

9. Social Surroundings

9.1 EPA Objective

To protect social surroundings from significant harm.

9.2 Policy and Guidance

The following policies and guidance are relevant to the social surroundings factor:

- Environmental Factor Guideline: Social Surroundings (EPA 2016g);
- *Aboriginal Heritage Act 1972*;
- *Environmental Protection (Noise) Regulations 1997*;
- State Planning Policy 5.4 Road and rail noise (WAPC 2019);
- Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration (Standards Australia 2018);
- Rail Infrastructure Noise Guideline (EPA 2013b);
- Visual Landscape Planning in Western Australia Manual (WAPC 2007); and
- A Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and Other Related Activities (DEC 2011).

9.3 Environmental investigations

Table 23 lists the relevant investigations which were undertaken to assess the social surroundings of the development envelope.

Table 23: Summary of the environmental investigations relevant to social surroundings

Title	Author	Year	Summary of scope	Project
Morley Ellenbrook Line: Reference Design Noise and Vibration Assessment – Part 1	SLR	2019	Preliminary desktop noise and vibration modelling based on the reference design. Comparison of noise and vibration levels to nearby sensitive receptors and comparison against relevant noise and vibration criteria developed for the broader MEL project. Identification of locations which may require noise and vibration mitigation measures to be implemented to meet project criteria.	Morley Ellenbrook Line (PTA)
METRONET Morley – Ellenbrook Route Protection Study, Preliminary Alignment Definition Study report	Jacobs	2018	Report detailing the environmental and heritage constraints associated with MEL alignment Option 2 (MCA Enhanced Option A) including four registered sites of Aboriginal Heritage. No sites of European Heritage identified.	Morley Ellenbrook Line (PTA)

Desktop Aboriginal Heritage Analysis of Proposed Morley to Ellenbrook Railway Line	R. E. O'Connor Pty Ltd	2018	Preliminary Aboriginal Heritage assessment of the proposed alignment involving a search of the Register of Aboriginal Sites.	Morley Ellenbrook Line (PTA)
Report of an Aboriginal Heritage Desktop Assessment of the NorthLink WA Project (Perth-Darwin National Highway)	Amergin Consulting	2014	Aboriginal and European heritage investigations in relation to the NorthLink WA Project involving desktop research and field surveys	PDNH (Main Roads)
Report of an Aboriginal Heritage Desktop Assessment of the NorthLink WA Project (Perth-Darwin National Highway) Incorporating the Proposed Swan Valley Bypass and Tonkin Grade Separations	Amergin Consulting	2014	Aboriginal and European Heritage investigations in relation to the NorthLink WA Project	PDNH (Main Roads)
Report of an Ethnographic Aboriginal Heritage Survey of the Proposed NorthLink WA Project. Part 1: Tonkin Grade Separations	Amergin Consulting	2015	Desktop research and ethnographic field survey/consultation of the proposed Tonkin Grade Separations, which form part of the NorthLink WA Project.	Tonkin Highway Grade Separations (Main Roads)
Report of an Ethnographic Aboriginal Heritage Survey of the Proposed NorthLink WA Project, Part 2: Perth-Darwin National Highway	Amergin Consulting	2015	Desktop assessment and an ethnographic field survey/consultation to identify any known or previously unreported ethnographic sites within the NorthLink WA Project Area.	PDNH (Main Roads)

9.4 Receiving environment

The Proposal is situated amongst extensively developed urban and industrial areas.

9.4.1 Aboriginal heritage

The development envelope incorporates land which has been subject to extensive disturbance, clearing and development, including for road, residential and industrial purposes. Heritage surveys

conducted in the area did not identify any evidence of Aboriginal heritage sites within the development envelope. One Registered site of Aboriginal Heritage (ID: 20058) previously known to occur within the development envelope, was completely removed in the 1990s. This site was recorded in 1987, as a temporary camp, and was located at the Tonkin / Reid Highway interchange, but no longer exists (Amergin Consulting 2015).

