

APPENDIX



S

Non-Indigenous Cultural Heritage

GOWRIE TO HELIDON ENVIRONMENTAL IMPACT STATEMENT



The Australian Government is delivering
Inland Rail through the Australian
Rail Track Corporation (ARTC), in
partnership with the private sector.

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Abbreviations

Abbreviation	Explanation
AEP	Annual Exceedance Probability
AOI	Area of Interest
ARTC	Australian Rail Track Corporation Ltd
B2G	Border to Gowrie
CHMP	Cultural Heritage Management Plan
Co.	Company
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FFJV	Future Freight Joint Venture
G2H	Gowrie to Helidon
GDA	Geocentric Datum of Australia
GIS	Geographical Information System
GPS	Global Positioning System
DES	Queensland Department of Environment and Science
DEHP	Queensland Department of Environment and Heritage Protection
DTMR	Queensland Department of Transport and Main Roads
EIS	Environmental Impact Statement
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999 (Cth)</i>
FFJV	Future Freight Joint Venture
H2C	Helidon to Calvert
ICOMOS	International Council of Monuments and Sites
ID	Identification
Inland Rail	Melbourne to Brisbane Inland Rail
km	Kilometres
Ltd.	Limited
m	Metre
m ²	Square metres
mm/s	millimetres per second
NSW	New South Wales
QH Act	<i>Queensland Heritage Act 1992 (Qld)</i>
QLD	Queensland
RNE	Register of National Estate
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Qld)</i>
QR	Queensland Rail
ToR	Terms of Reference
Vol	Volume

Executive summary

The Future Freight Joint Venture have undertaken a non-Indigenous (historical) cultural heritage assessment for the Gowrie to Helidon Project (The Project).

The assessment aims to inform the Project's environmental impact statement (EIS) process; with the assessment addressing the Terms of Reference for the Project. The assessment will also inform the construction and design phases of the Project, along with any legislative requirements.

The assessment identified non-Indigenous (historical) cultural heritage relevant to the Project (i.e. within 1 to 3 km of the Project, the EIS investigation corridor). In total, there were 17 registered heritage places:

- No heritage places of national or world significance, however there were three non-statutory heritage places listed on the Register of the National Estate
- Five heritage places of State significance, including several places associated with the existing West Moreton System rail corridor (e.g. Main Range Railway, Swansons Rail Bridge and Lockyer Creek Railway Bridge), the Great Dividing Range, and Baillie Henderson Hospital. Two of the sites (Main Range Railway, Swansons Rail Bridge) were also on the Register of the National Estate.
- Eleven heritage places of local significance, including the Bicentennial National Trail.

Of these sites, the Project traverses two of these areas:

- The Project traverses under the Main Range Railway (i.e. the Project alignment is in tunnel at this location)
- The Project traverses the Bicentennial National Trail at Gittins Road. At this location the Project alignment will cross Gittins Road via a viaduct with no residual impact to the trail.
- The Project also traverses part of Mount Lofty Rifle Range which has also been identified as a locally significant heritage site, with the site yet to be ratified under the Toowoomba Regional Council Planning Scheme.

Background research identified 42 areas of interest (AOIs) within the EIS investigation corridor which required verification and heritage assessment. The initial assessment comprised a review of previous heritage assessments, analysis of historic aerials, topographic and cadastral maps and a search of the relevant heritage registers and planning schemes. The area of interests included the Bicentennial National Trail and a bridge on the existing Main Line at Mount Kynoch, with both registered under local and State provisions respectively.

Of these 42 sites, 36 were identified within the cultural heritage study area (i.e. 50 m buffer around the Project disturbance footprint). These areas were primarily identified as early or complex structures (dairies and factories), simple structures (homesteads and sheds) and areas of archaeological potential (former railway infrastructure).

The areas were ranked based on proximity, priority and heritage potential to inform the site inspections. Of the 36 sites, 30 sites were subject to a visual inspection, with the remaining six sites deemed a low priority.

Site inspections were undertaken over two days between 19 August and 20 August 2019 by a qualified cultural heritage practitioner. Listed heritage items within the cultural heritage study area were visited and photographed. At areas of interest where land/property access was granted, any standing structures, significant views, garden plantings, surface archaeological deposits, or areas of subsurface archaeological potential were identified and recorded using a Global Positioning System (GPS), fieldnotes and photography on an iPad operating the Fulcrum platform. For those sites for which access was not granted, visual assessments from adjacent public areas were undertaken with photographs taken for reference where possible.

Of the 30 AOI that were inspected, the assessment found that 18 of the AOIs did not possess any historic structures, remains or areas or archaeological potential. The significance of the remaining 12 AOIs which possessed a range of heritage values, significance or potential, were assessed in accordance with the *Queensland heritage Act 1992* (Qld) and *Assessing cultural heritage significance: Using the cultural heritage criteria* (Department of Environment and Heritage protection (DEHP) 2013). The assessment determined that six of the AOIs are of local heritage significance (but currently unlisted) meaning that they have 'aesthetic, historic, scientific or social value for past, present or future generations'. The Bicentennial National Trail was also considered to be locally significant.

Each of the registered sites and the six AOIs with potential local heritage values were assessed in accordance with the *Guidance for Heritage Impact Assessments of Cultural World Heritage Properties* (International Council on Monuments and Sites (ICOMOS) 2011) based on their value of place or sensitivity and the magnitude of change in the heritage values as a result of the Project (direct and indirect impacts).

Of the existing State and local heritage sites located within the cultural heritage study area, one State-listed heritage place will be impacted by the Project. The Main Range Railway (601480) is located above the proposed Toowoomba Range tunnel at Ballard and impacts from vibration associated with tunnelling activities in this location are possible. Two local heritage places will also potentially be impacted by the Project:

- The Bicentennial National Trail intersects with the Project at Gittins Road, Withcott, where earthworks and general construction impacts associated with the development of the rail viaduct will occur
- The Mount Lofty Rifle Range (awaiting local heritage listing) will be directly impacted by the Project, however the works will not impact any heritage elements associated with the historic site.

Of the six sites considered to be of potential local heritage significance, the impact assessment has identified that all six will either be directly (e.g. sections of the area of the interest will be disturbed during construction) or indirectly (e.g. impacted by vibration during construction) impacted by the Project. The impact assessment found that, with appropriate mitigation and management measures (e.g. refinement of design to minimise impact during detailed design and digital archival recording where the impacts cannot be avoided), Project impacts can be reduced to neutral or slight for all heritage sites identified during this assessment (refer below).

Table 1 Summary cultural heritage significance and impact assessment - State and local heritage places

Site ID	Description	Cultural heritage significance	Significance of impact before mitigation	Significance of impact after mitigation
Main Range Railway (601480)	State-listed heritage place located within the Project disturbance footprint	State	Slight	Slight
G2H-19-H25 Bicentennial National Trail	Local heritage place located within the Project disturbance footprint	Local	Neutral/slight	Neutral/slight
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	Local	Neutral/slight	Neutral/slight

Table note:

ID: Identification

Table 2 **Summary cultural heritage significance and impact assessment – Potential local heritage places**

Site ID	Description	Cultural heritage significance	Significance of impact before mitigation	Significance of impact after mitigation
G2H-19-H13	Gowrie Junction Railway Station	Local	Moderate/large	Slight
G2H-19-H14	Single structure	Local	Neutral/slight	Neutral/slight
G2H-19-H16	Two single structures	Local	Slight/moderate	Neutral/slight
G2H-19-H24	House and windmill	Local	Moderate	Slight
G2H-19-H26	Multiple structures	Local	Slight	Neutral/slight
G2H-19-H30	Railway culverts, main line at Helidon	Local	Large/very large	Slight

1 Introduction

The Future Freight Joint Venture (FFJV) was commissioned by the Australian Rail Track Corporation (ARTC) to undertake the non-Indigenous (historical) cultural heritage assessment for the Gowrie to Helidon (G2H) Project (the Project), one of 13 projects that comprise the Inland Rail Program.

The Project involves a new rail corridor, which generally follows the Gowrie to Grandchester future State transport corridor, between Gowrie and Helidon.

Given the complexity and significance of the Project, the Project was declared a coordinated project under the *State Development and Public Works Organisation Act 1971* (SDPWO Act). This declaration initiates the statutory environmental impact assessment procedure detailed in Part 4 of the SDPWO Act, which requires a proponent to prepare an Environmental Impact Statement (EIS) for the Project in accordance with the Terms of Reference (ToR).

The non-Indigenous (historical) cultural heritage assessment aims to address the requirements of the Project's ToR, including the relevant guidelines. The assessment will also inform the detailed design and construction phases of the Project along with any legislative requirements.

It should be noted that Indigenous (Aboriginal) cultural heritage is being identified and assessed through a separate process undertaken with the relevant Aboriginal Parties and is outside the scope of this report.

ARTC is seeking approval to construct and operate the Project which consists of a single 28 kilometre (km) long dual gauge track with three crossing loops to accommodate double stack freight trains up to 1,800 metres (m) in length, including a future possible requirement to accommodate trains up to 3,600 m in length.

The Project will be constructed within a predominantly greenfield corridor, with approximately 5.6 km of brownfield development at either end of the alignment.

The alignment begins approximately 3.7 km west of Gowrie, at Charlton where it connects with the eastern end of New South Wales/Queensland Border to Gowrie (B2G) Inland Rail project, it then runs east, parallel to the existing Queensland Rail (QR) West Moreton System rail corridor (Western Line) on the southern side for approximately 4.8 km, before diverging from the West Moreton System rail corridor and passing into the proposed western tunnel portal within the vicinity of Boundary Street and the Toowoomba Bypass interchange at Gowrie Junction. The alignment then continues with a 6.24 km undrained tunnel through the Toowoomba Range, passing under the localities of Cranley, Mount Kynoch and Ballard (including the Toowoomba Bypass, New England Highway and the West Moreton System rail corridor) and emerging on the eastern side of the Great Dividing Range, with the eastern tunnel portal, in vicinity of Mount Kynoch. The eastern tunnel portal is in a rural area predominantly consisting of undisturbed natural vegetation. At each of the tunnel portals, ventilation and other tunnel infrastructure are proposed, along with an intermediate ventilation shaft and supporting infrastructure at Cranley.

On the eastern side of the tunnel, the alignment continues down the Toowoomba Range via a series of viaducts, embankments and cuttings, through the localities of Harlaxton, Withcott, Postmans Ridge, Lockyer and Helidon Spa. The Project crosses the Lockyer River at Helidon, after which, it again runs parallel for 800 m on the northern side of the existing West Moreton System rail corridor (Main Line) to connect with the Helidon to Calvert (H2C) Inland Rail project, to the north-west of Helidon.

The design has been developed cognisant of key environmental features and community/land issues but primarily in line with engineering constraints for a feasible, safe rail design. The key features of the Project are included in Table 1.1.

Table 1.1 Key features of the Project

Aspect	Description
Permanent features	
New track	<ul style="list-style-type: none"> Approximately 28 km of new single-track dual gauge railway.
Rail corridor	<ul style="list-style-type: none"> Establishment of approximately 22.4 km of new “greenfield” rail corridor Development of approximately 5.6 km of “brownfield” rail corridor The land required for the Project comprises a corridor with a minimum width of 62.5 m. A reduced corridor is required where the Project is co-located with the existing rail corridor or for the tunnel. The rail corridor will be of sufficient width to allow future crossing loop extensions to accommodate trains of up to 3,600 m in length The rail corridor will include land associated with the intermediate tunnel ventilation shaft and supporting infrastructure, access roads and other supporting infrastructure (e.g. water pipelines).
Tunnel	<ul style="list-style-type: none"> Construction of an approximately 6.24 km long undrained tunnel through the Toowoomba Range including expanded corridor to accommodate tunnel portal infrastructure (e.g. tunnel operations facilities and tunnel material stockpile at the western tunnel portal) Intermediate ventilation shaft (which draws in air to ventilate the tunnel) and associated infrastructure to be established at Cranley Land acquisition (volumetric) for the tunnel will include a provisional area around the tunnel to protect the asset from future development.
Crossing loops and turnouts	<ul style="list-style-type: none"> Crossing loops are places on a single-line track where trains in opposing directions can pass each other Three crossing loops, each a minimum of 2,200 m in length Turnouts allow the train to be guided from one section of track to another. Turnouts that tie-in to the existing West Moreton System rail corridor will be incorporated. There are 16 turnouts proposed along the alignment, including those associated with: <ul style="list-style-type: none"> Crossing loops Maintenance sidings Cross overs between Inland Rail and the existing West Moreton System Connection to the proposed InterLinkSQ facility Connection at the western tunnel portal to the West Moreton System to allow for train movements between Brisbane and Toowoomba.
Bridges and viaducts	<ul style="list-style-type: none"> Bridges and viaducts to accommodate topographical variation, crossings of waterways or other infrastructure such as roads There are 13 new bridge and viaduct structures, totalling approximately 6.7 km in length, proposed for the Project, comprising: <ul style="list-style-type: none"> Two rail-over-waterway viaducts Three rail-over-terrain-and-waterway viaducts Four rail-over-terrain-road-and-waterway viaducts One rail-over-road-rail-and-waterway viaduct One rail-over-waterway bridge One road-over-rail-and-waterway bridge One road-over-rail bridge Instream structures and scour protection measures associated with waterway crossings where relevant.
Drainage	<ul style="list-style-type: none"> Reinforced concrete pipe culverts and reinforced concrete box culverts. Scour protection measures will generally be installed around culverts and other drainage structures to minimise the potential for erosion.
Rail crossings	<ul style="list-style-type: none"> Rail crossings including grade separations/rail or road overbridges, occupational/private crossings and fauna crossing structures.

Aspect	Description
Embankments and cuttings	<ul style="list-style-type: none"> Embankments and cuttings will be required along the length of the alignment, this includes road and rail infrastructure within the alignment such as crossing loops and road of rail bridges The total length of embankments required for the Project will be approximately 15.4 km with a maximum embankment height of 33.3 m The total length of cut for the Project will be approximately 6.65 km with a maximum cut depth of 45.7 m.
Ancillary works	<ul style="list-style-type: none"> Associated rail infrastructure including maintenance sidings, Safeworking systems and signalling infrastructure Ancillary works include signalling and communications, signage and fencing, drainage works, establishment and/or reinstatement of access roads, and installation or modification of services and utilities Road closures and realignments; including closure of an existing level crossing on the QR West Moreton System rail line at Gowrie.
Environmental treatments	<ul style="list-style-type: none"> Potential noise barriers, fauna crossing structures, instream structures and fish passage design, fauna exclusion fencing, and rehabilitation and landscape treatments.
Temporary features	
Land	<ul style="list-style-type: none"> Temporary access tracks will be used to access construction sites. Where required, they will be retained to serve as rail maintenance access roads (RMAR) during the operation of the Project Land requirements for construction will include temporary workspace, site offices and laydown facilities Laydown areas will be located approximately every 5 to 10 km (avoiding 1% annual exceedance probability (AEP) floodplains where possible). Laydown areas will be required for activities such as tunnel construction, flash butt welding, concrete batching, water treatment facilities and rail assembly. Approximately 2,500 square metres (m²) of laydown areas to support bridge construction (where practicable, smaller near sensitive habitats).
Embankments and cuttings	<ul style="list-style-type: none"> Embankments and cuttings will be required along the length of the alignment, with a maximum fill height of 33.3 m The total length of cut for the Project will be in the range of 6.65 km with a maximum cut depth of 45.7 m
Material sourcing	<ul style="list-style-type: none"> Identification, and lawful use of established quarries for sourcing construction materials
Utilities	<ul style="list-style-type: none"> Clashes with utilities flagged and treatments identified for refinement during detailed design with utility relocations will be subject to separate assessments, with all necessary approvals obtained prior to any relocation being undertaken Major utility impacts and treatments have been confirmed with utility owners

1.1 Scope of assessment

Section 11 of the ToR for the EIS requires that: *‘The construction and operation of the Project should aim to ensure that the nature and scale of the Project does not compromise the cultural heritage significance of a heritage place or heritage area’*. The ToR describe the matters that ARTC must address in the EIS for the Project. The matters relating to cultural heritage are contained in Table 1.2.

Table 1.2 Terms of reference requirements

Terms of Reference requirements	Addressed in chapter
Information requirements	
11.174. For non-indigenous historical heritage, undertake a study of, and describe, the known and potential historical cultural and landscape heritage values of the area potentially affected by the Project. Any such study should be conducted by an appropriately qualified cultural heritage practitioner. Provide strategies to mitigate and manage any negative impacts on non-indigenous cultural heritage values and enhance any positive impacts	<p>A non-indigenous historical heritage assessment has been undertaken for the Project, the details of which are outlined in this report.</p> <p>The assessment and technical report were led by a FFJV historical heritage specialist. As part of the assessment and reporting, a number of mitigation strategies have been developed to manage negative impacts on non-indigenous cultural values and recommendations on enhancement of identified historical heritage values.</p>

In accordance with the requirements of the ToR and relevant legislation, this cultural heritage assessment seeks to:

- Identify known and potential historical cultural heritage values of the cultural heritage study area
- Assess the significance of these values
- Assess the Project's potential impacts on these values
- Recommend measures to manage or mitigate impacts on cultural heritage values.

A summary of relevant legislation is provided in Section 2.

1.2 Assessment area

The following terms are adopted for this assessment:

- Project disturbance footprint – the disturbance footprint encompasses the permanent disturbance footprint required for the Project and the temporary construction disturbance footprint being the area required only for construction. The Project disturbance footprint aims to capture the extent of all ground-disturbing works for the Project.
- Cultural heritage study area – the area of impact assessment encompasses the Project disturbance footprint plus a 50 m buffer to capture indirect impacts on cultural heritage from factors such as increased dust, vibration, or flooding (refer Figure 1.1)
- Area of Interest – an area of potential historic or heritage interest investigated as part of this technical study
- EIS investigation corridor - in order to contextualise the heritage assessment process, register searches and analysis of historical mapping has been undertaken over a wider area, comprising the disturbance footprint plus a minimum of 1 km on either side. In some areas, the maximum width of the EIS investigation corridor from the alignment centreline is 3.4 km.

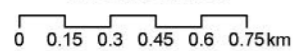


Legend

- | | | | |
|---|------------------------|---|------------------------------|
|  | Localities |  | Chainage (km) |
|  | Existing rail |  | B2G project alignment |
|  | Watercourses |  | G2H project alignment |
|  | Major roads |  | Tunnel |
|  | Minor roads |  | EIS disturbance footprint |
|  | Local Government Areas |  | Cultural heritage study area |
| | |  | EIS investigation corridor |



A3 scale: 1:25,000

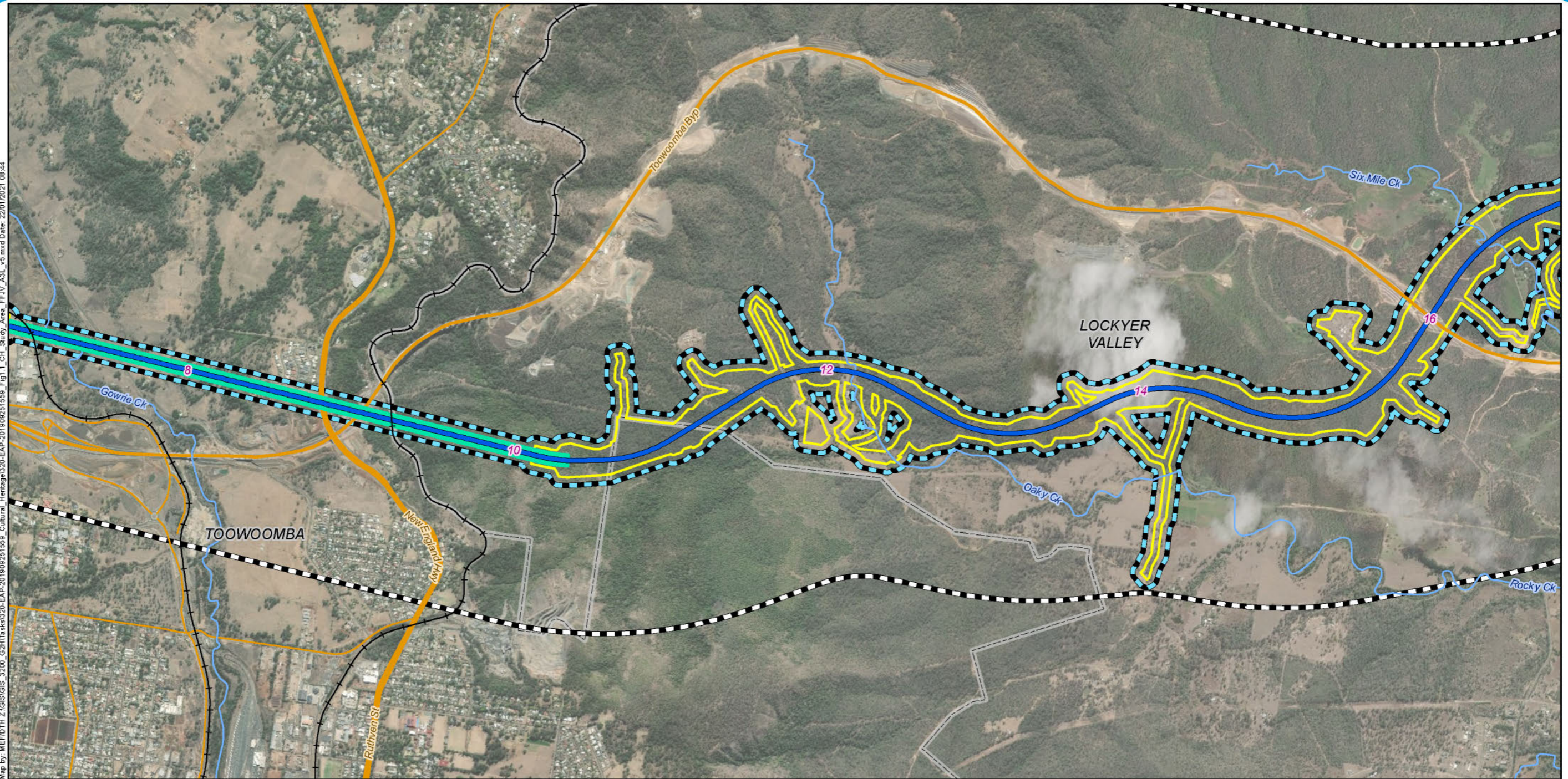


Issue date: 21/01/2021 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Gowrie to Helidon

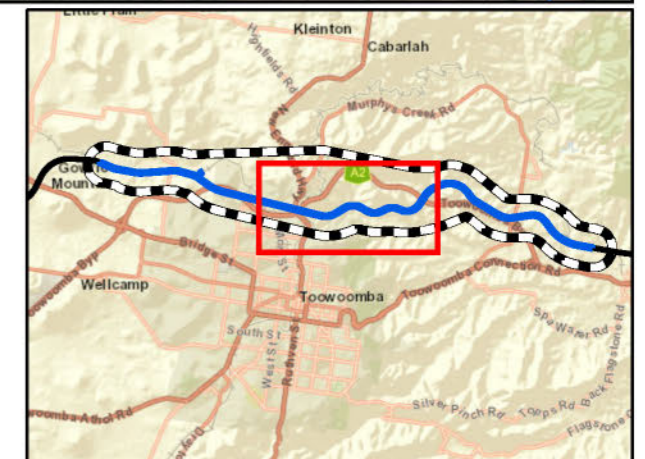
Figure 1.1a:
Cultural heritage study area

Map by: MEFDTH Z:\GIS\GIS_3200_G2H\Task320-EAP-201909251559_Cultural_Heritage\320-EAP-201909251559_Fig1.1_CH_Study_Area_FF.V_A3L_v5.mxd Date: 22/01/2021 08:44



Legend

- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Local Government Areas
- 5 Chainage (km)
- G2H project alignment
- Tunnel
- EIS disturbance footprint
- Cultural heritage study area
- EIS investigation corridor



A3 scale: 1:25,000
 0 0.15 0.3 0.45 0.6 0.75km



Legend

- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- Local Government Areas
- 5 Chainage (km)
- G2H project alignment
- H2C project alignment
- Tunnel
- EIS disturbance footprint
- Cultural heritage study area
- EIS investigation corridor



A3 scale: 1:25,000
 0 0.15 0.3 0.45 0.6 0.75km

2 Legislation, policy standards and guidelines

2.1 Commonwealth legislation

2.1.1 Environment Protection and Biodiversity Act 1999

The primary objective of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is to provide for the protection of the environment, particularly those aspects that are matters of national environmental significance.

On 17 March 2017, the Commonwealth Minister for the Environment determined the Project is a 'controlled action' under the EPBC Act (reference number EPBC 2017/7882) due to potentially significant impacts on listed threatened species and communities.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and non-Aboriginal historical cultural heritage items. Under the Act, heritage matters considered to be of national environmental significance are those listed on the World Heritage List, National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the Register of the National Estate (RNE). The RNE has been suspended and is no longer a statutory list; however, it remains as an archive.

Searches of the World Heritage List, National Heritage List, Commonwealth Heritage List and RNE were undertaken in September 2019 and indicated that there are three listings within proximity to the Project.

- The Main Range Railway is listed twice, once on the RNE as an indicative place (19547) and on the State heritage register (601480). The Main Range Railway intersects with the cultural heritage study area, running north to south between Ballard and Mount Kynoch.
- Similarly, Swansons Rail Bridge is listed both on the RNE (15971) and the State heritage register (600871). Swansons Rail Bridge is situated along the West Moreton System rail corridor, within the EIS investigation corridor, approximately 50 m east of the existing New England Highway and 1 km north of the disturbance footprint.
- The Escarpment and Foot Hills of the Great Dividing Range at Toowoomba, Warrego Highway is listed on the RNE (14286) and intersects with the cultural heritage study area near Ballard.

Two of the three listings are located in the cultural heritage study area. Refer Section 5.1 for the results of the register search.

2.2 State legislation

The *Queensland Heritage Act 1992* (Qld) (QH Act) provides the framework for assessing the significance of items and places of historical cultural heritage value in Queensland and is administered by the Department of Environment and Science (DES), with advice from the Queensland Heritage Council. It makes provision for the conservation of Queensland's cultural heritage by protecting all places and areas listed on the Queensland Heritage Register.

Broadly, a place is considered to be of State cultural heritage significance if:

'...its heritage values contribute to our understanding of the wider pattern and evolution of Queensland's history and heritage. This includes places that contribute significantly to our understanding of the regional pattern and development of Queensland' (Department of Environment and Heritage Protection 2013:6).

Under Section 35 (1) of the QH Act, a place may be entered on the Queensland Heritage Register if it satisfies one or more of the following criteria:

- The place is important in demonstrating the evolution or pattern of Queensland's history
- The place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage
- The place has potential to yield information that will contribute to an understanding of Queensland's history
- The place is important in demonstrating the principal characteristics of a particular class of cultural places
- The place is important because of its aesthetic significance
- The place is important in demonstrating a high degree of creative or technical achievement at a particular period
- The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- The place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.

Part 9, Division 1 of the QH Act also provides protection for places that have potential archaeological significance, as well as for underwater cultural heritage (shipwrecks). Section 89 requires a person to notify DES's Chief Executive of an archaeological artefact that is an important source of information about an aspect of Queensland's history (i.e. archaeology of State-level significance). This notice must be given as soon as practicable after the person discovers the item. Section 90 stipulates that it is an offence to interfere with an archaeological artefact once notice has been given of the artefact to the Chief Executive.

A search of the Queensland Heritage Register was undertaken in September 2019, which identified five State heritage listed places in proximity to the Project, three of which are located in the cultural heritage study area and two are located in the EIS investigation corridor (refer Table 5.2).

2.3 Local government planning schemes

Local heritage places are managed under Part 11 of the QH Act, as well as via local planning schemes established under the *Planning Act 2016*. The QH Act provides a process for establishing a local heritage register and nominating places to be included on a local heritage register. As defined by the Department of Environment and Heritage Protection (2013) (DEHP), a place is considered to be of local (rather than State) significance if 'its heritage values do not contribute significantly to our understanding of the wider pattern and evolution of Queensland's history and heritage'. It is noted, however, that, as government supported transport infrastructure, the Project is exempt from local planning scheme provisions.

Different planning schemes refer to places of local heritage value in different ways (refer below). For the sake of consistency and clarity, however, this report will identify all locally listed places as Local Heritage Register places.

2.3.1 Toowoomba Regional Planning Scheme

Cultural heritage is an important element within the strategic framework of the Toowoomba Regional Planning Scheme (Part 3) 2019. The scheme includes a Heritage Overlay Code, part of the Character Overlays Code Category under Part 8. The Heritage Overlay Code is used to identify important heritage places and inform development decisions within or adjoining identified places.

A search of Schedules 2 and 3 of the planning scheme in September 2019 indicates that there is one local heritage place included in the Toowoomba heritage overlay in proximity to the Project. A hotel, 254-272 New England Highway, is situated within the EIS investigation corridor, approximately 900 m south (outside of) of the disturbance footprint, refer Table 5.3.

2.3.2 Lockyer Valley Regional Council

Lockyer Valley Regional Council is yet to finalise its planning scheme subsequent to the amalgamation of the former shires of Gatton and Laidley. The planning schemes for the former shires remain in effect. The Gatton Shire Planning Scheme 2007 (Lockyer Valley Regional Council 2007) and Laidley Shire Planning Scheme 2003 (Lockyer Valley Regional Council 2003) both have Heritage Overlays which identify important local heritage places.

The cultural heritage study area is situated within the Gatton Shire Planning Scheme area. The policy direction provided by that scheme notes that 'Gatton Shire's places and areas of Indigenous and non-Indigenous cultural heritage are managed and their ongoing significance for the community is maintained or enhanced.' Developments within places of cultural heritage significance within the former Shire are assessed according to various codes of assessment outlined within the scheme. Places of cultural heritage significance are identified within a 'Register of Heritage Places and Precincts' as a Schedule and Overlay to the scheme.

A search of Schedule 2 of the Gatton Shire Planning Scheme in September 2019 indicates that there are 10 local heritage places in proximity to the Project.

There is one local heritage place within the cultural heritage study area. The Bicentennial National Trail traverses beneath a proposed viaduct at this intersect point with the Project in Withcott, refer Table 6.27. An additional 10 local heritage places were identified within the EIS investigation corridor (refer Figure 5.1).

A review of the relevant Lockyer Valley cultural heritage reports has been conducted. Specific to the cultural heritage study area, the *Gatton Shire Cultural Heritage Study 2000 - Vol 3 Murphy's Creek, Ma Ma Creek, Flagstone Creek & Stockyard Creek* (Buchanan Architects 2000) has been reviewed and has assisted in understanding the history and significance of relevant local heritage places, refer Table 5.3 and Section 3.1.3 for a full list of the previous heritage studies conducted.

2.4 Policy and guidelines

2.4.1 The Burra Charter 2013

The Burra Charter: The Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (Burra Charter) was originally created in 1979 by the Australian branch of ICOMOS. Since this time, the Burra Charter has provided the benchmark for cultural heritage management in Australia and is the basis for the majority of Commonwealth, State and local heritage legislation and policy (ICOMOS (Australia) 2013).

The Burra Charter defines a place as being of cultural significance if it possesses aesthetic, historic, scientific or social value, and provides guidance on managing and conserving places in order to preserve this significance.

2.4.2 Assessing Cultural Heritage Significance 2013

The Department of Environment and Science, formerly the DEHP, produced the guideline *Assessing cultural heritage significance: Using the cultural heritage criteria in 2013* to provide assistance in applying the QH Act criteria to significance assessments in Queensland (DEHP 2013). The document explores the different ways in which heritage places may fulfil each of the criteria and provides guidance on the thresholds that must be reached for a heritage place to be considered at a local, State, national or world significance.

2.4.3 Guidance on Heritage Impact Assessments 2011

Guidance on Heritage Impact Assessments for Cultural World Heritage Places was produced by ICOMOS, the peak international body for cultural heritage management (ICOMOS 2011). The document aims to provide an approach by which all types of impacts to heritage values might be identified, measured and managed. Although the document was prepared to inform impact assessments of World Heritage Listed places, it provides a robust methodology for the evaluation of impacts to all levels and types of heritage significance.

This includes:

- Local, regional and national heritage places
- Built, archaeological, landscape and intangible values
- Direct and indirect impacts
- Immediate and cumulative impacts.

2.4.4 Guideline: State Development Assessment Provisions 2017

The former DEHP prepared the *Guideline: State Development Assessment Provisions State Code 14: Queensland Heritage* in 2017 (DEHP 2017). The document provides recommendations for preparing a development application and assist in outlining the process in the preparation of a heritage impact statement. The document provides an overview of the requirements for preparing a heritage impact statement and provides supporting references for further information.

3 Methodology of assessment

The non-Indigenous cultural heritage assessment is informed by legislative and Project ToR requirements, as well as the guideline Assessing cultural heritage significance: Using the cultural heritage criteria (DEHP 2013), which provides a framework for identifying and managing historical significance under the QH Act.

In keeping with this framework, the key elements of the assessment are:

- Background research
- Historical cultural heritage inspection
- Significance assessment
- Impact assessment
- Management recommendations.

In accordance with Section 11.174 of the ToR requirements as discussed in Table 1.2, the non-Indigenous cultural heritage assessment was undertaken by a suitably qualified heritage practitioner.

3.1 Background research

The aim of the background research is to:

- Develop an understanding of the known and potential non-Indigenous cultural heritage values of the cultural heritage study area
- Identify and map listed heritage items within the cultural heritage study area
- Identify areas of potential heritage value in need of subsequent inspection and further investigation
- Provide a context against which the significance of these values can be assessed.

A three-stage process has been used to fulfil these aims, comprising: register searches, analysis of historical mapping, and review of previous studies. Consultation with relevant key stakeholders was also undertaken, including a request for information to QR to identify any heritage places on their internal registers relevant to the QR owned land parcels within the Project disturbance footprint. QR confirmed that two lots; Lot 591 SP117148 and Lot 452 SP117138 are listed on the Queensland Heritage Register, while no other heritage places were identified.

3.1.1 Register searches

Searches of all relevant heritage registers were conducted to identify previously recorded heritage places. Registers consulted include:

- World, national and Commonwealth Heritage Registers
- Queensland Heritage Register
- Register of the National Estate (non-statutory)
- Register of the Queensland National Trust (non-statutory)
- DES Cultural Heritage Information Management System (non-statutory)
- Local Heritage Registers – Toowoomba Regional Planning Scheme, Gatton Shire Planning Scheme (Lockyer Valley Regional Council 2007).

3.1.2 Analysis of historical mapping

Analysis of historical maps and other images has been undertaken to inform an understanding of the historic development of the areas investigated, including the general landscape of the cultural heritage study area. Sources consulted include:

- Cadastral mapping (showing property owners, reserves, roads and other infrastructure)
- Topographic mapping (showing the location of structures, types of landforms, the extent of vegetation clearance and the alignment of roads and railway)
- Aerial imagery (showing the location of structures, the extent of vegetation clearance and the alignment of roads and railway).

Each of these resources was georeferenced using geographical information system (GIS) software, enabling an accurate understanding of the location of the cultural heritage study area relative to historical elements within the landscape. This facilitated the identification of previously unrecorded heritage sites, such as early structures which are no longer standing, but which have the potential for archaeological deposits.

