



Great Western Highway Upgrade Program: Little Hartley to Lithgow (West Section)

Technical Working Paper Addendum –
Non-Aboriginal Heritage



Great Western Highway Upgrade: Little Hartley to Lithgow (West Section)– Design and Environmental Assessment Services – West Package

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Glossary of terms and acronyms

Term	Meaning
Burra Charter	Australia ICOMOS <i>Charter for Places of Cultural Significance</i>
CMP	Conservation Management Plan
CRR	Cox’s River Road proposal section
F2L	Forty bends to Lithgow proposal section
ICOMOS	International Council on Monuments and Sites
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
JAJV	Jacobs Arcadis joint venture
LEP	Local Environmental Plan
PWD	Public Works Department
REF	Review of Environmental Factors
SHI	State Heritage Inventory
SHR	State Heritage Register
SoHI	Statement of Heritage Impact
TfNSW	Transport for NSW

1. Introduction

1.1 Great Western Highway upgrade

Transport for NSW (Transport) proposes to upgrade the Great Western Highway (HW5) between Katoomba and Lithgow. The Great Western Highway Upgrade program will deliver around 34 kilometres of four lane divided highway between Katoomba and Lithgow. The program is needed to provide a safer and more efficient link between the Central West NSW and the Sydney Motorway Network for freight, tourists and general traffic. The program to deliver the upgrade consists of a series of projects.

In May 2010 a preferred route for the Great Western Highway Upgrade between Mount Victoria and Lithgow was announced and the preferred corridor was subsequently reserved via SP2 Infrastructure zoning in the Blue Mountains Local Environmental Plan 2015 and the *Lithgow Local Environmental Plan 2014*.

A Jacobs Arcadis joint venture (JAJV) has been engaged to progress the concept design and prepare a review of environmental factors (REF), including specialist environmental investigations, for the Little Hartley to Lithgow section of the Great Western Highway. The project includes:

- Upgrade of the Great Western Highway between Little Hartley and Lithgow to a four lane divided highway, about 14 kilometres in length
- Provision of service roads where possible to minimise direct access to the Great Western Highway from adjacent properties, with the existing highway to be used as service road wherever possible
- Provision of two heavy vehicle rest areas, one eastbound and one westbound.

Please note that this is an addendum report. Please refer to the original (main) report Great Western Highway Upgrade: Little Hartley to Lithgow (West Section) Technical working paper – Non-Aboriginal heritage, October 2021 (JAJV, 2021) for the full scope of works proposed and related assessment. This addendum report is limited to an assessment of identified elements requiring further investigation across two of the four sections proposed for the upgrade.

1.1.1 Cox's River Road Intersection (CRR)

Cox's River Road Intersection involves widening about 3.4 kilometres of the Great Western Highway to two lanes in each direction between east of the Cox's River Road intersection and in the vicinity of Mid Hartley Road. The project also involves creating a grade separated intersection crossing the upgraded highway between Cox's River Road and the old Great Western Highway. Key features include:

- Provision of a grade separated interchange at Cox's River Road, supplemented by new sections of connecting roadway to create a local service road network
- Realignment of the existing highway in the vicinity of Browns Gap to create a local service road
- Upgrades to intersections at Browns Gap Road and Baaners Lane.

1.1.2 Forty Bends to Lithgow (FBL)

Forty Bends to Lithgow involves widening approximately 4.5 kilometres of the Great Western Highway to two lanes in each direction between Forty Bends Road and Magpie Hollow Road.

- Upgrades to intersections at McKanes Falls Road, Old Bathurst Road and Mudgee Street, and modifications to the intersection at Forty Bends Road (western junction)
- Provision of significant retaining structures
- Significant provisions for private property access.

1.2 Location

The proposal is located within the Lithgow Local Government Area (LGA), connecting Lithgow in the northwest

with Little Hartley in the southeast. It includes the suburbs and localities of Little Hartley, Hartley, and Old Bowenfels (Old Bowenfels is a locality within the suburb of South Bowenfels).

1.3 Purpose and scope of this report

This report is an addendum to the Great Western Highway Upgrade: Little Hartley to Lithgow (West Section) Technical working paper – Non-Aboriginal heritage, October 2021 (JAJV, 2021). This report should be read in conjunction with the original (main) report. This addendum report has been prepared to support the REF for the proposal and addresses non-Aboriginal (historical) heritage items, conservation areas and historical archaeology in accordance with the Heritage NSW guidelines, the Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (Burra Charter), and the Transport Heritage Guidelines. It identifies historical heritage items within the study area not previously assessed as part of the main report, assesses the potential impacts on the heritage items from the proposed proposal activities, and identifies mitigation and management measures to minimise impacts to that heritage.

Due to access issues to some sites identified in the original (main) report and an outbreak of the COVID-19 Delta variant, some identified heritage items were unable to be visited on safety grounds and therefore were not fully assessed as part of that report. As a result, this addendum report investigated and assessed the identified potential heritage items that were not able to be included in the original (main) report.

The addendum report has assessed the following additional heritage items and potential heritage items:

- Lyndoch Orchard (LEP I109) and adjacent apple trees to south of Great Western Highway
- Road culvert and sustaining wall at Emoh (LEP A027)
- A series of water culverts along the Great Western Highway.

The sole purpose of this report and the associated services performed by the JAJV is to carry out a historical cultural heritage assessment in accordance with the scope of services set out in the contract between the JAJV and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, the JAJV may have relied upon information (or confirmation of the absences thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, the JAJV has not attempted to verify the accuracy or completeness of any such information.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by the JAJV for use of any part of this report in any other context.

2. Assessment methodology

This methodology is designed to be in accordance with the Heritage NSW guidelines, the Burra Charter, the Transport Heritage Guidelines and relevant Commonwealth heritage guidelines. The following methodology was applied when preparing the original assessment:

- Review of heritage registers and lists
- Review of relevant heritage reports and other source material
- Field survey of the study area to inspect listed items and conservation areas and identify any additional potential heritage items or areas of archaeological potential within the study area
- Completion of statements of significance for any additional (unlisted) heritage items or areas of archaeological potential
- Completion of statements of heritage impact (SoHI) for identified items within the study area.