Previous consultation with Aboriginal people identified that the development envelope is not seen as an area of significance and that the area was viewed as an occasional camping ground (R. & E. O'Connor Pty Ltd 2018 (Appendix D) Amergin Consulting 2015). The PTA has conducted further consultation with traditional owners for the Proposal (detailed in Section 3) who gave their conditional approval for the Proposal to proceed.

Eight Aboriginal heritage sites lodged with the Department of Aboriginal Affairs (DAA) which do not meet the criteria for a registered site, are mapped as occurring within the development envelope (Figure 16; DAA 2019):

- Collier Road (ID: 3178);
- Clune Street (ID: 3179);
- Bayswater 1-3 (ID: 3326);
- Marshall/Della Roads (ID: 3552);
- Nyibra Swamp (ID: 3748);
- Bayswater Camp 1 (ID: 3749);
- Broun Avenue (ID: 4039); and
- NOR/03 – Creek (ID: 21392).

Some of these lodged sites have had visible artefacts collected. However, all eight sites have since been destroyed due to surrounding development. Although some of the eight sites historically were listed as 'registered', these have since been downgraded to 'lodged' due to the level of disturbance that has occurred in the area. No approvals under the *Aboriginal Heritage Act 1972* are required to implement the Proposal.

9.4.2 European heritage

There are no State Registered sites of European Heritage significance located within or nearby the development envelope. There are two sites listed on the Bayswater Municipal Inventory identified as having European cultural significance that currently exist within the development envelope (Figure 16; Table 24). However, none of these sites meet the criteria outlined in the *Heritage of Western Australia Act 1950*. These sites have been subject to historic disturbance as a result of ongoing development within the area (Jacobs 2018). The Site 11351 is considered by the City of Bayswater, classification 4, as having some importance for historical recording purposes, however, the retention of the site is not considered to necessary.

Table 24: Places of European heritage (not State registered)

Site	Site name	Address
11351	Brady Plaster Works	12-26 Railway Parade, Bayswater
11334	Cresco Fertiliser works	2-4 Railway Parade, Bayswater

9.4.3 Amenity (noise, vibration and dust)

The development envelope traverses areas which have already been extensively developed for transport, residential and industrial purposes. Tonkin Highway already contributes significantly to surrounding noise levels due to existing traffic volumes.

A preliminary noise and vibration assessment was undertaken for the Proposal to forecast noise and vibration levels from the operational phase (SLR 2019) (Appendix C). The preliminary noise and vibration assessment was reviewed by the DWER Noise Branch in August 2019, with feedback incorporated into the final assessment.