3.1.3 Review of previous studies

Previous heritage studies of relevance to the cultural heritage study area were reviewed, along with more general primary and secondary historical sources. These included:

- Archaeo (2003). Cultural Heritage Survey and Assessment: Toowoomba Bypass South Eastern Queensland. Report to Department of Transport and Main Roads (DTMR)
- Brannock & Associates (2010). Toowoomba Regional Council Heritage and Urban Character Study. Unpublished report to Toowoomba Regional Council
- Beal, D J. (2012). A Detailed History of Gowrie Junction. Toowoomba & Darling Downs Family History Society Inc
- Niche Environment and Heritage (2014). Tunnel Lowering Feasibility Advice, Little Liverpool and Toowoomba Range. Unpublished report to SMEC, on behalf of QR
- Turnstone Archaeology (2015). Aboriginal Cultural Heritage Survey, Assessment and Mitigation for the Toowoomba Second Range Crossing: Gore Highway, Westbrook, to Postmans Ridge Road, Helidon, South East Queensland. Unpublished report to Western Wakka Wakka (Beatie), on behalf of DTMR
- ARUP (2016). Preliminary Environmental Assessment Report: Gowrie to Helidon. Unpublished report to ARTC
- Everick Heritage Consultants (2018). Mount Lofty Rifle Range, Toowoomba, QLD: Historic Significance Assessment. Unpublished report to Defence Housing Australia.
- Nexus (2019). Heritage Assessment. Toowoomba Second Range Crossing.

The information garnered from these sources was used to identify any additional areas of potential heritage significance, but also to generate an overview of the history of the area, providing a context against which heritage values were assessed.

3.2 Selection of sites for inspection

Given the extent of the cultural heritage study area, it was considered neither practical nor desirable to inspect the entire cultural heritage study area. Instead, a targeted survey strategy was used, focussing on areas of highest heritage potential. These areas of interest (AOI) were identified during the background research, and included:

- Registered heritage places (statutory and non-statutory)
- Previously identified but unregistered places
- New places identified during historical research.

The inspection of AOI was prioritised based on their proximity to Project works (and hence likelihood of impacts) and their heritage potential (high, medium or low) (refer Table 3.1 and Table 3.2). The numbering system associated with the heritage potential of the AOI determined the priority of the AOI during the visual inspection. For instance, areas located within the cultural heritage study area and were considered to have a high potential to yield evidence of early structures or homesteads were given a level 1 priority ranking and were prioritised.

Table 3.1 Areas of Interest, levels of heritage potential

Potential	Description	Example
High	Places that have potential for early or complex structures and archaeological deposits Registered heritage places	Homestead complexes Early slab huts
Medium	Places that have the potential for simple or later structures and archaeological deposits	Later single dwellings
Low	Places that have the potential for very simple or modern structures and archaeological deposits	Dips, bridges

Table 3.2 Areas of interest inspection priority

Priority		Heritage potential		
		High	Medium	Low
Within study area	Yes	1	2	3
	No	3	4	5

3.3 Significance assessment

The significance of non-Indigenous cultural heritage places was assessed in accordance with the QH Act and *Assessing cultural heritage significance: Using the cultural heritage criteria* (DEHP 2013). In general, a place may be considered to be of heritage significance if it meets one or more of the eight criteria (included in Section 2.4.2):

- The place is important in demonstrating the evolution or pattern of history
- The place demonstrates rare, uncommon or endangered aspects of cultural heritage
- The place has potential to yield information that will contribute to an understanding of history
- The place is important in demonstrating the principal characteristics of a particular class of cultural places
- The place is important because of its aesthetic significance
- The place is important in demonstrating a high degree of creative or technical achievement at a particular period
- The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- The place has a special association with the life or work of a particular person, group or organisation of importance.

These criteria may be fulfilled at a number of thresholds, ranging from World to Local, depending on the importance of the place, and the contribution it makes to our understanding of the past (refer Table 3.3).

Table 3.3 **Levels of cultural heritage significance**

Significance	Description
World	Heritage values contribute to our understanding of the pattern and evolution of world history and heritage and the place is considered to be of outstanding value to humanity.
National	Heritage values make an outstanding contribution to our understanding of the pattern and evolution of Australia's history and heritage.
State	Heritage values contribute to our understanding of the wider pattern and evolution of Queensland's history and heritage.
Local	Heritage values contribute to our understanding of the pattern and evolution of local history and heritage.

Source: DEHP (2013)

3.3.1 **Historical themes**

To assist in the assessment of historical significance (i.e. Criterion 1), DEHP (now DES) developed a thematic framework that identifies the most important events, processes and trajectories in Queensland history (refer Table 3.4) (DEHP 2013). Places that demonstrate one or more of these themes are more likely to meet Criterion 1 – Historic and be of non-Indigenous cultural heritage significance.

Table 3.4 Queensland thematic framework

Queensland historical themes	
<p>1. Peopling places</p> <ul style="list-style-type: none"> 1.1 the first inhabitants 1.2 migration from outside and within 1.3 encounters between Indigenous and non-Indigenous peoples 1.4 family and marking the phases of life <p>2. Exploiting, utilising and transforming the land</p> <ul style="list-style-type: none"> 2.1 exploring, surveying and mapping the land 2.2 exploiting natural resources 2.3 pastoral activities 2.4 agricultural activities 2.5 managing water 2.6 managing flora and fauna 2.7 experimenting, developing technologies and innovation 2.8 protecting and conserving the environment 2.9 valuing and appreciating the environment and landscapes <p>3. Developing secondary and tertiary industries</p> <ul style="list-style-type: none"> 3.1 feeding Queenslanders 3.2 developing manufacturing capacities 3.3 developing engineering and construction industries 3.4 developing economic links outside Queensland 3.5 struggling with remoteness, hardship and failure 3.6 inventing devices 3.7 financing 3.8 marketing, retailing and service industries 3.9 informing Queenslanders 3.10 entertaining for profit 3.11 lodging people 3.12 catering for tourists 3.13 adorning Queenslanders <p>4. Working</p> <ul style="list-style-type: none"> 4.1 organising worker and workplaces 4.2 caring for workers' dependent children 4.3 working in offices 4.4 unpaid labour 4.5 trying to make crime pay 4.6 surviving as Indigenous people in a white-dominated economy 4.7 working as exploited/indentured labour 	<p>5. Moving goods, people and information</p> <ul style="list-style-type: none"> 5.1 utilising human movement 5.2 using draught animals 5.3 using rail 5.4 using shipping 5.5 using motor vehicles 5.6 using air transport 5.7 telecommunications 5.8 postal services <p>6. Building settlements, towns, cities and dwellings</p> <ul style="list-style-type: none"> 6.1 establishing settlements 6.2 planning and forming settlements 6.3 developing urban services and amenities 6.4 dwellings <p>7. Maintaining order</p> <ul style="list-style-type: none"> 7.1 policing and maintaining law and order 7.2 government and public administration 7.3 customs and quarantine services 7.4 local government 7.5 Withstanding physical threats to order 7.6 Defending the country <p>8. Creating social and cultural institutions</p> <ul style="list-style-type: none"> 8.1 worshipping and religious institutions 8.2 cultural activities 8.3 organisations and societies 8.4 festivals 8.5 sport and recreation 8.6 commemorating significant events <p>9. Educating Queenslanders</p> <ul style="list-style-type: none"> 9.1 primary schooling 9.2 secondary schooling 9.3 educating adults 9.4 tertiary education <p>10. Providing health and welfare services</p> <ul style="list-style-type: none"> 10.1 health services 10.2 caring for the homeless and destitute 10.3 caring for women and children

Source: DEHP 2013

3.4 Impact assessment

The potential impacts on the heritage values are assessed using criteria developed from the Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS 2011). This document provides a comprehensive method for assessing impacts at all types of heritage places.

Under ICOMOS guidelines, cultural heritage places can be of differing levels of importance, or significance: local, State, national and world (refer also ICOMOS (Australia) 2013). Places of local significance are important only to their immediate community, places of State significance to the wider region, and places of national significance to the country as a whole. Places of world significance are important to all of humanity, possessing one or more Outstanding Universal Values. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), in order to be considered of Outstanding Universal Value, a property must meet one or more World Heritage Criteria:

- To represent a masterpiece of human creative genius
- To exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design
- To bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared
- To be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history
- To be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change
- To be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.

Places of differing heritage significance have differing sensitivity to impact. Places of world heritage significance will be more vulnerable to change than a local heritage site, and aspects of a world heritage place that represent Outstanding Universal Values are the most sensitive of all. The differing significance of a place's heritage values and their relative sensitivity to impact is summarised in Table 3.5.

Table 3.5 Levels of cultural heritage sensitivity

Sensitivity	Justification	Status
Extreme	Attributes which convey Outstanding Universal Values of World Heritage Place	Fulfils criteria for local, State, national and international listing
Very high	Exceptional, rare or outstanding attributes demonstrating important themes in national or international history and heritage	Fulfils criteria for local, State, national or potentially international listing
High	Attributes demonstrating important themes in state history and heritage	Fulfils criteria for local and State listing
Moderate	Attributes demonstrating important themes in local history and heritage	Fulfils criteria for local listing and may fulfil criteria for State listing
Low	Attributes demonstrating minor themes in local history and heritage	May fulfil criteria for local listing and does not fulfil criteria for State listing
Negligible	Attributes that have no heritage significance	Does not fulfil criteria for local or State listing

Source: ICOMOS (2011)

The degree of impact an activity will have on a heritage place is assessed in terms of the magnitude of change to the acknowledged heritage values of a place as summarised in Table 3.6. These impacts may be direct, such as the demolition of heritage buildings, or indirect, such as changes to the views or setting of a heritage place. In some cases, indirect impacts might also cause physical damage to a heritage place, such as excessive vibration causing structural damage, or excessive pollution causing damage to surfaces.

Table 3.6 Determining magnitude of change

Magnitude	Example criteria
Major	Change to all or most significant aspects of the place, such that its heritage values are substantially reduced or destroyed
Medium	Change to some significant aspects of the place, such that some of its heritage values are partially reduced
Low	Minor change to significant aspects of the place, such that some of its heritage values are slightly reduced
Negligible	Changes to insignificant aspects of the places, such that its heritage values are not reduced
No Change	No change

Source: ICOMOS (2011)

The final assessment of the significance of impact on a heritage place is a factor of the cultural heritage sensitivity of the place, combined with the predicted magnitude of change, as outlined in Table 3.7. A prediction of impact significance can be made both before and after the implementation of identified mitigation measures, allowing the efficacy of the measures to be assessed and revealing residual impacts that need to be considered. Those areas that were not subject to any magnitude of change have not been considered in the subsequent impact assessment as it was assessed that the proposed works would not impact or alter the heritage significance of these places.

Table 3.7 Estimating impact significance

Significance of impact		Magnitude of change				
		Major	Medium	Low	Negligible	No change
Cultural heritage sensitivity	Extreme	Very large	Large/very large	Moderate/large	Slight	Neutral
	Very high	Very large	Large/very large	Moderate/large	Slight	Neutral
	High	Large/very large	Moderate/large	Slight/moderate	Slight	Neutral
	Moderate	Moderate/large	Moderate	Slight	Neutral/slight	Neutral
	Low	Slight/moderate	Slight	Neutral/slight	Neutral/slight	Neutral
	Negligible	Slight	Neutral/slight	Neutral/slight	Neutral	Neutral

Source: ICOMOS (2011)

4 Historical context

4.1 Overview

4.1.1 Exploration and penal settlement

Early exploration and settlement to the Darling Downs area came from the south. In April 1827, the explorer Allan Cunningham set off from the Hunter Valley in New South Wales (NSW) with six convicts, 11 horses and sufficient equipment. The following year, 1828, Cunningham discovered a gap in the Great Dividing Range which would allow access from Brisbane and Moreton Bay to the Darling Downs. This was named Cunninghams Gap. Despite Allan Cunningham's exciting discovery, the Darling Downs region was not settled until twelve years later. This has been attributed to the presence of the Moreton Bay penal colony and the strict terms of settlement within proximity of the area (Kitson 2010).

In 1840, squatters began to move into the area, progressing from the east and following the route of Cunningham by establishing vast runs in the eastern Darling Downs (Strong et al. 2015:47). One of the first pastoralists to do so was Patrick Leslie who used records from Cunningham's expedition to the Darling Downs. Leslie settled a run called South Toolburra close to the present-day location of Warwick, approximately 75 km south of the cultural heritage study area. At this time, his run was in the New England Pastoral District. Others soon followed and took up licences both on the Darling Downs and to the east around Moreton Bay.

4.1.2 Free settlement

Within two decades of Cunningham's exploration, the region was flourishing and had become the 'jewel in the diadem of squatterdom' and the squatters were regarded as the elite of the 'pure merinos'. The Downs comprised pastoral villages dominated by comfortable houses and large woolsheds that dotted the landscape. In the next three decades agricultural selection and family farming became especially attractive to German and Irish immigrants, who would not deter the spread and success of pastoralism despite debt, drought and depression within the wider area. The Darling Downs landscape drastically changed within the following decades. The native grasses were now replaced by wheat and lucerne and the landscape was dotted with butter and cheese factories, aided by the use of refrigeration and railway transport. Grain growing on the rich black soil plains of the eastern Darling Downs proved a success as did dairying as several beneficial seasons boosted agricultural production and resulted in strong export demands. Assisting in this growth and demand within the area, the development of railway throughout the Darling Downs and the cultural heritage study area more generally was geared towards reaching the agricultural districts and assisting in meeting the supply and demand needs of these growing industries well into the 1860s (Cameron 2005) (refer Section 4.3).

The Darling Downs Pastoral District was created in 1843 with more genuine farmers and fewer speculators taking up leases throughout the area (Lehner 2017:1). Despite the appeal of the area, some of the purchasers were unable to fulfil the conditions of purchase and had to forfeit the land. The leasing of land by both genuine settlers and speculators was done with the hopes of profit gained through purchasing the holdings of land and selling them at a later date as resources and settlements within the area grew (Beal 2012:19) (refer Figure 4.1).

Within the Darling Downs region, it was noted that there were considerably fewer speculators taking up land as, although the soil was highly fertile, much of the land was covered with dense and lush vine scrub and the area comprised a reasonable slope. This was regarded as more of a hinderance as the scrub had to be cleared, usually by hand, before the land could be brought into production (Beal 2012:10).

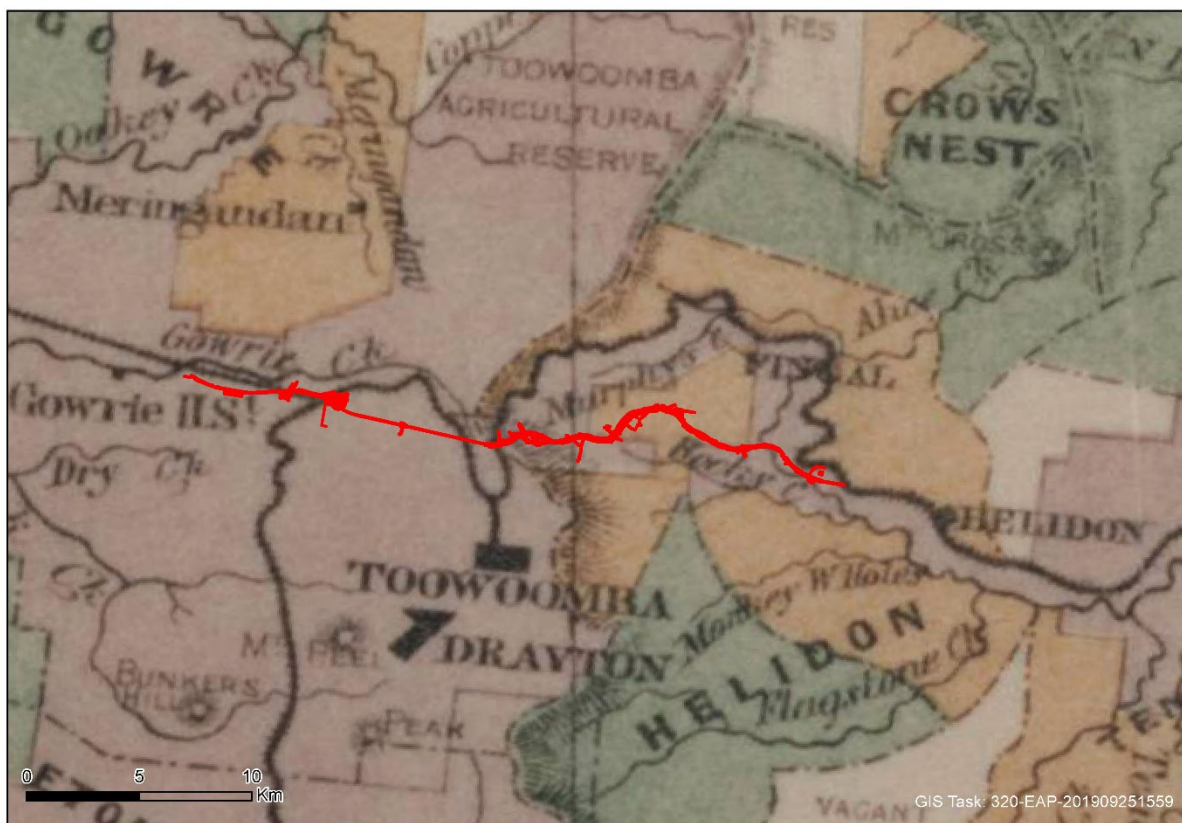


Figure 4.1 [Portion of] Queensland surveyed runs sheet 1 1872 showing the location of the Project

Source: Queensland Government Open Data Portal 1872

4.1.3 Closer settlement

The first squatters crossed the Great Dividing Range in 1841. Aboriginal people resisted this occupation and movement and frontier conflict continued into the 1840s. Most Aboriginal people had been completely driven from the plains and into the adjacent hills by the 1850s (Ivan McDonald Architects 2001:10). Toowoomba was first surveyed in 1852, although the initial settlement focus was to be at Drayton, further west towards today's Gowrie, Westbrook and Eton Vale. Toowoomba's location on the relatively level, though prominent, western edge of the Great Dividing Range meant there were reliable water sources and suitable topography for settlement, although the town was originally known as 'The Swamp'. The settlement grew to primarily service the early pastoral sector in the region but soon became a gateway between the coastal areas and valley regions to the east and the interior areas. The first land sales took place in 1853 and later town allotments were auctioned in 1858 and 1859. Toowoomba was declared a municipality in 1860 (Ivan McDonald Architects 2001:10). A toll road opened over the range in 1855, increasing access to the region and areas west of the range. It linked the Maranoa, Warrego, Dawson, MacIntyre and Darling Downs regions. A more direct link to Gowrie was established in 1858 (Ivan McDonald Architects 2001:14) and pastoral interests came to dominate the region into the 1860s.

After Queensland became a separate colony in 1859, Parliament passed a suit of land acts designed to take land from squatters and provide settlers with opportunities for closer settlement (Strong et al. 2015:47). In 1866 the freeholding lease for agricultural purposes was introduced and with it the Queensland grazing farms were born. The *Crown Lands Alienation Act* of 1868 was the most effective agricultural settlement legislation of the period, albeit with limited success in areas outside of the Darling Downs. This Act authorized the resumption of land within pastoral leases for agricultural settlement with the intention to lease blocks for agricultural selection (Cameron 2005). Closer settlement gradually eventuated in the cultural heritage study area with the declaration of the Toowoomba Agricultural Reserve. The first settlers in the Toowoomba area were Henry Hughes and Henry Isaac, who squatted in the land surrounding Gowrie Creek in the western portion of the cultural heritage study area, taking up a 32-kilometre frontage along the creek in 1841 (Strong et al. 2015:119-120). The lands surrounding Gowrie Creek were considered highly desirable by early surveyors and squatters. Charles Coxen was a Commissioner for Crown Lands during the mid-1800s who inspected the Gowrie land, reporting that the land on Gowrie Creek is 'of the most desirable quality for agriculture' (Strong et al. 2015:119-120). Comparably, the land within the undulating plains and steeper slopes required considerable work involving clearance of vegetation to ensure agricultural activities could flourish.

The name 'Gowrie', or 'Gowrie Junction' first appeared in October 1867 in a publication of 'The Queenslander' and it is likely that it stems from its original association with the Gowrie run and homestead which were purchased and established in the area during 1841, see section 4.4.1 for further details (Beal 2012:12). The name 'Gowrie' is believed to have originated from the Aboriginal word 'Eugarie' or 'Cowarie', which was the name for freshwater shellfish which was found in the area (*Gowrie Homestead, Kingsthorpe* 2003:406). The 'Junction' portion of the name is a nomenclatural remnant of the role this district served as the northern extent of the Sydney to Queensland Inland Rail line. Reference to 'Gowrie' township has since dropped the 'Junction' portion of the name after the connection with the Warwick line ended in 1959 and the station no longer served as a 'junction' between railway lines (Beal 2012:v). The importance of Gowrie Junction and a brief history of the impact of railways within the region is discussed in section 4.2.

The first settlers at Westbrook and Gowrie Runs cleared some areas particularly around the homestead paddocks or where there was a presence of Aboriginal resistance. Once closer settlement was initiated around 1900, smaller farm blocks were ploughed and the native grasslands replaced with cereals, especially oats and maize. Potatoes, pumpkins and other vegetables and fruits had long been grown in station gardens and such success had been replicated by the earlier German and Irish settlers in and around Toowoomba. Selectors also kept cattle however there was not a significant demand for beef at the time. Dairying was particularly important in the early decades of the 20th century, actively promoted by the government as a way to alleviate rural poverty, with mixed results (Beal 2012:45). Dairying was particularly influential in this respect, producing a perishable commodity that required prompt processing. Refrigeration had also been developed into a useful technology and the government committed itself to expenditure in the 1893 estimates for cool cars (rolling stock) on the railways and chilling rooms at important rail centres (Beal 2012:45). Before the 1890s, dairying on the Downs was generally a cottage industry, however, the dairying industry grew to meet the demands of the Colony in replacing imported goods (Beal 2012:42-3). Intensive settlement occurred around Gowrie Junction Road, to Goombungee Road, while the upper eastern escarpment of the Great Dividing Range remained relatively undisturbed. Around Postmans Ridge Road in the east of the cultural heritage study area and Murphys Creek Road in the centre portion and north eastern aspect of the cultural heritage study area, the original vegetation was cleared by the 1900s by early selectors (Strong et al. 2015:119-20).

Settlement around the Gowrie Junction area saw the area divided into sections with numerous reserves gazetted, railway reserves for employee housing and designated areas for quarrying material for the railway line (refer Table 6.18) (Beal 2012:35). An annotated 1963 map of the Town of Gowrie shown in Figure 4.2 highlights the AOIs and the corresponding inspection identifier (ID) for the sites.

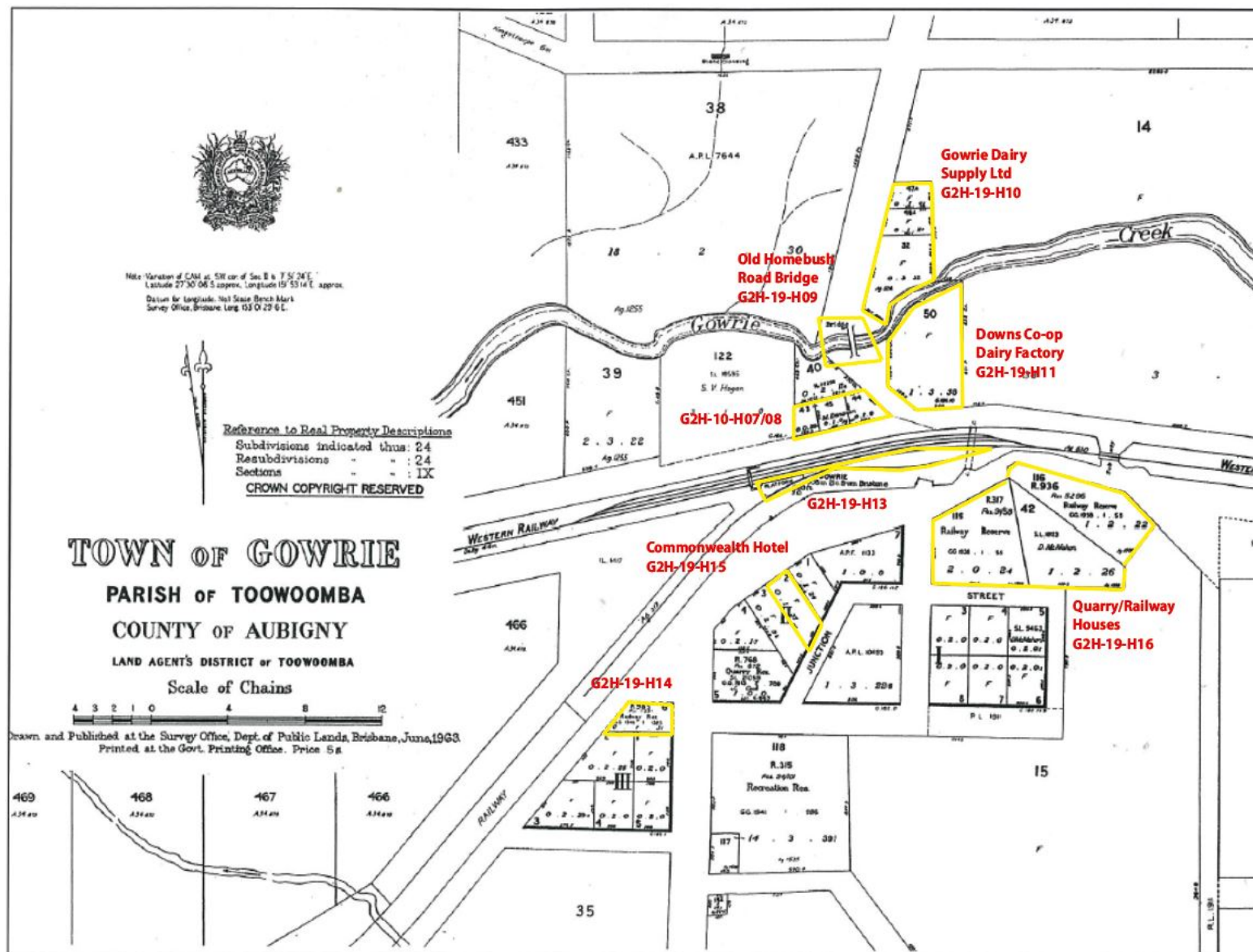


Figure 4.2 Annotated Map of Town of Gowrie 1963

Source: Rosalie Shire Historical Society

Visible in the annotated map of Gowrie, the following areas of interest within Gowrie Junction have been highlighted: two of the Paulsens Road homesteads (G2H-19-H07/08); the historic Gowrie Creek road bridge (G2H-19-H09); Gowrie Dairy Supply Ltd. (G2H-19-H10); Downs Co-op Dairy Factory (G2H-19-H11); Gowrie Junction Railway Station (G2H-19-H13); Gowrie Junction Road structures (G2H-19-H14); the Grand Junction and Commonwealth hotels (G2H-19-H15) and the quarry and railway houses (G2H-19-H16). The Mill/dairy factory identified as site G2H-19-H12 in this investigation is not visible at this scale, but would have been located in the vicinity of the Downs Co-op Dairy Factory (G2H-19-H11). For detailed inspection results refer to Table 6.3 to Table 6.32.

Located on this map is the first parcel of land that was purchased in Gowrie, 'Commonwealth Hotel' by Rodger O'Mara, in October 1875 for £12 (G2H-19-H15). Following this purchase Rodger applied for a publican's licence in May 1876 and opened a store in June 1876. He planned to call the hotel 'the Junction Hotel' however it has been recorded as the Grand Junction Hotel, refer Table 6.17 for the inspection results. Rodger O'Mara and Rody Burke held the licence for the Grand Junction Hotel until Daniel McMahon took it over in 1879. In 1879 Thomas Mahon opened his own hotel, the Railway Hotel, in the adjacent allotment, to the east of the original hotel. In the early 1890s the Railway Hotel was demolished, and the two-storey Commonwealth Hotel was built on allotment 2 facing Gowrie Junction Road (refer Photograph 4.1) (Beal 2012:37). The Commonwealth Hotel was later destroyed by fire in 1917.



Photograph 4.1 The Commonwealth Hotel 1916

Source: Rosalie Shire Historical Society

Although changes in transport and food technology have seen the closure of the butter factories and much of the rail lines, mixed agriculture continues to be an economic staple in and around the cultural heritage study area. In general, the cultural heritage study area across the Darling Downs has been modified by more than 160 years of farming practices.

4.2 Impact of railways (1860s-1920s)

Following separation in 1859, the economic development of Queensland was hampered by a poor transport network. The earliest endeavours to construct a railway in Queensland were made by the Moreton Bay Tramway Company in 1861, who intended to construct a tramway with horses hauling vehicles on timber rails between Ipswich and Toowoomba. The company failed to raise sufficient capital and by the end of 1862 was insolvent. The project did not proceed (Kerr 1993:1-1).

The Queensland Government took responsibility for building the Colony's first railway. The first Railway Bill, to borrow funds and construct for this purpose was passed by the government on 3 September 1863. The Sydney to Queensland Inland Rail line was developed in several sections, with the initial section of the Western line built from Toowoomba to Dalby, opening 16 April 1868 and the first section of the Southern line, from Gowrie Junction to Warwick opened in 1871 (Beal 2012:v). The station where the line began was named Gowrie Junction.

As the development of the railway line designs progressed, it was evident that the gauges of the railway lines were different throughout the region. This resulted in passengers and freight needing to change lines throughout journeys (Beal 2012:v). Prior to construction, in 1863 engineer Abraham Fitzgibbon proposed the adoption of 3 foot 6 inch (1,067 millimetre (mm)) narrow gauge railway in Queensland, rather than broad or standard gauges. The ascent of the Main Range between Ipswich and Toowoomba was the principal engineering and expense obstacle at this time and the narrow gauge allowed for tighter rail curves, cheaper construction costs and a lower capital outlay.

The line between Ipswich and Toowoomba was to become the first use of a narrow gauge for a main line anywhere in the world (Kerr 1993:1-2). The construction of the Main Line was divided into 5 sections. Tenders were called for Sections 2, 3, 4 and 5 on 24 August 1864 to extend the line from Grandchester to Toowoomba and the contract for construction was awarded to Peto, Brassey & Betts in 1865. Construction took place between 1865 and 1867.

Plans for the Main Line construction through the Little Liverpool Range section were tabled in Parliament in May 1864 (from Grandchester to Yarongmulu near the Victoria Tunnel at the summit of the range). Initial construction appears to have commenced by Bray and Thomas, who had completed 6 Chains (180 m) of excavation of the Victoria Tunnel by November 1864, when construction was handed over to Peto, Brassey & Betts. This section of line was opened on 1 June 1866 and the Victoria Tunnel and 'Six Chain' tunnels through the Little Liverpool Range are Queensland's oldest railway tunnels (Webber 1997: 16-18).

The ascent of the Main Range from Murphys Creek to Toowoomba was the most difficult section of the line to engineer, involving steep gradients of 1 in 50, nine tunnels, 47 bridges, 126 curves, numerous cuttings, embankments, culverts and nearly 18 miles (32 km) of track work. A large labour force was required for heavy manual labour to remove earth. Explosives were used to blast through rock. Large teams of men excavated with pick and shovel assisted by horse and bullock teams to move earth to create embankments. By 1877 the line had been extended to Wallangarra on the QLD/NSW border, and in 1878 the NSW section was completed (Beal 2012:v).

The opening of the railway caused the establishment of 'railway towns' in the region, including Gatton, Helidon and Gowrie Junction (Beal 2012:35). The station at Gowrie Junction opened on 18 November 1867 and was eventually equipped with a V-shaped platform shared by two lines, a station office with a waiting room, engine shed, engine pits and turntable (Beal 2012:12), refer Table 6.15 for inspection results. Most railway towns grew to service the growing agricultural sector of the region. Small cropping came first, then later the dairying industry (ARUP 2016:103-104). This is evident in the case of Gowrie Junction where closer settlement came to the area and the installation of the railway line secured trade and transport to Toowoomba. Gowrie Junction was a thriving railway town until 1915 when the Queensland Government opened the Drayton Deviation line which re-routed the Southern line through the town of Toowoomba. Refer Photograph 4.2 and Table 6.3 for the inspection results of the historic bridge across Gowrie Creek near the Tilgonda camp and siding as part of the Main Line.



Photograph 4.2 Steam train and carriages crossing the railway bridge between Kingsthorpe and Gowrie Junction, ca. 1902

Source: State Library of Queensland 1902

By 1871, the Gowrie farms numbered 32 with about 150 residents with a functional railway station and a telegraph office. The northern most portion of the Toowoomba 1944 topographic map details a railway station at Gowrie Junction, the Gowrie Allora rail line and the spread the town to the south of the rail line, refer Figure 4.3. This is similarly visible in the 1963 parish plan of Gowrie, refer Figure 4.2. The southern extension line from Gowrie Junction to Allora (Gowrie Allora rail line) opened on 11 March 1869 and closed on 30 June 1961 due to increasing competition from road transport.

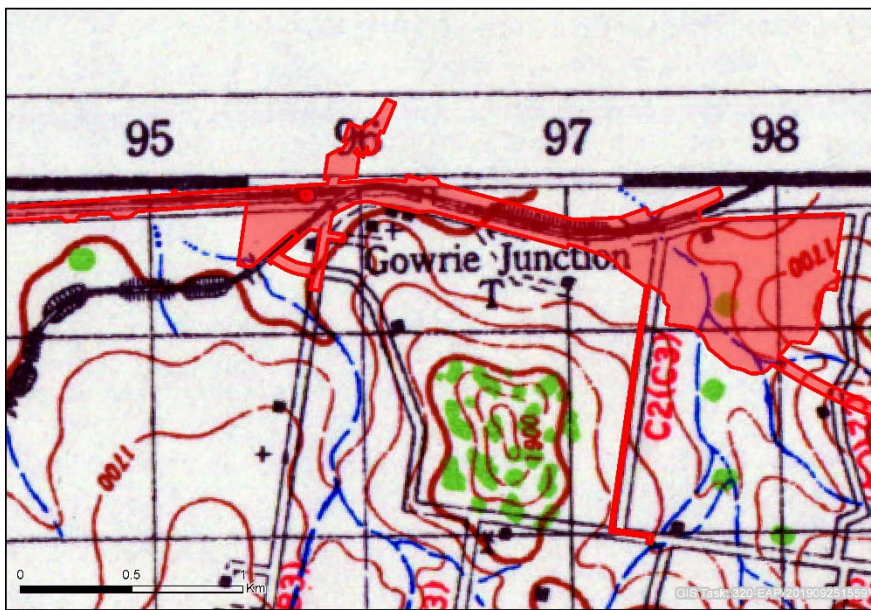


Figure 4.3 [Portion of] Toowoomba 1944 topographic map

Source: Queensland Government Open Data Portal 1944

The impression of the Gowrie Allora rail line is still visible crossing Krienke Road, heading south through the Project disturbance footprint (refer Figure 4.4).



