

# Decommissioning and rehabilitation 25

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## 25 Decommissioning and rehabilitation

### 25.1 Introduction

This section describes the decommissioning and rehabilitation activities of the GFD Project. These activities are required to achieve the following three overarching objectives for the landform:

- Safe for humans, native fauna, and livestock
- Non-polluting
- Stable and able to sustain appropriate land use.

Full details of the decommissioning and rehabilitation activities are provided in Appendix Y-M: Rehabilitation management plan and Appendix Y-N: Decommissioning and abandonment management plan.

This section has been prepared in accordance with section 4.10 of the *Terms of reference for an environmental impact statement* issued March 2013. The index to locate where each ToR requirement is met within this EIS is included in Appendix B: Terms of reference cross-reference.

### 25.2 Regulatory context

This EIS has been prepared in accordance with the State and Commonwealth regulatory context described within Appendix C: Regulatory framework. The legislation, policies and guidelines that apply to the decommissioning and rehabilitation of the GFD Project are outlined in Table 25-1.

Table 25-1 Regulatory context of the GFD Project – decommissioning and rehabilitation

Legislation, policy or guideline	Relevance to the GFD Project
<p><i>Environmental Protection Act 1994</i> (Qld) (EP Act) The EP Act is the principal legislation for the protection and management of environmental values within Queensland. The Act aims to protect the natural environment and associated ecological systems and processes, while allowing for sustainable development.</p>	<p>The EP Act requires the rehabilitation of disturbed areas and the preparation of a rehabilitation program to manage the rehabilitation. This rehabilitation program must also include a financial assurance payable to the government to allow the government to undertake rehabilitation of sites in the unlikely event that Santos GLNG is unable, or fails, to do so successfully.</p>
<p><i>Waste Reduction and Recycling Act 2011</i> (Qld) The Act aims to promote waste avoidance and reduction and to encourage resource recovery and efficiency. The Act provides a strategic framework for managing wastes by establishing a waste and resource management hierarchy.</p>	<p>The Act contains a hierarchy of waste management options to minimise disposal to landfill and maximise waste reuse, as discussed in Section 12: Waste. Decommissioning of GFD Project infrastructure will be undertaken with consideration of the waste management hierarchy.</p>
<p><i>Petroleum and Gas (Production and Safety) Act 2004</i> (Qld) The P&amp;G Act regulates petroleum activities with the aim of developing a safe, efficient and viable petroleum and fuel gas industry in Queensland. Petroleum tenure is granted under the Act.</p>	<p>The Act includes the obligations and responsibilities of petroleum authority and pipeline licence holders to decommission petroleum wells and pipelines.</p>
<p><i>Guideline for Contaminated Land Professionals</i> (Department of Environment and Heritage Protection (EHP), 2012). The guideline establishes best practice for managing contaminated land through the planning and development control process. This guideline outlines minimum assessment requirements and reporting requirements for contaminated land investigations. This guideline supersedes the <i>Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland</i> (Department of Environment, 1998).</p>	<p>The guideline outlines trigger assessment criteria for the investigation of contaminated land. Any locations requiring assessment for contamination during decommissioning and rehabilitation will be assessed in accordance with this guideline.</p>

### **25.3 Decommissioning and rehabilitation objectives and goals**

Specific goals for decommissioning and rehabilitation have been developed for the GFD Project. These goals, which are the same as for the GLNG Project, are:

- Undertake the decommissioning of assets and rehabilitation in a manner that complies with Queensland's legislative requirements and regulatory approvals
- Undertake decommissioning activities and rehabilitation in a manner that meets stakeholder expectations
- Leave a landform which is safe, stable and non-polluting and compatible with the intended post-closure land use and enable effective transfer to third parties, such as landholders
- Provide for the retention and beneficial reuse of infrastructure constructed by Santos GLNG by third parties (e.g. landholders or local authorities), where there is an appropriate agreement in place and regulatory authorities are satisfied.

