

APPENDIX K
Heritage Impact Statement

REVISED MARTINS CREEK QUARRY EXTENSION PROJECT

Heritage Impact Statement

FINAL

December 2020



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Heritage Impact Statement

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Daracon Group

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1.0 Introduction

Martins Creek Quarry (the Quarry) is situated within the Dungog Local Government Area (LGA), near the village of Martins Creek, New South Wales (NSW), approximately 7 kilometres (km) north of Paterson and 20 km north of Maitland.

In 2016, a development application was submitted by Buttai Gravel Pty Ltd, hereafter referred to as Daracon, for the consolidation of the existing development approvals and the expansion of the Quarry into new areas to extract approximately 1.5 million tonnes (Mt) of material per annum (pa) over a 30 year period (the Original Project). The development application is being assessed as a State Significant Development (SSD) (application number SSD 6612), requiring approval under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Environmental Impact Statement (EIS) for the Original Project (Monteath & Powys, 2016) was placed on public exhibition from 13 October to 24 November 2016. Niche Environment and Heritage prepared a Historical Heritage Assessment (HHA) as part of the EIS to identify and assess potential heritage impacts associated with the Original Project's proposed quarrying operations. The HHA concluded that there would be no impact on the heritage significance of the local heritage item, being the Martins Creek Quarry (Item I07 on the Dungog LEP 2014), as the significance of the quarry is assessed as restricted to local historical heritage values; the original extent and historical setting of the quarry has largely been lost through continuous use and expansion of the site; and the proposed development that will be carried out on the part of the allotment containing the local heritage item will only consist of low impact exploration activities. The HHA recommended that no further historical heritage assessment was necessary prior to the commencement of extraction and exploration works.

During the exhibition of the EIS, a number of submissions were received relating to historical heritage. Specifically, agencies have requested the preparation of a Heritage Impact Statement (HIS) that addresses the potential heritage impacts associated with the haulage route proposed as part of the Original Project, particularly relating to heritage values in Paterson and Bolwarra, including:

- potential vibration impacts (if any) of the proposed number and frequency of trucks on the structural integrity of listed heritage items
- potential impacts to the significance of the heritage conservation areas as a result of the number and frequency of trucks travelling through a conservation area
- the impacts of proposed intersection upgrade works on the curtilage and significance of listed items and any conservation areas.

Umwelt (Australia) Pty Ltd (Umwelt) have been engaged to prepare a HIS to consider the potential heritage impacts associated with the proposed haulage route (shown in **Figure 1.1**) and in turn address the issues raised by the Dungog Shire Council (Dungog Council), and Department of Planning and Environment (DPE)¹.

During 2018 and 2019, following further community engagement and feedback as well as the change to Quarry operations in September 2019, Daracon have undertaken further quarry planning and design activities to optimise the use of the existing resource and minimise environmental and community impacts. As a result, the project now includes a number of amendments including further reductions in road transportation volumes, peak hourly truck movements, operational hours, as well as a 13.5 hectare (ha) reduction in the project disturbance footprint (hereafter referred to as the Revised Project). The Revised Project is discussed in further detail in **Section 3.0**.

¹ Now the Department of Planning, Infrastructure and Environment (DPIE)