This addendum report has included field surveys of heritage items and potential heritage items that were previously not accessed. The potential heritage items have had their significance assessed. For heritage items with significance, an impact assessment and identification of mitigation measures has been undertaken. Please refer to the original (main) report for a full breakdown of the methodology including legislative and policy context.

2.1 Study area

This assessment considers impacts to non-Aboriginal heritage identified during desktop assessment or during survey including items, conservation areas or areas of archaeological potential which are located within the study area. The study area is defined as the construction footprint plus a 50-metre buffer. The study area includes the main design alignment, associated earthworks and batter slopes, intersections, under/overpasses and construction support sites (Figure 2-1).

The original report assessed proposed works across four areas as set under Section 1.1 of the original (main) report. This addendum report is limited to heritage items or potential heritage items that are located within the following sections:

- Cox's River Road (CRR, located within L2R)
- Forty Bends to Lithgow (F2L).

2.2 Field survey

The field survey was undertaken by Clare Leever (Senior Heritage Consultant, JAJV) and Lara Goldstein (Associate Heritage Consultant, JAJV) from 18 – 19 January 2022. The 2022 field survey approach was targeted based on areas and/or elements as requiring investigation following the field survey carried out 26 April to 5 May 2021. A visual inspection was completed to understand the potential for heritage significance and to identify any potential heritage items. General notes on the item or area of potential heritage significance were recorded during the field survey, including photographs.

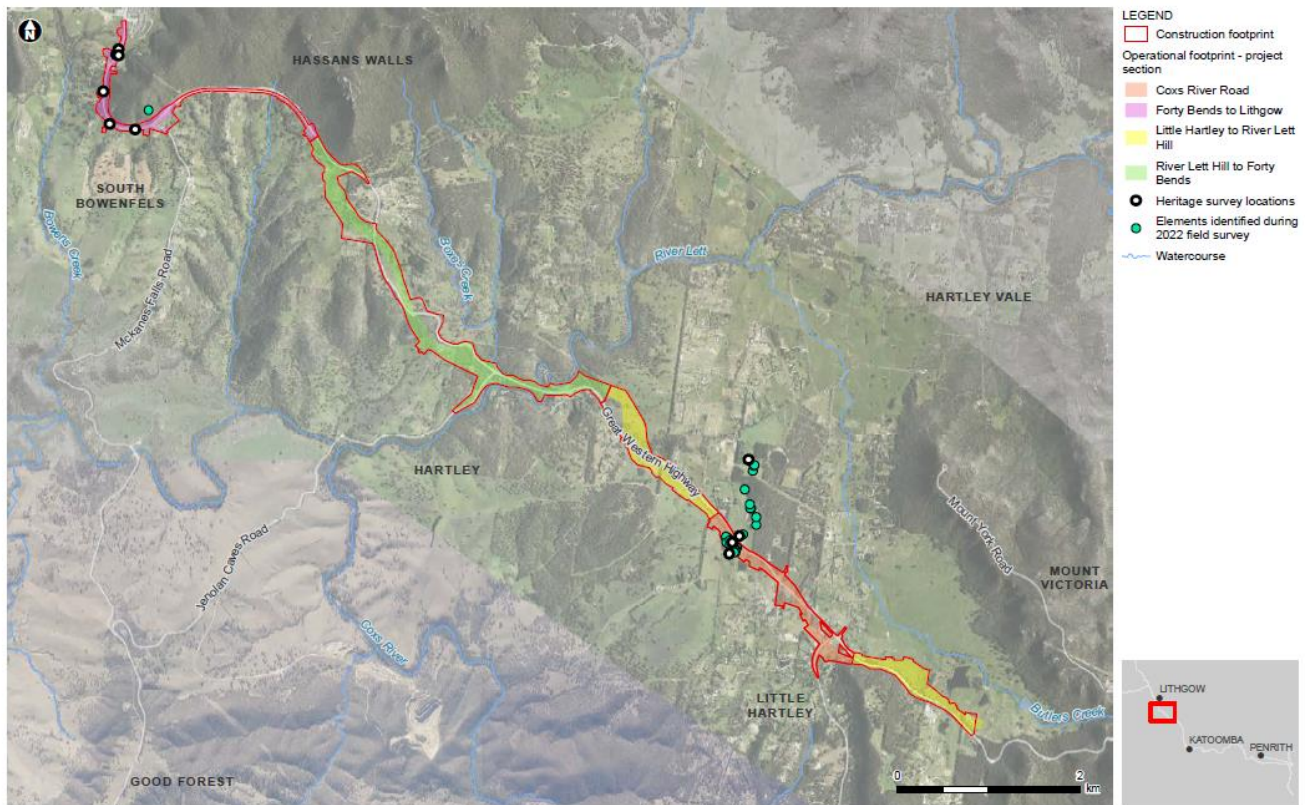


Figure 2-1: Overview of the study area and 2022 field survey results

3. Significance and Impact Assessment

3.1 Additional items assessed

3.1.1 Cox’s River Road (CRR, located within L2R)

Lyndoch Orchard (LEP I019) in Hartley was unable to be surveyed in 2021 due to access restrictions. The field survey undertaken in January 2022 was able to access the following properties to determine their association with the orchard and if there were any remnant orchard trees remaining in situ (refer to Figure 3-1):

- 2464-2468 Great Western Highway, Hartley NSW 2790 (Lot 1 DP1192566)
- 2430 Great Western Highway, Hartley NSW 2790 (Lot 72 DP751644)
- Great Western Highway, Hartley NSW 2790 (Lot 13 DP1192566)
- 2464 Great Western Highway, Hartley NSW 2790 (Lot 12 DP1192566).

