

6.5 Non-Aboriginal heritage

This section provides a summary of the assessment of potential impacts to non-Aboriginal heritage during construction and operation of the proposal and identifies mitigation measures to address these impacts. A detailed assessment of non-Aboriginal heritage impacts is presented in the the technical working paper – non-Aboriginal heritage (Appendix H).

6.5.1 Methodology

The non-Aboriginal heritage assessment involved the following:

- Assessment of the construction footprint plus 50 metre buffer (study area)
- Desktop assessment including a review available heritage registers, lists, relevant heritage report and other source material. Heritage registers included
 - World Heritage List (WHL)
 - National Heritage List (NHL)
 - Commonwealth Heritage List (CHL)
 - State Heritage Register and Inventory (SHR and SHI)
 - Section 170 Heritage and Conservation Registers (S170)
 - Lithgow City Local Environmental Plan 2014 (LEP)
 - Register of the National Estate (RNE)
- 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
- Assessment of potential direct and indirect impacts on identified items (listed, unlisted and areas of archaeological potential) within the study area associated with construction and operational of the proposal
- Identification of potential mitigation measures to avoid, manage, minimise and mitigate potential impacts on items likely to be impacted by the construction and operation of the proposal.

6.5.2 Existing environment

Little Hartley to River Lett

Existing context

The hamlet of Little Hartley was created in response to traffic along Thomas Mitchells line of road down Victoria Pass from 1829 to 1930. Following his commercial success of the nearby Golden Fleece Inn at the foot of Mount York (Hartley Vale), the Royal Garter Inn (now Billesdene Grange (LEP I023)) was built in Little Hartley. Unfortunately, Little Hartley did not develop into a village around his inn site as was hoped but formed an elongated hamlet along the Great Western Highway, and there was immediate competition to the Royal Garter Inn from the Harp of Erin (LEP I028) which opened in 1832 as a general store and public house. Other rival hostelries in Little Hartley in the 1830s were short lived with the exception of the Victoria Inn (now Rosedale, (LEP I024)), opened in 1839 and intermittently licensed until 1893, which competed with the Rose Inn (now Ambermere, (LEP I022)) in the 1840s.

Heritage items

Listed heritage items within the Little Hartley to River Lett study area and the items significance are outlined in Table 6-63. The location of these items are shown on Figure 6-17.

Table 6-63 Listed heritage items – Little Hartley to River Lett

Item name	Register	Register number	Significance
Hartley Valley	NHL	106092	National
Rosedale (former Victoria Inn)	LEP, RNE, NT	I024, 834, R3404	Local
Nioka	LEP	I025	Local
Billesdene Grange	LEP, NT	I023, R3389	Local
Hartley Public School	LEP	I018	Local
Mount York Conservation Precinct	RNE	18622	Not specified
Hartley Valley (Coxs River) Landscape Conservation Area	NT	R2977	Not specified

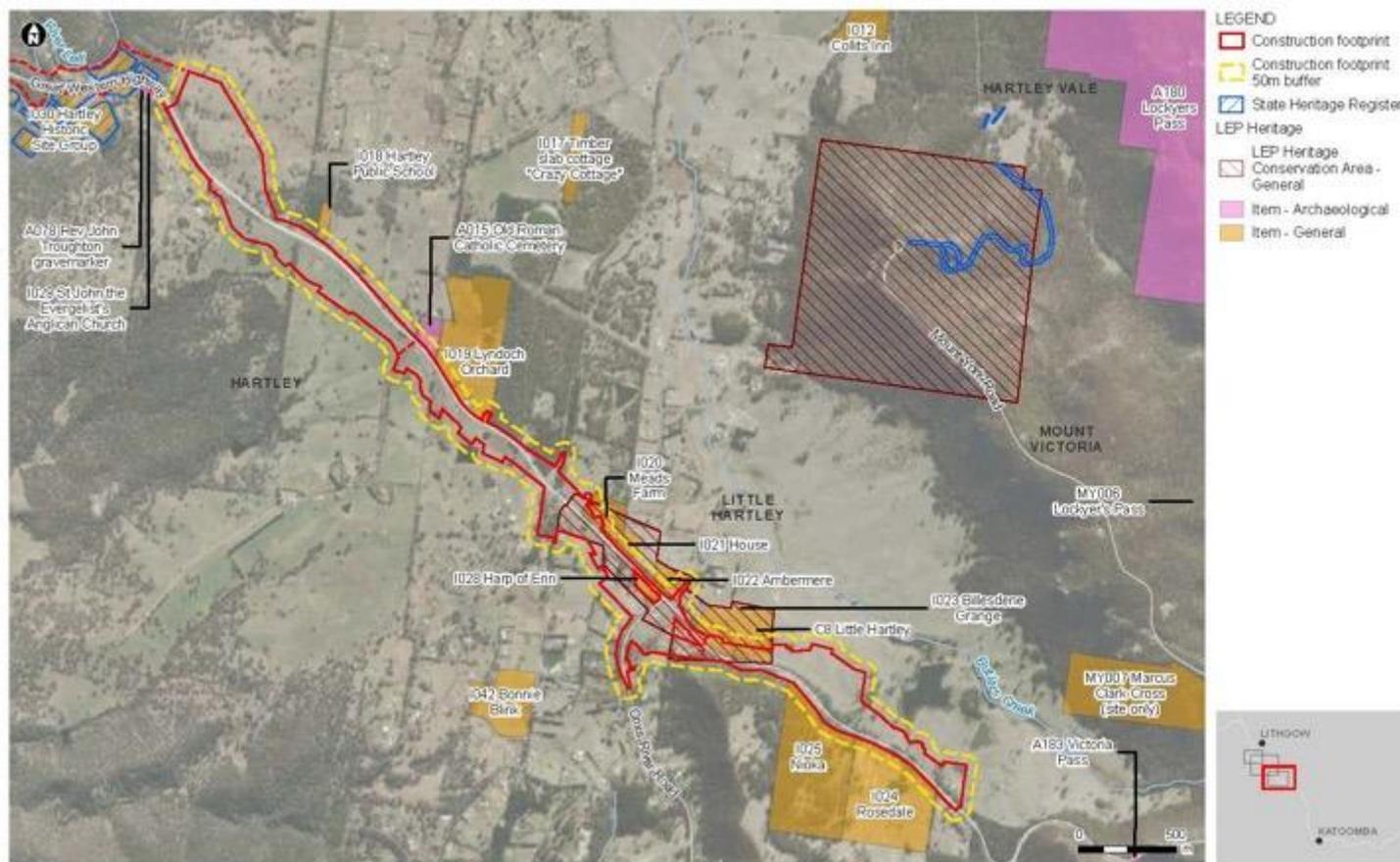


Figure 6-17 Existing heritage items – Little Hartley to River Lett

Unlisted heritage items

Unlisted heritage items within the study area are outlined in Table 6-64.