Prior to commencement of decommissioning rehabilitation activities for an asset, a scope of work shall be developed and agreed with relevant stakeholders. The purpose of preparing an asset specific scope of works is to ensure that decommissioning and rehabilitation activities occur in a manner that minimises and manages health and safety and environmental risks relevant to that asset.

### **25.4 Santos GLNG management framework**

Santos GLNG is committed to implementing the decommissioning and rehabilitation methodology, as described in section 25.6 and section 25.7 to mitigate the potential impacts of the GFD Project. These methodologies will be incorporated into the management framework for the GFD Project, as described in Appendix Y: Draft environmental management plan (Draft EM Plan).

The process for the decommissioning and rehabilitation of the GFD Project infrastructure and disturbance locations as discussed in this section is based on the management plans and standards listed in Table 25-2.

**Table 25-2 Existing Santos GLNG management plans and standards – decommissioning and rehabilitation**

Document	Overview
Decommissioning and abandonment management plan (DAMP)	<p>The DAMP describes the management framework in place for when petroleum activities cease. The objectives of the plan are to:</p> <ul style="list-style-type: none"> <li>• Undertake decommissioning of assets in a manner that complies with regulatory requirements and minimises the risk of environmental harm</li> <li>• Undertake decommissioning activities in a manner that meets stakeholder expectations</li> <li>• Leave a landform that is stable and compatible with intended post-closure land use</li> <li>• Provide for the beneficial reuse of Santos GLNG infrastructure constructed to third parties (e.g. landholders or local authorities) where an appropriate agreement has been signed by both parties and regulatory authorities are satisfied.</li> </ul>
Environment Hazard Standard (EHS) 01: Biodiversity and land disturbance	<p>Details the requirements for planning and conducting operations in a way which avoids or minimises disturbance to land and allows affected areas to be restored within reasonable timeframes.</p> <p>Requires land disturbance to be carried out in a manner that minimises environmental impact, and in accordance with relevant environmental procedures. The standard also includes provisions for the recording of all disturbances, and for the rehabilitation and fencing of disturbance.</p>
Environmental Health and Safety Management Standard (EHSMS) 11.11 Decommissioning and abandonment	<p>Ensures that any environmental, health and safety risks associated with the decommissioning of plant, equipment and facilities are effectively managed.</p> <p>The standard specifies a number of control elements that must be enacted for Santos GLNG operations and activities. These include:</p> <ul style="list-style-type: none"> <li>• Prior to commencement of decommissioning activities, the scope of work for decommissioning shall be developed and agreed with relevant stakeholders.</li> <li>• The following issues shall be considered in the development of the scope of work: <ul style="list-style-type: none"> <li>— Health and safety of future alternative uses of the area</li> <li>— Current environmental standards of the area</li> <li>— Cost effectiveness of remediation measures</li> <li>— Existing and future use of the area</li> <li>— Extent of decontamination and remediation of underground services</li> <li>— Current and potential regulatory standards and legislation</li> <li>— Monitoring system to assess effectiveness of decommissioning</li> <li>— Contracts which are relevant to operating the site.</li> </ul> </li> <li>• On completion of decommissioning and remediation, an assessment of environmental and safety performance (including an assessment of any residual risk) will be carried out by an endorsed competent person.</li> </ul>
Erosion and sediment control management plan (ESCMP)	<p>The ESCMP identifies erosion and sedimentation risk and provides an erosion and sediment control strategy that incorporates understanding of the risk inherent to local land resource characteristics.</p> <p>The ESCMP is supported by the Erosion and sediment control manual, which provides erosion, sediment and drainage controls in line with best practice guidelines.</p>