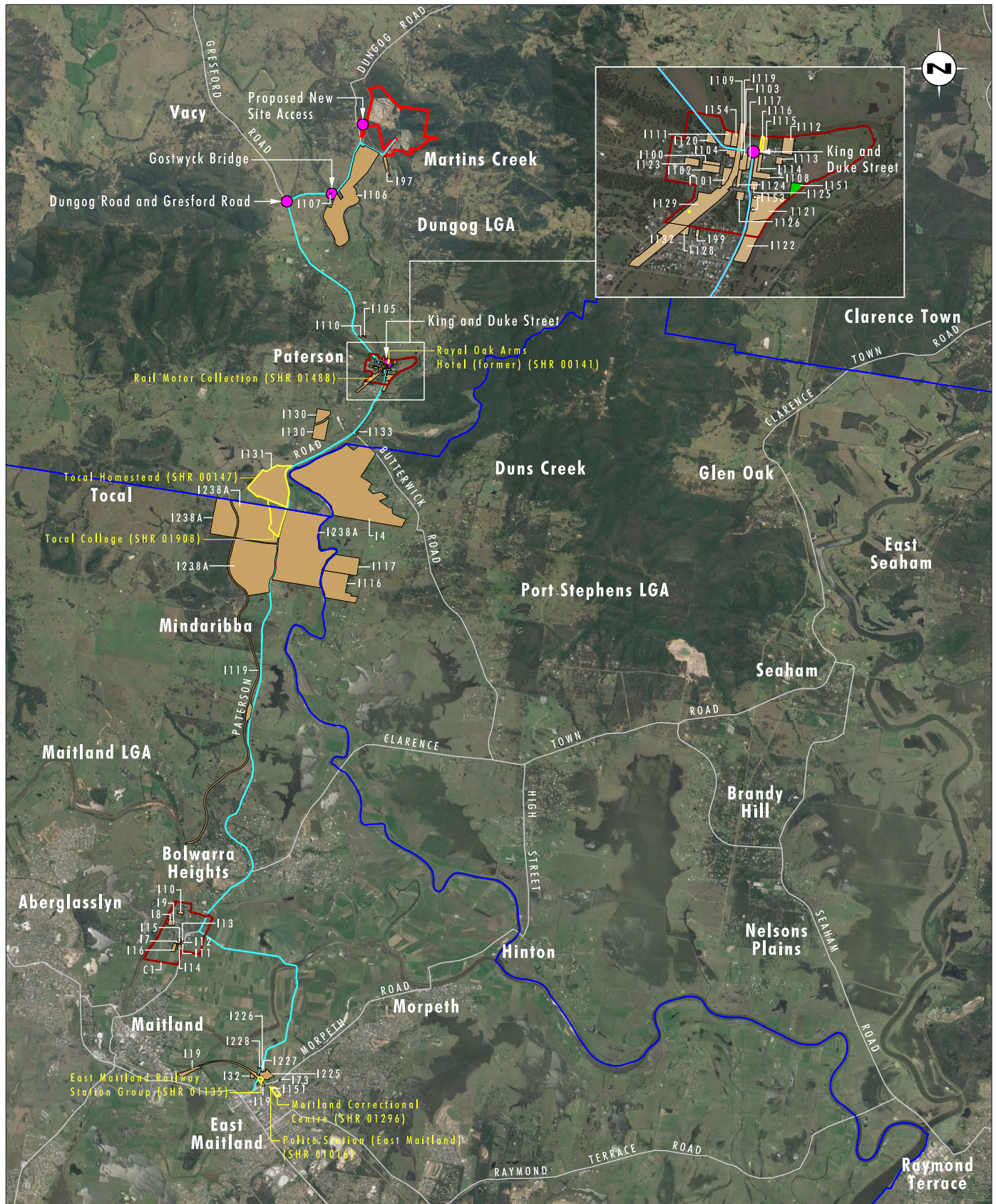


Image Source: Google Earth (2016)

0 2 4 6 km
1:120 000

Legend

- ▬ Project Area
- ▬ Haulage Route
- ▬ Local Government Area (LGA)
- ▬ Item - General
- ▬ Item Archaeological
- ▬ Conservation Area - General
- ▬ State Heritage Site
- Proposed Intersection/Bridge Approach Upgrade

File Name (A4): R06/3957_074.dgn
20200908 15.48

FIGURE 1.1

Proposed Haulage Route and
Listed Heritage Items/Areas
in the Vicinity

2.0 Statutory Framework

The Revised Project will require development consent under Part 4 of the EP&A Act. As a SSD the Revised Project does not require approvals under the provisions of the Heritage Act due to the operation of Part 4, Section 4.41 of the EP&A Act.

However, this does not exempt the Revised Project from requiring heritage assessment, which may identify heritage/archaeological sites and provide recommendations for their management, and the consideration of the provisions of the relevant statutory controls. SSD projects approved under Part 4 of the EP&A Act are subject to conditions of approval issued by the DPIE and (where relevant) historical heritage and archaeology considerations are addressed by appropriate conditions.

2.1 Environmental Planning and Assessment Act 1979

The EP&A Act enables responsibility for heritage (both Aboriginal and Non-Aboriginal) to be shared by State and local government agencies. The EP&A Act provides local government with the power to protect items and places of heritage significance in the local area through local environmental plans (LEPs) and development control plans.

The EP&A Act requires consideration be given to environmental impact – including heritage – as part of the land use planning process, and the provisions of the EP&A Act allow for the implementation of LEPs which provide the statutory framework for heritage conservation within a particular LGA.

The proposed haulage route extends across both Dungog and Maitland LGAs, requiring consideration of both the Dungog LEP 2014 and the Maitland LEP 2011.

2.1.1 Dungog LEP 2014 Part 5 Clause 5.10

Part 5 clause 5.10 of the Dungog LEP 2014 provides the statutory framework for heritage conservation within the Dungog LGA. The objectives of clause 5.10 (1) are as follows:

- to conserve the environmental heritage of Dungog
- to conserve heritage significance of heritage items and heritage conservation areas
- to conserve archaeological sites
- to conserve Aboriginal objects and Aboriginal places of heritage significance.

Schedule 5 of the Dungog LEP 2014 identifies specific buildings and sites in the Dungog LGA that are identified as being of local heritage significance. Locally listed heritage items are shown in **Figure 1.1**.

Clause 5.10(2) of the Dungog LEP 2014 requires development consent to be obtained for certain impacts to heritage items. Clause 5.10(2) does not apply to the proposed development as the proposed development will not involve any of the impacts that would trigger the need for development consent.

As noted above, the Revised Project will require development consent under Part 4 of the EP&A Act and the proposed developments potential impacts on items of local heritage significance under the Dungog LEP must be considered as part of the assessment process.

2.1.2 Maitland LEP 2011 Part 5 Clause 5.10

Part 5 Clause 5.10 of the Maitland LEP 2011 provides the statutory framework for heritage conservation within the Maitland LGA. The objectives of Clause 5.10 are as follows:

- to conserve the environmental heritage of Maitland
- to conserve heritage significance of heritage items and heritage conservation areas
- to conserve archaeological sites
- to conserve Aboriginal objects and Aboriginal places of heritage significance.

Schedule 5 of the Maitland LEP 2011 identifies specific buildings and sites in the Maitland LGA that are identified as being of local heritage significance.

Clause 5.10(2) of the Maitland LEP 2011 (which is identical to clause 5.10(2) of the Dungog LEP) requires development consent to be obtained for certain impacts to heritage items. Relevant listed heritage items are discussed further in **Section 4.0**. Clause 5.10(2) does not apply to the proposed development as the proposed development will not involve any of the impacts that would trigger the need for development consent.

As noted above, the Revised Project will require development consent under Part 4 of the EP&A Act and the proposed development's potential impacts on items of local heritage significance under the Maitland LEP 2011 must be considered as part of the assessment process.