3.1.2 Forty Bends to Lithgow (F2L)

The following road culverts were inspected as part of the field survey (refer to Figure 3-2):

- Road culvert and retaining wall located at 3432 Great Western Highway, South Bowenfels, NSW 2790 (Lot 1 DP 798073) – local heritage item ‘Road culvert and sustaining wall at Emoh’ LEP A027
- Road culvert located at 3449 Great Western Hwy, South Bowenfels 2790 (Lot 1 DP68390) - within the curtilage of the locally heritage listed item ‘Umera’ I052
- Road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (comprising Lot 9 Section 3 DP758809, Lot 3 DP580773)
- Road culverts located at 5 Magpie Hollow Road, South Bowenfels on the western side of the Great Western Highway (Lot 3 DP1229039, Lot 3 DP580773)
- Road culverts located at 3546 Great Western Highway, South Bowenfels (Lot 21 DP810179)
- Road culvert located at 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228).

A summary of each heritage item is included within Table 3-2 Summary of heritage items, significance, impacts and management measures under Section 3.10.

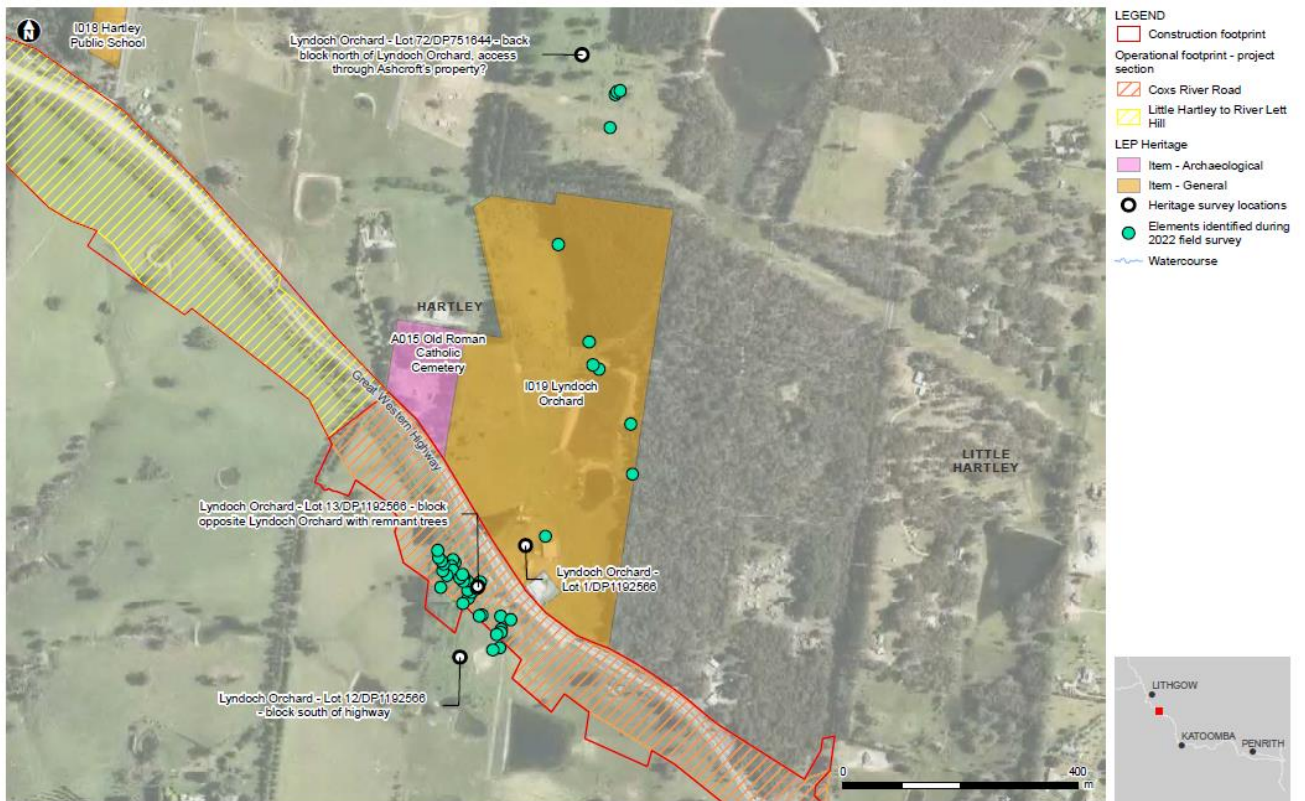


Figure 3-1: Lyndoch Orchard site and surrounds showing the results of the 2022 field survey and investigation. The green points denote potential fruit trees relating to the original historic orchard in relation to the proposed construction footprint

