



Protocol for Constraints Planning and Field Development

Australia Pacific LNG Project

October 2019

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3	12/02/2021	Approved with variation	Strategic Approvals
2	31/08/2011	Issued as Final	RU

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1.0 Introduction

The planning and development of gas field infrastructure is an iterative process. The Australia Pacific LNG Upstream Project Area will be progressively developed as the gas resource is realised. The Constraints Planning and Field Development Protocol (the Protocol) provides for the identification and assessment of Matters of National Environmental Significance (MNES) and the avoidance and management of potential environmental impacts in accordance with approval EPBC Act approval 2009/4974.

1.1 Scope of the Protocol

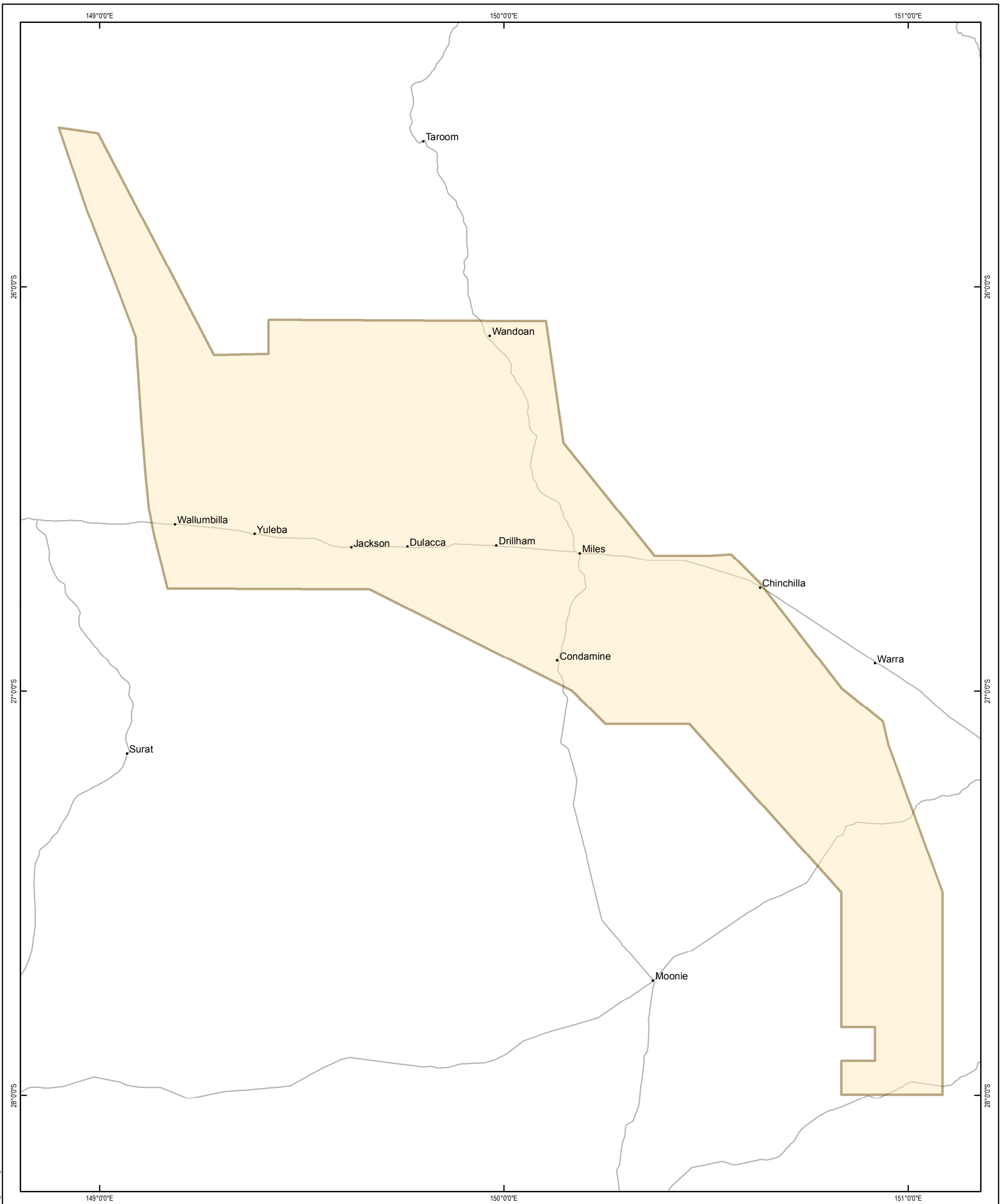
The Protocol provides a method for assessing environmental constraints during the planning and field development process. The purpose of the Protocol is to set out the framework for identifying and assessing Matters of National Environmental Significance (MNES) and avoiding or minimising potential environmental impacts associated with development of the APLNG Upstream Project. The Protocol must comply with requirements of EPBC Act Approval 2009/4974.