Document	Overview
GFD Project environmental protocol for constraints planning and field development (the Constraints protocol)	<p>The Constraints protocol applies to all gas field related activities. The scope of the Constraints protocol is to:</p> <ul style="list-style-type: none"> <li>• Enable Santos GLNG to comply with all relevant State and Federal statutory approvals and legislation</li> <li>• Support Santos GLNG’s environmental policies and the General Environmental Duty (GED) as outlined in the EP Act</li> <li>• Promote the avoidance, minimisation, mitigation and management of direct and indirect adverse environmental impacts associated with land disturbances</li> <li>• Minimise cumulative impacts on environmental values.</li> </ul> <p>The Constraints protocol provides a framework to guide placement of infrastructure and adopts the following management principles:</p> <ul style="list-style-type: none"> <li>• Avoidance — avoiding direct and indirect impacts</li> <li>• Minimisation — minimise potential impacts</li> <li>• Mitigation — implement mitigation and management measures</li> <li>• Remediation and rehabilitation — actively remediate and rehabilitate impacted areas</li> <li>• Offset — offset residual adverse impacts in accordance with regulatory requirements.</li> </ul> <p>The Constraints protocol enables the systematic identification and assessment of environmental values and the application of development constraints to effectively avoid and/or manage environmental impacts.</p>
Rehabilitation management plan	<p>The Rehabilitation management plan outlines the rehabilitation objectives for Project-related disturbances within the GFD Project area. This includes the phasing of rehabilitation to first achieve stabilisation and subsequently final rehabilitation for disturbances to land (i.e. ground surface).</p> <p>The Rehabilitation management plan:</p> <ul style="list-style-type: none"> <li>• Describes Santos GLNG’s approach to rehabilitation</li> <li>• Identifies key rehabilitation objectives and criteria to deem rehabilitation success</li> <li>• Outlines general rehabilitation actions to be undertaken by Santos GLNG when rehabilitation a disturbance</li> <li>• Provides an overview of monitoring and maintenance actions to be conducted on rehabilitated areas.</li> </ul>

## 25.5 Decommissioning and rehabilitation

Decommissioning and rehabilitation activities will occur throughout the life of GFD Project and through the various GFD Project phases. They will be implemented for short-term or temporary construction related activities (such as temporary camps) as well as for long-term or more permanent infrastructure (such as compressor stations and water management facilities). Key activities that will be undertaken include:

- Rehabilitation of construction works, such as laydown yards and pipeline construction areas
- Decommissioning and rehabilitation of short-term infrastructure, such as temporary camps
- Rehabilitation of production wells and associated infrastructure after depletion of gas supply
- Rehabilitation, at the end of the GFD Project, of remaining supporting infrastructure (such as water management facilities and compressor stations) prior to relinquishment of the petroleum tenure and environmental authority (EA).

When a gas field or asset is no longer required for GFD Project production, it will be decommissioned and then rehabilitated, or ownership will be transferred with agreement to a third party such as a landholder or local council in accordance with regulatory requirements.

The term “decommissioning” is taken to mean the steps involved in removing or leaving GFD Project assets and infrastructure in situ; the term “rehabilitation” is to return disturbance locations to a sustainable, usable condition, similar to the pre-disturbance condition, or in accordance with an alternative agreed post-GFD Project land use.

When operations are terminated and disturbances have been addressed, decommissioning and rehabilitation activities will enable the surrender of the relevant EAs. Surrender of an EA will be undertaken in accordance with the relevant regulatory requirements, including a final rehabilitation report (sections 142 and 143 of the EP Act), and will include landholder signoff when required (i.e. when assets are to be transferred from Santos GLNG to the landholder).

To minimise the disturbance footprint, decommissioning and rehabilitation activities will be undertaken progressively throughout the life of the GFD Project as gas fields become depleted.

Table 25-3 provides details of the infrastructure items associated with the GFD Project and the likely timeframes for decommissioning and rehabilitation.