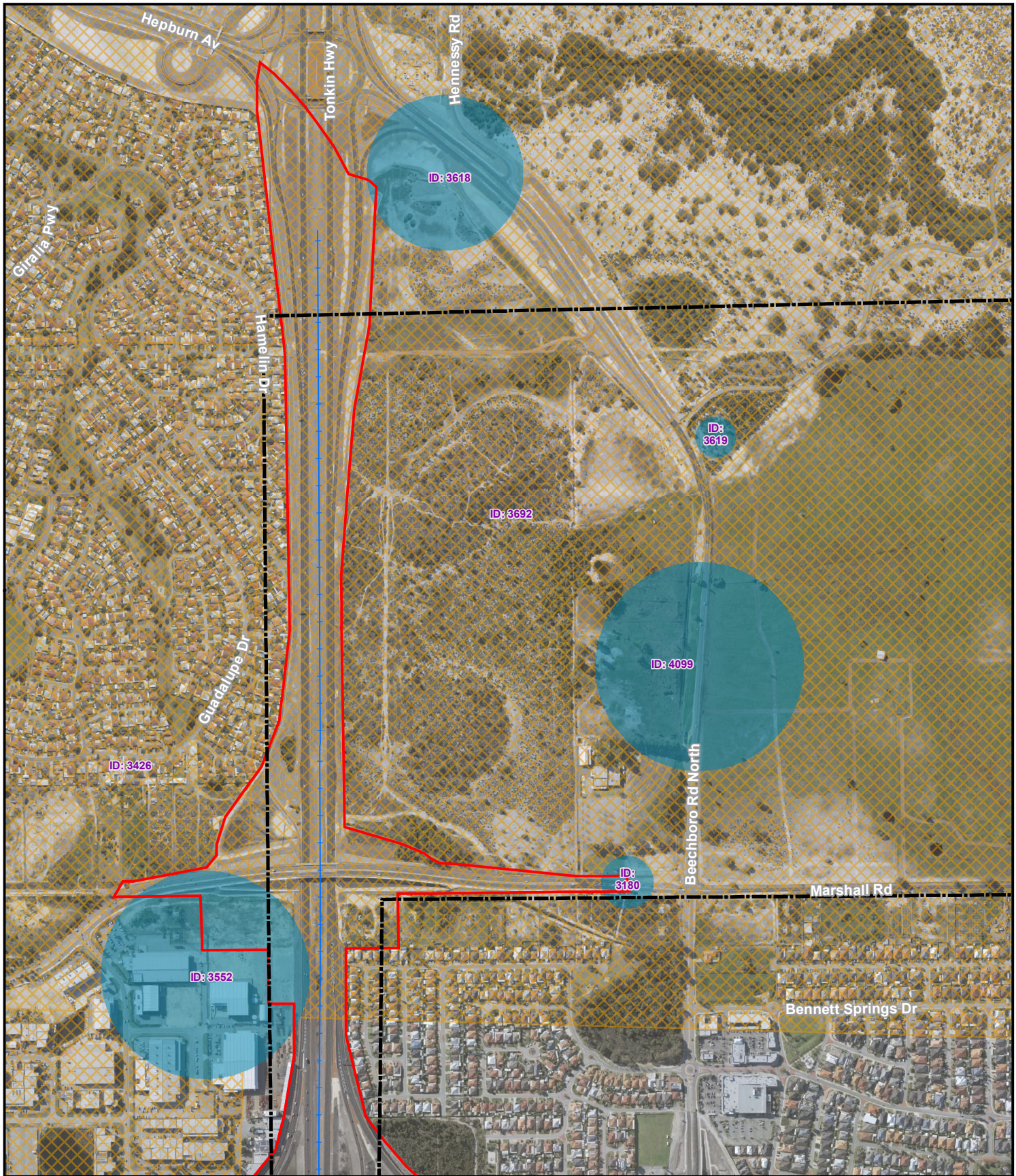
The preliminary noise and vibration assessment included an assessment of existing noise and vibration conditions to properties within and adjacent to the Proposal. A total of 238 residences were assessed in the Bayswater area. The assessment determined 49 of these residences are considered to currently receive noise levels above the airborne noise trigger level set for the Proposal.

The DWER conducts hourly air quality monitoring at a number of permanent monitoring stations in the metropolitan area. The closest station to the development envelope is Caversham. A review of air quality as measured in September 2019 indicated that both PM_{2.5} and PM₁₀ concentrations were well below the defined air quality index as prescribed by the National Environment Protection (Ambient Air Quality) Standard (DWER 2019a). While long-term airborne dust levels have not been reviewed, it is unlikely that background dust levels would regularly exceed the guideline levels, given the highly developed surroundings which include sealed surfaces such as roads, housing and infrastructure.

9.4.4 Amenity (visual)

The topography of the landscape surrounding the development envelope is typically flat, with areas becoming undulated further north outside the development envelope (Coffey 2015d).

The development envelope is predominantly located within the existing Tonkin Highway road reserve and industrial areas. The Tonkin Highway road reserve has been significantly modified through the construction of NorthLink WA. Noise walls and visual screens have been installed throughout the Proposal area to mitigate visual impacts from the operation of Tonkin Highway.



