

## 19 VISUAL AMENITY

### 19.1 INTRODUCTION

This chapter outlines the visual environmental significance of the proposed western coal seam methane (CSM) water supply pipeline (the proposed pipeline) on the landscape. A detailed visual amenity technical report is presented in TR 19-1-V3.5 Visual Assessment Technical Report. Note that figures/documents with numbering ending in V3.5 refer to figures/documents contained in Volume 3, Book 5 of the EIS.

### 19.2 METHODOLOGY OF ASSESSMENT

#### 19.2.1 RELEVANT LEGISLATION AND GUIDELINES

##### **State**

The proposed pipeline, outside existing petroleum lease areas is subject to assessment under the *Integrated Planning Act 1997* (IP Act) and *Environmental Protection Act 1994* (EP Act).

##### **Local**

The proposed pipeline is subject to provisions of the Planning Scheme for the former Taroom Shire 2006 and the Planning Scheme for the former Bungil Shire Council 2006.

#### 19.2.2 ASSESSMENT PROCESSES

A baseline study was completed in order to review the visual significance and magnitude of the proposed pipeline on the landscape. The baseline studies recorded and analysed the existing character, quality and sensitivity of the landscape and any visual resources in the vicinity of the proposed pipeline.

The landscape visual assessment consisted of the following key stages (refer Figure 19-1):

- desktop study of existing information
- fieldwork to collect visual data and assess the visual character of the landscape
- classification of the landscape into Visual Character Units (VCU). VCUs are broad tracts of landscape that have unity of character. These VCUs represent areas that contain consistent character in terms of topography, vegetation and land use
- analysis and evaluation to determine the visual impact, including the visual effect and visual sensitivity.

Definitions of VCU, visual impact, visual effect and visual sensitivity are provided below in Figure 19-2.

To assist in the appreciation of the visual effects of the proposed pipeline and its interactions with various landscape settings, a series of photomontage imagery was completed.