1.2 Land Disturbance Approach

A hierarchy of management principles is adopted when planning for petroleum activities that will result in land disturbance within the Upstream Project Area. These management principles are:

1. Avoidance - Avoiding direct and indirect adverse environmental impacts where reasonable and practicably possible;
2. Minimise - Minimise direct and indirect adverse environmental impacts where impacts cannot be avoided;
3. Mitigate - Implement mitigation and management measures to minimise direct, indirect and cumulative adverse environmental impacts;
4. Remediation and Rehabilitation - Actively remediate and rehabilitate impacted areas to promote and maintain long-term recovery; and
5. Provide Offsets - Where required, offsets will be provided for activities that result in an unavoidable significant residual adverse impact to MNES in accordance with EPBC approval 2009/4974.

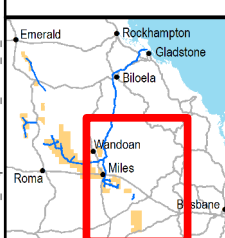
This Protocol does not supersede the management requirements or legal obligations provided by other government approvals. Other constraints relevant to the Project that are outside the scope of this Protocol include landholder constraints, cultural heritage (Indigenous and non-indigenous) as well as land use and tenure constraints. These additional constraints are discussed in more detail in Section 2.3.



- Legend**
- Town
 - Major Road
 - APLNG EPBC Approval 2009/4974

Source Information:
 © Origin/APLNG 2019
 © State of Queensland (Department of Natural Resources and Mines) 2019
 © Pitney Bowes (Streetpro) 2019

Scale 1:975,000 (at A3)
 0 7.5 15 30
 Kilometres
 Coordinate System: GCS GDA 1994



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0	Issued For Use	JM	DK	GH	DK	06/06/2019
A	Issued For Information Only	JM	PH	GH		06/06/2019



Figure 1 APLNG EPBC Approval Area Overview Locality Map
Date: 06 June 2019

Map Number	Doc No	Rev
1 of 1	Map ID GISWR_67298	0

2.0 Constraints Planning

The Australia Pacific LNG GIS contains mapping layers which includes environmental constraints. The GIS is used to identify mapped constraints and locate infrastructure to avoid particular environmental values. The development of the constraints layers is an iterative process. As new data becomes available, it is updated in the GIS through a process of data acquisition, cleansing and verification.

2.1 Constraints Categories

The broader environmental constraints for the APLNG Project are derived from a range of sources depending on the constraint type. The constraints GIS datasets considered will be sourced from Government datasets and APLNG GIS datasets. In addition to the constraints datasets, all current survey data, aerial photography, maps and other information relevant to the APLNG Project will be utilised during the constraints planning and field development process. The constraints categories as detailed in GIS layers represent requirements for constraints planning and field development. However, the groups of constraints that make up the GIS layers will be revised if new constraints are identified, or if Project approval conditions are varied.

A full list of constraints, constraint categories and the relevant development restrictions that that will apply are detailed in Table 6. A high level summary of what activities are permitted in each of the constraint categories is detailed in Table 7.

