

Hexham Relief Roads Project



Visual impact assessment

Report author: Stacey Brodbeck

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Envisage Consulting Pty Ltd

Ph: 02 4942 5677

ABN 89 139 313 296

www.envisageconsulting.com.au

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I. Introduction

I.1 Purpose of report

This report assesses the potential visual impacts on the landscape character of, and surrounding viewpoints to, the Hexham Relief Roads Project (proposed Project).

I.2 Structure of report

The structure of the report is such that it:

- Describes the context of the site in terms of location and the visual environment;
- Describes the main visual changes that would occur as a result of the development;
- Assesses the potential visual impact to the site and from surrounding viewpoints; and
- Recommends mitigation measures.

I.3 Project overview

The ARTC proposes to develop five Relief Roads (tracks) and associated infrastructure at Hexham in the NSW Hunter Valley (the proposed Project). The proposed Project is located approximately 16km north west of the town of Newcastle (**Figure I-1**).

Key components of the proposed Project comprise:

- Five Up Relief Roads (train lines) to the west of the existing Up Main, Down Main and Up Coal including:
 - The removal of the existing Down Coal (located to the west of the Up Coal);
 - The construction of five new train lines (tracks) for the Relief Roads;
 - The construction of a new Down Coal to the west and outside of the proposed Relief Roads;
 - Each Relief Road to accommodate trains generally comprising two or three locomotives and up to 91 wagons (1,543m long) requiring a minimum standing room of 1,670m; and
 - New turnouts, return curves and associated track changes.
- Installation of new signal infrastructure for the five Relief Roads including signal location cases, huts and gantries.
- Earth and civil works of approximately 265,000 cubic metres, including cut to fill, track formation, drainage and minor structures.
- Ancillary infrastructure including vehicle access tracks, temporary construction compounds and stockpile sites.

- Land acquisition and the upgrading of existing rail infrastructure and public utilities as required.
- The estimated cost of the Project is approximately \$90million and it is expected to take approximately 18 months to construct.



figure 1.1

Hexham Relief Road Projects - Site Location Map

2. Assessment methodology

2.1 General

The methodology for this visual impact assessment is based on widely accepted techniques.

In the absence of specifically applicable guidelines, the methodology has been tailored to address the potential visual impacts of a rail amplification project such as the proposed project. The applied methodology has been based on professional experience with similar projects, and existing guidelines used by government authorities in Australia such as the *Environmental Impact Assessment Guidance Note – Guidelines for Landscape Character and Visual Impact Assessment* (NSW Roads and Traffic Authority, 2009), *Visual Landscape Planning in Western Australia* (Western Australian Planning Commission, 2007) and *Guidelines for Landscape and Visual Impact Assessment* (The Landscape Institute and Institute of Environmental Management and Assessment, 2002).

The methodology essentially analyses the existing visual environment and then assesses the potential for the Project to impact that environment. To do that, consideration is given to the visual form and changes associated with the Project (such as scale, form, vegetation clearing and colour contrast), against the existing landscape character of its setting, and the impact to viewers that will see the Project from sensitive locations such as private properties and public roads.

To achieve this, the methodology is based on the following key steps:

- Description of the existing visual environment (context, landscape character and visual amenity);
- Description of the visual changes associated with the Project;
- Assessment of impact on the landscape character and visual amenity (i.e. changes to surrounding sensitive receptors and other viewpoints); and
- Identification of potential mitigation measures and recommended changes where relevant.

2.2 Definition of the assessment areas for Project

The definition of the visual assessment area of the Project varies depending on the two potential impacts types: that is, impacts in terms of landscape character, and impacts in terms of visual amenity. That is because impacts to landscape character are specific to the areas of the landscape directly affected, or close to, the Project, whereas impacts to visual amenity take into account a much wider area that considers outside viewpoints.

Thus, the two assessment areas identified for the visual impact assessment are defined as follows:

- Landscape character assessment area – covers the identified Project Area and its general surroundings.
- Visual amenity assessment area – covers the main area from which the Project would be seen.

2.3 Landscape character impact assessment methodology

The landscape character assessment:

- firstly describes the landscape character and its general sensitivity to change;
- changes that may affect it; and
- the likely level of impact.

2.4 Visual amenity impact assessment methodology

The visual amenity assessment focuses on changes to viewpoints from surrounding properties, public roads and any other identified sensitive receptors.

Emphasis has been placed on the nearest viewpoints, as the potential for visual impact on foreground views (those with 'local or foreground views') is of most concern. Taking into account the nature of this project, a distance of 500m has been used to define foreground views. Viewpoints within the next closest viewing range (termed 'mid-ground or sub-regional views' and defined for this project as within 500m to 2km) are of the next, and therefore somewhat lesser, level of concern. Views beyond a distance of 2km have been termed distant or 'regional views' and are likely to have a far lesser impact due to the greater separation distance.

