Origin Energy
Gas Supply Security Project

MNES Assessment Report

Appendix A: Environmental Constraints Planning and Field Development Protocol

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1. Purpose

The Environmental Constraints Planning and Field Development Protocol (the Protocol) for the Gas Security Supply Project (the Project) aims to ensure that infrastructure siting:

- considers Matters of National Environmental Significance (MNES), listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), when selecting the location of petroleum activities; and
- avoids, minimises, mitigates, rehabilitates or offsets disturbances to MNES.

The Protocol also recognises that, in addition to environmental constraints, landholder, engineering and cultural heritage constraints must be considered during infrastructure siting.

2. Scope

This Protocol applies to siting of petroleum activities for the Project, including:

- wells
- gas and water pipelines
- gas processing facilities
- water management facilities
- supporting infrastructure (including accommodation, access tracks, maintenance facilities, laydown areas and utilities).

3. Protocol

The Protocol provides a process for assessing MNES constraints during the planning and design of petroleum activities for the Project.

3.1. Planning principles

A hierarchy of environmental management practices will be adopted to minimise potential impacts to MNES through:

- **Avoidance** – avoid disturbance to MNES
- **Minimisation** – minimise disturbance to MNES where disturbance cannot reasonably and practicably be avoided
- **Mitigation** – implement mitigation and management measures to minimise impacts to MNES
- **Rehabilitation** – actively rehabilitate disturbance to MNES in accordance with the Rehabilitation Management Plan and relevant environmental authority (EA) conditions
- **Offset** – where required, provide offsets for activities that result in a significant residual impact (SRI) to MNES.

Section 4 details how these principles are used to manage potential impacts to MNES.

3.2. Environmental constraints analysis

The constraints categories detailed in Table 1 represent requirements for constraints planning and field development for the Project. Based on MNES values (including relevant listing status under the EPBC Act), different constraints categories will be applied to determine the types of development permitted within each category. A full list of constraint categories, constraints, permitted activities and management measures are detailed in Table 1.

Table 1 Project Area constraint categories

Constraint category	EPBC Act constraint	Development permitted	Management measure
No-go area	• National Parks • Conservation Parks • Spring vents and/or spring complexes protected under the EPBC Act (i.e. springs where the threatened ecological community (TEC) *the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin* has been identified and/or springs that support other EPBC Act-listed threatened species) • Wetlands of International Importance (Ramsar)	No petroleum activities	Avoidance
High constraint area	• Habitat for a species listed as critically endangered under the EPBC Act at the time of the referral[1]	Low impact petroleum activities[2] Linear infrastructure	Minimisation Mitigation Rehabilitation
Moderate constraint area	• All other MNES constraints under the EPBC Act approval	All petroleum activities[3]	
Low constraint area	• All other environment constraints (non MNES)	All petroleum activities	Rehabilitation

1. Habitat for species listed as critically endangered under the EPBC Act at the time of referral will be treated as a high constraint area irrespective of the constraint's basis ranking. Infrastructure developments in these areas will be restricted to low impact petroleum activities and linear infrastructure
2. Definitions for these activities are provided in the relevant EAs
3. All petroleum activities will be permitted within the moderate constraint area, however, areas of habitat critical to species' survival will be preferentially avoided over areas with lower MNES values.

The constraints will be identified using GIS datasets sourced from Government datasets and Origin GIS datasets. Where required, ecological assessments would be undertaken prior to disturbance to validate the presence of MNES values. The results of these assessments would be used to determine the location of petroleum activities through the avoidance of, and minimisation of disturbance to, MNES values.

3.2.1. Avoidance

Preliminary infrastructure locations will be relocated or modified to avoid disturbance to MNES where practicable, including the following avoidance measures:

- re-design / relocation of proposed infrastructure
- construction of wells using horizontal drilling technology
- direction drilling of pipelines under TECs, threatened flora, threatened fauna habitat, and migratory fauna habitat
- utilising existing cleared areas and existing infrastructure (e.g. access tracks).

3.2.2. Minimisation

Disturbances to MNES will be minimised where practicable by:

- minimising pipeline right-of-way widths

- minimising disturbance areas required for well pads during construction and operation
- using minimal disturbance well pads and access tracks
- ensuring non-linear infrastructure will be excluded from watercourses
- minimising the direction, intensity and/or extent of impacts, if clearing cannot be avoided.

3.2.3. Mitigation

Disturbance will be mitigated to reduce the scale and intensity of potential impacts to MNES values through compliance with relevant EA conditions, the Environmental Management Plan (EMP) and EPBC Act approval conditions, and other regulatory requirements such the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (DAF, 2018).

3.2.4. Rehabilitation

Disturbance will be rehabilitated in accordance with the Rehabilitation Management Plan and the relevant EA conditions.

3.2.5. Offset

To compensate for any SRI to MNES, after avoidance and mitigation measures are accounted for, offsets will be provided in accordance with the Offsets Plan and the EPBC Act Environmental Offsets Policy (DSEWPC, 2012).

4. Pre-disturbance requirements

Prior to disturbance, a site-selection process is undertaken to ensure that the proposed location of petroleum activities is complaint with the constraints detailed in Table 1. Figure 1 shows the site-selection process carried out by Origin Energy to ensure that the planning and design of petroleum activities are carried out in accordance with Section 3.