Table 6-64 Unlisted heritage items – Little Hartley to River Lett

Item name	Location	Description
Section of Coxs River Road	Lot 15/DP880798	Early alignment of Coxs Road which remains in use as a dirt farm track and is approximately 380 metres in length. No visible earthworks or other infrastructure associated with the track, packed earth with some gravel scalds, which runs along the rise of a gentle rolling hill. Only visible due to continued use and vehicle tracks. Terminates at the end of a sealed road (Wheeler Place) in the west, and a revegetation corridor within the property at its eastern end.
Remnant section of an earlier alignment of Mitchell's Road	West of Noika	Remnant section of an earlier alignment of Mitchell's Road connecting to Noika. The alignment is currently blocked by tall security fencing.

Archaeological potential

Archaeological potential was identified within the heritage curtilage of Rosedale, around the main house, related to previous outbuildings, wells, or refuse pits.

Coxs River Road

Existing context

Refer to existing context provided above under Little Hartley to River Lett.

Heritage items

Listed heritage items within the Coxs River Road study area and the items significance are outlined in Table 6-65. The location of these items are shown in Figure 6-18.

Table 6-65 Listed heritage items – Coxs River Road

Item name	Register	Register number	Significance
Billesdene Grange	LEP	I023	Local
Little Hartley Conservation Area	LEP	C8	Not specified
Ambermere	LEP, NT	I022, R3403	Local
Harp of Erin (former Williams Store)	LEP, RNE, NT	I028, 826, R3406	Local
House	LEP	I021	Local
Meads Farm	LEP, RNE, NT	I020, 838, R3405	Local
Lyndoch Orchard	LEP	I019	Local
Old Roman Catholic Cemetery	LEP, RNE, NT	A015, 19055, R2978	Local

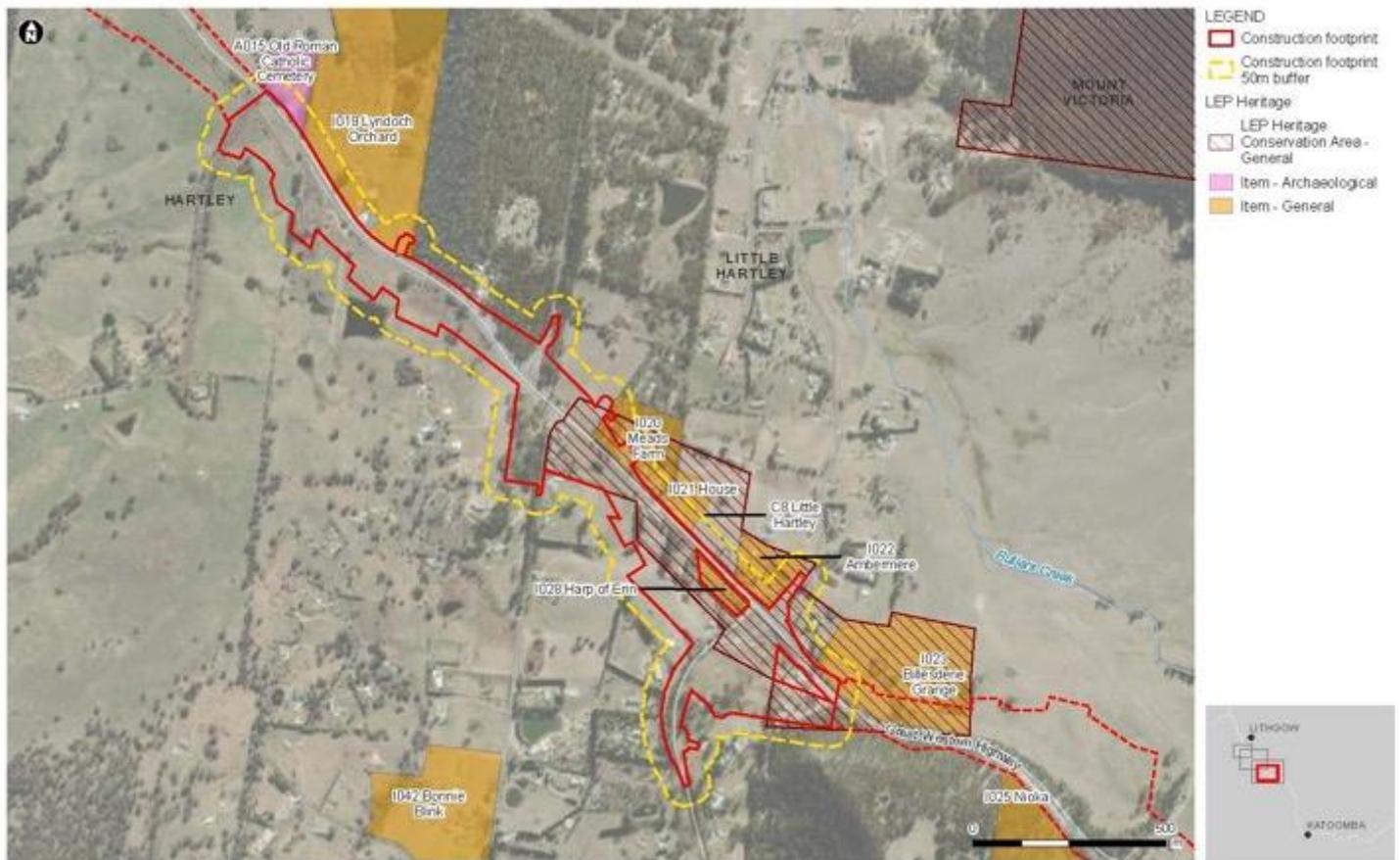


Figure 6-18 Existing heritage items – Coxs River Road

Unlisted heritage items

Unlisted heritage items within the study area are outlined in Table 6-66.

