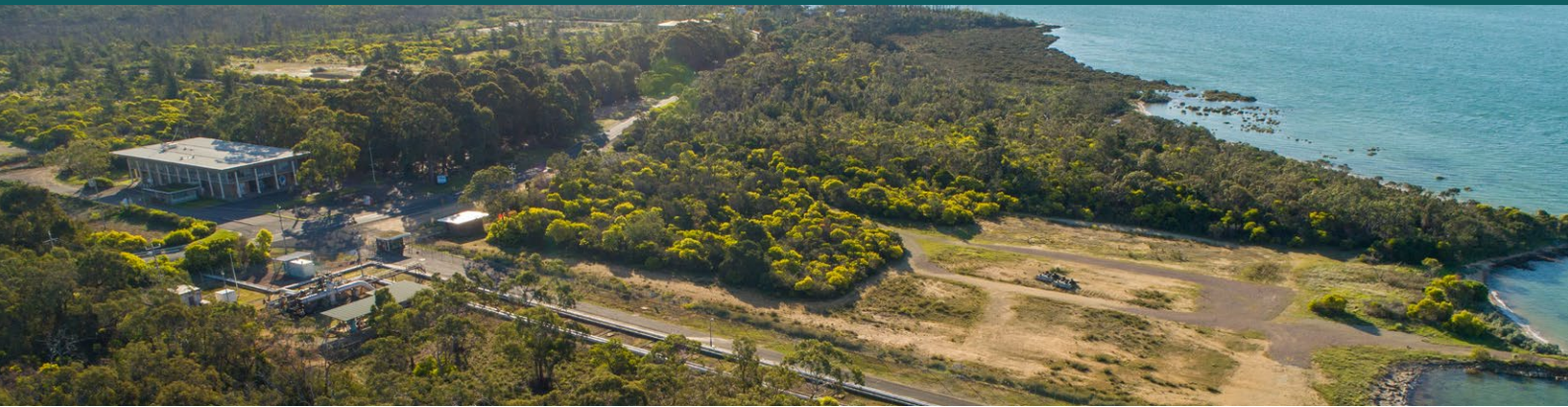


# Chapter 14

## Landscape and visual



This chapter discusses the potential landscape and visual impacts associated with the construction and operation of the Gas Import Jetty and Pipeline Project (the Project). The chapter is based on the impact assessment presented in EES Technical Report I: *Landscape and visual impact assessment*.

### 14.1 Overview

The development of the Project would result in changes to the landscape which is an important shared resource for individuals, communities and public bodies.

Landscape provides a sense of place, history and identity to many people. Landscape also fosters economic benefits by supporting livelihoods such as agriculture, forestry and other land management activities as well as recreation and tourism. Landscape is also widely acknowledged as generating indirect health and wellbeing benefits.

Landscape is not unchanging. When landscape is viewed by people, their visual amenity or the overall pleasantness of the visual aesthetics of their surroundings contributes to their experience of a place.

In addition to physical landscape changes, light spill from night-time construction and operational activities of the Project may also affect the amenity of a setting. Impacts of light spill on animals are discussed in **Chapter 6** Marine biodiversity and **Chapter 7** Terrestrial and freshwater biodiversity.



#### Light spill

Light spill is when light falls outside the area intended to be illuminated.

The significance of potential landscape and visual impacts as a result of the Project's construction and operation considers the sensitivity of the landscape or visual receptor and the magnitude of change expected.

### 14.2 EES evaluation objective

The scoping requirements for the EES set out the following relevant draft evaluation objective:

**Social, economic, amenity and land use – To minimise potential adverse social, economic, amenity and land use effects at local and regional scales.**

To assess the potential impact of the Project on landscape values and visual amenity, a landscape and visual impact assessment was undertaken.