3.0 Proposed Activity

The Revised Project is seeking approval for road haulage of product on the road network on the proposed primary haulage route, between East Maitland in the south and Martins Creek Quarry in the north (refer to **Figure 1.1**). The proposed haul route crosses the heritage listed Gostwyck Bridge and extends through the suburbs of East Maitland, Bolwarra Heights, Mindaribba, Paterson, and Martins Creek. There will be a need for trucks hauling quarry product to occasionally access other local roads for local projects.

Upgrade works are proposed at the intersection of the new quarry access road and Dungog Road. Furthermore, to maintain and improve the capacity, efficiency and safety of the road network used by the Revised Project, intersection upgrades are also proposed at the following locations: -

- intersection of Dungog Road and Gresford Road
- intersection of King and Duke Street (within the village of Paterson)
- approach to Gostwyck Bridge.

The location of the proposed intersection upgrades in relation to the Revised Project are shown in **Figure 3.1**.

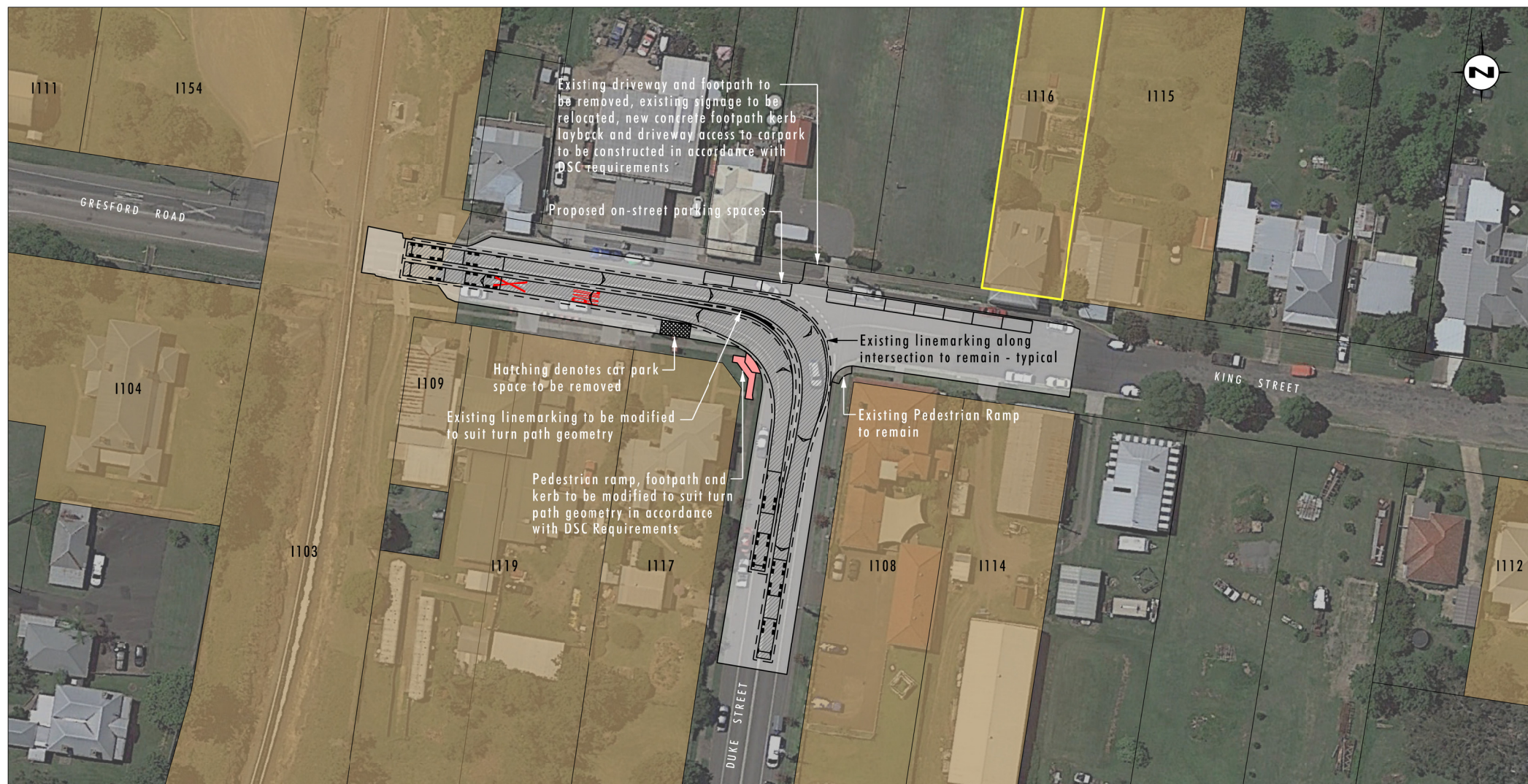
Physical works that will occur in association with a heritage item or area as part of the proposed haulage route are within Paterson at the intersection of Duke and King Streets, as this intersection is located within the locally listed Paterson HCA. As shown in **Figure 3.1**, a number of locally listed heritage items are located outside of, but in the vicinity of, the proposed works in this area. Road upgrade works will be required at this intersection to facilitate improvements to the turning path for the haul trucks, and will involve:

- Relocation of existing driveway on the north side of the intersection slightly west to improve the space allocation for parking on either side of the driveway and improve carparking capacity along this northern kerb line.
- Relocation of existing direction and hazard signage on northern side of intersection.
- Refreshing the dividing line marking through the intersection.
- Modification of the footpath, kerb ramp and kerb and gutter on the south-western corner of the intersection to accommodate the design vehicle turn path.
- Relocation of existing 'No Stopping' sign in front of Telstra phone box to power pole adjacent to Post Office driveway, remove existing single carparking space to accommodate design vehicle turn path.