Table 6-66 Unlisted heritage items – Coxs River Road

Item name	Description
The Log Cabin Farmhouse Shop and adjacent land	A composite timber structure set back approximately 15 metres from the Great Western Highway, also known as the Lolly Bug Store. Former petrol bowsers currently screened by decorative landscaping located less than three metres from the highway edge.
Convict-built causeway connecting Billesdene Grange to the Great Western Highway	The convict-built causeway extends from the highway to the entrance gate of the property where it narrows to a single lane. When viewed from the Great Western Highway, the causeway bridges a deep gully running alongside the alignment of Mitchells road and leads to Billesdene Grange.

Archaeological potential

Archaeological potential was identified at the rear of the Harp of Erin (particularly within the 'house paddock'), related to previous outbuildings related to the inn.

River Lett to Forty Bends

Existing context

Hartley Village is located four kilometres northwest of Little Hartley along the Great Western Highway, around the point where Mitchells Road crossed the River Lett. Land was set aside in 1830 for the creation of a village, and with law and order a military responsibility until 1834, the government in Sydney decided to create a police district with a courthouse on the site, replacing the stockade at Coxs River. The courthouse was the focus of the village, which occupied both sides of the River Lett along Mitchells Road, with sixteen streets laid on a grid pattern.

Hartley village depended on increased use of the highway, which was driven by coach services through to Bathurst during the 1830s. Once the courthouse opened in the 1840s, Hartley replaced Little Hartley as the primary transport hub west of the mountains and associated accommodation and public buildings (hotels and inns) were opened to take advantage of this shift. Western gold rushes drove further development in the town during the 1850s, however when the railway bypassed Hartley Valley and a major oil-extraction industry developed in Hartley Vale (both in the 1860s), growth of the town was quickly stifled. Following the development of the motor car, tourist traffic increased travelling through to Jenolan Caves and Corney's garage was opened in the 1940s. However, the town continued to stagnate and was further diminished through the rerouting of the Great Western Highway to the east of the village (its current alignment).

The village was eventually recognised for its heritage values and passed into the ownership and management of the National Parks and Wildlife Service (NPWS), who own eleven 19th century buildings (including the courthouse and a woolshed) and four later buildings. Only the house known as Bungaribee and the Anglican Church remain in private ownership.

Heritage items

Listed heritage items within the River Lett to Forty Bends study area and the items significance are outlined in Table 6-67. The location of these items are shown on Figure 6-19.

Table 6-67 Listed heritage items – River Lett to Forty Bends

Item name	Register	Register number	Significance
Hartley Historic Village	SHR, LEP, RNE	00992, I020, 837	State
Fernhill	SHR, LEP, NT	00225, I043, R4569	State
Hartley Courthouse (former)	RNE, NT	841, R2985	Not specified
St John the Evangelist Church	RNE, NT	825, R2986	Not specified
Royal Hotel (former)	RNE	822	Not specified
Rev John Troughton gravemarker	LEP	A078	Local
Sunnyside	LEP	I044	Local
Hassans Walls Stockade and Barracks	LEP	A021	Local