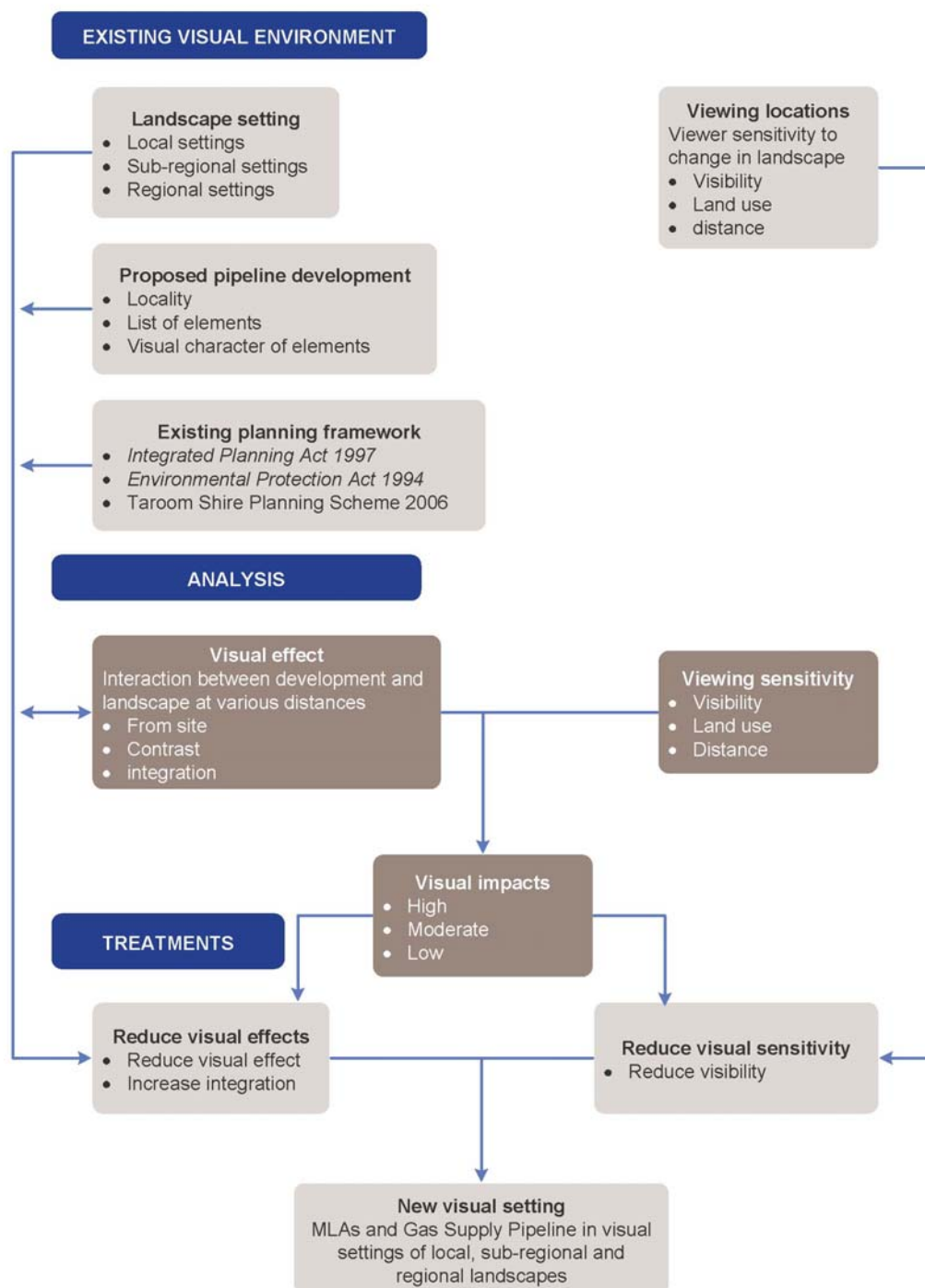


Figure 19-1: Visual assessment methodology

Visual Effect	Visual Sensitivity		
	High	Moderate	Low
High	High visual Impact	High/Moderate Visual Impact	Moderate/Low Visual Impact
Moderate	High /Moderate Visual Impact	Moderate Visual Impact	Moderate/Low Visual Impact
Low	Moderate/Low visual Impact	Moderate/Low Visual Impact	Low Visual Impact

Visual Impact is dependant on the interaction between visual effect and sensitivity.

**Figure 19-2: Visual impact**

## 19.3 EXISTING ENVIRONMENT

### 19.3.1 GENERAL

The country through which the proposed 91 km pipeline alignment passes are rural lands that are generally cleared or with scattered tree cover and open woodland tree cover along some creek and drainage lines.

The proposed pipeline alignment crosses two major creek systems, Eurombah Creek and Horse Creek. Each of these creeks is fed by numerous other creeks and drainage lines and feed into the Dawson River. These drainage lines and adjoining lands are dominated by open red gum woodland that contrasts with adjoining rural lands because of the tree cover and creek lines.

Topographic relief is limited and varies from 250-260 m along creek lines to 280-300 m on adjoining spurs and ridges. The topography is such that the view sheds are generally limited to the roads themselves and the immediate adjoining lands.

View sheds are defined by adjoining spurs that the road easements run between. These are often 3-5 km apart and can be up to 10 km apart. It is only within the creek fringing woodlands that views are restricted.

Due to the similarity of the terrain and land cover, rather than establish visual character units (VCU) as is normally the case, Visual Management Units (VMU) have been established based on locations of various roads, road segments and open paddock locations (refer Figure 19-3-V3.3).

Local VMU's include:

- Spring Hill Petroleum Lease Area VMU
- Roma to Taroom Road – Kurragong Creek Section VMU
- Roma to Taroom Road – Box Gully Section VMU
- Roma to Taroom Road – Three Mile Creek Section VMU
- Open Fields – Canal Creek Section VMU
- Golden Bimbadeen Road VMU
- MLA 50229 section VMU.

### 19.3.2 VISUAL MANAGEMENT UNITS

#### **Spring Hill Petroleum Lease Area VMU**

This section of the proposed pipeline alignment is within the petroleum lease area. It consists of gently undulating topography with open grassland and scattered trees as land cover.