**Table 25-3 Decommissioning and rehabilitation timeframes**

Infrastructure item	Disturbance type	Likely decommissioning and rehabilitation timeframes
Temporary camps	Short-term disturbance (less than 18 months).	Progressively throughout the life of the GFD Project.
Exploration and appraisal wells, including conversion of appraisal wells to production wells.	Short-term disturbance (less than 18 months) If converted to production wells, disturbance will be partly rehabilitated, and partly used for production wells.	Progressively throughout the life of the GFD Project as gas fields become depleted.
Laydown yards.	Mostly short-term disturbance (less than 18 months).	Following completion of construction phases of the GFD Project.
Overhead electrical transmission lines and power supply infrastructure.	Mostly short-term disturbance (less than 18 months) as rehabilitation occurs around operational infrastructure Long-term disturbance at tower sites and ground level infrastructure.	Rehabilitation will occur as a component of construction. Decommissioning and additional rehabilitation will occur progressively throughout the life of the GFD Project, when no longer required for GFD Project works.
Pipelines (gathering and transmission).	Mostly short-term disturbance (less than 18 months) as construction occurs along pipeline alignment.	Rehabilitation will occur as a component of construction. Decommissioning will occur progressively throughout the life of the GFD Project in association with decommissioning of the related production wells.
Semi-permanent accommodation camps.	Short-term disturbance (2 to 3 years).	Following completion of initial phases of the GFD Project.
Production wells.	Long-term disturbance (up to 30 years).	Progressively throughout the life of the GFD Project following depletion of gas resources at each well lease.
Permanent accommodation camp.	Long-term disturbance (for the life of the GFD Project).	At the conclusion of the GFD Project.
Gas, compression, gas treatment and water management facilities.	Long-term disturbance (for the life of the GFD Project).	At the conclusion of the GFD Project.

Infrastructure item	Disturbance type	Likely decommissioning and rehabilitation timeframes
Water and brine storage (dams).	Long-term disturbance.	Progressively throughout the life of the GFD Project as gas fields become depleted in association with decommissioning of the related production wells or other associated infrastructure.
Borrow pits and quarries.	Long-term disturbance.	Following completion of initial phases of the GFD Project. A smaller number of borrow pits and quarries progressively rehabilitated throughout the life of the GFD Project.
Access roads and tracks.	Combination of short-term disturbance and long-term disturbance.	Progressively throughout the life of the GFD Project when no longer required for Project works.

Prior to commencement of decommissioning or rehabilitation activities for an asset, a scope of work will be developed and agreed with relevant stakeholders.

### 25.5.1 Post-GFD Project land use

As discussed in Section 8: Land use and tenure, the predominant land use in the region is agriculture including grazing and to a lesser extent cropping (dryland and irrigated).

The Rehabilitation management plan provides a broad guide for the identification of the appropriate rehabilitation methods based on final land use. The Rehabilitation management plan also provides a framework for guiding rehabilitation activities for land that has been disturbed as part of gas field activities.

The objective of final rehabilitation is to achieve:

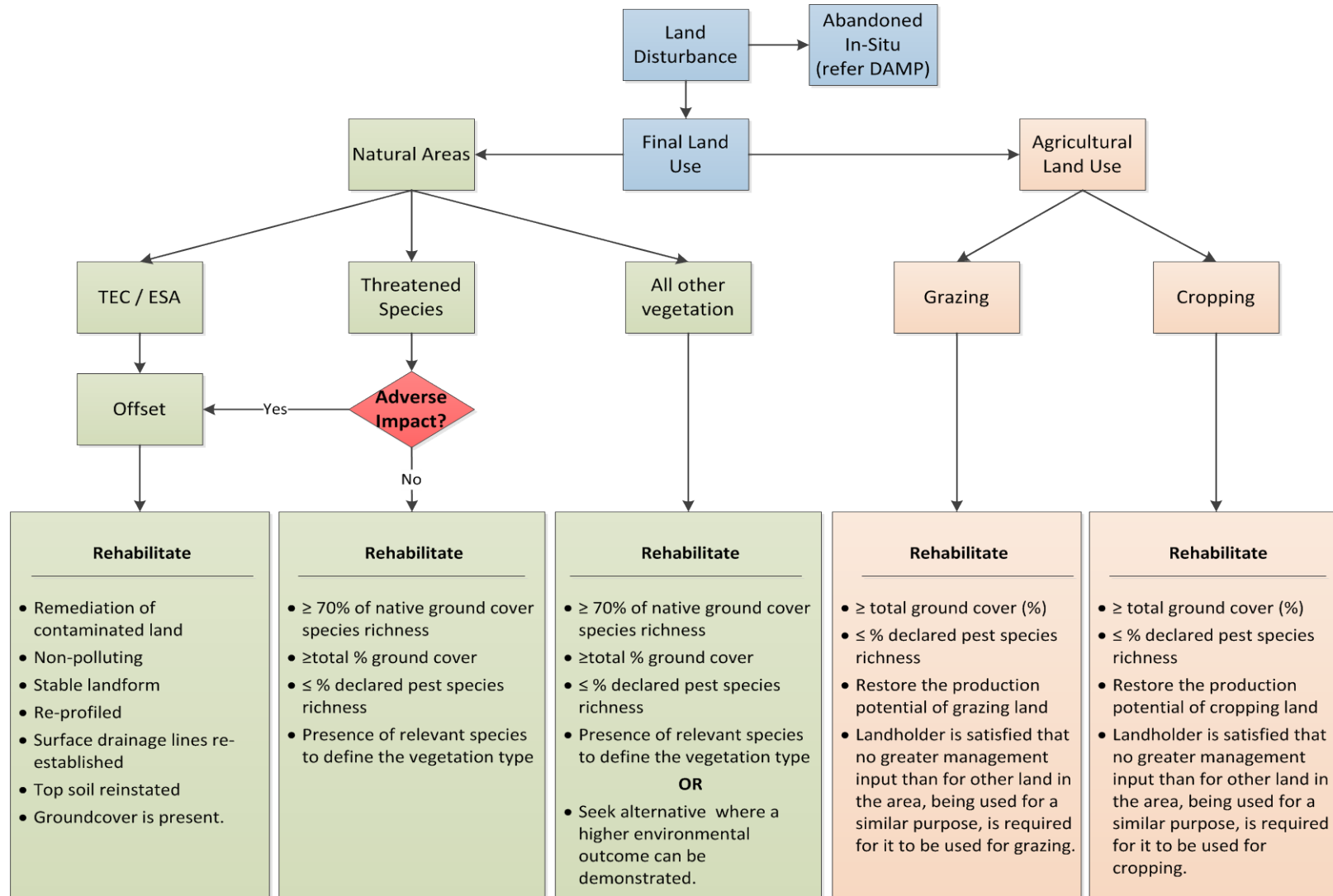
- A landform suitable for the intended ongoing land use (i.e. grazing or cropping); or
- Another stable landform consistent with the surrounding or adjacent areas (i.e. native vegetation); or
- Other agreed land use in consultation with the landholder and in accordance with regulatory requirements.

This approach to rehabilitation is consistent with the Santos GLNG Project, which is currently operating within the GFD Project area under approved EA conditions.

Figure 25–1 provides a process to guide rehabilitation actions.



Figure 25–1 Rehabilitation process for disturbed land within the GFD Project area



### **25.5.2 Performance and success criteria**

Decommissioning and rehabilitation will be considered successful when:

- The asset or disturbance location can be managed for its designated post-GFD Project land use without any greater management input than for other land in the area being used for a similar purpose
- Monitoring has shown the rehabilitation to have been successful and that a sustainable and stable landform has been achieved
- Written agreement has been attained by the land owner/holder and the administering authority as necessary (i.e. the surrender of the environmental authority).

## **25.6 Decommissioning methodology**

Decommissioning will be undertaken in accordance with the existing Santos GLNG DAMP, which will be adopted for the GFD Project.

Once the production capacity of the gas resource has been realised, final decommissioning activities can commence. Decommissioning activities will be documented as required and be subject to routine inspections, patrols and/or monitoring to demonstrate and ensure that health, safety and environmental issues are minimised and managed as appropriate.