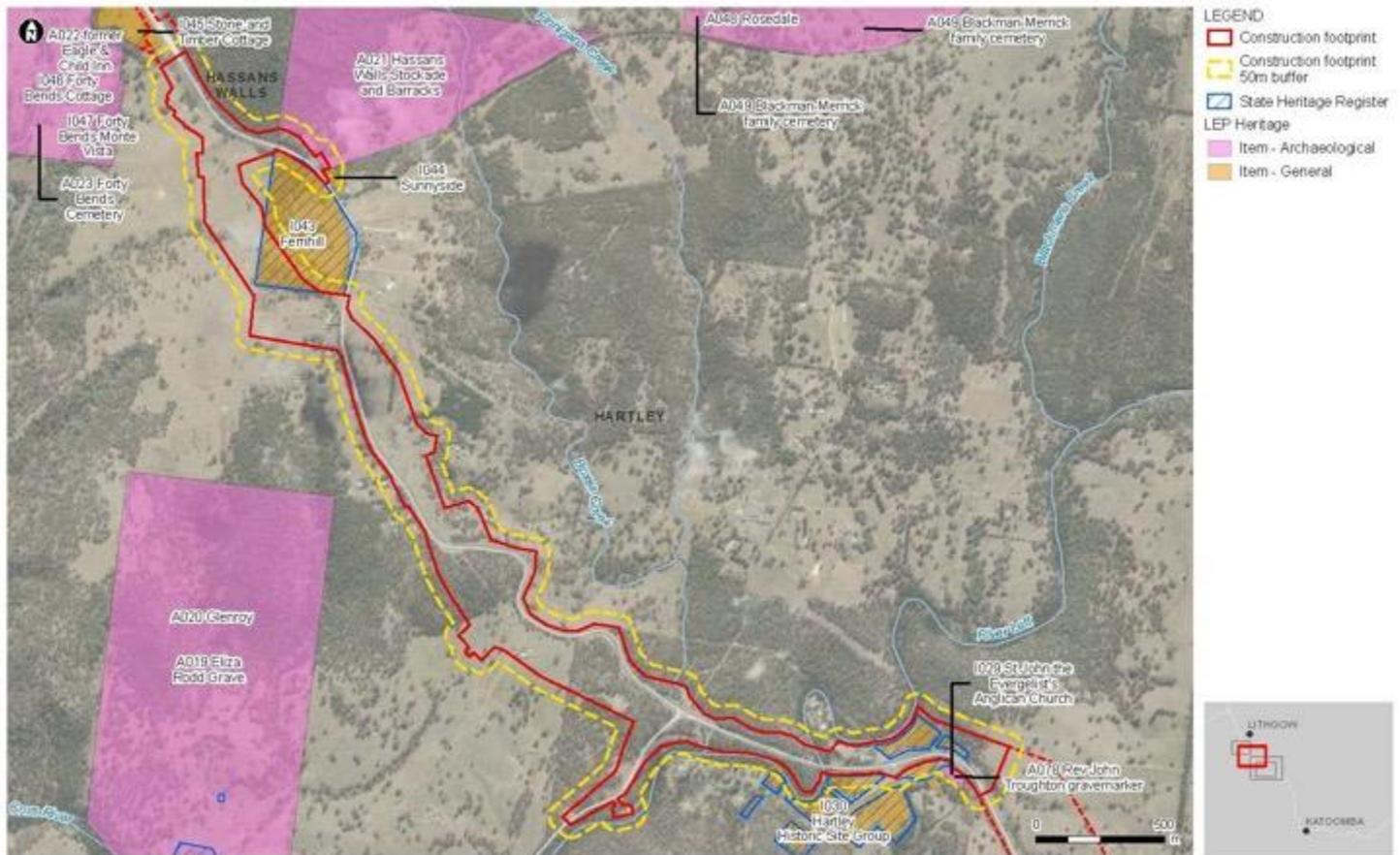


Figure 6-19 Existing heritage items – River Lett to Forty Bends

Unlisted heritage items

Unlisted heritage items within the study area are outlined in Table 6-68.

Table 6-68 Unlisted heritage items – River Lett to Forty Bends

Item name	Description
Bridge over the River Lett (located on the Old Great Western Highway, over the River Lett)	The bridge is significantly dilapidated, and it is no longer possible to cross it on foot, with sections of the timber deck having rotted through and collapsed. The piers appear sound with no visible subsidence or cracking. One of the timber supports (the centremost one) has collapsed and the timbers have been removed or washed downstream, with the footing beam the only piece still in situ. Sandstone steps have been informally constructed on the northern side to allow easy public access down to the riverbed.

Archaeological potential

Archaeological potential has been identified at the following locations:

- The rear of the Royal Hotel at Hartley and within the vacant land to its east
- Land behind the Royal Hotel at Hartley to the north of the current highway
- Land to the rear (north) and east of the courthouse at Hartley
- On unidentified Lot, possibly associated with the historical bullock track

Forty Bends to Lithgow

Existing context

The earliest land grants in the area of Bowenfels were made in 1831 and some of the early subdivisions of the original grants remain largely unchanged today. Following the relaxation of restrictions on settlement by Governor Bourke, there was a rapid development of a number of roadside inns in the Hartley-Bowenfels area during the 1830s-40s and the establishment of a National School in 1851 (Lavelle 1995:5). Following the completion of the Lithgow Zig-Zag and the opening of the railway to the new Bowenfels station (further north) in 1869, the 'old' Bowenfels township gradually declined.

The present Great Western Highway from Mckanes Falls Road to the village of Old Bowenfels essentially follows original alignment of the 1830s Western Road, though some sections have been upgraded, widened or slightly realigned. The proposal travels through the area of Old Bowenfels (also referred to as South Bowenfels). Along Mitchells Road in this area, service buildings began to flourish from the 1830s onwards including inns, stores and the first National School west of the mountains (which opened in 1851).

Heritage items

Listed heritage items within the Forty Bends to Lithgow study area and the items significance are outlined in Table 6-69. The location of these items are shown on Figure 6-20.

Table 6-69 Listed heritage items – Forty Bends to Lithgow

Item name	Register	Register number	Significance
Stone and Timber Cottage	LEP	I045	Local
Former Eagle & Child Inn / Forty Bends Cottage / Forty Bends Monte Vista / Forty Bends Cemetery	LEP	A022, I046, I047, A023	Local
Emoh (Emu Store/Corderoy's Store)	LEP	I051	Local
Road culvert and retaining wall at Emoh	LEP	A027	Local
Umera (Bowenfels Inn, Tricks House)	LEP	I052	Local
Ben Avon (former Royal Hotel)	LEP	I053	Local
Bowenfels National School Site;	SHR, LEP	00761, I054	State
Former Bowenfels Lockup	NT	12858	Not specified
Old Catholic Cemetery	LEP	A029	Local
Somerset House	LEP	I057	Local
Parsonage Farm	LEP	I058	Local
Presbyterian Church & Sessions Hall South Bowenfels	LEP	I059	Local
Bowenfels Presbyterian Cemetery	LEP	A030	Local
Caldwells house	LEP	I061	Local



Figure 6-20 Existing heritage items (listed and unlisted) – Forty Bends to Lithgow

Unlisted heritage items

Unlisted heritage items within the study area are outlined in Table 6-70.

Table 6-70 Unlisted heritage items – Forty Bends to Lithgow

Item name	Location	Description
Culverts 1 and 5	Forty Bends	Unlisted culverts
Location of bridge party encampment	Forty Bends	Unlisted area of archaeological potential
Bridge party reserve	Forty Bends	Unlisted area of archaeological potential
Old line of road	Forty Bends	Unlisted item

Archaeological potential

Previous assessments have identified a potential convict-era archaeological site which provided accommodation for a work party during 1832-33. Previous testing indicates that no archaeological remains are likely to survive within the existing road reserve north of the highway due to substantial modifications during the late 20th century. An area of most intact and substantial potential remains was identified, however the plan of the amended location of the potential site was removed from the publicly available copy of the report for confidentiality purposes.

The Bowenfels Presbyterian Cemetery contains archaeological potential within its heritage curtilage (assuming that the curtilage matches the original gazetted boundary) associated with unmarked burials and archaeological materials.

6.5.3 Potential impacts

Little Hartley to River Lett

A summary of potential impacts on heritage items within the Little Hartley to River Lett construction footprint is provided in Table 6-71. Heritage items that have been assessed as experiencing a level of impact of negligible or less have not been included. A detailed summary of potential impacts on these heritage items is provided in Section 6 of Appendix H.