## 14.3 Methodology

The approach adopted for the landscape and visual impact assessment involved the following key tasks:

- a review of relevant legislation and policy at Commonwealth, State and local level
- a desktop review of relevant baseline data and reports, including reports on the local landscape character and coastal spaces of Victoria
- site inspections across the study area in 2017, 2018, 2019 and early 2020
- characterisation of existing landscape character areas
- construction of visualisations from publicly accessible sensitive visual receptor viewpoints
- assessment of significance of landscape and visual impacts arising from the Project for each landscape character area, considering landscape sensitivity and magnitude of change, consistent with the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and the Institute of Environmental Management & Assessment, 2013) methodology
- review of light spill modelling from operational facilities, including the floating storage and regasification unit (FSRU) and an adjacent liquefied natural gas (LNG) carrier, and the Crib Point Receiving Facility and Pakenham Delivery Facility
- assessment of significance of light spill impacts from publicly accessible viewpoints and one additional private viewpoint at night time in response to community feedback
- development of mitigation measures in response to the landscape and visual impact assessment.



### What is a landscape character area?

A landscape character area is based on local patterns of geology, landform, vegetation, land use and cultural features. Consideration of a landscape character area's key characteristics contributes to an identification of the area's aesthetic significance, referred to as its landscape value.

### 14.3.1 Study area

Landscape characteristics are informed and defined by physical features and evident transitions in geology, geomorphology and topography. The majority of the study area is characterised by low plains including coastal plains and flood plains associated with the Bunyip River catchment. These are flanked to the west by rugged to gently undulating terrain of ancient sedimentary rock, which also characterises the northern edge of the plains at the northern extent of the study area.

Four landscape character areas were identified in the study area and are shown in **Figure 14-1**:

- Western Port Lowlands – coastal foreshore
- Western Port Lowlands – urban settlement
- Western Port Lowlands – agricultural plains
- Dandenong Ranges – southern foothills.



▲ Figure 14-1: Landscape and visual study area



## 14.4 Existing conditions

The four landscape character areas that comprise the study area for the assessment of potential landscape and visual impacts are described in further detail below.

### 14.4.1 Coastal foreshore

The coastal foreshore character area is located on the western and northern edge of Western Port and is shown in **Figure 14-1**. It extends from Crib Point Jetty to the urban boundary of Hastings and then north from Hastings adjacent to the coastal margins of the bay. It also extends south of Crib Point Jetty and includes Stony Point.

Western Port is an extensive low-lying tidal bay with areas of recreation, reservation and conservation. The saltmarsh estuary is serene in parts and gives a feeling of remoteness with opportunity for immersion within the natural environment. Mud flats are exposed at low tide creating a vast and open landscape character as shown in **Figure 14-2**. Jetties and port infrastructure interrupt the coastal margins at regular, yet infrequent moments.

▼ **Figure 14-2:** Coastal foreshore landscape character area



Expansive open views are available across Western Port from within foreshore reserves, parks and trails including the Western Port Trail, which is a shared use path that follows the coastline from Somerville to Balnarring. These views are punctuated by boat masts and power poles and existing jetty/port infrastructure and are broken by low coastal scrub. Roadside views are narrow and linear, contained by thick roadside vegetation. Glimpsed views of Western Port are available from the roadside in very limited sections including at the entrance to Crib Point Jetty.

Inland, there is a mix of rural landscapes with pockets of remnant vegetation which provide an important pre-European settlement landscape. There is minimal low residential density and a scattering of low-scale light industrial uses.

The majority of residential development is located greater than one kilometre from the proposed infrastructure and greater than 1.7 kilometres from the Crib Point Jetty. However, there are five residential properties located along The Esplanade, approximately 700 metres north-west of the proposed Crib Point Receiving Facility.

The coastal foreshore character area is characterised by the generally well-vegetated foreshore interface with the large expanse of Western Port, along with the relatively undeveloped French Island. Combined, this makes for an environment of relatively low light levels at night time. The generally dark foreshore is interrupted by areas of concentrated lighting associated with existing port and maritime industrial activities. Major light sources in the vicinity are the Crib Point Recreation Reserve, the existing lighting on the Crib Point Jetty and onshore buildings, Hastings urban settlement, Hastings Reserve and the existing industry within the Port of Hastings (such as Long Island point Jetty and BlueScope Steel Wharves), as shown in **Figure 14-3**.