Just to the east of the Spring Gully RO Plant, the proposed pipeline alignment crosses Eurombah Creek and proceeds in a south-east direction to the tributary that separates the main creek catchment from that of the adjoining Kurrajong Creek.

At the tributary, the pipeline route runs due east down to the Roma Taroom Road. Again this section of the route consists of grazing land with scattered tree cover.

#### **Roma Taroom Road/Kurrajong Creek VMU**

In this VMU section, the proposed pipeline alignment crosses a number of creeks and gullies that are part of Kurrajong Creek. The slopes and crests tend to be cleared for the greater part (refer Figure 19-4), with the creek and drainage lines having varying degrees of tree cover in the form of red gum woodland (refer Figure 19-5).

This VMU has one homestead close to the alignment that would have a high sensitivity if the homestead is orientated to the pipe alignment.

The pipeline alignment is on the northern side of the road reserve in private property.

#### **Roma Taroom Road/Sugarloaf Creek VMU**

The road alignment crosses the main creek mid way through the section. The road alignment is generally across the contour, leading into Sugarloaf Creek in the middle of the VMU (refer Figure 19-6).

Road reserve areas to the north are generally clear as are the adjacent grazing lands.

There are two homesteads close to the road and pipeline alignment.

The proposed pipeline is in grazing land on the northern edge of the road easement (refer Figure 19-7).



**Figure 19-4:** Most of the road reserves are dominated by grazing lands with scattered low tree cover



**Figure 19-5:** Creek lines are generally dominated by open River Red Gum Woodland that contrasts with the open grasslands with scattered trees away from creek lines





**Figure 19-6: Creekside locations support riparian strips and adjoining woodland**



**Figure 19-7: Road reserve and adjoining grazing lands are dominated by grassland with scattered low tree cover**

### **Roma Taroom Road/Three Mile Creek VMU**

Again, this section includes creek crossings with the main creek crossing occurring just to the north of a major billabong. These creek crossings and flats are generally dominated by red gum woodland (refer Figure 19-8).

The other sections of the proposed alignment are both along the contour and across it. However, the gentle slopes within the VMU ensure that no side cuts are created by the road. Again, the road reserves and lands adjoining are dominated by grazing lands with scattered tree cover (refer Figure 19-9).

### **Open Fields/Canal Creek VMU**

In this section the proposed pipeline alignment crosses open fields between the Roma Taroom Road and Goldens Bimbaden Road (refer Figure 19-10).

This VMU has scattered small tree and shrub cover over gentle slopes. The gentle terrain of the area is such that there has been no cut for road construction, therefore there will be no need for side cutting during construction of the pipeline.



**Figure 19-8: Creek lines within the VMU are generally dominated by open River Red Gum**





**Figure 19-9: Away from creeks and flats, a more open landscape adjoins roadways and are dominated by grazing lands**



**Figure 19-10: The proposed pipeline alignment crosses open fields with scattered low tree cover**



### **Goldens Bimbadeen Road VMU**

Goldens Bimbadeen Road is located along a tributary between Canal and Nine Mile Creeks, both draining west into Eurombah Creek. As with much of the proposed pipeline alignment, this section of the proposed pipeline alignment is dominated by grazing land with scattered tree cover. This unit differs from others to the west in that it does not cross creek lines (refer Figures 19-11 and 19-12).



**Figure 19-11: Northern side of the road reserve and adjoining fields are dominated by grassland with scattered tree cover in some locations**

### **MLA 50229 VMU**

Within the MLA, the proposed pipeline route crosses across open grazing land with scattered trees. The route although not fixed is across the dendritic pattern. However, due to the gentle terrain this will have little effect. There is more tree cover along the drainage lines. However, the openness of the woodland will allow for easy vehicle movement, thereby minimising the need for clearing (refer Figure 19-13).



