: Version 1', https://www.qld.gov.au/data/assets/pdf_file/0026/68561/mackay-whitsunday-climate-change-impact-summary.pdf, accessed March 2026; The State of Queensland, 2024, 'Climate change in the Whitsunday, Hinterland and Mackay region:

Sea level rise is expected to have impacts along the coast around Bowen. This will put pressure on coastal sea grass, and mangrove communities, wader and turtle sites, and the Great Barrier Reef.⁷⁶ Coastal land transitions predominantly into agriculture and urban areas which may inhibit marine ecosystem transition, and impact coastal freshwater wetlands.

Wind farm developments

Definition of wind farm developments

In the Plan, wind farm developments include activities and components associated with construction, operation, and decommissioning phases, as well as supporting and enabling infrastructure and ongoing maintenance.

Such activities include but are not limited to construction, installation and/or updates to turbines and meteorological masts, substations, transmission lines, and all other related activities for renewable energy generation.

Each activity (or component) can act as a potential source of impact to protected matters through a variety of impact pathways. For example, establishment of a concrete batching plant (if required), transportation of materials to and from the project site, and construction of access tracks and site facilities, laydown and stockpile areas. A full list of sources is in Table 4.

In defining the project site of a wind farm development, all components of the action should be considered, including those that are temporary.

Technical considerations to guide the design of wind turbine generators can include definition of:

- Total height
- Minimum and maximum height above ground of blades
- Rotor swept area including maximum and minimum height above ground
- Blade length and technology (e.g. include whether noise/ visibility mitigation is incorporated in technology)
- Footprint of turbine hardstand areas
- Footprint of lay down areas
- Average wind speed including seasonal and temporal variation at each proposed wind turbine location and across the entirety of the site.

Information on current developments is available from:

- the [EPBC Act Public Portal](#)⁷⁷ for projects that may have a significant impact on MNES

Version 2',

<https://data.longpaddock.qld.gov.au/static/Regional%20Impact%20Summaries/Qld%20Climate%20Change%20Impact%20Summary_Mackay%20Whitsunday.pdf> accessed March 2026; NQ Dry Tropics Ltd, 2016, 'Burdekin dry tropics natural resource management plan 2016-2026', <<https://www.nrmr.org.au/wp-content/uploads/2022/10/NQ-Dry-Tropics-RNP13-REPORT-Burdekin-Dry-Tropics-NRM-Plan-July-2016.pdf>> accessed March 2026.

⁷⁶ Commonwealth of Australia, 2024, 'Great Barrier Reef: Outlook report 2024', accessed March 2026; The State of Queensland, 2018, 'Sea level rise projection', <<https://www.qld.gov.au/environment/coasts-waterways/plans/hazards/sea-level-mapping>> accessed March 2026.

⁷⁷ <https://epbcpublicportal.environment.gov.au/all-referrals/>

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- the [Office of the Coordinator General](#)⁷⁸ for Coordinated Projects
- the [State Assessment and Referral Agency](#)⁷⁹ when the development could impact on matters of interest to Queensland against the State Development Assessment Provisions.

Overall risk rating

An overall risk rating of low to medium for wind farm developments reflects a cumulative risk from all wind farm developments across the Plan area, assuming well-managed mitigation of impacts. The risk will depend on the scale of wind farm development, and the location, design and impacts arising from individual developments.

Specific scenarios for the number or location of wind farm developments were not produced for this CIA. The risk rating takes into account that there are no wind farm developments approved in the Plan area, but several are in planning stage.

The overall risk rating also takes into account the residual risk assessment outlined below.

Sources of wind farm development pressures and their intensity

Each potential source of pressure from wind farm development activities is rated according to their intensity in Table 4. The majority of activities are identified as of tertiary or secondary, reflecting the constrained and discrete footprint of wind farm developments.

Seven sources associated with wind farm developments are classified as of key or major intensity, and are generally the more intensive construction or development activities. Although localised, impacts associated with these activities can be substantial.

Most (11) sources are classified as secondary or moderate, and can activate a broad range of impact pathways, including erosion, air emissions, dust, water extraction, pollution and habitat fragmentation.

10 sources are classified as rare or minor sources, such as the use of chemicals, site offices or amenity facilities. They contribute minimally to intensity of pressures.

⁷⁸ <https://www.coordinatorgeneral.qld.gov.au/projects/find-a-project>

⁷⁹ <https://www.planning.qld.gov.au/planning-framework/state-assessment-and-referral-agency/sara-application-material>

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Table 4 - Sources and intensity for wind farm development

Sources	Intensity ⁸⁰
Activities: primarily construction related	
Blasting & vibration (quarrying, tunnelling, major civil works)	Tertiary
Construction-related transport & traffic (haulage, workforce transport, delivery of materials)	Primary
Earthworks (excavation, cut-and-fill, foundations, road construction)	Secondary
Establishment & use of temporary/supporting infrastructure (camps, laydown yards, borrow pits, spoil areas, access tracks, site compounds, fencing, exploration works)	Secondary
General construction activities (machinery use, noise/light, site disturbance not otherwise specified)	Secondary
Land clearing	Primary
Soil, overburden & material handling (stockpiles, quarries, trenching)	Secondary
Water extraction & diversions (surface water diversions, channel modifications, bunding, groundwater pumping, bore fields, bulk supply pipelines)	Secondary
Activities: primarily operations and maintenance related	
Chemical use & application (herbicides, dust suppressants, fertilisers, water treatment chemicals)	Tertiary
Emissions generation (noise, light, vibration, processing, 24-hour operations)	Secondary
Energy/water resource use (power demand, pumping, irrigation, cooling)	Tertiary
Operational transport & traffic (workforce commuting, public traffic, maintenance fleets)	Tertiary
Operational use & maintenance activities (routine operations, servicing, inspections)	Primary
Wastewater & effluent generation (sewage, stormwater discharge)	Tertiary
Activities: primarily rehabilitation and decommissioning related	
Backfilling & recontouring (reshaping landforms)	Tertiary
Demolition & site clearance (removal of plant, equipment, structures)	Secondary
Removal of temporary/supporting infrastructure (camps, laydown yards, access tracks, borrow pits, spoil areas)	Secondary
Revegetation & habitat reinstatement (seeding, planting, wetland re-establishment, soil ripping, species mix)	Secondary
Soil replacement & stabilisation (topsoil spreading, erosion control)	Secondary
Components of an action	
Energy generation infrastructure (substations, transformers, battery storage)	Primary
Hazardous materials & waste storage (incl. tailings dams, waste rock dumps, waste facilities, landfills, fuel depots, chemical storage)	Tertiary
Processing & industrial facilities (processing plants, batching plants, workshops, labs, storage facilities)	Tertiary
Residential, commercial & open space areas (housing, recreation areas, landscaping/amenities)	Tertiary
Roads & transport infrastructure (roads, tunnels, haul roads, rail, ports, terminals, airports)	Secondary
Temporary & supporting infrastructure (construction camps, laydown areas, borrow pits, spoil areas, access tracks, fences, quarries)	Secondary
Transmission infrastructure (overhead/underground lines, poles)	Primary
Utilities & service infrastructure (pipelines, cables, comms, sewer, stormwater, fuel storage/distribution)	Primary
Water storage & treatment infrastructure (incl. WSUD/green stormwater systems) (dams, evaporation ponds, wetlands, swales, sewage treatment, irrigation areas)	Tertiary

Impact pathways

Residual risk assessment

The CIA rated the risk of impacts to protected matters from each impact pathway, considering the effectiveness of mitigation measures, to determine the 'residual risk'. Residual risk ratings of low⁸¹, medium⁸² and high⁸³ were applied to each impact pathway for each MNES group, assuming mitigation measures for wind farm developments have been effectively applied.

Risk ratings may not align directly with threats identified in conservation advices. This reflects the incorporation of additional Plan area- and wind farm development-specific expert information, the consideration of some emerging industries that may not be recognised in conservation advices, and the use of group-level risk descriptions, which may introduce additional threat considerations for protected matters.

The [Interactive Tool](#) provides a residual risk rating for each of the impact pathways for each MNES group. An example of the residual risk results for selected protected matters that frequently trigger EPBC Act referrals is shown in Table 5. It includes the group and corresponding protected matters:

- Gliders: Greater glider, Yellow-bellied glider (south-eastern)
- Non-volant (non-flying) mammals: Northern quoll
- Non-hollow roosting bats: *Pteropus poliocephalus* (Grey-headed flying fox)
- Canopy and aerial foraging birds, including long range migrants: *Hirundapus caudacutus* (White-throated needletail), *Apus pacificus* (Fork-tailed swift)
- Woody flora: *Eucalyptus raveretiana* (Black ironbox).

⁸⁰ **Primary:** Activities or components that are central to how wind farm developments interact with the environment and typically trigger multiple impact pathways with potential for moderate to high environmental impact. Impacts are often long-term or continuous and may extend across or beyond site boundaries in the plan area and can be difficult to reverse without strong mitigation. Layered mitigation measures and ongoing monitoring are generally required.

Secondary: Sources that are important but play a supporting or situational role within the industry, in practice often linked to transitional or cyclical phases (e.g. construction, periodic operations). These impacts generate some environmental impacts, but of lower intensity or spatial extent, and are typically manageable using standard best-practice mitigation measures.

Tertiary: Sources that are not applicable to the industry, or not major drivers of environmental impacts/pathways for the industry. Effects usually occur infrequently, as one-off or episodic events, and are localised, short-term, and readily reversible through routine procedures without intensive monitoring.

⁸¹ Impact pathways that can be avoided or reduced to support a net gain outcome for MNES; Impacts are unlikely to be significant at project or industry scale; Mitigation measures are expected to keep impacts low or not significant; Detailed site-specific studies are generally not required.

⁸² Impact pathways can be avoided or reduced but may require additional or compensatory mitigation measures to achieve net gain outcomes; Impacts may be significant for some projects or cumulatively across wind farm developments; Mitigation, along with compensation, or adaptive management, likely needed; Detailed site-specific studies may be required depending on MNES presence and project design.

⁸³ Impact pathways cannot be fully avoided or mitigated without additional or compensatory mitigation measures to achieve net gain outcomes; For some MNES, these pathways may need to be avoided entirely; Impacts are likely significant at both project and cumulative industry levels; Mitigation plus additional compensation, and/or adaptive management will be required; Detailed site-specific studies are likely needed to assess impact severity and mitigation/compensation options.

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Table 5 - Example impact pathway residual risk assessment for protected matters commonly triggered in wind farm developments

Impact pathway	Residual risk				
	Black ironbox	Greater- and Yellow-bellied glider	Northern Quoll	Grey-headed flying fox	White throated needletail, Fork-tailed swift
Accidental fire/ bushfire	Medium	Medium	Medium	Medium	Medium
Accidental introduction / release of hazardous pollutants	Low	Low	Low	Low	Low
Aerial collision / entanglement	No interaction	Low	Low	High	High
Vehicular & plant movements	Low	Low	Low	Low	Low
Barriers & interruptions to movement (from infrastructure)	No interaction	Medium	Medium	Low	Low
Habitat fragmentation	Medium	High	Medium	Medium	Medium
Subsidence & altered ground stability	Low	Low	Low	Low	Low
Air emissions (GHG, particulate, other)	Low	Low	Low	Low	Low
Dust generation & deposition	Low	Low	Low	Low	Low
Elevated noise, vibration, shadow flicker	No interaction	Medium	Medium	Medium	Medium
Artificial light spill	No interaction	Medium	Medium	Medium	Low
Thermal & microclimate alteration	Medium	Low	Low	Low	Low
Chronic pollution / contaminant release	Low	Low	Low	Low	Low
Disturbance of pre-existing contaminants	Low	Low	Low	Low	Low
Altered groundwater hydrology (levels/expression)	Medium	Low	Low	Low	Low
Altered surface water hydrology (incl. flooding)	Medium	Medium	Medium	Medium	Medium
Increased erosion & sedimentation	Low	Low	Low	Low	Low
Introduction / spread of weeds	Medium	Low	Medium	Low	Low
Introduction / spread of pest animals	Low	Low	Medium	Medium	Medium
Introduction / spread of disease	Low	Low	Low	Low	Low
Fauna entrapment	No interaction	Low	Low	Low	Low
Increased human presence & activity	Low	Low	Low	Low	Low
Land clearing (vegetation removal & ground disturbance)	High	High	High	High	High

An analysis of the spread of low, medium and high residual risks across all protected matters groups is also shown in Table 6.

Table 6 - Summary of residual risks from impact pathways across MNES groups associated with windfarm developments

Residual risk rating	Number (%)	Example impact pathways
Construction		
No interaction	38 (9%)	Aerial collision for estuarine or marine species
Low	269 (65%)	Introduction or spread of disease for gliders
Medium	93 (22%)	Altered surface water hydrology including flooding for shrub- and ground-foraging birds
High	14 (3%)	Land clearing for koalas

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Residual risk rating	Number (%)	Example impact pathways
Operation		
No interaction	38 (9%)	Fauna entrapment for marine turtles
Low	312 (75%)	Increased erosion and sedimentation for shorebirds
Medium	60 (15%)	Introduction or spread of pest animals for shrub- and ground-foraging birds
High	4 (1%)	Aerial collision or entanglement for non-hollow roosting bats

Key findings include:

- Residual risk in the Plan area from wind farm developments is driven more strongly by construction-related activities than operational activities.
- Overall, most impact pathways were low to medium risk to protected matters, assuming standard mitigation measures are effectively implemented. This reflects the constrained and discrete footprint of wind farms, as they result in localised, linear disturbance distributed across a broader project area.
- Construction-related land clearing and operational aerial collision / entanglement are the pathways that present the highest residual risks to protected matters across the Plan area.
 - Clearing can affect habitat features difficult to replace or restore, including mature vegetation, hollow-bearing trees, continuous canopy and intact understorey. This places most MNES including gliders, Koalas, woodland birds, non-volant mammals, reptiles, woody flora and forest-associated TECs at risk of significant impacts.
 - Flying fauna such as canopy-foraging birds, bats and migratory shorebirds also face collision exposure due to turbine height and placement within movement corridors, risks that remain difficult to fully mitigate even with standard mitigation measures. Improved early site selection, fine-scale habitat mapping and species-specific movement data would strengthen avoidance planning and reduce reliance on residual mitigation for these high-risk pathways.
- Impact pathways common to many MNES groups include land clearing and associated fragmentation, fire, vehicle and plant movement, pest introduction, and altered surface water hydrology including flooding. These are of varying severity, with most low or medium.
- The residual risk was broadly consistent across most MNES groups, however for a small number of species, specific higher-risk pathways were also identified. These include erosion/sediment runoff and hydrological alteration for freshwater aquatic species and frogs (notably under wet-season conditions), fragmentation and barrier effects for gliders (including linear infrastructure such as transmission lines), and weed spread affecting shrub- and ground-foraging birds.