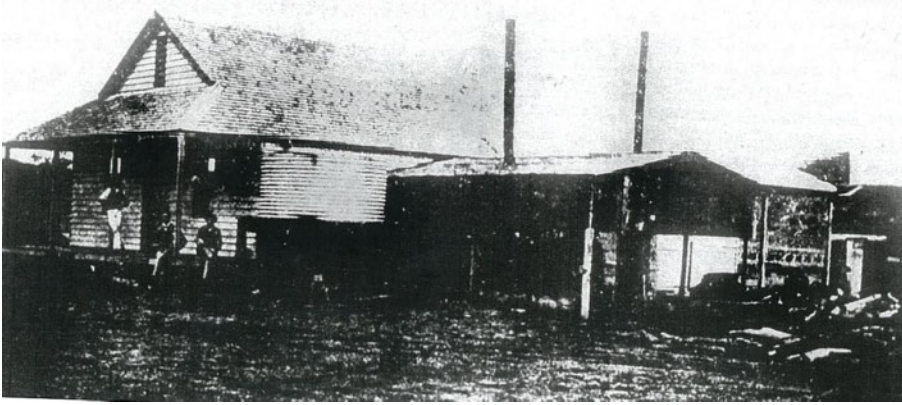
Figure 4.4 Impression of the Gowrie Allora rail line

Source: Google Earth Pro

4.3 Industry

Advances in technological developments assisted in the success and spread of dairies throughout the Darling Downs. Gowrie Junction saw the establishment of three dairies that experienced varying degrees of success. Two of the dairies in Gowrie Junction have been detailed in the 1963 annotated map of Gowrie (refer Figure 4.2).

The first of the dairy factories within Gowrie Junction was the Gowrie Junction Cheese & Butter Factory Co. The location of the original dairy has not been confirmed, however, historic images provide insight into the design of the structure (refer Photograph 4.3). This site was developed in 1895-6 by George Clazy, having secured an excellent site on the eastern bank of Gowrie Creek. This was considered to be a valuable position close to the railway station and well situated in relation to all the farms within the district. The main building consisted of a manufacturing room, cool room and refrigeration room. The facilities included complete plant for the manufacture of cheese and butter and equipment to make ice. All machinery onsite was driven by steam power with the engine house located on the northern side of the dairy. On either side of the cooling and refrigeration rooms were erected very wide verandas. An office was situated at the end of the southern verandah. The floor of the dairy was concrete throughout. The cheese and butter produce were exported as well as sold locally and the ice was sold in the district and transported to Toowoomba. In early 1898 the factory was destroyed by fire (Beal 2012:46-47). Table 6.12 presents the inspection results of the area anticipated to be the location of the original dairy. No evidence of historic structures or historic materials was identified.

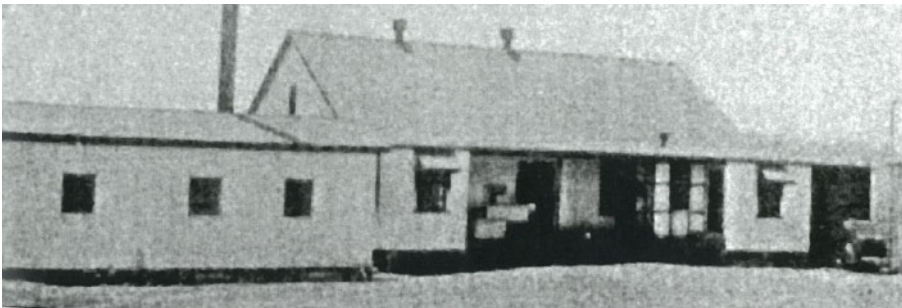


Photograph 4.3 Gowrie Junction Cheese and Butter Factory Co. 1896

Source: Rosalie Shire Historical Society

The second dairy in the region was the Gowrie Dairy Supply Ltd, established in 1907 in portion 32, situated north of Gowrie Creek and east of the bridge. The factory specialised in condensed milk however was unsuccessful. The factory closed in 1924 and sold the assets (Beal 2012:48). Table 6.12 presents the inspection results of this area. This site is currently the location of the landscape supplies store and no evidence of historic structures or materials were identified.

As demand for cheese production increased, the Toowoomba-based Downs Co-operative Dairy Factory (G2H-19-11) was established on Lot 50, south of Gowrie Creek (refer Photograph 4.4 , Photograph 4.5 and Figure 4.2). This site was established in 1918 and annually produced about 60-170 tons of cheese with a large portion of this produce exported. The factory struggled as Toowoomba based dairies began to flourish and closed on 1 May 1933. In 1934, Arthur Edward Hoopert bought the factory and continued to manufacture before closure for the last time in 1940. The buildings and equipment were eventually removed (Beal 2012:50). Table 6.13 presents the inspection results of this area, no evidence of historic structures or materials were identified.



Photograph 4.4 Downs Co-op Factory 1918-1933

Source: Rosalie Shire Historical Society



Photograph 4.5 Downs Co-op Factory 1918-1933

Source: Rosalie Shire Historical Society

4.4 Pastoral runs

The pastoral leases or runs were fundamental to the history of the Darling Downs as they opened up new land to settlement. Leases of Crown Land were granted to settlers, known as squatters, who could find a run of land not already claimed, and could transport a flock or heard to the area. The squatters were required to build huts, out-stations and sheep yards. The arranged leases were usually for a period of ten years and were frequently renewed or extended. It was compulsory to register a name for each run when the squatter made the application for the lease (Lehner 2017:1). Figure 4.5 illustrates the approximate location of the cultural heritage study area to the established runs within the Darling Downs.

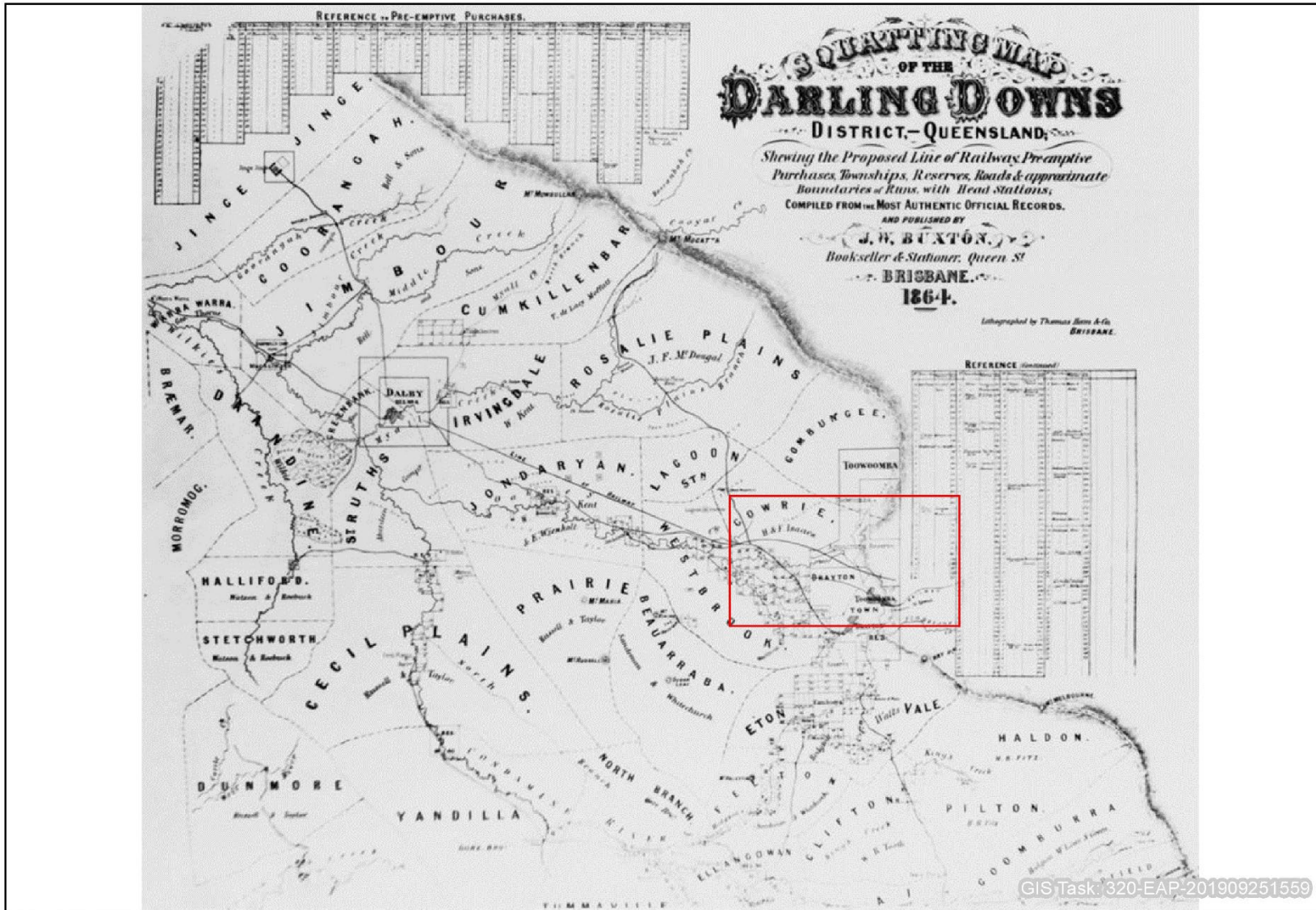
4.4.1 Gowrie Run

Gowrie Station was first taken up by Henry Hughes and his friends, brothers Henry Edward and Frederick Nevil Isaac in 1841. A portion of 32 km frontage along Gowrie Creek, formerly Sugarloaf Creek until 1846, was established. At the same time, other extensive areas were being established as farming and grazing properties on the rich Darling Downs soil. The Gowrie Station was originally titled Stambrook or Standbrook after the Standbrook Hall in Worchestershire England, where both Hughes and Isaac originated from. The name of the station was later changed to 'Gowrie' in 1846 (French 1990:65,122). The Gowrie Run was situated within the cultural heritage study area (refer Figure 4.1).

As one of the first pre-emptive purchases within this area, the Isaac brothers purchased the Gowrie lease homestead block of 320 acres in March 1857. Over the next two years, they applied for lands totalling 1,440 acres, all at £1 per acre. Strategically, each of the blocks selected within the Gowrie Run was the site of an important asset, such as the waterholes along Gowrie Creek, wash pools, wells and huts, and as much land along the creek-banks and plains as they could afford.

The census of 16 March 1841 listed the run as boasting six horses, 357 cattle, seven workers and one slab hut (French 1990: 65;122). The growth of this run is noted in 1847 as Christopher Rolleston, Commissioner for Crown Lands in Darling Downs reported that the newly named Gowrie Run covered some 75 square miles (48,000 acres or 19,200 ha), 40 horses, 800 cattle and 12,400 sheep (Beal 2012:4). This run grew substantially, with the eastern Gowrie boundary following the range north and west; crossed Gowrie Creek in the west very close to the existing Warrego Highway crossing just east of Oakey; then followed the ridge east, south of Gowrie Mountain, to the boundary of the Drayton Reserve, which had been surveyed by Surveyor Burnett in 1849 (Beal 2012:6).

The Isaacs employed George Downs who was the overseer for the Gowrie Run from 1846 to 1865. One of the first selectors in Gowrie, he purchased Portions 218-225, Parish of Gowrie, comprising 187 acres and named the farm 'Box Vale'. Downes built a slab homestead near the junction of Gowrie Junction Road with Holmes Road, immediately south of the cultural heritage study area. He planted 30 acres with barley and wheat and an orchard full of fruit trees (Strong et al. 2015:52). In 1866 George King bought the Gowrie and Goombungee run leaseholds and extensive freehold lands including the majority of the whole of the Gowrie Creek Valley from east of Gowrie Junction west to the vicinity of the 4AK Road from the estate of Frederick Isaac. King was a Sydney merchant who had arrived in NSW with his wife Jane in 1839. Despite purchasing the property, King continued to live in Sydney for another eight years. King came to live on the Gowrie Run in 1874 and built the homestead of concrete, stone and timber which still stands today on the Kingsthorpe-Haden Road, just south of Kingsthorpe and approximately 2.5 km south of the cultural heritage study area, (refer Photograph 4.6). The Gowrie homestead was originally situated on the southern bank of the creek, having nine bedrooms as well as outbuildings such as stables, sheds and yards (Toowoomba Chronicle 1 January 1987:9; 10 April 1987:3; Archaeo 2003:99-100).



Credits: [Part of] squatting map of the Darling Downs district, 1864

Figure 4.5 [Part of] squatting map of the Darling Downs district

Source: State Library of Queensland 1864



Photograph 4.6 Gowrie Station Homestead

Source: State Library of Queensland 1919

Gowrie Run began to be cut up from 1872 when some of the leased lands were opened by the government for closer settlement under the 1868 Land Act. From 1915 onwards, after government resumption of much of the remainder of the run, a number of farms were sold (Brier-Mills 1976; Archaeo 2003:123-124).

4.4.2 Harlaxton Range

During the 1850s timber getters roamed the Harlaxton Range felling and pit-sawing timber for the houses of Drayton (French 1992:72). The suburb of Harlaxton, once a part of the Gowrie Run and named for Gregory's Harlaxton House, was settled during the 1870s by Irish workers after completion of the railway (O'Sullivan 1992:22). The Harlaxton House is situated less than 100 m south of the cultural heritage study area. In 1867-70 Frances Thomas Gregory and his wife Marion Scott Hume, built Harlaxton House (refer Photograph 4.7). Harlaxton House is a low-set, single-storey stone residence built on a hill side with views overlooking the Toowoomba Range. Harlaxton House (600839) was listed as an item of State heritage on the Queensland Heritage Register on 21 October 1992 (refer Table 5.2). It is a good example of the Victorian Georgian style of architecture popular from the 1840s to the 1890s. The style is noted for its gentle symmetry and simple rectangular shapes with conservative detailing. The residence was constructed from an unusual red stone quarried at Harlaxton which is known as "Laterite". The doors and windows are trimmed in Helidon sandstone.



Photograph 4.7 Harlaxton House in Toowoomba, Queensland, ca. 1870 (John Oxley Library)

Source: State Library of Queensland 1870

The Gregory family bought approximately 53 hectares in 1869 from the original purchaser, Martin Meldon, and apparently began to build this low-set stone house almost immediately. In 1912 it was reported that around 150 acres of the Harlaxton House property had been recently subdivided into allotments ranging from a quarter to one acre. The blocks of land sold quickly at auction, but it took another two years for the house itself to be bought by George and Dorothea Cook (Archaeo 2003:121).

4.4.3 Goombungee Run

The Goombungee Run was situated in the eastern Darling Downs, approaching the Great Dividing Range and the headwaters of Oakey Creek. The Goombungee Run was situated and extended across the north of the cultural heritage study area. Much of the original vegetation was ironbark forest and brigalow scrub (Handford 2003). The pastoral run was taken up by Charles Pitts in 1847, east of Rosalie Plains. The origin of the name of the pastoral run, although possibly Aboriginal, is unrecorded. In 1866 George King bought the Gowrie and Goombungee Run leaseholds and extensive freehold lands. Part of the Goombungee Run's 16,000 ha was resumed in 1874 and a township reserve was gazetted in 1885. Surveyed town blocks were offered for sale in 1888. By 1908 the Goombungee area was substantially cleared, with the numerous farms concentrating on dairying and fodder crops. By the 1920s there were two dairy factories, one in the township and the larger of them producing both cheese and butter. A railway line through Goombungee, from Kingsthorpe to Haden, was opened in 1910 (Handford 2003).

4.4.4 Helidon Run

In 1842 Sydney alderman Henry McDermott selected land east of the escarpment and named it the Helidon Run. The Helidon Run is located less than one kilometre south of the cultural heritage study area, refer Figure 4.1. Eight years later, in 1849 it was acquired by William Turner. For a very short time, another run on the Toowoomba escarpment, known as Fincal, appears in the 1883 Darling Downs runs map, but it appears that it was subsumed into the Helidon Run, refer Figure 4.6. In 1876 the Lands Department surveyed part of the run after large sections of it were excised from Helidon near the settlement of Withcott. Following construction of the Murphys Creek railway in 1867, closer settlement followed (Strong et al. 2015:57). Lands near Withcott were selected by H. Pentecost, Thomas Ryan, F. Flannigan and J. Honan. A dozen more settlers and their families arrived in the Withcott area after further subdivisions in 1878 (Toowoomba Chronicle n.d.; Archaeo 2003:112).

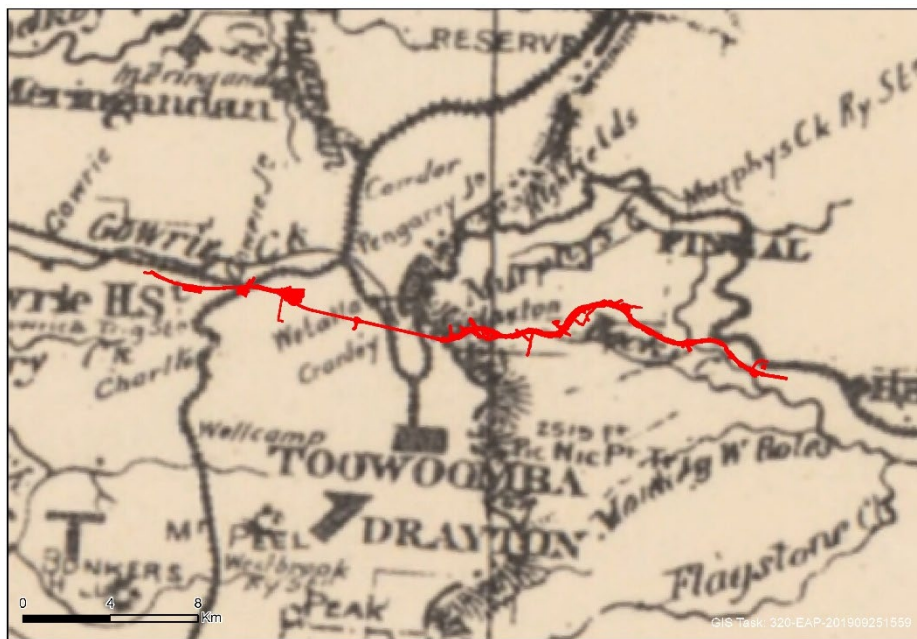


Figure 4.6 Darling Downs sketch map showing the Surveyed and Unsurveyed Runs 1883 (Surveyor General's Office Brisbane)

Source: Surveyor General's Office 1883

4.4.5 Westbrook Run

Westbrook Station is incorporated into the western and southern most edge of the cultural heritage study area, however the historic homestead is outside of the cultural heritage study area, situated to the south. The Westbrook Station was purchased by John 'Tinker' Campbell in 1841 and stocked and operational by mid-1841 (Lehner 2017:23). In 1853 the Westbrook Station was acquired by John Donald McLean who built the existing substantial stone homestead (refer Photograph 4.8). In 1855 McLean married and toured Europe for three years and William Beit, who had become McLean's partner, moved to Westbrook to manage it in 1856. The partnership of McLean and Beit were responsible for construction of the present homestead which was constructed of bluestone quarried from Westbrook land near Toowoomba. The roof was of imported English slate and cedar was used for most of the joinery. The homestead is located between two creeks, the larger permanent Westbrook Creek to the east and Half Mile Gully to the west, which also contained smaller permanent waterholes (Strong et al. 2015:54-55). William Beit married Mary Kellett in 1864 and McLean appears to have spent at least some of his time residing at Westbrook. The number of bedrooms and size of reception rooms in the new Westbrook homestead would have made the home appropriate for both Beit's planned family and to allow McLean to accommodate visitors and family members (Turnstone 2015:55).



Photograph 4.8 Open carriage outside of Westbrook Station Homestead, ca. 1877

Source: State Library of Queensland 1877

The Westbrook pastoral run originally comprised some 44,500 hectares of land with sheep, cattle and horses, but was progressively reduced in size as the pressures for closer settlement increased. One of the reductions saw large areas of Gowrie and Westbrook runs resumed for allocation for closer freehold settlement. Through a policy of pre-emptive selections, the owners conspired to purchase the majority of permanent water along Gowrie and Westbrook creeks, effectively limiting the expansion westwards of Drayton and Toowoomba. Following several poor seasons, Campbell sold the run in 1843 to John Stevens. McLean and Beit managed to retain large sections of the run, despite being forced to sell a section as early as 1855 (Turnstone 2015:54).

In 1872 Westbrook was sold by auction in Sydney and was purchased by the firm of Shanahan and Jennings who owned several large stations in NSW. J H Davidson, brother-in-law of Sir Patrick Jennings, past Premier of NSW, took up residence at Westbrook with his family. Shanahan and Jennings maintained possession of Westbrook until 1898 and planted 60 acres close to the homestead with vineyards, chestnuts, olives, peaches, and other fruit trees. In 1898 nearly 10,000 acres of Westbrook land was acquired by the government under the Agricultural Lands Purchase Act of 1894, subdivided and sold as farm blocks. The blocks were eagerly purchased, and the value of the land quickly rose. The rest of the estate was then privately surveyed, subdivided and sold and the homestead block, containing 9000 acres, was sold to Messrs Couper and Raulston and later divided into three dairy farms. When Couper died in 1938, his brother Ralph opened a school within the property in 1945. Hector McPhie purchased the property in 1949 and carried out renovations, including the subdivision of a bedroom into bathrooms. Westbrook was operated as a dairy and stud farm until 1954 when it was sold again and further subdivided. In 1969 most of the original stone sheds were demolished (Turnstone 2015:55).

5 Existing heritage context

5.1 Register searches

A search of all relevant statutory and non-statutory heritage registers, including relevant planning schemes in January 2021 indicates that there are no national or world heritage listed places within the EIS investigation corridor. A summary of the searches results is provided in Table 5.1.

The searches identified five State heritage listed places in proximity to the Project, of which three are located in the cultural heritage study area, refer Table 5.2. Additionally, 11 local heritage places were identified within proximity to the Project. Two of these local heritage places are situated in the cultural heritage study area, refer Table 5.3 and Figure 5.1.

Three non-statutory heritage places (i.e. RNE), of which two are listed as State heritage places were also identified within proximity to the Project, refer Table 5.4 and Figure 5.1.

Table 5.1 Summary register searches

Register	Other sites of relevance	Within cultural heritage study area
World Heritage List	None	None
National Heritage List	None	None
Commonwealth Heritage List	None	None
Register of the National Estate (non-statutory)	1 (within EIS investigation corridor)	2
State Heritage Register	4 (within EIS investigation corridor)	1
Cultural Heritage Information Management System (non-statutory)	None	None
Toowoomba Regional Planning Scheme	1 (within EIS investigation corridor)	None
Lockyer Valley Regional Planning Scheme/Gatton Shire Council	9 (outside of the EIS investigation corridor)	1
Queensland World War II Historic Places (non-statutory)	None	None

The Helidon Ammunition Store and Royal Australian Air Force No. 2 Replenishment Centre is listed under the Queensland World War II Historic Places register (non-statutory). This area is analogous with the Helidon Explosive Reserve, Air Force Road, Helidon at the eastern extent of the Project. This area was supported by road and rail, including the Russell Siding on the Main Line which is an AOI (G2H-19-H29), refer Section 6.

Table 5.2 State heritage places relevant to the Project

Name	Description	Planning scheme	Location	Proximity to Project
Baillie Henderson Hospital (601161)	A historical hospital complex dating to the 1890s. The place is significant for its association with the development of mental health care in Queensland. In addition, the place is important because of the social and cultural history of the hospital along with architectural qualities visible in the symmetry of the buildings, landscape and plantings.	Toowoomba	1 Hogg Street, Toowoomba	Within the EIS investigation corridor, approximately 1.5 km south of the intermediate ventilation shaft building at Cranley

Name	Description	Planning scheme	Location	Proximity to Project
Swansons Rail Bridge (600871)	A bridge located on the Main Range Railway, comprising an unreinforced concrete arch bridge built 1899 to 1900. The bridge demonstrates a high degree of technical achievement as a rare work of railway technology.	Toowoomba	6 km north of Toowoomba, Ballard; Blue Mountain Heights	Within the EIS investigation corridor, approximately 1 km north of the Project disturbance footprint (near the eastern tunnel portal)
Main Range Railway (601480)	A railway line running from Murphys Creek to Harlaxton, constructed mid-1860s, comprising nine tunnels, culverts and drains, cuttings and retaining features, bridges, stations and sheds. The Main Range Railway is important in demonstrating the evolution of Queensland's railway network.	Toowoomba	Ruthven Street overbridge, Harlaxton	Within the cultural heritage study area The proposed Toowoomba Range tunnel traverses under the Main Range Railway within the vicinity of Mount Kynoch
Lockyer Creek Railway Bridge (600513)	A bridge located on the Lockyer Creek. Constructed in 1910, the bridge comprises a reinforced concrete arch design and is significant for its aesthetic and innovative qualities while overcoming terrain challenges.	Toowoomba	Toowoomba - Helidon Line, Lockyer Creek	Within the EIS investigation corridor, approximately 800 m north-east of the Project disturbance footprint at Withcott Seedlings
Harlaxton House (600839)	Harlaxton House is a low-set, single-storey stone residence constructed in the early 1860s. The house is significant for its location, aesthetic and social qualities as a well-to-do house that was used by various Governors as a summer residence.	Toowoomba	6 Munro Street, Harlaxton	Within EIS investigation corridor, approximately 1.25 km south of the Project disturbance footprint (near the eastern tunnel portal)

Table 5.3 Local heritage places relevant to the Project

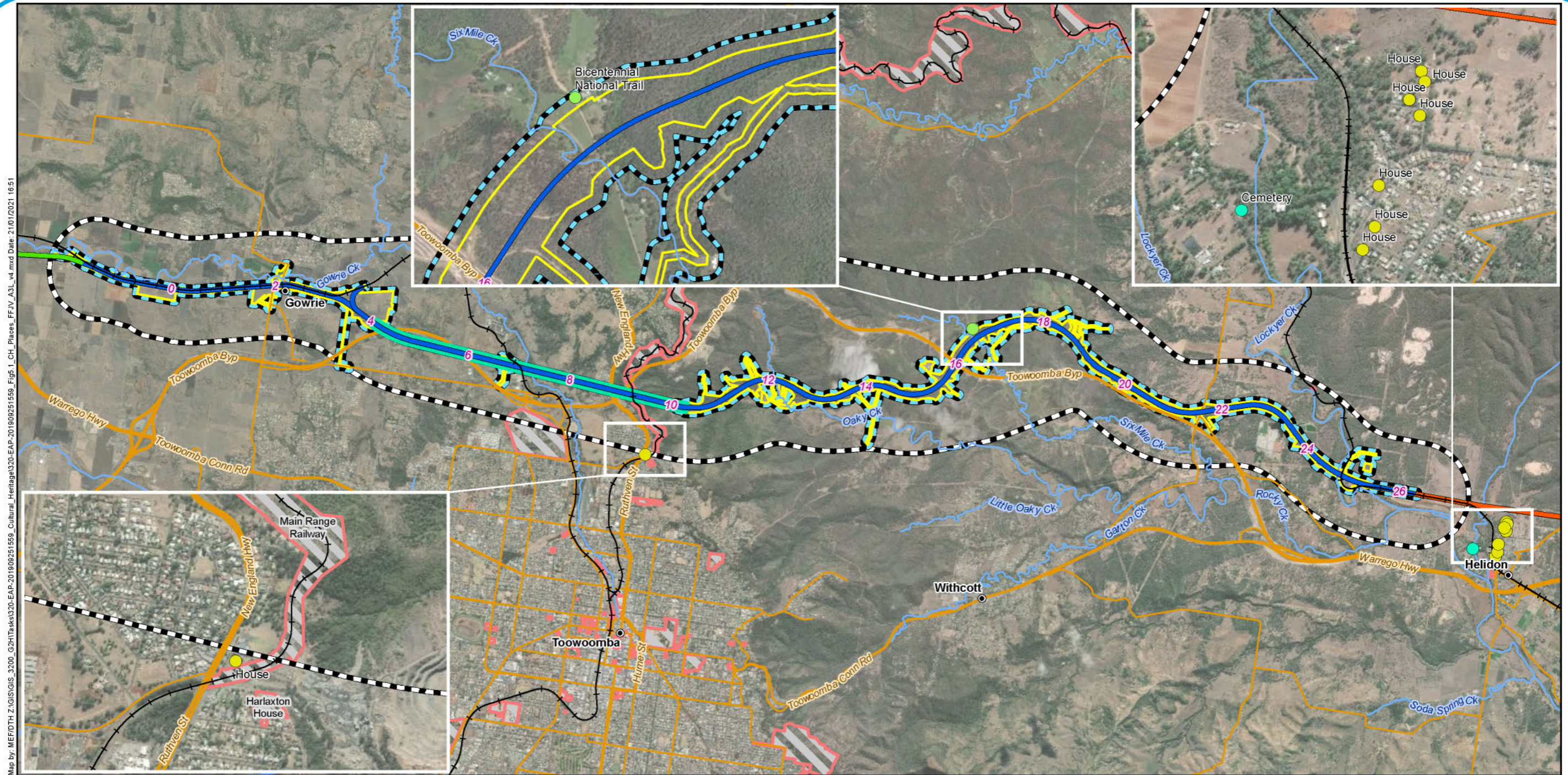
Name	Description	Planning scheme	Location	Proximity to Project
254-272 New England Highway, Harlaxton	House	Toowoomba	3RP86589, 5RP98376, 6RP98376, 8RP117570	Within EIS investigation corridor, approximately 800 m south of the Project disturbance footprint (near the eastern tunnel portal)
Bicentennial National Trail	A track comprising a national network of trails for walking or horse riding. The track is important as the local section of a national network set up as a commemorative event for Australia's Bicentenary.	Gatton	95CC385	The Project crosses over Gittins Road at Withcott, with this road and Jones Road also a proposed haulage route.
Gunn Street, Helidon	Ecclesiastical Buildings (Church complex)	Gatton	3RP897079	Outside the EIS investigation corridor to the east (Helidon), approximately 1.4 km south-east of eastern extent of the Project disturbance footprint
Gunn Street, Helidon	Ecclesiastical Buildings (Convent)	Gatton	4RP897079	Outside the EIS investigation corridor to the east (Helidon), approximately 1.4 km south-east of the eastern extent of the Project disturbance footprint

Name	Description	Planning scheme	Location	Proximity to Project
2 Arthur Street/ 1 Bowen Street, Helidon (House)	An 1890s style timber weatherboard house with pyramid style roof, verandah and original windows and doors. The place is important for its demonstration of early form, materials and early building techniques.	Gatton	101H1261	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
5 William Street, Helidon (House)	A house comprising part sandstone, part fibro with a verandah and chimney. The house is an interesting and rare example of a house built using local sandstone.	Gatton	218-220H1264	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
14 William Street, Helidon (House)	A timber weatherboard house with front and rear skillion enclosed verandahs. The house is important for its demonstration of early form, materials and early building techniques.	Gatton	1RP148530	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
22 Wrights Road, Helidon (House)	An 1890s style timber weatherboard house with a pyramid style roof and some original windows and doors. The house is important for its demonstration of early form, materials and early building techniques.	Gatton	2RP59783	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
10 Wrights Road, Helidon (House)	An 1890s style timber weatherboard house with enclosed verandahs and original windows and metal sunhoods. The house is important for its demonstration of early form, materials and early building techniques.	Gatton	1RP149759	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
18 Wrights Road, Helidon (House)	A late 1920s sandstone house with original doors and windows. The house is an interesting and rare example of a house built using local sandstone.	Gatton	1RP59783	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.
14 Russell Street, Helidon (House)	An 1890s style timber weatherboard and chamferboard house with a pyramid style roof, open verandahs and original doors and windows. The house is important for its demonstration of aesthetic characteristics and building techniques typical of the late 19 th and early 20 th century.	Gatton	10SP112158	Outside the EIS investigation corridor to the east (Helidon), approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint.

Table 5.4 Non-statutory heritage places listed on the RNE within the cultural heritage study area

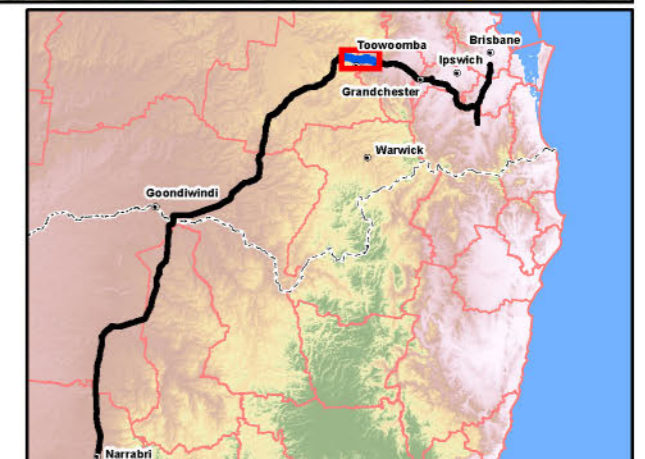
Place	ID	Description	Proximity to Project
Escarpment and Foot Hills of Great Dividing Range at Toowoomba, Warrego Highway	14286	These wooded slopes are Toowoomba's major natural feature. They clearly demarcate the eastern boundary of the city and give the visitor arriving from the east (Brisbane direction) a very favourable first impression of the garden city of Toowoomba. Rangeside parks provide open space, panoramic views and walking tracks and are a much appreciated source of recreation for locals and tourists.	The Project intersects the foothills of the Great Dividing Range west of Ballard

Place	ID	Description	Proximity to Project
Main Range Railway	19547	<p>Refer Table 5.2</p> <p>The sites was listed due to range of factors including, the railway being one of the first range crossings in Queensland, the engineering feats and the high quality of the railway, the unique elements especially the manhole tunnel which is thought to be the only example of this type of structure in Australia, landscape and scenic amenity offered by the alignment, along with the Spring Bluff Station gardens, Ballards camp and the social significance</p>	<p>Within cultural heritage study area</p> <p>The Project tunnel traverses under the Main Range Railway within the vicinity of Mount Kynoch</p>
Swansons Rail Bridge	15971	<p>Refer Table 5.2</p> <p>The bridge is the first of six concrete arch bridges built for the Queensland railways between 1900-13. Swansons Bridge, completed in 1900, replaced an original deck type metal truss, built with the railway in 1867. It is in a difficult location and bends to a tight curve in plan. The bridge is an early example of a concrete arch bridge. Two of the other bridges are associated with the Main Range Railway and are listed on the RNE</p>	<p>Within EIS investigation corridor, approximately 1 km north of the Project disturbance footprint (near the eastern tunnel portal)</p>



Legend

- Localities
- Existing rail
- Watercourses
- Major roads
- Minor roads
- 5 Chainage (km)
- B2G project alignment
- G2H project alignment
- H2C project alignment
- Tunnel
- EIS disturbance footprint
- Cultural heritage study area
- EIS investigation corridor
- State heritage place boundary
- Bicentennial National Trail
- Cemetery
- House



5.2 Previous heritage assessments

A number of previous heritage assessments have been undertaken for various parts of the cultural heritage study area and are summarised below.

Where applicable the findings of these assessments have been incorporated or used to inform the current assessment (e.g. Bicentennial National Trail and Baillie Henderson Hospital) (refer Table 5.2).

5.2.1 Toowoomba Bypass: Cultural Heritage Survey and Assessment (Archaeo 2003)

A cultural heritage assessment of the Toowoomba Bypass was prepared for DTMR in 2003. The route commenced at the Warrego Highway near Helidon and Withcott and emerged north of Toowoomba, following a series of spurs and escarpments. The route was surveyed on foot and the survey methodology was designed to investigate several route options. This study targeted the identification of Indigenous and non-Indigenous cultural heritage. There were 35 archaeological Indigenous sites identified.