METRONET | Bayswater to Malaga Rail Works Figure 16A Aboriginal and European Heritage Sites

Legend

- Development Envelope (The Proposal)
- Proposed Railway Line

Aboriginal Heritage Desktop Survey Area (R O'Connor 2018)

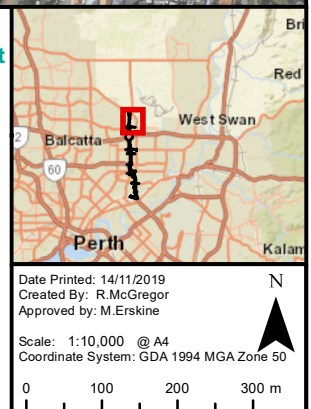
Aboriginal Heritage Sites

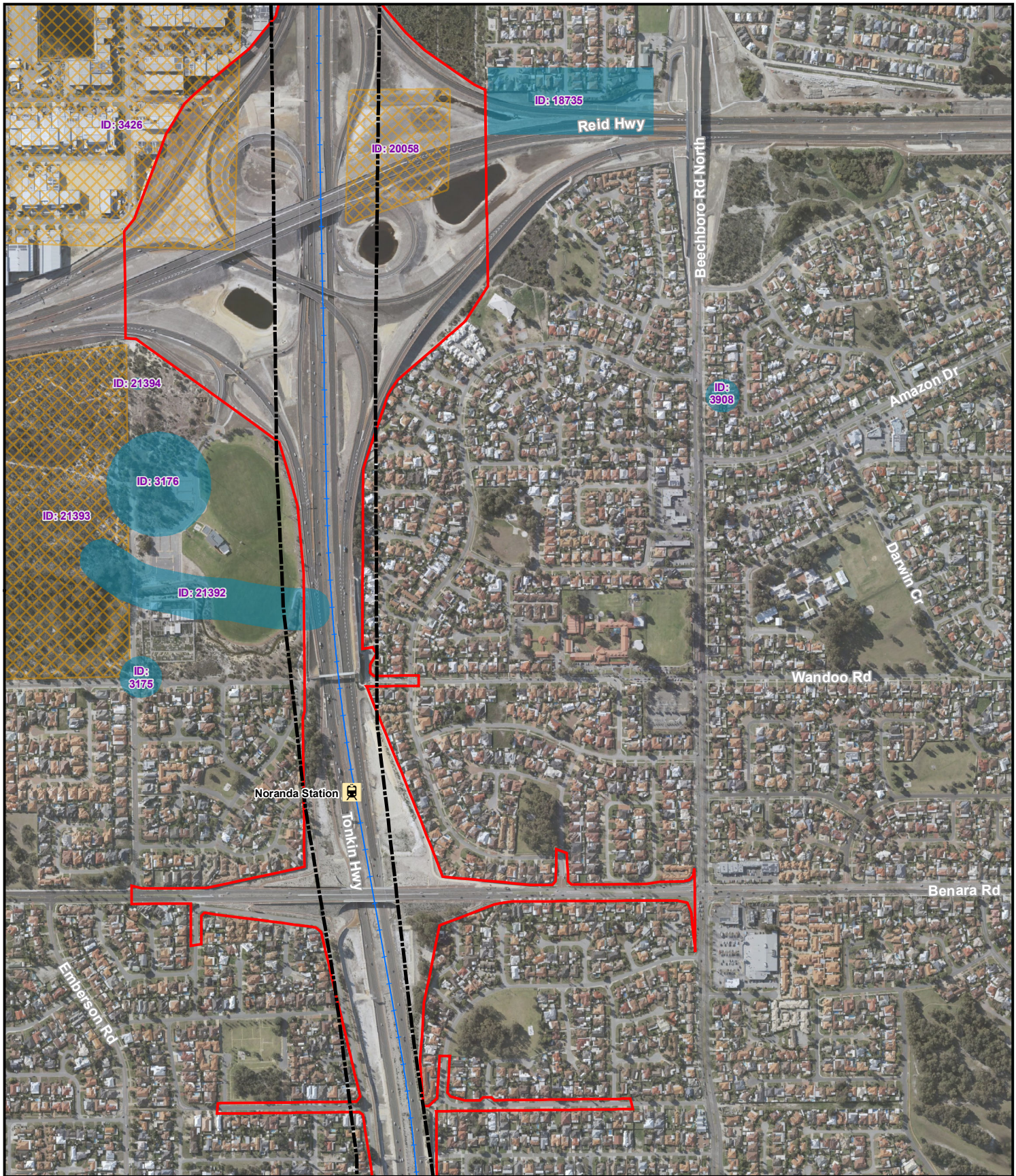
- Registered Site
- Stored Data / Not a Site