The proposed Gostwyck Bridge approach upgrade will involve the following:

- Realignment of Dungog Road by incorporating a series of curves to raise driver awareness and associated new line marking.
- Installation of Vehicle Activated Signage (VAS) alerting drivers approaching the bridge to reduce speed.
- Relocation of existing hazard signage and removal of redundant signage.
- Modification of existing property accesses as required on either side of Dungog Road.

Physical works associated with the proposed bridge approach upgrade would be in close proximity of, but outside the curtilage of the locally listed Gostwyck Bridge (Item I107 on the Dungog LEP 2014).



Data Source: Lindsay Dynan (2020)

0 10 25 50m
1:1 000

Legend

- Item - General
- State Heritage Item

FIGURE 3.1

Overview of works at Paterson in relation to heritage items in the vicinity

4.0 Relevant Heritage Listings

The proposed haulage route extends through two heritage conservation areas (HCA), being the Paterson Village HCA, as defined under the Dungog LEP 2014, and the Bolwarra HCA, as defined under the Maitland LEP 2011 (refer to **Figure 1.1**).

The established significance of these two HCAs, which are both locally listed, is outlined below:

Paterson HCA

The older parts of Paterson are significant within the lower Hunter as a rare example of a compact, essentially nineteenth century village which is set within a dramatic rural backdrop. Nestling in the Paterson River Valley with uninterrupted vistas in all directions to substantially cleared hills the older parts of this village are set on a street pattern which is dictated by relief and which retains most of its original half-acre allotments.

Built development is close to street frontages, with narrow separations, giving a compact built-up appearance to both residential and commercial development. Reflecting the mainly Victorian and federation ages of buildings most have steep galvanised iron roofs, high single or double storeyed timber or masonry walls with high narrow window openings, 'traditional' paint colours, often bullnosed verandahs and turn-of-the-century decorative details.

There is much intrusive modern signage in the commercial parts. There also has been some modern infill building and a great deal of both repairs/maintenance and fencing has been done using inappropriate modern materials but much of this is unseen behind older residential and commercial buildings.²

Bolwarra HCA

The historic significance of Bolwarra can be traced to the surviving buildings and gardens of the late nineteenth century which record the original subdivision of "gentleman's houses". These qualities give the area historic significance for the locality. The same remnant plantings and surviving estate development are of aesthetic significance. Many of the later but undistinguished houses are set in attractive gardens complementing the character of the earlier development.³

Gostwyck Bridge

The Gostwyck Bridge, completed in 1928, is of local significance and is a representative example of a steel Pratt truss. It is a high-level structure over an inland river and has technical and aesthetically merit. It has contributed significantly to the social and commercial development of Dungog.

The Gostwyck Bridge has significance because:

- *it is a high-level structure over an inland river;*
- *it has technical merit and is aesthetically distinctive;*
- *it has contributed significantly to the social and commercial development of Dungog;*
- *it is a representative example of a steel Pratt truss.*

The Gostwyck Bridge is assessed as being of local heritage significance.⁴

² <https://www.dungog.nsw.gov.au/sites/dungog/files/public/images/documents/dungog/Planning/Development%20Control%20Plan/17-heritage%201.3.12.pdf>

³ <https://www.maitland.nsw.gov.au/file/23961/download?token=Pkzx8Vkv>

⁴ Focus Bridge Engineering (FBE), 2020, *Daracon Group, Gostwyck Bridge BN1461 – Summary Strategic Report*

This table demonstrates that all significant fabric associated with Gostwyck Bridge is in association with the bridge itself; the identified significance does not extend into the adjoining road corridors.

Table 4.1 Significance Assessment for Components of Gostwyck Bridge

Bridge Component	Significance Gradings
Abutment A	Low
Abutment B	Low
Timber approach spans 1-4, 6-7	Moderate
Truss span 5	High
Piers 4 and 5	High
Overall significance	High

Other Heritage Items in the Vicinity

The proposed haulage route is also located in the vicinity of a number of other local and State listed heritage items, as outlined below and shown in **Figure 1.1**. It is noted that the majority of these items are not located in immediate proximity to the proposed haulage route and are included in the below table and on **Figure 1.1** for reference.

Table 4.2 Listed Heritage Items Located in The Vicinity of The Proposal Haulage Route (refer to Figure 1.1)

Item Name	Item ID	Planning Instrument
Locally Listed Items		
Showground	I130	Dungog LEP 2014
House	I131	Dungog LEP 2014
Martins Creek railway buildings and quarry	I97	Dungog LEP 2014
House, "Gostwyck"	I106	Dungog LEP 2014
Gostwyck bridge ⁵	I107	Dungog LEP 2014
Corner's flour mill	I110	Dungog LEP 2014
House, "Hayward"	I105	Dungog LEP 2014
Former bakery	I120	Dungog LEP 2014
St Anne's Church and cemetery	I111	Dungog LEP 2014
Fig trees	I154	Dungog LEP 2014
Paterson Railway Bridge	I103	Dungog LEP 2014
House (former butchery)	I115	Dungog LEP 2014
Former Royal Oak Arms Hotel ⁶	I116	Dungog LEP 2014
House, "Annandale"	I112	Dungog LEP 2014
House, "Hartharleigh"	I113	Dungog LEP 2014
Former CBC Bank	I117	Dungog LEP 2014
Former School of Arts building	I109	Dungog LEP 2014
Former courthouse	I104	Dungog LEP 2014