Table 6-71 Potential impacts on heritage items – Little Hartley to River Lett

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Rosedale	Local	<p>Indirect (visual)</p> <ul style="list-style-type: none"> The proposal would remove some of the mature vegetation along the eastern side of the highway The proposal would increase the visual bulk of the highway, creating a major visual element in the setting of the heritage item <p>Indirect (vibration)</p> <ul style="list-style-type: none"> Construction work would be within the minimum working distances for vibration-intensive construction equipment. Given the nature of the building's construction (stone walls with soft mortar bedding and variable stone arrangements) there may be existing deterioration which could be exacerbated by vibration 	Minor
Billesdene Grange	Local	<p>Direct (physical)</p> <ul style="list-style-type: none"> The proposal would impact a large portion of the southern side of the heritage curtilage, including the convict-built causeway, which provides access between the building complex and the highway The proposed works would also require the demolition of the gallery/roadside stall building <p>Indirect (visual)</p> <ul style="list-style-type: none"> The proposal would remove an extensive stand of poplars planted in the 1930s, plantings along the driveway and a screen between the highway and the property The proposal would introduce an increased visual bulk in closer proximity to the heritage item building complex than currently exists <p>Archaeological</p> <ul style="list-style-type: none"> There is potential for the proposed works to have a major archaeological impact on the Billesdene Grange causeway. 	Moderate

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Section of Coxs River Road	Not specified	Direct (physical) <ul style="list-style-type: none"> The proposal would directly truncate the eastern end of the historical road alignment in this area due to the excavation of a deep cutting. 	Minor

Coxs River Road

A summary of potential impacts on heritage items within the Coxs River Road construction footprint is provided in Table 6-72. Heritage items that have been assessed as experiencing a level of impact of negligible or less have not been included. A detailed summary of potential impacts on these heritage items is provided in Section 6 of Appendix H.

Table 6-72 Potential impacts on heritage items – Coxs River Road

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Little Hartley Conservation Area	Not specified	Direct (physical) <ul style="list-style-type: none"> The proposed works will remove the existing Great Western Highway to a more southerly location. Due to the nature of the hamlet's development, this will remove the key historical relationship with the heritage items that Little Hartley had with the through-route of the highway The proposal would require the removal of existing street trees (noted as being a significant element of the conservation area). Indirect (visual) <ul style="list-style-type: none"> The proposal would introduce a significant visual obstruction at both the eastern and western end of the conservation area impacting the rural setting of Little Hartley. 	Minor
The Log Cabin Farmhouse Shop and adjacent land	Not specified	Direct (physical) <ul style="list-style-type: none"> The proposed works would truncate the proposed heritage curtilage of the heritage item however the building itself would be retained and is the primary element of significance for the heritage item The relocation of the alignment would substantially alter the relationship between the heritage item and the highway which is an integral part of the building's history. Indirect (visual)	Minor

Item name	Significance	Description of impact	Level of impact to item's heritage significance
		<ul style="list-style-type: none"> The proposal would require the remove a large section of the heritage item's existing rural setting of cleared, open, grass paddocks. 	
House	Local	<p>Direct (physical)</p> <ul style="list-style-type: none"> The proposed resurfacing works will take place immediately adjacent to the heritage item's southern boundary, however they are confined to the existing road corridor. The other works are located 20-80 metres from the item's curtilage, physically distanced from any heritage fabric. 	Minor
Meads Farm	Local	<p>Direct (physical)</p> <ul style="list-style-type: none"> The realignment of the highway will directly truncate the heritage curtilage of Meads Farm in its southwest corner and would require ground disturbance through the construction of large batter slopes for the new alignment. The proposal would also require the removal of mature Eucalypts along the northern side of the Great Western Highway and the front section of a revegetated corridor on the heritage item's western side. <p>Indirect (visual)</p> <ul style="list-style-type: none"> The proposed works would introduce two new road levels in proximity to the heritage item representing a visual barrier to the heritage item and its views southward The embankment of the new highway alignment is expected to be at least four metres higher than the current ground surface (potentially as high as five metres in some areas) and would create an obtrusive visual element in a primarily rural setting. <p>Indirect (vibration)</p> <ul style="list-style-type: none"> Construction work would be within the minimum working distances for vibration-intensive construction equipment. Meads Farm has the potential to be sensitive to road construction techniques and vibration, which is supported by previous internal inspections at the property 	Minor
Lyndoch Orchard	Local	<p>Direct (physical)</p> <ul style="list-style-type: none"> The proposal would truncate a small stand of remnant orchard trees on the south side of the highway. If these trees are the sole surviving remnant 	Major

Item name	Significance	Description of impact	Level of impact to item's heritage significance
		<p>of the extensive orchard (previously 120 acres in total) they can be considered a rare surviving element of one of the earliest orchards in the Hartley area</p> <p>Indirect (visual)</p> <ul style="list-style-type: none"> The proposal would require the removal of the remnant orchard trees south of the highway – currently the only visual marker of the area and item's orcharding history. 	

River Lett to Forty Bends

A summary of potential impacts on heritage items within the River Lett to Forty Bends construction footprint is provided in Table 6-73. Heritage items that have been assessed as experiencing a level of impact of negligible or less have not been included. A detailed summary of potential impacts on these heritage items is provided in Section 6 of Appendix H.

Table 6-73 Potential impacts on heritage items – River Lett to Forty Bends

Item name	Significance	Description of impact	Level of impact to item's heritage significance
St Johns the Evangelist's Anglican Church/Rev John Troughton gravemarker	Local	<p>Indirect (visual)</p> <ul style="list-style-type: none"> The proposed works represent the duplication of an existing visual element in the landscape context of historical Hartley. The new road surface would be roughly at-grade with the existing highway through the section in proximity to the church, with a large fill embankment on its northern side. However, there would be minimal direct lines of site between the heritage item and the proposed works due to the topography, deep cutting of the existing highway and vegetation screening. 	Minor
Hartley Historic Village	State	<p>Direct (physical)</p> <ul style="list-style-type: none"> The realignment of the highway and new northern access road will directly truncate parts of the heritage curtilage of the item, primarily those portions to the north of the existing Great Western Highway, with minor truncation of the LEP heritage curtilage behind the Royal Hotel Although the core village to the south of the highway would be largely unaltered, the proposed works would directly impact and bury a portion of its heritage curtilage <p>Indirect (visual)</p>	Moderate