Prior to activities commencing, appropriate methods for the management of wastes will be developed with consideration of the waste management hierarchy discussed in Section 12: Waste and in accordance with regulatory requirements.

### **25.6.1 Production wells**

Decommissioning of wells will be conducted in accordance with regulatory requirements and may comprise:

- Isolation of gas reservoirs and aquifers by suitable barriers (where required)
- Placement of a surface cement plug
- Disconnection and depressurisation of flow lines and relevant gathering-lines
- Removal of well surface equipment, such as generators, separators, tanks, metering skid and water transfer equipment
- Removal of well casing and tubing to below ground level
- Removal, storage or disposal of all casing risers, flow loops, or other pipe work attached to the wellhead (but not parts of downstream production flow-lines or facilities)
- Cutting off screw piles associated with the well lease foundations below ground level and left in situ
- Backfilling of remaining excavations (if present) such as from drilling, work-over or production operations
- Marking of well locations
- Transferring to third parties remaining well-bores (e.g. water bores) and responsibility for their ongoing maintenance in accordance with appropriate regulatory authorities, conduct and compensation agreements or signed contract, and ensuring the recipient of any infrastructure is properly instructed in the safe operating methods and appropriate maintenance of equipment.

Disturbance locations will then be rehabilitated as discussed in section 25.7.

## **25.6.2 Linear infrastructure**

### **25.6.2.1 Pipelines**

It is likely that pipelines will be left in situ. Where practicable, pipelines may be transferred to a third-party for ongoing beneficial use. Decommissioning activities may comprise:

- Disconnection from and disposal of all aboveground structures such as pigging stations
- Disconnection of the cathodic protection systems
- Cutting and filling critical sections (such as rail crossings) with a stable material (e.g. concrete) to prevent potential future subsidence due to corrosion or breakage
- Cutting and capping at defined locations to prevent the pipe from acting as a conduit for water and / or contaminants.

Disturbance locations will then be rehabilitated as discussed in section 25.7.

### **25.6.2.2 Road and access tracks**

Where practicable, roads and access tracks may be transferred to a third-party for ongoing beneficial use. In the event that a road or access track is to be decommissioned and removed, activities may comprise the removal and recycling or disposal of pavements such as asphalt and gravel (if present) and grading of the surface to form a stable landform.

If rehabilitation is required then disturbance locations will then be rehabilitated as discussed in section 25.7.

### **25.6.2.3 Electrical and communication lines**

Underground electrical and communication lines that are no longer required will be decommissioned in accordance with legislative requirements applicable at that time. Decommissioning may comprise:

- De-energising and isolating lines
- Arc flash precautions (as required)
- Removal and recycling or disposal of electrical and communication lines (where practicable) or left in situ
- Removal and recycling or disposal of all surface equipment such as transformers, switchyards, substations and communication towers
- Demolition of concrete pads and foundations such as for switchyards, substations, transformers and communication towers (where practicable) or left in situ
- Concrete crushed and steel rebar segregated for recycling or disposal
- Demolition and recycling or disposal of transmission poles which may involve cutting off poles below grade.

Disturbance locations will then be rehabilitated as discussed in section 25.7

## **25.6.3 Gas compression facilities, laydown yards, water management facilities and accommodation camps**

Gas compression facilities, water management facilities, accommodation camps (temporary or permanent) and laydown areas may be comprised of a combination of pad-mounted, modular structures and fabricated structures. Examples of these buildings include offices, accommodation units, storage, kitchens, warehousing, switch rooms, maintenance facilities, tanks, sewage treatment plants and power generation (if not connected to reticulated power).

Modular type structures are generally able to be disassembled and removed intact, where re-use or sale is practicable. Where removal is not practicable, they may be demolished and recycled or disposed of. Fabricated type structures typically require demolition activities and comprise partial or complete removal of surface infrastructure, with piping and other structural elements, such as screw piling, cut off and/or capped below grade.