⁵ Bridge is also listed on Roads and Maritime's s170 Register

⁶ This item is also State listed

Item Name	Item ID	Planning Instrument
Building (formerly, Paterson Farmers Union)	I114	Dungog LEP 2014
St Paul's Church, hall and cemetery	I108	Dungog LEP 2014
Cottage	I123	Dungog LEP 2014
Court House Hotel	I119	Dungog LEP 2014
House, "Ernestville"	I124	Dungog LEP 2014
Former Oddfellows Hall	I100	Dungog LEP 2014
House	I102	Dungog LEP 2014
Former public school	I101	Dungog LEP 2014
Former rectory	I125	Dungog LEP 2014
Former Commercial Hotel	I126	Dungog LEP 2014
Fig trees	I153	Dungog LEP 2014
Corn staddle (building)	I121	Dungog LEP 2014
Paterson Railway Station Group, including station buildings and platform, goods shed and station master's residence	I129	Dungog LEP 2014
"Queens Wharf"	I151	Dungog LEP 2014
Rail Motor Collection—Rail Motor CPH No 1, Rail Motor CPH No 14, Rail Motor CPH No 19, Rail Motor CPH No 3, Rail Motor CPH No 7, Rail Motor SFP No 602, Rail Motor WFP No 606, Rail Motor HPC No 402, Rail Motor Trailer CT No 707, Rail Motor Trailer CTC No 51, Rail Motor Trailer FT No 501, Rail Motor Trailer CT No 707 ⁷	I132	Dungog LEP 2014
War memorial	I128	Dungog LEP 2014
House, "Yooringa"	I99	Dungog LEP 2014
House, "Hua Tsa"	I122	Dungog LEP 2014
Paterson River road bridge	I133	Dungog LEP 2014
Duninald House Group "Old Duninald" and "Duninald", including mature plantings, lagoon and landscape setting	I4	Port Stephens LEP 2013
"Stradbroke", including stone barn and landscape setting	I117	Port Stephens LEP 2013
"Tressingfield" (formerly "Carlton Cottage"), including gardens and landscape setting	I116	Port Stephens LEP 2013
Total College—C.B. Alexander Campus and moveable collection ⁸	I238A	Maitland LEP 2011
Government railway	I119	Maitland LEP 2011
"Gowan Brae"	I10	Maitland LEP 2011
Bolwarra House	I8	Maitland LEP 2011
Stone barn	I9	Maitland LEP 2011
Residence	I13	Maitland LEP 2011
Residence	I12	Maitland LEP 2011
Residence	I11	Maitland LEP 2011
"Dareel"	I14	Maitland LEP 2011
"Shenstone"	I16	Maitland LEP 2011
War memorial	I7	Maitland LEP 2011

⁷ This item is also State listed

⁸ This item is also State listed

Item Name	Item ID	Planning Instrument
Virginia House	I15	Maitland LEP 2011
Bolwarra Heritage Conservation Area	C1	Maitland LEP 2011
"Ivy Villa"	I228	Maitland LEP 2011
Timber house	I227	Maitland LEP 2011
"Ekelene"	I226	Maitland LEP 2011
Pender & Forster Sawmill	I225	Maitland LEP 2011
East Maitland Railway Station group	I19	Maitland LEP 2011
"Hillside"	I73	Maitland LEP 2011
House	I32	Maitland LEP 2011
Former Cohens Warehouse façade	I151	Maitland LEP 2011
State Heritage Listed Items		
Rail Motor Collection Encompassing Rail Motor CPH No. 1, Rail Motor CPH No. 14, Rail Motor CPH No. 19, Rail Motor CPH No. 3, Rail Motor CPH No. 7, Rail Motor FPH No. 602, Rail Motor FPH No. 606, Rail Motor HPC No. 402, Rail Motor Trailer CTC No. 51, Rail Motor Trailer FT No. 50 ⁹	SHR 01488	State Heritage Register
Royal Oak Arms Hotel (Former) ¹⁰	SHR 00141	State Heritage Register
Total Homestead	SHR 00147	State Heritage Register
Total College - C.B. Alexander Campus and Movable Collection	SHR 01908	State Heritage Register

The only physical works proposed as part of the haulage route that will occur in association with a heritage item or area are within the Paterson Village HCA, at the intersection of Duke and King Streets, and road upgrade works proposed in the vicinity of the Gostwyck Bridge (Item ID107 on the Dungog LEP 2014 and listed on Roads and Maritime's s170 Heritage and Conservation Register). These works are considered in detail at **Section 7.0**.

No physical works are proposed within or in the vicinity of the listed curtilage any other listed items, being either State or locally listed items.

⁹ This item is also locally listed

¹⁰ This item is also locally listed

5.0 Summary of Agency Comments

The EIS for the Original Project (Monteath & Powys, 2016) was placed on public exhibition from 13 October to 24 November 2016. As part of this process, a number of submissions were received relating to historical (non-Aboriginal) heritage.

These submissions are summarised in **Table 5.1**. This report has been prepared to address submissions made by Dungog Shire Council and the DPIE.

