



Australian Industrial Energy
Port Kembla Gas Terminal

Project No. 21-27477
Revision No. A
Date 01 Nov 2018

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

Viewpoint Location

Figure 13

7. Impact assessment

7.1 Landscape impact assessment

This section includes an assessment of impacts to landscape character from the project.

7.1.1 LCZ 1: Industrial port

| Landscape character zone 1: Industrial port | |
|--|---|
| Anticipated change to landscape character | <p>The introduction of the FSRU and associated wharf facilities will be a change to LCZ 1 for the period of the project. The vessel and wharf development will occur at Berth 101 in the Inner Harbour of Port Kembla.</p> <p>The LNG carrier will be a regular feature at Berth 101, appearing every two to three weeks moored adjacent to the FSRU for a period of approximately 24 to 48 hours each visit.</p> <p>The wharf facilities will involve the removal of parts of the existing wharf, and a minor change to the shape of the wharf to accommodate the proposed vessels. The gas pipeline alignment will be primarily within LCZ 1, with a small section occurring within LCZ 6. The pipeline will be installed underground and pass through previously disturbed areas and road verges. Installation of the pipeline will involve construction using traditional trenching methods, with directional drilling proposed at road and rail crossings to minimise disruption to the transport network.</p> <p>Traditional trenching will result in temporary open trenches along the pipeline alignment corridor through the construction period. This will result in ground disturbance and the possible removal of above ground elements such as trees and landscaping within the industrial precinct.</p> <p>Post-construction, the pipeline will be underground, however there will likely be limitations around the surface treatment above, such as a limitation to replacement tree planting, as a six metre maintenance easement will be required to be established.</p> |
| Sensitivity to change | <p>The sensitivity to change is Moderate as LCZ 1 is a local character precinct within greater Wollongong with distinctive local character features, with industrial heritage items of local significance. Tours of interest are offered for the public within the port precinct. Existing vegetation to main roadsides is valued for its provision of a visual buffer between public areas and port uses, as well as its contribution to the overall sense of place and identity of the coastal plain.</p> |
| Magnitude of change | <p>The magnitude of change is considered Low as the project will result in the addition of two new vessels of significant scale, however these will not be uncharacteristic to the landscape setting of LCZ 1. There are many built form elements of significant scale already present within LCZ 1, including large docked vessels, sheds, silos, and stockpiles, as previously discussed.</p> <p>The standard colour palette of the vessels is consistent with that outlined in the <i>Port Kembla Development Code</i>, therefore the vessels fit within the desired built form objectives of the port precinct in relation to colour.</p> <p>Tree removal will likely be limited to sections along road corridors often behind the existing primary buffer tree planting. Existing vegetation is likely to have been introduced with the port and road development and is not protected for its landscape value through planning legislation. The directional drilling approach proposed to road and rail crossings will result in the retention of existing trees in these locations.</p> |
| Significance of impact | Moderate-Low |

7.1.2 LCZ 2: Wollongong City Centre

No impact as the project has affected no change to the elements that define the landscape character unit as described in Section 6.2.

7.1.3 LCZ 3: Illawarra Escarpment

No impact as the project has affected no change to the elements that define the landscape character unit as described in Section 6.2.

7.1.4 LCZ 4: Lake Illawarra

No impact as the project has affected no change to the elements that define the landscape character unit as described in Section 6.2.

7.1.5 LCZ 5: Urban development - foothills

No impact as the project has affected no change to the elements that define the landscape character unit as described in Section 6.2.