Public Transport Authority

- A
- B
- C
- D





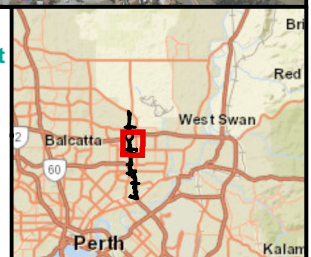
METRONET | Bayswater to Malaga Rail Works Figure 16B Aboriginal and European Heritage Sites

Legend

- ▬ Development Envelope (The Proposal)
- ▬ Proposed Railway Station
- ▬ Proposed Railway Line
- ▬ Aboriginal Heritage Desktop Survey Area (R O'Connor 2018)
- Aboriginal Heritage Sites**
 - ▬ Registered Site
 - ▬ Stored Data / Not a Site

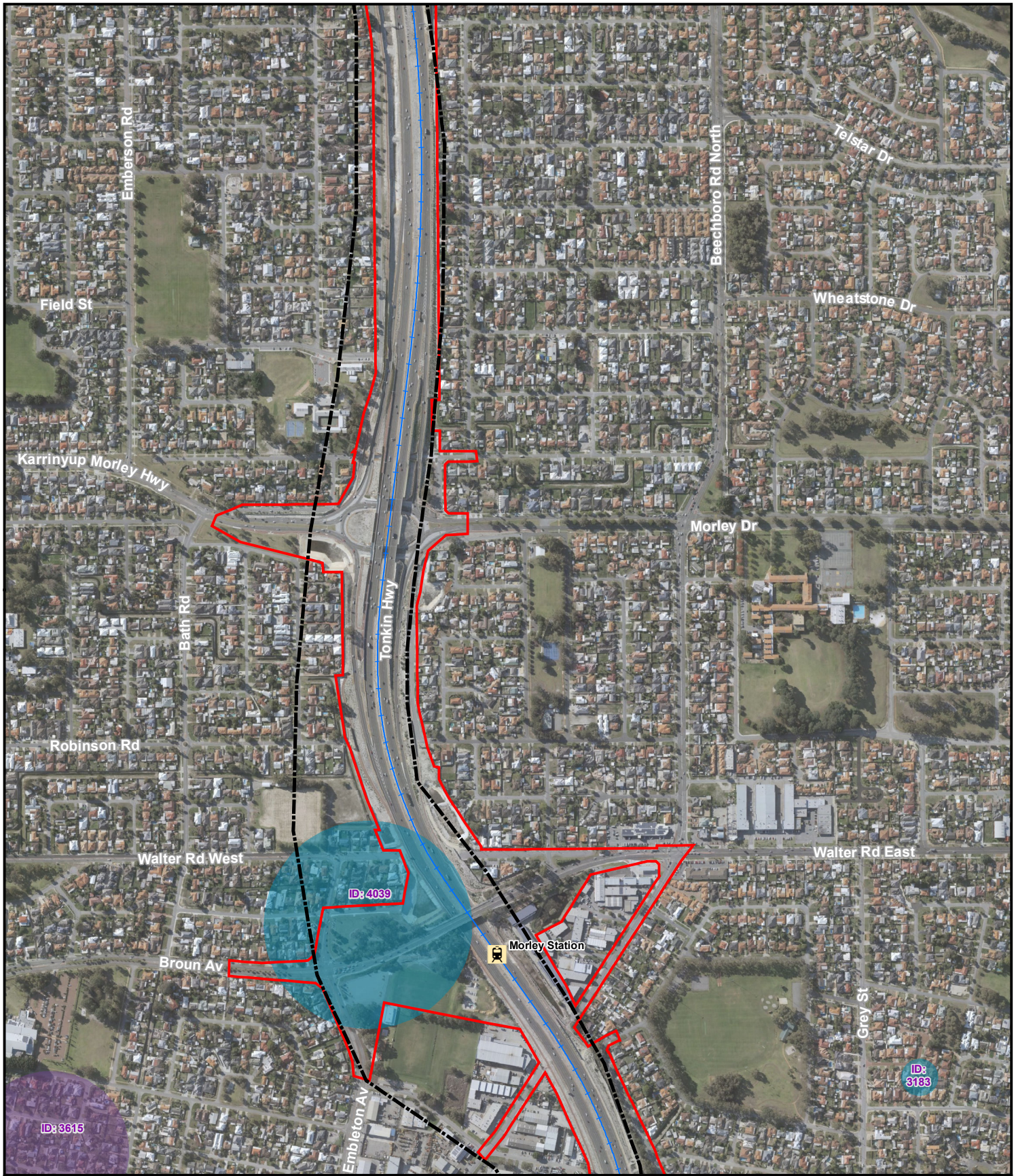


Public Transport Authority