Table 6: APLNG Project Constraint Categories

Constraint Categories	Constraint	Development Permitted	Mitigation for MNES
No-go Area	<ul style="list-style-type: none"> National parks Conservation parks Forest reserves 	<ul style="list-style-type: none"> No petroleum activities 	<ul style="list-style-type: none"> N/A - No petroleum activities permitted
	<ul style="list-style-type: none"> Spring vents and/or spring complexes protected under the EPBC Act (i.e. spring where the listed TEC The community of native species dependent on natural discharge of groundwater from the Great Artisan Basin has been identified and/ or springs that support other EPBC listed threatened species) 		
	<ul style="list-style-type: none"> Wetlands of International Importance (Ramsar) 		
High Constraint Area	<ul style="list-style-type: none"> Habitat for a species listed as critically endangered under the EPBC Act at the time of referral 2009/4974¹ 	<ul style="list-style-type: none"> Low impact petroleum activities² Linear infrastructure² 	<ul style="list-style-type: none"> Infrastructure limits Right-of-way disturbance limits for linear infrastructure
Moderate Constraint Area	<ul style="list-style-type: none"> All other MNES constraints under EPBC approval 2009/4974 	<ul style="list-style-type: none"> All petroleum activities³ 	<ul style="list-style-type: none"> Significant species management plans TEC and species habitat disturbance limits Offsets Rehabilitation
Low Constraint Area	<ul style="list-style-type: none"> N/A - not MNES 	<ul style="list-style-type: none"> All petroleum activities 	<ul style="list-style-type: none"> N/A - not MNES

1 - Habitat for species listed as critically endangered under the EPBC Act at the time of referral 2009/4974 will be treated as a high constraint area irrespective of the constraints 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 Section 6.0.

3 - All petroleum activities will be permitted within the moderate constraint area, however, areas of higher MNES values will be preferentially avoided over areas with lower MNES values.

Table 7: Summary of Activities Permitted in each Constraint Category for the APLNG Project

Constraint Category	Low impact petroleum activities	Linear Infrastructure	Wells & related petroleum activities	Petroleum activities
No Go area	No	No	No	No
High constraint area	Yes	Yes	No	No
Moderate constraint area	Yes ¹	Yes ¹	Yes ¹	Yes ¹
Low constraint area	Yes	Yes	Yes	Yes

¹ - All petroleum activities will be permitted within the moderate constraint area, however, areas of higher MNES values will be preferentially avoided over areas with lower MNES values.

2.2 Additional Constraints

In addition to MNES constraints described above, other constraints are relevant to the Project that fall outside the scope of this Protocol that must be considered when planning field development activities. These constraints include considerations such as landholder agreements, presence of sensitive receptors and constructability restrictions as well as those prescribed through other legislative mechanisms including cultural heritage (indigenous and non-indigenous) requirements, land use and tenure based constraints. These constraints influence development differently, from outright exclusion to preferential avoidance. Development needs are balanced against all constraints (including MNES), to ensure that activities are compliant with legal obligations and then avoiding and/ or minimising impacts to identified constraints as far as practicable.

3.0 Pre-Disturbance Requirements

As a development packages progress through the various stages of planning and design, the extent of land disturbance required by the program of works will vary. The Protocol will be predominantly applied during the preliminary phases that determine the location of significant land disturbances (i.e. project planning, infrastructure design and construction phases). All disturbances to land must comply with the Protocol and the internal approval process (Section 3.1).

3.1 Internal Approval Process

An internal assessment and approval process is used to ensure new land disturbance accounts for existing constraints. Figure 2 shows the application of the of the internal approval process. The process will be applied so as to ensure that the planning, design and decision making processes for all new field development and land disturbance activities implement the constraints determined in accordance with Section 2.0 and consists of the five steps described below.