**Figure 19-12: Northern side of road reserve and adjoining fields are dominated by grassland with scattered tree cover in some locations**



**Figure 19-13: The open fields with the tree lined creek typify some of the landscapes within the MLA**

## 19.4 DESCRIPTION OF PROPOSED DEVELOPMENT

### 19.4.1 PROPOSED PIPELINE ALIGNMENT

The proposed pipeline route begins at the existing reverse osmosis (RO) plant at the existing Spring Gully CSM fields and will traverse the existing petroleum leases (PLs) generally in a south-easterly direction. The alignment through the PLs has not as yet been finalised and will be the subject of future negotiations between the PL holders and the WJV. At some point within the PLs the alignment is proposed to intersect with the Roma-Taroom Road.

The proposed pipeline then follows Roma-Taroom Road in a north-easterly direction until the north-western property boundary of Lot 9 on plan AB127. The proposed pipeline alignment then turns east along the property boundary between Lot 9 on plan AB127 and Lot 8 on plan AB127. The eastern 'L' section of Lot 9 on plan AB127 is proposed to be traversed to meet the Goldens Bimbadeen Road from where the proposed alignment heads east until the intersection with Ferrets Road. From this point, the proposed alignment continues in an easterly direction and follows the southern property boundary of Lot 132 on plan SP121742. The route crosses the south-eastern corner of this Lot before entering the south-western corner of Lot 58 on plan FT556 and continuing on until it meets the western boundary of the MLA area.

The proposed alignment within the MLA area to the termination point at the proposed mine infrastructure area of the Project site is not yet finalised and will be determined dependent on the final mine layout in order to avoid proposed pit areas and other mine infrastructure.

#### **Visual significance of pipeline alignment**

The visual significance of the proposed pipeline is that it determines the types of landscape that will be crossed and that creates the basis for landscape interaction and visual effect. Alignment is also significant in defining the relationship between the pipeline and potential sensitive visual receptors such as homesteads.

### 19.4.2 PIPELINE CONSTRUCTION

The proposed pipeline will be approximately 91 km in length and will generally be located underground, constructed using a section trench and backfill method. Depth of cover will be between 0.6 m to 1 m and will vary subject to site specific conditions and land uses.

The proposed pipeline will require a lift pump station at the Spring Gully RO Plant area. Air release points will be at high points along the pipeline at approximately 800 m spacings as well as scour outlets at approximately 1 to 2 km apart.

The construction corridor will be approximately 20 m wide with a construction period of approximately 9 months. Construction will involve delivery of pipe sections to lay down points along the pipeline route. Typical machinery used for pipeline construction and installation will involve delivery trucks for pipe sections, trucks for importing bedding material, backhoe/excavator and mobile crane.



### Visual character of pipeline construction

The creation of a 20 m wide construction footprint and the construction of a pipeline will contrast with the existing landscape settings through which the proposed pipeline passes.

The visual contrast between the pipeline construction and the adjoining landscape will be created by the removal of ground cover be it grass or shrub cover. The resultant exposure and then excavation of the trench will create strong colour contrast with the adjoining landscape area. The extended linear character of this change through the landscape will create strong line contrast.

If tree cover exists, the clearing of trees will also increase the level of contrast between the existing landscape and that of the pipeline corridor creating a strong visual effect.

Much of the visual change is only experienced during the construction period with form and colour contrast removed when restoration of ground cover is completed. Should there be tree removal associated with construction, the mitigation of the visual change will not be as great unless some tree restoration is undertaken off the proposed pipeline alignment but along the edges of the corridor.

## 19.5 POTENTIAL IMPACTS

Visual Impacts resulting from the pipeline in any location are a product of both visual effects and visual sensitivity as outlined in Figure 19-2.

### 19.5.1 VISUAL EFFECTS

Potential visual effects during the proposed pipeline construction will result from the removal of ground cover in all locations and temporary earthworks associated with trenching. The removal of vegetation and topsoil will create a colour and minor form contrast to untouched areas and may detract from the landscape character of the highway, roadway and surrounding landscape settings. This contrast, at least during the construction phase, will also create a strong line in the landscape. The pipeline corridor will, however, reflect the alignment of roadways and fence lines in a locality and in this way not contrast with the established line pattern of the landscape.

In addition to disturbance of ground cover, there will also be removal of shrub and tree cover including Brigalow and tree cover generally in the form of scattered trees or open woodland along creeks, drainage lines and flood plains. This will increase the level of contrast and depending on the extent of "feathered edge" to the vegetation clearing, may create longer term linear elements in the landscape increasing visual effect levels.