An assessment of visual amenity impacts has been undertaken for the main identified viewpoints within these three assessment zones. The assessment process is based upon an overall indication of potential visual impact for each identified viewpoint, by considering both the visual sensitivity of a viewpoint and the magnitude of visual change.

Generally impacts are higher the closer any viewpoint is to the site, with those with high numbers of viewers, as well as permanent residents, normally of most concern.

The assessment assumed trains on all five relief roads when considering the overall potential for impact.

2.5 Impact levels

The following five terms have been adopted to generally describe the potential levels of impact as a result of the Project (adapted from *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Management and Assessment, 2002):

- **Severe** – The Project becomes the dominant feature of the scene to which other elements become subordinate and it significantly negatively affects and changes its character.
- **Substantial** – The Project forms a significant and immediately apparent part of the scene that negatively affects and changes its overall character.
- **Moderate** – The Project forms a visual and recognisable new element within the overall scene and may be readily noticed by the viewer.

- **Slight** – The Project forms a minor component of the wider view, which might be missed by the casual viewer. Awareness of the project would not have a marked effect on the overall quality of the scene.
- **Negligible/none** – Only a very small part or none of the Project is discernible or at such a distance that it is scarcely appreciated. Consequently it would have very little or no effect on the scene.

3. Site Context

3.1 General

The Project Area is located at Hexham, which lies to the west of Newcastle. It is a particularly busy area in terms of transport infrastructure, being situated at the junction of the New England and Pacific Highways, as well as the Project Area itself being part of the Main Northern (Railway) Line. This line continues on to Armidale, whilst the North Coast Line branches off at Maitland to service the NSW north coast.

Subsequently there are many transient viewers who travel through and close to the site, and will have opportunities to view it, albeit generally for a small amount of time.

The Project Area is located approximately 200 metres from the Hunter River and is surrounded by SEPP 14 and RAMSAR Wetlands, including the Hunter Estuary Wetlands and Hexham Swamp. The Project Area and adjoining lands were created by the filling of some of the wetlands of Hexham wetland, including small watercourses.

Landform

The site is a predominantly flat landform, reflecting its location at the northern edge of the Hexham Swamp. The only elevated landform in the immediate vicinity is the human made embankments created for both the construction of the New England and Pacific Highways to the north and east respectively, and the subject rail line. The landform rises alongside the New England Highway, to the north of the Project Area.

Further to the south-west and west the landform becomes higher as it forms the natural topographical boundary to the Hexham wetlands. Not far from the Pacific Highway is the Hunter River, with the landform on that side continuing quite flat over the floodplain towards Raymond Terrace.

Land use

The residential areas of Minmi, Fletcher and Maryland are located to the south-west of the Project Area, Shortland residential area to the south and the rural-residential area of Blackhill to the west. Immediately east of the rail line is the mixed commercial and industrial area of Hexham. The Hexham Railway Station is located within this area. There are no residential areas within Hexham. However, there are residences immediately adjoining the industrial and commercial uses. Many residences are in Old Maitland Road.

Hexham Railway Station appears to mainly service the workforce of the surrounding area. There are no nearby residential areas, although rail users are likely to travel from some more distant locations such as Raymond Terrace as it is the nearest station.

Vegetation

The land to be used for the Project is mostly cleared and highly disturbed and as a result supports very little mature vegetation. However, some vegetation remains within the Project Area and in close proximity.



Photograph 3-1:: View over part of Hexham wetland to south

According to the *Proposed Hexham Relief Roads Ecological Assessment* (Parsons Brinckerhoff, 2012), the dominant vegetation of exotic grassland/disturbed areas within the Study Area have been previously cleared and extensively modified due to historic and current grazing and the former location of a coal loader. The open forest areas tend to occur on old fill sites with the soil composed of ballast and building refuse.

There is significant regrowth of native vegetation, particularly dominated by Casuarinas (including two identified forest types - *Swamp Oak Swamp Forest Fringing Estuaries* and *Swamp Mahogany Swamp Forest on Coastal Lowlands*). Coastal Freshwater Wetlands occur in the lower lying areas with the northern wetlands being currently grazed and the southern wetlands a result of man-made dams or natural depressions. Coastal saltmarsh occurs in the southern portion of the Study Area where tidal influences occur from an inlet from the Hunter River.

Two SEPP I4 wetlands have been mapped in the Study Area:

- Wetland 724 – located at approximate chainage 176,100 km in the north of the Study Area, occurring on an adjoining property and being part of the sewage treatment works; and

- Wetland number 787 – located at approximate chainage 173,800 km in the south of the Study Area.

Overall, the proposed Study Area contains seven distinct vegetation types:

- Swamp Oak Swamp Forest Fringing Estuaries– covering approximately 6 ha.
- Swamp Mahogany Swamp Forest on Coastal Lowlands– covering approximately 1 to 2 ha.
- *Phragmites australis* and *Typha orientalis* Coastal Freshwater Wetlands – covering approximately 3 ha.
- Coastal Saltmarsh in Estuaries – covering approximately 1 to 2 ha.
- Exotic Grasslands/Disturbed vegetation – covering approximately 36 ha.
- Exotic Herbfield – covering approximately 9 ha.
- Planted Vegetation – covering approximately 3 ha.