7.1.6 LCZ 6: Urban development – coastal plain

| Landscape character zone 6: Coastal plain | |
|--|---|
| Anticipated change to landscape character | <p>The gas pipeline alignment will be primarily within LCZ 1, however a small section occurs within LCZ 6 at Bluescope Oval, an area zoned Private Recreation which contains playing fields, a carpark and amenities building on the corner of Springhill Road and Five Islands Road.</p> <p>The alignment of the pipeline in this location crosses through the oval and below two rows of boundary tree plantings between on the northern and eastern side of the playing fields which form a buffer between the port area and Springhill Road. The pipeline is proposed to be underground in this location.</p> <p>Installation of the pipeline will involve construction using directional drilling below the existing buffer vegetation and traditional trenching methods in the section through the oval. The directional drilling will result in the retention of the buffer vegetation to the perimeter of the sports field whereas the traditional trenching will require temporary open trenches along the pipeline alignment corridor through the construction period. This will result in the temporary closure and ground disturbance to the sports fields, however the site can continue to be used as playing fields once construction is complete.</p> |
| Sensitivity to change | <p>The sensitivity to change is Low as LCZ 6 in this location is not particularly distinctive in character nor does it contain items of recognised local significance or value. However, the rows of trees on the northern and eastern edge of the recreation area provide a visual and landscape amenity buffer between the sports fields, port, and Springhill Road.</p> |
| Magnitude of change | <p>The magnitude of change is considered Low as the pipeline will ultimately be below ground.</p> |
| Significance of impact | Low |

7.2 Visual impact assessment

The following section assesses the visual impact of the project from the following viewpoint locations:

- VP1: Mount Keira Lookout
- VP2: Lewis Drive, Figtree
- VP3: Hilltop Avenue, Coniston
- VP4: Wollongong Head Lighthouse
- VP5: Lackawanna Street, Cringila
- VP6: Flagstaff Road, Warrawong
- VP7: Christy Drive, Port Kembla
- VP8: Port Kembla Heritage Park
- VP9: Port Kembla Lookout Hill 60

This assessment is based on the project in operation, after construction is complete.

The following assessment is based on panoramas of existing views.

7.2.1 Photomontages

Photomontages have been created illustrating views from VP4 and VP8, included in Appendix A.

7.2.2 Viewpoint 1: Mount Keira Lookout



| Criteria | Comments |
|------------------------------|---|
| Location | VP1 is located at Mount Keira Lookout, approximately 7 kilometres north-west of the project site and at an elevation of approximately 560 metres. Mount Keira Lookout includes a visitor carpark, lookout and walking track, and is within a national park. |
| View direction | South-east |
| Description of existing view | VP1 is representative of visitors to Mount Keira Lookout stopping to enjoy the views up and down the coastline. VP1 is a distant and expansive view towards the project site, capturing residential areas on the foothills, the Wollongong City Centre to the left, Port Kembla harbour to the centre, and Lake Illawarra to the distant right. The ocean and sky form a blue gradient on the horizon as the coastline forms a strong presence in the view. Built form types and scale variations are discernible between different uses such as the tower buildings in the city, finer grain suburban areas, and larger scale industry around the harbour. |
| Anticipated Change to View | The FSRU and LNG carrier vessels would appear in the view, partially obscured by the elevated white grain silos adjacent to Berth 104. The size of each vessel would be smaller but similar in scale to the silos (which measure approximately 400 metres in length), and similar in form and colouration. |
| Sensitivity to Change | The sensitivity to change is High . This is due to the high value placed on the view. |
| Magnitude of Change | The magnitude of change is Negligible . The project will be partially shielded by existing features in the view, is of similar scale and colour to surrounding features and not uncharacteristic in appearance. |
| Significance of Impact | Negligible |

7.2.3 Viewpoint 2: Lewis Drive, Figtree



| Criteria | Comments |
|------------------------------|--|
| Location | VP2 is located at the intersection of Lewis and Outlook Drives in the suburb of Figtree, approximately 3.7 kilometres north-west of the project and at an elevation of approximately 60 metres. Figtree is a low density leafy suburb on the escarpment foothills with elevated areas enjoying distant views. |
| View direction | South-east |
| Description of existing view | VP2 represents views experienced by local residents. The view consists of residential properties on Outlook Drive to the foreground, with vegetation and built form to the middle ground, including the well vegetated elevation of Mangerton residential area to the left of the view. Port Kembla industrial area can be seen in the distance to the centre of the view above the residential rooftops. The cluster of vertical chimneys associated with the steelworks dominates the built form in this portion of the view, grounded by the elongated large scale sheds associated with Bluescope Steel. The large-scale elevated silos are just visible to the left. The ocean can be seen above the storage sheds, creating a focal point to the view. |
| Anticipated Change to View | The FSRU and the LNG carrier would appear as new elements in the view, seen on the distant horizon to the right of the elevated silos. The project would appear to the front of a small portion of ocean, adding to the already existing industrial frame. The ocean horizon will still be seen above the top of the vessel within the view, retaining the sea horizon. |
| Sensitivity to Change | The sensitivity to change is Moderate as residents would experience long viewing periods at a distance from the project site. |
| Magnitude of Change | The magnitude of change is Low as the change is relatively minor in scale and not uncharacteristic within the view. A small portion of the ocean is likely to be removed from view. |
| Significance of Impact | Moderate-Low |