A number of other large structures may be present at compression stations such as hub and nodal compressors, alternators and gas turbines. For these large structures, disassembly for relocation and reuse may not be a practicable alternative and they may be demolished for scrap recycling or disposal.

Decommissioning and rehabilitation activities may comprise:

- Removal of fuels, lubricants, chemicals and wastes, for recycling or disposal
- Demolition of the building structures (roof, siding and structural materials) for recycling or disposal recycled or disposed
- Demolition of concrete pads and foundations of the building and infrastructure (where practicable) or left in situ
- Concrete crushed and steel rebar segregated for recycling or disposal
- Leaving underground utilities or piping in situ
- Removal of gravel pathways, pavements or hardstand areas
- Concrete crushed and steel rebar segregated for recycling or disposal.

The disturbance locations will then be rehabilitated as discussed in section 25.7.

#### **25.6.4 Water storage**

Where practicable, water storage structures may be transferred to a third-party for ongoing beneficial use. In the event that a water storage structure is to be decommissioned and removed, activities may comprise:

- Removal of water contained within the dams
- Removal of accumulated sludge on the dam liners
- Removal (partial or complete) of the dam liners
- Removal and recycling or disposal of surface infrastructure such as pumps
- Leaving pipes in situ
- Sampling of soils under the liner and adjacent to the dam
- Removal and disposal of impacted soils (if required)
- Removal of dam wall, grading and stabilisation of soils.

Disturbance locations will then be rehabilitated as described in section 25.7.

### **25.7 Rehabilitation methodology**

Rehabilitation will be conducted in accordance with the requirements of the Rehabilitation management plan. The main aspects influencing the rehabilitation methodology include:

- The nature of the disturbance, relating to whether the site maybe contaminated
- The length of time of the disturbance
- The intended land use to which the disturbance location is to be rehabilitated
- Soil type and topography.

Selection of the rehabilitation methodology will generally be dictated by these aspects rather than by infrastructure type.

Generally, rehabilitation will include earthworks to reinstate the pre-existing landform and drainage lines, or to create alternative contours and drainage lines conducive to the agreed future landform. Areas will then typically be ripped, topsoil spread, erosion and sediment control measures installed, and the area allowed to revegetate from the seed bank in the topsoil or re-seeded. Where available, seed may be collected or sourced locally to ensure it is adapted to environmental conditions of the area.

## **25.7.1 Land use considerations**

### **25.7.1.1 Agricultural land**

The predominant land use within the GFD Project area is agriculture, which consists mainly of grazing and to a smaller extent cropping and some forestry. Rehabilitation works within these areas will concentrate on restoring the productive potential of the land, through considered soil and weed management. Rehabilitation works will consider seasonal growth factors and other variables like topography, soil type, existing vegetation and availability of topsoil. All rehabilitation works will be completed in consultation with the landholder.

Santos GLNG will conduct regular monitoring of a representative selection of rehabilitated areas to demonstrate that works are on the appropriate trajectory to meet the rehabilitation criteria and objectives. Where required, maintenance measures will be implemented.

### **25.7.1.2 Natural areas**

Natural areas within the GFD Project area have been categorised into three groups:

- Threatened ecological communities (TEC) and environmentally sensitive areas (ESA) (endangered and of concern regional ecosystems (RE))
- Threatened species (flora and fauna)
- All other REs.

As detailed in the Santos GLNG Rehabilitation management plan (Appendix Y-M), each category of natural area has slightly different rehabilitation criteria.

For significant residual adverse impacts to matters of national environmental significance and matters of state environmental significance, offsets will be provided in accordance with regulatory requirements. Santos GLNG will not rehabilitate disturbances in these areas to the pre-disturbance value. Instead, Santos GLNG will rehabilitate to a feasible level to achieve a safe, stable and non-polluting landform. Groundcover will be returned to ensure that the site is stable. These foundations should be sufficient to enable natural regeneration of the area to occur over time.