Refer to the Ecology section in the Environmental Impact Statement (EIS) for a detailed description and assessment of vegetation.

Heritage

The Minmi to Hexham Railway is listed as a heritage item under the Newcastle Local Environment Plan (LEP), and is , described in the LEP as being of state significance Refer to the *Hexham Relief Roads Project: Historic Heritage Impact Assessment* (Australian Museum Business Services, 2012)The embankment of the former railway is still visible in the landscape and on aerial photographs and is approximately 8.2 kilometres in length. The former railway travels perpendicular from the Main Northern Railway through the Project Area west to the Newcastle suburb of Minmi. The railway and embankment are shown in **Figure 5-1** (Section 5.0). It is understood the embankment would not be affected by the proposed Project.

Hunter Wetlands National Park

The Office of Environment’s website (February 2012) describes Hunter Wetlands National Park as:

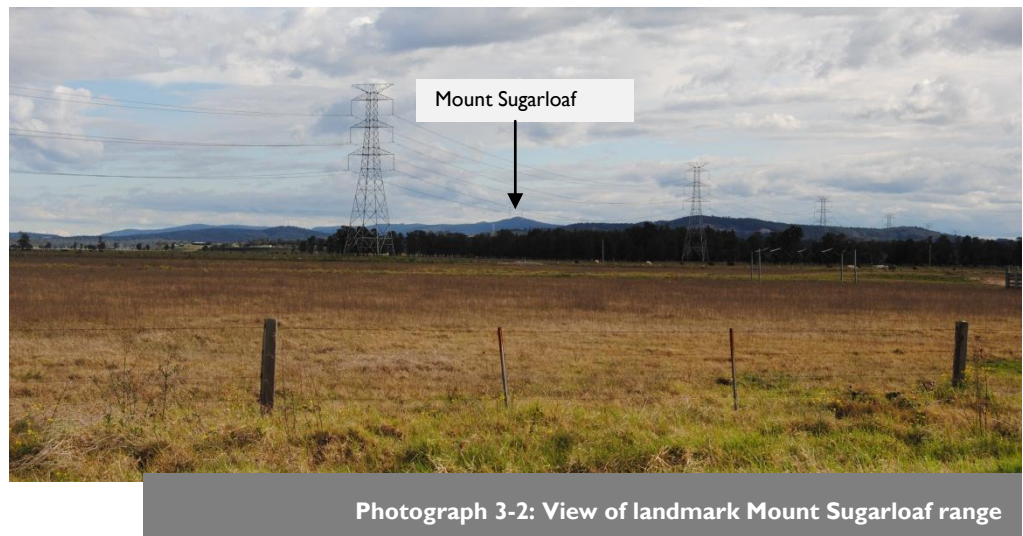
“A sanctuary for wildlife in the heart of an industrial city, Hunter Wetlands National Park is home to a range of threatened species and endangered ecological communities, as well as their more common associates. Waterbirds share the park with osprey, green and golden bell frogs, and a range of threatened bats. Diverse habitats conserved within the park include saltmarsh, swamp oak forest, freshwater wetlands and coastal rainforest communities.

Mangroves provide a nursery for fish and other aquatic life, as well as maternity roosts for endangered micro bats, including the vulnerable eastern freetail-bat).

Ash Island is the primary destination from which to experience the natural beauty of this park. Boardwalks, walking tracks and cycle ways provide ideal opportunities to explore the wonders of the intertidal world.”

Landmarks

Mount Sugarloaf and its associated range to the west forms a very recognisable natural landmark and vegetated backdrop for the surrounding Hunter region, with views to it from many places including the Project Area.



Photograph 3-2: View of landmark Mount Sugarloaf range

3.2 Landscape character and scenic amenity

The landscape character of the site and its immediate surrounds reflects the mixture of land use types associated with the existing industrial area and railway to the east, and the Hexham wetland area to the south-west. The industrial area, highway and railway have a cluttered look due to the high number of different building types, large sheds, structures and signs, with an almost total absence of street or other trees serving to visually temper this generally unattractive location.

The open grassed landscape, that includes some of the wetland to the south-west, is mostly comprised of an open, barren, semi-rural character. Its bounding by urban and industrial uses, and limited tree cover, impinge on its potential for a more natural landscape.

Overall, the flat nature of the landform, and the relatively low degree of vegetation in the surrounding area, combine with this contrasting mix of land uses to produce a landscape character that is not particularly attractive and has a **low scenic amenity**. Typical images that illustrate the landscape character are provided as **Photographs 3-3 to 3-5**.