Item name	Significance	Description of impact	Level of impact to item's heritage significance
		<ul style="list-style-type: none"> • The new highway alignment will be constructed to a higher level than the existing highway, increasing the visual bulk of the roadway and partially obstructing views from the heritage item down to the incised path of the River Lett • The scale of the new roadway would introduce a major visual element in an area which is currently a rural residential landscape, and the new bridge structure over the Jenolan Caves Road intersection would be visible from multiple points within the heritage item and be visually intrusive against the existing backdrop of natural bushland which covers the surrounding hills <p>Indirect (vibration)</p> <ul style="list-style-type: none"> • The Hartley Historic Village consists of a number of 19th century buildings of varying construction materials and techniques. Dependant on the specific heritage fabric and construction methodology for the proposed works in proximity to the item, the item may be sensitive to vibration impacts during construction. <p>Archaeological</p> <ul style="list-style-type: none"> • A previous assessment and the Hartley Conservation Management Plan identified several areas of archaeological potential within and around Hartley. • There is some limited potential for deep features such as wells and cesspits to have survived in the land immediately surrounding the Royal Hotel • The land behind the Royal Hotel on the north side of the current highway has moderate archaeological potential for a rubbish dump associated with the operation of the Royal Hotel and residential uses of the building during the 19th and early 20th century • The proposal would have the potential to impact subsurface remains. 	
Bridge over the River Lett (located on the Old Great Western Highway, over the River Lett)	Not specified	<p>Direct (physical)</p> <ul style="list-style-type: none"> • The required embankment for the Hartley/Jenolan Caves Road/Blackmans Creek Road access road would bury a section of the Old Great Western Highway on the north side of the River Lett, including its road surface, cutting, associated infrastructure, and potentially the north abutment of the Bridge over the River Lett. This would permanently disconnect the bridge from its previous road context and past as operational road infrastructure, and partially obscure its fabric. <p>Indirect (visual)</p>	Major

Item name	Significance	Description of impact	Level of impact to item's heritage significance
		<ul style="list-style-type: none"> • The construction of the access road necessitate a vast, visually prominent embankment in the heritage item's immediate vicinity, which would potentially obscure some of the item's heritage fabric • The height of the proposed concrete overbridge is such that it would be visible above the top of the embankment, looming over the landscape as a visually dominant element <p>Indirect (vibration)</p> <ul style="list-style-type: none"> • Due to the current condition of the bridge it is considered to be sensitive to vibration impacts during construction 	
Archaeological potential on unidentified Lot	Not specified	<p>Direct (physical)</p> <ul style="list-style-type: none"> • Realignment of the highway west of the current alignment and the construction of the access road would directly impact the areas of archaeological potential as a possible grave site and possible rubbish dump/camp site. <p>Archaeological</p> <ul style="list-style-type: none"> • There is moderate potential for archaeology related to a possible gravesite and 19th and 20th century rubbish dumps recorded in oral history. There may also be material related to campsites and work areas related to bullock drays and the use of the historical bullock track and creek crossing 	Major
Fernhill	State	<p>Direct (physical)</p> <ul style="list-style-type: none"> • The proposed works would require substantial cut and fill earthworks in order to construct the new alignment, directly truncating the southwest corner of the heritage item and removing a portion of its heritage curtilage, encroaching on the state-heritage listed building complex. <p>Indirect (visual)</p> <ul style="list-style-type: none"> • The construction of the new alignment would require an embankment and batter slope of over 10 metres in height, which would introduce a major visual element into the rural setting of the heritage item and has the potential to be visually intrusive <p>Indirect (vibration)</p> <ul style="list-style-type: none"> • As a heritage building complex of substantial age (circa 1859) Fernhill has the potential to be sensitive to road construction techniques and vibration. 	Moderate

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Historic bullock track and creek crossing	Not specified	<p>Direct (physical)</p> <ul style="list-style-type: none"> The construction of the new alignment would require substantial cut and fill earthworks to maintain a level grade for the roadway, which would directly impact the track alignment and the creek crossing, burying it beneath 10-30 metres of overburden. <p>Indirect (visual)</p> <ul style="list-style-type: none"> The construction would introduce a significant visual intrusion to an otherwise undeveloped rural valley setting, obstructing natural topography and drainage gullies and drastically changing the visual context of the heritage item. 	Major

Forty Bends to Lithgow

A summary of potential impacts on heritage items within the Forty Bends to Lithgow construction footprint are provided in Table 6-74. Heritage items that have been assessed as experiencing a level of impact of negligible or less have not been included. A detailed summary of potential impacts on these heritage items is provided in Section 6 of Appendix H.

Table 6-74 Potential impacts on heritage items – Forty Bends to Lithgow

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Road culvert and retaining wall at Emoh	Local	<p>Direct (physical)</p> <ul style="list-style-type: none"> The proposed works would include the decommissioning of the culvert. This would remove its purpose as a functional item of heritage infrastructure and represents a major direct (physical) impact to the heritage item. <p>Indirect (visual)</p> <ul style="list-style-type: none"> The burial of the culvert and retaining wall would obstruct all views of its external 'rock-faced' masonry wall and arched stone culvert, totally removing all views to and from the heritage item. <p>Indirect (vibration)</p> <ul style="list-style-type: none"> The culvert has been noted as being sensitive to vibration impacts due to the operation of the existing highway <p>Archaeological</p> <ul style="list-style-type: none"> Proposed works related to drainage and this culvert has the potential to impact the subsurface fabric of 	Minor

Item name	Significance	Description of impact	Level of impact to item's heritage significance
Bowenfels Presbyterian Cemetery	Local	the culvert, particularly the channel linking the north and south facades	Minor
		<p>Direct (physical)</p> <ul style="list-style-type: none"> The proposed works would be primarily located outside of the cemetery heritage curtilage, with the exception of one small section of the access road which intersects with the item's northwest corner. <p>Indirect (visual)</p> <ul style="list-style-type: none"> The encroachment of the highway alignment, access road and associated embankments to the cemetery would negatively impact its setting and views both to and from the heritage item, which were previously reduced by the widening of the highway in 1998. <p>Indirect (vibration)</p> <ul style="list-style-type: none"> The cut and fill activities required for the proposed works will be very close, and potentially within, the boundary of the heritage curtilage, and as the standing headstones and monuments vary in integrity and condition, they are considered sensitive to vibration during construction. <p>Archaeological</p> <ul style="list-style-type: none"> Assuming that the heritage curtilage of the cemetery marks the original gazetted boundary of the grounds, the portion of the new access road currently proposed within the heritage curtilage has the potential to impact archaeological material or burials. An excavation permit under Section 140 (s140 permit) of the Heritage Act, or a s139 exception would be required prior to construction. 	