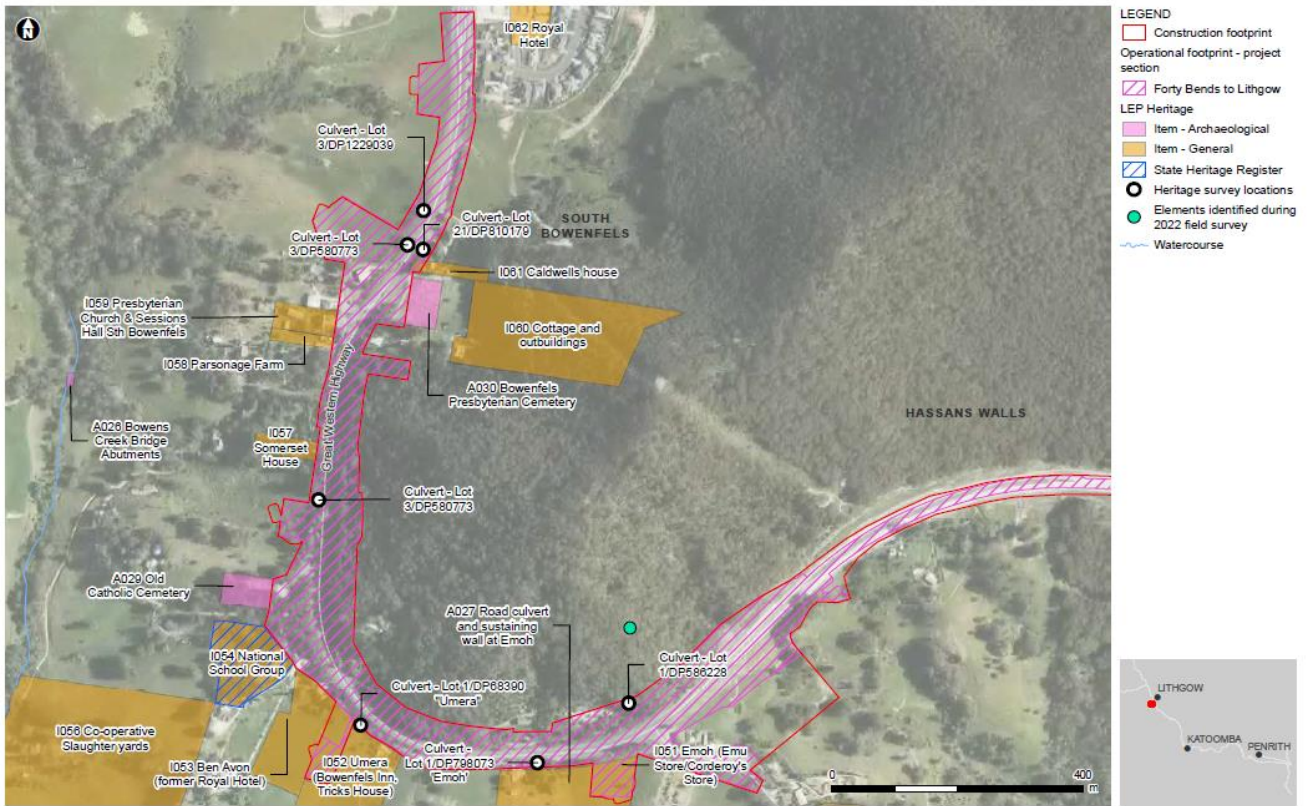


Figure 3-2. Identified elements of potential heritage significance that were investigated during the 2022 field survey and existing heritage context

3.2 Lyndoch Orchard and associated lots

3.2.1 Field survey results

The 2022 field survey established that Lot 13 DP1192566, located directly south of the Great Western Highway and outside of the listed LEP boundary for Lyndoch Orchard contains the most robust remnants of the historic orchard. Numerous established fruit trees appear to be planted in some uniformity, including a number of apple and pear varieties (refer to Appendix A Figures A-1 to A-18). Where possible the GIS location of individual trees were noted (refer to the green coloured points on Figure 3-1. It should be noted that due to access issues in some instances a single yellow point denotes multiple trees and so the number of green identification points should not be taken to demonstrate the exact number of existing orchard trees).

The majority of visible trees on this lot bear evidence of specialised pruning, albeit with more recent natural re-growth. It is acknowledged that it is likely that there are also a number of fruit trees/saplings on this property that have self-seeded from the more established trees in more recent times. Due to impenetrable vegetation (brambles) it was not possible to identify the exact number of fruit trees likely to relate to the historic orchard however at an estimation at least 50 trees appear to be located on this property.

A number of fruit trees (estimated to be at least 11 visible) that appear to be of a similar age and also displaying evidence of past pruning were visible on the western and northern edges of the adjacent (south) property at 2464 Great Western Highway (Lot 12 DP1192566). However due to access restrictions (bramble vegetation) the condition of these trees is unable to be determined.

The field survey also investigated 2464-2468 Great Western Highway (Lot 1 DP1192566 which denotes the local LEP listing boundary) located directly north of the Highway, and 2430 Great Western Highway (Lot 72 DP751644) the adjacent further north lot. The survey identified a further number of extant fruit (apple) trees on these properties (refer to Appendix A Figures A-13 to A-18).

2464-2468 Great Western Highway (Lot 1 DP1192566) is a local heritage item known as 'Lyndoch Orchard'. The NSW State Heritage Inventory form for this item describes it as "A modest timber framed and boarded orchardist cottage...property includes extensive orchard, shedding associated 40 acres. Further 80 acres on opposite side of road".

The field survey was able to confirm the presence of fruit trees on both sides of the road. A large established apple tree is located to the rear of the existing heritage listed structure (weatherboard house). Elsewhere on the property there are a number of apple trees however due to existing vegetation (thick brambles) it was not possible to confirm the number of trees or their condition, or establish with any certainty whether they relate to the historic orchard planting or whether they are self-seeded later plantings. It is estimated that there are at least 15 fruit trees located on the property at Lot 1 DP1192566 and approximately a further 10 fruit trees on the adjacent property to the north at Lot 72 DP751644.

3.2.2 Assessment of significance

Following the 2022 field survey and given findings set out above it is considered that the trees outside the LEP listing boundary but adjacent to the Lyndoch Orchard are considered to be associated with the orchard and are an element that contributes to its local heritage significance. It is evident that the orchard extended both further north and south than the LEP curtilage.

The stand of fruit trees located on the south side of the Highway is apparently not the sole surviving remnant of the extensive orchard however they form the most intact and legible remnant of the orchard, with fruit trees that are clearly the most established (oldest) and in the best condition from what was surveyed and identified. Therefore this stand can be considered a rare surviving element of one of the earliest orchards in the Hartley area.

3.2.3 Statement of Heritage Impact

The works in the vicinity of Lyndoch Orchard (LEP I109) and the adjacent lots which to the south of the highway which also contain fruit trees comprise the realignment of the highway to the immediate south of its current alignment and the

construction of several small tie-ins to provide access to informal access tracks and driveways on the south side of the new roadway.

The statement of heritage impact relating to Lyndoch Orchard included in the original (main) report (refer to Section 6.4.1.5.1) reads as follows:

Lyndoch Orchard is of heritage significance for its historical values. The proposed works would potentially constitute a major direct (physical) impact to the heritage item, depending on whether other orchard trees survive elsewhere on the property. The proposed works would be a moderate indirect (visual) impact to the heritage item due to the removal of remnant orchard trees. As the orchard trees are specifically defined as highly significant to the heritage item, if the trees proposed for removal are the last examples related to the orchard, their removal would be a major impact to the heritage significance of Lyndoch Orchard.