▼ **Figure 14-3:** Coastal foreshore light sources as viewed from French Island



### 14.4.2 Urban settlement

The urban settlement character area shown in **Figure 14-1** above covers the central area of Hastings, from the northern boundary of Warringine Park in the south to Graydens Road and Bayview Road in the north.

The character of this area is focused around the main thoroughfare and major viewing corridor of Frankston–Flinders Road with light industrial and residential subdivisions to the west and east, as shown in **Figure 14-4**.

Views are typically urban, terminating at low-scale industrial developments and some residential housing, with views filtered by roadside vegetation. Mature tree planting within the Hastings urban streetscapes is an important element which softens the urban character and creates a sense of place and interest.

Built form becomes less intensive north of Hodgins Road with semi-rural open views available across open paddocks.

### 14.4.3 Agricultural plains

The agricultural plains character area shown in **Figure 14-1** includes the floodplains of the Western Port basin which was historically converted from swampland to farmland. It is low-lying and flat with open expansive views across working agricultural land which has mostly been cleared of vegetation. Views are generally long ranging over agricultural land as shown in **Figure 14-5**.

Post and wire fences and power poles create vertical elements within the landscape. Dense roadside vegetation creates linear elements along the road corridors which also serve to screen views of the agricultural plains.

There is a low density of built elements with homesteads and farm sheds present within large paddocks.

In the north of the character area, views are terminated in the distance by the foothills of the Dandenong Ranges.

▼ **Figure 14-4:** Urban settlement landscape character area



▼ **Figure 14-5:** Agricultural plains landscape character area



#### 14.4.4 Southern foothills

The southern foothills character area shown in **Figure 14-1** is characterised by elevated topography and distinct north-south ridge lines rising from the flat agricultural plains to the south. The undulating land has mostly been cleared for agriculture and is dissected by exotic and native shelterbelts and post and wire fences. Electricity pylons and power poles create vertical elements in the landscape. Single storey agricultural buildings and dwellings are set back from the road within open paddocks.

Major viewing corridors include the Princes Highway and Princes Freeway. Long-ranging southerly views across the agricultural plains and towards Western Port can be glimpsed through roadside vegetation as shown in **Figure 14-6**.

### 14.5 Construction impacts

The significance of construction impacts for each landscape character area was assessed considering landscape sensitivity and the magnitude of change proposed.

Construction activities across the Project Area would result in a temporary loss of visual amenity and landscape character. For the Pipeline Works, the landscape and visual impact would be most significant during the construction phase, where various activities would occur along the pipeline right of way (ROW) including vegetation clearing, removal of agricultural buildings, open cut trenching, horizontal directional drilling (HDD) and shallow horizontal boring.

Amenity impacts during construction have been minimised where possible through the optimisation of the pipeline alignment to determine the most efficient route with the least impact to the environment and community. Optimising the pipeline alignment allows for the retention of valuable vegetation and situates the works away from receptors.

▼ **Figure 14-6:** Southern foothills landscape character area



#### 14.5.1 Vegetation and ground surface clearing

A notable landscape and visual effect during construction is from clearing of ground surfaces and vegetation which would be a considerable change before the reinstatement of surfaces and low vegetation on the ROW.

While the pipeline ROW would be reinstated with consideration of the vegetation composition and ground surface adjacent to the ROW (see mitigation measure MM-LV01), trees and large shrubs cannot be planted on the operational pipeline easement due to the potential for pipeline damage caused by plant roots and to enable maintenance activities. Vegetation clearing would therefore continue to have a landscape and visual impact once the pipeline was operating.

Any loss of vegetation due to construction outside the approved construction footprint would be replaced with appropriately selected small trees or large shrubs, in consultation with the affected landholder (see mitigation measure MM-LV06).