7.2.4 Viewpoint 3: Hilltop Avenue, Coniston



| Criteria | Comments |
|------------------------------|--|
| Location | VP3 is located at Hilltop Avenue, Coniston, approximately 3.6 kilometres north-west of the project site, and at an elevation of approximately 60 metres. Coniston is a leafy low to medium density residential suburb situated close to the city centre and Port Kembla Inner Harbour. |
| View direction | South-east |
| Description of existing view | VP3 represents views experienced by local residents. Rooftops of residential properties populate the lower half of the view. The Port Kembla industrial area features across the horizon to the centre right. Trees and roofs frame the view to the foreground. Hill 60 can just be seen in the far distance. The elevated grain terminal silos stand out amongst the muted urban context, creating a focal point to the view. The steelworks chimneys punctuate a generally strong horizon line to the distant right. The left portion of the horizon is made up of dense vegetation and a large portion of ocean view. |
| Anticipated Change to View | The project will be partially shielded by the elevated white silos associated with the grain terminal, as well as other port infrastructure in front. Up to half the length of the FSRU may be visible to the left of the silo building, extending to the location where the angled silo chute disappears behind existing built form. |
| Sensitivity to Change | The sensitivity to change is Moderate as residents would experience long viewing periods at a distance from the project site. |
| Magnitude of Change | The magnitude of change is Low as the new feature is likely to be visible yet will be nestled amongst existing infrastructure of a similar visual character. |
| Significance of Impact | Moderate-Low |

7.2.5 Viewpoint 4: Wollongong Head Lighthouse



| Criteria | Comments |
|------------------------------|---|
| Location | VP4 is located at the lookout above the carpark near the Wollongong Head Lighthouse, approximately 4.3 kilometres north of the project sites at an elevation of approximately 20 metres. The Wollongong Lighthouse and Flagstaff Hill Park forms part of a natural rocky headland adjacent to Wollongong city centre and beach, and is a popular tourist destination. |
| View direction | South |
| Description of existing view | VP4 represents views experienced by visitors to the Flagstaff Hill Park and Wollongong Head Lighthouse. VP4 is a long distant view south along the coastline towards Hill 60, which appears to the left on the horizon line. The foreground is dominated by the carpark. To the middle ground, the ocean and beach shoreline can be seen, with tall pine trees and multi-storey towers of Wollongong to the right. The port infrastructure appears to the centre of the view forming part of the distant horizon. The elevated grain silos built form dominates the view in this location due to its scale and form, and although the steelworks chimneys punctuate the horizon, most infrastructure appears below the escarpment horizon. The escarpment forms a continuous distant backdrop to the city and port. |
| Anticipated Change to View | The anticipated change to VP4 is the addition of the project to a relatively small portion of the view in the distance, to the left and front of the steelworks chimneys. Existing coal stockpiles and rock wall in the existing view will appear in front of the project. In this location, the colours appear relatively muted therefore although the project will appear behind existing elements, the white colour and scale of the FSRU (and LNG carrier) will provide some contrast, however not to the extent that the white silos are currently doing. |
| Sensitivity to Change | The sensitivity of change is High as this is a major tourist lookout location adjacent to the Wollongong city centre. |
| Magnitude of Change | The magnitude of change is Low as the new feature in the view is minor, not uncharacteristic, although is likely to be noticeable. |
| Significance of Impact | Moderate |