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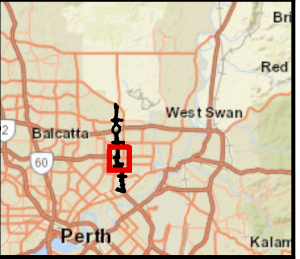
METRONET | Bayswater to Malaga Rail Works
 Figure 16C Aboriginal and European Heritage Sites

- Legend**

 - Development Envelope (The Proposal)
 - ⚡ Proposed Railway Station
 - +— Proposed Railway Line
- Aboriginal Heritage Desktop Survey Area (R O'Connor 2018)**

Aboriginal Heritage Sites

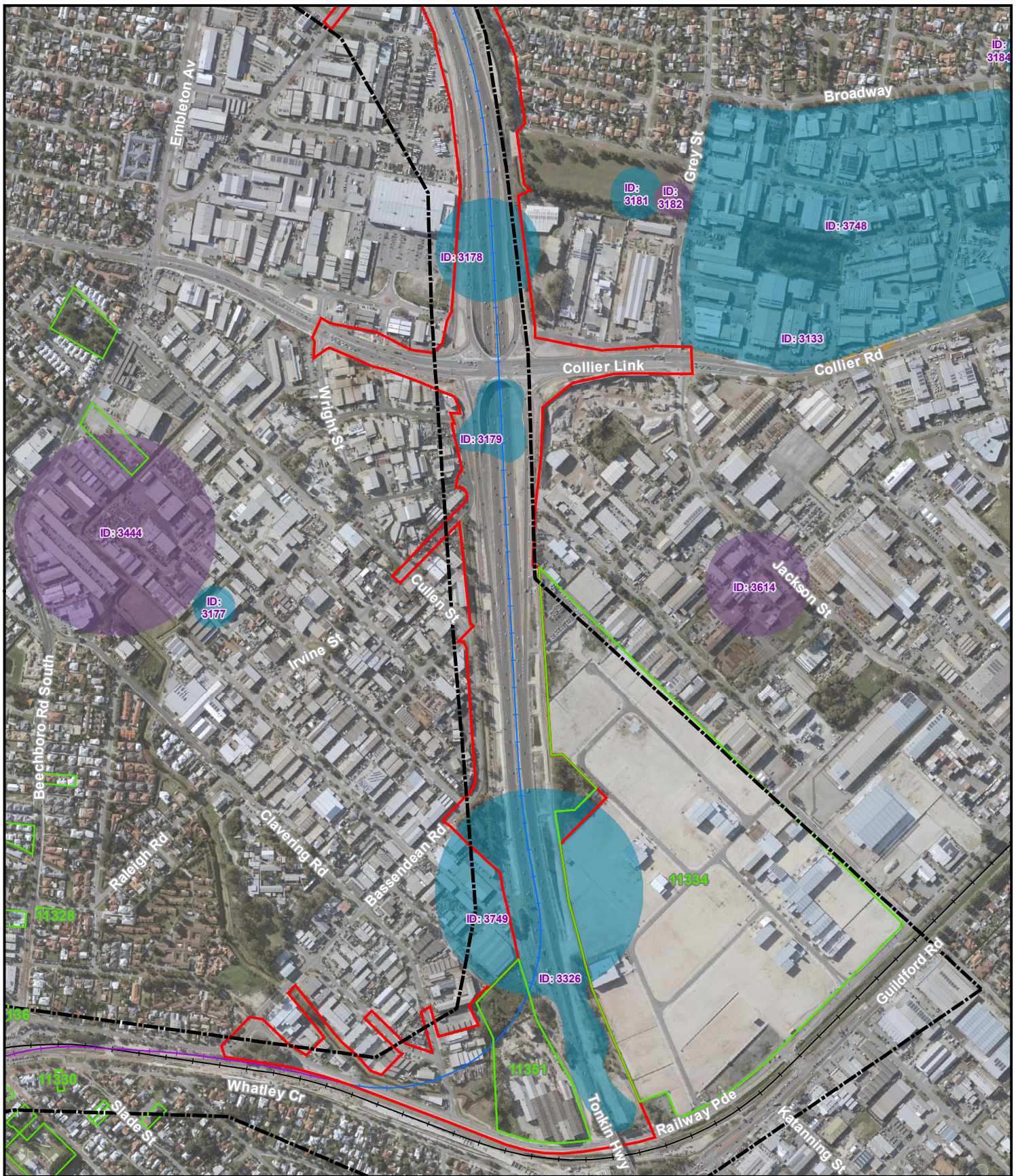
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Figure 16D Aboriginal and European Heritage Sites