Photograph 3-3: View of highway north of Hexham Bridge



Photograph 3-4: View of industrial area from north



Photograph 3-5: View of wetland over railway lines and mark

3.3 Future changes

QR (Queensland Rail) National proposes to construct a Train Support Facility (TSF) on a 40 hectare site to the immediate west of the Project (refer **Figure 5-1**, Section 5.0, for location). The proposal is not yet approved. The TSF would provide for the maintenance and storage of trains, with it understood that there would be limited separation between the two projects.

4. Proposed visual changes

4.1 General

Key components of the proposed Project comprise: Five Up Relief Roads (train lines) to the west of the existing Up Main, Down Main and Up Coal including:

- The removal of the existing Down Coal (located to the west of the Up Coal);
 - The construction of five new train lines (tracks) for the Relief Roads;
 - The construction of a new Down Coal to the west and outside of the proposed Relief Roads;
 - Each Relief Road to accommodate trains generally comprising two or three locomotives and up to 91 wagons (1,543m long) requiring a minimum standing room of 1,670m; and
 - New turnouts, return curves and associated track changes.
- Installation of new signal infrastructure for the five Relief Roads including signal location cases, huts and gantries.
 - Earth and civil works of approximately 265,000 cubic metres, including cut to fill, track formation, drainage and minor structures.
 - Ancillary infrastructure including vehicle access tracks, temporary construction compounds and stockpile sites.
 - Land acquisition and the upgrading of existing rail infrastructure and public utilities as required.
 - The estimated cost of the Project is approximately \$90million and it is expected to take approximately 18 months to construct.

Signalling

New signalling installed for the Relief Roads. Walk-in signal huts would be installed within the existing rail corridor on the Down Side at the following locations:

- One 9m x 3m hut at approximate chainage 174.100km;
- One 5m x 3m hut at approximate chainage 174.500km; and
- One 9m x 3m hut at approximate chainage 176.200km.

The signal huts would be mounted on steel platforms in order that they stay above the 100 year flood level. The huts would be constructed of prefabricated colourbond panel.

A six track portal signal gantry spanning the re-aligned Down Coal and the five Relief Roads would be erected at approximate chainage 174.475km.

Maintenance Vehicle Access Tracks

A number of new vehicular access tracks would be established within the Project Area. The width of the vehicular access tracks would be approximately 6-8m.

Access to Site

Construction access would be from the Tarro interchange. An unsealed construction access track approximately 10m wide would be constructed from the Tarro interchange to Woodlands Close. The track joins Woodlands Close approximately 150m south of the New England Highway.

4.2 Vegetation removal

Clearing of native vegetation will be required within and alongside the western side of the existing railway corridor. An area of approximately 45 metres (m) wide would be cleared of vegetation for its entire length, with this widening out in some places such as at the Woodlands Close/New England Highway intersection.

The proposed Project would include the removal of 7.5 ha of native vegetation, including 4.5 ha of Swamp Oak Swamp Forest Fringing Estuaries, 1.1 ha of Swamp Mahogany Swamp Forest on Coastal Lowlands and 1.9 ha of *Phragmites australis* and *Typha orientalis* Coastal Freshwater Wetlands. The clearing of trees such as Casuarinas (or Swamp Oak), which would be a more noticeable visual change.

4.3 Construction changes

The main visual changes during construction would involve installation of security fencing, vegetation removal, earthworks, construction of rail lines and associated infrastructure. Two site compounds would also be required during construction.

Site compounds

A primary compound would be established and remain in place for the duration of the construction phase. The area is an existing lay down yard located in the rail corridor at the southern end of Woodlands Close. A secondary compound would be established at the southern end of the site. The area currently comprises a mix of degraded hard standing and grassland.

5. Visual impact assessment

A Visual Context Map that identifies some of the key features and potential viewpoints discussed in this section is included overleaf as **Figure 5-1**. **Figure 1-1** (Section 1.0) illustrates the overall location and 500m, 1km and 2km off-sets from the Project boundary.

5.1 Landscape impact

The main visual changes to the immediate landscape of the area affected by the Project would be:

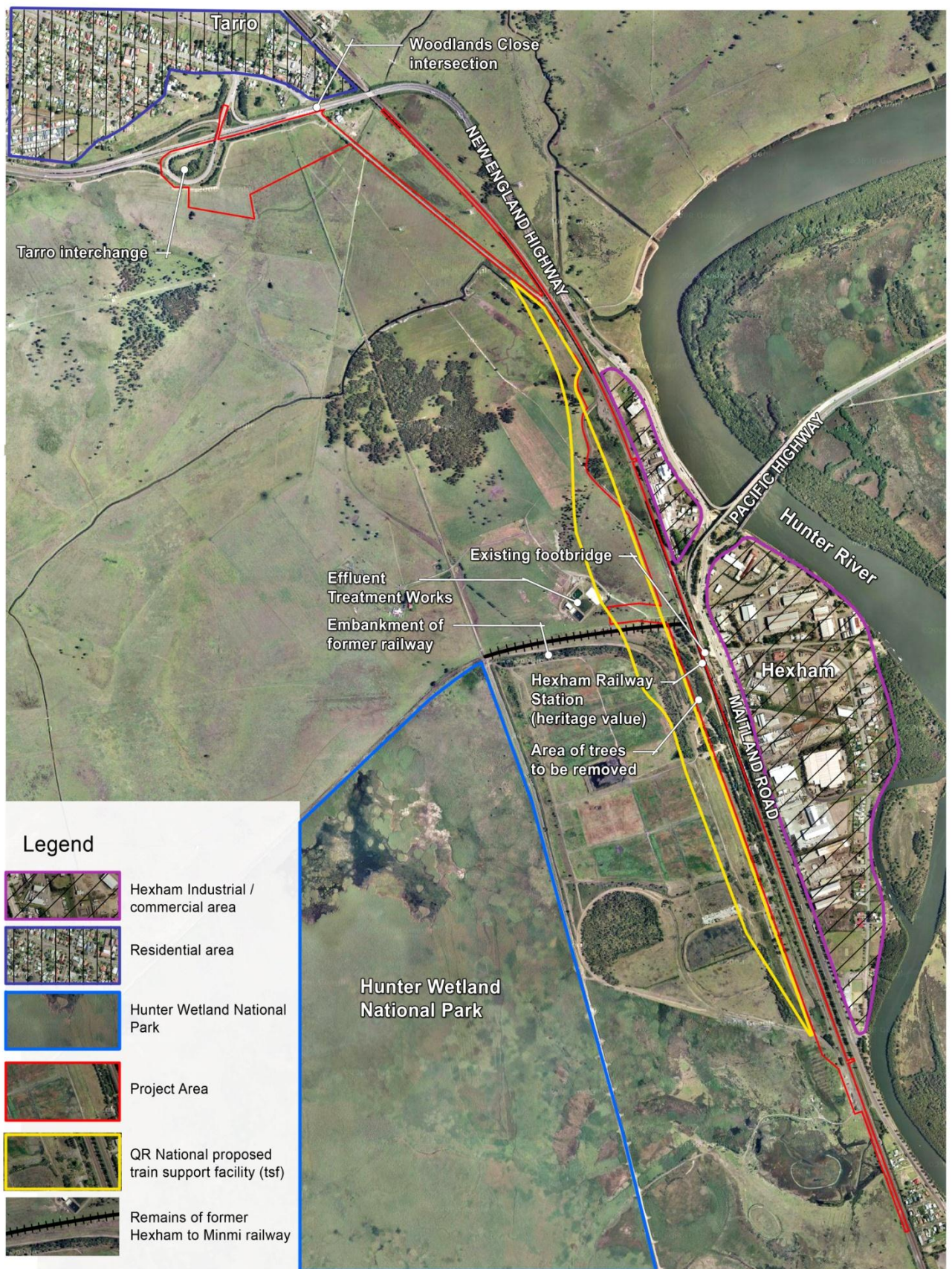
- Minor earthworks to create a suitable platform for Project construction;
- Construction of rail lines and associated infrastructure;
- Upgrading of the Woodlands Close/New England Highway intersection; and
- Removal of approximately 7.5 ha of native vegetation, including 4.5 ha of Swamp Oak Swamp Forest Fringing Estuaries, 1.1 ha of Swamp Mahogany Swamp Forest on Coastal Lowlands.

5.2 Assessment of landscape impact

The scenic amenity of the project Area landscape has previously been identified in **Section 3.0** as being of low quality, largely due to the poor quality of the nearby industrial area of Hexham, the existing railway, the flat landscape, low vegetation levels and degraded nature of the general surrounding area.

The proposed Project would further slightly reduce this scenic amenity of the immediate landscape through the proposed changes, particularly the construction of a wider rail corridor and the loss of approximately 6.5 hectares of vegetation (mostly Casuarinas). Although it is understood that these trees are largely the result of re-growth, they do nevertheless provide some visual relief and serve to break-up views across this semi-industrial area.

Therefore there would be a **slight impact to the landscape character** of the site affected by the Project.



5.3 Methodology for identifying and assessing surrounding viewpoints

Surrounding viewpoints from where the proposed facility could potentially be seen were identified by a combination of topographical mapping and ground-truthing. The assessment considers and assesses changes to views from:

- surrounding residential properties;
- public viewpoints (such as in this case the Pacific Highway, New England Highway and Hunter Wetlands National Park); and
- any other viewpoints identified as potentially sensitive.

5.4 Impact to foreground viewpoints (less than 500m)

5.4.1 Hunter Wetlands National Park

Hunter Wetlands National Park is a publically-accessible nature reserve generally located at its closest point approximately 700m away, yet with a small section crossing the rail line. The park appears to have very low visitation numbers in the vicinity of the Project Area, with poor public access and signage being likely contributors.

Visual sensitivity: The public nature of this viewpoint means that it is potentially sensitive, although the low number of users reduce this somewhat. The proposed visual changes are also consistent with the existing railway line and industrial area of Hexham which establishes a strong context in the immediate area of the national park.