The assessment identified 13 sites of non-Indigenous historical significance, including the Bicentennial National Trail, the heritage listed Main Range Railway and Baillie Henderson Hospital, along with historical trees, homestead sites, fences and logging tracks.

5.2.2 Toowoomba Regional Council Heritage and Urban Character Study (Brannock & Associates 2010)

The *Toowoomba Regional Heritage and Urban Character Study* was commissioned to collate the results of previous studies, and to identify additional places to create a comprehensive survey of heritage values to inform the new Toowoomba planning scheme. The study provides a basic overview of the settlement and development within with the Toowoomba region and highlights key areas of interest within the cultural heritage study area, such as Gowrie Junction. The report provides a preliminary introduction to the heritage and character of the Toowoomba region and provides details for the places of local significance that have been addressed in this report.

5.2.3 Heritage Impact Statement (Niche Environment and Heritage 2014)

Niche were commissioned by SMEC to prepare a Heritage Impact Statement for the proposed works associated with the tunnel lowering program on the Little Liverpool and Toowoomba Ranges, located in the Lockyer Valley. The majority of the work was to take place within the heritage listed boundary of the Main Range Railway (QHR601480). The survey identified that all the tunnels were of State-level cultural heritage significance and identified additional areas of potential for the remnants of construction camps, rail culverts, bridges, cuttings and embankments within the surveyed area.

5.2.4 Toowoomba Second Range Crossing: Aboriginal Cultural Heritage Survey (Turnstone Archaeology 2015)

Turnstone Archaeology were commissioned to provide technical support for Western Wakka Wakka (Beatie), on behalf of DTMR for the Toowoomba Bypass. Following a survey that identified a number of significant Aboriginal areas and sites between Gore Highway and Postmans Ridge Road, within the current cultural heritage study area, a series of test excavations were undertaken. A total of 54 test pits were excavated and identified a range of Indigenous and non-Indigenous cultural heritage material. Of interest for the current study area, the results of the excavation identified the use of historical bottle glass from Westbrook Homestead by Aboriginal people, along with cast iron metal work, ceramics and small finds.

5.2.5 Preliminary Environmental Assessment Report: Gowrie to Helidon (ARUP 2016)

ARUP were commissioned to provide a Preliminary Environmental Assessment Report to identify Aboriginal and historical cultural heritage constraints within the vicinity of the Gowrie to Helidon alignment. The desktop identified areas of potential local historic significance to be associated with pre-1946 housing stock, early commercial and domestic buildings near the existing railway and railway infrastructure.

Within the cultural heritage study area, the desktop cultural heritage review identified 12 Aboriginal heritage sites, as well as one State significant heritage place, Main Range Railway (QHR601480), and several potential places of historical heritage significance that have been incorporated into the current assessment.

5.2.6 Mount Lofty Rifle Range, Toowoomba, QLD: Historic Significance Assessment (Everick Heritage Consultants 2018)

Everick Heritage Consultants were commissioned by Defence Housing Australia to undertake a historic significance assessment for the proposed residential development of the former rifle range located in Mount Lofty, Queensland. The assessment aimed to assess the potential heritage values associated with the Mount Lofty Rifle Range (1877 to 2011).

Interchangeable with the name 'Tick Hill' up until 1919, Mount Lofty was initially the location of a small home called 'Longview' that was situated on the crest of the summit of Mount Lofty in 1863. A portion of the land was further utilised as a dairy in 1880. The Commonwealth developed rifle ranges across Australia in the efforts of creating a civilian-based reserve defence force. As such, 20 acres of the reserve were set aside for the Mount Lofty rifle range that was originally named the Toowoomba Rifle Range and operated periodically from 1878 until 2011. There are no surviving structures or buildings associated with the pre-Commonwealth use of the site. The current target trenches and target shutters present on the site are the result of the site upgrades in 1913.

The historic significance assessment determined that the proposed residential development would directly impact on the Mount Lofty Rifle Range that has been assessed to be of local significance, however it is yet to be listed.

The Project traverses the northern limits of the Mount Loft Rifle Range, approximately 200 m north of the known heritage elements.

5.2.7 Toowoomba Second Range Crossing (Nexus 2019)

Recent construction works associated with the Toowoomba Bypass identified a large collection of Australian coins (i.e. 5,600 coins spanning from 1882 to 1940).

The collection of coins recovered have been analysed, with the results indicating that the coins could be one of the largest reported coin hoards in Australia.

5.3 Historical mapping review

Historic topographic maps relevant to the Project (Australian Section Imperial General Staff 1936, 1943 and 1944) were georeferenced and analysed for early structures and other points of interest.

Where possible, these identified sites were verified with historic aerial photography from the 1930s-1980s (and where applicable current imagery) sourced from QImagery, Queensland's online database of current and historic imagery.

Through this process, 42 AOI were identified and are summarised in Table 5.5.

Table 5.5 Summary areas of interest identified within the Environmental Impact Statement investigation corridor

Category	Count
Mill/Factory	1
Homestead	3
House (and mill)	1
Multiple structures	6
Railway station	5
Railway siding	3
Single structure	20
Hall	1
Bridge	1
Trail	1
Total	42

5.4 Areas of interest within the cultural heritage study area

Of the 42 AOI identified within the EIS investigation corridor from the historic mapping review (refer Section 5.3) 36 are within the cultural heritage study area (refer Figure 5.2).

In accordance with Section 3.2, each of the 36 AOIs were prioritised for inspection. There were 30 sites identified for inspection with a list of these sites, along with their potential and priority rankings determined using the methodology outlined in Section 3.2, provided in Table 5.6. The results of the site inspections, including limitations is outlined in Section 6.

Table 5.6 Areas of interest within the cultural heritage study area

Inspection ID	Description	Lot/Plan	Study area	Potential	Inspection priority
G2H-19-H26	Multiple structures	11RP839411	Y	H	1
G2H-19-H10	Mill/Factory	14RP889026	Y	H	1
G2H-19-H11	Road intersection	50RP889026	Y	H	1
G2H-19-H12	Mill-factory	14RP889026	Y	H	1
G2H-19-H23	Multiple structures	354CH312304	Y	H	1
G2H-19-H06	Homestead	458A34873	Y	H	1
G2H-19-H07	Homestead	45AG937	Y	H	1
G2H-19-H08	Homestead	44RP216739	Y	H	1
G2H-19-H18	Single structure	5SP198121	Y	H	1
G2H-19-H03	Railway Station	10D3691	Y	H	2
G2H-19-H27	Single structure	13CH31259	Y	H	2
G2H-19-H24	House and windmill	320CH312556	Y	H	2
G2H-19-H13	Gowrie Junction Railway Station	2RP34879	Y	H	2
G2H-19-H17	Single structure	1RP192838	Y	M	3
G2H-19-H16	Two single structures	1RP205894 42AG1509	Y	M	3
G2H-19-H15	Single structure	201CP893797	Y	M	3
G2H-19-H02	Single structure	33SP312428	Y	M	3
G2H-19-H20	Single structure	2RP806906	Y	M	3

Inspection ID	Description	Lot/Plan	Study area	Potential	Inspection priority
G2H-19-H14	Single structure	307AG4196	Y	M	3
G2H-19-H22	Rail bridge (Main line at Mount Kynoch)	591SP117148	Y	M	3
G2H-19-H05	Single structure	33SP312428	Y	M	3
G2H-19-H21	Single structure	4SP194139	Y	M	3
G2H-19-H30	Railway Siding (Helidon Explosives)	452SP117138	Y	L	3
G2H-19-H29	Railway siding (Russell's Siding), Main Line at Helidon	452SP117138	Y	L	3
G2H-19-H28	Single structure	87CA31624	Y	L	3
G2H-19-H25	Bicentennial National Trail	Gittins Road, adjacent to 259CC317 and 17SP186715	Y	L	3
G2H-19-H09	Road Bridge over Gowrie Creek	Old Homebush Road, adjacent to 40AG1255	Y	L	3
G2H-19-H19	Single structure	11SP189518	Y	L	4
G2H-19-H04	Hall	2RP838203	Y	L	4
G2H-19-H01	Bridge over Gowrie Creek	Adjacent to Draper Road, 71SP122172 10D3691	Y	L	4

The remaining six AOIs were not inspected as they were considered to have a priority ranking of 5, and therefore are not considered further in this assessment (refer Table 5.7).

Table 5.7 Areas of interest removed from further assessment

Description	Lot/Plan	Study area	Potential	Inspection priority
Single structure	202G1861	Y	L	5
Single structure	306AG4196	Y	L	5
Single structure	50RP889026	Y	L	5
Single structure	5SP194139, 4SP194139	Y	L	5
Homestead	44RP216739	Y	L	5
Homestead	45AG937	Y	L	5

Map by: MEFIDTH/KG Z:\GIS\GIS_3200_02\HTask\320-EAP-20190925\559_Cultural_Heritage\320-EAP-20190925\559_Fig 5.2_Non_CH_AOI_FFIV_A3L_v4.mxd Date: 12/03/2021 10:14



Legend

- Heritage AOI
- Localities
- + Existing rail
- Watercourses
- Major roads
- Minor roads
- 5 Chainage (km)
- B2G project alignment
- G2H project alignment
- Tunnel
- EIS disturbance footprint
- Cultural heritage study area
- EIS investigation corridor



A3 scale: 1:10,000
 0 0.07 0.14 0.21 0.28 0.35km



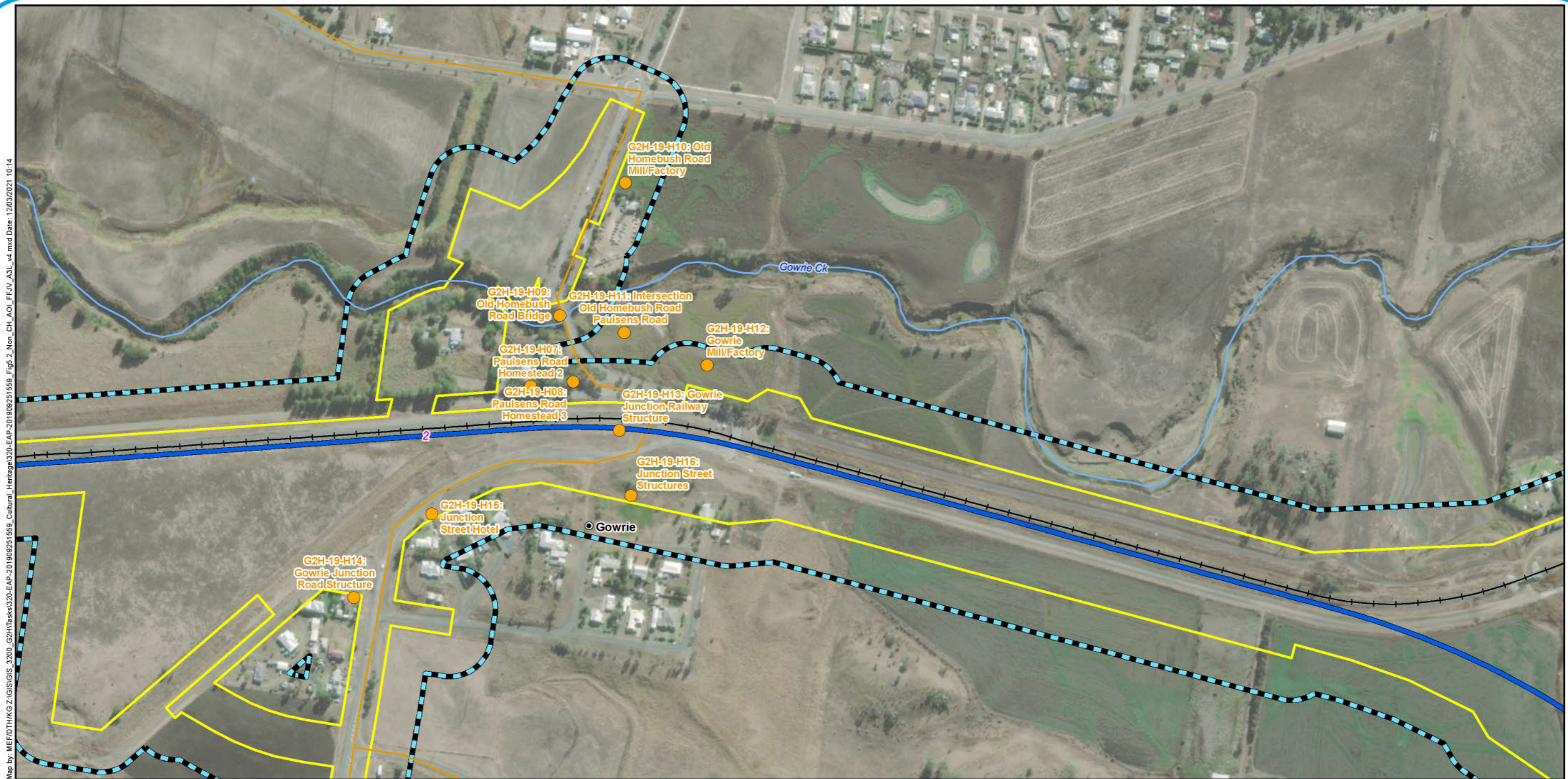
Future Freight
 Integrating Community, Environment and Engineering

Issue date: 12/03/2021 Version: 4
 Coordinate System: GDA 1994 MGA Zone 56













Gowrie to Helidon

Figure 5.2a:

Non-Indigenous cultural heritage areas of interest

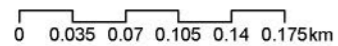


Legend

- | | | | |
|---|---------------|---|------------------------------|
|  | Heritage AOI |  | Chainage (km) |
|  | Localities |  | G2H project alignment |
|  | Existing rail |  | Tunnel |
|  | Watercourses |  | EIS disturbance footprint |
|  | Major roads |  | Cultural heritage study area |
|  | Minor roads |  | EIS investigation corridor |



A3 scale: 1:5,000



Issue date: 12/03/2021 Version: 4
Coordinate System: GDA 1994 MGA Zone 56

Gowrie to Helidon

Figure 5.2b:

Non-Indigenous cultural heritage areas of interest

Map by: MEFIDTH/KG Z:\GIS\GIS_3200_02HTask\320-EAP-201909251559_Cultural_Heritage\320-EAP-201909251559_Fig 5.2_Non_CH_AOI_FFIV_A3L_v4.mxd Date: 12/03/2021 10:14

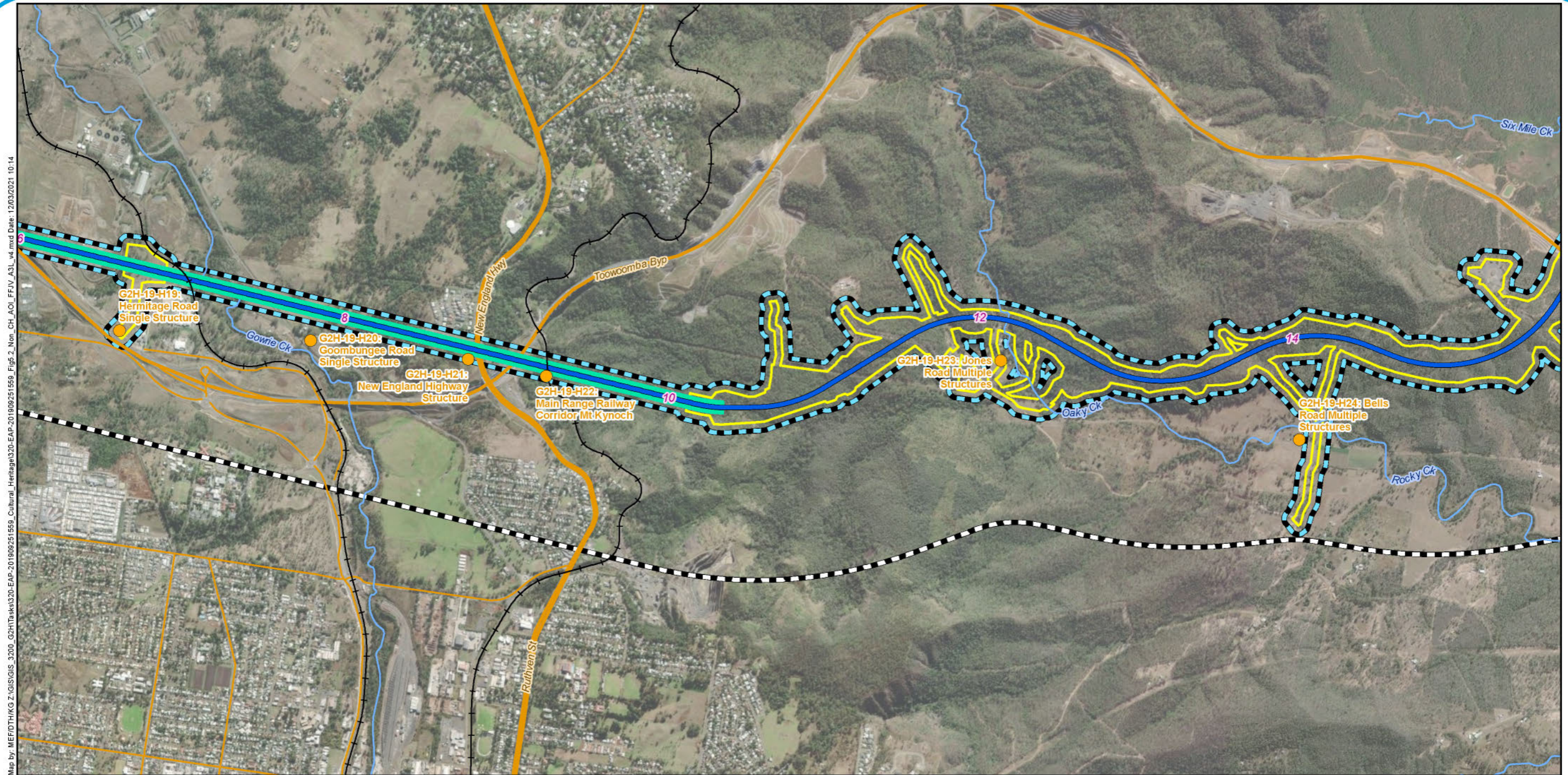


Legend

- Heritage AOI
- Localities
- + Existing rail
- Watercourses
- Major roads
- Minor roads
- 5 Chainage (km)
- G2H project alignment
- Tunnel
- EIS disturbance footprint
- - - Cultural heritage study area
- - - EIS investigation corridor

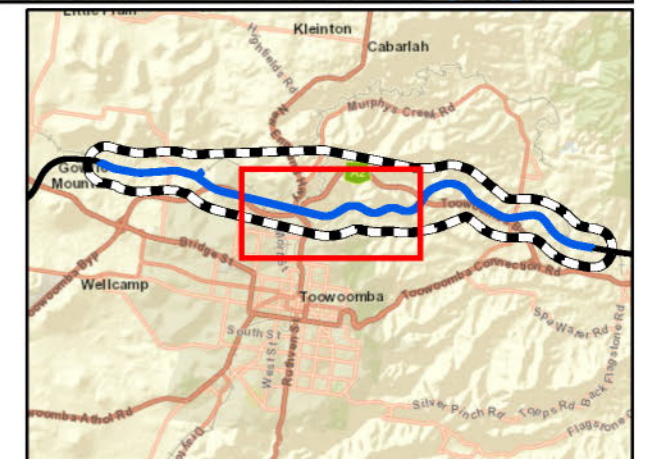


A3 scale: 1:12,500
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Legend

- Heritage AOI
- Localities
- + Existing rail
- Watercourses
- Major roads
- Minor roads
- 5 Chainage (km)
- G2H project alignment
- Tunnel
- EIS disturbance footprint
- - - Cultural heritage study area
- - - EIS investigation corridor



A3 scale: 1:25,000
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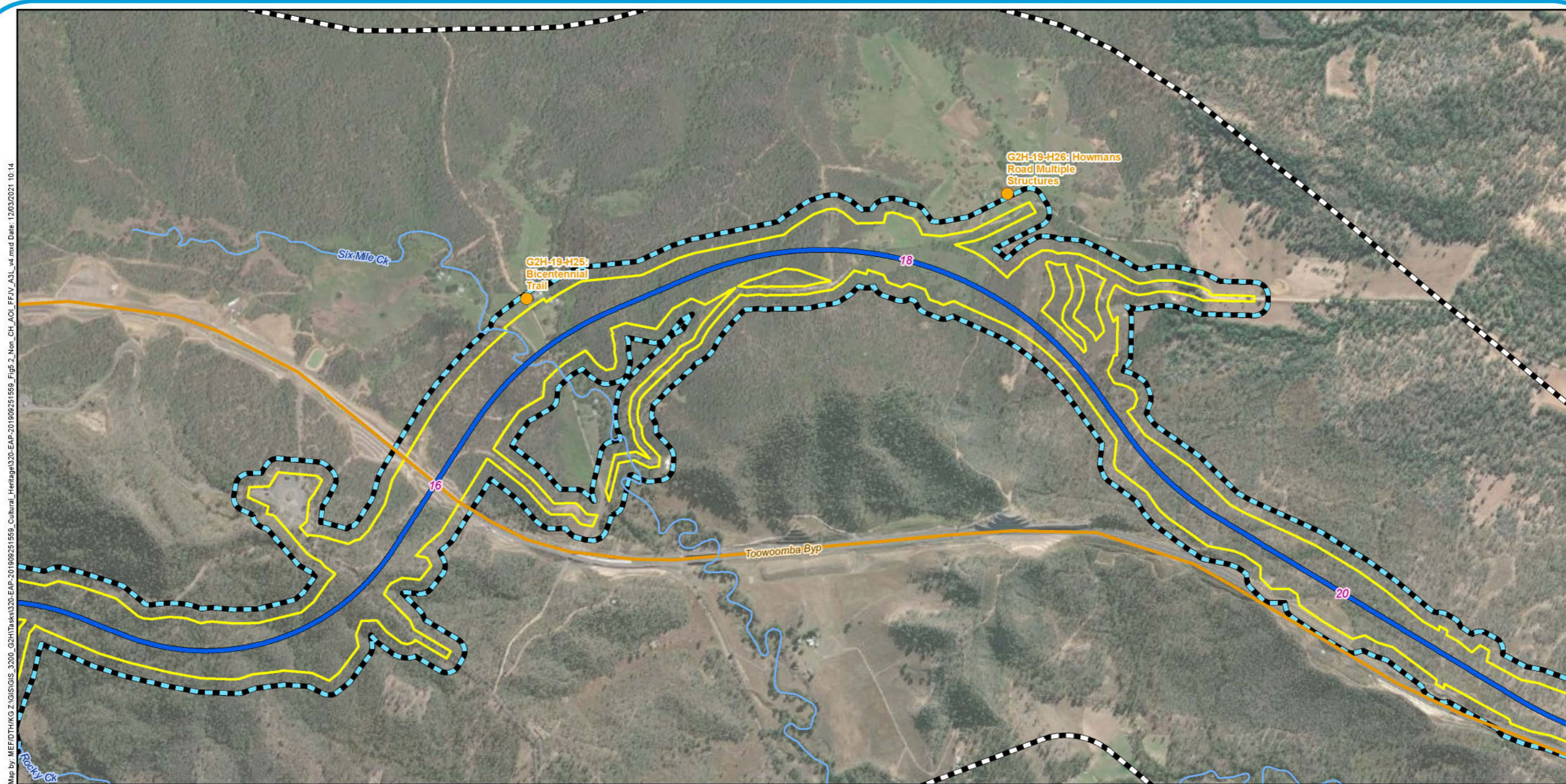
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 Coordinate System: GDA 1994 MGA Zone 56

Gowrie to Helidon

Figure 5.2d:

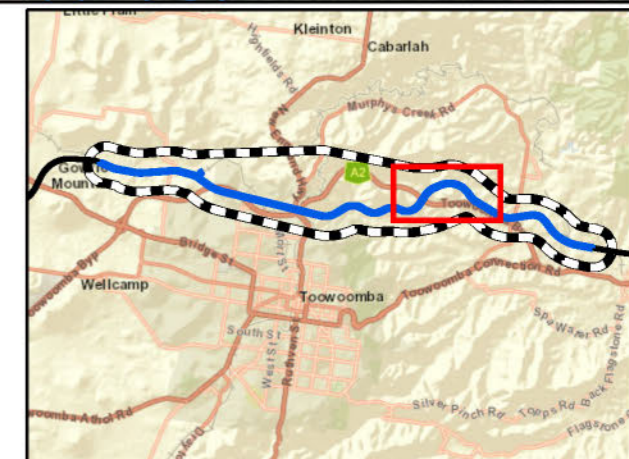
Non-Indigenous cultural heritage areas of interest

Map by: MEFIDTH/KKG Z:\GIS\GIS_3200_G2H\Task320-EAP-201909251559_Cultural_Heritage320-EAP-201909251559_Fig 5.2_Non_CH_AOI_FFIV_A3L_v4.mxd Date: 12/03/2021 10:14



Legend

- Heritage AOI
- Localities
- Watercourses
- Major roads
- Minor roads
- 5 Chainage (km)
- G2H project alignment
- Tunnel
- EIS disturbance footprint
- Cultural heritage study area
- EIS investigation corridor



A3 scale: 1:15,000
 0 0.1 0.2 0.3 0.4 0.5km



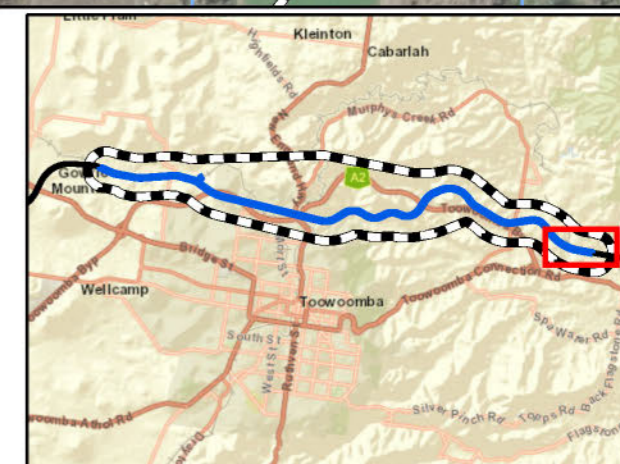
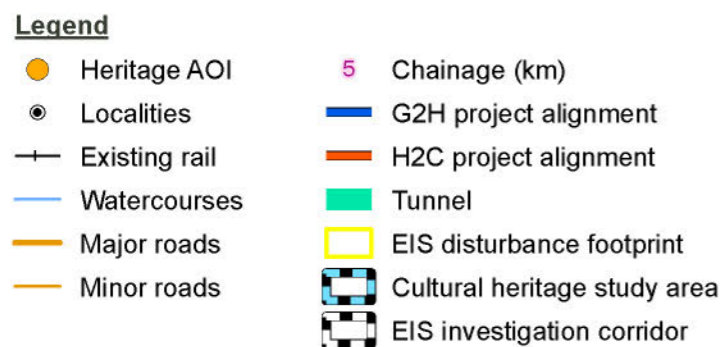
Future Freight
 Integrating Community, Environment and Engineering

Issue date: 12/03/2021 Version: 4
 Coordinate System: GDA 1994 MGA Zone 56

Gowrie to Helidon

Figure 5.2e:

Non-Indigenous cultural heritage areas of interest



6 Site inspections

Site inspections were undertaken over two days between 19 August and 20 August 2019 by heritage specialist practitioners.

6.1 Inspection strategy

Following the process outlined in Section 3.2 and 5.4, all 30 AOI including the nine 'Priority 1' AOI were selected for inspection. However, landholder access was granted for only four AOIs (refer Table 6.1).

Pedestrian inspections were conducted for each of the AOI for which access was granted, and any standing structures, significant views, garden plantings, surface archaeological deposits, or areas of subsurface archaeological potential were identified and recorded using GPS, fieldnotes and photography on an iPad operating the Fulcrum platform.

Those AOIs for which access was not granted were viewed from adjacent public areas, and photographs taken if possible (refer Table 6.1).

For the areas in which cultural heritage material was identified during the visual inspection, the proximity of the AOI to the disturbance footprint has been indicated (refer Table 6.1).

The location of each of these AOI is shown in the mapping in Figure 5.2.

Table 6.1 Gowrie to Helidon inspection areas of interest

Inspection ID	Description	Lot/Plan	Access	Inspected
G2H-19-H01	Bridge over Gowrie Creek associated with the railway corridor	Adjacent to Draper Road, 71SP122172 and 10D3691	No	Yes
G2H-19-H02	Single structure	33SP312428	No	Yes
G2H-19-H03	Railway station	10D3691	No	Yes
G2H-19-H04	Hall	2RP838203	No	Yes
G2H-19-H05	Single structure	33SP312428	No	Yes
G2H-19-H06	Homestead	458A34873	No	Yes
G2H-19-H07	Homestead	45AG937	No	Yes
G2H-19-H08	Homestead	44RP216739	No	Yes
G2H-19-H09	Road bridge over Gowrie Creek	Adjacent to 40AG1255 and directly downstream of Old Homebush Road	No	Yes
G2H-19-H10	Mill/Factory	14RP889026	No	Yes
G2H-19-H11	Road intersection	50RP889026	No	Yes
G2H-19-H12	Mill/Factory	14RP889026	No	Yes
G2H-19-H13	Gowrie Junction Rail Station	2RP34879	No	Yes
G2H-19-H14	Single structure	307AG4196	No	Yes
G2H-19-H15	Single structure	201CP893797	No	Yes
G2H-19-H16	Two single structures	1RP205894, 42AG1509	No	Yes
G2H-19-H17	Single structure	1RP192838	No	Yes
G2H-19-H18	Single structure	5SP198121	No	Yes
G2H-19-H19	Single structure	11SP189518	No	Yes
G2H-19-H20	Single structure	2RP806906	No	No
G2H-19-H21	Single structure	4SP194139	No	No
G2H-19-H22	Rail bridge (Main Line at Mount Kynoch)	591SP117148	No	No

Inspection ID	Description	Lot/Plan	Access	Inspected
G2H-19-H23	Multiple structures	354CH312304	Yes	Yes
G2H-19-H24	House and windmill	320CH312556	Yes	Yes
G2H-19-H25	Bicentennial National Trail (locally listed)	Gittins Road, adjacent to 259CC317 and 17SP186715	Yes	Yes
G2H-19-H26	Multiple structures	11RP839411	Yes	Yes
G2H-19-H27	Single structures	13CH31259	No	Yes
G2H-19-H28	Single structure	87CA31624	No	No
G2H-19-H29	Railway Siding (Russell's Siding), Main Like at Helidon	452SP117138	No	No
G2H-19-H30	Railway culverts (Main Line at Helidon)	452SP117138	No	Yes

In addition to the AOIs, relevant State and locally listed heritage places located within the Project disturbance footprint were subject to visual inspection where practical, refer Table 6.2. The Bicentennial National Trail was the only listed heritage place subject to inspection, refer Table 6.27.

Table 6.2 State and locally listed heritage places targeted for visual inspection

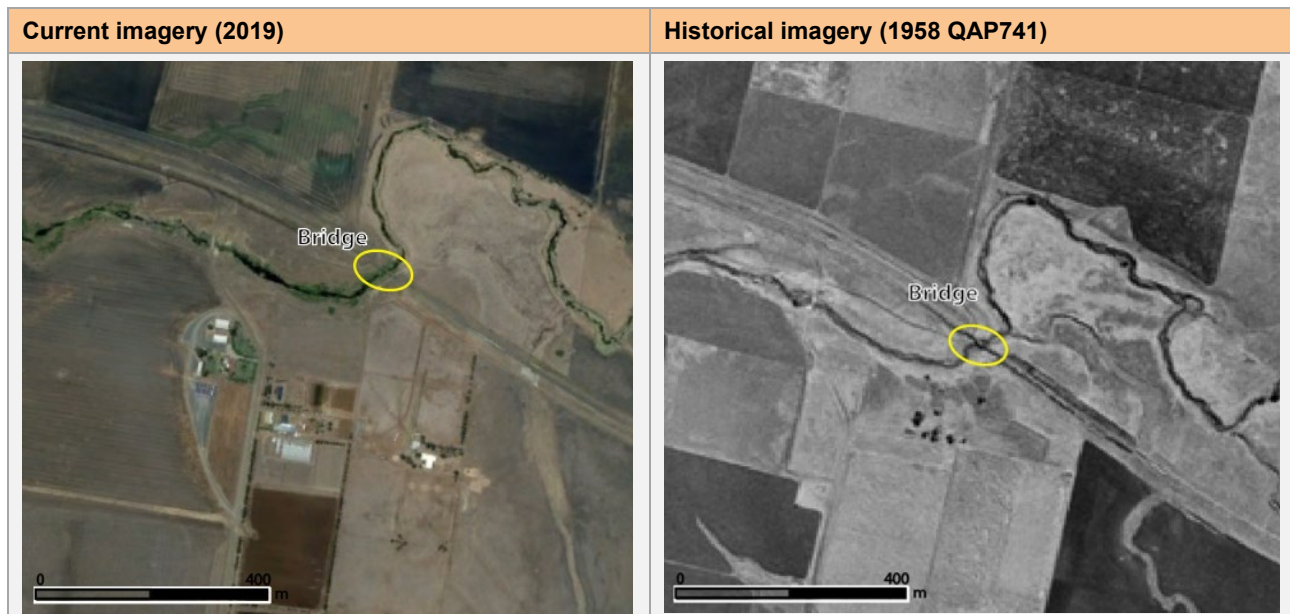
Inspection ID	Description	Significance	Lot/Plan	Access	Inspected
Main Range Railway (601480)	The Toowoomba Range tunnel traverses beneath the Main Range Railway (i.e. West Moreton System rail corridor) within the vicinity of Mount Kynoch/Ballard	State	309SP289045 591SP117148	N	N
Bicentennial National Trail	Heritage place located within disturbance footprint	Local	Gittins Road, adjacent to 259CC317 and 17SP186715	Y	Y

6.2 Inspection results

For each of the 30 AOIs, the outcome of the site inspections and the historical mapping review is described below. Noting that 11 of the AOIs are located within the Project disturbance footprint, with a further two AOIs above the Toowoomba Range Tunnel alignment.