The construction of the proposed pipeline will require up to 20 m clear space. This will allow for trenching equipment, pipe laying equipment as well as pipe delivery truck and general vehicle movement. However, where possible, vegetation clearing will be restricted to less than 20 m.

The removal of grass, trenching work and other activities associated with construction are temporary and the visual effect of this is removed once restoration and re-grassing is accomplished. However, where woodland, dense shrub or forest is removed the linear effect of vegetation clearing will be more long lasting.

The visual effects of the proposed pipeline construction have been illustrated in Figures 19-14-V3.3 to 19-17-V3.3. These photomontages illustrate the visual effects in different visual settings along the pipeline route.

Visual effects will in the short term be high due to strong contrast created by ground cover removal, trenching and pipe laying activity. However, this visual effect is short term and is reduced to low once restoration and re-grassing has been completed.

In treed areas, visual effects will remain at moderate levels where there is a strong edge to vegetation clearing. Otherwise, similar low to moderate visual effect levels will be experienced once ground covers are re-established.

Visual effects may also stay at a somewhat elevated level if there is a restriction to management of the corridor and that this will create a linear visual difference between the corridor and adjoining farm areas.

Figure 19-14-V3.3 shows the various photomontage locations described below.

## 19.5.2 VISUAL EFFECT ILLUSTRATED BY PHOTOMONTAGE

### **Figures 19-15-V3.3: Grazing areas east of Golden Bimbadeen Road**

In this location the proposed pipeline alignment crosses grazing lands to the west of the MLAs. In this location the pipeline also crosses Horse Creek that is defined by the Red Gum Woodland along the creek line (refer Figure 19-15a-V3.3). The selected route utilises a break in the creek line trees to ensure that tree clearing is avoided in this location (refer Figure 19-15b-V3.3).

The visual effect is created by the disturbance to the pattern of grassland and sedges in this locality. While this visual pattern will take some time to re-establish the visual effect is considered to be low following the completion of pipeline construction and restoration.

### **Figures 19-18-V3.3: Open Fields to the south of Golden Bimbadeen Road**

In this locality the pipeline crosses open fields to the south of Golden Bimbadeen Road. The existing visual setting is dominated by grassland with scattered tree cover (refer Figure 19-16a-V3.3). Construction of the pipeline will create a temporary change in the visual setting (refer Figure 19-16b-V3.3) but this effect is short lived until grass cover is restored over the newly laid pipeline.

The visual effect of the pipeline in this situation is low.

### **Figures 19-17-V3.3: Roma Taroom Road**

At this location the pipeline passes through an open field (refer Figure 19-17a-V3.3). The construction works for the pipeline will create a temporary line in the landscape that is created by the colour contrast of the soil against the existing grassland (refer Figure 19-17b-V3.3). This visual effect is temporary.

The visual effect of the pipeline construction in this location is low following completion of restoration works.

### 19.5.3 VISUAL SENSITIVITY

Visual sensitivity to the proposed pipeline construction is due to two sources, views from the adjacent roadways and from adjoining homesteads and farm areas.

The Roma Taroom Road is considered to have moderate sensitivity, given its regional linkage status, while other roads are considered to have low sensitivity due to their local road status.

Views from homesteads are considered to have potentially high visual sensitivity, while adjoining farm lands have low sensitivity. The locations of homesteads close to the pipeline route are illustrated in Figure 19-18-V3.3.

### 19.5.4 VISUAL IMPACTS

Visual Impacts in the short term during the construction period will be moderate to high due to the high visual effect levels and close proximity of the road and potentially some homesteads.

However, this impact will reduce to low when appropriately managed rehabilitation and ground cover vegetation is restored. This will also be the case in areas where trees occur unless a strong edge is created in the clearing process. In such cases a moderate visual impact may continue as it relates to the roadway. A high impact may remain if there are homestead views along such a clearing line for some distance. The latter scenario is unlikely given the nature of the terrain, vegetation structure and the visual orientation of homesteads.