Prior to proposal impacts, a field survey should be completed of Lyndoch Orchard in order to establish if any other orchard trees related to the heritage item are present [the subject of this addendum report]. The trees proposed for removal should be assessed by a qualified arborist and options for propagation and preservation of any rare, old or otherwise significant varietal or species should be explored prior to construction. An archival recording should also be produced for the remnant trees prior to any impacts.

The built heritage of Lyndoch Orchard is not considered to be sensitive to vibration during construction, however this should be confirmed through a dilapidation survey prior to construction.

No other sympathetic options have been explored. The current alignment south of the existing highway avoids impacts to the built heritage element and encroachment within the gazetted heritage curtilage.

This addendum report confirms that there are additional significant fruit trees outside the LEP listing boundary for Lyndoch Orchard, and their removal would be a major direct (physical) impact to the Lyndoch Orchard heritage item. The remnant orchard trees should be examined by a qualified arborist and assessed for significance and horticultural value. Any rare, old or otherwise significant examples or varieties should have potential for propagation or preservation considered prior to proceeding with any future works.

Should removal of extant significant trees be required (as per Section 7. Management measures under the original (main) report) an archival recording of the heritage item should be carried out in accordance with the guidelines Photographic recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW 2006). The documentation forming the archival recording should be added to as opportunities arise during the course of the project. . The required approvals as set out under Section 8. Approvals under the original (main) report remained unchanged.

3.3 ‘Road culvert and sustaining wall at Emoh’ (LEP A027)

3.3.1 Field survey results

The field survey identified two road culverts at this location (refer to Appendix A Figures A-19 to A-24). This includes the already known locally listed heritage item ‘Road culvert and sustaining wall at Emoh’ (LEP A027) located on the southern side of the Great Western Highway. The second culvert is also located within the LEP curtilage.

The 2022 field survey was able to sight and confirm the location and condition of this item during the site visit (refer to Appendix A Figures A-19 to A-22).

The second road culvert at this location is modern in construction and fabric (concrete). It was partially sighted (due to vegetation) located along the northern boundary of the property alongside the Great Western Highway. It is considered and confirmed that this culvert is not of any identified heritage significance (refer to Appendix A Figures A-23 and A-24). It is therefore not considered further in this addendum report.

3.3.2 Assessment of significance

The NSW State Heritage Inventory form includes the following statement of significance for the heritage item ‘Road culvert and sustaining wall at Emoh’:

Historic: The culvert is a rare example of the work of the Public Works Department (PWD) just before the railway building over the Mountains diverted resources from road maintenance. This part of the road has been in constant use since 1828 and the present culvert is likely to be the successor of an earlier drain. As viewed from Emoh’s garden, the south wall is exceptionally pleasing with good quality stone-work and excellent detailing, including the parapet walls. Scientific: The culvert and wall cast light on the building techniques of the PWD in the 1860s.

3.3.3 Statement of Heritage Impact

The proposed works in proximity to the road culvert and wall comprise the widening of the existing highway alignment to the north of the current roadway and an intersection upgrade at Mckanes Falls Road. The statement of heritage impact of the proposed works as set out in the original report (Section 6.6.1.3) remains unchanged based on the field survey undertaken.

3.4 Road culvert located at 3449 Great Western Hwy, South Bowenfels 2790 (Lot 1 DP68390) - within the curtilage of the locally heritage listed item Umera (LEP I052)

3.4.1 Field survey results

This culvert is located along the northern boundary of the LEP listed Umera property, allowing for water to drain from under the road into the paddock on the property (and a small dam). The culvert runs underneath the old historic road alignment (that is parallel south to the current Highway). The culvert is however clearly of modern design and fabric (concrete) with no apparent historic features (refer to Appendix A Figures A-25 and A-26). It is therefore not considered to be a heritage item and does not contribute to the heritage significance of Umera (LEP I052).

3.4.2 Statement of heritage impact

The statement of heritage impact for Umera (LEP I052) as presented in Section 6.6.1.4 remains unchanged following the field survey of the above culvert.

3.5 Road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (comprising Lot 9 Section 3 DP758809, Lot 3 DP580773)

3.5.1 Field survey results

The field survey established that the road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels runs across (underneath) the old highway alignment. The survey was limited due to access restrictions. A modern concrete casing structure has been constructed around the eastern (uphill) side of the culvert and this impedes any visual of a potentially older culvert/element. It is also buried under the Highway (road). Although running water could be heard flowing freely it was not possible to sight or confirm age or integrity of original culvert element on the downhill side (western) side of the culvert due to existing thick vegetation.

3.5.2 Assessment of significance

Given the location of the culvert (in context with the old highway alignment) it may be possible that this is a historic structure of some heritage significance. However, this was not possible to confirm due to access restrictions and impaired visibility (refer to Appendix A Figures A-27 to A-29). Once works have commenced the existing vegetation that is currently impeding access to or site of the downhill/downstream side of the culvert should be cleared sufficiently to allow for a brief survey and reassessment of this element in order to determine appropriate management.

3.6 Road culverts located at 5 Magpie Hollow Road, South Bowenfels on the western side of the Great Western Highway (Lot 3 DP1229039, Lot 3 DP580773)

These culverts are two modern concrete road culverts located on the western side of the Highway (refer to Appendix A Figures A-30 and A-31). These culverts were sighted (limited visibility due to existing vegetation) and confirmed to be modern and not of heritage significance. Therefore they are not considered further in this assessment.

3.7 Road culverts located at 3546 Great Western Highway, South Bowenfels (Lot 21 DP810179)

These are two modern concrete and metal culverts (refer to Appendix A Figures A-32 and A-33) located on the road verge on the eastern side of the Great Western Highway. The culverts are set flat into the ground with the road verge sloping down to the metal drain elements. These culverts were sighted in full and confirmed to be modern and not of heritage significance. Therefore they are not considered further in this assessment.