Magnitude of visual change: The construction of the relief tracks would mean the railway would move approximately 45m closer to the boundary of the main area of the national park nearest to the Project Area.

There would also be the removal of some trees near the edge of the tracks, particularly along the southern section. However, the removal of these trees would largely be hidden from viewpoints within the national park as the embankment remaining from the former Minmi to Hexham railway would prevent views to the affected area.

Level of visual impact: There would be a **slight visual impact** as a result of the project to any viewers who would see it from the Hunter Wetlands National Park.

The most noticeable change would be removal of trees and other vegetation along the corridor, with the loss of some of this vegetation meaning there would be a more obvious view of the railway, and probably of greater concern, less visual screening towards the rather unattractive industrial area and highway on the eastern side of the existing railway.

5.4.2 Residences

There is only one residence within 500m of the Project Area, which is 1 Woodlands Close at the junction of Woodlands Close and the New England

Highway. The house is within 20m of the New England Highway boundary, and 100m from the existing railway, and as such is currently highly impacted by this location and the associated poor visual amenity and a lack of any visual separation or screening from both these infrastructure elements. This situation effectively lowers the visual sensitivity of this residence in this visual setting, although its close proximity to the Project Area means that it would nevertheless have a moderate sensitivity to any visual change.

Construction traffic would access the Project Area from a new access track from the Tarro interchange which joins Woodlands Close to the south of the residence at I Woodlands Close. There would be the potential for a moderate visual impact during construction with presumably earthworks, machinery, construction fencing and possibly stockpiles evident. Once operational there would likely be a low visual impact assuming change is relatively low. ,

The house location approximately 1km north of the area where the five relief roads would be located means that residents would experience little visual change as a result of this part of the Project due to the flat nature of the landform.

Therefore, overall, taking into account the distance of this house from the main part of the proposed Project, and the assumed low visual change associated with the intersection upgrade, there would be a **low visual impact** to I Woodlands Close.

5.4.3 Pacific Highway and New England Highway

The Pacific Highway and New England Highway support a large number of transient viewers who would have views towards the Project whilst passing alongside it. These roadways become as close as 20m in some locations. It is unlikely that those travelling in the direction of the proposed Project on the Hexham Bridge would see any change as the closest part of the site is hidden by intervening industrial/commercial buildings and vegetation.

Visual sensitivity: The many public users of these roadways mean that views from it are potentially visually sensitive. However, the low scenic amenity of the general area means that the sensitivity is considered moderate.

Magnitude of visual change: Viewers from the roadway may perceive the changes that would occur, such as the removal of vegetation along the corridor to a width of approximately 45m, the increase in width of the rail line infrastructure and new access roads. During construction the visual change would be more obvious, with the change less obvious once construction is complete as it would blend with the existing infrastructure to a large extent.

Level of visual impact: Overall, there would be a **slight visual impact** as a result of the Project to any viewers who would see it from viewpoints along the Pacific Highway and New England Highway.

5.4.4 Hexham Industrial/Commercial area

There would be limited opportunities for views of the Project from the Hexham Industrial/Commercial area, as the majority of the area is separated by the

Pacific Highway. Trees alongside many parts of the highway along the southern section of the Project effectively screen many potential views. The only noticeable feature would be the removal of some vegetation, although this is likely to be not very obvious due to the separation distance.

The only part of the industrial/commercial area located closer is that near and including the Oak restaurant, with this area situated between the highway and railway, just west of Hexham Bridge. However in general there are very few potential viewpoints towards the Project Area as a combination of buildings, and large trees (such as the Figs in the case of the Oak car park), block most views.

Visual sensitivity: Due to the low numbers of viewers the visual sensitivity is low.

Magnitude of visual change: The magnitude of visual change would also be low, with little change noticed from this area.

Level of visual impact: Overall, there would be a **negligible visual impact** to the Hexham industrial/commercial area.

5.4.5 Hexham Railway Station and rail line

There is a footbridge that provides access to the station platform in the centre of the existing railway lines, with this bridge providing elevated views towards the Project Area.

Visual sensitivity: The public nature of this viewpoint means that it is potentially visually sensitive, however, the low number of users mean that the overall sensitivity would be fairly low.

Transient viewers travelling on the rail line would travel at such a speed to have a low sensitivity to any visual change.

Magnitude of visual change: Users of the bridge and station platform would have clear views of the Project, noticing the removal of trees within the 45m wide corridor on the western side of the rail line, which would open up views across the rural and wetland area to the west. The increase in the number of rail lines and the width of the main rail corridor would also be obvious. The change to transient rail users would be negligible.

The highest change would be during construction, with familiarity with the changes lessening the effect over time.

Level of visual impact: Overall, there would be a **moderate visual impact** as a result of the Project to any viewers who would see it from the railway station, with the most noticeable change the loss of trees. There would be a negligible impact to rail users passing through the site.

Tarro

The residential area of Tarro is located across the New England Highway immediately to the north of the project area. However, the existing raised embankment of which the highway is situated, means that there are, and would be, no viewpoints of the project from Tarro.

