

Left intentionally blank to allow for double sided printing

Contents

1.	PURPOSE	1
1.1.	Project description	1
1.2.	Acronyms	1
2.	SCOPE	4
2.1.	Site description and extent	4
2.2.	Land types and uses	4
2.3.	Extent of rehabilitation	4
3.	REHABILITATION METHODS	4
3.1.	Reshaping and stabilisation of landforms	5
3.1.1.	Terrestrial soils.....	5
3.1.2.	Acid sulfate soil management	5
3.2.	Ground cover establishment	5
3.2.1.	Vegetation re-spreading.....	5
3.2.2.	Compost blankets	5
3.2.3.	Turf reinforcement mats	6
3.2.4.	Rock mulching	6
3.3.	Revegetation	6
3.3.1.	Natural regeneration	6
3.3.2.	Direct seeding, hydromulching and seedling reinstatement	6
4.	REHABILITATION MAINTENANCE	6
4.1.	Weed management	7
4.2.	Fire management	7
4.3.	Rework.....	7
5.	REMEDIATION	7
5.1.	Site investigation	7
6.	SUCCESS CRITERIA	8
7.	MONITORING AND COMPLIANCE REPORTING	10
7.1.	Monitoring type, method and frequency	10
7.1.1.	Rehabilitated areas monitoring	10
7.1.2.	Weed monitoring.....	10
7.2.	Compliance reporting, contents and frequency	10
7.2.1.	EPBC Act compliance reporting.....	10
7.2.2.	Environmental Authority reporting.....	11
8.	REVIEW AND RESPONSIBILITY	11
8.1.	Review	11

8.2.	Responsibility	11
8.2.1.	Inductions and training.....	11
8.2.2.	Inspections and corrective action.....	11
9.	REFERENCES.....	11

LIST OF FIGURES

Figure 1.1: Australia Pacific LNG Facility Construction Rehabilitation Areas.....	3
---	---

LIST OF TABLES

Table 1.1: Acronyms.....	1
Table 1.2: Success criteria by rehabilitation type.....	9

1. PURPOSE

The purpose of this document is to provide an overarching standard relating to rehabilitation activities of temporary construction facilities/areas within the LNG facility site on Curtis Island at Gladstone and to also address State and Federal government approval conditions for the Australia Pacific LNG (APLNG) Project.

The Construction Rehabilitation Plan specifically addresses conditions 25 (i) of the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 Approval 2009/4977 issued by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (now the Department of the Environment) on 21 February 2011. The plan also addresses condition A7 (j) of the Environmental Authority (No. EPPG00715613).

Rehabilitation associated with decommissioning of the LNG Facility is not covered here.

1.1. Project description

As part of the wider APLNG Project and on behalf of the APLNG Project joint venture shareholders, Origin Energy Limited (Origin; 37.5% interest), ConocoPhillips Australia Pty Ltd (ConocoPhillips; 37.5% interest) and China Petrochemical Corporation (SINOPEC Group; 25% interest), ConocoPhillips Australia Pty Ltd (COPA) operates a coal seam gas (CSG) to LNG production and marine export facility on Curtis Island near Laird Point, Queensland. The APLNG Project has a life of at least 30 years, and is made up of three primary elements:

- Gas fields in the Bowen and Surat Basins of south-west and central Queensland;
- A 530km high pressure gas transmission pipeline from the gas fields to Curtis Island, near Gladstone in central Queensland; and
- The LNG facility (APLNG Facility), which is ultimately to comprise four liquefaction trains each producing (at design capacity) approximately 4.5 million metric tonnes per annum (Mtpa) of LNG, up to 20Mtpa in total. The APLNG Facility includes gas processing plant, utilities such as power generation and distribution and marine and ancillary facilities required to support facility operations.

This Construction Rehabilitation Plan has been written for the LNG facility and its associated infrastructure on Curtis Island (Figure 1.1).