3.8 Road culvert located at 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228)

The road culvert located at 3462 Great Western Highway, South Bowenfels was sighted (refer to Appendix A Figure A-34) and confirmed to be modern, being of contemporary design/construction and fabric (concrete). It is located within the road verge. It is therefore not of heritage significance and is not considered further in this assessment.

3.9 Stone feature and quarry, 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228)

During the site visit to this property the land owners directed the consultants to two potential heritage features.

The first was situated within and near the southern boundary of their property (adjacent to the road). This is located within the acquisition area related to the proposed works. The stone feature comprised a small area of worked stone embedded in the ground that may be related to an earlier structure or use of the site e.g. paving, part of a wall (refer to Figures A-35 to A-37). There is no record of this stone feature in any earlier studies. It was raised and brought to attention through a resident submission (the recent new owners of the property on which it is located) who note that this property was originally part of the Bowenfels township (located over the Highway and below the level of the road) and suggest that the stone feature may relate to an earlier structure or building that was part of this place. In talking to this resident this information was confirmed to come from local/oral history of the area shared by members of the community. While it is currently unclear what the function or nature of this stone feature was, it is considered that this element should be treated as a relic and further investigation undertaken.

The second feature identified during field survey was a quarry site. Figure 3-2 shows the location of this feature with a green point. Photographs are provided in Appendix A Figures A-38 and A-39. Given the stone feature also inspected, there is the potential that this stone originated from this quarry. However, as the quarry is located outside of the study area it is not considered further in this assessment.

3.9.1 Significance assessment

Table 3-1. Stone feature, 3462 Great Western Highway, South Bowenfels - significance assessment

Criterion	Assessment
A – Historical significance	Historic significance for potential association with the historic Bowenfels township.
B – Historical Association	
C – Aesthetic significance	
D – Social significance	Social significance for its importance to the local community.
E – Research potential	Good research potential as completely undocumented.
F – Rarity	
G – Representativeness	

3.9.2 Statement of significance

Historic: The stone feature has historical importance as its location and worked nature of the stone feature mean that it is possible that it is related to the early history of this area, in particular the historic township of Bowenfels which was situated in the vicinity, over the other side of the current Highway and below the road level.

Social: The stone feature’s location was raised by local community members who shared local knowledge about this potential item’s history and importance locally. Therefore the stone feature has social significance for its importance to the local community.

Research potential: The stone feature has some research potential as it appears to be completely undocumented to date and has only been identified due to a local resident submission.

Given the significance assessment above, it is considered that the feature is categorised as an archaeological ‘relic’ and is of moderate archaeological potential.

3.9.3 Statement of Heritage Impact

As this feature is located within the acquisition area it is assumed that no ground works are proposed in this area. However, if any ground works are proposed that will disturb this potential heritage feature this will be considered a direct impact and will need to be managed accordingly. As per Section 7. Management measures under the original (main) report, for an archaeological impact comprising a ground disturbance in an area of moderate archaeological potential, the following management measures apply:

- Test excavation under a s140 permit – an Excavation permit under Section 139(4) of the Heritage Act

- Where test excavations are proposed, an archaeological research design and methodology must be prepared in accordance with Archaeological Assessments: Archaeological Assessment Guidelines (NSW Heritage Office 1996a).

Test excavation would still be proposed, however, since the preparation of the original (main) report, Heritage NSW has made updates to exceptions to the requirement for a s140 permit. A Schedule of exceptions to subsections 139(1) and (2) of the Heritage Act was published in the Government Gazette (which came into effect 1 March 2022). The relevant exception for the current proposal area is as follows:

2 Exceptions

The following disturbance or excavation of land does not require an excavation permit under subsections 139(1) or (2) of the Heritage Act 1977 provided that it falls within one or more of the exceptions described at clauses 2(a) to (f) below, and is undertaken in compliance with the General Conditions prescribed at clause 3 further below:

(d) Any disturbance or excavation of land for archaeological test excavation of relics of local heritage significance completed in accordance with the guideline ‘Relics of local heritage significance: a guide for archaeological test excavation’ published by Heritage NSW.

It is proposed that test excavation of the stone feature could therefore proceed without a Section 140 permit from Heritage NSW, as it would fall within the scope of Section 139(4) Exception 2(d). This should be confirmed by Transport for NSW through self-assessment against the new guidelines *Relics of local heritage significance: a guide for archaeological test excavation* (Heritage NSW 2022). Prior to commencement of any test excavation, the potential relics must be assessed and documented in a heritage management document (including a test excavation research design and excavation methodology) as per the aforementioned guidelines, to be approved by Transport for NSW. Following its approval, the appropriate exception Record of Use form (or other formal record of the decision to use exception 139 2(d)) should be completed and retained for a reasonable time.

If following test excavation, no relics are found, no further action or notifications are required. If relics are found, notification to the Heritage Council is required under Section 146 of the Heritage Act. If the test excavation identifies that further archaeological work is required, then a Section 140 excavation permit may be necessary.

3.10 Summary

A summary of each heritage item assessed as part of this addendum report is provided in Table 3-2, including significance, impacts and management measures.

Table 3-2. Summary of heritage items, significance, impacts and management measures

Type of place/item	Location	Age and Significance	Field survey results	Impact and management measures
Lyndoch orchard and associated lots	2464-2468 Great Western Highway, Hartley NSW 2790 (Lot 1 DP1192566), 2430 Great Western Highway, Hartley NSW 2790 (Lot 72 DP751644), Great Western Highway, Hartley NSW 2790 (Lot 13 DP1192566), 2464 Great Western Highway, Hartley NSW 2790 (Lot 12 DP1192566)	Mix of historic plantings (related to the orchard) and younger (self-seeded) trees Part of the place is a local heritage item (LEP I109).	Field survey sighted and confirmed location and condition of a large number of extant historic fruit trees. It is evident that the orchard extended both further north and south than the LEP curtilage. The stand of fruit trees located on the south side of the Highway can be	Removal of significant fruit trees would be a major direct (physical) impact to the Lyndoch Orchard heritage item. Remnant orchard trees should be examined by a qualified arborist and assessed for significance and horticultural value, and potential for propagation or preservation should be considered prior to proceeding with any future works.