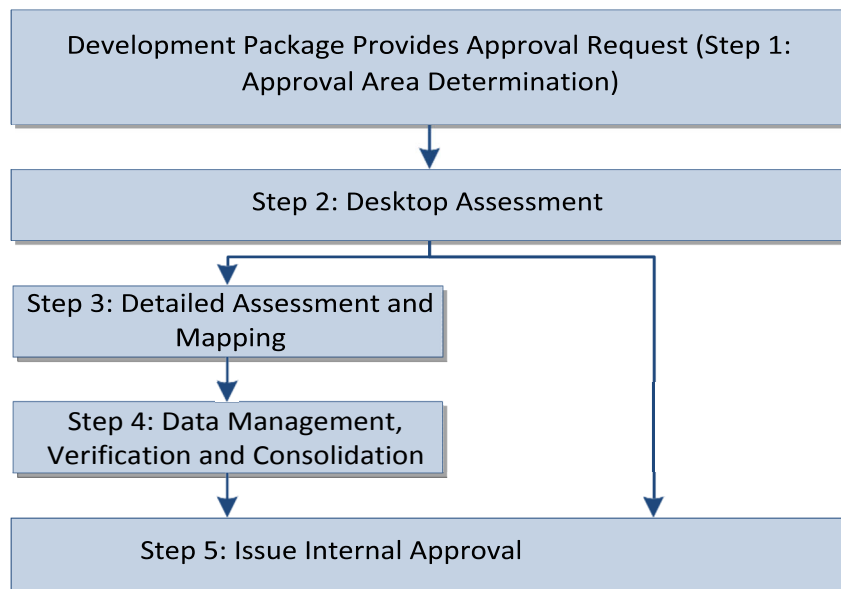


Figure 2: The Internal Approval Process

3.1.1 Step 1: Approval Area Determination

The disturbance initiation process starts with the determination of the area subject to the development package. The development package can be for a large area project scale internal approval allowing certain infrastructure types within certain areas or smaller discrete programs of works where the proposed geographic location of the infrastructure requiring the disturbance (GIS location data) is known. During this stage of development, the project related details such as the type of approval, name of the project and the proposed infrastructure subject to the approval is documented.

3.1.2 Step 2: Desktop Assessment

The desktop assessment to be undertaken will consist of the following:

- Identifying additional external environmental and regulatory permits and approvals required to be in place prior to the commencement of disturbance.
- Assessment of the mapped constraints using internal GIS constraints data. The assessment will involve a review of high resolution aerial photography and determination of the accuracy of existing constraints data in the internal GIS;
- Identifying areas that require a detailed environmental assessment. A detailed environmental assessment will be undertaken in areas that satisfy the following two conditions:

1. Have low accuracy constraints data. Whether ecological assessment and mapping data is suitable and can be relied upon for constraints planning and internal approval process will be assessed by a suitably qualified person. Factors to be considered by the suitably qualified person include:
 - Results of the previous survey when compared to current high resolution aerial photography;
 - Ecological values assessed and the survey methodology employed;
 - Proximity of any existing survey data in relation to the assessment area;
 - Time period from when the field survey was last conducted;
 - Data quality including any confidence scores assigned to the data by a suitably qualified person.

Should the suitably qualified person consider that the ecological assessment and mapping methodology broadly aligns with the methodology attached in Appendix A and the temporal scale of the assessment in respect to the values assessed is such that a new detailed environmental assessment is unlikely to change the results of the assessment then the existing environmental assessment will be considered reliable.

2. Are likely to contain one or more of the following environmental constraints:
 - Threatened fauna species habitats;
 - Threatened flora species and habitats;
 - Vegetation Communities specifically REs and TECs;
 - Wetlands; or
Springs.

A desktop assessment will be adequate to inform the final internal environmental approval (avoiding Step 3) in the following two circumstances:

1. The desktop assessment has determined that the approval area has been accurately assessed and mapped in the past and the constraints data derived from the assessment is accurate and mapping can be relied upon.
2. Assessment of the mapped constraints data and high resolution aerial photography in the internal GIS indicates that the approval area is unlikely to contain any of the environmental constraints listed above. This would apply to predominantly cleared areas with little or no structured woodland / forest vegetation.

If either of the above two circumstances have been met then the process will be continued at Step 5. If the desktop assessment has determined detailed environmental assessment is required then the process continues at Step 3.

3.1.3 Step 3: Detailed Assessment and Mapping

Where required by the desktop assessment, a detailed environmental assessment will be conducted to quantify the environmental values present. The detailed environmental assessment methodology is provided in Appendix A.

The scope of the detailed environmental assessment will vary depending on the location of the approval area and the environmental constraints being assessed. The detailed environmental assessment will be conducted by suitably qualified person.

The objective of the detailed environmental assessment is to:

- Identify and target specific constraints and assess them in accordance with the internal procedures. Targeted specific constraints will include, but are not limited to, the following:
 - Threatened fauna species habitats;
 - Threatened flora species and habitats;
 - Wetlands;

- Watercourses;
- Springs;
- Vegetation Communities specifically REs and TECs; and
- Pests and weeds.
- Map the environmental constraints present within the approval area; and
- Determine whether the area requires re-classification in accordance with the constraint basis ranking and the constraint categories listed in Table 6 and update internal constraints mapping.

Field assessment surveys will inform future options assessments relating to potential field development impacts on environmental constraints including MNES and provide recommendations to inform decisions to manage the risk of adverse impact to such values.

3.1.4 Step 4: Data Management, Verification and Consolidation

Field validated values and alterations to mapping will be uploaded to the internal GIS and made available to the business for further optimisation of future developments. The iterative process of data updates following detailed environmental assessment increases the accuracy of the Desktop Environmental Assessment (Step 2).