7.2.6 Viewpoint 5: Lackawanna Street, Cringila



| Criteria | Comments |
|------------------------------|---|
| Location | VP5 is located at the intersection of Lackawanna Street and Jarvie Road in Cringila, approximately 3 kilometres south-west of the project site at an elevation of approximately 70 metres. Cringila is a residential suburb with single-storey dwellings on relatively undulating topography and extensive views to the steelworks at Port Kembla. |
| View direction | South-west |
| Description of existing view | VP5 represents views from nearby residential properties at a similar elevation. The view comprises Jarvie Road to the centre, with single-storey residential houses to the right and parkland to the left. The steelworks infrastructure of chimneys and sheds dominates the centre and left of the view extending across the horizon line, with steam billowing from a chimney to the right. A solid blue ocean horizon extends across the backdrop of the view over the steelworks and suburban area. Electrical poles are dominant vertical foreground elements in the view. |
| Anticipated Change to View | Only a small portion of the project is likely to be visible within VP5. This may appear to the left of the tallest steelworks element central to the view. The visible component is likely to be limited to the FSRU / LNG carrier. This may appear between existing chimneys already in the view. |
| Sensitivity to Change | The sensitivity to change is Moderate as residents would experience long viewing periods at a distance from the project site. |
| Magnitude of Change | The magnitude of change is Negligible as the project would not affect any change, it will only be a small component within the already industrialised view. |
| Significance of Impact | Negligible |

7.2.7 Viewpoint 6: Flagstaff Road, Warrawong



| Criteria | Comments |
|------------------------------|---|
| Location | VP6 is located on a footpath within an open space area on Flagstaff Road Warrawong, approximately 3 kilometres south-west of the project site at an elevation of approximately 50 metres. Warrawong is a low to medium density residential development located between the industrial port and Lake Illawarra. |
| View direction | South-west |
| Description of existing view | VP6 represents views from nearby residences at a similar elevation. The view comprises Flagstaff Road residences to the right, sited at an elevation overlooking the open space area towards the port. The centre of the view to the fore and middle ground comprises low shrubs and grasses within the open space valley, exposing clear views towards the steelworks behind. Large scale vertical and horizontal sheds, chimneys and silos can be seen, with steam billowing into the skyline. The Illawarra Escarpment and ocean form a blue backdrop to the view. |
| Anticipated Change to View | Only a small portion of the project is likely to be visible within VP6. This may appear to the centre of the view to the left of the steelworks chimneys. The visible component is likely to be limited to the bridge element of the FSRU / LNG carrier. If visible, these components will appear behind the steelworks infrastructure. |
| Sensitivity to Change | The sensitivity to change is Moderate as residents would experience long viewing periods at a distance from the project site. |
| Magnitude of Change | The magnitude of change is Negligible as the project may not affect any change, it would only be a small project component within an existing industrial setting. |
| Significance of Impact | Negligible |

7.2.8 Viewpoint 7: Christy Drive, Port Kembla



| Criteria | Comments |
|------------------------------|--|
| Location | VP7 is located in the public carpark at Christy Drive in Port Kembla, approximately 500 metres south of the project site at an elevation of approximately 5 metres. This area is a publically accessible section of Port Kembla, located between the Inner and Outer Harbours, is possibly used by, visitors to the port, workers and anglers. A footpath and row of trees are present along the foreshore, as well as a memorial to those who died as a result of the sinking of the ship Gabriella. |
| View direction | North / north-west |
| Description of existing view | VP7 is representative of visitors, workers and anglers using the small foreshore area and carpark at Christy Drive. The view comprises an expanse of Inner Harbour water to the foreground, components of the Coal and Grain Terminals to the middle ground, and the Illawarra Escarpment and Mount Keira forming the backdrop. Key built elements include the elevated silos, the smaller silver silos, sheds and ships. Light poles and cranes are also relatively prominent across the view. The escarpment skyline is relatively continuous as most built elements appear below. |
| Anticipated Change to View | The FSRU and LNG carriers will be new features in the view, appearing to the centre, behind the rock revetment wall and to the front of the grain terminal infrastructure. Due to the angle of the view, the front of the vessels will be the most visible component. The FSRU will appear to the front of the silver silos, and the LNG carrier, when berthed, will appear adjacent, extending across the view to the left to meet the elevated grain silos. |
| Sensitivity to Change | The sensitivity to change is Low as views will be experienced either by carpark users, anglers, and visitors within an interest in viewing the industrial port. |
| Magnitude of Change | The magnitude of change is Low as the new features will be visible however are within the existing characteristics of the view. |
| Significance of Impact | Low |