Type of place/item	Location	Age and Significance	Field survey results	Impact and management measures
			considered a rare surviving element of one of the earliest orchards in the Hartley area.	Should removal of extant significant trees be required an archival recording of the heritage item should be carried out. The required approvals as set out under Section 8. Approvals under the original (main) report remained unchanged.
Road culvert and retaining wall	3432 Great Western Highway, South Bowenfels, NSW 2790 (Lot 1 DP 798073)	Historic Local heritage item 'Road culvert and sustaining wall at Emoh' LEP A027	Already known as a local heritage item. Field survey sighted and confirmed location and condition.	Statement of heritage impact from proposed works as set out in the original report (6.6.1.3) remains unchanged
Road culvert	Located along northern boundary (alongside Highway) of 3432 Great Western Highway, South Bowenfels, NSW 2790 (Lot 1 DP 798073)	Modern Not of heritage significance	Modern road culvert. Field survey sighted and confirmed location and condition.	No impact on heritage significance as a result of proposed works
Road culvert	3449 Great Western Hwy, South Bowenfels 2790 (Lot 1 DP68390)	Modern Not of heritage significance (within the curtilage of the locally heritage listed item 'Umera' I052)	Modern road culvert. Field survey sighted and confirmed location and condition.	Statement of heritage impact from proposed works as set out in the original report (6.6.1.4) remains unchanged
Road culvert	Western side of the Great Western Highway near Mudgee Street, South Bowenfels (Lot 9 Section 3 DP758809, Lot 3 DP580773)	Potentially historic Unknown significance (potential heritage item)	Possible heritage item due to location and context. Unable to confirm significance due to access restrictions. Requires further survey and assessment.	Once works have commenced existing vegetation should be cleared to allow for brief survey and reassessment to be undertaken to determine appropriate management.
Road culverts	5 Magpie Hollow Road, South Bowenfels on the western side of the Great Western Highway (Lot 3	Modern. Not of heritage significance.	Modern road culvert. Field survey sighted and confirmed	No impact on heritage significance as a result of proposed works

Type of place/item	Location	Age and Significance	Field survey results	Impact and management measures
	DP1229039, Lot 3 (DP580773)		location and condition.	
Road culverts	3546 Great Western Highway, South Bowenfels (Lot 21 DP810179)	Modern. Not of heritage significance.	Modern road culvert. Field survey sighted and confirmed location and condition.	No impact on heritage significance as a result of proposed works
Stone feature and quarry	3462 Great Western Highway, South Bowenfels (Lot 1 DP586228)	Historic Unknown significance (potential heritage item)	Stone feature – Historical and social importance, and research potential. Considered to be of moderate archaeological potential. Should be treated as a potential heritage feature. Quarry site – Potential for the stone (from the worked stone feature) to have originated from the quarry site but this is unconfirmed.	If any ground works are proposed that will disturb this potential heritage feature this will be considered a direct impact and it will be necessary to manage accordingly. Test excavation is required if physical disturbance to the location is proposed. This would occur under Exception Section 139 2(d) for relics of local significance. Self-assessment by Transport for NSW that the Exception applies is required.

4. Conclusion

As an outcome of the field survey and additional assessment, the overall impact to the heritage significance of each known heritage item as a result of the proposal has not changed from the original (main report), as follows:

Major impact:

- Lyndoch Orchard (LEP I019)

Minor impact:

- Road culvert and sustaining wall at Emoh (LEP A027)

Negligible impact:

- Umera (LEP I052)

Most of the previously unassessed road culverts were found to be modern structures with no heritage significance, with the possible exception of one. The road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (Lot 9 Section 3 DP758809, Lot 3 DP580773) may have heritage significance given its location beneath the former highway alignment. However, this was not possible to confirm due to access and visibility restrictions. Once works have commenced the existing vegetation that is currently impeding access to or site of the downhill/downstream side of the culvert should be cleared sufficiently to allow for a brief survey and reassessment of this element in order to determine appropriate management.

In addition, a potential relic was also identified during the site inspection. A small area of worked stone was identified at 3462 Great Western Highway, South Bowenfels which may relate to an earlier structure/building or use of the site. As such should any works be proposed that will disturb the potential relic this should be managed as follows:

- Transport for NSW must make a self-assessment that Exception Section 139 2(d) applies to proposed test excavation (if required)
- Transport for NSW must then approve archaeological test excavation, retaining a record of this decision and a summary of the test excavation results for a reasonable time
- Completion of test excavations under Section 139(4) exception 2(d) for test excavation of relics of local significance.

Apart from those items discussed above management measures for the heritage items addressed in this addendum report have not changed from those set out in the original (main) report. Overall, the additional assessment in this addendum report has not altered the overall level of impact on non-Aboriginal (historical) heritage as a result of the proposal. The proposal would still have a major impact on four heritage items, a moderate impact to four, and a negligible or minor impact to 23 heritage items or potential heritage items.

For the full scope of works proposed and related assessment please refer to the original (main) report Great Western Highway Upgrade: Little Hartley to Lithgow (West Section) Technical working paper – Non-Aboriginal heritage, October 2021 (JAJV, 2021).