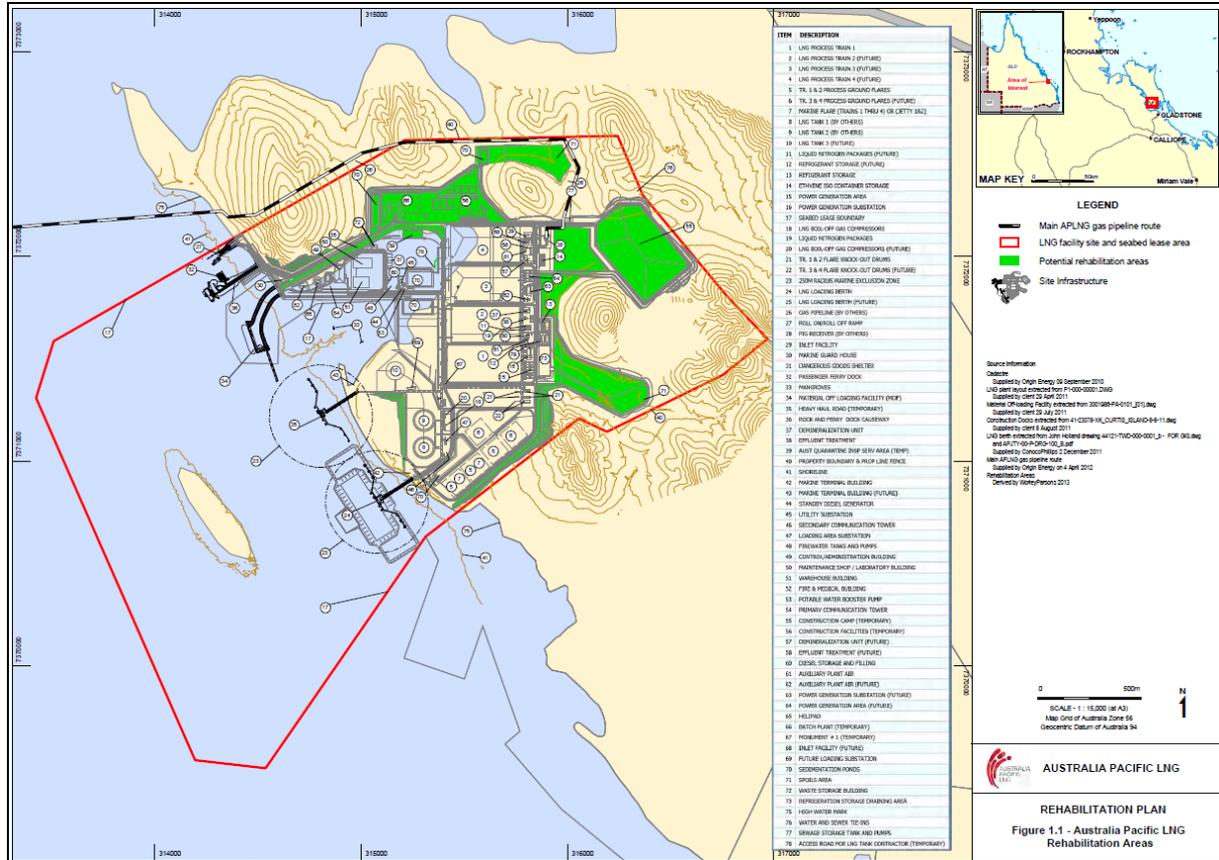
1.2. Acronyms

Table 1.1: Acronyms

Acronym	Definition
APLNG	Australia Pacific LNG
ASS	Acid sulphate soil
ASSMP	ASS management plan
DOTE	Department of the Environment
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EIS	Environmental Impact Statement
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GSDA	Gladstone State Development Area

LNG	Liquefied Natural Gas
QCLNG	Queensland Curtis LNG
MOF	Material Offloading Facility
RORO	Roll-On Roll-Off ramp

Figure 1.1: Australia Pacific LNG Facility Construction Rehabilitation Areas



2. SCOPE

2.1. Site description and extent

The Australia Pacific LNG Project LNG facility site is located on Curtis Island, within Port Curtis, approximately 11km northwest of Gladstone City on Curtis Island. The LNG facility is located on Lot 3 on SP228454 near Laird Point and is within the Curtis Island Industry Precinct of the Gladstone State Development Area (GSDA). The location of the LNG facility site is shown in Figure 1.1 and the LNG facility site layout and its extent within the Gladstone State Development Area are shown in Figure 1.1.

2.2. Land types and uses

The LNG facility is surrounded by remnant vegetation previously utilised for low intensive cattle grazing. Approximately 300ha of remnant vegetation was approved for clearing for the project. However, less than 200ha has been cleared.

To the east of the LNG facility site, the Department of Infrastructure and Planning has designated an Environmental Management Precinct with an aim to protect terrestrial ecology on Curtis Island.

There are no residential dwellings located within or near the LNG facility. The nearest dwellings on Curtis Island are located at the settlement of South End on the island. The Gladstone urban area is located approximately 11km to the southeast of the LNG facility on the southern side of Port Curtis.