Table 5.1 Submissions Received Relating to Historical (non-Aboriginal) Heritage

Department	Submission
Dungog Shire Council	<p>Generally Council is in agreement with the findings of this report, however it is considered deficient in that the development proposes physical works and increased truck movements through the Historical village of Paterson which is an adopted Heritage Conservation Area under Dungog LEP 2014.</p> <p>Further to this comment the Council's submission includes details of the various listings of heritage items along the haul road and includes two maps detailing the location of those items in relation to the proposed haul route.</p>
Department of Planning and Environment (DPE)	<p>The Department requests a historic heritage assessment of the listed items and conservation areas located on the proposed haul routes (ie Paterson, Morpeth and any other relevant location) by a suitably qualified and experienced professional/s. The historic heritage assessment should consider the:</p> <ul style="list-style-type: none"> a) potential vibration impacts (if any) of the proposed number and frequency of trucks on the structural integrity of listed heritage items; b) potential impacts to significance of the conservation area as a result of the number and frequency of trucks travelling through a conservation area; and c) the impacts of proposed intersection upgrade works on the curtilage and significance of listed items and any conservation areas.
Heritage Division – Office of Environment and Heritage	<p>The Heritage Division agrees with the findings of the Historical Heritage Assessment and recommends that mitigation measures provided by the assessment be included as conditions of consent for the Martin's Creek Quarry Extension Project.</p>

As noted in **Table 5.1**, the submission received from the Heritage Division does not require any response. The Heritage Division submission is therefore not considered further in this report.

6.0 Visual Inspection

A visual inspection of the proposed haulage route was undertaken by Umwelt Senior Consultant Karyn Virgin on 9 May 2019. The entirety of the haulage route was subject to inspection (either via vehicle or on foot). The Paterson HCA, through which the proposed haulage route will extend, and within which works are proposed, was subject to more detailed pedestrian inspection.

6.1 The Haulage Route

The inspection confirmed that the majority of heritage items located along the haulage route are located away from the road, and set-back a sufficient distance from the front property boundaries to ensure that vehicle movements associated with the quarry will not result in any direct visual or physical impact to the items.

The following photographs (**Plates 6.1 to 6.8**) demonstrate the context and setting of the haulage route in relation to the heritage items that are located in the vicinity.



Plate 6.1 View of part of the proposed haulage route, located to the north of the East Maitland town centre and in proximity to various heritage items

© Umwelt, 2019



Plate 6.2 View of part of the proposed haulage route, located to the north of the East Maitland town centre and in proximity to various heritage items

© Umwelt, 2019



Plate 6.3 View of part of the proposed haulage route as it extends through the Bolwarra HCA (facing north on Flat Road)

© Umwelt, 2019



Plate 6.4 View of part of the proposed haulage route as it extends through the Bolwarra HCA (facing south on Paterson Road)

© Umwelt, 2019



Plate 6.5 View of part of the proposed haulage route located in proximity to the 'Government Railway' (Item ID I119), which is located to right of frame

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Plate 6.6 View of part of the proposed haulage route located in proximity to the ‘Tocal College—C.B. Alexander Campus and moveable collection’ (Item ID I238A), facing north on Paterson Road

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Plate 6.7 View of part of the proposed haulage route located in proximity to the ‘Tocal College—C.B. Alexander Campus and moveable collection’ (Item ID I238A) and State listed Tocal Homestead (SHR 00147) and Tocal College (SHR 01908), facing north on Paterson Road

© Umwelt, 2019



Plate 6.8 View of part of the proposed haulage route located in proximity to the ‘Homestead, “Tocal”’ (Item ID I131), the ‘Duninald House Group’ (Item ID I4) and the State listed Tocal Homestead (SHR 00147), facing north on Paterson Road

© Umwelt, 2019

6.2 The Paterson HCA

As noted above, the Paterson HCA was subject to detailed visual inspection, as physical works are proposed within the HCA. The visual inspection confirmed the significance of the HCA, as detailed in **Section 4.0**. None of the footpaths or gutters within the HCA were identified to comprise significant fabric as all are contemporary. Similarly, all road surfaces within the HCA to which works are proposed were observed to be contemporary, and did not comprise any identified or potential significant fabric at the ground surface level.

The section of kerb, gutter and footpath at the southwest corner of the intersection of Duke and King Streets, which is proposed to be modified part of the project, was observed to be in poor condition with the concrete footpath and layback showing significant failure (cracking).

The below photographs (**Plates 6.9 to 6.14**) demonstrate the context and nature of the HCA.



Plate 6.9 View of part of the Paterson HCA, facing north on Duke Street

© Umwelt, 2019



Plate 6.10 View of part of the Paterson HCA, facing east on King Street

© Umwelt, 2019



Plate 6.11 View of part of the Paterson HCA, facing southeast on King Street towards the intersection
Visible is typical kerbing, guttering and footpaths within the HCA

© Umwelt, 2019



Plate 6.12 View of the intersection of King and Duke Streets, facing south down Duke Street
The sections of footpath/gutter proposed for modification are shown at either side of frame

© Umwelt, 2019



Plate 6.13 View of the intersection of King and Duke Streets, facing west toward King Street. The footpath/gutter proposed for modification on the southwestern corner of this intersection is shown at centre frame

© Umwelt, 2019



Plate 6.14 View of the rail crossing on King Street, facing northwest on King Street

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6.3 Gostwyck Bridge

Due to issues in safely accessing the bridge, a direct visual inspection was not undertaken. However, utilising a combination of available photographs and aerial imagery, it has been determined that the curtilage of the bridge is concentrated on the bridge itself, and does not extend into the adjoining roadways. This is shown in **Plate 6.15** below for reference. The curtilage is shown in relation to the works proposed in the vicinity of the bridge in **Plate 6.16**.

An aerial view of the bridge is provided in **Plate 6.17**. **Plates 6.16** and **6.17** demonstrate the configuration of the bridge, illustrating that the proposed physical works will not occur on the bridge structure. It also demonstrates the setting and aesthetic character of the bridge and its surrounds.