Clearing of ground surfaces and vegetation along the pipeline ROW is considered to have a negligible to minor impact of reducing visual amenity across the landscape character areas, as reinstatement and rehabilitation would occur progressively and would not alter the character of an area.

In the urban settlement character area, the proposed pipeline alignment would follow the Stony Point rail corridor and local council land in central Hastings, at the rear of business properties. As described in **Chapter 19 Business**, earlier revisions of the pipeline alignment considered trenching along Frankston–Flinders Road. Constructing the pipeline in the rail corridor mainly using trenchless techniques would reduce amenity impacts during construction on businesses along Frankston–Flinders Road and sensitive receptors in Hastings.

The location of the proposed Crib Point Receiving Facility is currently screened by existing mature vegetation to the north, south and west. The site was cleared of most its vegetation in February 2020 as part of the Port of Hastings Development Authority's bushfire management strategy. The construction of the Crib Point Receiving Facility would have a minor visual impact to surrounding areas.

## 14.6 Operation impacts

The pipeline would be underground and so once it was operating would not generally have an impact on the landscape character of the areas assessed.

Above the pipeline, small cathodic protection boxes for monitoring the system to protect the integrity and operational life of the pipeline asset would be located at approximately one to five kilometre intervals. In addition, marker posts would also be located at fences, road crossings and other locations as required for safety reasons along the pipeline alignment. The End of Line Scraper Station (EOLSS) located in a cleared paddock of low landscape and visual value would be buried with concrete pits, which would have a negligible significance of impact.

The main visual impacts from the Project's operation would arise from the permanently moored FSRU at Crib Point Jetty and associated Jetty Infrastructure, intermittent LNG carriers arriving at the jetty, the Crib Point Receiving Facility, Pakenham Delivery Facility and the mainline valves.

### 14.6.1 Gas Import Jetty Works

The visual effects associated with the Gas Import Jetty Works, including the FSRU, Jetty Infrastructure, and Crib Point Receiving Facility involve a higher degree of proposed change than for the rest of the Project and are also located in an area of high landscape value, leading to a high sensitivity rating.

The FSRU would measure approximately 300 metres long and be permanently moored at Berth 2 of the Crib Point Jetty. At times, there may be three vessels at the jetty: the FSRU, a visiting LNG carrier of similar proportions to the FSRU, and potentially a United Petroleum vessel at Berth 1. United Petroleum vessels moor at the Crib Point Jetty on approximately a fortnightly basis.

While the FSRU would be the main change to views out to Western Port, there would also be Jetty Infrastructure installed on the pierhead, including marine loading arms and firefighting equipment. Onshore, the Crib Point Receiving Facility would be visible from certain viewpoints, particularly the nitrogen storage tank which would be up to 20 metres high. However, visibility is generally screened by coastal foreshore vegetation and existing infrastructure. In addition to the nitrogen storage tank, other buildings and structures such as stainless-steel vaporiser towers, firewater tanks and nitrogen unloading facilities would be visible from The Esplanade.

The proposed Crib Point Receiving Facility and FSRU would have a moderate visual impact from a number of viewpoints along the coastal foreshore, including from the Victorian Maritime Centre, submarine (HMAS Otama) lookout and Woolleys Beach. These viewpoints in relation to the Gas Import Jetty Works are shown on **Figure 14-7**.

From the submarine lookout and Woolleys Beach North, the visual mass of the FSRU and the nitrogen storage tank at the Crib Point Receiving Facility would break the skyline from certain viewpoints, leading to an overall moderate visual significance.





◀ **Figure 14-7:**  
Viewpoints at  
Crib Point

It is noted that while the significance of visual effects from these viewpoints is moderate, these effects are considered appropriate within the complementary context of the viewpoint, and the existing jetty and maritime industrial activities at the site. This significance rating (moderate) is largely a reflection of the impact on views across Western Port towards French Island consisting largely of flat foreground, sea and sky. The moderate rating was assigned considering a framed view of the Gas Import Jetty Works, without a petroleum tanker (that intermittently docks at Berth 1) or any other surrounding port or maritime activities.