Table 6.3 Inspection results – G2H-19-H01 – Draper Road Bridge, adjacent to Draper Road, Lot 71 SP122172 and Lot 10 D3691

Description
Location of a bridge identified on a 1943 topographic map (Australian Section Imperial General Staff 1943) and is identifiable in a 1958 aerial image.
This site is located at the existing Gowrie Creek railway crossing, adjacent to Draper Road and Tilgonda Kingsthorpe Road, Gowrie Junction. This site is located at the Gowrie Creek railway bridge crossing, adjacent to Draper Road, Lot 71 SP122172 and Lot 10 D3691. This site was inspected from the eastern embankment of Gowrie Creek. There is no evidence of the original bridge, however timber posts associated with the original crossing were identified.
Proximity to Project: Within the Project disturbance footprint (upgrade an existing access road under the bridge)



Key elements		
Timber posts	Latitude (GDA94)	Longitude (GDA94)
<p>The site currently comprises a contemporary concrete pylon bridge across Gowrie Creek.</p> <p>The only extant structures within the vicinity of the bridge are five large timber posts partially submerged and adjoining a small land platform extending from the western embankment (Photograph 6.1). This may be evidence of a road crossing that existed alongside the railway bridge to allow for ease of access across Gowrie Creek. Refer Photograph 4.2 for a historic photograph of a steam train on the historic Gowrie Creek bridge with possible vehicle crossing platform located upstream from the bridge.</p> <p>No evidence of the historical bridge structure was identified during the survey.</p>	27° 29' 32.6096" S	151° 50' 49.7137" E
Photograph 6.1 G2H-19-H01 Gowrie Creek railway bridge with timber posts partially submerged		

Table 6.4 Inspection results – G2H-19-H02 – Draper Road Structure, Lot 33 SP312428


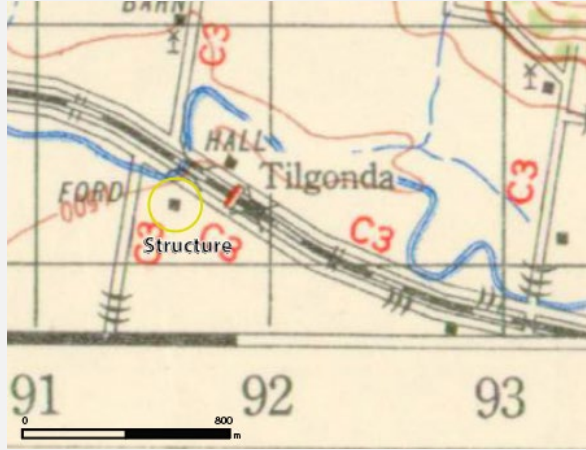
Description	
<p>Location of a site identified as a single structure on a 1943 topographic map (Australian Section Imperial General Staff 1943), though it is not identifiable in the 1958 aerial imagery in Table 6.3.</p> <p>The site is situated to the south of Draper Road, Gowrie Junction. This site is located on a flat approximately 100 m south of Gowrie Creek, on Lot 33 SP312428. This property was visually inspected from a publicly accessible location. The property has been cleared and ground surface visibility was moderate to low. No evidence of historical structures or other heritage items were identified during the survey. This is possibly a factor of the flood-prone nature of the land, which has been subject to regular inundation and subsequent recovery efforts.</p>	
Proximity to Project: Approximately 50 m from the Project disturbance footprint, but no evidence exists	
Current imagery (2019)	Topographic map (1943 799084)
	

Table 6.5 Inspection results – G2H-19-H03 – Draper Road Railway Station, Lot 10 D3691



Description	
<p>Location of site referred to as 'Tilgonda' on a 1943 topographic map (Australian Section Imperial General Staff 1943) and identifiable in a 1958 aerial image.</p> <p>The site is located on a small rise directly north of the railway tracks and north of Draper Road. This site is located on Lot 10 D3691. The northern side of the site was not inspected due to access restrictions. This site was inspected from a publicly accessible area on the southern side of the railway tracks. Local historic reports support the topographic map and aerial imagery, stating there was a construction camp established at Tilgonda where the rail line crosses Gowrie Creek. It has been noted that Tilgonda was an official siding where passengers could board or alight during the period of 1920-1949 (Beal 2012:12). The only indication of a former structure that has since been destroyed were the small collections of sandstone and ballast boulders noted along the southern side of the rail reserve.</p> <p>No evidence of historical structures or other heritage items were identified during the survey.</p>	
Proximity to Project: Within the Project disturbance footprint	
Current imagery (2019)	Historical imagery (1958 QAP741)
	

Table 6.6 Inspection results – G2H-19-H04 – Draper Road Hall, Lot 2 RP838203


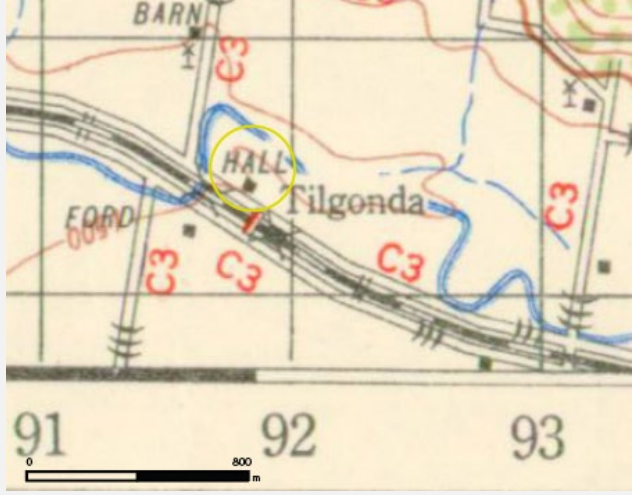

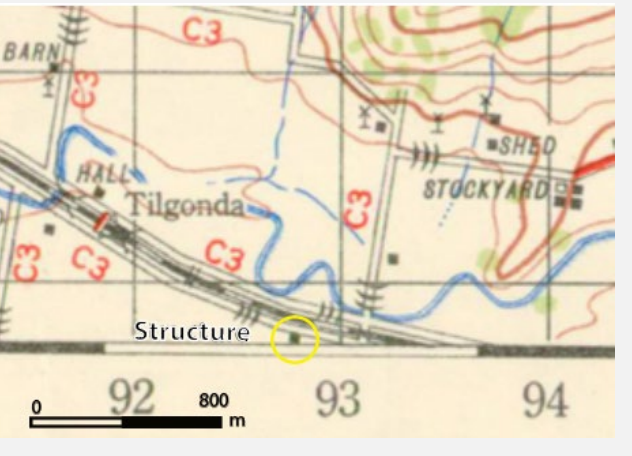

Description	
<p>Location of site referred to as 'Hall' on a 1943 topographic map (Australian Section Imperial General Staff 1943), though it is not identifiable in the 1958 aerial imagery in Table 6.5.</p> <p>The site is located in the undulating paddock north of the railway tracks. This site is located on Lot 2 RP838203. This property was not inspected due to access restrictions. The property was assessed from a publicly accessible place. There were no extant structures visible within the property.</p>	
Proximity to Project: Approximately 50 m north of the Project disturbance footprint	
Current imagery (2019)	Topographic map (1943 799084)
	

Table 6.7 Inspection results – G2H-19-H05 – Draper Road single structure, Lot 33 SP312428

Description	
<p>Location of a site referred to as a single structure on a 1943 topographic map (Australian Section Imperial General Staff 1943).</p> <p>This site is located on a gently undulating lot south of the railway tracks. This site is located on Lot 33 SP312428. The property was visually inspected and historic archaeological elements were identified. There was no evidence of historic structures identified during the survey. The paddock has recently been ploughed and the ground surface visibility was excellent. The key elements of this site were the isolated glass medicine bottle and small glass bottle fragments. A small pile of fencing debris south of the glass bottle was inspected but did not yield any evidence of the historic structures within the property. This site contains moderate to low archaeological potential and further research may identify the extent and former uses of the site.</p>	
Proximity to Project: Approximately 200 m south of the Project disturbance footprint	
Current imagery (2017)	Topographic map (1943 799084)
	

Key elements		
Isolated bottle	Latitude (GDA94)	Longitude (GDA94)
<p>One intact small brown glass medicine bottle was identified on the ground surface (Photograph 6.2). The bottle is embossed with 'Property of JP Cusak SYDNEY - POISON - DEDANT'. The brown glass, in addition to the embossed lettering, suggests this was a medicine bottle. The external screw finish indicates the bottle was manufactured after the 1920s (ASHA 2019).</p> <p>This isolated find was located approximately 60 m south of the railway tracks (Photograph 6.3). The bottle measured 60 mm x 20 mm. It is possible that this bottle indicates the approximate location of the former structure within the property.</p>	27° 29' 54.8539" S	151° 51' 31.1358" E
<div style="display: flex; justify-content: space-around;">   </div>		
Photograph 6.2 G2H-19-H05 historic glass bottle artefact	Photograph 6.3 G2H-19-H05 location of the glass bottle, looking west	
Glass fragments	Latitude (GDA94)	Longitude (GDA94)
<p>Two small glass fragments were identified on the ground surface. The smaller purple glass body fragment is dated to 1900 -1914 (ASHA 2019) due to the deep purple colour of the fragment. The colourless glass base fragment is embossed with 'Y CO BRISBANE'. The characteristics of this fragment suggest it was used for the storage of medicine.</p>	27° 29' 54.8539" S	151° 51' 31.1358" E



Photograph 6.4 G2H-19-H05 historic glass fragments



Photograph 6.5 G2H-19-H05 historic glass fragment base

Table 6.8 Inspection results – G2H-10-H06 – Paulsens Road Homestead 1, Lot 458 A34873

Description	
<p>This site is located on a rural property, north of Paulsens Road, Gowrie Junction. This site is located on Lot 458 A34873. The key elements of this site comprise a house and large shed located at the rear of the property. The house is located approximately 60 m north of the railway tracks. This property was visually inspected from a publicly accessible location. In light of a visual inspection of the property, a review of the available historic aerial imagery has indicated that the house and shed were constructed during the 1980s and these structures do not have heritage value. A review of historic and aerial imagery indicates that the first occurrence of the house and shed is in 1984 (QAP4354), see below. It has also been determined that the house has been constructed in a sympathetic design to reflect the traditional timber cottage exterior that is commonly associated with historic homesteads throughout rural Queensland.</p>	
Proximity to Project: Approximately 50 m north of the Project disturbance footprint	
Current imagery (2017)	Historical imagery (1984 QAP4354)

Table 6.9 Inspection results – G2H-19-H07 – Paulsens Road Homestead 2, Lot 45 AG937



Description	
<p>This site is located on a small parcel of land located north of Paulsens Road, Gowrie Junction. This site is located on Lot 45 AG937. This site is approximately 35 m north of the railway tracks and 50 m south of Gowrie Creek. This site is situated approximately 40 m west of Paulsens Homestead 3 (G2H-19-H08). The key element of this site is the house. In light of a visual inspection of the property, a review of the available historic aerial imagery has indicated that the house was constructed post-1958 and is not considered to have heritage values. The 1958 historic aerial image has been provided to confirm the absence of the property in a historic context, see below (QAP736). The first occurrence of the house is a 1984 aerial (QAP44354). It has been determined that the house has been constructed in a sympathetic design to reflect the traditional timber cottage exterior that is commonly associated with historic homesteads throughout rural Queensland.</p>	
Proximity to Project: Within 50 m east of the Project disturbance footprint (Gowrie Junction Road bridge)	
Current imagery (2017)	Historical imagery (1958 QAP736)
	

Table 6.10 Inspection results – G2H-19-H08 – Paulsens Road Homestead 3, Lot 44 RP216739

Description
<p>This site is located on a small parcel of land located north of Paulsens Road, Gowrie Junction. This site is located on Lot 44 RP216739. This site is approximately 35 m north of the railway tracks and 60 m south of Gowrie Creek. This site is situated approximately 40 m east of Paulsens Homestead 2 (G2H-19-H07). The key element of this site is the house. In light of a visual inspection of the property, a review of the available historic aerial imagery has indicated that the house was constructed post-2000 and does not have heritage values. The 1958 historic aerial image has been provided to confirm the absence of the property in a historic context, see below (QAP736). The first occurrence of the house is a 2005 aerial (QA6173). It has been determined that the house has been constructed in a sympathetic design to reflect the traditional timber cottage exterior that is commonly associated with historic homesteads throughout rural Queensland.</p>
Proximity to Project: Within 50 m north of the Project disturbance footprint

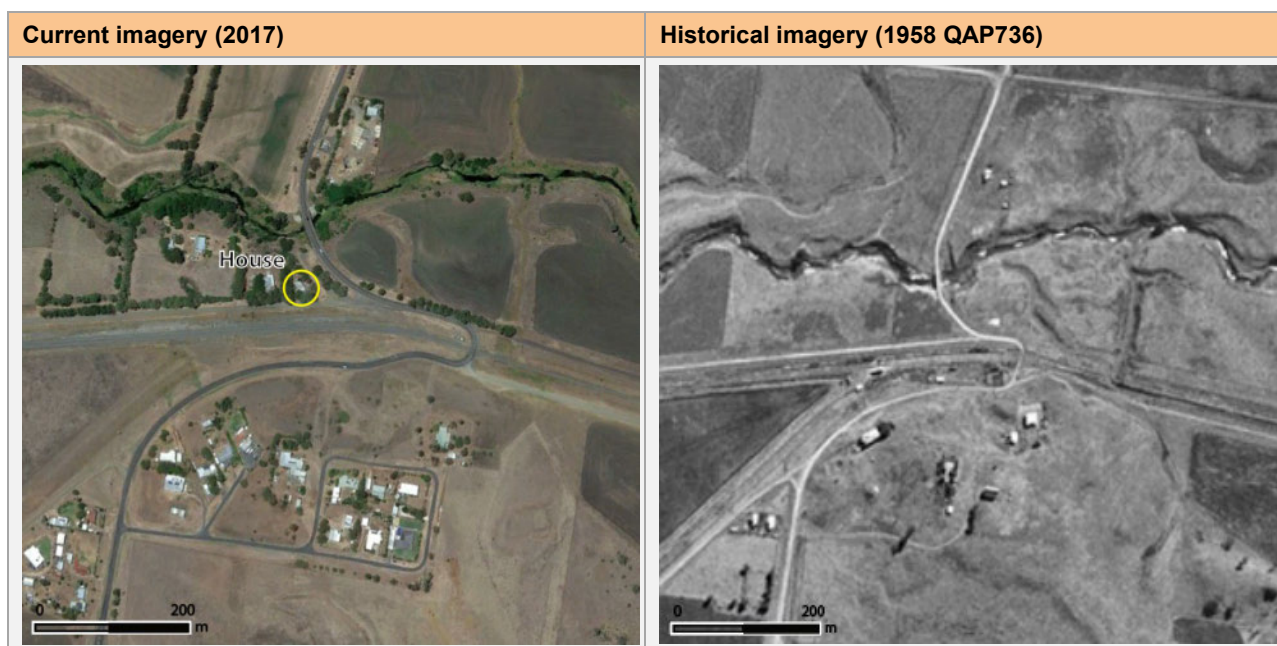


Table 6.11 **Inspection results – G2H-19-H09 – Old Homebush Road Bridge, Old Homebush Road, over Gowrie Creek adjacent to Lot 40 AG1255**

Description
<p>Location of site referred to as bridge on a 1943 topographic map (Australian Section Imperial General Staff 1944) and identifiable in a 1958 historical aerial image.</p> <p>The site is located on Gowrie Creek, adjacent to Lot 40 AG1255, and directly downstream of the existing Old Homebush Road bridge over Gowrie Creek at Gowrie Junction. This site was inspected from the public reserve on the western side of Old Homebush Road. No evidence of historical structures or other heritage items were identified during the survey. The location of the vehicle access track running directly west of Old Homebush Road suggests the original route of the road and the location of the original bridge.</p> <p>Local historic heritage reports have stated that 'on 28 October 1876 an inspector surveying for a school within the region noted the presence of a new bridge over the creek near the railway station' (Beal 2012:38). The report goes further to suggest that 'the need to cross the creek to get from one side to the other was a continuing problem. Initially, horsemen, drays, carts and pedestrians crossed through the water. However, the banks near the station have always been quite steep and a bridge was required. A primitive bridge was built across the creek quite early, no date provided, but heavy loads and floods took their toll and it became unsafe. Later in the nineteenth century residents complained about the state of the bridge and in 1900 it has been alluded to the fact another bridge was constructed' (Beal 2012:40).</p> <p>No evidence of the original bridge was identified during the visual inspection.</p>
<p>Proximity to Project: Approximately 100 m upstream of the Project disturbance footprint (Gowrie Junction Road bridge)</p>

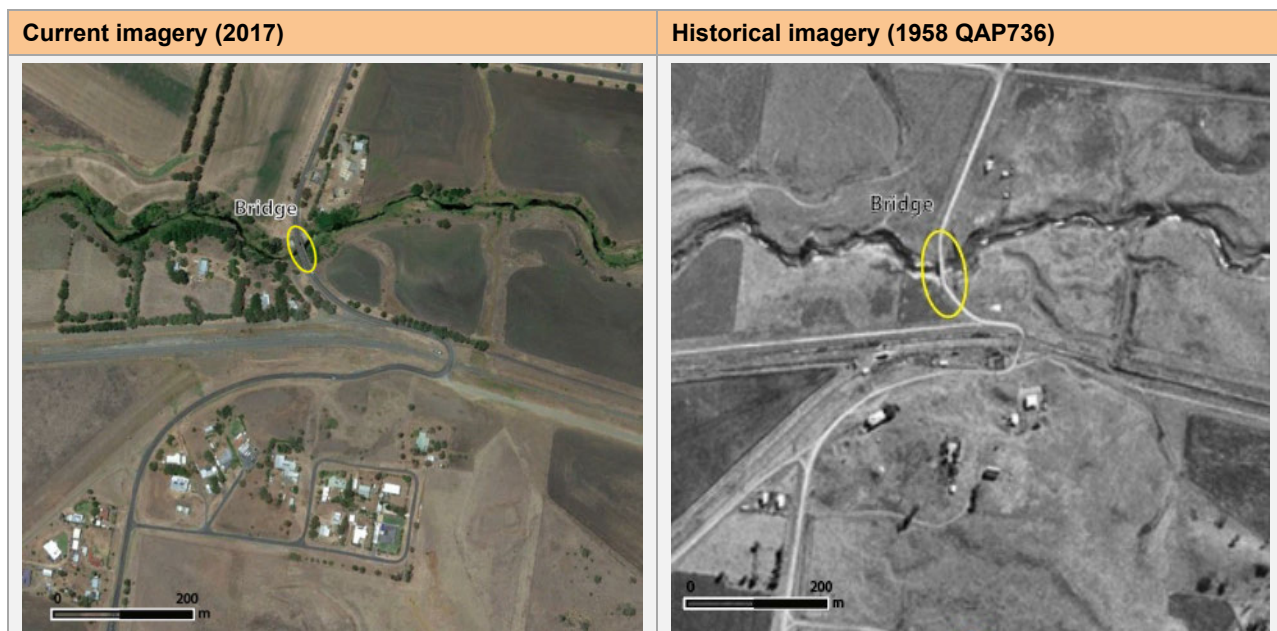


Table 6.12 Inspection results – G2H-19-H10 – Old Homebush Road Mill/Factory, Lot 14 RP889026

Description	
<p>Location of site referred to as 'Mill/Factory' on a 1943 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1958 historical aerial image.</p> <p>The site is located on Lot 14 RP889026 on the low-lying flats approximately 80 m north of Gowrie Creek and adjacent to Old Homebush Road, Gowrie Junction. No evidence of historical structures or other heritage items were identified during the survey.</p> <p>Communication with a local landholder stated that a dairy was located near the current bridge at Gowrie Junction. Local historic heritage reports support these comments along with the historic imagery, indicating that 'the land was portion 32, Parish of Toowoomba, which lies to the north east of the bridge and is the current location of the landscape supplies store. The new Gowrie dairy was the Gowrie Dairy Supply Ltd' (Beal 2012:48).</p>	
<p>Proximity to Project: Adjacent to the east of the proposed Gowrie Junction Road realignment disturbance footprint</p>	
Current imagery (2017)	Historical imagery (1958 QAP736)

Table 6.13 Inspection results – G2H-19-H11 – Intersection Old Homebush Road and Paulsens Road, Lot 50 RP889026



Description	
<p>Location of site referred to as intersection on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1958 historical aerial image.</p> <p>The site is located on Lot 50 RP889026 on the low-lying flats approximately 60 m south of Gowrie Creek and located at the intersection adjacent to Old Homebush Road and Paulsens Road, Gowrie Junction. No evidence of historical structures or other heritage items were identified during the survey.</p> <p>Local historic reports indicate that portion 50 was the location of the Toowoomba-based Downs Co-operative Dairy Co. that was established in 1918 on the southern bank of the creek with the main road on its southern and western boundaries. Annually, the factory made about 60-70 tons of cheese with most of this cheese exported. The factory closed on 1 May 1933 and in 1934, Arthur Edward Hoopert bought the factory and continued to manufacture cheese before closure of the dairy for the last time in 1940. The buildings and equipment were eventually removed (Beal 2012:50). A visual inspection confirmed there is no evidence of the dairy or any associated historic items.</p>	
Proximity to Project: Approximately 50 m north of the Project disturbance footprint	
Current imagery (2017)	Historical imagery (1958 QAP736)
	

Table 6.14 Inspection results – G2H-19-H12 – Gowrie Mill/Factory, Lot 14 RP889026

Description
<p>Location of site referred to as 'Mill/Factory' on the 1943 topographic map (Australian Section Imperial General Staff 1944).</p> <p>The site is located on Lot 14 RP889026 on the low-lying flats approximately 120 m south of Gowrie Creek and located at the intersection adjacent to Paulsens Road, Gowrie Junction. No evidence of historical structures or other heritage items were identified during the survey.</p> <p>Communication with a local landholder confirmed that this was the former site of a dairy. Local historic reports indicate that this was possibly the location of the Gowrie Junction Dairy & Ice Factory that was established in 1895-6. The dairy secured an excellent site on the eastern bank of Gowrie Creek and close to the railway station which was considered a vital position in relation to all the farms within the district. The main building consisted of a manufacturing room, cool room and refrigeration room. The facilities included complete plant for the manufacture of cheese and butter and equipment to make ice. All machinery onsite was driven by steam power with the engine house located on the northern side of the dairy. On either side of the cooling and refrigeration rooms were erected very wide verandas. An office was situated at the end of the southern verandah. The floor of the dairy was concrete throughout. The cheese and butter produce were exported as well as sold locally, the ice was sold in the district and carted to Toowoomba. In early 1898 the factory was destroyed by fire (Beal 2012:46-47). A visual inspection confirmed there is no visual evidence of the dairy or any associated historic items.</p>
Proximity to Project: Approximately 50 m north of the Project disturbance footprint.


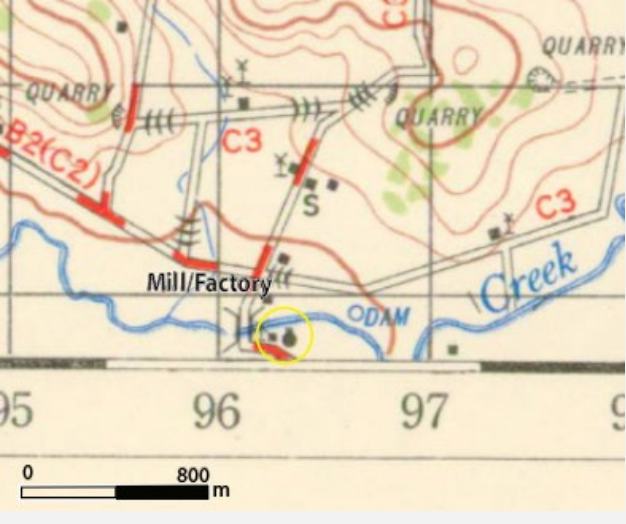

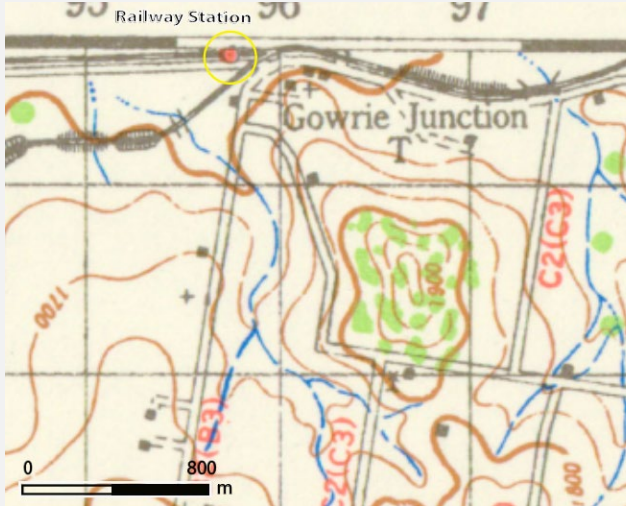
Current imagery (2017)	Topographic map (1943 799084)
	

Table 6.15 Inspection results – G2H-19-H13 – Gowrie Junction Railway Station, Lot 2 RP34879

Description	
<p>Location of site referred to as 'Gowrie Junction Railway Station' on 1943 topographic map (Australian Section Imperial General Staff 1943).</p> <p>This site is located approximately 15 m south of the existing Western Line railway tracks. This site is located on Lot 2 RP34879, Gowrie Junction. The key element of this site is the concrete structure identified adjacent to the main railway. Inspection of this item was restricted due to railway access constraints and safety concerns, however, an assessment of the site took place from a publicly accessible area.</p>	
Proximity to Project: Within the Project disturbance footprint	
Current imagery (2017)	Topographic map (1943 799084)
	





Key elements		
Concrete structure	Latitude (GDA94)	Longitude (GDA94)
The remains of a concrete structure are located on the southern side of the railway tracks (Photograph 6.6). The visible extent of the concrete structure measured approximately 25 m x 1.5 m (Photograph 6.7). The area around the structure has been cleared. Metal railway pegs and small pieces of historic glass fragments were identified on the ground surface towards the western extent of the structure. It is possible that this concrete structure acted as an extension of the original railway platform that has been identified in historic aerial imagery.	27° 29' 54.5829" S	151° 53' 22.2163" E
		
Photograph 6.6 G2H-19-H13 concrete structure, view west	Photograph 6.7 G2H-19-H13 view of concrete structure across the railway tracks, view south	

Table 6.16 Inspection results – G2H-19-H14 – Gowrie Junction Road structure, Lot 307 AG4196



Description
<p>Location of a site referred to as a single structure on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1958 historical aerial image.</p> <p>This site is located at the base of an undulating plain approximately 30 m west of Gowrie Junction Road and approximately 50 m east of Krienke Road, Gowrie Junction. The site is located on Lot 307 AG4196. The 1958 historic aerial image identifies two houses located on the lots. The lots were inspected from a publicly accessible area. The western-most structure identified in the aerial image has been demolished and a contemporary house is located further south on the lot. The key element of this site is a house.</p>
Proximity to Project: Approximately 50 m south-east of the Project disturbance footprint, adjacent proposed road realignment/bridge

Current imagery (2017)	Historical imagery (1958 QAP736)
	

Key elements

House	Latitude (GDA94)	Longitude (GDA94)
<p>The house comprises a single-storey timber-clad raised structure on timber posts with a hipped corrugated iron roof and skillion verandah extending from the northern aspect of the house (Photograph 6.8). The original timber window canopies are visible on the eastern and western aspects of the house. The understorey of the house appears to have been partially enclosed with timber panels. The house is well maintained however it has experienced several alterations to the original fabric of the building. The original verandah appears to have been enclosed and contemporary aluminium framed glass windows have been added.</p>	27° 30' 00.9570" S	151° 53' 10.5997" E
		
<p>Photograph 6.8 G2H-19-H14 house</p>		

Table 6.17 Inspection results – G2H-19-H15 – Junction Street Hotel, Lot 201 CP893797

Description		
<p>Location of a site referred to as a single structure on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1958 historical aerial image.</p> <p>This site is located at the base of a steep embankment. This site is situated on Lot 201 CP893797, Gowrie Junction. It is believed that the site would have originally been set back into the embankment and recent land modification works have altered the landform throughout this lot.</p> <p>The original element of the hotel could not be identified. Communication with a local landholder identified the property as the location of an original hotel that burnt down, and the land has since been significantly disturbed with land reformation works by the current landholder of the lot. Local historic heritage reports have confirmed these findings, stating that 'Rodger O'Mara purchased the first lot in the area in October 1875 for £12. Following this purchase Rodger applied for a publicans licence in May 1876 and opened a store in June 1876. He planned to call the hotel 'the Junction Hotel' however it has been recorded as the Grand Junction Hotel. In 1879, Tom Mahon opened his own hotel, the Railway Hotel, in the adjacent allotment, 2, to the east of the original hotel. Mahon's original intention to apply for a licence for the Railway Hotel details that the property was a seven-bedroom residence containing three sitting rooms' (Beal 2012:3). In the early 1890s, the Railway Hotel was demolished, and the two-storey Commonwealth Hotel was built on allotment 2 facing Gowrie Junction Road. The hotel comprised the lots 2-4 covering approximately 1½ acres with the hotel situated on lot 2 (Beal 2012:37). The Commonwealth Hotel was destroyed by fire in 1917.</p> <p>While there was no evidence of the original hotel, a local landholder noted scatters of historic glass and ceramic fragments in exposed areas of the driveway.</p>		
Proximity to Project: Within the Project disturbance footprint		
Current imagery (2017)	Historical imagery (1958 QAP736)	
		
Key elements		
Glass and ceramic fragments	Latitude (GDA94)	Longitude (GDA94)
A scatter of small historic glass and ceramic fragments has been noted in areas of exposure along the front of the property (Photograph 6.9). These small finds have been attributed to the hotel that would have originally been located less than 50 m north east of the surface scatter (Photograph 6.10).	27° 29' 57.7671" S	151° 53' 14.0210" E




Photograph 6.9 G2H-19-H15 scattered historic glass and ceramic fragments




Photograph 6.10 G2H-19-H15 location of original hotel and land reformation works

Table 6.18 Inspection results – G2H-19-H16 – Junction Street structures, Lot 42 AG1509 and Lot 1 RP205894

Description
<p>Location of a site referred to as two single structures on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1958 historical aerial image.</p> <p>The site is located on Lot 42 AG1509 and Lot 1 RP205894, Gowrie Junction. This property is located approximately 65 m south of the existing Western Line railway tracks. The extent of this site was visually inspected.</p> <p>Communication with a local landholder identified this property as the location of two former railway houses. In addition, historical maps and historic records have indicated this site as the location of two houses and a ballast quarry or tip. A local historic report has determined that the Post Office directory of 1900 lists Mahon and Rodger O'Mara as the operators of a stone-crushing quarry that was located in the easternmost reserve where blue metal or basalt rock was quarried. The quarry closed in 1900 (Beal 2012:50). In addition, the historic reports detail how Gowrie Junction featured numerous gazetted reserves including reserves for railway, for employee housing and for quarrying material for the line and it is suspected that these are in close vicinity of this site (Beal 2012:35).</p> <p>Ground surface visibility was limited due to tall grasses across the site. During the visual inspection it was noted that there were several areas across the site that have been subject to recent ground disturbance and the ground surface was visible. These areas of exposure were targeted and a thorough visual inspection was conducted to identify any archaeological evidence of the former structures. The key elements identified within this site was one sandstone post hole, an area featuring a large artefact scatter and deposit of historic material and a large deposit of roof tiles. No standing structures were identified. Areas in the north and south of the property yielded the most surface archaeological evidence.</p>
<p>Proximity to Project: Within the Project disturbance footprint</p>

Current imagery (2017)	Historical imagery (1958 QAP736)
	

Key elements

Post hole	Latitude (GDA94)	Longitude (GDA94)
A single sandstone and concrete posthole was identified (Photograph 6.11). The depth of the posthole was not determined. This feature has been attributed to the location of the original railway houses that were located within the vicinity of this block.	27° 29' 57.1215" S	151° 53' 22.7010" E
		
Photograph 6.11 G2H-19-H16 posthole		
Artefact scatter and deposit	Latitude (GDA94)	Longitude (GDA94)
A large quantity of historic artefacts were recorded scattered across the site in areas of recent ground disturbance and areas of exposure (Photograph 6.12). The true extent of the scattered artefacts could not be determined due to poor ground surface visibility attributed to the long grasses. The scatter across the site comprised broken Toowoomba Brickwork clay bricks (Photograph 6.13), miscellaneous historic items (Photograph 6.14), metal railway sleeper pegs, historic glass fragments (Photograph 6.15, Photograph 6.16), broken ceramics, a concrete and metal weight attributed to the original ballast quarry (Photograph 6.17), metal pipes, clay pipes, and frequent occurrences of ballast were identified in areas of moderate ground surface visibility.	27° 29' 57.834" S	151° 53' 22.366" E
	27° 29' 56.242" S	151° 53' 22.382" E

		
<p>Photograph 6.12 G2H-19-H16 artefact scatter in area of recent ground disturbance</p>	<p>Photograph 6.13 G2H-19-H16 clay bricks</p>	<p>Photograph 6.14 G2H-19-H16 miscellaneous metal item</p>
		
<p>Photograph 6.15 G2H-19-H16 glass bottle fragments</p>	<p>Photograph 6.16 G2H-19-H16 broken glass bottle or decorative vase</p>	<p>Photograph 6.17 G2H-19-H16 concrete weight</p>
<p>Roof tiles</p>		<p>Latitude (GDA94)</p>
<p>A large deposit of suspected clay roof tiles were noted on the ground surface. Fragmentary remains of the roof tiles are all that was visible on the ground surface. Due to limited ground surface visibility across the site, the true extent of the roof tile scatter and deposit could not be determined. These artefacts are shown in Photograph 6.18 and Photograph 6.19.</p>		<p>Longitude (GDA94)</p>
		<p>27° 29' 57.447" S</p>
		<p>151° 53' 22.771" E</p>



Photograph 6.18G2H-19-H16 suspected clay roof tile scatter



Photograph 6.19G2H-19-H16 clay roof tile fragment

Table 6.19 Inspection results – G2H-19-H17 – Morris Road Structure, Lot 1 RP192838

Description	
<p>Location of a site referred to as a single structure on a 1943 topographic map (Australian Section Imperial General Staff 1944).</p> <p>The site is located on Lot 1 RP192838, Gowrie Junction. This site was inspected from a publicly accessible area due to access constraints. There was no evidence of any extant structure present within the property. A contemporary red brick house and shed are currently situated on the property.</p>	
Proximity to Project: Within the Project disturbance footprint	
Current imagery (2019)	Topographic map (1943 799084)

Table 6.20 Inspection results – G2H-19-H18 – Boundary Road Structures, Lot 5 SP198121





Description	
<p>Location of a site referred to as a single structure on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1955 historical aerial image.</p> <p>The site is located on Lot 5 SP198121, Gowrie Junction. This site was inspected from a publicly accessible area due to access constraints with the Toowoomba Bypass. There is no evidence of structures present within the property which may be attributed to significant ground disturbance throughout the area with the construction of the bypass in this section of Gowrie Junction.</p>	
<p>Proximity to Project: Approximately 60 m south of the Project disturbance footprint and above the Toowoomba Range tunnel.</p>	
Current imagery (2019)	Historical imagery (1955 QAP483)
	

Table 6.21 Inspection results – G2H-19-H19 – Hermitage Road Single Structure, Lot 11 SP189518

Description	
<p>Location of a site referred to as a single structure on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1955 historical aerial image.</p> <p>The site is located on Lot 11 SP189518, Cranley. This property is located approximately 150 m north east of the Toowoomba Bypass. The site was inspected from a publicly accessible area due to access constraints.</p> <p>The site comprises a largely cleared paddock with few extant structures and agricultural equipment. A large broken metal windmill and metal water tank on timber stumps are present. A small timber structure is present. This appears to have been used to house equipment. Other miscellaneous agricultural items are piled around the property. The timber structure is in a considerable state of disrepair. There are a series of timber stumps present to the south of the hut and windmill. These may signify an old fence line present within the property.</p>	
<p>Proximity to Project: Within the Project disturbance footprint (for the intermediate ventilation shaft and associated infrastructure)</p>	
Current imagery (2019)	Historical imagery (1955 QAP483)
	


