

Visual Amenity

A visual impact assessment (VIA) was carried out to describe changes to the visual amenity resulting from proposed development at EAW (**Appendix N**).

17.1 Existing Environment

17.1.1 Darwin Harbour landscape

The shoreline around Darwin Harbour contains relatively large tracts of undeveloped land, mainly comprising tidal flats vegetated by mangrove stands. Some residential, industrial and infrastructure development has been undertaken around the shorelines of East Arm, while the shoreline throughout Middle Arm is almost completely undeveloped.

The predominant development along the shoreline within Darwin Harbour includes:

- ConocoPhillips Darwin LNG Plant, on Wickham Point approximately 5 km to the west of EAW.
- Darwin Wharf Precinct, ship berthing, seaside promenades, parklands, landscaped gardens, hotels and alfresco dining, on the eastern side of the main body of the harbour.
- Darwin CBD, on the eastern side of the main body of the harbour.
- Suburban developments from Darwin in the north to Palmerston in the east of the harbour shoreline. A small residential area also exists in Mandorah, on the western side of the mouth of the Harbour.
- East Arm industrial development, including EAW and Vopak bulk liquid storage facilities.

Existing landscape elements at EAW include:

- Purpose built multi berth wharf
- Intermodal container terminal (rail and road)
- Hardstand areas
- Open stockpile, bulk ship loading and conveyor infrastructure
- Haulage rail (AustralAsia) and road corridor
- Industrial allotments (including the Darwin Business Park) (AECOM, 2009).

The EAW is currently lit at night-time to provide light for operability and plant safety. The additional structures will also be lit at night-time for the same reasons. These light sources and light from existing other development in the harbour contribute to an overall light “glow” from the city area, which is visible (if very faintly) from up to 40 km away (M Guinea, Charles Darwin University, pers comm. Sept 2008). Emissions visible at EAW may include dust generated during site clearing and earthworks, sediment disturbance during dredging activities and loading/unloading of ore.

17.1.2 Visual User Groups

Receptors to visual amenity changes associated with the expansion of EAW include a widespread section of the community:

- port area employers and employees
- visiting crews of the various ships and vessels using Darwin Port
- all passing marine and boating traffic in Darwin Harbour
- tourist and the local Darwin community visiting the Darwin Harbour, Stokes Hill Wharf and Fort Hill Wharf
- employees working in buildings in the civic precinct in Darwin CBD, with direct visual access

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- users of the East Arm boat ramp and other recreational users
- residents and occupiers of various residential buildings with direct visual access.

17.1.3 Visual Accessibility

EAW is generally visible from adjacent land areas including the Darwin CBD, residential subdivisions, Blaydin Point and Wickham Point. Fourteen sites (refer Figure 17-1) of interest to the visual impact assessment were identified and selected to account for a range of viewing angles, potential receptors types and residential, cultural, heritage and tourism values. Photographs showing EAW from the identified receptor locations are presented in Appendix B of the VIA.