6.5.4 Safeguards and management measures

Table 6-75 Safeguards and management measures – non-Aboriginal heritage

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
NH0 1	Discovery of historical heritage materials features or deposits	If at any time during the construction of the proposal, historical heritage materials, features and/or deposits are located, the Transport Standard Management Procedure: Unexpected Heritage Items (unexpected finds protocol) (Transport for NSW 2019) will be implemented. The works will not recommence until the requirements of the procedure have been satisfied.	Contractor	Construction	Appendix H	All
NH0 2	Discovery of human remains	In the event that construction activities reveal possible human skeletal material (human remains), the Transport Standard Management Procedure: Unexpected Heritage Items (unexpected finds protocol) (Transport for NSW, 2019) will be implemented. These guidelines have been developed in consultation with Heritage NSW and are consistent with the requirements of the Skeletal Remains: Guidelines for Management of Human Skeletal Remains under the Heritage Act (NSW Heritage Office 1998).	Contractor	Construction	Appendix H	All
NH0 3	Inadvertent impacts by contractors during construction	Historical heritage awareness training will be provided for contractors prior to the commencement of construction works to ensure understanding of known and potential heritage items that may be	Contractor	Construction	Appendix H	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		impacted or otherwise encountered during the proposed works This training will include specific mention of the procedure required in the event unexpected heritage finds or human remains are encountered				
NH0 4	Direct impacts to heritage fabric/within an item's heritage curtilage	Design consideration should be given to the heritage item and proposed works with critical assessment of the necessity of the proposed impacts: <ul style="list-style-type: none">• Road culvert and retaining wall at Emoh (LEP A027)• Bowenfels Presbyterian Cemetery (LEP A030) If the impacts cannot be mitigated through design, additional justification will be required to inform the item's Statement of Heritage Impact	Contractor	Detailed design	Appendix H	Forty Bends to Lithgow
NH0 5	Direct impacts to heritage fabric	An archival recording of the heritage item would be carried out, in accordance with the guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW 2006) at the following sites: <ul style="list-style-type: none">• Billesdene Grange (LEP I023)• Section of Coxs River Road (unlisted)• Lyndoch Orchard (LEP I019)• Bridge over the River Lett (unlisted)• Historical bullock track and creek crossing (unlisted)	Contractor	Prior to construction	Appendix H	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		<ul style="list-style-type: none"> Road culvert and retaining wall at Emoh (LEP A027) <p>Dependant on the nature and complexity of the heritage item and the potential impact of the proposed works, the archival recording may also include additional primary or archival research, and additional digital data capture methods such as 3D scanning</p>				
NH0 6	Proposed works within the curtilage of an SHR listed heritage item	<p>Options to reduce the construction footprint within the SHR curtilage should be considered at the following items:</p> <ul style="list-style-type: none"> Hartley Historic Village (SHR 00992/LEP I043) Fernhill (SHR 00225/LEP I043) <p>An archival recording of the heritage item would be carried out, in accordance with the guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Council of NSW, 2006). The appropriate heritage permits must be obtained prior to construction This will be an approval under either Section 60 or subsection 57(2) of the Heritage Act Either application will require the approval of the NSW Heritage Council or its delegate</p>	Contractor	Detailed design	Appendix H	River Lett to Forty Bends
NH0 7	Changes to, or exacerbation of existing, water	<p>An assessment of existing drainage and water runoff on the item should be completed for the following items:</p> <ul style="list-style-type: none"> House (LEP I021) 	Contractor	Detailed design	Appendix H	Coxs River Road

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
	runoff and drainage in proximity to a heritage item	<ul style="list-style-type: none"> Meads Farm (LEP I020) Options to mitigate drainage or runoff issues through the installation of drainage infrastructure or other modifications should be explored prior to or during detailed design				
NH08	Direct impact to heritage fabric with unknown impacts	Structural assessment by a heritage structural engineer in order to determine the structural capability of the causeway, the probable impacts from the road construction and required compaction, and any additional management or mitigation measures at Billesdene Grange (LEP I023). Archaeological investigation of the area of impact should be completed in order to fully understand the structure and enable a comprehensive archival recording to be produced	Contractor	Prior to construction	Appendix H	Coxs River Road
NH09	Removal of old, rare, or otherwise significant trees or vegetation	The remnant orchard trees at Lyndoch Orchard (LEP I019) 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	Transport	Prior to construction	Appendix H	Little Hartley to River Lett
NH10	Construction (cut or fill) of large road cuttings, embankments or batter slopes	Attempts should be made, where possible, to blend new batter slopes and embankments with existing topography near: <ul style="list-style-type: none"> Rosedale (LEP I024) Meads Farm (LEP I020) Old Roman Catholic Cemetery (LEP A015) 	Contractor	Prior to construction and construction	Appendix H	Little Hartley to River Lett, Coxs River Road, River Lett to Forty Bends