7.2.9 Viewpoint 8: Port Kembla Heritage Park



| Criteria | Comments |
|------------------------------|--|
| Location | VP8 is located to the outer edge of the Port Kembla Heritage Park, which is adjacent to the Breakwater Battery Museum approximately 2.2 kilometres south-east of the project site, at an elevation of approximately 8 metres. The park and museum are situated on a once natural rocky headland which now includes the eastern breakwater of the Port Kembla harbour. The site is part of the Hill 60 / Illowra Battery heritage precinct which has significance at both a state and local level. The site incorporates Maritime, Military and Aboriginal Heritage whilst also providing an outlook to the working port. |
| View direction | North-west |
| Description of existing view | VP8 is representative of visitors to Heritage Park. Similar views may also be experienced from within the museum, and from the Eastern Breakwater. VP8 comprises of the Breakwater Museum to the left, the Eastern Breakwater extending across the centre middle of the view, and the port infrastructure and escarpment to the background. The narrow opening between Inner and Outer Harbours can be seen to the centre left of view. Mount Keira provides a focal point on the horizon. Key built form infrastructure includes the museum, the breakwater, and the steelworks. The water and grassy slope dominates the foreground. |
| Anticipated Change to View | The FSRU and LNG carrier vessels would appear as new features in the view, located towards the centre to the front of the elevated grain silos. The vessels would extend from the vertical elements to the centre of the silos, to the left, close to the harbour opening. From this view direction, the appearance of the LNG carrier when berthed will be largely obscured by the FSRU. |
| Sensitivity to Change | The sensitivity to change is High as the site is a heritage tourism location located on a natural headland, from which visitors enjoy the views of the surrounding area. |
| Magnitude of Change | Low as the project will be a minor addition to the view within the setting of the port with similar characteristics already present within the view. |
| Significance of Impact | Moderate |

7.2.10 Viewpoint 9: Port Kembla Lookout Hill 60



| Criteria | Comments |
|------------------------------|--|
| Location | VP9 is located at the lookout within Hill 60 Park, approximately 3.8 kilometres south-east of the project site, at an elevation of 70+ metres. The park and lookout are located above Fisherman’s Beach, and the viewpoint is taken from the top level of the concrete military fortification adjacent to the Illowra Trig Station. VP9 is within the Hill 60 / Illowra Battery heritage precinct which has both state and local heritage significance. The site incorporates Maritime, Military and Aboriginal Heritage whilst also providing 360 degree views of the surrounding area including the port, coastline, lake and escarpment. |
| View direction | North / north-west |
| Description of existing view | VP9 is representative of visitors to Hill 60 Park and lookout. The view comprises coastal vegetation to the foreground, the port and coastline to the middle ground, and the escarpment to the background. The Illowra Trig point appears as a large feature central to the view, with a picnic setting behind. The steelworks chimneys and associated stream appear to the centre left of the view. Larger industrial sheds can be seen to the right of the Trig point, behind MM Beach. Port Kembla Public School can be seen immediately right of the Trig Point. The breakwater and central harbour passage can be seen, as well as the elevated grain silos, the city centre and Wollongong Head Lighthouse to the distant right. The escarpment is a continuous dominant feature in the view, characterised by the gently undulating horizon and features of Mount Keira and Mount Kembla. |
| Anticipated Change to View | The project will be a new feature in the view, appearing to the immediate right of the elevated silos building, partially obscured by the rocky landform of the coal terminal. Removed from the view will be a small portion of harbour water. The project is likely to appear relatively similar in scale and colour to the elevated silos building. The addition of the LNG carrier to the view when berthed will not be a noticeable addition as the vessel will appear largely behind the FSRU from this view direction. |
| Sensitivity to Change | High as visitors to this location are here specifically to experience extensive views of the surrounding urban and natural landscape. |
| Magnitude of Change | Low as the project is of similar scale and colour to surrounding features and not uncharacteristic within the view. The image is hazy due to the climatic conditions and time of day – during clearer conditions the project is likely to be more visually prominent than the image may suggest. |
| Significance of Impact | Moderate |

7.3 Summary of impacts

The following Table 7 and Table 8 provides a summary of landscape and visual impacts for the project.