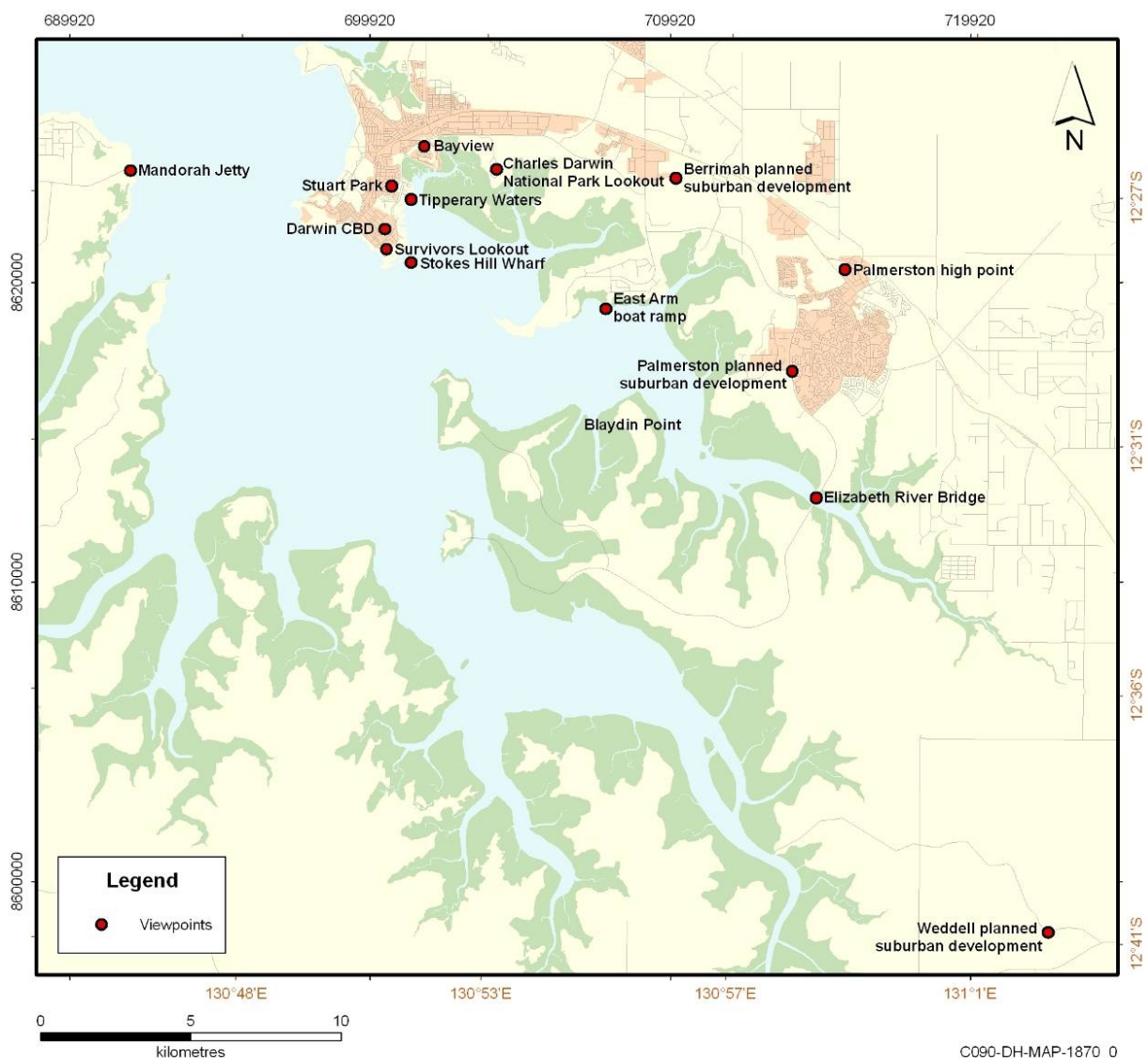


Figure 17-1 Viewpoints considered in the visual impact assessment

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17.2 Potential Impacts

The VIA concluded that the proposed development will be visible from only nine of the fourteen considered viewpoints.

- Mandorah Jetty
- Darwin CBD (view from high - rise building)
- Survivors Lookout, Darwin Wharf precinct
- Stokes Hill Wharf, Darwin Wharf precinct
- Hilly residential area at Stuart Park
- Harbour foreshore at Tipperary Waters
- Harbour foreshore at Bay View
- East Arm public boat ramp
- Elizabeth River Bridge.

Viewpoints from which the proposed development area was visible were broadly considered to be *Medium* to *High* visibility impact sites. Viewpoints where the views to EAW were significantly obscured by vegetation, buildings or topography were considered *Low* or *No* visibility impact sites. The visual accessibility and visibility rankings are presented in Table 17-1.

The only site rated “high” visibility is the East Arm public boat ramp, as the proposed development would be clearly visible from this viewpoint, over a moderate distance. This view of the Project could potentially be experienced by a large number of people that utilise the boat ramp for recreational fishing, boating, or tourism. However, although the visibility from this viewpoint is high, any viewing from this point (by boat ramp users) would be transient.

The view from Stokes Hill Wharf in Darwin was rated “medium” impact, as were five other sites. The proposed development area would be visible from these viewpoints, but over relatively long distances and with some partial obstructions to this view. The proportion of the view taken up by the proposed development areas from these distances would be small.

The view from Mandorah, Berrimah and Palmerston (planned residential subdivision) were rated “low” impact, as the distance to EAW is very long and would be barely visible. EAW is not visible from Weddell, Elizabeth River Bridge, Charles Darwin National Park or from the highest point in Palmerston.

Table 17-1 Ranking of the Project's Potential Visual Impact from Affected Viewpoints

| Site | Visual accessibility | Distance | Visibility |
|---|--|----------|------------|
| 1 Mandorah Jetty | EAW is visible in the far distance from this location, with no obstructions. The proportion of the view taken up by the Project would be extremely low. | 13.5 | Low |
| 2 Darwin CBD (view from high-rise building) | The proposed development area is clearly visible without obstruction. Viewers from this aspect may be long-term residents (e.g. apartments) or employees in offices. | 5.1 | Medium |
| 3 Survivors Lookout, Darwin Wharf precinct | Most of EAW is visible; the view is similar in nature to that from Stokes Hill Wharf but with buildings and wharf in the foreground. The long distance decreases the proportion of view taken up by the Project. | 4.9 | Medium |