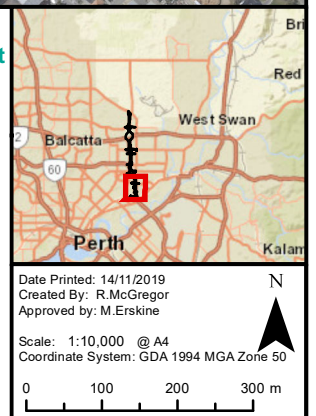


Public Transport
Authority

Legend

- ▬ Development Envelope (The Proposal)
- - - Existing Railway Line
- Proposed Railway Alignment within Existing Rail Reserve
- Proposed Railway Line
- Aboriginal Heritage Desktop Survey Area (R O'Connor 2018)
- Bayswater Municipal Inventory (SHO-005)
- Aboriginal Heritage Sites**
- Lodged
- Registered Site
- Stored Data / Not a Site

A
B
C
D



9.5 Assessment of impacts to Social Surroundings

Table 25 provides an evaluation of the potential impacts that the Proposal may have on social surroundings and PTA's proposed mitigation to minimise impacts.

Table 25: Assessment of impacts to Social Surroundings

Social surroundings aspect	Potential impacts	Assessment of impacts	Mitigation hierarchy
Noise and Vibration	Exposure of existing urban and industrial areas to railway-related noise and vibration (construction and operation).	<p>The Proposal is largely situated within Tonkin Highway road reserve and industrial areas, and is unlikely to significantly contribute to existing noise and vibration levels.</p> <p>Operational noise and vibration</p> <p>The preliminary noise and vibration assessment considered current and modelled noise from the Proposal at numerous residences in the vicinity of the Proposal (SLR 2019). The noise modelling for the Proposal indicated that various locations between Bayswater Station and Malaga are likely to experience airborne noise levels above the trigger level, but not above the design level set for the Proposal (SLR 2019).</p> <p>The preliminary vibration modelling determined that ground-borne vibration and ground-borne noise levels would potentially affect 34 and 133 residences respectively in the Bayswater area. An additional 16 residents in a 500 m section north of the proposed Morley Station may experience ground-borne noise levels above the trigger level (SLR 2019).</p> <p>Construction noise and vibration</p> <p>Construction noise and vibration may have a temporary impact on sensitive receivers during construction.</p>	<p>Avoid:</p> <ul style="list-style-type: none"> The Proposal has been designed to utilise the existing Tonkin Highway road reserve where effective noise mitigation is in place in the form of noise walls (i.e. Tonkin Highway and PDNH). <p>Minimise:</p> <ul style="list-style-type: none"> Further noise and vibration modelling assessment to be undertaken based on the final design and operational requirements. Recommended mitigation measures outlined in the pending modelling to be implemented for the Proposal. Implementation of recommended noise mitigation measures such as boundary noise walls, to achieve compliance with airborne noise trigger levels for operational rail noise. Engineering treatments such as ballast matting and/or sleeper pads with suitable trackform will be applied as appropriate to mitigate vibration from railway operations. Development and implementation of a Noise and Vibration Management Plan (NVMP) to outline the PTA's commitments in relation to railway operational noise and vibration management. The NVMP will be provided to DWER for review. If construction is required outside of standard construction hours, an out of hours noise management plan will be prepared and approved by the City of Bayswater and/or the City of Swan in accordance with the <i>Environmental Protection (Noise) Regulations 1997</i>. Noise and vibration controls during construction works will be in accordance with AS 2436-2010 (R2016) <i>Guide to noise and vibration control on construction, demolition and maintenance sites</i>.