Generally, from viewpoints where the Crib Point Receiving Facility and FSRU would be visible, a view of the existing jetty, legacy BP tanks and other industrial maritime activities would provide a background. The mooring of the FSRU and an additional LNG carrier at an existing jetty is consistent with the existing use of the jetty for industrial maritime purposes and the existing landscape character. As such, the operation of the Gas Import Jetty Works is considered to have a minor impact on the landscape character area in the context of the surrounding port and industrial area.





◀ **Figure 14-8:**  
Visualisation of  
the Crib Point  
Receiving Facility  
from submarine  
lookout facing  
south



◀ **Figure 14-9:**  
Visualisation of  
the FSRU and  
LNG carrier from  
submarine lookout  
facing south-east

Appropriate materials and finishes would be applied to the Crib Point Receiving Facility, such as fencing design, architectural cladding, façade treatment (see mitigation measure MM-LV03) and screening vegetation incorporated into the site frontage at The Esplanade (see mitigation measure MM-LV02) providing it meets the bushfire safety management requirements. Additionally, exterior materials and finishes of the Crib Point Receiving Facility and the FSRU would be maintained to prevent aesthetic deterioration according to a schedule for cleaning, painting and general maintenance (see mitigation measure MM-LV04).



◀ **Figure 14-10:**  
Visualisation of  
the FSRU and  
LNG carrier from  
Woolleys Beach  
North facing east  
(United Petroleum  
carrier present on  
left). Note: haze in  
the image is due  
to smoke from  
bushfires in January  
2020.



◀ **Figure 14-11:**  
Visualisation of Crib  
Point Receiving  
Facility from  
Victorian Maritime  
Centre



## Light spill

Light impacts from the Crib Point Receiving Facility, FSRU and LNG carrier were assessed from similar viewpoints as per daytime for their visual impacts. Lighting would generally be required on the FSRU, LNG carrier and at the Crib Point Receiving Facility for safety and security requirements.

The light modelling showed that light spill from the moored FSRU/LNG carrier diminishes significantly with no measurable increase in lux levels (the amount of light that hits or passes through a surface) at land-based receptors.

While there would be no direct light spill impacts measurable on any of these land-based viewpoints, lighting from the new elements would be visible from certain viewpoints and contribute to sky glow at Crib Point Jetty.

The impact of lighting upon receptors is typically assessed using a measurable quantum such as the increase in lux levels. This assessment has attempted to describe and estimate the impact of increased light levels from the Project on the visual character of the surrounding area. This is not a typical process in landscape and visual impact assessment, and caution must be taken in interpreting the results given the high degree of variability in the baseline and estimated proposed conditions as set out below.

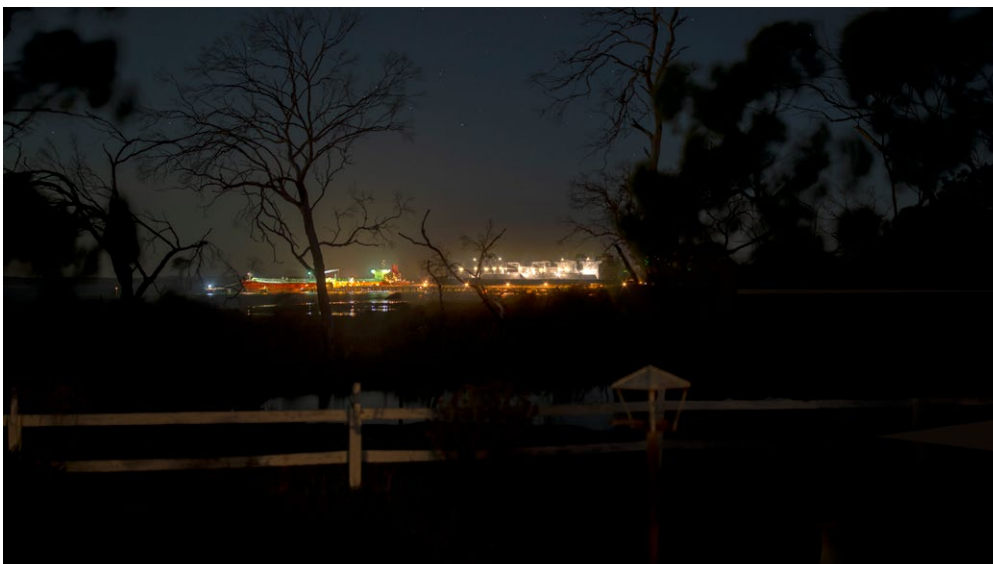
The following findings are of primary relevance to the consideration of the impact of lighting due to the Project:

1. There are no highly sensitive publicly accessible night-time views or viewpoints impacted.
2. The light spill calculations demonstrate that no receptors in the surrounding area are subject to increased lux levels from direct light sources.

The view from a small number of residential properties near Crib Point Jetty are the most sensitive to light changes as they are used at night-time in contrast to the public viewpoints, which are unlikely to be utilised at night. The house at 103 The Esplanade is the closest of the residential dwellings at Jack's Beach and has the most unimpeded view of the Crib Point Jetty from its backyard. From the backyard of 103 The Esplanade, the existing lighting on the Crib Point Jetty is the focal point at night through a gap in the foreground vegetation, particularly when a United Petroleum vessel is docked at Berth 1, as shown in **Figure 14-12**.

Specific visual effects from the backyard of 103 The Esplanade are estimated to be the illumination of the FSRU surfaces, illumination of the water and potential sky glow. The proposed light source of the Crib Point Receiving Facility is largely screened by existing vegetation and directed away from the primary direction of view and would likely only be visible through an increase in sky glow. As such it is estimated there would be a moderate significance of impact at this private viewpoint.

At the other public viewpoints assessed, lighting impacts would be negligible or minor, in view of the context of the existing lights at Crib Point Jetty and low sensitivity of the viewpoints given they are generally not utilised at night. To reduce the reflection of artificial light, reflective surfaces on infrastructure would be minimised (see mitigation measure MM-LV05).



◀ **Figure 14-12:**  
Artists impression  
of FSRU lighting  
from the backyard  
of 103 The  
Esplanade looking  
east with United  
Petroleum vessel  
moored at Crib  
Point Jetty Berth 1

### 14.6.2 Pakenham Delivery Facility

The Pakenham Delivery Facility would be located in an open agricultural plain adjacent to a large rail depot and maintenance facility. Specifically, the facility is located between the Princes Freeway and the rail stabling yards at the intersection of the agricultural plains and southern foothills landscape character areas. These landscapes are generally characterised by low levels of development.

The primary visual receptors associated with this facility are road users, particularly on the Princes Freeway, although there is relatively high amount of existing screening vegetation. Glimpses of the facility would be visible from the Princes Freeway, and the significance of impact is considered to be minor.

While light spill from the Pakenham Delivery Facility would not directly reach the Princes Freeway, nearby houses or road receptors, it would illuminate the structures and contribute to sky glow. In the context of the larger rail depot and maintenance facility located behind the Pakenham Delivery Facility, it is estimated there would be a negligible significance of impact from lighting at the facility.

### 14.6.3 Mainline valves

The two above-ground mainline valves (MLVs) would create vertical elements with chain-wire fencing approximately three metres high in an area of 10 metres by 11 metres, in the otherwise flat and open agricultural plains. This would have a minor significance of impact as the areas have low landscape value due to low use and low sensitivity to change.