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| Site | Visual accessibility | Distance | Visibility |
|---|---|----------|------------|
| 4 Stokes Hill Wharf, Darwin Wharf precinct | EAW is clearly visible across the water, without obstructions. The distance and perspective reduces the proportion of the view that would be taken up by the Project. This site is considered an important tourism location within central Darwin. | 4.3 | Medium |
| 5 Hilly residential area at Stuart Park | EAW is visible from this area, although distant and partly obscured by buildings or vegetation close to the viewpoint. | 5.8 | Medium |
| 6 Harbour foreshore at Tipperary Waters | EAW is clearly visible from this area. The distance and perspective reduces the proportion of the view that would be taken up by the Project. | 5.5 | Medium |
| 7 Harbour foreshore at Bayview Haven | EAW is visible from this area, although distant and partly obscured by housing and vegetation. | 6.4 | Medium |
| 8 Charles Darwin National Park lookout | EAW is not visible from this vantage point due to tree cover close to the lookout, which completely obscures the view in that direction. | 5.3 | None |
| 9 East Arm public boat ramp | EAW is clearly visible, with no obstructions across the water. This is the closest viewpoint to the proposed development area. The proposed barge ramp hardstand area will be seen from this location. Viewing from this point by boat ramp users would be transient. | 1.5 | High |
| 10 Planned residential subdivision in Berrimah (highest ground) | EAW is obscured from this viewpoint by a small hill in the middle distance. Some of the Project infrastructure may be partly visible at the sides of this hill. | 6.5 | Low |
| 11 Palmerston suburban area (highest ground) | EAW is completely obscured from this viewpoint by vegetation in the middle-distance. | 10.8 | None |
| 12 Planned residential subdivision in Palmerston (highest ground) | This area is vegetated with tall trees. Therefore the view to EAW is heavily obscured for a person standing at ground level. | 9.5 | Low |
| 13 Elizabeth River Bridge | This viewpoint is relatively close to EAW, but the view is obscured by a hill on Middle Arm and mangrove vegetation in between the bridge and EAW. While there may be a large number of viewers from this angle, most are likely to be very transient (i.e. in vehicles travelling across the bridge), reducing the viewing time. | 11.7 | None |
| 14 Planned residential subdivision in Weddell (highest ground) | EAW is not visible from this vantage point due to the landform (hills) and vegetation in that direction. The distance to EAW from this site is large, at around 25 km. | 25 | None |

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17.3 Management of Potential Impacts

17.3.1 Vegetated Buffers

The nature of the proposed infrastructure (wharfs, moorings, laydown areas etc) requires that these areas would need to be cleared, and precludes the retention of shoreline vegetation in those areas.

Some of the proposed infrastructure (such as cranes) will be taller than the existing tree line and will not be completely hidden, but the retention of vegetation to the north and east of the site will reduce the otherwise stark contrast between the proposed development area and surrounding undeveloped mangrove coastline, when viewed from the north and the east.

Construction of the rail loop will entail clearance of vegetation in this area; however based on experience for the existing development, it is expected that mangroves will probably recolonise the shoreline within a few years, and assist to mitigate the visual impact of the site to receivers at some viewpoints.

17.3.2 Lighting

Light from the proposed development areas will be attenuated to some extent over the 4 km distance to Palmerston, and 10 km distance to the Darwin CBD.

17.3.3 Air Emissions

Dust emissions during construction, and from materials handling during operation, as well as smoke from burning-off operations, are potential visual impacts.

Comprehensive measures for control of dust emissions are set out in Chapter 11 (Air Quality), and are summarised in Section 26.5.7 (Air Quality and Emissions Management Plan).

Once the EAW extension is completed, there will be little remaining vegetation within the EAW precinct. Also, stockpiled vegetation from clearing activities will not be burnt, but will be reused where possible or disposed of off site, and slashing and spraying is the preferred management method for control of weeds (Section 21.7, Fire Management and Mitigation Measures).

DPC does not undertake burning off within the EAW area, although on occasion dunnage (packaging timber) has been burnt in mud ponds as directed by the Australian Quarantine Inspection Service, when the volume has been much too big to be put through the quarantine incinerator (DPC pers.comm.). It is noted, however, that burning off may periodically be undertaken in areas outside the EAW precinct, as is common in many areas of the NT.

17.4 Commitments

- *The proposed development will be screened from the surrounding area as much as is practicable.*
- *Measures will be adopted during construction and operation of the proposed development to limit dust generation.*

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References

AECOM, 2009, *Notice of Intent for the Proposed Expansion Works at East Arm*, prepared for Department of Planning and Infrastructure.

INPEX, 2010, *Ichthys Gas Field Development Project Draft EIS*; accessed 28 September 2010 at (<http://www.inpex.com.au/ichthys-draft-environmental-impact-statement/downloads/draft-eis.aspx>)