Air Quality	Generation of airborne dust as a result of construction activities	<p>The Proposal has been designed to utilise the existing Tonkin Highway road reserve where the majority of the development envelope has already been disturbed and cleared for recent projects, resulting in reduced clearing and dust generating activities.</p> <p>The generation of dust is likely to vary dependent on the activities, and weather conditions including strength and direction of prevailing winds (Pacific Environment Limited 2015).</p> <p>Any effects of dust on environmental values are likely to be temporary and can be adequately controlled using mitigation techniques, such as water carts (Pacific Environment Limited 2015).</p> <p>The PTA notes that the majority of earthworks will be completed by Main Roads as part of the <i>Tonkin Highway Modifications: Guildford Road to Hepburn Avenue</i> proposal.</p>	<p>Minimise:</p> <p>A CEMP will be developed and implemented to outline appropriate management measures, including the following:</p> <ul style="list-style-type: none"> Use of water for dust suppression. Temporarily cease construction in high wind conditions where practicable, if the activity is likely to generate dust.
Aboriginal Heritage & European Heritage	Impacts to Aboriginal or European heritage	<p>No impacts to Aboriginal heritage or State Registered sites of European Heritage are expected to occur as a result of the Proposal due to the absence of identified sites and the heavily disturbed condition of the development envelope.</p> <p>It is likely that the implementation of the Proposal will impact a portion of Site 11351, which is included on the City of Bayswater Municipal Heritage Inventory for historical recording purposes. The property can be demolished without planning approval from the City of Bayswater.</p>	No mitigation required.

Social surroundings aspect	Potential impacts	Assessment of impacts	Mitigation hierarchy
Visual Amenity	Permanent visual intrusion impacts to nearby receptors	<p>Visual intrusion impacts to nearby receptors, may occur as a result of the proposed rail bridge over Railway Parade and Clavering Road in Bayswater. However, the proposed rail bridge is not expected to further reduce the visual amenity of nearby land-user/receptors as it is primarily surrounded by industrial land uses.</p> <p>Additionally, existing noise walls along the Tonkin Highway will reduce the visibility of the operational railway.</p>	No mitigation required.

9.6 Predicted outcome

The PTA considers that through the implementation of appropriate avoidance and mitigation measures and implementation of the CEMP, the social surroundings environmental factor can be appropriately managed during the construction and operation of the Proposal, and that the EPA's objective will be met.

10. Conclusion

The PTA has referred the Bayswater to Malaga Rail Works Proposal to the EPA under Section 38 of the EP Act. The PTA has considered the potential impacts to the EPA factors:

- Flora and vegetation.
- Terrestrial environmental quality.
- Terrestrial fauna.
- Inland waters.
- Social surroundings.

The PTA has applied the mitigation hierarchy and considers that the impacts of this Proposal on the EPA factors are able to be mitigated or managed to enable the EPA's objectives to be met.

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Appendix A Morley-Ellenbrook Line - Environmental Constraints Desktop Analysis

Appendix B: Bayswater to Malaga Rail Works - Vegetation and Black Cockatoo Habitat Assessment

Appendix C: Morley-Ellenbrook Line – Preliminary Design Noise and Vibration Assessment (Part 1)

Appendix D: Desktop Aboriginal Heritage Analysis of the Proposed Morley to Ellenbrook Railway Line