Key elements		
Timber structure	Latitude (GDA94)	Longitude (GDA94)
The small timber structure is the prominent feature within this property (Photograph 6.20). This structure comprises a simple milled timber shed approximately 15 m x 4 m with a large opening in the south eastern profile of the structure. This structure is in a considerable state of disrepair with large portions of timber missing from the frame and large masses of vines spread across the entire roof of the structure.	27° 30' 57.2239" S	151° 55' 49.7880" E
		
Photograph 6.20G2H-19-H19 timber shed and miscellaneous farm equipment, view north		

Table 6.22 Inspection results – G2H-19-H20 – Goombungee Road Single Structure, Lot 2 RP806906

Description
<p>Location of site referred to as a single structure on the 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1951 historical aerial image.</p> <p>The site is located on Lot 2 RP806906, adjacent to Goombungee Road at Cranley.</p> <p>This site was inspected from a publicly accessible area due to access constraints. Currently the property comprises a single storey timber house adjacent to Goombungee Road with a metal shed at the rear of the property. A review of the available historic aerial imagery has indicated that the original single structure identified as an AOI was not inspected as part of this assessment, refer image below (1951 QAP156). Note that a neighbouring property, the subject of this assessment, was visually inspected from a safe publicly accessible vantage point for context. A detailed visual inspection of the original AOI has not been undertaken and access to the property for a visual inspection has not been conducted due to access constraints and safety concerns regarding publicly accessible vantage points from the road corridor.</p>
Proximity to Project: Approximately 50 m from tunnel alignment above where the alignment will be within the underground tunnel

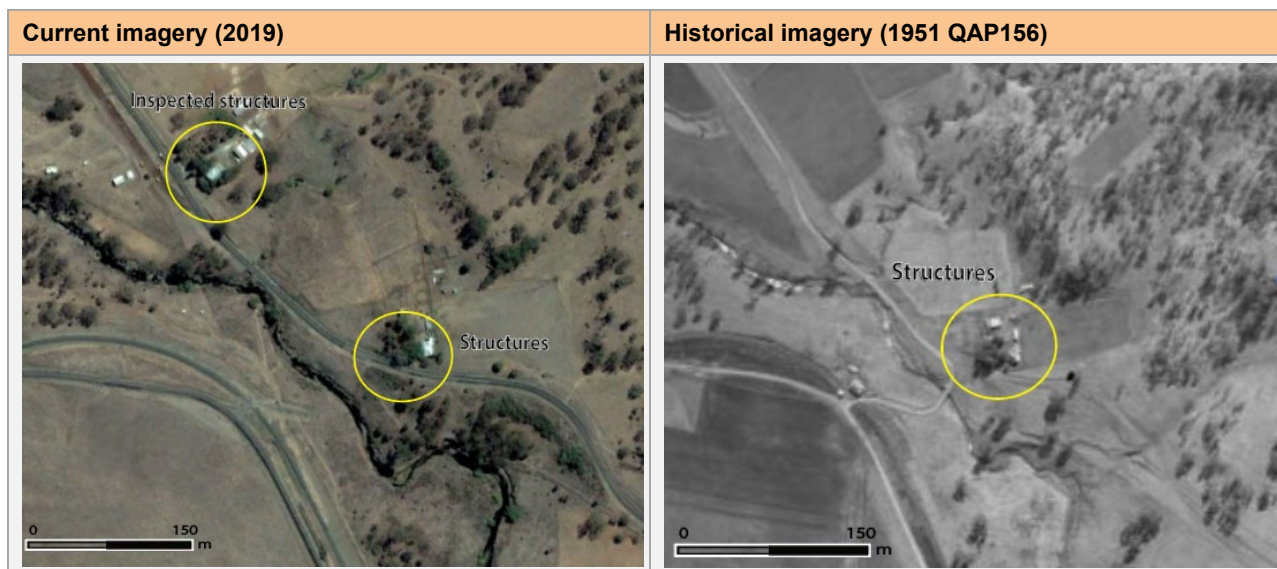


Table 6.23 Inspection results – G2H-19-H21 – New England Highway Structure, Lot 4 SP194139

Description	
<p>Location of a site referred to as a single structure on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1951 historical aerial image.</p> <p>The site is located on Lot 4 SP194139, Mount Kynoch. This site was not inspected as it was deemed unsafe to access due to the position of the property next to New England Highway and the construction of the Toowoomba Bypass. A drive-by inspection did not identify any obvious signs of a structure within the property.</p>	
Proximity to Project: Above disturbance footprint where the alignment will be within the underground tunnel	
Current imagery (2019)	Historical imagery (1951 QAP156)

Table 6.24 Inspection results – G2H-19-H22 – Main Range Railway Corridor, Mount Kynoch, Lot 591 SP117148

Description
<p>Location of a site referred to as a bridge on a 1944 topographic map (Australian Section Imperial General Staff 1944).</p> <p>The site is located on Lot 591 SP117148 which is part of the QR West Moreton System's Main Line.</p> <p>The Main Range Railway was built in 1865-1867, running from Murphys Creek Station, the railway begins its winding ascent up the Main Range, reaching the summit at Harlaxton before descending gently to Toowoomba Station. The Main Range Railway listing comprises a range of tunnels, stations, cuttings, culverts, bridges, houses and sheds.</p> <p>The Main Range Railway (601480) is a State-listed item of heritage significance, refer Table 5.2. This portion that intersects with the Project was not inspected as part of this assessment due to access restrictions to the property as a result of nearby construction and road access permits associated with the Toowoomba Bypass.</p>
Proximity to Project: Above disturbance footprint where the alignment will be within the underground tunnel


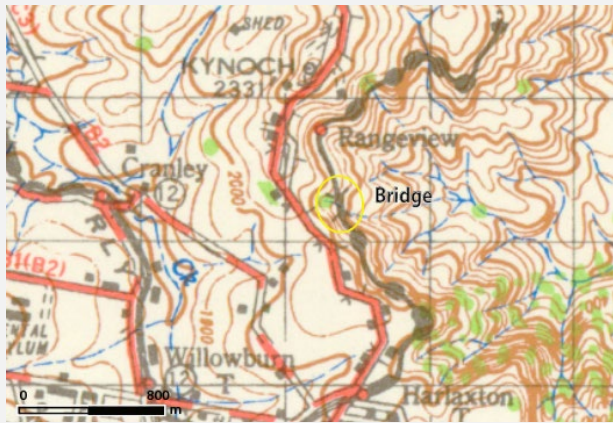


Current imagery (2019)	Topographic map (1944 035739)
	

Table 6.25 Inspection results – G2H-19-H23 – Jones Road Multiple Structures, Lot 354 CH312304

Description		
<p>Location of site referred to as multiple structures on a 1944 topographic map (Australian Section Imperial General Staff 1944) and is identifiable in a 1955 historical aerial image.</p> <p>The site is located on Lot 354 CH312304, Ballard. This property is located off Jones Road, Ballard. This site was thoroughly inspected. This site comprises a home and assorted metal sheds, gardens and discarded farm equipment. The key element in this site is the farm equipment that may indicate the original presence of a homestead. All extant structures within the site were inspected however they were not considered to be historic in nature. In addition to the inspection for non-Indigenous cultural heritage items or structures, communication with the landholder indicated a possible area of Indigenous cultural heritage on the lot. Upon inspection of the sandstone rock overhangs cultural heritage material was observed.</p>		
Proximity to Project: Within the Project disturbance footprint		
Current imagery (2019)	Historical imagery (1955 QAP483)	
		
Key elements		
Farm equipment	Latitude (GDA94)	Longitude (GDA94)
The site featured discarded farm equipment that may indicate the original location of the homestead located within this vicinity (Photograph 6.21). This area is located on a flat less than 50 m west of Rocky Creek.	27° 31' 04.4836" S	151° 59' 02.2090" E



Photograph 6.21 G2H-19-H23 farm equipment

Sandstone boulders and artefacts	Latitude (GDA94)	Longitude (GDA94)
<p>The landholder identified an area of Indigenous cultural heritage potential located within the steep sandstone outcrop situated along the western extent of the property (Photograph 6.22). The sandstone outcrop is approximately 130 m north west of the current house and approximately 100 m directly west of Rocky Creek.</p> <p>The landholder indicated that stone artefacts had been identified within close proximity of the sandstone rock overhangs and boulder outcrops (Photograph 6.23). The artefacts were identified upon further inspection. The artefacts present were identified as quartz, quartzite and mudstone flakes, angular fragments, a core and grinding stone (Photograph 6.24). Dense leaf litter ground cover resulted in no ground surface visibility for the areas around the sandstone boulders. The only areas that were able to be inspected were those protected areas underneath the rock overhang (Photograph 6.25). No additional Indigenous cultural material was identified. Of the sandstone outcrop, 120 m was visually inspected for Indigenous cultural heritage material. It was suspected that these areas may have been used as habitation shelters for transient use by local Indigenous groups within the area.</p> <p>This area would have been a valuable position for past Indigenous groups due to the proximity to Rocky Creek and associated resources. The area is surrounded by thick native vegetation with the advantage of the undulating landscape and steep slopes which would have provided an ideal environment for hunting and protection from the elements. The identification of artefacts and lack of disturbance throughout this area highlights the considerable archaeological potential for further research opportunities at this site. Further archaeological work in this area is currently being undertaken in accordance with the Inland Rail Cultural Heritage Management Plans (CHMPs) relevant to the Project, both of which were executed in 2018.</p>	27° 30' 54.068" S	151° 58' 59.899" E



Photograph 6.22G2H-19-H23 sandstone rock outcrop



Photograph 6.23G2H-19-H23 sandstone boulder



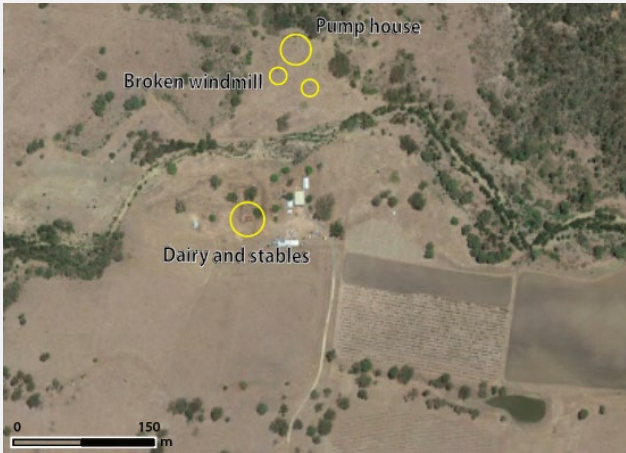
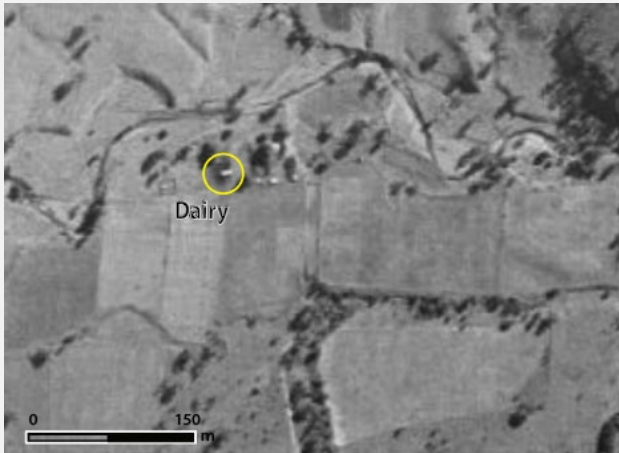


Photograph 6.24G2H-19-H23 Indigenous artefacts previously identified by the landholder



Photograph 6.25G2H-19-H23 sandstone rock overhang where Indigenous artefacts were identified

Table 6.26 Inspection results – G2H-19-H24 – Bells Road Multiple Structures, Lot 320 CH312556

Description
<p>Location of a site referred to as single structure and windmill on 1936 topographic map (Australian Section Imperial General Staff 1936) and is identifiable on a 1958 historical aerial image.</p> <p>The site is located on Lot 320 CH312556. This property is located off Bells Road, Withcott. The key elements within this site are the dairy, stables, pump house and windmill. All extant structures within the site were inspected.</p>
<p>Proximity to Project: Elements within the Project disturbance footprint</p>

Current imagery (2019)		Historical imagery (1958 QAP736)	
			
Key elements			
Dairy		Latitude (GDA94)	Longitude (GDA94)
<p>The dairy comprises a structure framed and clad with a mixture of milled and unmilled timber approximately 13 m x 5 m. The structure features a corrugated iron gabled roof. The northern profile of the structure features openings into the timber holding yards. The interior features a concrete floor that has been engraved with the date 1929 to indicate the year the concrete was poured after the shed was impacted by flooding in the same year. Contact with the local landholder suggested that the dairy was in operation up until the late 1960s. The structure is operable and stores a mixture of domestic and agricultural wares associated with the livestock still held within the property.</p>		27° 31' 20.3584" S	152° 00' 07.2383" E
			
Photograph 6.26G2H-19-H24 dairy		Photograph 6.27G2H-19-H24 stables adjacent to dairy	
Pump House		Latitude (GDA94)	Longitude (GDA94)
<p>The pump house shed is a small frame approximately 3.5 m x 2.5 m comprising a milled timber frame clad in corrugated iron (Photograph 6.28). The shed is not currently in use and is in a state of disrepair with a large portion of the corrugated iron roof sheeting collapsed. A series of six milled timber stumps are present on the north eastern side of the pump house structure (Photograph 6.29). These are attributed to foundations for a platform for a water tank that has since been removed.</p>		27° 31' 14.359" S	152° 0' 8.969" E



Photograph 6.28 G2H-19-H24 pump house



Photograph 6.29 G2H-19-H24 pump house and tank foundations

Windmill

The windmill that has been identified on historic aerals has since been broken and discarded at the rear of the property. The metal tower and metal multi-bladed rotor have been separated and are in a state of disrepair (refer Photograph 6.30 and Photograph 6.31). It is not known when the windmill was discarded.

Latitude (GDA94)

27° 31' 15.564" S

Longitude (GDA94)

152° 0' 9.396" E





Photograph 6.30 G2H-19-H24 broken metal windmill tower



Photograph 6.31 G2H-19-H24 broken metal multi-bladed rotor

Table 6.27 Inspection results – G2H-19-H25 – Bicentennial National Trail, Gittins Road, adjacent to Lot 259 CC317 and Lot 17 SP186715

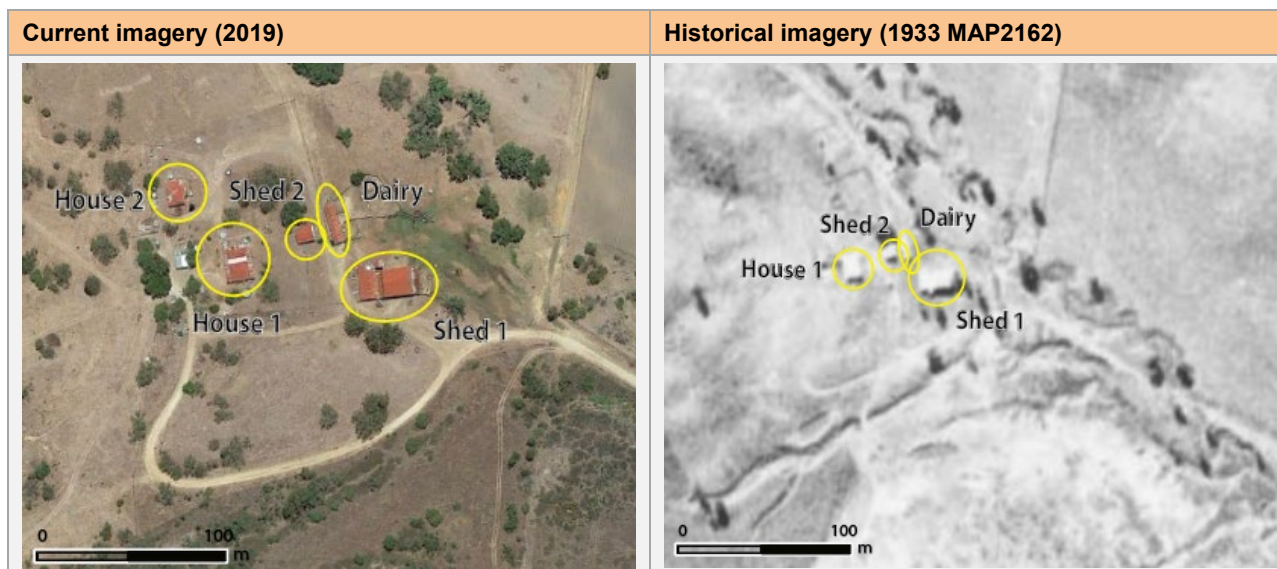
Description		
<p>Location of a site identified as a track on a 1945 topographic map (Australian Section Imperial General Staff 1945) and is identifiable on a 1933 historical aerial image. The site is associated with Gittins Road, adjacent to Lot 259 CC317 and Lot 17 SP186715.</p> <p>The Bicentennial National Trail was established in 1988 and is the longest marked trekking route of its kind in the world, stretching 5,330 km from Cooktown in tropical North Queensland, to Healesville in Victoria. The Bicentennial National Trail is a locally listed item of heritage significance, refer Table 5.3. This heritage item was inspected as part of this assessment.</p> <p>Forged from the inspiration of the legendary bushman R. M. Williams, wherever possible along its great length the trail follows the routes of early pioneers, stock routes, old pack horse trails, and country roads in highlighting historic sites and artefacts along the way. It links eighteen of the country's national parks and reveals some of the most spectacular scenery in Australia. The trail gives access to some of the wildest, most remote country in the world and provides endless fascination for those interested in Australia's unique fauna and flora (Archaeo 2003:118).</p>		
<p>Proximity to Project: Within the Project disturbance footprint, however the Project alignment crosses Gittins Road and the Bicentennial National Trail in viaduct (grade separated) so no permanent impact on the use of the trail is expected</p>		
Current imagery (2019)	Historical imagery (1933 MAP2162)	
		
Key elements		
Trail	Latitude (GDA94)	Longitude (GDA94)
The Bicentennial National Trail intersects with the Project disturbance footprint along Gittins Road, Withcott (Photograph 6.32) where the alignment will be in viaduct over the trail. The original purpose or importance of this section of the route is unknown.	27° 30' 25.4402" S	152° 01' 20.8822" E



Photograph 6.32G2H-19-H25 Bicentennial National Trail marker

Table 6.28 Inspection results – G2H-19-H26 – Howmans Road Multiple Structures, Lot 11 RP839411

Description
<p>Location of a site referred to as multiple structures on a 1936 topographic map (Australian Section Imperial General Staff 1936) and is identifiable on a 1933 historical aerial image.</p> <p>The site is located on Lot 11 RP839411. This property is located off Howmans Road, Lockyer. This site was thoroughly inspected. The key elements within this site are the dairy, shed 1, shed 2, house 1 and house 2. All extant structures within the site were inspected.</p> <p>Communication with the landholder indicated that the homestead has been in operation from the early 1900s. Family history documentation has provided further insight to the history of the homestead, stating that the farm was originally called 'Crackington Farm' and was a well-run model dairy farm with students from Gatton Agricultural College often shown around the premises.</p> <p>The property originally featured three wells, one of which was indicated by the landholder as originally being situated near shed 1. This has since been sealed shut due to safety concerns.</p>
Proximity to Project: Approximately 400 m north of the Project disturbance footprint



Key elements

Dairy	Latitude (GDA94)	Longitude (GDA94)
<p>The dairy is a long rectangular structure approximately 18 m x 5 m comprising milled and unmilled timber frame and cladding. The roof is gabled corrugated iron. Communication with the local landholder has suggested that the dairy was constructed in the early 1900s. The dairy features twelve small timber doors on the western side for the release of cattle after the milking process took place inside the dairy (Photograph 6.33). The landholder has indicated that the timber loading yard to the east of the structure features original timber posts with more contemporary timber horizontal palings (Photograph 6.34). The building is currently in use and has been maintained.</p>	27° 30' 13.6582" S	152° 02' 23.6727" E



Photograph 6.33 G2H-19-H26 dairy



Photograph 6.34 G2H-19-H26 dairy and stables

Shed 1	Latitude (GDA94)	Longitude (GDA94)
<p>Shed 1 comprises a large milled timber framed structure approximately 30 m x 15 m clad and roofed in corrugated iron (Photograph 6.35). Shed 1 features three levels and is built into the embankment in the eastern portion of the property, closest to Howmans Road (Photograph 6.36). Contact with the landholder has indicated that shed 1 was constructed in 1915. The original brick floors are visible and are said to have been laid by early prisoners (Photograph 6.37). Both northern and southern profiles of the structure feature large openings for the storage and transportation of farming equipment.</p>	27° 30' 13.986" S	152° 2' 24.144" E

Local family history documentation has provided evidence of the use of this site. The shed features three levels, where the top level originally featured feeding stalls. Evidence of the timber posts for the feeding stalls is still visible within the site (Photograph 6.37). The second level of the shed contained lucerne hay stacked ready for chaffing, a wagon and other farm implements. The third level contained riding gear and a large grinding wheel. A large brick silo that has since been cemented and painted extends from the north aspect of the structure, having originally been constructed to store corn (Photograph 6.38). The silo reflects a European influence attributed in design to the original owners of the property, the Howmans, who were from Cornwall and travelled to Australia in the early 1900s.

Shed 1 has been well maintained and is still in use, featuring a mixture of retired early agricultural equipment and contemporary equipment.



Photograph 6.35 G2H-19-H26 shed 1 and silo



Photograph 6.36 G2H-19-H26 shed 1 interior



Photograph 6.37 G2H-19-H26 shed 1 original brick floor and timber stumps visible



Photograph 6.38 G2H-19-H26 shed 1 extent

Shed 2	Latitude (GDA94)	Longitude (GDA94)
<p>Shed 2 comprises a large rectangular raised structure approximately 8 m x 10 m with a milled timber frame and corrugated iron cladding (Photograph 6.39). The roof is gabled corrugated iron. The original glass windows have since been removed and replaced with wire mesh. The original timber double door remains. The original timber stairs have since been replaced with a simple metal staircase. The open area beneath the structure is currently used for storage. The interior of the structure was not inspected.</p> <p>Shed 2 has been adequately maintained. Communication with the landholder indicated that shed 2 is currently used for storage but was formerly used for social gatherings and events.</p> <p>An original raised timber platform is situated to the north of the shed and currently houses a contemporary water tank.</p>	27° 30' 13.169" S	152° 2' 23.458" E



Photograph 6.39 G2H-19-H26 shed 2

House 1	Latitude (GDA94)	Longitude (GDA94)
<p>House 1 comprises a single-story timber framed and clad weatherboard structure on stumps with two separate gabled corrugated iron roofs that have been connected by a covered corrugated iron breezeway (Photograph 6.40). The house has since been re-stumped with metal posts.</p> <p>Local family history documentation and contact with the landholder has indicated that the original cottage on the farm was extended to include four bedrooms and a wide-open verandah was added with a covered breezeway between the kitchen, living area and bathroom, all of which were added prior to the 1930s. The original verandah extended around the entire structure but has since been enclosed on the north eastern side.</p> <p>The structure comprises a mixture of original external doors and window fittings mixed with contemporary features that have been installed as the structure changed and has been enclosed and extended in portions.</p> <p>The interior of the structure was not inspected. This house has been maintained and is currently in use, however has been subject to a series of changes that have altered the original fabric of the homestead.</p>	27° 30' 13.156" S	152° 2' 21.563" E



Photograph 6.40 G2H-19-H26 house 1

House 2	Latitude (GDA94)	Longitude (GDA94)
<p>House 2 is located approximately 30 m north-west of the main homestead structure. House 2 comprises a single story raised timber framed and timber weatherboard structure with a hipped corrugated iron roof (Photograph 6.41). An open verandah extends from the northern aspect of the structure.</p> <p>Communication with the landholder suggested that rural farming properties usually comprised two houses, in this instance the landholder confirmed that house 2 acted as the residence for the workers on the farm.</p> <p>House 2 has been well maintained and is currently in use.</p> <p>A small 'out-house' timber structure is located to the north of house 2.</p>	27° 30' 12.894" S	152° 2' 21.274" E



Photograph 6.41 G2H-19-H26 house 2

Table 6.29 Inspection results – G2H-19-H27 – Cattos Road Structure, Lot 13 CH31259


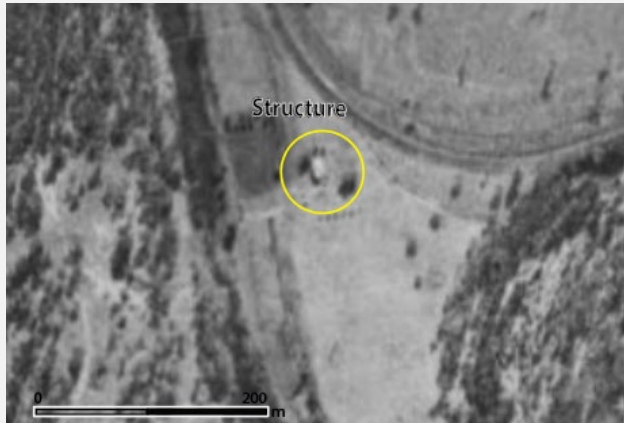

Description		
<p>Location of a site referred to as a single structure on a 1936 topographic map (Australian Section Imperial General Staff 1936) and is identifiable on a 1933 historical aerial photograph.</p> <p>The site is located on Lot 13 CH31259, off Cattos Road, Helidon. This site was inspected from a publicly accessible area. The key element within this site is the timber shed and adjoining stables. The primary house on this lot was not inspected due to access restrictions. Further details regarding the construction and history of the primary house are unknown.</p>		
Proximity to Project: Within approximately 50 m of the Project disturbance footprint		
Current imagery (2019)	Historical imagery (1933 MAP2092)	
		
Key elements		
Shed	Latitude (GDA94)	Longitude (GDA94)
<p>This site comprises a single structure of milled and unmilled timber frame and cladding (Photograph 6.42). The structure features a gabled corrugated iron roof. The southern aspect of the structure is open and features adjoining timber stables. A timber livestock loading ramp is situated on the northern aspect of the property. The inside of the structure was not inspected.</p>	<p>27° 32' 10.2982" S</p>	<p>152° 06' 23.2726" E</p>
		
Photograph 6.42 G2H-19-H27 shed and stables		

Table 6.30 Inspection results – G2H-19-H28 – Airforce Road Single Structure, Lot 87 CA31624


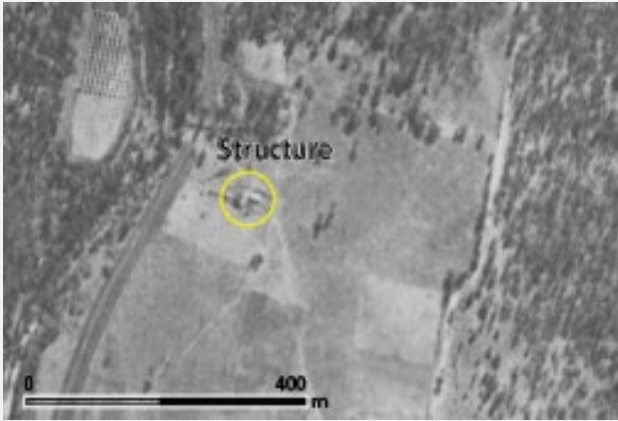
Description	
<p>Location of site referred to as a single structure on a 1936 topographic map (Australian Section Imperial General Staff 1936) and is identifiable on a 1948 historical aerial image.</p> <p>The site is located on Lot 87 CA31624, off Cattos Road, Helidon. Site access was not available and potential vantage points from Cattos Road proved to be impassable in this section, therefore a visual inspection of the property was not completed.</p>	
Proximity to Project: Approximately 60 m east of the Project disturbance footprint	
Current imagery (2017)	Historical imagery (1948 SVY04305029)
	

Table 6.31 Inspection results – G2H-19-H29 – Airforce Road Siding North, Russell's Siding, Main Line at Helidon, Lot 452 SP117138


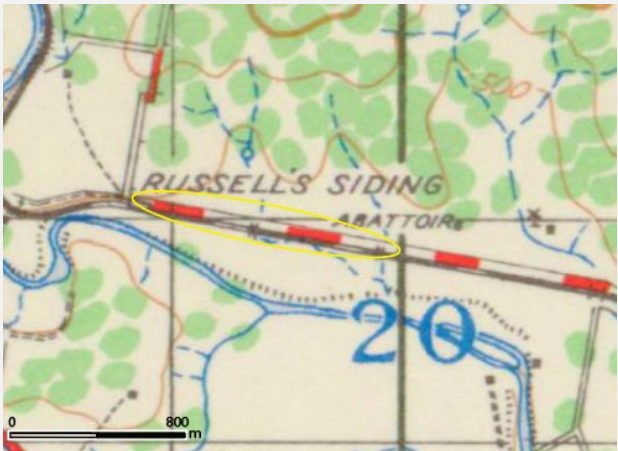

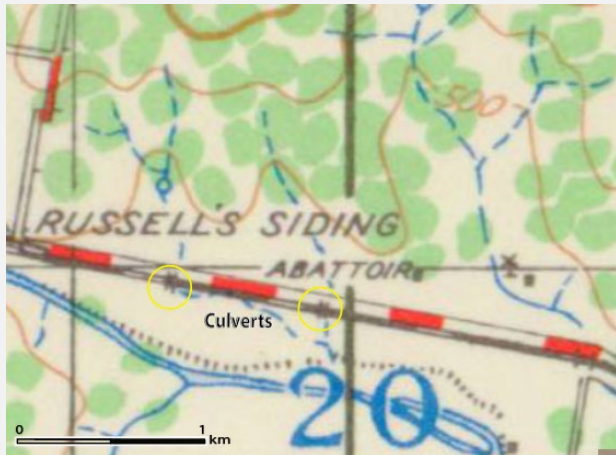


Description	
<p>Location of site referred to as 'Russell's Siding' on a 1936 topographic map (Australian Section Imperial General Staff 1936).</p> <p>The site is located on Lot 452 SP117138 and is associated with the QR West Moreton System Main Line at Helidon. The site is located adjacent to Airforce Road and the Helidon Explosives Reserve. The siding serviced the Helidon Ammunition Store and Royal Australia Air Force No. 2 Replenishment Centre, a QLD WWII Historic Place.</p> <p>The area was inspected from a publicly accessible area. No evidence of historical structures or other heritage items were identified during the survey. Inspection was restricted due to long grass obscuring view and safely accessible stopping locations along Airforce Road, Helidon.</p>	
Proximity to Project: Within the disturbance footprint	
Current imagery (2017)	Topographic map (1936 244700)
	

Table 6.32 Inspection results – G2H-19-H30 – Airforce Road Culvert/Siding, Lot 452 SP117138

Description		
<p>Location of site referred to as a culvert on a 1936 topographic map (Australian Section Imperial General Staff 1936). The Russell's Siding (south) was identified as an AOI in this area, however it was not located. A culvert was identified within close proximity of the area of the original siding.</p> <p>This site is located in the road reserve, Helidon Dip Road, immediately south of Lot 452 SP117138 which is part of the QR West Moreton System Main Line at Helidon. This site is situated north of Helidon Dip Road and immediately south of the Main Line from Brisbane to Toowoomba, Helidon. This site was inspected from a publicly accessible area. The key element within this site is the original box sandstone culvert. This culvert has previously been identified in the cultural heritage survey for the H2C project (H2C-19-01).</p>		
Proximity to Project: Within the Project disturbance footprint		
Current imagery (2017)	Topographic map (1936 244700)	
		
Key elements		
Culvert	Latitude (GDA94)	Longitude (GDA94)
<p>This site comprises a single sandstone box culvert dated to c1860s (Photograph 6.43).</p> <p>The headwall of the culvert consists of four courses of dressed sandstone blocks, with the top course acting as a lintel, and measures approximately 1 m x 2 m. The culvert itself is two courses high and the opening measures approximately 0.6 m x 0.6 m (Photograph 6.44). Visibility and access to the site was impacted by thick grasses.</p>	27° 32' 10.2982" S	152° 06' 23.2726" E
		
Photograph 6.43 G2H-19-H30 culvert	Photograph 6.44 G2H-19-30 culvert opening	

6.2.1 Areas of interest removed from further assessment

The following section summarises those AOI that have been identified in topographic maps and historic aerials (refer Table 6.33) however were unable to be located during a visual inspection. In these cases, the visual inspection did not confirm the presence of any historic structures, remains or areas of archaeological potential. Similarly, the cases where a visual inspection confirmed the presence of a structure or site which were not considered to be of heritage significance, have also been addressed below.

In addition, the AOI that were unable to be assessed due to safety concerns or road accessibility have been detailed below. The sites detailed in Table 6.33 are not considered further in the cultural heritage significance and impact assessment, including four AOIs within the Project disturbance footprint and the two AOIs above the Toowoomba Range tunnel.

Table 6.33 Areas of interest where non-Indigenous cultural heritage potential was not evident

Site ID	Description	Results of visual inspection
G2H-19-H01	Bridge over Gowrie Creek, associated with the railway corridor	No evidence of the historical structure was identified during the survey. This area is within the Project disturbance footprint with an existing access track under the Western Line to be upgraded. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to the construction of the contemporary railway bridge and any erosion associated with seasonal flooding along Gowrie Creek. Should any heritage material be identified, it is likely that these remains will not be of heritage significance.
G2H -19-H02	Single structure	No evidence of the historical structure or other heritage items were identified during the survey. There is potential for archaeological remains to be present given the lack of ground disturbance across the site, however, seasonal flooding and inundation has reduced the likelihood of identifying intact archaeological deposits. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H03	Railway station	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. There is potential for archaeological remains to be present given the lack of ground disturbance across the site, however, seasonal flooding and possible localised ancillary disturbance associated with any upgrades to the railway bridge has reduced the likelihood of identifying intact archaeological deposits. The site is located within the Project disturbance footprint and should any heritage material be identified, it is likely that these remains will not be of heritage significance.
G2H -19-H04	Hall	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to considerable ground disturbance works through ploughing and seasonal flooding within the area. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H06	Homestead	No evidence of historical structures or other heritage items were identified during the survey. The identified structure is a house that was constructed post-1980s and is not of heritage significance. There is a low potential for archaeological remains to be present in proximity to the house given the lack of ground disturbance across the site, however, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H07	Homestead	No evidence of historical structures or other heritage items were identified during the survey. The identified structure is a house that was constructed post-1980s and is not of heritage significance. There is a low potential for archaeological remains to be present in proximity to the house given the lack of ground disturbance across the site, however, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.