Impact pathways relevant to the Great Barrier Reef Marine Park, World Heritage property and National Heritage place

While the Plan focuses on impacts on protected matters within the Plan area, wind farm development may also lead to indirect or downstream impacts. Of relevance to the Plan is the Great Barrier Reef Marine Park which is also a World Heritage property and National Heritage place. Indirect or downstream impacts to the Marine Park should be considered by proponents, in addition to any impacts on world and national heritage values.

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There are four main drivers of change in the Great Barrier Reef Marine Park – climate change, coastal development, land-based runoff and direct use.⁸⁴ Key impact pathways related to wind farm development include barriers and interruptions to movement and pathways related to land-based run-off. Other indirect impacts, such as artificial light, will be particularly relevant where projects are adjacent to the Marine Park.

Table 7 outlines impact pathways for wind farm developments within the Plan area that have the potential to result in impacts to the Great Barrier Reef Marine Park.

Table 7 - Impact pathways relevant for each driver of change for the Great Barrier Reef Marine Park.

Driver	Relevant pathways
Climate change	Air emissions (GHG, particulate, other)
Coastal development in the catchment (including windfarms)	Artificial light spill (where within range of the GBR), barriers and interruptions to movement (from infrastructure) / habitat fragmentation (particularly relevant for aquatic species), hydrological changes (altered groundwater hydrology (levels/expression) / altered surface water hydrology (incl. flooding), increased human presence and activity, introduction or spread of weeds / pest animals / disease, land clearing (vegetation removal and ground disturbance), accidental fire / bushfire (in so far as it interacts with wet weather events, or salt marsh communities in particular)
Land-based runoff	Accidental introduction or release of hazardous pollutants / chronic pollution or contaminant release, disturbance of pre-existing contaminants, increased erosion and sedimentation, subsidence and altered ground stability
Direct use ⁸⁵	Nil

Receptors

Most relevant protected matters

The CIA identified 92 protected matters as most likely to be affected by wind farm developments (Table 9), including:

- Seven TECs
- 47 listed threatened species
- 19 listed migratory species
- 19 species listed as both migratory and threatened species.

A smaller subset of protected matters would likely be relevant to specific projects.

Protected matters most commonly triggered during EPBC Act assessments from wind farm developments include the Greater glider (all subspecies), Yellow-bellied glider, Northern quoll, White-throated needletail, Grey headed flying fox, Fork-tailed swift, Ornamental snake (*Denisonia maculata*), Koala, and Black Ironbox (*Eucalyptus raveretiana*).

While the Plan focuses on protected matters within the Plan area, wind farm developments may lead to indirect or downstream impacts on other protected matters. Proponents will also need to consider

⁸⁴ Commonwealth of Australia, 2024, 'Great Barrier Reef: Outlook report 2024', accessed March 2026.

⁸⁵ Commonwealth of Australia, 2024, 'Great Barrier Reef: Outlook report 2024', accessed March 2026.

Direct uses includes commercial marine tourism, defence activities, fishing, recreation, research and educational activities, ports, shipping and the traditional use of marine resources.

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impacts on protected matters outside the Plan area, particularly the Great Barrier Reef Marine Park and World Heritage listed property.

Most protected matters (73) known or likely to occur within the Plan area are broadly distributed and have a limited proportion of their overall distribution located within the plan area.⁸⁶ However, a significant number (15) have a moderate⁸⁷ reliance on the Plan area, reflecting localised ecological importance for habitat maintenance, hydrological connectivity, or population viability.

Two protected matters (the Granite nightshade and *P. uncinellus*) are highly reliant⁸⁸ and an additional two are extremely reliant⁸⁹ on the Plan area (*A. granitica* and the Blackwall Range kurrajong). These two occur almost entirely within the pilot Plan area, with verified populations restricted to a handful of remnant patches, meaning their long-term viability depends directly on the Plan area.⁹⁰

The conservation status of all protected matters considered by the CIA is shown in Table 8 below. Only the *Crocodylus porosus* (Saltwater crocodile) is increasing, while most protected matters (78) are experiencing, or assumed to be experiencing, a decline.

Table 8 - MNES status

MNES status	Number	Example
Increasing	1	Saltwater crocodile
Stable	9	<i>Geophaps scripta scripta</i> (Squatter pigeon (southern)), <i>Natator depressus</i> (Flatback turtle), Grey falcon
Declining	55	Brigalow TEC, Northern quoll, <i>Erythroriorchis radiatus</i> (Red goshawk), Granite nightshade, <i>Saccolaimus saccolaimus nudiclunius</i> (Bare-rumped sheath-tail bat)
Unknown (assumed stable)	4	<i>Tringa incana</i> (Wandering tattler), <i>Gallinago stenura</i> (Pin-tailed snipe), <i>Gallinago megala</i> (Swinhoe's snipe), <i>Calidris melanotos</i> (Pectoral Sandpiper)
Unknown (assumed declining)	23	Blackwall Range kurrajong, <i>Egernia rugosa</i> (Yakka skink), <i>Eungella spiny</i> crayfish
TOTAL	92	

For ease of analysis, individual protected matters with shared characteristics about ecological function, habitat needs and responses to environmental change were grouped together in the CIA (Table 9). These groups help understand which protected matters face similar pressures and how to best protect them. Project-level assessments should still address each protected matter individually.

⁸⁶ *Australia - Species of National Environmental Significance*, Database, Commonwealth of Australia, Last updated 2023, Reference period 3 September 2018.

⁸⁷ 10-50% of their range within the Plan area.

⁸⁸ 90% of their known range

⁸⁹ Over 90% of their known range

⁹⁰ *Flora and Fauna threatened and near threatened species records*, Internal Database, The State of Queensland, Last updated 2025, The State of Queensland (The Department of the Environment, Tourism, Science and Innovation); Commonwealth of Australia, 2023 *Australia - Species of National Environmental Significance*, Database, Commonwealth of Australia, Last updated 2023, Reference period 3 September 2018.

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Table 9 - MNES groups

MNES group	Protected matters
Canopy- & aerial-foraging birds, incl. long-range migrants (8)	Fork-tailed swift, oriental cuckoo, red goshawk, grey falcon, <i>Grantiella picta</i> (painted honeyeater), white-throated needletail, yellow wagtail, <i>Pandion haliaetus</i> (osprey)
Freshwater aquatic species (3)	<i>Eseya irwini</i> (Irwin's turtle), Eungella spiny crayfish, <i>Rheodytes leukops</i> (Fitzroy river turtle)
Frogs (1)	Eungella day frog
Gliders (3)	Greater glider (northern), Greater glider (southern and central), Yellow-bellied glider (south-eastern)
Hollow bearing tree-dependent birds and bats (2)	Bare-rumped sheath-tail bat, <i>Tyto novaehollandiae kimberli</i> (Masked owl (northern))
Koala (1)	Koala
Marine turtles (6)	<i>Caretta caretta</i> (Loggerhead turtle), <i>Chelonia mydas</i> (Green turtle), <i>Dermochelys coriacea</i> (Leatherback turtle), <i>Eretmochelys imbricata</i> (Hawksbill turtle), <i>Lepidochelys olivacea</i> (Olive Ridley turtle), Flatback turtle
Non-hollow roosting bats (3)	Ghost bat, <i>Pteropus conspicillatus</i> (Spectacled flying-fox), Grey-headed flying-fox
Non-volant mammals (1)	Northern quoll
Other wetland / estuarine species (1)	Saltwater crocodile
Reptiles (5)	Ornamental snake, Yakka skink, <i>Furina dunmalli</i> (Dunmall's snake), Allan's Ierista, Mount Cooper striped skink
Shorebirds (waders) (29)	<i>Actitis hypoleucos</i> (Common sandpiper), <i>Arenaria interpres</i> (Ruddy turnstone), <i>Calidris acuminata</i> (Sharp-tailed sandpiper), <i>Calidris alba</i> (Sanderling), <i>Calidris canutus</i> (Red knot), <i>Calidris ferruginea</i> (Curlew sandpiper), Pectoral Sandpiper, <i>Calidris ruficollis</i> (Red-necked stint), Great knot, <i>Charadrius leschenaultii</i> (Greater sand plover), large sand plover, <i>Charadrius mongolus</i> (Lesser sand plover), <i>Gallinago hardwickii</i> (Latham's snipe), Swinhoe's snipe, Pin-tailed snipe, <i>Limosa lapponica</i> (Bar-tailed godwit), <i>Limosa lapponica baueri</i> (Nunivak bar-tailed godwit), <i>Limosa limosa</i> (Black-tailed godwit), Eastern curlew, <i>Numenius minutus</i> (Little curlew), <i>Numenius phaeopus</i> (Whimbrel), <i>Pluvialis fulva</i> (Pacific golden plover), Grey plover, Australian painted snipe, <i>Tringa brevipes</i> (Grey-tailed tattler), Wandering tattler, Common greenshank, <i>Tringa stagnatilis</i> (Marsh sandpiper), <i>Xenus cinereus</i> (Terek sandpiper)
Shrub- & ground-foraging birds (3)	Squatter pigeon (southern), Star finch, <i>Poephila cincta cincta</i> (Southern black-throated finch)
Non-woody flora (9)	<i>Aristida annua</i> , <i>A. granitica</i> , <i>Arthraxon hispidus</i> (Hairy-joint grass), <i>Bulbophyllum globuliforme</i> (Miniature moss-orchid), <i>Dichanthium queenslandicum</i> (King bluegrass), <i>Dichanthium setosum</i> (Bluegrass), <i>Phlegmariurus tetrastichoides</i> (Square tassel fern), <i>P. uncinellus</i> , Granite nightshade
Woody flora (10)	<i>Bertya opposens</i> , Blackwall Range kurrajong, <i>Cadellia pentastylis</i> (Ooline), <i>Daviesia discolor</i> , <i>Denhamia megacarpa</i> (Large-fruited denhamia), Black ironbox, <i>Omphalea celata</i> , <i>Ozothamnus eriocephalus</i> , <i>Polianthion minutiflorum</i> , <i>Samadera bidwillii</i> (Quassia)
Threatened Ecological Communities (TECs) – coastal wetlands, swamps & rainforest (1)	Littoral Rainforest and Coastal Vine Thickets TEC
Threatened Ecological Communities (TECs) – forest, woodlands & grasslands (6)	Brigalow TEC, Broad Leaf Tea-tree TEC, Natural Grasslands TEC, Poplar Box Grassy Woodland TEC, Semi-evergreen vine thickets TEC, Weeping Myall Woodlands TEC

Impact thresholds

Impact thresholds describe how much additional impact each protected matter can tolerate, while still achieving a net gain outcome and avoiding impacts on irreplaceable features. The impact thresholds include a consideration of cumulative impacts and the effectiveness of mitigation measures. They can be used to inform where impacts are more appropriately avoided versus where they can likely be mitigated effectively or offset.

Protected matters were assigned impact threshold categories from E2 to E4+ (Table 10). Some protected matters were classified as having a combination of impact thresholds, reflecting they have varying ability to tolerate impacts for different characteristics. For example, the Curlew Sandpiper is classified as E2/E4 – the E2 component relates to impacts to its habitat, whereas the E4 component relates to impacts on the birds themselves, as they are imperilled, rapidly declining and small in number.

Table 10 - Impact thresholds for protected matters

Category and impact threshold	Measures to support achievement of net gain outcomes, in a way that avoids impacts on irreplaceable features*	Number of protected matters	Example protected matters
E4+: Near zero impacts. At additional risk from wind farm developments and other regional pressures.	Avoidance in all but exceptional circumstances, then strict mitigation. Offsets are unlikely to compensate for impacts, as values cannot be fully replaced or restored. Increased cumulative risk will make net gain outcomes difficult.	7	<i>A. granitica</i> , loggerhead turtle
E4: Near zero impacts.	Avoidance in all but exceptional circumstances, then stringent mitigation. Offsets are unlikely to compensate for impacts, as values cannot be fully replaced or restored.	12	Eungella day frog, Littoral Rainforest and Coastal Vine Thickets TEC
E4/E3; E4/E2: Habitat component dependent per above.	Per E4, E3 and E2, depending on habitat components.	9	Greater glider (northern), Australian painted snipe, Curlew sandpiper
E3: Impacts as low as possible.	Avoidance and strict mitigation. Offsets should be used only as a last resort and should be designed to account for low confidence of effective restoration/replacement of values.	43	Northern quoll, SEVT TEC, Granite nightshade
E2: Some impacts with appropriate compensation.	Avoidance and good practice mitigation. Offsets possible after all efforts at avoidance and mitigation have been implemented.	21	Water mouse, Black ironbox, Bluegrass
E1: Not appropriate for MNES.	N/A	0	N/A

* In accordance with the EPBC Act, the mitigation hierarchy must be applied for all E-categories. Measures for how to achieve net gain outcomes, in a way that avoids impacts on irreplaceable features, differ across E-categories as set out above.