## 19.6 MITIGATION MEASURES

### 19.6.1 GENERAL

Visual mitigation strategies will reduce the visual effect of the proposed pipeline construction process and aim to reduce contrast created by clearing and earthworks.

Visual mitigation strategies include:

- minimise corridor clearing
- sectionalising work areas
- fragmenting construction functions in corridor
- management of top soil
- re-establishment of ground cover
- re-establishment of shrub and tree cover
- screening of sensitive receptors.

### 19.6.2 SECTIONALISING WORK AREAS

The establishment of a pipeline has the potential to create a high visual effect along the length of the pipeline. Establishing the pipeline in sections to enable early restoration will minimise the length of impact and the time over which it is experienced.



### 19.6.3 MINIMISE CORRIDOR CLEARING

Although a corridor width of 20 m will be established not all of this corridor may need to be cleared in sensitive locations. It may not be necessary in all locations to clear this width. Apart from basic operations of trench construction, pipe delivery, pipe laying, backfilling and restoration all other operations such as pipe lay down areas, storage areas, etc should avoid sensitive areas.

Staggering of operations in sensitive locations may remove the need to clear wide corridor areas.

### 19.6.4 FRAGMENTING CONSTRUCTION CORRIDOR FUNCTIONS

The proposed construction corridor is required for many functions that will be carried out simultaneously. This will include trenching, trucking in pipes, placing bedding materials, laying the pipe and backfilling. The functions that are not immediately involved with trenching are usually immediately adjacent to the trench (e.g. trucking in pipes).

It is suggested that in sensitive locations where trees occur, this function and others like it could be moved laterally to minimise tree clearing and or to achieve the “feathered corridor” edge that will avoid the creation of a visual ‘gun barrel’ through wooded areas.

### 19.6.5 FEATHERING CORRIDOR CLEARING

Where there are long and sensitive views along corridors, it may be possible to “feather” the corridor edge to prevent hard and regular edges to clearings.

This would require marginal under-clearing in some locations to provide variety to areas that are cleared to the maximum width.

### 19.6.6 MANAGING TOPSOIL

Management of topsoil and surface mulch so that it can be reused when trenching has been completed will allow for topsoil nutrient, micro flora and fauna and seed to assist in the rehabilitation process. Similarly existing mulch will contain indigenous seed and provide good ground cover during rehabilitation.

### 19.6.7 RE-ESTABLISHMENT OF GROUND COVER

In most cases, initial restoration will involve the establishment of grass cover. This should be of the type that occurs in adjoining field areas or in the case of bushland areas where mulch is not used, sterile grasses that will provide soil protection values.

This will reduce the major visual effect created by colour contrast between exposed soil and adjoining grasslands or other vegetation types.

### 19.6.8 RE-ESTABLISHMENT OF SHRUB AND TREE COVER

Re-establishment of shrub and tree cover should be completed according to specified rehabilitation practices for the Project. Such restoration will remove the more subtle contrast factor between the proposed pipeline corridor and the adjoining vegetation. While it is appreciated that the reestablishment of large trees on the pipeline is not desirable, use

of indigenous shrubs and small trees will remove the linear visual effect of clearing through native vegetation.

Should cultural planting, say along a driveway be removed, such plantings should be re-established in close proximity based on mutual agreement with the land owner.

### 19.6.9 SCREENING OF SENSITIVE RECEPTORS

In the unlikely circumstance that a homestead is adversely affected by the post re-habilitated landscape, plantings should be carried out adjacent to the affected viewing area to provide screening of visual integration of the affected landscape.

## 19.7 RESIDUAL IMPACTS

It is considered that there will be no significant residual visual impact created by the proposed pipeline construction. This is due to the underground location of the pipeline and the ability to restore surface areas to blend in with the adjoining landscapes.

Even where tree clearing is needed it is considered that the open woodland character of the landscapes and the unlikelihood of critical view lines being parallel to such clearings would minimise potential for lasting high visual impacts.

If critical and ongoing visual impacts are created in isolated situations, the implementation of mitigation strategies, including at viewing points, landscape treatments will ensure that no significant residual visual impacts are experienced.