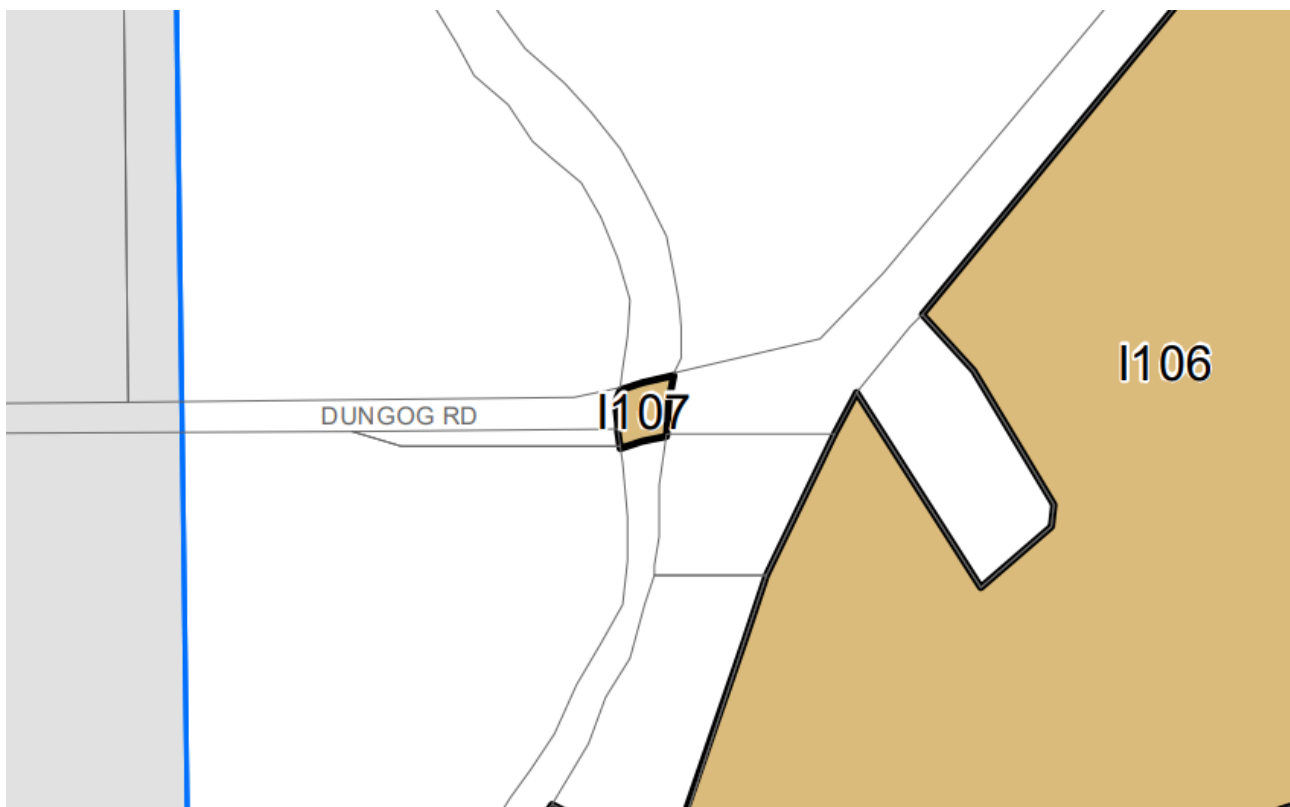


Plate 6.15 View of the Gostwyck Bridge curtilage, indicated as 'I107'

© Dungog LEP 2014, Heritage Map Sheet HER_006AC

© Lindsay Dynan, 2020



© FBE, 2020

7.0 Assessment of Potential Impacts

An assessment of the potential impacts of the proposed haulage route on heritage items or areas is provided below. This assessment considers both physical and visual impacts, as well as a consideration of potential vibration impacts.

7.1 Assessment of Impacts

The only physical works that will occur in association with a heritage item or area as part of the proposed haulage route are within the Paterson HCA, at the intersection of Duke and King Streets, and in proximity to the locally listed Gostwyck Bridge.

7.1.1 The Paterson HCA

Works within the Paterson HCA, as described at **Section 3.0**, will be at-grade, or close to at-grade, meaning that they will not be readily visible within general views to or within the HCA or individually listed heritage items.

As existing kerbs, gutters and footpaths are contemporary, their modification will not result in any adverse visual impacts to the existing aesthetic significance or general visual presentation of the HCA or listed heritage items located therein.

All physical works will be undertaken in association with contemporary fabric of no identified heritage significance. Footpaths, kerbs, gutters and road surfaces within the HCA are all contemporary, and none are identified as significant elements within the statement of significance prepared for the HCA.

7.1.2 Gostwyck Bridge

The Revised Project has the potential to impact on the heritage listed Gostwyck Bridge due to the proposed increase in truck movements across the bridge and the physical works associated with the proposed upgrade to the bridge approach.

Focus Bridge Engineering were engaged to undertake a detailed assessment of the potential impacts of truck movements across the Gostwyck Bridge as a result of the Revised Project and identify strategic maintenance requirements (FBE, 2020). This included an assessment of the heritage status, schedule and significance of the bridge. The FBE report (2020) confirms that the bridge has adequate capacity to accommodate the proposed truck movements and the Revised Project does not necessitate additional physical works for the bridge, beyond the regular inspections and maintenance regimes planned and implemented by Transport for NSW (TfNSW).