Table 7 Summary of landscape impacts

| LCZ | Description | Sensitivity to change | Magnitude of change | Overall Rating |
|-------|------------------------------------|-----------------------|---------------------|---------------------|
| LCZ 1 | Industrial Port | Moderate | Low | Moderate-Low |
| LCZ 2 | Wollongong City Centre | N/A | N/A | No Impact |
| LCZ 3 | Illawarra Escarpment | N/A | N/A | No Impact |
| LCZ 4 | Lake Illawarra | N/A | N/A | No Impact |
| LCZ 5 | Urban Development - foothills | N/A | N/A | No Impact |
| LCZ 6 | Urban Development - coastal plains | Low | Low | Low |

Table 8 Summary of visual impacts

| VP | Location | Sensitivity to change | Magnitude of change | Overall Rating |
|-----|-----------------------------|-----------------------|---------------------|---------------------|
| VP1 | Mount Keira Lookout | High | Negligible | Negligible |
| VP2 | Lewis Drive, Figtree | Moderate | Low | Moderate-Low |
| VP3 | Hilltop Avenue, Coniston | Moderate | Low | Moderate-Low |
| VP4 | Wollongong Head Lighthouse | High | Low | Moderate |
| VP5 | Lackawanna Street, Cringila | Moderate | Negligible | Negligible |
| VP6 | Flagstaff Road, Warrawong | Moderate | Negligible | Negligible |
| VP7 | Christy Drive, Port Kembla | Low | Low | Low |
| VP8 | Port Kembla Heritage Park | High | Low | Moderate |
| VP9 | Port Kembla Lookout Hill 60 | High | Low | Moderate |

8. Mitigation Measures

The following section recommends mitigation measures that respond to issues arising within the assessment that have potential to adversely impact on:

- The character of the landscape within which the project is located
- Views to the project

Mitigation measures address the most visual elements of the project as well as referencing any relevant considerations drawn from the legislation and policy review.

8.1 Mitigation recommendations

General consideration for the project components include:

Wharf facilities

- Ensure proposed wharf facilities conform to recommended design criteria within the *Port Kembla Development Code*. Specifically:
 - Ensure ancillary structures are highlighted through the innovative use of colour, structure, screening and material
 - Ensure materials used reinforce the industrial maritime character of the port precinct and are appropriate for the proposed use. Preferred materials include timber, brick, steel, corrugated metal, and other complementary materials.

Gas pipeline

- Ensure the gas pipeline alignment and associated six metre easement is located away from the existing established buffer tree planting along main public road corridors such as Springhill Road, to avoid unnecessary tree removal and ensure the functional integrity of the existing environmental and visual buffers as outlined in the *Port Kembla Development Code*.
- Obtain arboricultural advice regarding the opportunity to retain existing mature vegetation, and investigate design solutions to achieve this
- Where possible, incorporate replacement landscape planting to areas disturbed by construction work and to re-establish the landscape buffers to external roadways, intersections, and the Bluescope Oval recreation area, in accordance with the *Port Kembla Development Code* design criteria. Ensure tree species are selected to complement the existing landscape character of the immediate surrounding area.

Lighting

In accordance with the *Port Kembla Development Code*, ensure that:

- All external lighting provides a safe and attractive environment that meets the operational requirements of the Port
- Light spill on the surrounding environment, community and operational activities of the waterways is minimised
- Lighting levels are to be provided in a manner just sufficient to meet operational requirements and to the relevant Australian Standards
- Light spill outside the site boundary and sky lighting is to be avoided through the adoption of measures such as:

- Focussing light downwards
- Installing cut-offs or shields on lights
- Minimising the light mast height
- Using low mounting height poles to light non terminal operational areas, including access / egress routes.

8.1.1 Construction phase

General consideration for the construction phase include:

- Temporary boardings, barriers, traffic management and signage would be removed when no longer required
- Materials and machinery would be stored neatly during construction works
- Roads providing access to the site and work areas would be maintained free of dust and mud as far as reasonably practicable
- Ensure temporary lighting required during the construction period is sited and designed to avoid light spill into the surrounding area

9. Conclusion

This LVIA has been undertaken to understand the potential landscape and visual effects of the proposed Port Kembla Gas Terminal project, comprising of the key components of the LNG carrier, the FSRU, the wharf facilities, and the gas pipeline.