Australia Pacific LNG is the northern most of the three operating LNG facilities. The Australia Pacific LNG facility is bordered by Queensland Curtis LNG (QCLNG) to the south.

The LNG facility site lies wholly within the Great Barrier Reef World Heritage Area and the intertidal area in the central and western portions of the site form part of the Port Curtis Marine Park and wetland area.

2.3. Extent of rehabilitation

The majority of the LNG facility site consists of areas of permanent infrastructure required for the processing, storage and export of LNG. These permanent infrastructure areas are not subject to any rehabilitation measures. The extent of the areas subject to rehabilitation is shown in Figure 1.1.

The measures proposed within this plan will also be incorporated for rehabilitation of disturbed areas across the LNG facility as required and will not be limited to those areas shown in Figure 1.1.

3. REHABILITATION METHODS

This section outlines a general rehabilitation method that will be utilised for the rehabilitation of the LNG facility site. Infrastructure specific rehabilitation methods are provided below in Section 4.

3.1. Reshaping and stabilisation of landforms

3.1.1. Terrestrial soils

General soil management measures implemented during construction include topsoil stripping, storage and replacement and subsoil excavation, storage, protection and replacement. At the completion of construction works, reshaping, stabilisation and / or revegetation of disturbed areas is required and will be undertaken as specified in the Stages 1 to 3 Stormwater Management Plans - Erosion and Sediment Control Plans (25509-100-V26-G00Y-00298, 25509-100-V10-G00Z-00337 and 25509-100-V26-G00Y-00192).

The height of the spoil areas will not exceed the highest natural topographical point in each spoil area and designated spoil areas will be rehabilitated as soon as possible after construction has been completed, as required by the EA.

3.1.2. Acid sulfate soil management

The ASS management plans (ASSMP) discussed in Section 6 (Table 6.4) of the Construction EM Plan (APLN-000-EN-R01-D-10181) have been developed to describe the Project works, particularly in areas of ASS, and outline the necessary onshore management measures required to minimise environmental impact associated with the development of the LNG facility in ASS areas. More specific ASS management actions are detailed within subsequent Construction Contractor and subcontractor ASSMPs specific to construction areas such as the materials off-load facility (MOF), roll-on roll-off (RORO) ramp, causeway and aggregate docks.

Overall the project has involved the excavation and treatment of approximately 50,000m³ of ASS and the placement of fill (site derived and imported) to variable depths to achieve the design elevations. Validation of the treatment was undertaken and included in the Acid Sulfate Close-Out Report (25509-100-V10-G00Z-00563). At the completion of construction the impact of disturbance of ASS is considered minor as all excavated ASS will have been treated, stockpiled, covered with fill and revegetated. ASS disturbance as a result of future work is unlikely, but in that event, the existing ASSMPs would be followed.

3.2. Ground cover establishment

3.2.1. Vegetation re-spreading

Site produced native vegetation mulch will be re-spread over disturbed areas where practicable to provide ground cover and assist with the distribution of seed stock and revegetation. Typically this form of ground cover establishment will be utilised on gently undulating topography only.

3.2.2. Compost blankets

Organics compost blankets will be used on eroded, bare or disturbed soils, slopes and batters.

A site-specific native seed mix will be applied within the compost blanket bringing about the revegetation to match the disturbed adjacent ecosystems.

3.2.3. Turf reinforcement mats

Turf reinforcement mats (TRMs) such as Enkamat and Grassroots will be used on the steeper slopes on site. TRMs provide immediate erosion protection and long term site armouring and assist in the establishment of vegetation where the forces exerted by water exceed the shear limits of unreinforced vegetation.

3.2.4. Rock mulching

Rock mulching will be the treatment used on areas where vegetation is prohibited due to operational safety requirements.

Geocell will be used as a cellular confinement system in combination with rock mulching on steeper slopes to add stability.

3.3. Revegetation

3.3.1. Natural regeneration

Trees and shrubs will be allowed to regenerate naturally on cleared areas, other than those areas that must be free of vegetation for the purpose of the safe operation of the LNG Facility.

Following the construction of the marine facilities the temporary disturbance footprint (that area within 10m of the permanent infrastructure footprint) will be allowed to naturally regenerate.

3.3.2. Direct seeding, hydromulching and seedling reinstatement

All revegetation will be undertaken using Australian species sourced from the South Eastern Queensland and/or Brigalow Belt bioregion/s. The three different methods of direct seeding, hydromulching and seedling reinstatement will be employed based on slope gradient and stability.