With regards to the proposed bridge approach upgrade, the physical works associated with the upgrade is proposed in the vicinity of the bridge and will be limited to the installation of new and improved road signage, and at-grade road upgrades. The works will therefore not occur within the listed curtilage for this item and will therefore not result in any physical impacts to this item. Furthermore, these works will in no way visually impact the aesthetic significance or setting of the bridge. The works will maintain and improve the existing visual presentation of the eastern approach to the bridge.

As such, there are no identified impacts to Gostwyck Bridge as a result of the Revised Project.

7.1.3 Assessment of Impacts Caused by Vibration

The NSW Department of Environment and Conservation 2006 Guideline “Assessing Vibration: a technical guideline” (Vibration Guidelines) includes guidance for the assessment of vibration impacts. It includes the following observation:

The most severe vibrations associated with road traffic result from heavy vehicles with stiff suspensions moving rapidly along roads with irregular surfaces.

In essence, vibration impacts of concern really only arise when a heavy vehicle hits a pot hole, speed bump or other irregularity at speed and the energy from the impact is then transferred through the ground to adjoining buildings.

The areas where truck movements associated with the Project are in proximity to heritage buildings is the Paterson HCA. The road surface within the Paterson HCA is a bitumen pavement and, when properly maintained, does not contain irregularities that would induce significant vibration impacts. A review of the Vibration Guidelines and academic studies (see for example Basekar et al, 2015) indicate that vibration impacts from trucks under any conditions on bitumen roads is unlikely to cause structure damage to heritage buildings but can have cosmetic effects in extreme cases. The key factor in determining vibration impacts is irregular road surfaces (e.g. cobbles, corrugations or potholes) and the speed of the vehicle (see for example Crispino 2001).

SECA Solution have prepared a *Traffic and Access Assessment* (2020) for the proposed haulage route. This assessment concluded that:

From the updated assessment completed for the Revised Project, it can be seen that the proposed annual output of the quarry for which approval is being sought will have an acceptable impact upon the road network that forms the haul route between the New England Highway and the site. The assessment above shows that the road has adequate capacity and is currently operating within acceptable guidelines provided by the RTA Guide to Traffic Generating Developments. The application seeks approval for a maximum of 20 trucks per hour and 140 per day.

The proposed haulage route is already host to heavy vehicle traffic associated with the existing Martins Creek Quarry operations, as well as general non-quarry related heavy vehicle traffic. Since the original application, Daracon have committed to reduced truck numbers per hour and a speed limit for trucks driving through the Duke and King St intersection, in Paterson.

Consistent with the findings of academic studies, the Vibration Guidelines recommend:

Mitigation techniques could therefore include the restriction of use of heavy vehicles on particular roads, limiting speed and reducing the occurrence of surface irregularities such as potholes and speed humps.

Daracon will contribute to road maintenance costs associated with truck haulage and these funds will enable Dungog Council to ensure road conditions within Paterson are appropriately maintained. It is recommended that Daracon include a requirement in the Driver Code of Conduct a requirement to report any substantial road pavement irregularities in Paterson, with these reports being passed on the Dungog Council for attention. Directions should also be given to drivers alerting them of any identified road irregularities to enable them to minimise speeds where these occur when driving through Paterson. It is noted that these instructions are also consistent with good operating practice as it reduces wear and tear on vehicles and improves vehicle safety and driver comfort. Daracon have also committed to reducing truck speeds through Paterson to 40 km/hr, with further reduction to 20-25 km/hr around the King Street and Duke Street intersection. The combination of reduced truck speeds and appropriate road maintenance is consistent with the recommendations in the Vibration Guidelines. The implementation of Daracon’s controls and contributions to road maintenance is expected to prevent any impacts on heritage values (including minor cosmetic damage) associated with quarry truck movements.

8.0 Conclusion

Based on the assessment presented in this report, there are no identified heritage constraints, either visual or physical, associated with the proposed haulage route.

The proposed intersection upgrade within the Paterson HCA will not result in any identified adverse visual or physical impacts to the heritage significance of this HCA or individually listed heritage items located therein.

Works in the vicinity of Gostwyck Bridge will not physically occur within the listed curtilage for this item and will therefore not result in any physical impacts to this item. Further, the works proposed in the vicinity of the bridge are limited to the installation of new and improved road signage, and at-grade road upgrades. These works will in no way visually impact the aesthetic significance or setting of the bridge. Detailed assessment and fatigue life analysis undertaken confirms that Gostwyck Bridge has adequate capacity to accommodate the proposed truck movements for the Revised Project (FBE, 2020).

Adverse impacts on heritage items in Paterson HCA associated with traffic induced vibration are considered to be unlikely given the controls to be implemented by Daracon and the financial contributions towards road maintenance.

Based on the above, the proposed works are able to proceed with no further assessment or investigation with regards to built heritage.

9.0 References

- Basekar, P, Vaghela, D, and Katakiya M. 2015 International Journal of Advanced Technology in Engineering and Science 3(3): 6:15.
- Crispino, Maurising and D'Apuzzo, M., 2001, Measurement and prediction of traffic-induced vibrations in a heritage building, Journal of Sound and Vibration 246(2):319:335.
- Focus Bridge Engineering (FBE), 2020, *Daracon Group, Gostwyck Bridge BN1461 – Summary Strategic Report*.
- NSW Department of Environment and Conservation, 2006, Assessing Vibration: a technical guideline.
- SECA Solutions, 2020, Martins Creek Quarry Revised Project – Traffic and Access Assessment.