Site ID	Description	Results of visual inspection
G2H -19-H08	Homestead	No evidence of historical structures or other heritage items were identified during the survey. The identified structure is a house that was constructed post-2000s and is not of heritage significance. There is a low potential for archaeological remains to be present in proximity to the house given the lack of ground disturbance across the site, however, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H09	Road bridge over Gowrie Creek	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to the construction of the contemporary bridge and the landscape modification and erosion associated with seasonal flooding along Gowrie Creek. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H10	Mill/Factory	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to the construction and operation of a landscape supplies store on the site and associated ground disturbance works within the area. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H11	Intersection Old Homebush Road Paulsens Road	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to considerable ground disturbance works through ploughing and seasonal flooding within the area. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H -19-H12	Mill/Factory	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The likelihood of identifying surface or sub-surface archaeological deposits is reduced due to considerable ground disturbance works through ploughing and seasonal flooding within the area. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the project disturbance footprint.
G2H-19-H17	Single structure	No evidence of historical structures or other heritage items were identified during the survey. There is potential for archaeological remains to be present given the lack of ground disturbance across the site. The site is located within the Project disturbance footprint and should any heritage material be identified, it is likely that these remains will not be of heritage significance.
G2H-19-H18	Single structure	No evidence of historical structures or other heritage items were identified during the survey. It is highly unlikely that any undisturbed archaeological remains or features are present within the site. The construction of the Warrego Highway and associated ground disturbance works adjacent to this site has reduced the potential for archaeological remains to be present. Should any heritage material be identified, it is likely that these remains will not be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H-19-H20	Single structure	No evidence of potentially occurring historical structures or other heritage items were identified during the survey due to the property access not being available at the time of survey and the view to structures being obscured from the road (with no safe stopping locations). A neighbouring property was viewed from the road to provide context to potential modifications from potential ground-borne vibration impacts due to the construction of the Toowoomba Range tunnel. The neighbouring property is located approximately 50 m from the disturbance footprint, where the alignment is underground within the proposed Toowoomba Range tunnel. As a visual inspection of the intended AOI has not been conducted, further assessment of the heritage significance or values of the property has not been incorporated into this assessment. The site is also located outside of the Project disturbance footprint.

Site ID	Description	Results of visual inspection
G2H-19-H21	Single structure	This site was not inspected as it was unsafe to access due to the position of the property next to New England Highway. A drive-by inspection did not identify any obvious signs of a structure within the property. The installation of a tunnel is proposed for this area and, in the unlikely event that any surface or sub-surface archaeological deposits are present, these will not be impacted, and any potential remains are unlikely to be of heritage significance.
G2H-19-H22	Rail bridge (Main Line at Mount Kynoch)	This site was not inspected due to access restrictions to the property as a result of nearby construction and road access permits associated with the construction of the Toowoomba Bypass. The excavation for a tunnel is proposed for this area and, in the unlikely event that any surface or sub-surface archaeological deposits are present, these will not be impacted, and any potential remains are unlikely to be of heritage significance. The site may be assumed to be of heritage value given that it is part of the Main Line at Mount Kynoch, which is listed under the Queensland Heritage Register (Main Range Railway (601480)).
G2H-19-H28	Single structure	This site was not inspected due to access restrictions to the property as the road was impassable in this section and a visual inspection of the property was not completed. Should any heritage structures or material be identified within the area, no direct impact resulting from the proposed works is anticipated within the area of this site and any potential remains are unlikely to be of heritage significance. The site is also located outside of the Project disturbance footprint.
G2H-19-H29	Railway siding (Russell's Siding), Main Line at Helidon	Inspection was restricted due to safety along the Airforce Road, Helidon. No evidence of historical structures or other heritage items was identified during the survey. In the unlikely event that any surface or sub-surface archaeological deposits are present, it is anticipated that these remains will not be of heritage significance. The site is located within the Project disturbance footprint and should any heritage material be identified, it is likely that these remains will not be of heritage significance.

7 Historic significance assessment

The desktop and field assessment indicates that of the initial 30 AOI, 18 did not possess any historic heritage values or historic archaeological potential as discussed in Table 6.33. The remaining 12 AOI possess a range of heritage values, significance, or potential and were assessed to determine the level of heritage significance in accordance with the QH Act and the DES thematic framework.

In accordance with the QH Act and *Assessing cultural heritage significance: Using the cultural heritage criteria* (DEHP 2013), a significance assessment has been conducted to assess the qualities and values of each site to understand its importance and contribution to Queensland's heritage. In general, a place may be considered to be of heritage significance if it meets one or more of the following values or criteria – historical, rarity, research, representativeness, aesthetic, creative or technical, social or associational. Further details of the significance assessment criteria are outlined in Section 3.3.

The findings of the assessment are summarised in Table 7.1 and are further detailed in Table 7.2 to Table 7.13. Seven of the 30 AOI are considered to be of local heritage significance, including the Bicentennial National Trail which is listed under Schedule 2 of the Gatton Shire Planning Scheme, and have been assessed further in Section 8. The other five sites may possess historic heritage value or historic archaeological potential but are not considered significant under the DES thematic framework and have not been considered further in the cultural heritage significance and impact assessment.

In addition to assessing the significance of each AOI, the DES thematic framework has been used to assess whether the sites reflect any themes that are considered important in shaping the events, processes and trajectories of Queensland's history. The historical themes relevant to each AOI are shown in Table 7.2 to Table 7.13. Refer to Section 3.3.1 for the thematic framework.

Table 7.1 Summary assessment indicating threshold of significance

Site	A – historical	B – rarity	C – research	D – representativeness	E – aesthetic	F – creative/technical	G – social	H – associational
G2H-19-H05	Not met	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H13	Local	Not met	Not met	Not met	Not met	Not met	Local	Not met
G2H-19-H14	Local	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H15	Not met	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H16	Local	Not met	Local	Not met	Not met	Not met	Not met	Not met
G2H-19-H19	Not met	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H23	Not met	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H24	Local	Not met	Local	Local	Not met	Not met	Not met	Not met
G2H-19-H25	Local	State	Not met	Not met	Not met	Not met	Not met	Local
G2H-19-H26	Local	Not met	Local	Local	Not met	Local	Not met	Not met
G2H-19-H27	Not met	Not met	Not met	Not met	Not met	Not met	Not met	Not met
G2H-19-H30	Local	Local	Local	Local	Local	Not met	Not met	Not met

Source: DEHP (2013)

Table 7.2 Significance assessment – G2H-19-H05 – Draper Road Single Structure

Criterion	Assessment	Threshold
A – historical	The Draper Road site does not possess any historical values of significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	No elements of the Draper Road site are known to be rare or unusual.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to the former structure to be present, however, due to land clearance and cultivation, the potential for archaeological remains is low. Further research or investigation is unlikely to contribute to a greater understanding of 20 th century agricultural life within Queensland as intermittent single structures are common throughout this area.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	The Draper Road site does not possess any known representative significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Draper Road site has no known aesthetic significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Draper Road site does not contain any elements of known technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Draper Road site does not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Draper Road site does not have any known special association with a person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	
Overall significance		<input checked="" type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> State

Table 7.3 Significance assessment – G2H-19-H13 – Gowrie Junction Railway Station

Criterion	Assessment	Threshold
A – historical	The Gowrie Junction site is of historical significance due to the association with the former Gowrie Junction Railway Station and structures situated on this site from 1867. This site relates to the development and importance of rail throughout the Darling Downs region in the 18 th and 19 th century and its contribution to the development of the Gowrie Junction township throughout this period.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The Gowrie Junction site has no known rarity values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to the former railway station and associated structures to be preserved at the Gowrie Junction site. Further research or investigation is unlikely to contribute to a greater understanding of the use and significance of railway infrastructure throughout regional Queensland.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	The Gowrie Junction site is not sufficient to be a good representative of type.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
E – aesthetic	The Gowrie Junction site has no known aesthetic significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Gowrie Junction site does not contain any known elements of technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Gowrie Junction site has some social significance as the site of the first railway station structure in Gowrie Junction and marks a significant development in the accessibility and trade opportunities within the township.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Gowrie Junction railway structure does not have any known special association with person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	5.3 using rail 6.1 establishing settlements	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.4 Significance assessment – G2H-19-H14 – Gowrie Junction Road Structure

Criterion	Assessment	Threshold
A – historical	The site is of some historical significance as an early 20 th century dwelling.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The site has no known rarity values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to early 20 th century domestic life to be preserved in, under and around the residence, but these are considered unlikely to contribute new or important information about the area.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	There is insufficient information about the house to determine its representatives.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The site has no known aesthetic values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The site has no known creative or technical values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The site has no known social value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The site has no known special association with the life or work of a particular person, group or organisation of importance in Queensland's history.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.5 Significance assessment – G2H-19-H15 – Junction Street Hotel

Criterion	Assessment	Threshold
A – historical	The Junction Street Hotel area of interest was the former location of two hotels spanning across the site in Gowrie Junction throughout the late 19 th and early 20 th century. The Railway Hotel, commonly known as the Grand Junction Hotel opened in 1879 and was replaced by the Commonwealth Hotel in the 1900s and was destroyed by fire in 1917.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	There is insufficient physical evidence to assess the rarity of the former Junction Street Hotel.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	The Junction Street Hotel area of interest has been subject to considerable disturbance. Destruction of the former structure by fire and more recent land modification works are likely to have destroyed the majority of historic fabric associated with the hotel. The potential for archaeological remains is low and it is unlikely that further research would contribute to an understanding of the former structure.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	There is insufficient physical evidence to assess the representativeness of the former Junction Street Hotel.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	There is insufficient physical evidence to assess the aesthetic merit of the former Junction Street Hotel.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	There is insufficient physical evidence to assess the creative/technical merit of the former Junction Street Hotel.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	While no structural evidence of the former Junction Street Hotel remains, this site would have been significant to the Gowrie Junction community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The former Junction Street Hotel was associated with prominent figures in Gowrie Junction settlement. This first lot in the area was sold to Rodger O'Mara and Rody Burke in October 1875 as licensees of the Railway Hotel/Grand Junction Hotel. At the same time, Thomas Mahon, who purchased the second lot in Gowrie Junction, secured the neighbouring lot and established the Commonwealth Hotel.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	
Overall significance		<input checked="" type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> State

Table 7.6 Significance assessment – G2H-19-H16 – Junction Street Structures

Criterion	Assessment	Threshold
A – historical	The Junction Street structures site is associated with the development of the railway within Gowrie Junction in the late 19 th century. Within the site, historic records, topographic maps and aerial imagery have indicated two structures that would have served as railway houses for the workers in addition to a quarry for the production of ballast for the railway line.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	No elements of the former Junction Street structures are known to be rare.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	The Junction Street structures site possesses considerable surface and sub-surface research potential. The nature and extent of sub-surface archaeological deposits is unknown and the research potential of the site is considered high as further investigation may assist in understanding the domestic and industrial activities within the site.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
D – representativeness	The Junction Street structures site is not sufficiently intact to be a good representative of its type.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Junction Street structures site has no known aesthetic significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Junction Street structures site does not contain any elements of known technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The remains of the Junction Street structures do not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Junction Street structures may have been associated with the former workers of the railway and quarry. It is unclear whether the site of the former Junction Street structure has any known special association with person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	5.3 using rail 6.4 dwellings	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.7 Significance assessment – G2H-19-H19 – Hermitage Road Single Structure

Criterion	Assessment	Threshold
A – historical	The Hermitage Road site may have the potential to be related to the pastoral industry, but there is insufficient historical or physical evidence to confirm the nature or extent of association.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The Hermitage Road site has no known rarity values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to early 20 th century pastoral or agricultural activities to be preserved in, under and around the site, but these are considered unlikely to contribute new or important information about the area.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	There is insufficient information about the Hermitage Road site to determine its representatives.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Hermitage Road site has no known aesthetic values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Hermitage Road site has no known creative or technical values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Hermitage Road site has no known social value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Hermitage Road site has no known special association with the life or work of a particular person, group or organisation of importance in Queensland's history.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	

Criterion	Assessment	Threshold
Overall significance		<input checked="" type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> State

Table 7.8 Significance assessment – G2H-19-H23 – Jones Road Multiple Structures

Criterion	Assessment	Threshold
A – historical	The Jones Road area of interest has the potential to be related to early agricultural industry, but there is insufficient historical or physical evidence to confirm the nature or extent of association.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The Jones Road area of interest has no known rarity values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to early 20 th century domestic and agricultural life to be present and preserved around the site but these are considered unlikely to contribute new or important information about the area.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	There is insufficient physical evidence to confirm the representativeness of this site.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Jones Road area of interest has no particular aesthetic value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Jones Road area of interest does not feature any elements of known technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Jones Road area of interest does not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Jones Road area of interest does not have any known special association with the life or work of a particular person, group or organisation of importance in Queensland's history.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	
Overall significance		<input checked="" type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> State

Table 7.9 Significance assessment – G2H-19-H24 – Bells Road Multiple Structures

Criterion	Assessment	Threshold
A – historical	The Bells Road site is of historic significance as a representation of the pastoral industry that dominated the local economy throughout the 19 th and 20 th centuries.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	No elements of the Bells Road site are known to be rare.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is some potential for archaeological remains related to pastoral activities and associated domestic contexts to be preserved within the timber dairy and yards. This potential is particularly high at the dairy where the concrete floor may have sealed deposits in situ.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
D – representativeness	While not in use as a dairy, the Bells Road dairy in particular is one of the more intact examples of an early dairy and is a good representative of its type.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Bells Road structures have no particular aesthetic value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Bells Road structures do not contain any known elements of technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Bells Road structures do not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Bells Road structures do not have any known special association with a person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	2.3 pastoral activities 3.1 feeding Queenslanders	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.10 Significance assessment – G2H-19-H25 – Bicentennial National Trail (locally listed)

Criterion	Assessment	Threshold
A – historical	The trail follows the routes of early pioneers, stock routes, old pack horse trails, and country roads in highlighting historic sites and artefacts along the way.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The trail is the longest marked trekking route of its kind in the world, stretching 5,330 km from Cooktown in tropical North Queensland, to Healesville in Victoria.	<input type="checkbox"/> Not met <input type="checkbox"/> Local <input checked="" type="checkbox"/> State
C – research	Given the considerable disturbance associated with vegetation clearance and road construction, the potential for archaeological remains is considered low.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	Due to the context of this portion of the trail situated alongside recent road developments and the Toowoomba Bypass, this section is not a good representation of the broad Bicentennial National Trail.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The portion of the trail within the cultural heritage study area has no particular aesthetic value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The portion of the trail within the cultural heritage study area does not contain any known elements of technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The portion of the trail within the cultural heritage study area does not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The trail follows the path of the legendary bushman R. M. Williams along with early pioneer and stock routes throughout the region.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
Historical themes	2.1 exploring, surveying and mapping the land 5.1 using human movement 5.2 using draught animals 6.1 establishing settlements	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.11 Significance assessment – G2H-19-H26 – Howmans Road Multiple Structures

Criterion	Assessment	Threshold
A – historical	The Howmans Road site comprises a homestead complex, which includes a dairy, sheds, yards and domestic areas and is of historical significance as a representation of the pastoral and dairying industry that dominated the local economy throughout the 19 th and 20 th centuries.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	There is not enough information currently available about the site to determine its rarity.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is good potential for archaeological remains related to domestic, pastoral and dairying activities at the site. The potential for deposits to remain in situ is considered high as the site has remained relatively undisturbed.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	While not in use, the Howmans Road dairy in particular is one of the more intact examples of an early dairy and is a good representative of its type.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Howmans Road site has no known aesthetic significance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The main house appears to have been built in at least two stages, using a variety of materials and approaches, and has the potential to provide insight into ad hoc construction methods.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Howmans Road site does not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Howmans Road site does not have any known special association with a person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	2.3 pastoral activities 6.4 dwellings	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

Table 7.12 Significance assessment – G2H-19-H27 – Cattos Road Structure

Criterion	Assessment	Threshold
A – historical	The Cattos Road site has the potential to be related to the pastoral industry, but there is insufficient historical or physical evidence to confirm the nature or extent of association.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	The Cattos Road site has no known rarity values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
C – research	There is some potential for archaeological remains related to early 20 th century domestic life to be preserved in, under and around the structure, but these are considered unlikely to contribute new or important information about the area.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	There is insufficient information about the structure to determine its representatives.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Cattos Road site has no known aesthetic values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Cattos Road site has no known creative or technical values.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Cattos Road site has no known social value.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
H – associational	The Cattos Road site does not have any known special association with person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	None	
Overall significance		<input checked="" type="checkbox"/> None <input type="checkbox"/> Local <input type="checkbox"/> State

Table 7.13 Significance assessment – G2H-19-H30 – Airforce Road Culvert/Siding

Criterion	Assessment	Threshold
A – historical	The Airforce Road site is of local historic significance as it provides physical evidence of the initial construction of the railway through the area in the 1860s.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
B – rarity	Due to the considerable upgrades and redevelopment of the Main Line, it is anticipated that there are few original box culverts remaining within the cultural heritage study area.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
C – research	There is good potential for archaeological remains related to dairying and perhaps domestic activities at the site. This potential is particularly high at the dairy, which is an older, repurposed building, and where the later concrete floor may have sealed deposits in situ.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
D – representativeness	The Airforce Road site is representative of similar culverts that would have been constructed along the Main Line between Brisbane and Toowoomba.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
E – aesthetic	The Airforce Road site has some aesthetic value for its brickwork and sandstone features.	<input type="checkbox"/> Not met <input checked="" type="checkbox"/> Local <input type="checkbox"/> State
F – creative/technical	The Airforce Road site does not contain any elements of known technical or creative merit.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
G – social	The Airforce Road site does not have any known social significance to any community.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State

Criterion	Assessment	Threshold
H – associational	The Airforce Road site does not have any known special association with person or group of people of historical importance.	<input checked="" type="checkbox"/> Not met <input type="checkbox"/> Local <input type="checkbox"/> State
Historical themes	5.3 using rail	
Overall significance		<input type="checkbox"/> None <input checked="" type="checkbox"/> Local <input type="checkbox"/> State

8 Potential impacts

Potential Project impacts on heritage sites identified in Section 5.4 have been assessed in Section 8.1 to Section 8.3.

A discussion of the impact assessment methodology is provided in Section 3.4.

8.1 Project activities

Activities proposed as part of the Project have been categorised into four phases; pre-construction, construction, commissioning and reinstatement and operation. A description of Project related activities that are likely to impact on non-Indigenous heritage is provided in Table 8.1.

Table 8.1 Description of Project related activities likely to impact on non-Indigenous heritage

Phase	Infrastructure activity	Description of activities
Pre-construction, Construction	Site preparation	Vegetation clearing
		Topsoil stripping
		Construction of temporary site compounds and laydown areas
		Construction of access roads
		Installation of boreholes and construction water
		Installation of offices, hardstands etc
		Stockpiling
	Utility diversions	Excavation
		Trenching
		Modification, diversion and realignment of utilities and associated infrastructure
	Drainage	Culvert installation
	Structures	Construction of bridges over main waterways
		Road/rail bridge construction
	Civil works	Cutting construction
		Embankment construction using cut material and borrow material from external borrow sources, where required
		Construction of temporary haul roads
		Drainage controls
	Road works	Road realignments, closures and upgrades
		Construction of permanent rail maintenance access roads
	Rail logistics	Sleeper stockpiling
		Rail stockpiling
	Rail construction	Drilling
		Blasting
		Ballast installation
		Sleeper placement
		Rail placement
		Installation train signals and communications infrastructure
		Demobilising site compounds

Phase	Infrastructure activity	Description of activities
	Tunnel construction	Removal of construction material and waste
		Roadheader and Tunnel Boring Machine excavation
		Removal of redundant structures
		Decommissioning work site signs
		Decommissioning access roads
		Forming and stabilising of spoil mounds
	Signals and communications installation	Removal of temporary fencing
Commissioning and reinstatement	Demobilisation/ decommissioning	Establish permanent fencing
		Restoration of disturbed areas, including revegetation where required
	Spoil mounds	Conversion of haul roads and construction access roads into permanent roads
	Restoration	Minor maintenance works
	Rail works	Bridge and culvert inspections
		Sleeper replacement
		Rail welding
		Rail grinding
		Ballast dropping
		Track tamping
		Major periodic maintenance
Operation	Train operations	Train movement along rail
	Operational maintenance	Ongoing vehicle movement within rail corridor

8.2 Assessing sensitivity

The degree of impact an activity will have on a heritage place is partly a factor of the place's heritage significance: the more significant a place is, the more sensitive it will be to change (refer Section 3.4). The State heritage places are all considered to have a high sensitivity, while the locally registered places are considered to have a medium sensitivity.

The findings indicate that of the initial 30 AOI, 18 do not possess any historic heritage values or historic archaeological potential. The remaining 12 AOI were assessed to determine the level of heritage significance in accordance with the QH Act and the DES thematic framework. The assessment determined that 7 of the initial 30 AOI are considered to be of local heritage significance. An assessment of the sensitivity of the locally significant heritage places within the cultural heritage study area is provided in Table 8.2 in accordance with the methodology provided in Section 3.4.

Table 8.2 Sensitivity of identified local heritage sites

Site ID	Description	Significance	Number of criteria met	Sensitivity
G2H-19-H13	Gowrie Junction Railway Station	Local	2	Moderate
G2H-19-H14	Single structure	Local	1	Low
G2H-19-H16	Two single structures	Local	2	Low
G2H-19-H24	House and windmill	Local	3	Moderate
G2H-19-H25	Bicentennial National Trail	Local	3	Moderate
G2H-19-H26	Multiple structures	Local	4	Moderate
G2H-19-H30	Railway culverts, Main Line at Helidon	Local	5	High

8.3 Potential impacts and magnitude of change

Potential impacts on heritage sites can be divided into two main types: direct and indirect.

Direct impacts occur if a heritage place or site is located directly in a development area and/or would be physically impacted by a development. Such impacts include the demolition or substantial alteration of a building, or the disturbance of an archaeological site.

Direct impacts to heritage sites are most likely to occur during site preparation as a part of the construction phase. At this time, clearing and stripping activities will require the demolition of heritage structures and the destruction of archaeological sites within the disturbance footprint.

Indirect impacts, alternative, are those that alter the surrounding physical environment in such a way that a heritage place or site is affected. Indirect impacts might include extra vibration from construction activities or subsequent traffic load, as well as additional water runoff or sediment deposition due to changing hydrology. Indirect impacts may occur during any phase of the Project, when pre-construction, construction, operation activities result in excessive dust noise or vibration, which damages heritage structures.

The effects of direct or indirect impacts are measured in terms of the extent to which they alter the heritage values of the heritage place. This is represented as the 'magnitude of change' (refer Section 3.4). The following impact assessment is based on the construction phase of the Project, as there are no anticipated significant operational impacts from dust or vibration. Further detail is provided in Appendix P: Operational noise and vibration technical report.

8.3.1 Registered heritage places

A review of the impact to the State and locally listed heritage places has been conducted as part of this impact assessment. The results are shown in Table 8.3 and Table 8.4.

As part of the EIS, consultation was undertaken in order to gain further insight into the potential impacts to the Bicentennial National Trail. The stakeholders for the Bicentennial National Trail were briefed in June 2020 regarding the Project in order to provide them with an opportunity to voice any concerns about the Project. Communication with the stakeholders for the Bicentennial National Trail will continue throughout the pre-construction and construction phases of the Project.

Table 8.3 State-listed heritage places and potential risk of impact from the Project

Site ID	Description	Potential impact	Likely magnitude of change
Baillie Henderson Hospital (601161)	State-listed heritage place located within the cultural heritage study area	Heritage place is located approximately 1 to 1.5 km south of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project, including from vibration during construction and operations	No change
Swansons Rail Bridge (600871)	State-listed heritage place located within EIS investigation corridor	Heritage place located approximately 1 km north of the Project disturbance footprint (near the eastern tunnel portal).	No change
Main Range Railway (601480)	State-listed heritage place located within disturbance footprint	The Project tunnel traverses under the Main Range Railway within the vicinity of Mount Kynoch. Possible vibration impact from earthworks, however there is no anticipated exceedance of criteria resulting in structural damage due to tunnelling. This is discussed further in the noise and vibration assessment completed in the EIS Chapter 15: Noise and vibration. There are no expected impacts to the Main Range Railway during the operation of the Project.	Negligible

Site ID	Description	Potential impact	Likely magnitude of change
Lockyer Creek Railway Bridge (600513)	State-listed heritage place located within EIS investigation corridor	Heritage place located approximately 800 m north-east of the Project disturbance footprint at Withcott Seedlings. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project, including impacts in relation to flooding.	No change
Harlaxton House (600839)	State-listed heritage place located within the cultural heritage study area	Heritage place located approximately 1.25 km south of the Project disturbance footprint (near the eastern tunnel portal). The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change

Table 8.4 Locally listed heritage places and potential risk of impact from the Project

Site ID	Description	Potential impact	Likely magnitude of change
254-272 New England Highway	Local heritage place located within the EIS investigation corridor	Heritage place located approximately 800 m south of the eastern tunnel portal.	No change
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	The Project traverses the northern limits of the Mount Lofty Rifle Range, approximately 200 m north of the known heritage elements. The Project will not impact the heritage elements; however, a small portion of the land will be directly impacted by the Project.	Negligible
Bicentennialail, National Trail G2H-19-H25	Local heritage place located within the Project disturbance footprint	Heritage place that will be intersected by the Project alignment at Gittins Road, Ballard Possible temporary vibration impact from earthworks, along with temporary access restrictions during construction.	Negligible
Gunn Street, Helidon (Church) complex)	Local heritage place located outside EIS investigation corridor	Heritage place located approximately 1.4 km south-east of eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
Gunn Street Helidon (Convent)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1.4 km south-west of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
2 Arthur Street/ 1 Bowen Street, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
5 William Street, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1.1 km south-west of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change

Site ID	Description	Potential impact	Likely magnitude of change
14 Williams Street, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1 km south-east of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
22 Wrights Road, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1 km south-east of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
10 Wrights Road, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1 km south-east of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
18 Wrights Road, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1 km south-east of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change
14 Russell Street, Helidon (House)	Local heritage place located outside the EIS investigation corridor	Heritage place located approximately 1 km south-east of the eastern extent of the Project disturbance footprint. The Project will not impact the heritage place. There are no anticipated direct or indirect impacts to the heritage place as a result of the Project.	No change

8.3.2 Potential local heritage places

The heritage significance assessment (refer Section 7) identified six AOIs (excluding the Bicentennial National Trail) which have values of local cultural significance under the ICOMOS and DEHP guidelines. The potential local heritage places that are within the Project disturbance footprint, and as such direct impacts are likely to occur as a result of the Project, are listed in Table 8.5, along with the potential nature of impact and magnitude of change.

Table 8.5 Potential local heritage places at risk of direct impact from the Project

Site ID	Description	Potential impact	Likely magnitude of change
G2H-19-H13	Gowrie Junction Railway Station	Removal of concrete structure and any archaeological deposits relating to the former railway station.	Major
G2H-19-H16	Two single structures	Disturbance of entire site. Removal of archaeological deposits relating to the former land use (e.g quarry and railway housing).	Major
G2H-19-H24	House and windmill	Possible dust and vibration from use of the access track. Access track through site will alter the layout of the area and possibly disturb any archaeological deposits associated with the site	Medium
G2H-19-H30	Railway culverts, Main Line at Helidon	Works within the existing West Moreton System rail corridor may impact on the historical sandstone culvert.	Major

As part of the EIS, a preliminary construction, noise and vibration assessment has been conducted for the Project. The assessment identified potential areas in which heritage sites will be at risk of indirect impacts associated with the construction activities resulting in excessive dust, noise or vibration. The assessment identified vibration impacts as a potential risk to heritage sites. The vibration assessment results are indicative only and subsequent site-specific assessments are required to confirm the extent of the potential vibration impacts on heritage sites.

The preliminary construction vibration assessment has outlined the potential local heritage sites that are at risk of vibration impact.

The assessment considered the sites located within the disturbance footprint and determined that they are high-risk and subject to possible vibration impacts due to the close proximity of the sites to the Project alignment.

For these sites, the extent of impact has not been determined as further detailed assessments prior to construction are required.

It is noted that exceedance of the criterion does not necessarily result in damage to the heritage sites. However, as a mitigation measure, frequent monitoring of high-risk sites will assist in identifying whether impacts are occurring, and the extent of vibration impacts on heritage sites. For further details, refer to Chapter 15: Noise and vibration, Appendix O: Construction noise and vibration technical report.

Potential local heritage sites at risk of indirect impacts are listed in Table 8.6, along with the potential nature of impact and magnitude of change.

Table 8.6 Potential local heritage places at risk of indirect impact from the Project

Site ID	Description	Potential impact	Likely magnitude of change
G2H-19-H14	Single structure	Vibration from earthworks, site set-up and roadworks may affect the foundations of the structure and lead to future superficial damage	Negligible
G2H-19-H26	Multiple structures	Vibration from earthworks, site set-up and roadworks may affect the foundations of the structure and lead to future superficial damage.	No Change
G2H-19-H30	Railway culverts, Main Line at Helidon	Possible vibration impact due to proximity to the Project. Extent of indirect impact (change to flow velocities and vibration) is not known, and further assessment is required.	Unknown

9 Proposed mitigation measures

The accepted methodology for managing impacts on heritage places is to avoid wherever possible, minimise as far as is practical and then mitigate where avoidance and minimisation is not possible (ICOMOS 2011). This section describes the measures that either have been, or will be adopted by the Project to avoid, minimise or mitigate potential impacts on heritage places. In the case of local heritage places, it is proposed that regard will be given to the provisions of the local planning scheme where possible. Although the Project is exempt from such requirements, the planning scheme does provide a benchmark of the level of heritage protection expected by the relevant local government and local community.

9.1 Design considerations

Development of the design for the Project has progressed in parallel with the impact assessment process. As a consequence, design solutions for avoiding, minimising or mitigating impacts have been incorporated into the design as appropriate and where possible. Mitigation measures and controls that have been factored into the design for the Project are summarised in Table 9.1.

These measures aim to avoid or minimise impacts to cultural heritage, and therefore contribute to a lowering of the initial significance rating for impacts on cultural heritage.

Table 9.1 Initial mitigation relevant to non-Indigenous cultural heritage

Aspect	Initial mitigation measures
All heritage	Project extents are minimised to avoid impacts to previously undisturbed areas as far as practicable The Gowrie to Grandchester future State transport corridor was developed with consideration of Indigenous and non-Indigenous cultural heritage assessments, including field surveys. Refer to EIS Chapter 2: Project rationale for more details.
Tunnel and structures	Key design features of the Project such as the tunnel and viaducts will mitigate some of the surface disturbance impacts. For example, the viaduct over the Gittins Road will minimise impacts on the Bicentennial National Trail post-construction.

Potential additional mitigation measures proposed to be implemented during subsequent Project phases (for example, detailed design, construction and operational phases) are presented in Section 9.2 and the potential impact on heritage values is reassessed.

9.1.1 Assessment of significance of impact – design considerations

The significance of predicted impacts to each of the heritage sites is assessed in Table 9.2 and Table 9.3, using the rankings established in the previous sections (e.g. Table 3.7). By identifying the significance of possible impacts to heritage places post-design considerations, this assessment highlights the potential magnitude of change to heritage items should the impacts proceed without the implementation of additional mitigation measures during the future phases of development.

Table 9.2 Assessment of significance of potential impacts to State and locally listed heritage places - design considerations

Site ID	Description	Sensitivity	Magnitude of change	Significance of impact
Baillie Henderson Hospital (601161)	State-listed heritage place located within the cultural heritage study area	High	No Change	Neutral
Swansons Rail Bridge (600871)	State-listed heritage place located within EIS investigation corridor	High	No Change	Neutral
Main Range Railway (601480)	State-listed heritage place located within disturbance footprint	High	Negligible	Slight

Site ID	Description	Sensitivity	Magnitude of change	Significance of impact
Lockyer Creek Railway Bridge (600513)	State-listed heritage place located within EIS investigation corridor	High	No Change	Neutral
Harlaxton House (600839)	State-listed heritage place located within the cultural heritage study area	High	No Change	Neutral
Bicentennial National Trail (G2H-19-H25)	Local heritage place located within the disturbance footprint	Moderate	Negligible	Neutral/slight
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	Moderate	Negligible	Neutral/slight

Table 9.3 Assessment of significance of potential impacts on AOI - design considerations

Site ID	Description	Sensitivity	Magnitude of change	Significance of impact
G2H -19-H13	Gowrie Junction Railway Station	Moderate	Major	Moderate/ large
G2H-19-H14	Single structure	Low	Low	Neutral/slight
G2H-19-H16	Two single structures	Low	Major	Slight/ moderate
G2H-19-H24	House and Windmill	Moderate	Medium	Moderate
G2H-19-H26	Multiple structures	Moderate	Low	Slight
G2H-19-H30	Railway culverts, Main Line at Helidon	High	Major	Large/very large

9.2 Proposed mitigation measures

The accepted methodology for managing impacts on heritage places is to avoid wherever possible, minimise as far as is practical and then mitigate where avoidance and minimisation is not possible (ICOMOS 2011).

To further avoid or minimise impacts to cultural heritage sites relevant to the Project, a number of additional mitigation measures have been proposed for implementation in future phases of Project delivery and are presented in Table 9.4. These measures incorporate ARTC's standard practices, as well as standard industry practice and legislative requirements.

Refer Table 9.5 for site specific mitigation measures considered for all non-Indigenous heritage. Table 9.6 details the proposed mitigation measures to be applied to the relevant State and locally listed heritage places. Table 9.7 details how these measures are proposed to be applied to each of the potential local heritage places identified in Table 8.2.

Proposed mitigation measures during construction are included in the draft Outline Environmental Management Plan (draft Outline EMP) (refer EIS Chapter 23: Draft Outline Environmental Management Plan).

Heritage places during operations will be managed in accordance with ARTC's existing environmental management system, procedures and policies. This includes maintaining a register of heritage places within the railway corridor and where applicable implementing measures similar to those proposed for construction during maintenance works.