4. REHABILITATION MAINTENANCE

Rehabilitation works on disturbed areas must be fully implemented within twelve months of completing each component of the LNG facility. Plant and vehicular access to rehabilitated areas of the LNG facility will be limited to activities that are required to perform essential maintenance. All other traffic is prohibited on topsoil areas and should remain off the rehabilitation areas to enable successful establishment of groundcover. Flagging or fencing of rehabilitation areas will be required with fences to be removed once sufficient vegetation cover has established (i.e. 80% of the cover).

Maintenance will take place to ensure the following objectives are met:

- landforms remain stable
- erosion control measures remain effective
- stormwater runoff and seepage from rehabilitated areas do not negatively affect the environmental values of any waters
- plants show healthy growth and recruitment is occurring
- weed species abundance and population density is managed.

4.1. Weed management

Where weeds have become established in rehabilitation areas, treatment applications will be implemented to remove the species from the area and to reduce the potential for these species to spread to new, unaffected areas within the LNG facility site and to surrounding lands. Priority weed infestations have previously been identified within the LNG facility site and these will be the focus of treatment application works for the site. Declared weed species known to occur within the LNG facility site prior to construction that are of particular concern include three declared plants of Queensland:

- common lantana (*Lantana camara*)
- common prickly pear (*Opuntia stricta*)
- rubber vine (*Cryptostegia grandiflora*).

In addition to the above three plants, the declared plant parthenium (*Parthenium hysterophorus*) was found on site in 2015.

Details regarding species specific control measures are located within Section 7.3.1 and Appendix 4 – Table 4.3 of the Construction EM Plan.

4.2. Fire management

The LNG facility is separated from the open eucalypt forests and woodlands by an established firebreak.

Revegetation must be managed to ensure compliance with the site specific bushfire management measures as outlined in the Construction EM Plan (APLN-000-EN-R01-D-10181).

4.3. Rework

Rehabilitation works on disturbed areas must be fully implemented within twelve months of completing each component of the LNG facility. Sites not displaying stability (after 12 months) and adequate vegetation cover (80% of cover after 24 months) through either regrowth or direct seeding will undergo re-seeding. Where rehabilitation has failed and further rehabilitation works are required areas will undergo an assessment of the site specific requirements and alternative measures will be explored on a case by case basis.

5. REMEDIATION

5.1. Site investigation

A preliminary site history investigation was conducted as part of the EIS. Investigations outlined in Volume 5, Attachment 11 (WorleyParsons, 2010) have indicated that land contamination, from previous land use activities was considered to be unlikely to be present within the LNG study area.

Throughout the construction phase, assessments have been undertaken for contamination as required following significant spills and leaks.

Preliminary site investigations are conducted to determine the presence or absence of site contamination where notifiable activities have been conducted, where evidence of leakage or spillage of hazardous material is detected.

A preliminary site investigation will include the following components:

- development of a site history
- an inspection of the site
- a basic sampling program to determine if contamination is present
- report preparation.

Investigations will be conducted by suitably qualified persons. The EP Act requires persons submitting contaminated site investigation reports to be members of a prescribed professional organisation listed in Schedule 8 of the Environmental Protection Regulation 2008. Persons conducting site investigations should hold appropriate qualifications, have experience relevant to the investigation and be approved by the Department of Environment and Heritage Protection (DEHP).

The assessment of potential future impacts identified common issues applicable to each phase of LNG facility construction. These include but are not limited to:

- leaks and spills from process equipment
- leaks and spills during refuelling of plant and vehicles
- generation and handling of wastes
- storage of dangerous goods
- weed control.

Any additional site investigations will be conducted in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and attending Schedules and the provisions of the EP Act.

6. SUCCESS CRITERIA

The success criteria by rehabilitation type is shown in Table 1.2.