MLV1 at Denham Road, Tyabb would be more frequently viewed than MLV2 at Bloomfield Lane, Cardinia, as MLV1 would be located on a minor connector road and MLV2 at the end of a minor residential dead-end lane. MLV2 would likely only be viewed by one proximate dwelling. The facilities would not be illuminated at night. Visualisations of MLV1 and MLV2 are shown in **Figure 14-13** and **Figure 14-14**.

**Figure 14-13:**  
Visualisation of MLV1,  
Denham Road, Tyabb



**Figure 14-14:**  
Visualisation of MLV2,  
Bloomfield Lane, Cardinia





## 14.7 Mitigation measures

**Table 14-1** sets out the mitigation measures developed for the landscape and visual assessment.

**Table 14-1:** Mitigation measures – landscape and visual

Mitigation measure ID	Mitigation measure	Works area	Project phase
MM-LV01	<b>Reinstate ground surface</b> The construction footprint will be reinstated with consideration of the vegetation composition and ground surface adjacent to the area and in consultation with the landholder.	Pipeline Works	Construction
MM-LV02	<b>Landscape screening</b> Vegetation will be introduced to screen facilities within the viewshed of roads (such as The Esplanade) and where possible residences, if reasonably requested by affected landholders and with any necessary approvals granted.	Gas Import Jetty Works and Pipeline Works	Design, construction and operation
MM-LV03	<b>Materials and finishes</b> Selection of materials and finishes will appropriately respond to the environment and be complementary to the setting.	Gas Import Jetty Works and Pipeline Works	Design and operation
MM-LV04	<b>Preventative maintenance</b> Exterior materials and finishes will be maintained to prevent aesthetic deterioration according to a schedule for cleaning, painting and general maintenance.	Gas Import Jetty Works and Pipeline Works	Operation
MM-LV05	<b>Reflective surfaces</b> Reflective surfaces on infrastructure will be minimised to reduce reflection of artificial light where practicable.	Gas Import Jetty Works and Pipeline Works	Design and operation
MM-LV06	<b>Vegetation loss outside the construction footprint</b> If there is any loss of trees and shrubs due to construction outside the approved construction footprint, this will be replaced with appropriately selected small trees or large shrubs, in consultation with the affected landholder.	Gas Import Jetty Works and Pipeline Works	Construction and operation

## 14.8 Conclusion

The Project is considered to have a negligible to minor landscape and visual impact across the four identified landscape character areas. While the effects of lighting on a residence at Jack's Beach at 103 The Esplanade have been determined to be moderate, the few private views potentially impacted by this lighting increase does not warrant a change to the overall impact significance rating of the coastal foreshore character area.

A key impact of the Pipeline Works would be the clearing of vegetation of the ROW during the construction phase.

During operation of the Project, the underground pipeline would be visually marked by marker posts where required which is not expected to impact landscape values.

During operational activities, the foremost landscape and visual impact would be in response to the FSRU and Crib Point Receiving Facility located at Crib Point Jetty. The proposed Crib Point Receiving Facility and FSRU would have a moderate visual impact during operation from certain viewpoints. However, the mooring of the FSRU and an additional LNG carrier at the Crib Point Jetty is consistent with existing and approved use of the jetty and is considered to represent a minor impact overall to the landscape character.

Lighting from the Gas Import Jetty Works would not cause an increase of directly measurable luminance at any of the assessed viewpoints. There would be a considerable change to the view from one residential dwelling at night due to an increase in lighting from the FSRU moored at the jetty.

Landscape and visual impacts would be minimised through:

- reinstating the ROW progressively after pipeline construction with consideration of vegetation composition and ground surface adjacent to the area
- introducing screening vegetation to above-ground facilities
- selecting materials and finishes which complement the setting and environment and minimise reflective surfaces
- maintaining surfaces to prevent aesthetic deterioration.

With implementation of the identified mitigation measures, potential impacts on landscape values and visual amenity would be minimised during construction and operation of the Project.

In response to the social, economic, amenity and land use draft evaluation objective, impacts of the Project on landscape values and visual amenity have been assessed and mitigation measures have been identified to reduce or minimise these impacts.