3.1.5 Step 5: Issue and Acceptance of Internal Environmental Approval Conditions

Subject to the environmental constraints present, an internal approval will be issued authorising certain petroleum activities to proceed. Once the internal approval has been granted, development activities can proceed subject to requirements of the internal approval and other internal processes.

The assessment of the actual extent of disturbance to environmentally sensitive areas, including MNES, will also be considered at this stage, along with the cumulative extent of disturbance relative to the disturbance limits.

4.0 Post-Disturbance Requirements

4.1 Recording and Tracking Disturbances

Where disturbance to MNES constraints is permitted, the following details will be recorded:

- The location and extent of the disturbance and the type of infrastructure or activity responsible for the disturbance;
- The related pre-construction environmental assessment documents identifying the environmental constraint;
- The reasons for the decision including justification for the action taken, description of the efforts taken to avoid impact, and an explanation why, given the coexisting constraints, the decision was justified;
- The environmental constraints disturbed; and
- The extent of the disturbance and the relevant effect on the disturbance limits set out in the approval documents.

The information will be recorded and maintained so that it can be audited. Disturbances will be frequently updated in the internal GIS so that predicted disturbances can be analysed with actual disturbances and records updated to accurately reflect cumulative disturbances levels.

4.2 Data Collection and Storage

Accurate records, survey information, photographs, field data or any material associated with the field validation requirements will be maintained to demonstrate that surveys and environmental assessments were conducted in a manner consistent with this protocol. This material will be provided to the Department upon request.

The results of the detailed environmental assessment will be documented and records maintained as required in approval EPBC 2009/4974.

5.0 Approval and Review of the Protocol

This Protocol will be published on the APLNG website. The Protocol will be revised to reflect the any relevant changes to approval conditions. Examples of changes that may require review and amendment of the Protocol include:

- Changes to the geographic extent of the project;
- Changes in the listing status of flora and fauna species relevant to the project;
- Changes in the listing status of Threatened Ecological Communities relevant to the project;
- Revisions to databases and datasets;
- Amendments to EAs;
- Amendments to legislation; and
- At the request of the Commonwealth Government.

6.0 Definitions

Term	Definition
Conditions	The conditions attached to the approval of the action
Environmental Impact Statement (EIS)	A formal process used to predict the environmental, social and health effects of development activities and to address the mitigation of identified potential impacts.
Gas field development	All activities associated with the development of the gas fields including (but not limited to) site clearance and site preparation; development of exploration and production wells; development of water and gas transmission pipelines; infrastructure access road construction; construction of workers accommodation and office facilities; construction of gas compression stations; construction of pumping stations; construction of water treatment facilities; and construction of water storage dams.
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, ecological communities or other identified matters of environmental significance listed for protection under the EPBC Act.
Low impact petroleum activities	<p>Low impact petroleum activities means petroleum activities which do not result in the clearing of native vegetation, earthworks or excavation work that cause either, a significant disruption to the soil profile or permanent damage to vegetation that cannot be easily rehabilitated immediately after the activity is completed.</p> <p>Examples of such activities include but are not necessarily limited to:</p> <ul style="list-style-type: none"> • chipholes • coreholes • geophysical surveys • seismic surveys • soil surveys • topographic surveys • cadastral surveys • ecological surveys • installation of environmental monitoring equipment (including surface water).
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.
Plan	Includes a report, study, protocol or strategy (however described).
Regulatory agency	Agencies administering the EPBC Act
Relevant Authority	A person or body authorised in writing to exercise powers under government environmental Regulations or Acts.
Suitably Qualified Person	A person who has professional qualifications, training, skills and experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature

7.0 References

Cropper, S. (1993) *Management of endangered plants*, CSIRO Publications, Melbourne.

Department of Environmental and Heritage Protection (EHP) (2014). *Biodiversity Assessment and Mapping Methodology*. Version 2.2. Department of Environment and Heritage Protection, Brisbane.

Department of Environmental and Heritage Protection (EHP) (2014) *Flora Survey Guidelines - Protected Plants Nature Conservation Act 1992*. Business Reform, Nature Conservation Services, Department of Environment and Heritage Protection

Eyre, T.J., Wang, J., Venz, M.F., Chilcott, C., and Whish, G. (2009). *Buffel grass in Queensland's semiarid woodlands: response to local and landscape scale variables, and relationship with grass, forb and reptile species*. The Rangeland Journal 31, 293-308.