Where disturbances have not resulted in a significant residual adverse impact, the disturbed area will be rehabilitated with the objective of returning the land to match the values of the adjacent land use at the time of commencement of the rehabilitation works.

For all other REs, a wider range of rehabilitation options are available. These include carrying out rehabilitation works with the objective of returning the land to match the biodiversity values of the adjacent land use. Alternatively, options such as voluntary offsets can be adopted.

Santos GLNG will conduct regular monitoring of a representative selection of rehabilitated areas to demonstrate that works are on the appropriate trajectory to meet the rehabilitation criteria and objectives. Where required, maintenance measures will be implemented.

### **25.7.2 Infrastructure or disturbance specific rehabilitation**

For Santos GLNG activities involving significant cut and fill operations, such as particular borrow pits and quarries, these areas will not be rehabilitated to the pre-existing or adjacent land use as this is not a practical or achievable outcome. Instead, the area will undergo landform management to ensure the final landform is stable, non-polluting and safe to humans, livestock and wildlife through the use of methods such as benching, surface re-profiling, contouring and stormwater diversion.

### **25.7.3 Contaminated land**

Infrastructure with the potential for land contamination includes:

- Water and brine storage
- Chemical and fuel storage areas
- Waste storage areas
- Gas treatment and compression facilities and water management facilities.

Assessment of contaminated or potentially contaminated land at areas where notifiable activities have occurred will be undertaken during or after decommissioning. If it is identified that the location is likely to have become contaminated, a location-specific contaminated land assessment and management plan will be developed. Such assessments will be developed in accordance with the *Guideline for Contaminated Land Professionals* (EHP, 2012). Land will then be managed or remediated including, if necessary, transportation of the contaminated waste to an authorised disposal or treatment facility in accordance with the management plans and regulatory requirements.

Additional discussion on the management of contaminated land is contained in Section 9: Land resources.

## **25.8 Rehabilitation monitoring**

Regular monitoring of rehabilitated areas will typically be undertaken over a period of three years following rehabilitation works in accordance with the requirements of the Rehabilitation management plan.

If monitoring identifies that performance criteria are not being met, maintenance actions will be undertaken. If required, the monitoring period will be extended to ensure the maintenance works have been successful. If towards the end of the monitoring period, rehabilitation is not performing as desired, the monitoring program, including rehabilitation maintenance, will be extended until successful performance of the rehabilitation is achieved.

Monitoring will include inspections for the following aspects:

- Soil erosion
- Revegetation success
- Weed and pest introduction
- Integrity of water diversion drains and sediment control structures.

Where rehabilitation relates to revegetation criteria, monitoring may also include vegetation surveys and photo monitoring. The monitoring locations are to be determined by suitably qualified persons.

Where repeat failure of rehabilitation occurs, or where the same maintenance is required over multiple sites, an investigation into the rehabilitation practices at those areas will be undertaken to identify the cause of the need for ongoing maintenance. This investigation may include soil analysis and review of planting/seeding mixes and practices. The rehabilitation methodology will then be modified as required in response to the investigation or an alternative rehabilitation outcome or objective selected in accordance with regulatory requirements.

***Conclusion***

The intent of the decommissioning and rehabilitation is to facilitate the return of the land to a stable state, where either the former land use or another land use agreed by the landholder and/or regulatory agency can occur. Rehabilitation objectives include ensuring that the site is safe to humans and wildlife, non-polluting, stable and able to sustain the agreed land use. Risks imposed by the rehabilitated land use will not exceed the risks posed by the surrounding undisturbed land use.

Prior to handover of any infrastructure to be retained for third party use, Santos GLNG will ensure the infrastructure is in sound working order with low identified residual risks. In such cases an assessment of residual risk will be undertaken in accordance with the requirements of EHSMS 11.11 Decommissioning and abandonment and any identified risks addressed.

Residual risks following the decommissioning and rehabilitation of the GFD Project will be low.