Nineteen protected matters, such as the Eungella day frog, were assigned an E4 or E4+ category. This reflects that they have unique ecological needs, are unable to be restored, recreated or fully offset once impacted, and are sensitive to cumulative pressures from both wind farm developments and other Plan-wide pressures. Net gain outcomes that avoid impacts on irreplaceable features are likely to be most challenging to achieve for these protected matters.

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Both E4 and E4+ categories typically include those protected matters with high habitat specificity and/or hydrological dependence. They cannot absorb additional impacts, so impact avoidance is the most effective mitigation option to achieve net gain outcomes. Offsets for these protected matters are unlikely to compensate for impacts, as values cannot be fully replaced or restored once impacted. Additional targeted government and/or private investment in conservation and threat reduction for these MNES is likely to be needed in addition to near zero impact, if net gain is to be achieved.

Protected matters assigned impact thresholds of E2 and E3 are typically migratory species, wide-ranging birds, or fauna and flora with broader habitat tolerance. These protected matters can accommodate some impacts while still achieving net gain outcomes and avoiding impacts on irreplaceable features. This assumes that impacts are managed through strict adherence to the mitigation hierarchy, including effective offsets where required.

Susceptibility to windfarm development and other regional pressures

Across the Plan area, other regional pressures are generally the strongest influence on impact thresholds. Key findings in relation to regional pressures include:

- High risk regional pressures in the Plan area were pronounced. 72% of protected matters face pressure from major projects and land use change, 59% from ongoing and pervasive threats, 54% from climate-driven pressures, and 39% from ongoing land use and diffuse human activity. These pressures include resource extraction, infrastructure expansion, grazing, weeds, pests and climate variability, which are expected to intensify over time.
- Collectively, regional pressures acted together to compound cumulative risk for approximately half of all protected matters. This was pronounced for some species and, in some instances, accounted for all protected matters in particular groups including:
 - all gliders, the Koala, all woodland and grassland TECs, most shorebirds and most marine turtles.
 - three canopy/aerial foraging birds (Grey Falcon, Red Goshawk and Painted Honeyeater), two ground foraging birds (Squatter Pigeon (southern) and Southern black-throated finch), two reptiles (Ornamental snake and Dunmall's Snake) and two freshwater aquatic species (Irwin's turtle and Fitzroy River turtle), three species of non-woody flora (*A. granitica*, *Dichanthium queenslandicum* (King bluegrass), *P. uncinellus*) and one species of woody flora (*Cadellia pentastylis* (Ooline)).
- For shorebirds, the Koala, and TECs, cumulative habitat loss and disturbance pathways (often including land clearing) compound across the landscape.
- For those species where nesting/denning habitat is critical (such as Australian Painted Snipe, Red Goshawk and gliders), cumulative pressures heighten the risk that impacts would result in long term population consequences.
- Climate change impacts are likely underestimated because conservation documentation for many protected matters does not identify climate threats, creating an incomplete picture of long-term risk.

Windfarm development was high risk for one protected matter, the Eungella day frog. This species was considered particularly susceptible to altered surface water, vegetation clearing and erosion and sedimentation. Other regional pressures on this species include chytrid fungus, pests and weeds.

Mitigation

The [Interactive Tool](#) outlines a list of mitigation measures that could be used to reduce or eliminate impacts on protected matters, including an assessment of their effectiveness, ease of implementation, and the scale at which they are most effective.

This list is not intended to be used as a model for condition-setting in any proposed approval, or to indicate that all measures should be used for all projects. Together, the list of mitigation measures and their ratings provide a benchmark for prioritising where stronger mitigation measures, innovation, or policy attention may be required. They are intended to enable proponents and regulators to consider:

- where to focus their attention – i.e. on those where mitigation remains uncertain or constrained (partial or limited) and additional, more stringent and/or innovative options may be required, and
- other factors that influence their effectiveness, such as the scale at which the mitigation measure should be undertaken.

Overall ability to mitigate impact pathways

A catalogue of possible mitigation measures was developed, then each impact pathway was assessed for how well the relevant mitigation measures avoid or reduce impacts (see Table 11). A rating of sound⁹¹, partial⁹² or limited⁹³ was assigned to the overall ability to mitigate each impact pathway. This evaluation relates to impact pathways generated from wind farm developments and can be applied on and beyond the project site.

Several mitigation measures cross-cut numerous impact pathways, including alternative site selection, offsets, research, education, staff training and adaptive management.

Table 11 - Overall ability to mitigate impact pathways

Impact pathway	Summary of mitigation measures	Overall ability to mitigate
Accidental fire / bushfire	Good practice operational mitigation measures, coordinated fire management plans, site infrastructure/layout to minimise fire risk	Sound
Accidental introduction or release of hazardous pollutants / chronic pollution or contaminant release	Adopt zero-discharge design, Build and maintain containment and treatment systems, good practice operational mitigation measures.	Sound
Aerial collision / entanglement	Site and align aerial structures to avoid key habitats and flight paths, implement deterrent technologies, and design/retrofit modifications, undertake habitat and attractant management, relocate or decommission structures	Limited

⁹¹ The measure is proven and reliable and impacts to MNES are expected to be avoided or substantially reduced in most or all implementation settings.

⁹² The measure is dependent on good implementation and oversight. It may not fully avoid or reduce impacts in all settings or for all MNES, but can deliver moderate risk reduction when applied consistently.

⁹³ The measure is technically difficult, uncertain or not feasible under most conditions. It is unlikely to avoid impacts, and reductions achieved may be inconsistent or patchy across areas.

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Impact pathway	Summary of mitigation measures	Overall ability to mitigate
Air emissions (GHG, particulate, other)	Use or transition to low- or zero-emission equipment, site and design infrastructure away from sensitive habitats, good practice operational mitigation measures.	Sound
Artificial light spill	Avoid installing lighting near sensitive habitats wherever practicable, design lighting to minimise spill into sensitive areas, minimise lighting duration, apply best practice guidelines.	Sound
Barriers and interruptions to movement (from infrastructure) / habitat fragmentation	Progressive/staged clearing, design infrastructure layouts to enable safe fauna movement, fauna sensitive transport infrastructure delivery, enhance habitat and appropriate connectivity	Partial
Disturbance of pre-existing contaminants	Undertake site contamination assessments, implement remediation plans	Sound
Dust generation and deposition	Site and design infrastructure to avoid major dust-generating activities near sensitive receptors, good practice operational mitigation measures.	Sound
Elevated noise, vibration	Site infrastructure away from areas sensitive to noise/vibration, apply operational mitigation measures to minimise impacts,	Partial
Fauna entrapment	Avoid creating entrapment risks, Install and maintain fauna-friendly fencing, prevent fauna entrapment.	Sound
Hydrological changes (altered groundwater hydrology (levels/pressure) / Altered surface water hydrology (incl. flooding)	Design developments to maintain natural flow regimes and protect water-dependent ecosystem, implement stormwater mitigation measures, implement active water management interventions in high-risk settings and/or as adaptive management.	Partial
Increased erosion and sedimentation	Avoid locating ground-disturbing activities in highly erodible areas, plan timing of major earthworks to avoid working in the wet season, implement erosion and sediment control plans, Implement good practice sediment and erosion mitigation measures.	Sound
Increased human presence and activity	Avoid siting workforce access/laydown areas near sensitive habitats, manage and restrict access to sensitive areas	Sound
Introduction or spread of weeds /pest animals/disease	Coordinate weed/pest/disease prevention, management and eradication measures. Apply targeted weeds, pests and diseases/pathogen management, develop and implement coordinated management plans to identify and target high risk species, prevent introduction and spread via best practice operational mitigation measures, apply control programs and treatments across the project area.	Limited
Land clearing (vegetation removal and ground disturbance)	Avoid clearing sensitive habitat features, pre-clearance surveys, alternative/artificial habitat structures, demarcate clearing boundaries, progressive/staged clearing, deploy spotter-catchers, plan timing of major clearing, translocate priority flora, apply weed and erosion mitigation measures, implement fauna captive breeding and release, flora propagation and reintroduction/rescue.	Limited
Subsidence and altered ground stability	Conduct geotechnical assessments, undertake excavation and backfilling in stages.	Sound
Thermal and microclimate alteration	Green infrastructure, good practice operational mitigation measures	Partial
Vehicular and plant movements	Good practice operational mitigation measures, design and site roads away from important areas for fauna.	Sound
Cross cutting – multiple impact pathways	Staff training (fauna handling, biosecurity, incident reporting)	Sound
Cross cutting – multiple impact pathways	Apply monitoring and adaptive management with defined triggers across all measures	Partial
Cross cutting - multiple impact pathways	Undertake targeted research to address species/ecosystem knowledge gaps where it reduces residual risk	Limited

Impact pathway	Summary of mitigation measures	Overall ability to mitigate
Cross cutting – multiple impact pathways	Educational programs with the aim of instigating behavioural change	Limited
Cross cutting – multiple impact pathways	Site selection and alternatives assessment	Limited-Sound
Cross cutting - multiple impact pathways	Biodiversity offsets (land-based)	Limited-Sound
Cross cutting - multiple impact pathways	Biodiversity offsets (threat abatement)	Limited-Sound

Mitigating impacts from development and land use change

Mitigating impacts from development is the responsibility of the proponent. Although designed for wind farm developments, it would be beneficial if these measures, where applicable, are also implemented by proponents of development or land use change in other industries.

Wind farm developments

When selecting a project site, proponents should examine existing, planned or potential developments (including those in construction status) in the vicinity of the proposed development and their relationship to the proposed development and the likely cumulative impacts to MNES. Proponents should consider potential cumulative impacts of the proposed action on ecosystem resilience, noting the importance of large contiguous habitat patches for resilience to climate-related threats including vegetation fragmentation.

When undertaking early scoping of potential wind farm development sites, understanding the loss and fragmentation of habitat at the proposed site as well as to the increased risk of degradation over time to the remaining vegetation patches adjacent would be beneficial, particularly when siting each wind turbine.

Avoid

For wind farm developments, mitigation is most effective when avoidance is built into the early strategic planning, site selection and design phases. For example, avoidance of sensitive habitats, high risk activities and impact pathways with high residual risks (e.g. land clearing or aerial collision or entanglement) is the most effective way to reduce impacts on protected matters. This is especially important for protected matters with impact thresholds of 'near zero impact' (E4+, E4, or partial E4) or 'impacts as low as possible' (E3). For further guidance, see Section 6.

Minimise and repair

To ensure mitigation is effective and achieves net gain outcomes for protected matters, the proponent will need to coordinate with other parties such as neighbouring landholders or regional NRM organisations.

The [Interactive Tool](#) shows how well each mitigation measure minimises the impacts (or impact pathways) on MNES.

Many of these mitigation measures are well established and shown to be effective (sound or partial rating), providing they are implemented consistently, audited transparently, and maintained across the project lifecycle. This does not reduce the importance of mitigation – it indicates that effort can

be focused on effectively applying known mitigations measures rather than needing to develop new measures. Relevant impact pathways include accidental fire, air emissions, dust generation and deposition, artificial light spill, vehicle and plant movements, increased human presence and activity, elevated noise and vibration, erosion and sedimentation, accidental pollutant release and chronic contamination, and fauna entrapment.

Captive breeding and release or genetic rescue mitigation measures for small populations is noted as being complex and weak or untested. It involves high costs and specialist expertise, and success relies on sustained cooperation across multiple parties, such research institutions and/or conservation groups. In addition, only a small number of protected matters have been successfully bred and released or translocated.

For behaviour- and governance-dependent impact pathways, mitigation success is driven less by technical measures and more by consistent implementation, accountability and coordination. This includes biosecurity risks (e.g., weeds, pests and disease), increased human activity, vehicle and plant movement, as well as adaptive management across all measures. Strengthening outcomes will therefore depend on clear responsibilities, enforceable triggers and response timeframes, consistent protocols across wind farm development operations, sharing monitoring data, and Plan area coordination (where feasible).

Designing new mitigation measures is generally unnecessary, however there may be circumstances where proponents may decide to take an alternative approach taking into account new scientific information or emerging best practice. This should be well-documented and justified in the assessment documentation.

Some site-specific sensitivities may warrant more stringent requirements. Examples include:

- development that is located near sensitive habitat or hydrological features
- when avoiding and adaptively managing collision risk where birds and bats are known to fly at rotor swept heights and collision risk is predicted or known to be a threat. As the wind farm industry is new in these areas and the impacts on protected matters are still poorly understood, there is an opportunity to trial novel approaches and technologies to test their effectiveness and applicability.

Where high-consequence pathways (such as land clearing and aerial collision / entanglement) cannot be avoided, proponents should coordinate with others in the Plan area to design and deliver mitigation measures. This could also include collaborating on protecting and improving connectivity with other habitat that will not be impacted.

The cumulative effects of climate change impacts on the environment should also be considered in the assessment of water resources and ecosystem resilience.

Offset⁹⁴

Where impact pathways from wind farm developments cannot be avoided, minimised or repaired and the action results in a residual significant impact, compensation will be most beneficial if focused

⁹⁴ This section applies to matters and actions where offsets are appropriate. An unacceptable impact cannot be made acceptable (and therefore be approved) through the delivery of an offset.

on outcomes located within the Plan area. Offsets will be required to comply with the legislation in place at the time of the project referral. In accordance with the EPBC Act, offset proposals will need to deliver a net gain and contribute to the protection and enhancement of the relevant protected matters.

The nature of relevant offsets will be dependent on the protected matter impacted and its requirements (e.g., critical lifecycle function). Recovery and conservation efforts could focus on addressing existing threats which result in a decline in the condition and/or resilience of protected matters (e.g., land clearing, habitat fragmentation, loss in condition as a result of weeds, predation by pests) and responding to emerging threats which result in a decline in condition and/or resilience to protected matters (e.g., climate resilience, new emerging diseases).