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		<ul style="list-style-type: none"> Hartley Historic Village (SHR 00992/LEP I043) Fernhill (SHR 00225/LEP I043) <p>Where the construction requires vegetation removal, embankment design should aim to be of an obtuse angle such that revegetation or new landscape planting is possible</p>				
NH1 1	Removal of visually significant vegetation or areas of existing mature trees	<p>Wherever possible, areas where vegetation removal is required should attempt to revegetate or landscape the area, with plantings to match the existing landscape (trees replacing trees, grasses replacing grasses) at the following items:</p> <ul style="list-style-type: none"> Rosedale (LEP I024) Billesdene Grange (LEP I023) Harp of Erin (LEP I028) Meads Farm (LEP I020) Old Roman Catholic Cemetery (LEP A015) Fernhill (SHR 00225/LEP I043) Old Catholic Cemetery (LEP A029) <p>Landscaping of new works elements should not introduce plantings of tall height species if they did not previously exist in that location. This should aid in maintaining an open landscape where suitable and screening vegetation where it currently exists</p>	Contractor	Construction	Appendix H	All
NH1 2	Structures not expected to be sensitive	A dilapidation survey should be confirmed for the following items, with consideration to the proposed works and	Contractor	Prior to construction	Appendix H	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
	to vibration impacts, but need this to be confirmed prior to construction	<p>expected construction plant to be used in their proximity, in order to confirm whether they would be sensitive to vibration impacts during construction:</p> <ul style="list-style-type: none"> • Billesdene Grange (LEP I023) • Log Cabin Farmhouse Village Shop (unlisted) • House (LEP I021) • Lyndoch Orchard (LEP I019) • Old Roman Catholic Cemetery (LEP A015) • St John the Evangelist's Anglican Church (LEP I029) • Stone and Timber Cottage (LEP I045) • Bowenfels National School Site (SHR 00761/LEPI054) 				
NH13	Structures considered to be sensitive to vibration impacts during construction	<p>A dilapidation report should be prepared for each of the following sensitive heritage item to assess, on a case-by-case basis, whether the fabric would be sensitive to vibration impacts during construction or operation:</p> <ul style="list-style-type: none"> • Rosedale (LEP I024) • Nioka (LEP I025) • Harp of Erin (LEP I028) • House (LEP I021) • Meads Farm (LEP I020) • Hartley Historic Village (SHR 00992/LEP I043) • Bridge over the River Lett (unlisted) • Fernhill (SHR 00225/LEP I043) 	Contractor	Prior to construction	Appendix H	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		<ul style="list-style-type: none"> • Emoh (Emu Store/Corderoy's Store) (LEP I051) • Road culvert and retaining wall at Emoh (LEP A027) • Umera (Bowenfels Inn, Tricks House) (LEP I052) • Ben Avon (former Royal Hotel) (LEP I053) • Old Catholic Cemetery (LEP A029) • Somerset House (LEP I057) • Parsonage Farm (LEP I058) • Presbyterian Church and Sessions Hall (LEP I059) • Bowenfels Presbyterian Cemetery (LEP A030) • Caldwell's House (LEP I061) <p>Vibration monitoring would be carried out on sensitive heritage items for at least the period of construction. Monitoring should continue at least 12 months after the completion of works to determine if ongoing impacts are occurring i.e. identify any operational damage attributable to the proposal.</p> <p>Surfacing and construction methods in proximity to sensitive heritage items should be in accordance with the Transport criteria for construction adjacent to sensitive heritage buildings. The dilapidation report for each cemetery should involve archival recording/photographs showing the present state of monuments, followed by an assessment of any tilting of headstones or</p>				

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		cracking of slabs that may be attributable to roadworks				
NH1 4	Vibration impacts during construction	Where a heritage item is deemed sensitive to vibration impacts, the more stringent German Standard guideline values (DIN 4150) should be followed when assessing minimum safe distances and determining allowable plant and its maximum vibration level This may require a greater safety buffer to be maintained between the heritage item a particular vibration-intensive construction equipment	Contractor	Construction	Appendix H	All
NH1 5	Ground disturbance in an area of low archaeological potential	Application for a s139 exception and test excavation or monitoring of ground disturbance works by an appropriately qualified archaeologist are required at the following locations: <ul style="list-style-type: none"> • Harp of Erin (LEP I028) • Hartley Historic Village (SHR 00992/LEP I043) • Archaeological potential on unidentified Lot (unlisted) Test excavation prior to, or monitoring during ground disturbance works in this area under a s139 exception.	Contractor	Prior to construction	Appendix H	Little Hartley to River Lett and Coxs River Road
NH1 6	Ground disturbance in an area of moderate archaeological potential	Test excavation under a s140 permit - an Excavation Permit under Section 139(4) of the Heritage Act is required at the following sites: <ul style="list-style-type: none"> • Hartley Historic Site (SHR 00992/LEP I043) • Ben Avon (LEP I053) 	Contractor	Prior to construction	Appendix H	River Lett to Forty Bends and Forty Bends to Lithgow

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		<ul style="list-style-type: none"> Former Bowenfels Lockup (unlisted) Bowenfels Presbyterian Cemetery (LEP A030) <p>For works within the SHR curtilage, the excavations would require approval under s60 of the Heritage Act instead</p> <p>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)</p>				
NH1 7	Disturbance of an area of high archaeological potential	<p>As the causeway at Billesdene Grange (LEP I023) is considered to be an archaeological 'work' it does not trigger the requirement for a s140 permit</p> <p>Archaeological investigation should be completed under appropriately qualified supervision to expose, investigate and record the causeway fabric</p> <p>A detailed archival recording of the causeway and Billesdene Grange frontage to the Great Western Highway should be completed prior to works</p>	Contractor	Prior to construction	Appendix H	Little Hartley to River Lett
NH1 8	Disturbance of an area with the potential for human remains	<p>An archaeological assessment should be completed of the site</p> <p>Archaeological potential on unidentified Lot, including a detailed survey of the lot and area of potential in order to assess the landform and identify any</p>	Contractor	Prior to construction	Appendix H	River Lett to Forty Bends

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
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surface features, and remote sensing of an appropriate method. Based on the results of the survey and remote sensing, an archaeological research design should be prepared for management of the site and. It should include further research to try and ascertain the potential identity of the deceased and may subsequently include genealogical research to locate any of their descendants. If the archaeological assessment identifies potential features, complete a test excavation. If the results are inconclusive then the area to be impacted should be monitored during the removal of topsoil by an appropriately qualified archaeologist. This work would require a s139 exception and should be completed with the support of a physical anthropologist in case potential human remains are identified.

NH1 9	Properties unable to be accessed	Further assessment in the detailed design phase will be completed at the following locations in order to physically inspect these items and amend the desktop assessment of the items presented in this report: <ul style="list-style-type: none"> • Billesdene Grange (LEP I023) • House (LEP I021) • Meads Farm (LEP I020) • Lyndoch Orchard (LEP I019) 	Contractor	Detailed design	Appendix H	All
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No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Locations
		<ul style="list-style-type: none"> • Archaeological potential at unidentified Lot (unlisted) • Fernhill (SHR 00225/LEP I043) • Emoh (I051) • Umera (LEP I052) 				

Other safeguards and management measures that would address non-Aboriginal heritage impacts are identified in Section 6.3 Noise and vibration.