15 VISUAL AMENITY

Chapter 15 describes the existing landscape features, panoramas and views associated with the Gas Field Component of the Queensland Curtis LNG (QCLNG) Project and associated works that have, or could be expected to have, value to the community, whether of local, regional, state, national or international significance.

A landscape and visual assessment for the Gas Field area has been carried out and a copy of the report is provided in *Appendix 3.8*. This chapter provides a summary of the findings from that report.

The Project environmental objective for visual amenity is to preserve the visual amenity of the landscape as far as practicable.

15.1 METHODOLOGY

A four-step process was used to identify and assess the potential visual impacts associated with the Gas Field development. This process included:

1. describing the visual characteristics of the Gas Field works
2. defining the viewshed pertinent to assessing landscape and visual impact
3. identifying the landscape units within the viewshed
4. assessing the landscape and visual impacts from publicly accessible viewpoints.

Visual impact of a development is a function of the magnitude of change to a landscape's existing character and the sensitivity of the observer at each viewpoint. The magnitude of change is influenced by:

- location of the proposed development in the view
- compatibility of the development with the surrounding landscape
- duration of impacts in the construction and operation phases
- scale of the development
- reversibility of the change
- potential blockage of view.

The sensitivity or quality of the viewpoint is influenced by:

- the distance to the development
- the number of observers present to see the development (i.e. whether the viewpoint has one observer or many observers)
- whether the observer has a permanent or temporary view of the magnitude of change (i.e. from a living-room window or a passing car)

- whether the observer has the opportunity for alternative views in other directions.

Using these parameters, the significance of the landscape and visual impacts has been defined based on whether the impact has a negligible effect, low adverse effect, medium adverse effect or high/unacceptable adverse impact. These terms are defined in *Appendix 3.8*.

The Environmental Impact Statement (EIS) methodology was then applied to ensure that all environmental factors were equally assessed for this EIS.

15.2 VISUAL CHARACTERISTICS OF THE GAS FIELD COMPONENTS

The key visual characteristics of the Gas Field fall into two categories:

- temporary aspects of the Project associated with construction include the presence of vehicles, trucks and earthmoving equipment and the clearing of vegetation
- long-term changes associated with vegetation removal, the presence of aboveground infrastructure and ongoing operations (refer *Volume 2, Chapters 7 and 11.)*.

15.2.1 Linear Components

As part of the Gas Field development works, all new access tracks or pipeline easements will be located to minimise impacts to agricultural land and remnant vegetation.

New tracks will be constructed to, where possible, benefit landholders. Any tracks that are not required after construction works are completed will be removed and rehabilitated. Once the gas pipeline easements have been created and rehabilitated, they will be visually similar to tracks and farm access gates already found in the area.

Where vegetation removal is required, the tracks and pipeline easements will be more prominent, yet still visually similar to other farm access tracks in many rural areas. The pipelines associated with the gas and water-gathering network will be buried and revegetated with grass species to minimise their overall visual impact. Marker posts will be required over the gas pipelines as a safety requirement under AS 2885.

15.2.2 Well Lease Components

Long-term or permanent changes will occur as a result of the presence of the wellheads and gas separators. Gas separators will be most noticeable at the well sites once they are operational. Gas separator units are approximately four meters high.

15.2.3 Gas Compression Components

The tallest structures seen in a field compression station (FCS) or central processing plant (CPP) are the lights and compressor units, which are approximately 8.5 m high. Flares up to 30 m in height may also be required for safe management of gas during maintenance or emergencies.

A visible element of the infrastructure is night lighting. The only permanent lighting associated with the FCSs and CPPs is for access to the control room. These will be low-level, shielded lights similar to that found adjacent to the front door of a farm house. The flares would not operate continuously and only for short periods (e.g. 15 minutes) during maintenance or up to one day in an emergency.

It is considered that the normal night-time lighting impact of the FCSs and CPPs will be low-to-negligible and that a detailed lighting assessment is not required for this infrastructure. At the well sites, other than flaring, there is no permanent lighting proposed thus no night-time lighting impact can be assessed.

15.2.4 Associated Water Components

The other visible elements of the Gas Field works are the ponds used for water storage and/or evaporation. The banks of these ponds are visible within the landscape typically because of their lack of vegetative cover.