Compensatory benefits need to be measurable, achievable and transparent, with clear governance and continuity over the agreed time period. They require measurable equivalence, long-term management funding and responsibility, and regulatory oversight, to demonstrate the offset will contribute to the recovery or conservation of the protected matter with high certainty.

Proponents are encouraged to consider relevant legal security mechanisms applicable to the offset site to ensure that any proposed gain will be delivered and maintained for the duration of the impact. Example of mechanisms that could be applied are covenants, conservation areas and nature refuge.

Coordination at a landscape-scale is important, particularly for those impact pathways (such as land clearing, aerial collision and surface- or groundwater change) that are irreversible or act over larger areas. For example, the White-throated needletail would benefit from landscape-scale monitoring to understand the potential impacts of aerial collision risk.

Where aerial collision and entanglement impacts to listed bird and bat species are likely over the life of the action, offsets are unlikely to be effective. Robust justification will need to be provided by proponents on the acceptability of the impacts (e.g., ongoing removal of individuals from a species population) and any offsets proposed, separate to any restoration or habitat creation activities proposed as offsets. There may be some exceptional circumstances where offsets may be suitable. Discussions with the department regarding these circumstances early in the assessment process are likely to be beneficial.

Should proponents consider siting offsets near the project site where impacts to listed birds and bats are likely, the practicality of achieving conservation gain to impacted species should be considered, particularly with ongoing pervasive impacts adjacent/ nearby the project site.

Advanced offsets provide a way to manage the risks associated with the time delay in finding a suitable offset site and achieving a net-gain outcome for the impacted protected matter. Advanced offset sites that have already achieved a gain in habitat quality can also provide greater certainty that the offset will succeed in achieving the required compensatory benefit, potentially reducing the time it takes to acquit an offset obligation.

There is opportunity for proponents to deliver offsets strategically within the Plan area by coordinating with other proponents, landholders and relevant government such that there is combined/broader landscape scale delivery of net gain recovery and conservation outcomes for the affected matter. For example, improving species resilience through concerted efforts to enhance connectivity.

Other major projects and land use change

Proponents of other development types (e.g. mining) can benefit from the information in the Plan and contribute to improved outcomes for MNES. This can be achieved by tailoring the Plan guidance to those specific projects. Outcomes will be most successful if proponents across all forms of development types and the community work collaboratively to achieve Plan goals.

Mitigating impacts from non-development pressures

Long-term MNES outcomes across the Plan area will depend on more than just effective mitigation from individual proponents. Cumulative pressures other than development (ongoing land use and diffuse human activities, ongoing and widespread threats, and climate driven pressures) are expected to intensify over time, eroding MNES habitat condition and resilience. To avoid the decline of MNES, coordinated landscape-scale measures that support development mitigation is needed (Table 12).

These work best when applied across sectors. Partners can include proponents, governments, regional NRMs, communities, investors, landholders, business and other parties. These actions may include policy changes, community-led conservation projects, or investment through environmental markets. This is not intended to shift responsibility for impacts from development away from proponents.

These measures could be appropriate for government or philanthropic investment, including for example through stewardship payments or grant programs.

Table 12 rates these measures by ability to implement and effectiveness. Careful consideration is required for those measures that are complex to implement and do not have a strong record of being effective. Specific protected matters' requirements should also be taken into account.

Those that are manageable to implement include fire management planning and applying protection mechanisms on title. Maintaining, repairing, and enhancing habitat and alternative or artificial habitat structures could vary from manageable to complex to implement, depending on the resources available, and number and experience of parties involved.

The most effective measures include coordinated fire planning, programs to reduce weeds, pests and diseases, and the use of protection mechanisms on title.

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Table 12 - Landscape-scale measures

Measure	Impact pathways	Ability to implement ⁹⁵	Effectiveness ⁹⁶
Coordinated fire management planning	Accidental fire/bushfire	Manageable	Strong
Coordinated weed, pest, and/or disease management programs	Introduction or spread of weeds Introduction or spread of pest animals Introduction or spread of disease	Complex	Conditional / uncertain
Active water management in high-risk settings and / or as adaptive management to reduce impacts on dependent ecosystems	Altered groundwater hydrology Altered surface water hydrology	Complex	Conditional / uncertain
Captive breeding and / or genetic rescue of fauna populations	Land clearing	Complex	Weak / untested
Implement ex-situ propagation that conserves genetic diversity for reintroduction and rescue of restricted and depauperate flora populations.	Land clearing	Complex	Conditional / uncertain
Maintain, repair, and enhance habitat, protected matter-appropriate connectivity, and buffers to support ongoing ecological function and genetic flows	Barriers and interruptions to movement (from infrastructure) Habitat fragmentation	Manageable	Conditional / uncertain
Provide alternative or artificial habitat structures	Land clearing	Manageable to complex	Conditional/Uncertain
Targeted research to reduce residual risk	Cross-cutting	Complex	Conditional / uncertain
Educational programs with the aim of instigating behavioural change	Cross-cutting	Complex	Conditional / uncertain
Applying protection mechanisms including legal security on title⁹⁷	Cross-cutting	Manageable	Strong

Many of the mitigation measures outlined for onsite planning and operation for wind farm developments can also be applied to improve conservation outcomes on other areas. This includes but is not limited to fauna-friendly fencing, maintenance of natural flow regimes, and storm water and erosion controls. Mitigating impacts of human presence in areas of high sensitivity could include managing access and behaviour on-site, such as requirements to stay on tracks and rules regarding pets.

Many mitigation measures can be implemented in a way that improves resilience to climate change and natural disasters. For example, habitat restoration could be undertaken in strategic areas to reduce erosion, which would otherwise be expected to increase with increased rainfall variability, or

⁹⁵ When undertaken for impacts from wind farm development

⁹⁶ When undertaken for impacts from wind farm development

⁹⁷ Protection mechanisms were not identified explicitly in the CIA under the category of mitigation scale *within and beyond the project area*, however they do form a large part of offset requirements under both State and Federal legislation. These mechanisms can be applied by other parties including government to protect important conservation areas. By adding protection on title (legal security), the values can be protected in perpetuity.

to protect areas of climate refuge. The [Interactive Tool](#) provides information on areas of potential climate-stable habitat. To improve the long-term effectiveness of mitigation measures, the likely impacts of climate change should be considered when designing and implementing mitigation measures.

Some of these measures are already underway, with varying degrees of implementation, geographical spread, investment and success – for example, many land managers already manage for fire, weeds, pests and destock around sensitive habitats. Nevertheless, a more coordinated and thorough approach is needed to address the effects of cumulative impacts on MNES across the landscape. This approach can also have downstream, positive effects on social, cultural and economic values such as improving productivity.

Social, cultural and economic values

Values statements

Social, cultural and economic values related to MNES across the Plan area were recorded as values statements. These were developed with inputs from both research and stakeholder engagement, and grouped into seven key themes (Table 13). This information will assist proponents but does not comprise a social impact assessment. These values may vary when undertaken for other assessments with different purposes.

Table 13 – Social, cultural and economic values statements for the Plan area

Theme	Values statements
Sustainable and liveable communities	The existing character of towns, suburbs and centres is maintained and built on to retain the identity of the place. Communities are resilient to significant growth from residential and non-residential population growth, and communities and services are supported in accommodating fly-in/fly-out, drive-in/drive-out and bus-in/bus-out workforces. Social identity and connectedness in the community is maintained through strong livelihoods, in particular the agriculture and mining sectors. Access to green spaces is protected and maintained. <i>Sources: Mackay, Isaac and Whitsunday Regional Plan, mid-2025 stakeholder engagement and Caval Ridge Coal Mine Environmental Impact Statement (EIS).</i>
Strong, diverse and inclusive economies	Resilience and growth are supported through diversification, innovation, and emerging industries. Access to employment and economic opportunities is increased, including addressing challenges with social disadvantage and an aging population. Opportunities for young people in the community are increased and better focussed, including a thriving Indigenous ranger program. Communities have the opportunity to earn a good income, while being close to their families and pursuing active leisure activities. <i>Sources: Mid-2025 stakeholder engagement, Dry Tropics NRM Plan, Mackay, Isaac and Whitsunday Regional Plan, Burdekin Dry Tropics Caring for Country Plan 2005, Caval Ridge Coal Mine EIS.</i>

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Theme	Values statements
Sustained natural environment	Scenic amenity is maintained, contributing to liveability and tourism. This includes the regional landscape, encompassing green spaces, natural areas, and farming landscapes. Development is implemented in a way that protects regional character, vulnerable species, and essential ecological services. The pristine environment, soil health, water quality and aquatic ecosystems are maintained, including so that it can continue to be used for recreational fishing, hunting and outdoors activities. Healthy Country supports healthy people and healthy people support healthy Country. <i>Sources: Mid-2025 stakeholder engagement, Mackay, Isaac and Whitsunday Regional Plan, Central Queensland Sustainability Strategy 2030, Burdekin Dry Tropics NRM Plan, Burdekin Dry Tropics Region Caring for Country Plan 2005.</i>
Integrated land use and infrastructure	Services and infrastructure are sufficient to meet growing needs of residential populations and non-residential workforces. Water supply infrastructure and strategic reserves underpin various economic activities and communities, with much sourced from the Burdekin Basin and inland areas relying on bores from the Great Artesian Basin. It is important that 'Energy is reliably provided to support growth in an economically and ecologically sustainable manner'. These needs be affordable, resilient to extreme climate and weather events. Transport networks should be highly connected, efficient, sustainable, integrated, safe and accessible. This should include the effective movement of freight and people to support regional growth. <i>Sources: Mid-2025 stakeholder engagement, Mackay, Isaac and Whitsunday Regional Plan</i>
Resilience to climate change and natural disasters	Resilience to and recovery from extreme weather events is improved through coordinated efforts, to reduce significant impacts on communities, the economy, infrastructure, and the environment. Resilience to climate change is improved, to reduce impacts on regional livelihood, energy and water security and biodiversity. This includes improved infrastructure resilience. <i>Sources: Mid-2025 stakeholder engagement, Mackay, Isaac and Whitsunday Regional Plans and Dry Tropics NRM Plan.</i>
Strong governance and meaningful engagement	Local voices and local knowledge are incorporated into decision-making, to foster ownership of development outcomes and build trust in emerging industries. Communities are meaningfully consulted on decisions that affect them, to ensure continuity of community identity. Governance is locally informed, clearly communicated and supported by trusted facilitators to ensure communities understand, engage with and adapt to change. Representative structures and organisations are established, to support First Nations peoples to negotiate access to country and address Traditional Owner issues in the management of cultural and natural resources. <i>Sources: Mid-2025 stakeholder engagement, Dry Tropics Caring for Country Plan 2005.</i>
First Nations leadership, knowledge and culture	Opportunities for young people to be on Country and to be involved are improved, including traditional owner ranger programs and locally based career guidance and employment. Partnerships that recognise and address education gaps for First Nations people in the region are encouraged. First Nations people are situated within their Country emotionally, spiritually and metaphysically, so that Country is well and people are well. First Nations peoples' culture can contribute greatly to the social, spiritual and economic wellbeing of communities. First Nations ways of thinking, working, reflecting and

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Theme	Values statements
	incorporating values, beliefs and priorities are understood and embraced to safeguard the region's prosperity for all its residents. Cultural access to Country, the revival of Language, cultural heritage management, location and recording of culturally significant sites, protection of material culture, and development of outstations are improved. <i>Sources: Mid-2025 stakeholder engagement, Mackay, Issac and Whitsunday Regional Plan, Dry Tropics Caring for Country Plan 2005.</i>

Effects of mitigation measures

Project mitigation can influence existing social, cultural and economic values. Provided projects achieve net gain for MNES, most mitigation measures recommended by the Plan can enhance these values or provide co-benefits. However, there are some instances where negative outcomes on values may occur.

Key findings include:

- A key influence on the nature of interactions between project mitigation measures and social, cultural and economic values will be whether proponents and governments engage with local communities, including First Nations peoples, from the very start of a project or process. This can influence both the effectiveness of project mitigation measures (particularly those that require coordination with other parties) and the outcomes for social, cultural and economic values.
- Outcomes are most likely to be positive if engagement is proactive and includes project design and siting, and overall management of the project.
- Key challenges to this can include commercial arrangements, project timelines, and inflexible offset requirements – these should be adapted to allow for meaningful engagement where possible.
- Mitigation measures that involve changes in land access or use, such as alternative site placement and offsets, can have strong interaction with social, cultural and economic outcomes. The nature of the interaction can be improved by co-locating or sharing infrastructure to prevent unnecessary land use or infrastructure conflicts, and early engagement with the local community, including First Nations peoples. Key negative interactions could include:
 - Competition with other land uses in the Plan area (e.g. agriculture), potentially with associated challenges to long-established rural character and identity.
 - Restricting community access to valued cultural, social and environmental areas (for example, for recreation).
 - Visual amenity and perceived health effects of wind farm developments.
- On the other hand, mitigation measures can protect species, habitats, soil health, water quality and ecological processes – core elements underpinning regional environmental integrity. These can improve ecosystem function and that sustain adjacent grazing, tourism, recreation, cultural practices, disaster resilience and overall community wellbeing.
- Another key area of interaction with mitigation measures can be around employment, skills development and career pathways. This can influence both the effectiveness of project mitigation measures and the outcomes for social, cultural and economic values.