5. References

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Appendix A. Field survey photographs

The following photographs are a representative example of the elements investigated during the field survey undertaken between 18 – 19 January 2022:

Lyndoch Orchard located at 2430 Great Western Highway, Little Hartley, NSW, 2790 and 2464-2468 Western Highway, Little Hartley, NSW, 2790 (comprising Lot 12 DP1192566 (split north and south of the Highway), Lot 72 DP751644, Lot 13 DP1192566)



Figure A-1: Looking across the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard Lot 13 DP1192566. Fruit trees visible towards the rear



Figure A-2: Apple tree on the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard



Figure A-3: Overgrown apple tree on the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard



Figure A-4: Overgrown apple tree on the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard – showing evidence of pruning techniques



Figure A-5: Apple tree on the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard – many trees are actively fruiting



Figure A-6: Thick vegetation (brambles) impeding physical access to many trees on the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard



Figure A-7: One of the large established pear trees along the western boundary of the property directly adjacent (south) of the Highway that forms part of the original Lyndoch Orchard – trees are actively fruiting



Figure A-8: A fruiting pear tree



Figure A-9: Apple tree on the property known as Lot 12 DP1192566 (southern side of the Highway) that forms part of the original Lyndoch Orchard



Figure A-10: Fruit trees on the property known as Lot 12 DP1192566 (southern side of the Highway). Unable to get any closer due to vegetation and farm animals



Figure A-11: The property on the northern side of the Great Western Highway known as 2464-2468 Great Western Highway, Hartley Lot 1 DP1192566 that forms part of the heritage item Lyndoch Orchard. Existing shop and workshop visible



Figure A-12: the historic dwelling house at 2464-2468 Great Western Highway, Hartley Lot 1 DP1192566 - part of the heritage item Lyndoch Orchard



Figure A-13: Large established apple tree located at the rear of the existing structures on Lot 1 DP1192566



Figure A-14: Fruit trees at the rear of Lot 1 DP1192566, unable to confirm how many trees are present or their condition due to impenetrable vegetation



Figure A-15: Apple trees located on Lot 72 DP751644 at 2430 Great Western Highway – the lot furthest to the north that forms part of the original Lyndoch Orchard



Figure A-16: Apple trees located on Lot 72 DP751644 at 2430 Great Western Highway



Figure A-17: Fruiting apple tree on Lot 72 DP751644



Figure A-18: Apple tree located on Lot 72 DP751644 at 2430 Great Western Highway – with measuring pole for scale

Road culvert and retaining wall located at 3432 Great Western Highway, South Bowenfels, NSW 2790 (Lot 1 DP 798073) – local heritage item ‘Road culvert and sustaining wall at Emoh’ LEP A027



Figure A-19: local heritage item ‘Road culvert and sustaining wall at Emoh’ looking northward

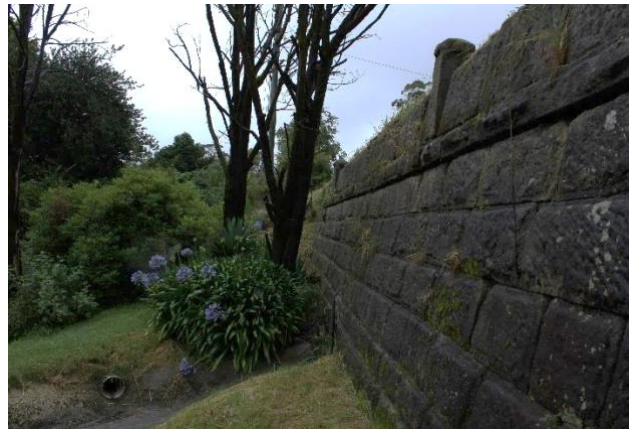


Figure A-20: looking west along the culvert wall. The Highway is above the parapet on the right



Figure A-21: Culvert at the base of the stone wall



Figure A-22: Looking down from the Highway verge at the grounds of Emoh from the top of the listed retaining ('sustaining') wall (stone parapet element visible to the left)



Figure A-23: Modern concrete culvert, vegetation restricted access and visibility. Looking north with Highway above



Figure A-24: Modern concrete culvert, vegetation restricted access and visibility. Looking downhill from southern side Highway verge

Road culvert located at 3449 Great Western Hwy, South Bowenfels 2790 (Lot 1 DP68390) - within the curtilage of the locally heritage listed item 'Umera' 1052



Figure A-25: Modern concrete culvert located within the curtilage of local heritage item 'Umera', looking north from the paddock adjacent to the item



Figure A-26: Looking south from the northern boundary of the property Umera. Standing roughly above the concrete culvert which drains into the small dam visible.

Road culvert located on the western side of the Great Western Highway near Mudgee Street, South Bowenfels (comprising Lot 9 Section 3 DP758809, Lot 3 DP580773)



Figure A-27: eastern side of the culvert alongside the old highway alignment. Covered over with modern concrete casing – partially visible due to vegetation.



Figure A-28: the old road alignment running parallel to the western side of the Old Highway. Thick vegetation visible on both sides.



Figure A-29: Thick vegetation covering the western side of the culvert in this location. Unable to get a clear line of sight to determine age or integrity. Running water heard.

Road culverts located at 5 Magpie Hollow Road, South Bowenfels on the western side of the Great Western Highway (Lot 3 DP1229039, Lot 3 DP580773)



Figure A-30: Modern concrete culvert (obscured by vegetation) located on western side of the Highway



Figure A-31: Modern concrete culvert (obscured by vegetation) located on western side of the Highway

Road culverts located at 3546 Great Western Highway, South Bowenfels (Lot 21 DP810179)



Figure A-32: One of the two modern concrete and metal culvert along the road verge on the eastern side of the Highway. Both culverts are the same in design and construction



Figure A-33: Close view of one of the two modern concrete and metal culvert along the road verge on the eastern side of the Highway

Road culvert located at 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228)



Figure A-34: Modern concrete road culvert on the eastern side of the Highway at 3462 Great Western Highway

Stone feature and quarry, 3462 Great Western Highway, South Bowenfels (Lot 1 DP586228)



Figure A-35: Stone element of potential archaeological potential at 3462 Great Western Highway. Located near the southern property boundary (marked with range pole)



Figure A-36: Close view of the stones which may be of archaeological potential



Figure A-37: Close view of the stones which may be of archaeological potential



Figure A-38: Looking across the quarry site on the property at 3462 Great Western Highway.



Figure A-39 (left): Close view of part of the quarry site