At the time of the visual assessment the water strategy was still being finalised, but it is not anticipated that the required water treatment infrastructure (e.g. reverse-osmosis equipment) would be more dominant than the CPPs and FCSs. Any mitigation measures applied to CPPs and FCSs will also, where necessary, be applied to water treatment infrastructure.

15.3 DEFINITION OF THE VIEWSHED

In determining the viewshed of the Gas Field Component of the Project, the potential impacts of construction of the trunklines and gathering systems, as well as the long-term presence of the wellheads, CPP and FCS, were assessed. As discussed above, the presence of water treatment equipment has not been included at this stage of the field development, and is not expected to impact viewsheds to a greater extent than the CPPs or FCSs. Using the parameters of human vision, the visual impact of a development is based on the extent to which it would intrude into the central field of vision, both horizontally and vertically.

The trunklines and gathering systems will be underground, with marker posts the only key above-ground elements. This results in limited above-ground components to which a potential viewshed can be assigned. However, it was recognised that, due to the presence of vehicles, trucks and earthmoving equipment, the pipeline corridors would be visible during construction. Construction of these elements will be ongoing throughout Gas Field

development. However, the vehicles will be intermittent and therefore a temporary visual component of the landscape.

There will be a visual impact associated with the removal of existing vegetation. A nominal viewshed of 500 m to either side of the trunklines and gathering systems was factored into calculations.

For the larger, long-term items, the zones of visual influence were determined taking into account both the horizontal and vertical field of view of the human eye. The method of calculation is explained in *Appendix 3.8*. The calculations found that:

- The viewshed for the proposed wellheads and associated infrastructure (i.e. gas separator, flare pit and water sumps) could extend to a distance of approximately 500 m and have the potential to dominate views to a distance of 150 m (refer *Plate 3.15.1*).
- The viewshed for the FCSs and CPPs could extend out to a distance of 500 m from the infrastructure, and have the potential to dominate views to within 250 m (refer *Plate 3.15.2*).

Plate 3.15.1 Wellheads at 750 m plus

Plate 3.15.2 Compressor Station at 750 m

Viewsheds are affected by the presence or lack of topographic features and vegetation. As discussed in *Volume 3, Chapter 3*, the majority of the Gas Field area is predominantly flat with some gently undulating and hilly areas towards the north-western end of the tenements. No prominent or elevated locations or lookouts were identified within the Gas Field viewshed.

There has already been some modification of the vegetation in the region through past land uses, particularly clearing associated with European settlement. The remaining vegetation in the Gas Field is described in *Volume 3, Chapter 7.*

15.4 LANDSCAPE UNITS

Landscape units are based on areas with similar visual characteristics in terms of topography, geological features, soil, vegetation and land use. The landscape units used in the assessment were:

- Landscape Unit 1 – flat farmland: the most common landscape unit present within the Gas Field area
- Landscape Unit 2 – hilly farmland: this unit is confined to the north-western area of the Gas Field
- Landscape Unit 3 – forested areas: these occur primarily in state forests, parks and reserves

Landscape Unit 4 – rural townships: Condamine is the only one within the viewshed (although Tara, Chinchilla, Wandoan and Dalby are all near the Gas Field development area).

A number of state forest areas are within or close to the Gas Field. The potential to directly impact the ecology of these areas is discussed in *Volume 3, Chapter 7* while this chapter assesses what any such impacts would mean in terms of visual amenity.

15.5 ASSESSMENT OF THE LANDSCAPE AND VISUAL IMPACTS

A field review (refer *Appendix 3.8, Section 6)* was carried out in a number of locations within the viewshed to determine what, if any, impacts may be incurred as a result of the Gas Field activities.

The field review looked at existing activities in the area and the ability of the landscape to absorb these activities. In particular, the various elements already in existence (i.e. pipelines, access tracks, wellheads, FCSs and CPPs) were inspected and assessed for their visual impact. The findings from this work were used to assess the impacts of future development within the Gas Field.

The visual assessment took into account the sensitivity of the various landscape units in relation to Gas Field activities. Landscape sensitivity can be defined as the ability of a landscape to absorb visual change, and therefore its visual influence on the viewers. While change is an integral part of any landscape, development and infrastructure are significantly different to the natural processes that occur in a landscape.