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- Effects may be positive when mitigation measures generate local work or contracting opportunities (particularly for land management related roles); however, overall, the benefits are likely to be diffuse.
- Proponents could support economic and community resilience values by supporting local business growth and new environmental industries.
- However, this may be limited by availability of workforce and expertise to realise community benefit. This may place strain on workforce participation in already low unemployment settings. Wind farm development proponents may also have difficulty accessing required skills and expertise.
- These interactions could be improved by offering access to training and education that supports diversified career opportunities. This would benefit the wind farm development industry by increasing the available workforce to deliver mitigation measures, provide economic benefit to the region, and support social outcomes by allowing people to remain the region while pursuing a variety of career paths.
- To help build understanding and confidence in wind farm developments, mitigation measures that implement recognised best practice standards (e.g. erosion and sediment control, fire management, transport and lighting guidelines) should be clearly communicated to community members.
- Achieving net gain outcomes for protected matters will depend on governance and engagement structures being in place. Clear responsibilities, accountability, oversight and compliance will need to be established and implemented, including for landscape-scale mitigation measures.
- Landholder involvement in nature-based markets and landscape-scale mitigation often depends on economic factors and the landholder's willingness and capacity to participate in the market. Growing the supply of restorable land should consider costs, land use incentives, community needs, and opportunities that help maintain business operations.
- The value of strong livelihoods in the agricultural sector can support mitigation measures (including offsets) through landholder involvement in landscape-scale mitigation, in particular mitigation for erosion and sediment run-off. Grazing practices which improve pasture quality and vegetation cover also support mitigation measures through improving vegetation condition and maintaining topsoil, therefore delivering co-benefits for the environment and agricultural productivity.
- Values associated with 'integrated land use and infrastructure', and 'strong governance and meaningful engagement' were less affected by mitigation measures. However, these themes are still important to the community and should be addressed where relevant.

First Nations outcomes depend on inclusive, meaningful and long-lasting engagement and respect for culture. Where mitigation genuinely embeds First Nations peoples' knowledge and priorities, it can support protection of Country, cultural economy, cultural landscapes and shared prosperity. It can also enable cultural access, heritage protection and culturally informed management of sensitive areas. Integration of cultural knowledge into land and water management is also likely to benefit outcomes for protected matters. Key findings specifically related to values for First Nations peoples include:

- Most mitigation measures also influence cultural and spiritual wellbeing by shaping the health, access and integrity of Country.

- Co-benefits are more likely to arise when mitigation measures reinforce Traditional Owner-led governance and support informed decision-making. Challenges include risk of consultation fatigue, overloading governance bodies or bypassing them due to project timelines.
- A proponent's ability to engage appropriately with First Nations peoples and deliver mitigation measures in a culturally sensitive way depends on staff having a sound level of cultural capability. To support this, staff who will be involved in the project should undertake cultural capability training specifically relevant to the project location.
- First Nations peoples need to be involved in decisions about their cultural heritage and identity, to support community outcomes. Some culturally significant sites, species, ecosystems, and broader cultural landscapes may not be recognised as MNES, but should be addressed with First Nations peoples and form part of the impact assessment. Relevant First Nations peoples should be involved in surveying for cultural heritage, and advising on how any cultural heritage is managed.
- Design and location of mitigation measures and offsets can influence opportunities to be on Country. These measures have the potential to result in positive interactions, such as by increasing access to Country through employment opportunities in land management. However, they also have the potential to impede connection to Country by inhibiting access.
- Plan area- and landscape-scale actions, such as offsets, fire management and coordinated land stewardship, can create structured pathways for young people through ranger programs, traineeships and culturally grounded employment, provided these are consciously designed and adequately resourced. Forward planning and early community engagement will ensure local employment opportunities and skills development can be prioritised.

6. Advice

This section applies the results of the CIA and SCA to provide EPBC Act guidance for wind farm developments. This advice does not change a developer's obligations under Queensland or Australian Government assessment and approval processes, though EPBC Act decision-makers must have regard to the Plan when making a relevant decision.

It also identifies opportunities for other parties to contribute to the protection and improvement of MNES – including where coordinated actions and investment are most useful.

There are two main types of advice in this section:

- Improved guidance on how to address responsibilities under the EPBC Act. It provides transparency about what is expected to address existing obligations, rather than creating new obligations. The extent to which this advice is followed will be considered by EPBC Act decision-makers. This type of advice is phrased as “should” or, where an obligation is already explicit under the EPBC Act, “must”.
- Opportunities to improve outcomes for: MNES, assessment and approval processes, and social, cultural and economic outcomes. These activities may be undertaken by proponents and/or various other parties. The Plan does not create any obligation to undertake these activities. It is intended to be used as a catalogue of ideas for governments, conservation groups and industries to choose from. Many will be best done in partnership between parties. This type of advice is phrased as “could” or “are encouraged to”.

This advice has been prepared with a focus on wind farm development. Whilst some of the advice is relevant for other forms of development, each project assessment will need to be tailored to the relevant development type and assessed on a case-by-case basis.

It is a proponent’s responsibility to propose mitigation measures, and it is for proponents to decide how many and which of the mitigation measures are used from the CIA. The more impacts on protected matters are reduced (or eliminated), the greater the likelihood of an efficient assessment process.

Under the EPBC Act, to determine the acceptability of impacts from a proposed action, regulators need to be satisfied that proponents have proposed reasonable and appropriate avoidance measures and mitigation measures to deal with the relevant impacts of the proposed action on MNES.

Under the EP Reform Act, proponents must demonstrate that they have applied the mitigation hierarchy (avoiding, mitigating and repairing harm to protected matters), before resorting to environmental offsets.

In doing this, proponents should demonstrate that any avoidance or mitigation measures will provide ecological benefits to the protected matter in the long-term. For example, on-site avoidance/conservation areas should be connected or provide connectivity opportunities for listed threatened species in the broader landscape, and should include enduring mitigation of impacts from adjacent development.

Proponents should seek additional advice of a suitably qualified ecologist and other relevant advisors (e.g., engineers), particularly if considering actions that may result in impacts outlined in the ‘avoiding impacts’ section.

All impact assessments will need to be consistent with the EPBC Act, National Environmental Standards, rulings, protection statements, statutory documents and policies in force at the time of referral.

Overarching impact assessment and strategic planning

This section provides advice on other matters related to EPBC Act assessment and approvals, such as the scope and content of referrals.

- 1. In determining the significance and acceptability of impacts, regulators should consider the extent to which the advice in the Plan has been followed. In particular, advice numbers 2, 3, 4, 7, 8, 9, 11, 12, 14, 15 and 16 and 19.**

This advice is relevant to: Governments (regulators)

The Plan is guidance only and the advice should be considered in the context of the specifics of the project and the EPBC Act. As such, the advice in the Plan should not be taken as categorical statements of the significance or acceptability of impacts.

Regulators will need to consider multiple factors when determining the significance and acceptability of impacts, including the specifics of the proposal and other regulatory and guidance material (such as National Environmental Standards and the EPBC Act environmental offsets policy). See for example [Significant Impact Guidelines 1.1 - Matters of National Environmental Significance - DCCEEW](#) for relevant considerations beyond the Plan.

Figure 10 provides an overview of how the advice in the Plan may be considered by a regulator when determining the significance and acceptability of the impacts from a wind farm development.

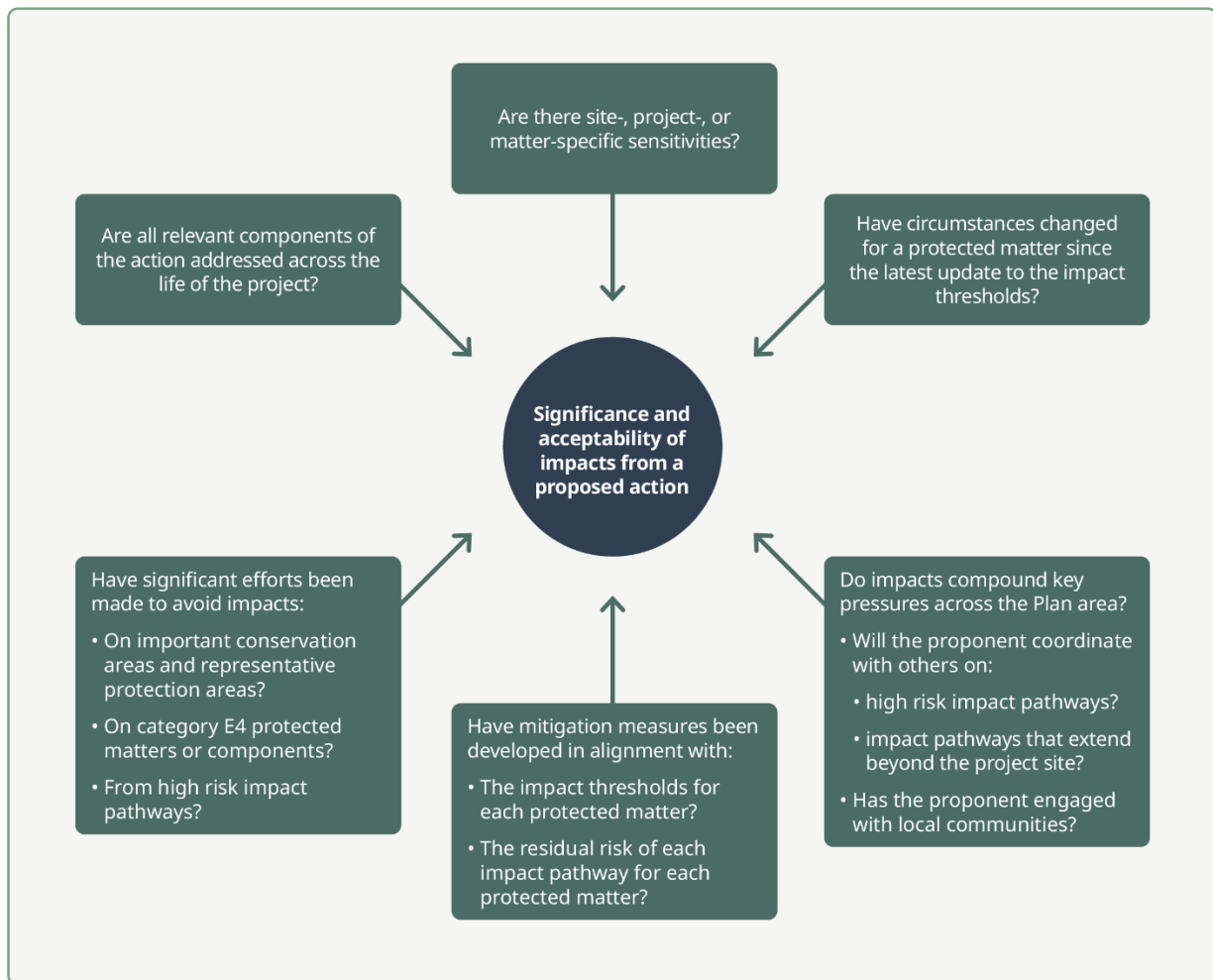


Figure 10 - How this advice contributes to considering significance and acceptability of impacts

2. Proponents should apply the mitigation hierarchy in alignment with the impact thresholds for each relevant protected matter.

This advice is relevant to: Proponents, Governments (regulators)

This means:

- making significant efforts to avoid impacts to for protected matters with an impact threshold of 'Near zero impact' (E4 or E4+) in the [Interactive Tool](#). Offsets are unlikely to be effective for these protected matters.

If offsets are proposed, proponents should demonstrate that:

- All reasonable avoidance and mitigation measures have been exhausted, and
- The offset is highly likely to succeed in compensating for the impacts on protected matters.

To be highly likely to succeed, the offset will likely be a novel approach not considered in developing the Plan. Supporting evidence of its effectiveness should be provided.

- applying avoidance, then strict mitigation and repair measures for protected matters with an impact threshold of 'Impacts as low as possible' (E3) in the [Interactive Tool](#), using offsets only as a last resort.
- using good practice avoidance and mitigation and repair measures for protected matters with an impact threshold of 'Some impacts with appropriate compensation' (E2) in the [Interactive Tool](#), using offsets in accordance with the mitigation hierarchy.

High restoration potential areas could be used as a starting point for offset investigations. These areas are likely to provide significant opportunities for co-benefits to multiple protected matters and may be particularly useful when considering strategic or coordinated offsets. As a result, they are likely to improve efficiency when offsets are required for multiple protected matters. Existing land uses and social, cultural and economic values will also need to be considered by proponents, and negotiations with landholders and other interests on title are likely to further refine the opportunities. Proponents will still need to demonstrate that these areas are suitable for the specific protected matters impacted by a proposal via an offset delivery plan.

Offsets cannot be used for unacceptable impacts. That is, an unacceptable impact cannot be made acceptable (and therefore be approved) through the delivery of an offset.

3. Proponents should refer to the residual risk of each impact pathway for each protected matter when developing mitigation measures.

This advice is relevant to: Proponents, Governments (regulators)

This means:

- For low-risk impact pathways – Using avoidance, mitigation and repair measures to keep impacts low or not significant. Detailed site-specific studies and offsets are unlikely to be required.
- For medium risk impact pathways – Using avoidance, mitigation and repair, along with offsetting and/or adaptive management to achieve net gain outcomes. Detailed site-specific studies may be required depending on protected matters present and project design.
- For high-risk impact pathways – Prioritising avoidance, then using mitigation, repair and offsetting, and/or adaptive management. Detailed site-specific studies are likely to be needed to assess impact severity and mitigation options.

Offsets are unlikely to be effective for pervasive impacts associated with aerial collision or entanglement.

Should a project apply different mitigation measures to those provided in the CIA, the department may exercise discretion in applying an alternative residual risk rating.

4. Proponents must address all relevant components of a proposed action and all associated impact pathways across the life of the project.

This advice is relevant to: Proponents, Governments (regulators)

Under the EPBC Act, proponents must include activities across all phases of a project, including geo-technical investigations, pre-construction, construction, operation and decommissioning of the project. Table 4 provides a guide on components to address.

Actions and activities associated with the proposed action but not referred should be detailed.