5.4.6 Hexham to Minmi Railway

Impacts to the Hexham to Minmi Railway are addressed in the Heritage Report (refer *Hexham Relief Roads Project: Historic Heritage Impact Assessment* (Australian Museum Business Services, 2012)). From a visual perspective, the effect on the existing embankment, which is quite a dominant landscape feature in the immediate area, should be considered. It is understood that the proposed Project would not impact on this embankment, and therefore any visual impact to it would be low.

5.5 Mid-ground (500m to 2km)

There is one residence within the mid-ground viewing range, which is the residence to the west of the effluent treatment plant, located approximately 800m west of the proposed Project and already with low quality views of the railway line and more distant industrial area. It is understood that this residence is only periodically occupied.

There is some vegetation close to the house which partially screens views towards the Project Area. There are few other trees between the residence and Project Area, which means that there would be no visual change associated with tree loss due to the proposed Project. The main change would be the moving of the edge of the rail corridor some 45m closer to the house which would result in a low visual change and therefore a **low visual impact**.

5.6 Distant (over 2km)

There are residential areas bordering the wetland and rural area to west and south-west of the Project Area. The nearest locations are Sandgate (approximately 3km to south), the rural-residential area of Blackhill (3km to west) and Maryland (4km to south-west). These areas are considered at such a distance that there would be difficulty in distinguishing any visual change and therefore a **negligible visual impact**.

5.7 Cumulative impacts

QR National proposes to construct a major Train Support Facility (TSF) on a 40 hectare site to the immediate west of the Project (refer **Figure 5-1** for location). The TSF would provide for the maintenance and storage of trains, with it understood that there would be no separation between the two projects. The project would include grading and filling earthworks, removal of vegetation within the corridor and the construction of a number of large buildings. Approximately 6.2 hectares of SEPP 14 wetland would be affected (refer Preliminary Environmental Assessment Hexham Train Support Facility (ADW Johnson 2011)).

Based on the preliminary environmental assessment the current site includes some patches of forest, which appear to be mostly Casuarinas or Swamp Oaks, which would need to be removed for the construction of the facility. The main cumulative impact would be a greater increase in the industrial-like character of the immediate area, considering both the QR National TSF and Project that is the subject of this report. This increase would be seen from similar viewpoints

to that assessed for the proposed Project, such as views from the Pacific Highway and New England Highway, views from Hexham Railway Station, views from Hunter Wetlands National Park and from the house to the west of the effluent treatment plant.

It is considered that the combined cumulative impact of both projects would generally lead to a **moderate impact** on the landscape character of the combined sites and thereby amplify the impact of surrounding viewpoints to it.

5.8 Recommended mitigation measures

Following construction and as part of the landscaping and rehabilitation of affected areas, consideration would be given to tree-planting at a number of locations which would be determined based on environmental conditions and taking into account safety clearance distances from the rail corridor. It is understood that proposed mitigation measures already include some biodiversity off-set planting to replace some of the lost vegetation from the overall Project (refer *Proposed Hexham Relief Roads Ecological Assessment* (Parsons Brinckerhoff, 2012)).

In addition to that measure, consideration would be given to landscape planting of any suitable areas near the centre and south of the Project Area to partially screen views of both the proposed Project and the QR National project from outside viewpoints to the east and west.

6. Conclusion

Five terms have been adopted to describe the potential level of impact of the Project on the landscape character and surrounding viewpoints, with those being in descending order of impact level - severe, substantial, moderate, slight and negligible/none (adapted from *Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment, 2002)*).

Overall, it is concluded that as a result of the Project there would be the following levels of impact:

- Landscape character of the immediate site - slight impact;
- Foreground views – moderate visual impact to views from Hexham Railway Station, a slight visual impact to views from the Hunter Wetlands National Park the New England Highway and the Pacific Highway, a low long term impact to residence at I Woodlands Close and a negligible impact to views from the Hexham Industrial/Commercial area and rail users passing through the site;
- Mid-ground views - there is one residence within the mid-ground viewing range to the west of the effluent treatment plant which is understood to be periodically occupied that would have a low visual impact; and
- Distant views - negligible visual impact to surrounding residential areas.

It is also considered that the combined cumulative impact of both this Project and the QR National Train Support Facility (TSF) would generally increase to a moderate impact level on the landscape character of the Project Areas of both sites and increase the impact of surrounding viewpoints to them.

The Project would further slightly reduce the scenic quality of the immediate landscape (albeit a low one) through the proposed changes, particularly the construction of a wider rail corridor and the loss of approximately 7.5 ha of native vegetation (including 4.5 ha of Swamp Oak Swamp Forest Fringing Estuaries and 1.1 ha of Swamp Mahogany Swamp Forest on Coastal Lowlands) which contain mostly trees such as Casuarinas.

It is recommended that tree planting mitigation measures be included as described in **Section 5.8** to reduce the impact of the proposed Project.