The sensitivity of viewers to change in the identified landscape units would depend upon a number of factors, such as location, the rarity of a particular landscape and the scenic qualities of a particular landscape. Much of the area around the Gas Field has been highly modified by agricultural and grazing activities. This has created a landscape unit that is not rare, nor is it high in scenic quality. The area has therefore been assessed as having a low sensitivity to construction activities.

However, the assessment recognises that cleared land with no signs of built form may be valued by some viewers and therefore the proposed infrastructure may be perceived as having a high visual impact.

Forest areas and townships have been assessed as having a medium-to-high sensitivity to change.

The assessment found that, generally, the landscapes associated with the Gas Field development have the capacity to absorb the proposed visual changes. This was based on the changes that have already occurred within the area and the regular changes that currently occur as a result of farming activities in the region. The assessment determined that the major visual impact would be temporary and workplace-specific during construction due to the visual changes associated with vegetation clearing, transport movements, drilling and general construction-related activities occurring in the area.

The proposed works were assessed for potential visual impact and it was determined that:

- Most of the existing landscape has been extensively modified since European habitation. The landscape units in the viewshed are well represented across the area. Agricultural activity, associated structures and other signs of human intervention have also created a landscape that can absorb other changes

- The greatest impact would be on properties neighbouring the proposed works
- There would be no visual impact on townships
- Parks and reserves in the area are covered by dense vegetation that limits views to the immediate vicinity, creating a low level of impact
- Gas Field impacts on visual amenity are likely to have minimal visibility from the major roads in the area (i.e. Moonie, Warrego and Leichhardt highways). Although there will be views from these highways, the overall impact is expected to be low due to the predominantly low-landscape sensitivity and limited viewing opportunities afforded by topography and vegetation
- There will be a visual impact on viewers using minor roads within the locality. Visibility from these minor roads, which have far fewer users than the highways and main roads, is sometimes restricted by roadside vegetation. The visual impact will be low-to-negligible from these locations partly because viewer numbers are low, but also because this rural landscape can absorb further change
- Wellheads and their associated separators, which are approximately 4 m high are not expected to be visually obtrusive at distances greater than 500 m (refer *Plate 3.15.1*). The proposed spacing of the wellheads and the minimum distance from any residence, for a variety of reasons including safety, noise and visual impacts, will be determined through consultation with residents, consideration of local factors and on a case-by-case basis. Therefore the wellheads are not expected to create adverse visual impacts.

The assessment found that the landscape should be able to absorb the proposed development within the Gas Field, although some areas may require screening planting to minimise the effects.

15.6 MITIGATION MEASURES

There are no landscape techniques that can be employed to mitigate the visual impacts associated with the construction of trunklines and gathering systems. However, construction management practices will be employed to limit construction areas to the minimum required.

The following management measures will, as far as is practicable, minimise the visual impacts of the wellheads, FCSs and CPPs:

- locating wellheads as far as possible from a residence to minimise visual impacts
- consulting landholders in relation to the placing of infrastructure
- locating infrastructure in forested areas near to previously modified/cleared areas such as the existing access tracks

- locating, where possible, FCSs and CPPs in landscape units that have the ability to absorb visual impacts
- consultation with local residents whose visual amenity may be impacted
- installing a landscape buffer to the perimeter of the sites, as per the site layout and location
- where infrastructure colour is not prescribed by Australian Standards, using darker coloured materials/coatings than the surrounding grass and vegetation for large structures
- buffer plantings of suitable species to reduce remaining visual impacts.

15.7 CONCLUSION

The visual impact of Gas Field Component infrastructure, which is generally of low height and widely scattered across a vegetated landscape, is expected to be negligible. Mitigation measures have been proposed where required. A summary of the impacts outlined in this chapter is provided in *Table 3.15.1*.

Table 3.15.1 Summary of Impacts for Visual Amenity

Impact assessment criteria	Assessment outcome
Impact assessment	Negative
Impact type	Direct
Impact duration	Long-term
Impact extent	Local
Impact likelihood	High

Overall assessment of impact significance: negligible.