Based on the protected matters in the project site and the activities to be undertaken for the project, proponents should consider all the relevant impact pathways in the [Interactive Tool](#) across the life of a project. Examples of this include proponents detailing:

- The interactions between listed threatened species and their habitat with existing and proposed barriers to movement, such as exclusion fencing and permanent structures.
- Consideration given, during the decommissioning stage, to timing and duration of decommissioning activities, clearing of vegetation to facilitate removal of wind turbine blades and other infrastructure and rehabilitation of cleared land.

Proponents should check impact pathway interactions with other regional pressures across the Plan area to understand where cumulative effects may amplify project impacts or undermine project mitigations. Where this is the case, the assessment of impact and the design of mitigation measures should account for this interaction. Examples include:

- How connectivity to habitat will be retained, moved or functionally compromised or lost in the project site or landscape.
- How adjacent habitat in the locality and/or region will be subject to intensification of ongoing impacts such as increased vehicle movement, noise and vibration impacts hydrological changes, or expansion of agriculture.

5. Proponents and governments should consider indirect or downstream impacts of development within the Plan area, particularly on the Great Barrier Reef.

This advice is relevant to: Proponents, Governments (regulators, strategic planners)

While the Plan focuses on impacts on protected matters within the Plan area, wind farm development may also lead to indirect or downstream impacts.

Of notable importance is the Great Barrier Reef Marine Park, which is also a World Heritage property and National Heritage place. Indirect or downstream impacts to the Marine Park should be considered by proponents, in addition to any impacts on world and national heritage values.

Key impact pathways related to wind farm developments include barriers and interruptions to movement and pathways related to land-based run-off. Other indirect impacts, such as artificial light, will be particularly relevant where projects are adjacent to the Marine Park. See Section 5 for more detail.

6. Proponents and regulators should consider project-specific circumstances, including changing context and on-ground conditions, that may change the applicability of this advice.

This advice is relevant to: Proponents, Governments (regulators)

Proponents should consider their specific circumstances and conduct project-specific investigations to determine site-, project- and protected matter-specific factors. This is likely to involve on-ground surveys. Examples of site-specific sensitivities include proximity to hydrological features or sensitive habitat for protected matters.

Proponents and regulators should also consider relevant changes in circumstances since the last review of the impact thresholds that may impact on protected matters' ability to tolerate impacts. This could include, for example, negative impacts of natural disasters or positive results of pest management programs.

In determining site selection for wind farm development, proponents are encouraged to consider the following for relevant listed threatened and migratory bird and bat species:

- Site characteristics: focal habitat features, topography, prevailing wind and weather patterns, wetlands (including adjacent to proposed action area), and distance to potential nesting, roosting and foraging areas.
- Species characteristics: behaviour, flight or demographic factors (e.g. species presence [ongoing, transitory/migratory]), site use (e.g. transit, roosting, breeding and/or foraging), flight paths (including migratory flight paths), flight heights and patterns, soaring, flocking, and population numbers.
- A site-specific assessment of how at-risk listed threatened and migratory bird and bat species are using, or likely to use, the action area and the surrounding area. This assessment must be informed by site-specific and species-specific site utilisation surveys (undertaken by a suitably qualified expert) and supported by other relevant scientific evidence. Other requirements of site-specific assessment may include at least 24 months of site utilisation surveys to provide sufficient baseline data on a relevant species' potential to utilise the project area and surrounds. This means that site utilisation surveys must be undertaken for each relevant season over a minimum two years (up to 8 survey events).

7. Proponents should coordinate with other parties when developing and implementing mitigation measures, particularly:

- **Where high risk impact pathways cannot be avoided,**
- **For impact pathways that extend beyond the project site.**

This advice is relevant to: Proponents, Governments (regulators)

In some instances, this will involve considering the implications of other regional pressures acting across the Plan area (including actions by persons other than the proponent). This is not intended to shift responsibility for other regional pressures to wind farm developments proponents, but to reduce the risk of cumulative effects amplifying project impacts or undermining project mitigations.

At the time of writing the Plan, the following mitigation measures were noted as requiring action at a scale broader than the project site, to support their effectiveness:

- Site selection and alternatives assessment
- Fire management planning
- Habitat corridors and buffers
- Water management interventions
- Weed, pest and disease prevention, management and eradication
- Alternative or artificial habitat structures
- Translocation of priority flora
- Captive breeding and release or genetic rescue
- Design and siting of roads
- Targeted research to address knowledge gaps
- Offsets.

See the [Interactive Tool](#) for more information on the appropriate scale for each mitigation measure.

Many mitigation measures used to manage impacts from wind farm developments, such as hygiene protocols and pest and weed management, also directly address dominant cumulative pressures. Aligning project mitigation measures with regional threat-abatement and land management programs will enable the benefits to be compounded.

Other parties to coordinate with may include, for example, other proponents, governments, regional NRMs, conservation groups, adjacent landholders, First Nations peoples and research institutions.

This may involve, for example, working with adjacent landholders, community conservation groups or regional NRMs when undertaking pest management measures. It may include coordinating the timing, methods and focus of pest management efforts. Alternatively, it may include seeking additional expertise to support measures such as captive breeding, from research institutions and/or conservation groups. Proponents and other parties are encouraged to develop arrangements to share monitoring data with other parties in the area.

8. Proponents and regulators should consider the complementarity of mitigation measures across projects, particularly for impact pathways that extend beyond the project site.

This advice is relevant to: Proponents, Governments (regulators)

Where multiple projects operate in similar landscapes, coordinated implementation can improve consistency, reduce duplication and increase effectiveness, particularly for pressures that extend beyond the project site or require sustained effort.

This is not intended to shift responsibility for other projects to wind farm developments proponents, but to ensure an understanding of how cumulative effects may amplify project impacts or undermine project mitigations.

Outcomes will be strongest where high-risk impact pathways are mitigated in a complementary way across projects using clear, repeatable mitigation measures, particularly for pathways with impacts that extend beyond the project site or are cumulative. Examples include habitat loss, landscape fragmentation and hydrological change.

This could include, for example,

- Common monitoring frameworks, including communicating results to the local community,
- Consistent triggers and thresholds,
- Cumulative risk management across tenures and operators,
- Developing standard conditions specific to the Plan area to provide consistency for proponents and regulators.

9. Proponents should ensure there are clear roles and responsibilities for all commitments relating to mitigation measures.

This advice is relevant to: Proponents, Governments (regulators)

Proponents are encouraged to include relevant management plans in support of commitments made for mitigation measures (e.g., construction environmental management plan and flora and fauna management plan). Commitments should be:

- S – Specific (protected matter-specific objectives, methods, outcomes, and repeatability).
- M – Measurable (baseline information, quantifiable, auditable).
- A – Achievable (timeframes, financial and human resources).
- R – Relevant (conservation advice, recovery plans, threat abatement plans).
- T – Time-bound (set implementation, performance and completion timeframes).

To ensure compliance with mitigation measures including roles and responsibilities, the regulator may make the commitments proposed by proponents binding through conditions of approval.

10. Proponents and strategic planners are encouraged to proactively engage with local communities, including First Nations peoples, from the very start of a project/process, to improve:

- Effectiveness and efficiency of mitigation measures, and
- Outcomes of the project/process for social, cultural and economic values.

This advice is relevant to: Proponents, Governments (regulators, strategic planners), Industry groups

The following considerations will help to improve the effectiveness of mitigation, increase opportunities for partnerships and improve social licence:

- Ensure engagement is inclusive and meaningful.
- Explore opportunities for employment training and career paths, recognising that workforce availability may limit ability to implement mitigation measures.
- Investigating and implementing solutions to overcome known barriers to landholder participation in restoration markets and coordinated management of regional pressures. This could include researching and synthesising existing literature.
- Proponents should support key staff who will be involved in the project to undertake cultural capability training that is tailored to the First Nations groups in their project site.
- Governments could offer to work with First Nations peoples to develop guidance, or point proponents to existing guidance, on how to appropriately engage with First Nations peoples in the Plan area.
- Proponents and governments could harness the knowledge and experience of local First Nations peoples, community environmental groups and regional NRMs when engaging in conservation programs.
- Co-benefits are heavily dependent on early and forward planning, equitable decision-making, coordination between government, communities and industry, and quality and effectiveness of implementation.
- Site selection (for both projects and offset areas), and the way this process is undertaken, are the most important measures when it comes to determining whether and to what degree mitigation measures have positive or negative interactions with SCEV.
- Project placement decisions that avoid important natural features need to be considered by proponents or strategic planners in terms of trade-offs for other land use types, predominantly for high value agricultural areas.
- Where possible, mitigation measures that involve protection or management of particular areas should aim to maintain access for recreation, economic and cultural activities.

Avoiding impacts, and protecting and conserving MNES

This section outlines measures proponents should take to avoid impacts from their development. It also outlines key opportunities for both proponents and other parties to protect and conserve protected matters.

Avoiding project impacts involves considering the size of the development footprint, intensity of the development and whether impacts are temporary or permanent. To aid in site selection and project

design, proponents are encouraged to use the [Interactive Tool](#) as early as possible in project conception. At the conceptual stage, the SCA may provide early indication of which areas of the project site may contain sensitive protected matters, enabling the project to be designed carefully to avoid and/or minimise impacts.

Consideration should also be given to micro-siting or co-locating project components with existing infrastructure, and brownfield or disturbed areas.

Protection and conservation are likely to be the most cost-effective method of achieving outcomes for some protected matters.

11. Proponents and strategic planners should make significant efforts through strategic planning, early site selection and project design to avoid impacts on the below sensitive areas:

- Around the Eungella Hinterland, where there are important conservation areas and representative protection areas
- Montane areas between Bowen and Rangemore, where there are important conservation areas and representative protection areas
- Near Eaglefield and Moranbah, which are important for *P. uncinellus*
- Blackwell Range, which contains important subpopulations of Blackwall Range kurrajong
- Around the foothills of Mt Pring, where the only known populations of *A. granitica* are
- Habitat for protected matters with a 'near zero impacts' threshold (E4).
- Important conservation areas.
- Representative protection areas.

This advice is relevant to: Proponents, Governments (regulators, strategic planners)

Where an action is proposed within these areas, proponents should ensure that on ground surveys have fulsomely assessed the presence of protected matters and identified the presence and precise location of features that are difficult or impossible to restore or replace. Significant advice from suitably qualified ecologists and other relevant advisors (e.g., engineers) is highly likely to be needed.

Examples of habitat associated with E4 protected matters include:

- Regional ecosystems associated with the Blackwall range kurrajong, including 11.11.18 and 11.12.4
- The area west of Winchester that contains core wildlife refugia for species including Allan's lerista (*Lerista allanae*)⁹⁸.
- Montane environments in the north of the plan area associated with many threatened flora species, including habitat around Mt. Pring for *A. granitica*⁹⁹ (associated with regional ecosystems 11.12.7 and 11.12.13), and habitat for *O. eriocephalus* (associated with regional ecosystems 11.10.1 and 11.12.15).

⁹⁸ BPA decision number brbn_l_27

⁹⁹ BPA decision number brbn_fl_05

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- Areas noted as having high densities of denning habitat for greater gliders and yellow-bellied gliders, including areas in and around Eungella National Park, Sonoma State Forest¹⁰⁰, and southern Connors/Broadsound Range¹⁰¹.
- Regional ecosystems associated with the Broad Leaf Tea-tree TEC, including 7.3.8(a, b, c, d and g), 8.32, 8.5.2(a and c), 8.5.6.

Proponents should provide evidence of how avoiding these areas was considered during strategic planning, site selection and design.

In strategic planning exercises, site-based investigations should be undertaken prior to prioritising these areas for development. This is to increase certainty about the presence, location and condition of protected matters. Strategic planners should also consider that:

- Targets for recovery of threatened species and ecological communities, and protection of important areas, may not be met if development occurs in important conservation areas and impacts features that are difficult or impossible to restore or recreate.
- The loss of representative protection areas would represent an opportunity cost in making it harder to achieve the national targets to protect and conserve 30% of Australia's landmass by 2030 (the '30 by 30' target), particularly in a way that ensures they are representative.

12. Proponents and strategic planners should make significant efforts through strategic planning, early site selection and project design to avoid impacts on the following protected matters:

- **Protected matters with an impact threshold of 'Near zero impacts' (E4 and E4+) in the [Interactive Tool](#).**
- **Components that have an impact threshold of 'Near zero impacts' (partial E4) in the [Interactive Tool](#).**

This advice is relevant to: Proponents, Governments (regulators, strategic planners)

At the time of writing the Plan, there were:

- 19 E4 or E4+ protected matters: Eungella spiny crayfish, Eungella day frog, Green turtle, Leatherback turtle, Olive Ridley turtle, Flatback turtle, Loggerhead turtle, Hawksbill turtle, *A. granitica*, *P. uncinellus*, Allan's Ierista, Mount Cooper striped skink, Star finch, Littoral Rainforest and Coastal Vine Thickets TEC, Broad Leaf Tea-tree TEC, *Polianthion. minutiflorum*, *O. eriocephalus*, Blackwall Range kurrajong, and Large-fruited denhamia.
- Nine partial E4 protected matters (see Table 14).

¹⁰⁰ BPA decision number brbn_I_80

¹⁰¹ BPA decision number brbn_I_74

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Table 14 - Protected matters with components for which offsets are unlikely to be effective

Protected matter	Component of impacts for which offsets are unlikely
Curlew sandpiper	Direct impacts to individuals
Red goshawk	Direct impacts to individuals and known nesting habitat
Eastern curlew	Direct impacts to individuals
Australian painted snipe	Direct impact to individuals and known nesting habitat
Greater glider (northern)	Denning habitat
Greater glider (southern and central)	Denning habitat
Yellow-bellied glider (south-eastern)	Denning habitat
Masked owl (northern)	Denning habitat
Ghost bat	Maternity roosts

See the [Interactive Tool](#) for more detail and an up-to-date list.

Offsets are unlikely to compensate for impacts for these protected matters.

13. Land and water managers could prioritise the areas in Advice 11 and the protected matters listed in Advice 12 for conservation, protection and active management.