7. References

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The Landscape Institute and Institute of Environmental Management and Assessment, 2002. *Guidelines for Landscape and Visual Impact Assessment*. Spoon press, United Kingdom.

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Parsons Brinckerhoff, 2012. *Proposed Hexham Relief Roads Ecological Assessment*.

Queensland Main Roads, 1997. *Road Landscape Manual*.

Queensland Rail (2011). *Preliminary Environmental Assessment. Hexham Train Support Facility*.

Western Australian Planning Commission, 2007. *Visual Landscape Planning in Western Australia*.

Appendix A: Author's qualifications

Stacey Brodbeck - CV

Years of Professional Experience: 24

Professional qualifications:

- Masters of Environmental Planning, Macquarie University, 1999
- Bachelor of Landscape Architecture, University of NSW, 1988
- Registered Landscape Architect (No. 719)
- Certified Practising Planner (No. 7761).

Professional affiliations

- Associate, Planning Institute of Australia (including urban design chapter)
- Associate of the Australian Institute of Landscape Architects.

Professional recognition

- **Expert panels** - currently hold two appointments on local government panels that provide expert advice on issues relating to issues including view loss during the assessment of major development applications:
 - Central Coast SEPP (State Environmental Planning Policy) 65 Design Review Panel - since 2003. Panel covers the rapidly developing local government areas of Gosford and Wyong. Due to the high rise nature of these developments view loss is sometimes an issue.
 - Waverley Council Independent Hearing and Assessment (IHAP) Panel - since June 2006. The panel provides independent review and assessment role for a local Sydney council centred on the high profile area of Bondi. Due to the nature of this highly desired area and its ongoing intensification of development, a high percentage of applications involve developments with increased heights and site coverage that creates issues of view loss. It is estimated that the author has contributed to at least 20 cases that have involved these types of issues.
- **Planning Institute of Australia (PIA)** – judge for the 2009 and 2007 NSW PIA awards.

Published Papers

- Hypothetical Case Study – View loss and visual privacy issues as related to the amendments to the Tree (Disputes Between Neighbours) Act 2006 (NSW), March 2011 *Australia and New Zealand Property Journal*. 3,800 word paper.
- A View for the Public, March 2005, *Australian Planner* (a peer-refereed journal). Paper comprised 3,000 words on visual assessment techniques.

Other relevant experience

- **Sydney Gas Proposal** - Stage 2 Coal Seam Methane Project, Camden, Independent Review of Visual Impact Assessment (prepared for the state planning department, then known as the Department of Infrastructure, Planning and Natural Resources). Expert review of a visual impact assessment report by another, submitted as part of the environmental impact assessment report for this project assessed by DIPNR. The key issue was the effect on views from a nearby historic rural property to the proposed

methane plant, and the impact that could occur to changes to landscape character and scenic quality of these views.

- **Cessnock City Council, independent expert review** - Preparation of a number of independent reviews for major development applications for this Council, located within the visually sensitive Hunter Valley wine country. As a result of these assessments Council accepted a number of recommendations to reduce impacts to views from surrounding properties and public areas such as major roads. The three projects were; a guest house/winery proposed on a local ridge; a large house proposed on a local, visually-prominent high point; and, a major hotel proposal that included a hotel building, separate day-spa building and large amphitheatres, all located on a local hill seen from many surrounding properties and a main road entry to Cessnock.
- **Manyana North** – Urban design and visual assessment report. This report for Shoalhaven City Council provided an independent review of urban design and visual issues associated with a proposed new residential suburb on the south coast. The report focused on the visual impacts on this natural part of the coastline that would result from the development. It considered sightlines from surrounding residential areas and made recommendations to reduce the impact of new buildings on the bordering beach.
- **Visual impact statements**

I have also prepared a wide range of visual impact statements which have involved considering impacts to views both from and to proposed developments, including for the following projects:

- Lochinvar Seniors living, Hunter Valley NSW (heritage issues as within heritage-listed property).
- Bowen Basin Open-cut Coal Mine – visual impact assessment for EIS.
- Wyaralong Dam, proposed new dam in SE Queensland.
- South-West Rail Link major new rail line proposed in Sydney's South-West Growth Sector.
- Tarong Transport Corridor, a major infrastructure project of state significance in SE Qld, involving a 65km rail or conveyor corridor.
- Caves Beach proposed Seniors Living Facility (issues relating to views of facility from beach).
- Surat Basin, SE Queensland, proposed open-cut coal mine.
- A large number of highway projects such as: Hume Highway Bypasses Project (three major bypasses at Tarcutta, Woomargama and Holbrook); Banora Point, Pacific Highway Upgrade; Tugun Bypass (Gold Coast); and Pacific Highway Upgrade, Bulahdelah.
- Patrick Stevedores, Port Botany, proposed extensions involving assessment of impacts of six new quay cranes.
- Paling Yards Wind Farm, proposed windfarm near Oberon with over 50 turbines.