The project site is located at the Port Kembla industrial harbour south of Wollongong, which services the import and export of a range of industries including grain, coal, motor vehicles, cargo, and dry and liquid bulk. The Port Kembla Steelworks is adjacent to the site within the port industrial lands.

The study area for assessment is land within ten kilometres of the project site, including the key features of Mount Keira and part of the Illawarra Escarpment, Wollongong Central Business District, Port Kembla, and part of Lake Illawarra.

Key legislation relevant to this report includes the *Wollongong Local Environmental Plan*, the *Wollongong Development Control Plan*, and the *Port Kembla Development Code*. These include relevant guidance relating to landscape character and views within the study area, key sites of historical significance, key viewing areas frequently visited by tourists and the local community, as well as the landscape and urban design objectives within port itself.

Significant landscape characteristics within the study area include the Illawarra Escarpment, the escarpment foothills, the coastal plain, beaches and foreshore, and Lake Illawarra. Key urban features include the Wollongong City Centre, the port precinct, and the residential development on the surrounding foothills. Six landscape character zones were defined reflecting the landscape character within the study area.

A ZTV analysis was undertaken revealing the project viewshed. Within this area, nine viewpoints were chosen for assessment representative of a selection of the most sensitive visual receivers within the visual catchment of the project. Viewpoints represented views from elevated residential areas surrounding the project site, key lookout areas including the Mount Keira Lookout, the Wollongong Head Lighthouse, Hill 60 and the Port Kembla Heritage Park. Two photomontages were created illustrating views from Viewpoint 4 (Wollongong Head Lighthouse) and Viewpoint 8 (Port Kembla Heritage Park).

The landscape character impact assessment revealed only two of the six landscape character zones were impacted by the project, LCZ 1 (Industrial Port) and LCZ 6 (Urban development – coastal plain). LCZ 1 was found to have a Moderate – Low significance of impact rating due to the precincts contribution to local character and heritage precinct within, as well as the likely tree removal associated with the pipeline development. LCZ 6 was found to have a Low significance of impact rating.

The visual impact assessment revealed a range of overall rating from Negligible to Moderate. The most significant were from VP 4 (Wollongong Head Lighthouse), VP 8 (Port Kembla Heritage Park) and VP9 (Port Kembla Lookout Hill 60). This was due to the higher level of visual sensitivity associated with these sites as popular tourists sites or lookouts, and their protected heritage significance. VP 2 (Lewis Drive, Figtree) and VP 3 (Hilltop Avenue, Coniston) were found to have Moderate – Low significance of impact ratings due to the viewer sensitivity being residential areas. VP7 (Christy Drive, Port Kembla) has an overall rating of Low as this area is predominantly a carpark area within the port precinct and not an area of high viewer sensitivity. VP 1 (Mount Keira Lookout) and VP 5 (Lackawanna Street, Cringila) had an overall rating of Negligible due to the scale of change within the view.

Recommended mitigation measure for the project reflect heavily on the *Port Kembla Development Code* objectives and criteria. This includes guidance in relation to the materiality

and colour of project elements, avoiding the unnecessary removal of vegetation particularly the existing buffer vegetation along external roads and the Bluescope Oval site, and incorporating replacement planting where possible. Although lighting is not formally assessed within this report, guidance for the avoidance of light spill and sky lighting is provided. General considerations for mitigation during the construction phase have also been provided.

10. References

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Landscape Institute and Institute for Environmental Management and Assessment (LIIEMA) (2013), *Guidelines for Landscape and Visual Impact Assessment*. Routledge 3rd Edition.

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Wollongong City Council, *Illawarra Escarpment Strategic Management Plan*

Wollongong City Council, *Wollongong Development Control Plan 2009*

Wollongong City Council, *Wollongong Local Environmental Plan 2009*

Appendices

Appendix A - (Photomontages)



Existing View



Photomontage of Project



Enlarged view



Viewpoint location

Project: Port Kembla Gas Terminal
PHOTOMONTAGE VIEWPOINT 4:
Wollongong Head Lighthouse

Location: Wollongong Head Lighthouse, lookout above carpark
Coordinates: 307 877, 6 189 065
 (GDA 1994 MGA Zone 56)
View Direction: South
Lens Size: 50mm
Date of Photography: 29th August 2018
Date of Photomontage: 10th October 2018