This advice is relevant to: Governments (strategic planners, land managers, funding bodies), Conservation groups, regional NRMs, First Nations groups, and Investors.

Proactive conservation, protection and active management of these areas and protected matters could increase protected matters' resilience to ongoing pressures and capacity to tolerate further impacts.

14. Proponents and strategic planners should make significant efforts through strategic planning, early site selection and project design to avoid impacts to protected matters from high-risk impact pathways, particularly those with mitigation effectiveness of 'partial' or 'limited'.

This advice is relevant to: Proponents, Governments (regulators, strategic planners)

At the time of writing the Plan these were:

- Aerial collision and entanglement – high risk for bats and birds (other than shrub- and ground-foraging birds), with limited ability to mitigate.
- Land clearing, including vegetation removal and ground disturbance – high risk for many protected matters, with limited ability to mitigate.

- Increased erosion and sedimentation – high risk for freshwater aquatic species and frogs, with sound ability to mitigate.
- Altered surface water hydrology – high risk for frogs, with partial ability to mitigate.
- Habitat fragmentation – high risk for gliders, with partial ability to mitigate.
- Introduction and spread of weeds – high risk for shrub- and ground-foraging birds, with limited ability to mitigate.

See the [Interactive Tool](#) for more detail and an up-to-date list.

Proponents and regulators should prioritise effort towards understanding and developing solutions for these impact pathways.

Mitigating and repairing impacts

The [Interactive Tool](#) provides a catalogue of mitigation measures to aid in identifying project-specific mitigation measures. Not all mitigation measures will be relevant for every project, because, for example, most projects will not impact all protected matters considered in the Plan. The list is also not intended to be exhaustive or to prevent other measures from being used.

15. Proponents and regulators should implement adaptive management of aerial collision and entanglement risks for projects where birds and bats are known to fly at rotor swept heights.

This advice is relevant to: Proponents, Governments (regulators), Conservation groups, Researchers

Aerial collision and entanglement is a high-risk impact pathway and currently cannot be reliably addressed through project-scale mitigation alone. Collision risk technologies and practices, such as deterrents, monitoring systems, and design or operational controls are evolving rapidly. As a result, measures to address aerial collision risk should be reviewed and updated regularly as scientific information improves and species-specific responses become better understood.

Where there are insufficient scientific certainty or evidence of a proposed measures, proponents and regulators could explore novel approaches and emerging technologies. The regulator may recommend conditions of approval for proposed trials of novel mitigations, alongside comprehensive monitoring of their effectiveness.

Proponents and regulators should set clear thresholds for acceptable collision risk, and specify procedures that activate should thresholds be exceeded. Targeted research to improve understanding of species-specific behaviour to inform effective mitigation is also needed. Some of this research is expected to be delivered in late 2026 through the [Renewables Environmental Research Initiative](#)¹⁰².

¹⁰² <https://www.dcceew.gov.au/environment/epbc/advice/renewable-energy-projects/reri>

16. Land and water managers are encouraged to increase coordinated management of:

- **Grazing practices that cause habitat degradation,**
- **Invasive weeds and pest animals,**
- **Inappropriate fire regimes,**
- **Erosion and sedimentation,**
- **Climate stress.**

This advice is relevant to: Proponents, Governments (regulators, strategic planners), Conservation groups, regional NRMs, and Investors

Because other regional pressures are more pervasive and typically higher risk than wind farm developments, project-scale mitigation will only translate into net gain outcomes if supported by coordinated action to reduce the dominant regional pressures. Broader efforts to address compounding pressures will need to continue and be expanded.

Focus should be on pressures that erode habitat extent, condition and connectivity and affect wetland and aquatic systems via hydrological change.

Structures, such as working groups or facilitated events, could be established to help proponents connect with other parties in the Plan area, such as local governments, regional NRMs and landholders.

This could also be supported by proponents, governments, and other land and water managers providing opportunities for landholders in land and water stewardship that benefits or mitigates impacts to protected matters in a production landscape setting. There are opportunities for stewardship incentives to be provided to landholders to achieve benefits for protected matters while maintaining agricultural production in the landscape.

Where possible, these measures should be designed with local community, including First Nations peoples. They may present an opportunity to work with First Nations peoples to protect cultural landscapes, support First Nations-led governance structures, and integrate cultural knowledge into land and water management.

17. Proponents and regulators should ensure dependable implementation, accountability and coordination of mitigation measures for the following impact pathways (where activated):

- **Biosecurity risks (weeds, pests and disease),**
- **Increased human activity,**
- **Vehicle and plant movement,**
- **Adaptive management applied across multiple pathways.**

This advice is relevant to: Proponents, Governments (regulators)

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For these impact pathways, the success of mitigation is most influenced by dependable implementation, accountability and coordination. It is not usually necessary to design new controls for these impact pathways.

Proponents should outline:

- clear responsibilities for each activity,
- triggers and response timeframes,
- measure they have taken to ensure mitigation is compatible with other wind farm developments in the area, where appropriate,
- any measures they propose to share monitoring data, and
- measures they have taken to coordinate with other parties operating in the Plan area (where feasible).

To ensure compliance with mitigation measures proposed, regulators are encouraged to include relevant commitments outlined above as a condition of approval.

18. Unless there are site-specific sensitivities, proponents should apply standard best practice mitigation and repair measures for the following impact pathways (where activated):

- **Accidental fire.**
- **Air emissions.**
- **Dust generation and deposition.**
- **Artificial light spill.**
- **Vehicle and plant movements.**
- **Increased human presence and activity.**
- **Elevated noise/vibration.**
- **Erosion and sedimentation.**
- **Accidental pollutant release and chronic pollution.**
- **Disturbance of pre-existing contaminants.**
- **Fauna entrapment.**

This advice is relevant to: Proponents, Governments (regulators)

These impact pathways are generally readily mitigable, supported by well-established controls and regulator guidance. They rely on mature technical solutions, embedded within environmental approval and management system requirements, meaning they can deliver predictable outcomes when implemented well.

Proponents and regulators should ensure these measures are implemented consistently, audited transparently, and maintained across the project lifecycle. Proponents should outline corrective actions that will be undertaken to rectify any failures in delivering their mitigation measures.

Development of new measures is not needed for these impact pathways, unless site-specific sensitivities apply. There may also be circumstances where proponents take an alternative approach taking into account new scientific information or emerging best practice.

Offsetting impacts and restoration to benefit MNES

Where residual significant impacts to listed threatened species or ecological communities remain after application of reasonable avoidance and mitigation measures, a compensatory environmental offset may be appropriate. Proponents should use offsets only when appropriate for the impact threshold category, in accordance with the mitigation hierarchy, and in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*¹⁰³ (EPBC Act Offsets Policy) and any relevant National Environmental Standards in force at the time of referral.

The level of compensation required will depend on the legislative settings in place at the time an action is referred for assessment. Projects referred before the commencement of EP Reform Act will continue to use the 'no net loss' test. For projects referred after the 'net gain' test commences, the level of net gain required will depend on the regulations in place. If there is no prescribed net gain, it is subject to a net gain that the Australian Government Minister for the Environment and Water is satisfied is appropriate. Information on the timing of the commencement of EPBC Act reforms can be found on DCCEW's webpage on the environment protection [reforms](#)¹⁰⁴.

Although the Plan aims to support net gain outcomes for MNES, it addresses this qualitatively and does not change the quantity of compensation required under EPBC Act assessment.

19. Proponents and governments should consider the effectiveness of offsets for impacts from aerial collision or entanglement.

This advice is relevant to: Proponents, Governments (regulators), Industry groups

Land-based offsets are unlikely to be effective in compensating for direct impacts to bird species that do not land frequently. Restoration or rehabilitation of habitat for these species is unlikely to compensate for reductions in the population resulting from mortalities from aerial collision.

20. Proponents and governments are encouraged to consider use of advanced and strategic offsets, where appropriate.

This advice is relevant to: Proponents, Governments (regulators), Industry groups

High restoration potential areas in the [Interactive Tool](#) could be used as a starting point for this investigation. These areas are likely to provide significant opportunities for co-benefits to multiple protected matters, and may be particularly useful when considering strategic or coordinated offsets.

¹⁰³ <https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy>

¹⁰⁴ <https://www.dcceew.gov.au/environment/epbc/epbc-act-reform/stronger-environmental-protection-restoration>

As a result, there are likely to be efficiencies in delivering benefits for multiple protected matters. This will depend on knowing future impacts to protected matters.

Consideration by proponents of existing land uses (not reflected in this analysis), and negotiations with landholders and other interests on title are likely to further refine the opportunities. Proponents will still need to demonstrate that these areas are suitable for the specific protected matters impacted by a proposal.

Advanced offsets are encouraged as they provide an opportunity for conservation efforts to commence earlier for net gain outcomes and reduces risks associated with the time delay in finding a suitable offset site. Advanced offset sites that have already achieved a gain in habitat quality can also provide greater certainty that the offset will succeed in achieving the required compensatory benefit, potentially reducing the time it takes to acquit an offset obligation.

21. Proponents, governments and land and water managers could use the following areas as a starting point for investigating offsets based on vegetation condition improvement:

- Around Redcliffe Tableland National Park.
- In the area from Sutton to Winchester.
- Around Bundoora.
- In the area from Bowen to Mount Abbot National Park and south to Collinsville.
- High restoration potential areas shown in the [Interactive Tool](#).

This advice is relevant to: Proponents, Governments (regulators, strategic planners, funding bodies, land managers), Landholders

High restoration potential areas could be used as a starting point for considering opportunities. These areas are likely to provide significant opportunities for co-benefits to multiple protected matters, which may provide efficiencies in restoration activities.

Strategic planners should consider that the loss of areas of high restoration potential would represent an opportunity cost in achieving net gain outcomes. It will likely increase the future cost of offsetting and other restoration actions and compromise the ability to achieve net gain outcomes for some protected matters.

22. Land and water managers could prioritise the areas outlined in Advice 21 for proactive restoration based on vegetation condition improvement.

This advice is relevant to: Governments (strategic planning, funding bodies, land managers), Conservation groups, Regional NRMs, Investors, First Nations groups, Landholders

High restoration potential areas could be used as a starting point for considering proactive restoration opportunities. These areas are likely to provide significant opportunities for co-benefits to multiple protected matters, which may provide efficiencies in restoration activities.

Improving decision making and information

This section outlines actions that would build on the Plan to support informed development planning and the continuous improvement of regulatory processes under the EPBC Act. This could assist with individual project assessments, or support broader approaches such as regulatory bioregional plans and strategic assessments.

23. Governments, industry groups and researchers could develop additional information to support any future strategic planning mechanisms, such as quantitative analysis and information on environmental, social, cultural and economic values.

This advice is relevant to: Governments (strategic planners, funding bodies, environmental experts), Industry groups, Researchers

Key aspects of this could include:

- Developing more detailed, quantitative and spatialised development scenarios.
- Refining impact thresholds for individual protected matters, such as through development of quantitative impact thresholds or population viability analysis.
- Improving information on key habitats and threatening processes for protected matters, and their susceptibility to development impacts, such as through:
 - Undertaking targeted on-ground surveys.
 - Additional expert advice.
 - Synthesising additional region-specific information.
- Developing a more quantitative and spatially-explicit understanding of cumulative impacts in the Plan area. This could involve accounting for development scenarios, target protected matters, social, cultural and economic values, and other underlying pressures to better model conservation priorities and incorporate trade-off decisions. This could include undertaking economic analysis of regional production and any impacts from projects including proposed offsets.
- Improved spatial understanding of offset opportunities and appropriate restoration actions for target protected matters, including those protected matters for which offset availability is likely to be limited.

Much of the additional data and information outlined in advice number 24 would support this.

24. Governments and other parties are encouraged to strengthen information and data about protected matters, to support more detailed guidance for impact assessments and conservation planning.

This advice is relevant to: Governments (regulators, strategic planners, funding bodies, environmental experts), Proponents, Industry groups, Research institutions

This would be particularly beneficial for protected matters with a ‘near zero’ impact threshold and with strong ecological reliance on the Plan area, such as: *A. granitica*, Blackwall range kurrajong, and *P. uncinellus*.

This could include:

- Incorporating First Nations peoples’ traditional ecological knowledge, when appropriate and shared with free, prior and informed consent. This could include identifying culturally significant landscapes and localities.
- Strengthening understanding of climate-related threats to protected matters at the species or community level and reflecting this in relevant advice and guidance.
- Developing guidance on how best to avoid, mitigate, restore and offset the impacts of wind farm development.