Table 1.2: Success criteria by rehabilitation type

REHABILITATION TYPE	REHABILITATION OBJECTIVE	INDICATORS	MEASURABLE SUCCESS CRITERIA	CORRECTIVE ACTIONS
Native vegetation	Restore a stable landform with a self-sustaining vegetation consistent with the surrounding vegetation	Vegetation cover	Evaluate the success of rehabilitation methods annually for 3 years after rehabilitation when compared to reference sites.	Review planting procedures and timings.
		Flora species diversity	<p>A minimum of 80% foliage cover of reference sites is maintained in the rehabilitated sites</p> <p>Flora species consistent with the surrounding native vegetation and sourced from the South Eastern Queensland and/or Brigalow Belt bioregion/s.</p> <p>Plants show healthy growth and recruitment is occurring</p> <p>Rehabilitated areas are free of any declared pest plant</p>	<p>Undertake replanting/re-work of areas to enable them to meet these success criteria.</p> <p>Undertake weed control as required and re-survey for weed species.</p>
Ground cover	A stable landform not causing any erosion	Evidence of erosion	Evaluate the success of rehabilitation methods annually for 3 years after rehabilitation.	Evaluate the type of ground cover used and consider potential alternatives if success criteria have not been met.
		Soil coverage	<p>Landforms are stable and show little or no erosion</p> <p>A success criterion for ground cover is a minimum of 80% cover</p>	<p>Reinstate ground cover to meet success criteria.</p> <p>Reshape/rework landform to stabilise surface if erosion is evident.</p>

7. MONITORING AND COMPLIANCE REPORTING

7.1. Monitoring type, method and frequency

7.1.1. Rehabilitated areas monitoring

Monitoring will occur one month following the completion of the final landform and after any significant rainfall event. The monitoring will ensure that no erosion has occurred, the desired landform remains present and natural regeneration of vegetation has commenced.

7.1.2. Weed monitoring

The distribution of weeds within the LNG facility will be recorded through an active inventory of declared and environmental weeds, including the distribution of weeds within rehabilitated areas. Monitoring of the extent and distribution of weed populations including new infestations and weeds within rehabilitated areas will include the following:

- weed surveys monitoring annually for 3 years after rehabilitation.
- monitoring of known weed infestations will be undertaken before and a suitable time frame after treatment to determine treatment success
- photographing prior to and a suitable time frame after treatment applications to provide a visual assessment of the effectiveness of methods to reduce weed density
- updating and maintaining an active inventory of declared and environmental weeds within the LNG facility.

7.2. Compliance reporting, contents and frequency

7.2.1. EPBC Act compliance reporting

Condition 82 of the EPBC Act approval states that the proponent must, when first aware of a non-compliance of any condition of this approval, or plan required to be approved by the Minister under these conditions:

- a) report the non-compliance and remedial action to the department within five business days; and
- b) bring the matter into compliance within a reasonable timeframe agreed to, in writing by the Department

Condition 86 of the EPBC Act approval states that the proponent must produce an Annual Environmental Return which:

- a) addresses compliance with these conditions;
- b) records any unavoidable adverse impacts to MNES, mitigation measures applied to avoid adverse impacts on MNES and any rehabilitation work undertaken in connection with any unavoidable adverse impact on MNES;
- c) identifies all non-compliances with these [EPBC Act approval] conditions, and
- d) identifies any amendments to plans (including this plan) to achieve compliance with these conditions.

7.2.2. Environmental Authority reporting

Condition A21 of the Environmental Authority requires that all documents required to be developed under this environmental authority must be kept for five years.

Condition G22 of the Environmental Authority requires that all documents required to be prepared, held or kept under this environmental authority must be provided to the administering authority upon written request within the requested timeframe, unless an alternate time is agreed to by the administering authority.

8. REVIEW AND RESPONSIBILITY

8.1. Review

Australia Pacific LNG will review the Construction Rehabilitation Plan annually during construction. This review will take into account any new information available to Australia Pacific LNG, including any information and advice provided by Federal or State Government agencies or available from other CSG proponents.

8.2. Responsibility

8.2.1. Inductions and training

Australia Pacific LNG will ensure that all staff and contractors undertaking rehabilitation works participate in the site inductions, to ensure they are familiar with the environmental requirements of the site and are able to locate and report weed infestations and other hazards.

8.2.2. Inspections and corrective action

Australia Pacific LNG will be responsible for undertaking on-site inspections to ensure the success criteria outlined in Table 1.2 are achieved. Procedures in this Construction Rehabilitation Plan are to be followed by all personnel, including the construction contractor and its subcontractors. Australia Pacific LNG and its construction contractor will be responsible for determining if site specific control measures (such as erosion and sediment control measures and weed control) are required.

9. REFERENCES

National Environment Protection Heritage Council 1999. National Environment Protection (Assessment of Site Contamination) Measure 1999.

WorleyParsons 2010. Australia Pacific LNG Project, Environmental Impact Statement

WorleyParsons 2012. Australia Pacific LNG Project, Construction Environmental Management Plan