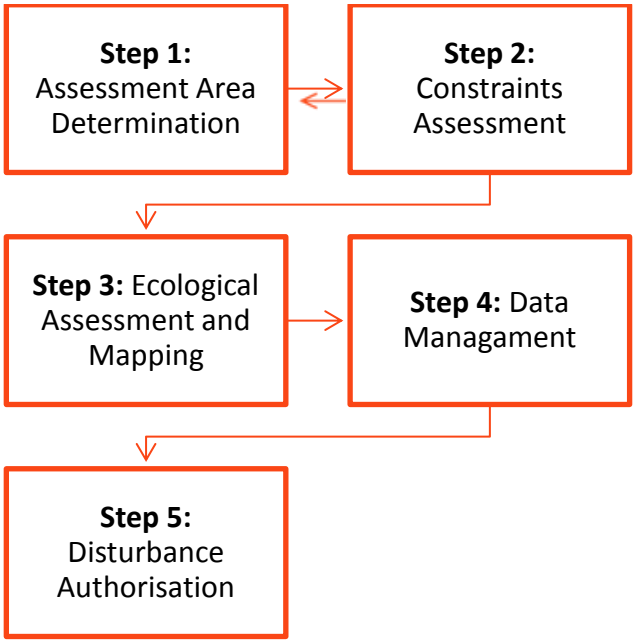

Figure 1 Pre-disturbance requirements

Step 1. Assessment Area Determination

The site-selection process starts with the determination of the area subject to a development package. A development package consists of proposed petroleum activities and geographical location. It may be for a large, project scale area or for a small discrete program of works where the specific geographical location of the disturbance is known. During this stage of development, environmental approval requirements for the development package are documented (including any existing environmental approvals within the development package area, and the proposed infrastructure subject to the approval).

Step 2. Constraints Assessment

A constraints assessment is then undertaken for the development package. The constraints assessment consists of the following:

- a GIS analysis of MNES habitat modelling and mapping data, ecology data and remote sensing data to identify MNES values and constraints likely to be disturbed
- identification of areas that may require further ecological assessment.

The MNES values identified during this assessment are then used to inform the development package design to preferentially avoid and/or minimise disturbance to MNES, while considering landholder, engineering and cultural heritage constraints. The development package may be revised based on the outcome of the constraint's assessment.

Step 3. Ecological Assessment and Mapping

If required, further ecological assessment is conducted to validate MNES values within the assessment area. The scope of the assessment will vary depending on the location of the approval area, proposed disturbance, and the environmental constraints being assessed. Field validation may be used to inform ecological assessment.

Step 4. Data Management

Alterations to mapped MNES values and alterations to the proposed design are uploaded to Origin Energy's GIS to optimise future developments within the assessment area.

Step 5. Disturbance Authorisation

Once the assessment process is finalised, disturbance authorisation is issued, and petroleum activities can proceed subject to EPBC Act approval conditions and other regulatory requirements.

5. Post-disturbance recording keeping

Where disturbance to MNES has occurred, the following details will be recorded:

- the location of the disturbance
- the petroleum activities associated with the disturbance
- the MNES values disturbed
- the extent of the disturbance and acquittal against the disturbance limits authorised under the EPBC Act approval; and
- the extent of SRI and acquittal against offsets authorised under an EPBC Act approval.

6. Definitions

Table 2 provides select definitions used throughout this document.

Table 2 Definitions

Term	Definition
Conditions	The conditions attached to the approval of the action
EA	An environmental authority providing environmental management requirements for petroleum activities authorised under the *Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPBC Act Offsets Policy	The EPBC Act Offsets Policy (DSEWPC, 2012) provides guidance on the role of offsets in environmental impact assessments, and how the Commonwealth Department considers the suitability of a proposed offset *https://www.environment.gov.au/system/files/resources/12630bb4-2c10-4c8e-815f-2d7862bf87e7/files/offsets-policy_2.pdf*
GIS	Geographic information system
Linear infrastructure	Infrastructure including (but not limited to) gas and water gathering lines, low and high-pressure gas and water pipelines, roads and tracks, power lines and other service lines
Listed	Those species, TECs or other identified matters of environmental significance listed for protection under the EPBC Act
Low impact petroleum activities	Low impact petroleum activities means petroleum activities which do not result in the clearing of MNES habitat
Minister	The Minister responsible for Part 4 of the EPBC Act and may include a delegate of the Minister under s.133 of the EPBC Act
MNES	Matters of national environmental significance, being the relevant matters protected under Part 3 of the EPBC Act
Non-linear infrastructure	Infrastructure including (but not limited to) exploration and production wells, compressor stations, regulated dams, reverse osmosis plants, brine encapsulation facilities, workers camps, and maintenance facilities
Offsets	Offsets are defined as measures that compensate for the significant residual impacts of an action on the environment. Where appropriate, offsets are considered during the assessment phase of a referral under the EPBC Act and delivered during implementation of the Project
Plan	Includes a report, study, protocol or strategy (however described)
SRI	Significant residual impact on MNES following consideration of mitigation measures including rehabilitation and offsets