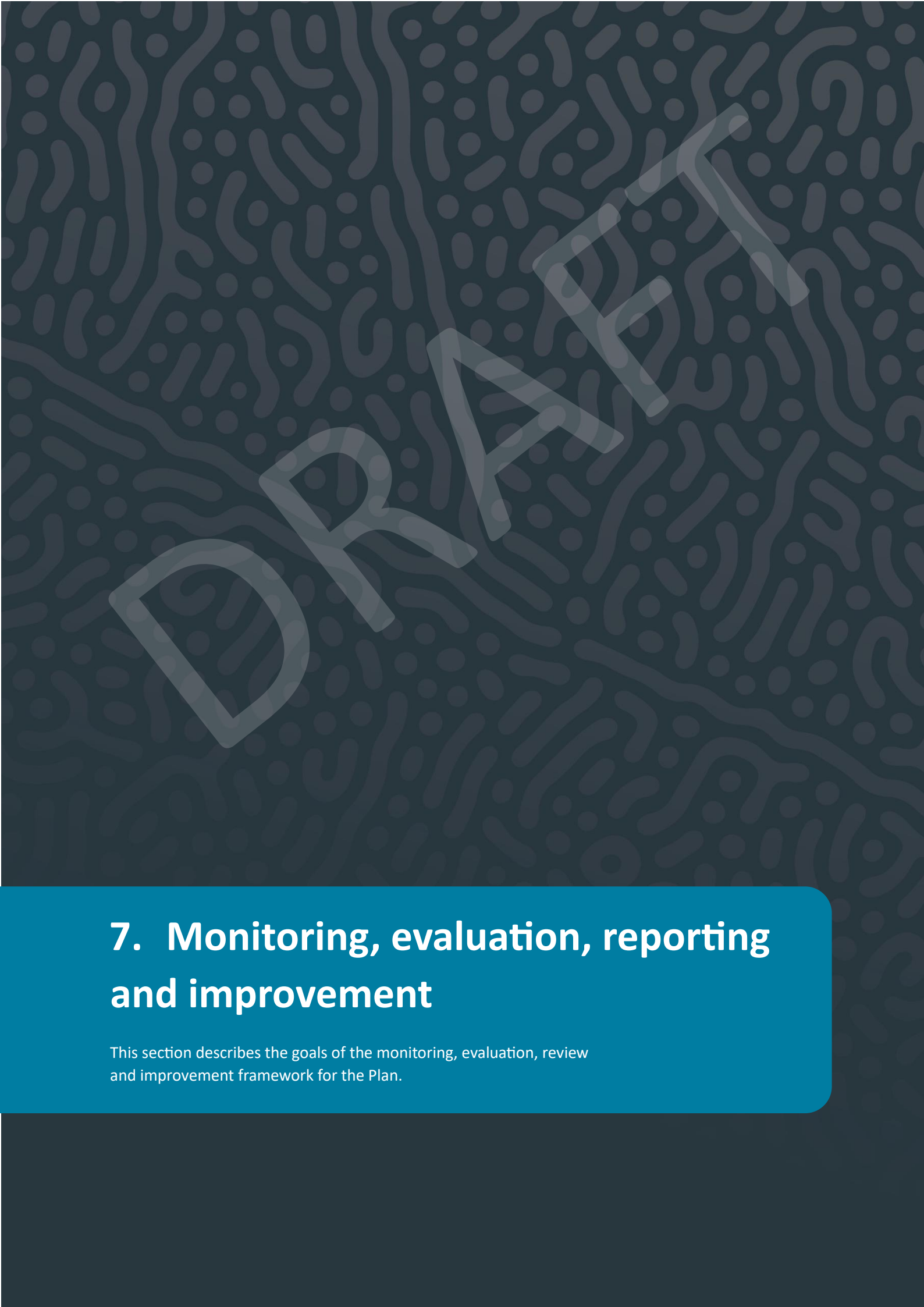
At the time of writing the Plan, DCCEEW is delivering the [Renewables Environmental Research Initiative](#)¹⁰⁵. This involves a suite of projects to support proponents and environmental decision makers, including:

- targeted research on threatened species.
- new and updated regulatory guidance.
- useful tools and data.
- Improving spatial data on protected matters’ distribution, critical habitat (including for different life stages), connectivity between habitat features and habitat dependencies. This could involve:
 - Using targeted on ground surveys and other survey technologies such as remote sensing to:
 - Clearly define and map denning/roosting habitat for old-growth structure specialists (e.g. gliders and the northern masked owl)
 - Ground-truth information on microhabitat drivers and occupancy patterns for highly range-restricted protected matters (e.g. Allan’s Ierista, Mount Cooper striped skink, *A. granitica* and *P. uncinellus*)
 - Delineate high-use sites for protected matters that rely on critical places (e.g. marine turtles) and populations that are small and declining (e.g. red goshawk, curlew sandpiper and eastern curlew).
 - Improving the resolution of environmental data for habitat modelling, including finer scale regional ecosystem mapping, remote sensing products (vegetation, geomorphological features), etc.

¹⁰⁵ <https://www.dcceew.gov.au/environment/epbc/advice/renewable-energy-projects/reri>

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- Strengthening understanding of protected matters' habitat requirements (including shelter and breeding, mobility, and foraging preferences), and their presence and use of the region.
At the time of writing the Plan, CSIRO is undertaking targeted surveys for 9 protected matters in the plan area.
- Refining connectivity models to reflect individual protected matters
- Incorporating information on key threats and/or conservation actions into spatial data
- Progressively sourcing higher confidence spatial datasets, prioritising data such as DETSI Habitat Suitability Models for use in spatial conservation analyses.
- A commitment by proponents to monitor and report on presence and occurrence of protected matters at both the impact and any offset sites. This can be achieved through appropriate conditioning.
- Landscape-scale monitoring of the movement patterns and potential impacts of wind farm developments on protected matters most at risk of aerial collision, including white throated needle tail and fork tailed swift.
 - This could include a combination of monitoring requirements applied to proponents as a condition of approval, collaboration with regional NRMs, and public participation by landholders and/or through citizen science programs.
- Improving confidence and resolution of data about difficult or impossible to restore or recreate features, particularly in areas most likely to experience development pressure. This could involve on-ground surveys and/or expert elicitation.
- Improving identification of restoration areas by factoring in likely restoration considerations and opportunities. This could involve incorporating data such as State economic interests and other land use objectives, diffuse pressures, and considering key protected matters and their specific habitat requirements.
- Updating relevant Commonwealth statutory documents with best available data detailing changes to habitat extent, presence, threats and pressures to protected matters.
- Improving data standardisation and sharing between jurisdictions and sectors to improve efficiency and trust in decision-making. To support up-to-date, trusted data products, governments could embed agreed data standards in regulatory, procurement, and other data channels.
- Developing habitat quality field assessment and offset benefit calculation guidance tailored to specific protected matters that enable consistent methods, benchmarks, variables, and standards to be applied.



7. Monitoring, evaluation, reporting and improvement

This section describes the goals of the monitoring, evaluation, review and improvement framework for the Plan.

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A Monitoring, Evaluation, Reporting and Improvement Framework (MERI Framework) will accompany the Plan and will monitor the efficiency and effectiveness of the Plan. Developed on a five-year cycle, the MERI framework provides a structured approach to assess the effectiveness of the bioregional guidance plan and its implementation. It will support evidence-based decision-making, foster adaptive management, and ensure that planning strategies remain responsive to emerging challenges and opportunities.

Updates to supporting tools, including the [Interactive Tool](#), may be made more frequently.

The primary goals of the MERI framework include:

- **Evaluate the effectiveness of strategies:** Review how well the plan is working to achieve its objectives, including:
 - protecting MNES
 - supporting industry and increasing certainty
 - identifying opportunities for environmental, cultural, and economic values.
- **Inform stakeholders:** Share findings with stakeholders to promote transparency and help guide future decisions about bioregional planning and management.
- **Encourage adaptive management:** Support ongoing improvements by learning from past experiences and refining the Plan to ensure it delivers positive outcomes for Queensland's environment, communities, and industries.

Following the release, the Plan may be updated periodically using better data and more detailed analysis to provide clearer guidance. Where appropriate, these updates may also lead to changes in assessment and approval requirements to ensure the Plan remains effective and relevant.

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8. Glossary

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Term	Definition
Action	An action as per the EPBC Act which includes but not limited to a project, a development, an undertaking, an activity or series of activities.
Bioregion	A geographically distinct landscape characterised by a common climate, geology, landform, native vegetation and species. In the Plan, a bioregion is defined following the Interim Biogeographic Regionalisation for Australia Version 7
BPA	Refers to DETSI Biodiversity Planning Assessments. BPAs use spatial data and expert knowledge to identify ecological values according to their conservation significance.
Connectivity pinch points	Areas important for maintaining connectivity between important conservation areas. These areas are the most constrained points in broader connectivity corridors.
Conservation status	The classification of a species or ecological community under the EPBC Act based on its risk of extinction.
Critical habitat	As defined in the EPBC Act, habitat listed in the register in relation to a species or ecological community is critical habitat.
Cumulative impact	The combined and ongoing effects on the environment from development and other pressures, including human activity and other landscape forces.
Cumulative impact assessment	An assessment which considers the effects of an activity related to the focus industry, combined with identified regional pressures.
Decision-maker	The decision-maker under the EPBC Act is the Australian Government Minister for the Environment and Water or a delegate (such as the National Environmental Protection Agency) who has legal authority to make decisions on behalf of the Minister.
Ecological community	A naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat, determined by environmental factors including position in the landscape, climate and water availability.
Environment	Section 528 of the EPBC Act defines environment to include: a) ecosystems and their constituent parts, including people and communities; and b) natural and physical resources; and c) the qualities and characteristics of locations, places and areas; and d) heritage values of places; and e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b), (c) or (d).
Important conservation areas	Locations that contain irreplaceable features important to protected matters (e.g., wetland complexes, high densities of hollow bearing trees, riffle zones) and connectivity pinch points.
Irreplaceable	Means biologically, physically or technically impossible to reverse damage to habitat, or impossible to restore, recreate or replace the habitat in a relevant timeframe and location and with the function necessary to support the viability of the species or community.
Landscape-scale	A large area of land considered as a whole, including the ecosystems, habitats and natural processes.

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Term	Definition
MNES	Matters of National Environmental Significance are protected under the EPBC Act. There are nine MNES, such as world heritage areas, threatened species, migratory species and wetlands of international importance.
Mitigation or mitigation measures	Specific actions taken to avoid and reduce the severity, duration or likelihood of environmental impacts. The term refers to the full mitigation hierarchy, including (in order) avoid, mitigate, repair and offset.
Net gain	Requires a “measurable improvement for the affected protected matter relative to an agreed baseline”. It is a mandatory legal test that replaces the “no net loss” standard.
Non-volant	Not capable of flying
Offset	Measures taken to compensate for the residual significant impact of an action on protected matters, after avoidance and mitigation measures are taken.
Plan area (and any variation of this)	The geographical scope of the Plan – the Bogie River Hills and Northern Bowen Basin within the Northern Brigalow Belt IBRA bioregion.
Precautionary principle	The principle that a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.
Project site	Where an action is proposed to take place.
Proponent	The person, company or organisation responsible for proposing an action under the EPBC Act, including referring the action and supporting its assessment and approval, where required.
Proposed action	A project, development, undertaking, activity, or series of activities that is the subject of a referral.
Protected matter	Refers to a specific protected value or item protected under the EPBC Act, for example, a threatened species or threatened ecological community.
Referral	The written application from the person proposing to take an action, or from a consultant, or from another person, containing information about the proposed action in accordance with the EPBC Act and the EPBC Regulations. A referral acts as an application for a decision on the significance of the impact that the proposed action will have on protected matters.
Regional pressure	A social, economic or environmental factor in the context of an identified region that impacts ecosystems, species or communities.
Residual risk	The risk of a residual significant impact on a protected matter, after mitigation measures.
Residual significant impact	Is the impact that remains after all reasonable measures to avoid and mitigate harm have been taken. It is the “leftover” impact that should be addressed through environmental offsets to ensure the environment remains in a state as good as, or better than, before the action occurred.
Restoration potential areas	Locations with the highest potential restoration benefits for MNES, especially through improving vegetation condition.
Representative protection areas	Locations where protection of existing habitat could most benefit MNES outside of areas with protection mechanisms already applied.
Sensitive habitats	Habitat critical for the survival of a species or ecological community.

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Term	Definition
Significant impact	An impact that is important, notable or of consequence under the EPBC Act.
Wind farm development	In the Plan, wind farm developments include activities and components associated with construction, operation, and decommissioning phases, as well as supporting and enabling infrastructure and ongoing maintenance. Such activities include but are not limited to construction, installation and/or updates to turbines and meteorological masts, substations, transmission lines, and all other related activities for renewable energy generation.

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Attachments

Attachment 1 – Consultation

The Queensland Government held various engagement events throughout 2025 to inform development of the Plan. Stakeholders invited to participate included business and industry representatives from a range of sectors, Aboriginal and Torres Strait Islander peoples, local governments, environmental groups, local community groups, landholders, scientific experts, natural resource management organisations and Queensland and Australian Government departments. The stakeholder engagement approach was targeted towards potential users of the plan.

In May - June 2025, 251 stakeholders across Queensland were initially engaged on the bioregional planning process.

In July 2025, 93 stakeholders attended NQ-specific pilot plan online information sessions.

In August 2025, engagement was conducted to understand the environmental, social, cultural and economic values within the Plan area. Stakeholder advice was sought on locally-available data, and stakeholder perspectives on the key pressures and threats impacting MNES. A total of 30 stakeholders attended workshops (including online, in-person and First Nations specific workshops) and 15 completed an online survey.

From October to December 2025, 625 people received a project update and/or were invited to provide feedback on early draft Plan advice, including recommended mitigation measures. Around one-third responded (191), including through two online webinars (105), small group meetings (including First Nations meetings) (56), written submissions (4) and survey responses (26). This engagement was not specific to the Plan so the data is not limited to NQ participants. A small number of participants engaged through more than one channel.

Feedback from engagement has been used to validate findings from other information sources, identify areas for further investigation and ensure critical issues raised by stakeholders were not overlooked in developing the Plan.

First Nations Engagement

The Queensland Government also identified and contacted 57 relevant First Nations peoples or groups including Traditional Owners, Elders, Indigenous Prescribed Body Corporates (PBC's), Native Title holders, associations, companies and community organisations across all pilot plans. This included 21 groups or representatives in the NQ region.

An Aboriginal-owned creative and communications agency was engaged to support First Nations outreach and to provide cultural guidance, supporting culturally appropriate engagement.

In accordance with this advice, DETSI sought to engage with Aboriginal and Torres Strait Islander representatives regarding:

- how they would like to engage in the process and outcomes
- goals and aspirations, where they overlap with the location of MNES
- sensitive cultural sites and environmental considerations (including data privacy)
- proposed mitigation, monitoring and management actions for MNES.

Consultation has not yet addressed all of those questions due to availability of First Nations representatives. This is a key limitation of the Plan. DETSI intends to continue working with First Nations representatives to consider and incorporate additional information gained from ongoing consultation with First Nations peoples.

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