Goff, F.G., Dawson, G.A. and Rochow, J.J. (1982) Site examination for threatened and endangered plant species. *Environmental Management* 6: 307-316.

Lindenmayer, D.B., Cunningham, R.B, Pope, M.L., and Donnelly, C. F., (1999). *The response of arboreal marsupials to landscape context: A large scale fragmentation study*. *Ecological Applications* 9, 594-611.

McIntyre, S., McIvor, J.G., and Macleod, N.D. (2000). *Principles for sustainable grazing in eucalypt woodlands: landscape scale indicators and the search for thresholds*. In Hale, P., Petrie, A., Moloney, D., and Sattler, P. (Eds.), *Management for Sustainable Ecosystems*, University of Queensland, Brisbane, pp. 92-100.

Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (2012) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 3.2. Updated August 2012. Queensland Herbarium, Queensland Department of Science, Information Technology, Innovation and the Arts, Brisbane. 124 pp.





Appendix A: Detailed Assessment Methodology

Detailed Assessment Methodology

Detailed site assessments will:

- take into account and reference previous ecological surveys undertaken in the area and relevant new information on the likely presence or absence of MNES;
- Be undertaken by a suitably qualified ecologist;
- Document the survey methodology, results and significant findings in relation to MNES;
- Field data is to be collected in the APLNG GIS database;
- Detailed ecological site assessments should include the following flora and fauna survey methodologies where applicable.

Vegetation Community Assessment

The vegetation community assessment is based on the Queensland Herbarium's *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner et al., 2012). Features to be assessed within assessment sites include the following:

- Notes on presence or absence of native vegetation;
- Photographic evidence (multiple photos);
- Quaternary level notes on dominant species (e.g. *Corymbia citriodora*, *Eucalyptus crebra* woodlands on sandy soils, mostly native understory *Aristida* spp.);
- Land Zone, landscape topography and soil type;
- Height of the Ecological Dominant Layer;
- Estimate of patch size;
- Native ground cover species richness;
- Total percent ground cover;
- Per cent species richness of declared plant pest species;
- Organic litter cover;
- Estimate of shrub density;
- Total density of coarse woody material;
- Presence and dominance of key flora species within all structural layers; and
- Incidental observations (including presence of weed species / populations).

In accordance with the Neldner Methodology, the attribute accuracy of the groundtruthed vegetation data in the APLNG GIS is classified using the following confidence ratings:

- A = high confidence in accuracy of polygon attributes
- B = moderate confidence in accuracy of polygon attributes
- C = low confidence in accuracy of polygon attributes



Fauna Species Habitat Assessment

Where the desktop assessment reveals the potential for fauna habitat to exist within the Assessment Area, further desktop and field based assessment may be undertaken. As with the field based vegetation community assessment, field surveys will be undertaken in representative habitat patches. The field assessment will be undertaken using the Habitat Mapping Assessment Tool (HMAT). Preliminary assessments of the following factors are to be undertaken (at a desktop level) and recorded on the HMAT:

1. Tenement in which the Habitat Zone is located (Part A of HMAT);
2. Biodiversity Planning Assessment (BPA) Mapping (Part B of HMAT);
3. Proximity to water (Part C of HMAT);
4. Underlying vegetation type (Part D of HMAT); and,
5. Specimen backed records (Part E of HMAT).

In addition, a review of fauna databases, reports and mapping may also be conducted to gain an understanding of the species and the species' preferred microhabitat features likely to occur in the area.

The field assessment involves the completion of the HMAT. This will be carried out by a suitably qualified person. The field assessment involves two steps:

1. Review and confirm the results of the desktop assessment (Part A - E); and
2. Complete the microhabitat features assessment (Part F).

Once the data entry stage of the HMAT is complete, the HMAT will predict habitat classes of Unlikely, General, Essential or Core habitat for each of the significant species in the HMAT.

The suitably qualified person must then verify the results of the HMAT as either:

1. Agree and confirm the output of the HMAT; or
2. Disagree with output of the HMAT.

Where the verification finding disagrees with the HMAT an explanation is required within the "Results" tab of the HMAT.

In addition to completing the above assessment process using HMAT, incidental observations of fauna species that are observed while completing the field based elements of HMAT must be recorded as part of this assessment.