Table 9.4 Mitigation measures - cultural heritage

Delivery phase	Aspect	Proposed additional mitigation measures
Detailed design	All heritage	<p>Undertake initial consultation with relevant heritage asset owners regarding the Project alignment and proposed activities including level of risk to the identified heritage and, if relevant, develop site-specific management measures with the asset owner/government agency.</p> <p>Design to avoid direct impacts to identified sites/items of Indigenous and non-Indigenous heritage significance where practicable.</p> <p>Undertake additional non-indigenous cultural heritage surveys targeting locations where access was constrained, or where values were of local significance. Where applicable, design to respond to the outcomes of any further cultural heritage surveys.</p>
Pre-construction	All heritage	<p>Construction planning will avoid directly impacting on identified sites/items of Indigenous and non-Indigenous heritage significance where practicable. If items/sites cannot be avoided, photographic/digital archival recording of the items/sites (e.g. former rail station sites and associated infrastructure, homestead diaries) and other contextual locations/structures of heritage significance will occur in accordance with outcomes of any further cultural heritage surveys for the Project. Items and sites will be collected prior to construction in accordance with the Heritage Management Plan to be developed as part of the Construction Environmental Management Plan (CEMP).</p> <p>The Heritage Management Plan will detail mitigation and management measures to be implemented during construction in relation to cultural heritage. It will include specific reference to the CHMPs and incorporate:</p> <ul style="list-style-type: none"> ■ Requirements for site induction, training, heritage monitors, inspections, audits, corrective actions, notification and classification of environmental incidents, record keeping, monitoring and performance objectives for handover on completion of construction ■ Heritage management actions to be undertaken by a suitably qualified heritage practitioner ■ Specific requirements for cultural heritage sites/items that cannot be avoided during construction, particularly the Bicentennial National Trail (G2H-19-H25), the Gowrie Junction Railway Station (G2H-19-H13), Junction Street Structure (G2H-19-H14), and railway culverts at Helidon (G2H-19-H30) ■ Unexpected finds procedure, including assessment by a suitably qualified person and notification obligations under the applicable legislation ■ Procedure for encountering potential burial sites or potential human skeletal material including notification obligations under applicable legislation ■ Any other requirements necessary to comply with conditions of approval, subsequent approvals, regulatory requirements or ARTC cultural heritage management plans/agreements. <p>Archaeological investigations will only be undertaken by archaeologists qualified and experienced in Indigenous and non-Indigenous (historic) heritage. Where necessary, works will be conducted in consultation with the relevant registered Aboriginal stakeholders in accordance with the CHMP in place between ARTC and relevant parties.</p>
	Vibration	<p>Building condition surveys will be undertaken at all vibration sensitive receptors identified during detailed design as being subject to potential vibration impacts, which may include structures of heritage value. Surveys will occur before and after undertaking vibration generating works (e.g. pile-driving), with the potential for monitoring during the construction activities as per noise and vibration plans.</p> <ul style="list-style-type: none"> ■ Tailor construction methodology to limit vibration impacts to heritage structures. For example, select plant and equipment with a preference for non-vibratory plan items near vibration sensitive receptors ■ Vibration at heritage places to be kept below 2mm/sec where-ever possible (in accordance with German Standard DIN4150 Part 3 1999 Structural Vibration in Buildings – Effects on Structures, Berlin) ■ Pre-construction and post-construction condition dilapidation surveys to be undertaken at all heritage places at risk of vibration impact in consultations with a suitably qualified person (heritage practitioner) ■ Vibration to be monitored at places where thresholds exceedances are possible

Delivery phase	Aspect	Proposed additional mitigation measures
		<ul style="list-style-type: none"> Where vibration exceedances occur, change design/construction methodology where possible to reduce impact. <p>If impacts cannot be avoided, consultation with the relevant heritage asset owner/government agency will be undertaken to identify and implement appropriate mitigation measures prior to vibration generating activities commencing. The measures are to be included in the Heritage Management Plan.</p> <p>Prior to the commencement of Project works, further targeted assessments will be undertaken to determine whether the vibration impacts exceed the criterion at the following heritage sites (but not limited to) and whether subsequent vibration monitoring is required:</p> <ul style="list-style-type: none"> Main Range Railway (601480) Mount Lofty Rifle Range Bicentennial National Trail (G2H-19-H25) Gowrie Junction Road structure (G2H-19-H14) Howmans Road multiple structures (G2H-19-H26) Helidon Dip Road culvert (G2H-19-H30)
	Non-Indigenous built heritage	<p>If impacts cannot be avoided (e.g. G2H-19-H13), the following pre-construction measures may be implemented:</p> <ul style="list-style-type: none"> Archival recording <ul style="list-style-type: none"> Undertake archival photographic recording in accordance with DEHP (2013) Guideline: Archival Recording of Heritage Places Copies of archival records to be lodged with the John Oxley Library, and local libraries or historical societies as appropriate. Repair <ul style="list-style-type: none"> Any damage to heritage structures will be repaired in a way which conserves the heritage values of the place (see Burra Charter Article 1.4 (ICOMOS (Australia) 2013)) Relocation <ul style="list-style-type: none"> Relocation of heritage items is generally undesirable, as setting forms an intrinsic part of heritage value (ICOMOS (Australia) 2013) However, if impacts cannot be managed in any other way, it may be appropriate to relocate buildings or items of moveable heritage to another location, such as a local historical society. Any damage to heritage structures during relocation will be repaired in a way which conserves the heritage values of the place (see Burra Charter Article 1.4 (ICOMOS (Australia) 2013)).
	Non-Indigenous archaeological heritage	<p>If impacts to non-Indigenous cultural heritage places cannot be avoided, the following pre-construction measures may be implemented by suitably qualified historical archaeologists:</p> <ul style="list-style-type: none"> Archaeological survey <ul style="list-style-type: none"> Undertake archaeological survey to map all elements of heritage places¹ and identify areas of possible subsurface deposit. Archaeological excavation <ul style="list-style-type: none"> If warranted by results of archaeological survey, undertake a two-stage archaeological excavation: <ul style="list-style-type: none"> Stage 1 – test excavation to confirm subsurface deposit Stage 2 – salvage excavation of subsurface deposits (if required) Stage 3 – prepare and finalise post excavation report and analysis.

Delivery phase	Aspect	Proposed additional mitigation measures
		<ul style="list-style-type: none"> ■ Archaeological surface collection <ul style="list-style-type: none"> – Collect archaeological artefacts on the ground surface – Depending on nature of site may be undertaken in conjunction with, or in place of, excavation. ■ Archaeological monitoring <ul style="list-style-type: none"> – If warranted by results of archaeological survey, archaeologists will monitor ground breaking works to identify any subsurface deposits ■ Archaeological chance finds <ul style="list-style-type: none"> – In the case of unexpected archaeological finds, the appropriate protocols will be included in the Heritage Management Plan and will be followed
Construction and Commissioning	All heritage	<p>Where impacts can be avoided to known Indigenous or non-Indigenous heritage, appropriate precautionary measures, such as informing relevant staff and contractors of the nature and location of the items and need to avoid impacts, detailing location on site maps, along with temporary protective fencing and signage will be implemented for those sites within close proximity of the area of works.</p> <p>Works will not be performed on potential heritage items without securing required approvals and appropriate management plans in place.</p> <p>Temporary protective barricading will be installed around heritage places or artefacts that are located within the Project disturbance footprint and will be retained.</p> <p>If a suspected Aboriginal or historic heritage item or site is identified, any works that may impact the item or site will stop, and the unexpected finds procedure in the Heritage Management Plan will be followed. Any responses to chance finds will only be undertaken by archaeologists qualified and experienced in the relevant discipline.</p> <p>In the event of the discovery of potential human remains, all work in the area will cease and the relevant statutory process for the notification and management of human remains will be instigated, in accordance with the Heritage Management Plan and other relevant plans.</p>
	Non-Indigenous built heritage	<p>Vibration monitoring will be undertaken at vibration sensitive receptors where the potential for building/structural damage risk is identified during the detailed design phase or as part of pre-construction building surveys. Vibration monitoring will be undertaken by a suitably qualified person, in accordance with relevant standards and guidelines. Where monitoring is required to occur at a heritage structure, placement of equipment will be carried out on advice from a suitably qualified person (heritage practitioner).</p> <p>Where vibration exceedances occur, the design/construction methodology will be changed, where possible, to reduce impact. This may include the use of rock saws instead of blasting, damped tips on rock-breakers, and/or avoiding dynamic compaction when piling.</p> <p>Any damage that occurs at heritage places as a result of vibration or other Project activity will be repaired in accordance with Burra Charter principles (Article 1.4)</p>
	Non-Indigenous archaeological heritage	<p>Archaeological monitoring</p> <ul style="list-style-type: none"> ■ If warranted by results of archaeological survey, archaeologists will monitor ground breaking works to identify any subsurface deposits <p>Archaeological chance finds</p> <ul style="list-style-type: none"> ■ In the case of unexpected archaeological finds, the appropriate protocols will be included in the Heritage Management Plan and will be followed.

Delivery phase	Aspect	Proposed additional mitigation measures
Operation	Vibration	<p>Maintain a register of all known cultural heritage sites within the railway corridor and where applicable directly adjacent. Noting that the following sites are likely to be applicable to operations</p> <ul style="list-style-type: none"> ■ Main Range Railway (601480) ■ Mount Lofty Rifle Range ■ Bicentennial National Trail (G2H-19-H25) ■ Gowrie Junction Road Structure (G2H-19-H14) ■ Howmans Road Multiple Structures (G2H-19-H26) ■ Airforce Road Culvert/Siding (G2H-19-H30). <p>Establish protocols as part of the existing management systems to ensure that works within proximity to these sensitive receptors have the relevant internal approvals and mitigation measures in place. For example:</p> <ul style="list-style-type: none"> ■ Potential for vibration impacts to heritage sites to be assessed prior to the undertaking of maintenance activities that have potential to result in vibratory impacts. ■ Pre- and post-condition structural surveys will be undertaken at all heritage buildings and structures when maintenance activities may result in exceedance of the structural damage vibration criteria relevant to the site and nature of the works (e.g. German Standard DIN4150 Part 3 1999 Structural Vibration in Buildings - Effects on Structures, Berlin) ■ If impacts cannot be avoided, the following measures may be implemented: <ul style="list-style-type: none"> – Archival recording – Relocation – Archaeological monitoring – Repair

Table note:

1 Heritage place, a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions (ICOMOS 2013)

9.2.1 Monitoring

Vibration monitoring will be undertaken at locations where the potential for building/structural damage risk is identified from the noise and vibration modelling (for construction and operation), further surveys during the detailed design phase or as part of pre-construction dilapidation surveys. Vibration monitoring will be undertaken by a suitably qualified person, in accordance with relevant standards and guidelines. Where monitoring is required to occur at a heritage structure, placement of equipment will be carried out on advice from a suitably qualified person (heritage practitioner).

Monitoring and reporting forms part of the compliance process of the Project. The details of monitoring programs are provided in the draft Outline EMP (refer EIS Section 23.8 Environmental Monitoring).

9.2.2 Site specific mitigation measures

Table 9.4 details the general cultural heritage mitigation measures across the delivery phases for all cultural heritage places. For the heritage places where the significance of impact and magnitude of change is neutral/negligible as listed in Table 9.3, refer to the mitigation measures outlined in Table 9.4. For a detailed description of the relevant site-specific mitigation measures, refer to Table 9.5.

Relevant mitigation measures will be applied during the design, pre-construction and construction phases of the Project.

Table 9.5 Site specific mitigation measures for non-Indigenous heritage

Management and Minimisation	Description
Vibration impacts	<p>Building condition surveys will be undertaken at all vibration sensitive receptors identified during detailed design as being subject to potential vibration impacts, which may include structures of heritage value. Surveys will occur before and after undertaking vibration generating works (e.g. pile-driving tunnelling and blasting), with the potential for monitoring during the construction activities as per noise and vibration plans.</p> <ul style="list-style-type: none"> ■ The construction methodology will be designed to limit vibration impacts to heritage structures ■ Vibration at heritage places will be kept below 2 mm/s wherever possible (in accordance with the German Standard DIN4150 Part 3 1999 Structural Vibration in Buildings - Effects on Structures, Berlin) ■ Pre-construction and post-construction condition dilapidation surveys will be undertaken at all heritage places at risk of vibration impact in consultation with a suitably qualified person (heritage practitioner) ■ Vibration will be monitored at places where thresholds exceedances are possible. Vibration monitoring will be undertaken by a suitably qualified person, in accordance with relevant standards and guidelines. ■ Prior to the commencement of Project works, further targeted assessments will be undertaken to determine whether the vibration impacts exceed the criterion at the following heritage sites and whether subsequent vibration monitoring is required: <ul style="list-style-type: none"> – Main Range Railway (601480) – Bicentennial National Trail (G2H-19-H25) – Mount Lofty Rifle Range – Gowrie Junction Railway Structure (G2H-19-H13) – Gowrie Junction Road Structure (G2H-19-H14) – Junction Street Structures (G2H-19-H16) – Airforce Road Culvert/Siding (Helidon Explosives) (G2H-19-H30). ■ Where vibration exceedances occur, the design/construction methodology will be changed, where possible, to reduce impact ■ If impacts cannot be avoided, consultation with the relevant heritage asset owner/government agency will be undertaken to identify and implement appropriate mitigation measures prior to vibration generating activities commencing. The measures are to be included in the Heritage Management Plan.

Management and Minimisation	Description
Built heritage impacts	<p>If impacts cannot be avoided, the following pre-construction measures may be implemented:</p> <ul style="list-style-type: none"> ■ Archival recording <ul style="list-style-type: none"> – Undertake digital archival photographic recording in accordance with DEHP (2013) Guideline: Archival Recording of Heritage Places – Copies of archival records will be lodged with the John Oxley Library, and local libraries or historical societies and relevant land managers as appropriate ■ Repair <ul style="list-style-type: none"> – Any damage to heritage structures will be repaired in a way which conserves the heritage values of the place (see Burra Charter Article 1.4 (ICOMOS (Australia) 2013)) ■ Relocation <ul style="list-style-type: none"> – Relocation of heritage items is generally undesirable, as setting forms an intrinsic part of heritage value (ICOMOS (Australia) 2013) – However, if impacts cannot be managed in any other way, buildings or items of moveable heritage may be relocated to another location, such as a local historical society.
Archaeological aspect impacts	<p>If impacts to non-indigenous cultural heritage places cannot be avoided., the following pre-construction measures may be implemented by suitably qualified historical archaeologists:</p> <ul style="list-style-type: none"> ■ Archaeological survey <ul style="list-style-type: none"> – Undertake archaeological survey to map all elements of heritage places¹ and identify areas of possible subsurface deposit ■ Archaeological excavation <ul style="list-style-type: none"> – If warranted by results of archaeological survey, undertake a three-stage archaeological excavation: <ul style="list-style-type: none"> ■ Stage 1 – test excavation to confirm subsurface deposit ■ Stage 2 – salvage excavation of subsurface deposits (if required) ■ Stage 3 – prepare and finalise post excavation report and analysis. ■ Archaeological surface collection <ul style="list-style-type: none"> – Collect archaeological artefacts on the ground surface – Depending on nature of site will be undertaken in conjunction with, or in place of, excavation ■ Archaeological monitoring <ul style="list-style-type: none"> – If warranted by results of archaeological survey, archaeologists will monitor ground breaking works to identify any subsurface deposits ■ Archaeological chance finds <ul style="list-style-type: none"> – In the case of unexpected archaeological finds, the appropriate protocols will be included in the Heritage Management Sub-plan and will be followed.

Source: ICOMOS (1990)

Table note:

1 Heritage place, a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions (ICOMOS 2013)

Table 9.6 Proposed mitigation measures for State and local heritage places

Site ID	Description	Significance of impact	Mitigation
Main Range Railway (601480)	State-listed heritage place located within disturbance footprint	Neutral/slight	<ul style="list-style-type: none"> ■ Consultation with QR and DES during detailed design ■ Confirm via additional modelling during detailed design if vibration is likely to impact on the structure as a result of the tunnelling methodology. If impacts are predicted, develop additional mitigation measures in consultation with QR and DES

Site ID	Description	Significance of impact	Mitigation
Bicentennial National Trail (G2H-19-H25)	Local heritage place located within the Project disturbance footprint where the alignment is in viaduct passing over the trail	Neutral/slight	<ul style="list-style-type: none"> Rehabilitation of Gittins Road reserve, including where applicable reinstatement of the pavement and signage Traffic control including pedestrian and horse traffic measures will consider the areas heritage values and access during construction.
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	Neutral/slight	<ul style="list-style-type: none"> Tailor construction methodology to reduce impacts to heritage site

Table 9.7 Proposed mitigation measures for AOIs

Site ID	Description	Significance of impact	Mitigation
G2H -19-H13	Gowrie Junction Railway structure	Moderate/large	<ul style="list-style-type: none"> Avoid site If site avoidance is not possible: <ul style="list-style-type: none"> Digital archival recording Further site-specific assessment required to determine the extent of vibration impact to the site If vibration impacts exceed criterion: <ul style="list-style-type: none"> Pre-construction and post-construction condition dilapidation surveys to be undertaken in consultation with a suitably qualified person (heritage practitioner)
G2H-19-H14	Single structure	Neutral/slight	<ul style="list-style-type: none"> Tailor construction methodology to reduce dust impacts to heritage site
G2H-19-H16	Two single structures	Slight/moderate	<ul style="list-style-type: none"> Avoid site Further site-specific assessment required to determine the extent of vibration impact to the site If vibration impacts exceed criterion: <ul style="list-style-type: none"> Pre-construction and post-construction condition dilapidation surveys to be undertaken in consultation with a suitably qualified person (heritage practitioner) Implement protocols for responding to unexpected heritage finds If avoidance is not possible: <ul style="list-style-type: none"> Archaeological surface collection.
G2H-19-H24	House and windmill	Moderate	<ul style="list-style-type: none"> Tailor construction methodology to reduce impacts to heritage site Digital archival recording
G2H-19-H26	Multiple Structures	Neutral/ slight	<ul style="list-style-type: none"> Avoid site where practicable Digital archival recording Implement protocols for responding to unexpected heritage finds If avoidance is not possible: <ul style="list-style-type: none"> Archaeological survey Archaeological excavation

Site ID	Description	Significance of impact	Mitigation
G2H-19-H30	Railway culverts, Main Line at Helidon	Large/very large	<ul style="list-style-type: none"> Consultation with QR and potentially Lockyer Valley Regional Council during detailed design Avoid site where practicable, including erection of signage and barriers during construction works within the existing rail corridor Digital archival recording Further site-specific assessment required to determine the extent of vibration impact to the site If vibration impacts exceed criterion: <ul style="list-style-type: none"> Pre-construction and post-construction condition dilapidation surveys to be undertaken in consultation with a suitably qualified person (heritage practitioner)

9.3 Residual impacts

The assessment of significance of predicted post-mitigation impacts for each of the sites where impacts are predicted to occur or has the potential to occur is documented in Table 9.9. This assessment uses the rankings established in the previous sections to determine the residual significance of impacts after the mitigation measures have been applied as identified in Table 9.4.

Table 9.8 Assessment of significance of residual impacts to State and local heritage places

Site ID	Description	Sensitivity	Magnitude of change after mitigation	Significance of impact after mitigation
Main Range Railway (601480)	State-listed heritage place located within disturbance footprint	High	Negligible	Slight
Bicentennial National Trail (G2H-19-H25)	Local heritage place located within the Project disturbance footprint	Moderate	Negligible	Neutral/slight
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	Moderate	Negligible	Neutral/slight

Table 9.9 Assessment of significance of residual impacts from the Project on potential local heritage places

Site ID	Description	Sensitivity	Magnitude of change after mitigation	Significance of impact after mitigation
G2H -19-H13	Gowrie Junction Railway Station	Moderate	Low	Slight
G2H-19-H14	Single structure	Low	Negligible	Neutral/slight
G2H-19-H16	Two single structures	Low	Low	Neutral/slight
G2H-19-H24	House and windmill	Moderate	Low	Slight
G2H-19-H26	Multiple structures	Moderate	Negligible	Neutral/slight
G2H-19-H30	Railway culverts, Main Line at Helidon	High	Negligible	Slight

9.4 Cumulative impacts

The potential for cumulative impacts emerges when concurrent or consecutive activities bring about incremental change to heritage places and values. These changes may not be captured in an assessment for any single project, and instead need to be considered on a wider physical and temporal scale (ICOMOS 2011).

It should be noted that the results of cumulative impact assessments undertaken for cultural heritage sites and places must be interpreted with caution, not least because they are based (in part) on heritage datasets that are inevitably incomplete and contain various inconsistencies and errors. Godwin (2011), in particular, has questioned the value of cumulative impact assessments to cultural heritage management in Australia, arguing that the 'fundamentals' necessary for undertaking such assessments simply do not exist. The 'fundamentals' Godwin is referring are robust regional and national data sets for measuring proposed impacts and the determination of acceptable scientific and cultural impact thresholds.

In the case of this Project, the other projects most relevant to the cumulative impact assessment are considered to be the two adjoining Inland Rail projects B2G and H2C and the InterLinkSQ area.

The Project is adjoined by B2G in the west and H2C in the east. Of the two adjoining projects, B2G is largely comprised of greenfield development and overlaps with the Project in a greenfield area. Conversely, H2C is predominantly a brownfield development. The areas of overlapping boundaries are expected to be constructed primarily within previously disturbed land that is currently rail corridor, access tracks or immediately adjacent, within pre-disturbed areas.

The Project should be considered in light of the other ongoing and interrelated Inland Rail projects that have resulted in varying degrees of impact to heritage sites. Using the EIS investigation corridor as the basis of assessment in the three cases, an analysis was undertaken of the number of heritage sites impacted by the Project with B2G and H2C projects (refer Table 9.10). An investigation of the cumulative impacts of the Project in relation to the adjoining B2G and H2C projects highlights how the Project does not largely contribute to the overall impact to heritage sites within the broader context of the Inland Rail Program. The analysis suggested that the three adjoining projects will have a similar extent of impact to each other.

Within the adjoining projects, there is one instance where a heritage site occurs where two of the project investigation corridors overlap. In the eastern extent of G2H, G2H-19-H30 intersects with the western extent of the H2C project, therefore the mitigation measures associated with the Project and the H2C project are consistent to ensure that there are no residual cumulative impacts

Table 9.10 Summary heritage cumulative impacts for the G2H, B2G and H2C projects

Category	G2H			B2G			H2C			Total		
	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted
Bridge	1	0	0	8	3	38	7	5	71	16	8	50
Cemetery	0	0	0	1	0	0	3	0	0	4	0	0
Church	0	0	0	0	0	0	4	0	0	4	0	0
Hall	1	0	0	1	1	100	4	3	75	6	4	66
Homestead	3	0	0	8	3	38	0	0	0	11	3	27
Hotel	0	0	0	0	0	0	4	4	100	4	4	100
House	0	0	0	0	0	0	51	6	12	51	6	12
House & Shed	0	0	0	1	0	0	0	0	0	1	0	0
House & Windmill	1	0	0	40	0	0	0	0	0	41	0	0
Hut	0	0	0	0	0	0	1	1	100	1	1	100
Industrial	0	0	0	0	0	0	6	1	17	6	1	17

	G2H			B2G			H2C			Total		
Category	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted	# Sites	# Impacted	% Impacted
Memorial	0	0	0	0	0	0	4	3	75	4	3	75
Mill/Factory	1	0	0	2	2	100	0	0	0	2	2	100
Multiple structures	6	4	66	20	10	50	42	14	33	68	28	41
Orchard	0	0	0	1	1	100	0	0	0	1	0	0
Post Office	0	0	0	0	0	0	2	1	50	2	1	50
Railway	8	2	25	10	3	30	12	9	75	30	5	17
School	0	0	0	1	0	0	4	1	25	5	1	20
Shed	0	0	0	6	3	50	0	0	0	6	0	0
Shed & Windmill	0	0	0	4	2	50	0	0	0	4	0	0
Shop	0	0	0	1	0	0	6	2	33	7	2	29
Single structure	20	5	25	21	8	38	99	28	28	140	41	29
Trail	1	1	100	0	0	0	0	0	0	1	0	0
Windmill	0	0	0	23	0	0	56+	1	20	79+	1	<1
Total	42	12	28%	149	34	23%	254	79	31%	494+	111	22%

10 Summary and conclusion

This assessment has considered the potential non-Indigenous cultural heritage impacts of the Project. The assessment identified non-Indigenous (historical) cultural heritage relevant to the Project (i.e. within 1 to 3 km of the Project, the EIS investigation corridor). In total, there were 17 registered heritage places:

- Five heritage places of State significance, including several places associated with the existing West Moreton System rail corridor (i.e. Main Range Railway, Swansons Rail Bridge and Lockyer Creek Railway Bridge), the Great Dividing Range, and Baillie Henderson Hospital. Two of the sites (Main Range Railway, Swansons Rail Bridge) are also on the Register of the National Estate.
- No heritage places of national or world significance, though there were three non-statutory heritage places listed on the Register of the National Estate
- Eleven heritage places of local significance, including the Bicentennial National Trail.

Of these sites, the Project traverses two of these areas, whilst the other sites are sufficiently displaced from the Project that no impacts are predicted:

- The Project traverses under the Main Range Railway (i.e. the Project alignment is in tunnel at this location)
- The Project traverses the Bicentennial National Trail at Gittins Road. At this location the Project alignment is grade separated (i.e. the alignment crosses Gittins Road via a viaduct) and therefore have no residual impacts to access or alignment of the trail.
- Mount Lofty Rifle Range was also identified from a desktop review of relevant cultural reports for the area.

A search of heritage registers in addition to the analysis of historical mapping identified an initial 36 areas of cultural heritage potential within the cultural heritage study area. Of these, 30 sites were inspected, and the assessment found that 18 of the AOIs did not possess any historic structures, remains, or areas of archaeological potential. The significance of the remaining 12 AOIs, including which possessed a range of heritage values, significance or potential, were assessed in accordance with the QH Act and Assessing cultural heritage significance: Using the cultural heritage criteria (DEHP 2013).

The assessment determined that six of the AOIS are of local heritage significance (but currently unlisted) meaning that they have aesthetic, historic, scientific, or social value for past, present or future generations. The Bicentennial National Trail was also considered to be locally significant.

In accordance with the ICOMOS standard guidelines, each of the registered sites and the six sites of potential local heritage were then assessed based on sensitivity, magnitude of change and the likely indirect and direct impacts of the Project. The impact assessments found that, with appropriate mitigation and management measures (e.g. refinement of design to minimise impact during detailed design and archival recording where the impacts cannot be avoided), Project impacts can be reduced to neutral or slight for the three registered places and the six potential local heritage places identified during this assessment (refer Table 10.1 and Table 10.2).

Table 10.1 Summary cultural heritage significance and impact assessment for State and local heritage places

Site ID	Description	Cultural heritage significance	Significance of impact before mitigation	Significance of impact after mitigation
Main Range Railway (601480)	State-listed heritage place located within Project disturbance footprint	State	Slight	Slight
Bicentennial National Trail (G2H-19-H25)	Local heritage place located within the Project disturbance footprint	Local	Neutral/slight	Neutral/slight
Mount Lofty Rifle Range	Awaiting registration as a local heritage place Heritage place located within the EIS investigation corridor	Local	Neutral/slight	Neutral/slight

Table 10.2 Summary cultural heritage significance and impact assessment for potential local heritage places

Site ID	Description	Cultural heritage significance	Significance of impact before mitigation	Significance of impact after mitigation
G2H -19-H13	Gowrie Junction Railway Station	Local	Moderate/large	Slight
G2H-19-H14	Single structure	Local	Neutral/slight	Neutral/slight
G2H-19-H16	Two single structures	Local	Slight/moderate	Neutral/slight
G2H-19-H24	House and windmill	Local	Moderate	Slight
G2H-19-H26	Multiple structures	Local	Slight	Neutral/slight
G2H-19-H30	Railway culverts, Main Line at Helidon	Local	Large/very large	Slight

11 References

- Archaeo (2003). Toowoomba Bypass: Cultural Heritage Survey and Assessment, Toowoomba: Archaeo report to Main Roads.
- ARUP (2016). Preliminary Environmental Assessment Report: Gowrie to Helidon. Unpublished report to Australian Rail Track Corporation.
- ASHA (2019). ASHA Artefact Identification Workshop 2019 – Melbourne's Glass Bottles. Paper presented by Bronwyn Woff at the ASHA Artefact Identification Workshop. Melbourne.
- Beal, D J. (2012). A Detailed History of Gowrie Junction. Toowoomba & Darling Downs Family History Society Inc.
- Brannock & Associates. (2010). Toowoomba Regional Council Heritage and Urban Character Study. Unpublished report to Toowoomba Regional Council.
- Brier-Mills, M. (1976). "To 'Old Gowrie' and Toowoomba", John Oxley Library Manuscripts.
- Buchanan Architects (2000). Gatton Shire Cultural Heritage Study: Volume 3 – Murphy's Creek, Ma Ma Creek, Flagstone Creek, Stockyard Creek. Available: <https://www.lockyer valley.qld.gov.au/our-services/strategic-planning/Documents/Planning%20Studies/Gatton%20Shire%20Cultural%20Heritage%20Study%20V3%20-%20Murphy%27s%20Creek,%20Ma%20Ma%20Creek,%20Flagstone%20Creek%20and%20Stockyard%20Creek.pdf>
- Cameron, D. (2005). Closer Settlement in Queensland: The Rise and Decline of the Agrarian Dream, 1860s-1960s. In: G. Davison & M. Brodie, eds. *Struggle Country: The Rural Ideal in Twentieth Century Australia*. Clayton: Monash University ePress.
- Department of Environment and Heritage Protection (now DES)(2013). Assessing cultural heritage significance: Using the cultural heritage criteria. Brisbane.
- Department of Environment and Heritage Protection (now DES) (2017). Guideline: State Development Assessment Provisions – State code 14: Queensland heritage. Queensland Government. Available from: https://www.qld.gov.au/data/assets/pdf_file/0020/67133/sdap-heritage-statement.pdf
- Deutsches Institut für Normung (1999). *DIN 4150: Part 3 1999 Structural Vibration in Buildings - Effects on Structures*, Berlin: DIN.
- Everick Heritage Consultants (2018). Mount Lofty Rifle Range, Toowoomba, QLD: Historic Significance Assessment. Unpublished report to Defence Housing Australia.
- French, M. (1989). *Conflict on the Condamine: Aboriginies and European Invasion*. Toowoomba: Darling Downs Institute Press.
- French, M. (1990). *A Pastoral Romance: The Tribulation and Triumph of Squatterdom*. Toowoomba: Darling Downs Institute Press.
- French, M. (1992). *Pubs, Ploughs and Peculiar People: Towns, Farms and Social Life*. Toowoomba: Darling Downs Institute Press.
- French, M. & Waterson, D. (1982). *The Darling Downs: A Pictorial History, 1850-1950*. Toowoomba: Darling Downs Institute Press.
- Google Earth Pro 7.3.2.5776 (January 21, 2019). Gowrie Junction, Queensland. 27° 29' 56.23" S, 151° 53' 16.18" E, Eye alt 1.24 km. CNES / Airbus 2020.
- Gowrie Homestead, Kingsthorpe (2003). *[This paper was read to a meeting of the society on September 2003]*. Journal of the Royal Historical Society of Queensland, vol. 18, no. 9, pp. 406-419.
- Handford, K. (2003). *The History of Goombungee & District*. Toowoomba: K. Handford.
- ICOMOS (1990). *Charter for the Protection and Management of the Archaeological Heritage*. Lausanne.

ICOMOS (2011). *Guidance on Heritage Impact Assessments for Cultural World Heritage Places*. Paris.

ICOMOS (Australia). 2013. *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Burwood, Victoria, Victoria: Australia ICOMOS.

Kerr, J. (1993). *Queensland Rail Heritage Report, July 1993*. Unpublished report to Queensland Rail.

Kirkwood, L. & Quirk, Dr K. (2020). *Inland Rail Helidon to Calvert EIS: Chapter 18 Cultural Heritage*. Unpublished report prepared for Australian Rail Track Corporation.

Kitson, B. (2010). From runs to closer settlement. Queensland Historical Atlas.

<https://www.qhatlas.com.au/content/runs-closer-settlement>

Lehner, D. (2017). Darling Downs: Natural Features and Pastoral Runs 1827 to 1859: ANPS Data Report No. 6. Australian National Placenames Survey (ANPS).

<https://www.anps.org.au/upload/ANPSDataReport6.pdf>

Lockyer Valley Regional Council (2003). Laidley Shire Planning Scheme. Available:

<https://www.lockyervalley.qld.gov.au/our-services/strategic-planning/Documents/Planning%20Schemes/Laidley%20Planning%20Scheme%20%20with%20LGIP%2020180627.pdf>. [20 September 2018].

Lockyer Valley Regional Council (2007). *Gatton Planning Scheme*. Available from:

<https://www.lockyervalley.qld.gov.au/our-services/strategic-planning/Documents/Planning%20Schemes/Gatton%20Planning%20Scheme%20with%20LGIP%2020180627.pdf>

Love, S. & Robins, T. (2018). *Mount Lofty Rifle Range: Historic Significance Assessment*. Toowoomba: Everick Heritage Consultants Pty Ltd. Unpublished report prepared for Defence Housing Australia.

McDonald, I. (2001). *Toowoomba City Centre Heritage Study, Volume 1*. Unpublished report prepared for Toowoomba Regional Council.

Niche Environment and Heritage. (2014). Tunnel Lowering Feasibility Advice, Little Liverpool and Toowoomba Range. Unpublished report to SMEC, on behalf of Queensland Rail.

O'Sullivan, D. (1992). *Dairying History of the Darling Downs*. Toowoomba: USQ Press.

Queensland Government (1872). Open Data Portal: *Map of the Southern Portion of the Colony of Queensland showing the Surveyed Runs Sheet 1*. [Map]

https://gisservices.information.qld.gov.au/arcgis/rest/directories/historicalscans/cad_scans/cad-map-se-queensland-surveyed-runs-sh1-1872.jpg

Queensland Government (1894). Open Data Portal: *Queensland Run Maps. Darling Downs Sketch Map showing the Surveyed and Unsurveyed Maps*. [Map]

https://gisservices.information.qld.gov.au/arcgis/rest/directories/historicalscans/cad_scans/pre/cad-map-darling-downs-original-runs-1883-20pc.jpg

Queensland Government (1944). Open Data Portal: *Toowoomba Topographic Map*. [Map]

https://gisservices.information.qld.gov.au/arcgis/rest/directories/historicalscans/topo_scans/topo-map-1mile-military-line-colour-toowoomba-ed-1-1944.jpg

Rosalie Shire Historical Society Inc., Goombungee, Queensland. In D. J. Beal (2012). *A Detailed History of Gowrie Junction*. Toowoomba & Darling Downs Family History Society Inc.

State Library of Queensland (ca. 1870). Harlaxton in Toowoomba, Queensland, ca. 1870 [Photograph] John Oxley Library.

https://digital.slq.qld.gov.au/delivery/DeliveryManagerServlet?change_ing=en&dps_pid=IE88194

State Library of Queensland (ca. 1877). *Open carriage outside the Westbrook Station homestead, ca. 1877*. [Photograph] John Oxley Library.

https://digital.slq.qld.gov.au/delivery/DeliveryManagerServlet?change_ing=en&dps_pid=IE106839

State Library of Queensland (1864). *[Part of] squatting map of the Darling Downs district*. [Map] by J. W. Buxton, John Oxley Library.

http://bishop.slq.qld.gov.au/view/action/singleViewer.do?dvs=1588732716861~48&locale=en_US&metadata_object_ratio=14&show_metadata=true&VIEWER_URL=/view/action/singleViewer.do?&DELIVERY_RULE_ID=10&frameId=1&usePid1=true&usePid2=true

State Library of Queensland (1902). Steam Train and carriages crossing the railway bridge between Kingsthorpe and Gowrie Junction, ca. 1902. [Art] (John Oxley Library, State Library of Queensland)

State Library of Queensland (1919). 'The Queenslander': *Gowrie Station Homestead, eighteen miles from Charleville* – H. J. Walton photo. (April 12, 1919). John Oxley Library.

http://bishop.slq.qld.gov.au/view/action/singleViewer.do?dvs=1588143409346~908&locale=en_US&metadata_object_ratio=14&show_metadata=true&VIEWER_URL=/view/action/singleViewer.do?&DELIVERY_RULE_ID=10&frameId=1&usePid1=true&usePid2=true

Strong, M. K., Tucci, A. & Foley, J. (2015). Aboriginal Cultural Heritage Survey, Assessment and Mitigation for the Toowoomba Second Range Crossing: Gore Highway, Westbrook, to Postmans Ridge Road, Helidon, South East Queensland, Sandstone Point: Turnstone Archaeology for Western Wakka Wakka (Beattie), on behalf of Department of Transport and Main Roads.

Surveyor General's Office. (1883). *Darling Downs: Sketch Map Showing the Surveyed and Unsurveyed Runs*. Queensland Run Maps. Brisbane.

Toowoomba Chronicle (TC) (various dates), n.d.

Turnstone Archaeology. (2015). *Aboriginal Cultural Heritage Survey, Assessment and Mitigation for the Toowoomba Second Range Crossing: Gore Highway, Westbrook, to Postmans Ridge Road, Helidon, South East Queensland*. Unpublished report to Western Wakka Wakka (Beattie), on behalf of DTMR.

Webber, B. (1997) *Railway Tunnels in Queensland*. Australian Railway Historical Society, Queensland Division.