

NSW Roads and Maritime Services

WOOLGOOLGA TO BALLINA | PACIFIC HIGHWAY UPGRADE ENVIRONMENTAL IMPACT STATEMENT

MAIN VOLUME 1B

Chapter 13 – Historical (non-Aboriginal) heritage

Chapter summary

This chapter presents an assessment of the direct and indirect impacts of the project on non-Aboriginal historical heritage.

There were 38 heritage items identified near or in the project boundary. Thirty of these sites were identified as being of local or state heritage significance (based on criteria set out in the NSW Heritage Manual).

The project would impact on 20 heritage items. 18 heritage items would be directly impacted by the construction of the project (ie be within the project boundary) or indirectly impacted (such as landscape and vista or vibration impacts). Two of these 18 sites are listed on the NSW State Heritage Register (New Italy Settlement and High Conservation Value Old Growth Forest).

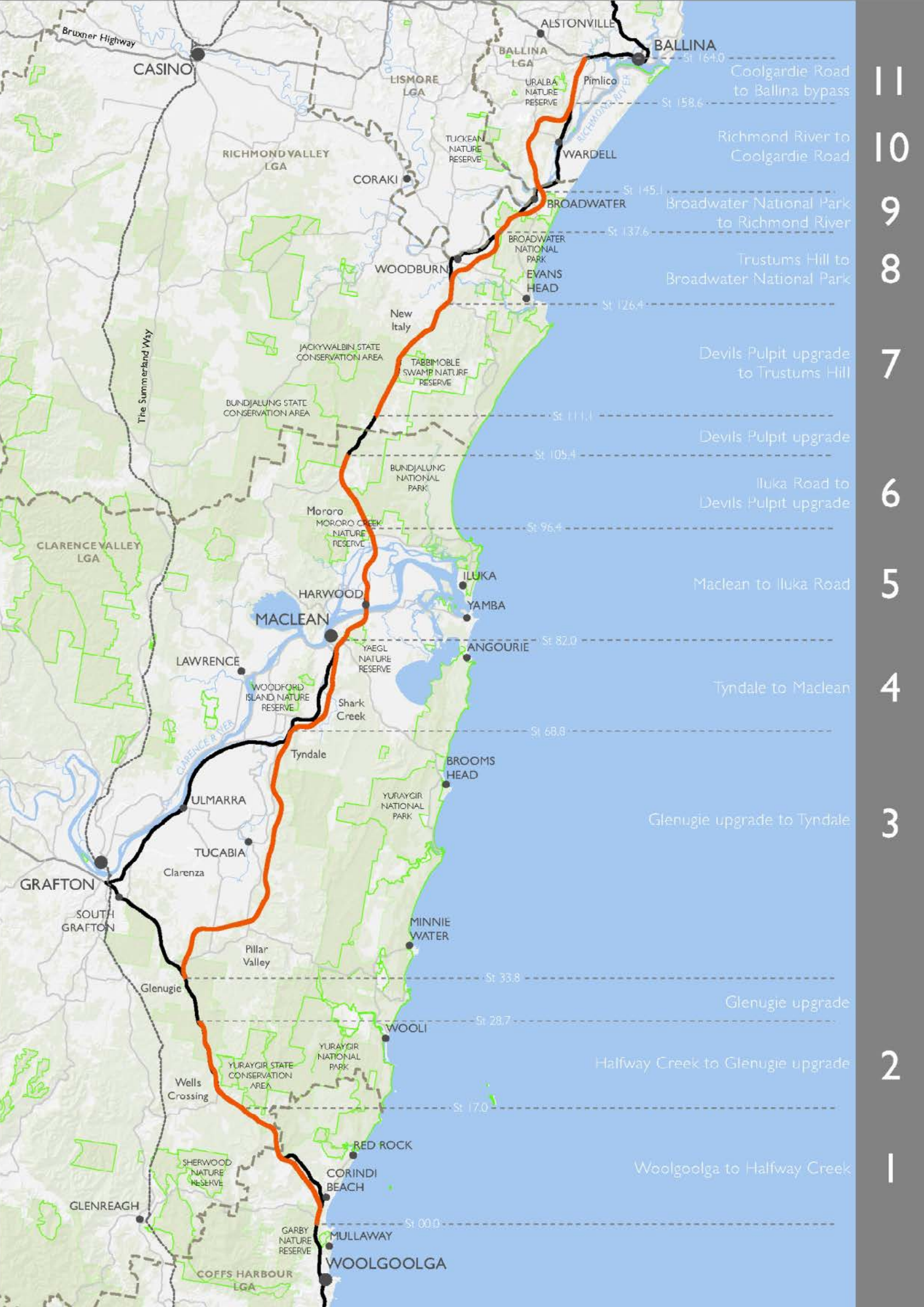
Two heritage properties listed on local environmental plans would be impacted by the project, but impacts would occur outside the identified heritage curtilage of the items. New Italy Settlement Sites is listed on both the State Heritage Register and the Richmond Valley Local Environmental Plan 2012. There would be no direct impacts on the State Heritage Register sites, but with potential indirect impacts. There would be direct impacts to the local environmental plan listed sites, with the Monument to the Pioneers being relocated out of the project boundary and the removal of Roder's Well and mango orchard.

The project would impact on the High Conservation Value Old Growth Forest, impacting on 2.14 hectares of the item. All impacts are in areas adjacent to the existing Pacific Highway. This equates to around 0.001 per cent of the entire heritage listing. Due to the widespread nature of this heritage item in the region, the project could not avoid impacts to this item.

To manage or mitigate impacts to non-Aboriginal heritage items, a range of measures have been identified including photographic condition survey before construction, protection during construction (through fencing or structural support), archival recording or relocation of structures.

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13 Historical (non-Aboriginal) heritage

This chapter presents an assessment of the direct and indirect impacts of the project on non-Aboriginal historical heritage. The full assessment is provided in Working paper – Historical (non-Aboriginal) Heritage (SKM, 2012). The assessment addresses the Director General's environmental assessment requirements, which are provided below.

Reference	Director-General's requirements	Where addressed
Heritage	Impacts to State and local historical heritage (including archaeology, heritage items, conservation areas and natural areas), in particular impacts to the New Italy Settlement and High Conservation Value Old Growth Forest should be assessed.	Section 13.3
	Where impacts to State or locally significant historical heritage items are identified, the assessment shall undertake the following:	
	Outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the guidelines in the NSW Heritage Manual (1996).	Section 13.4
	Be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria).	Section 13.1.1 and section 2.1.1 in Working paper – Historical (non-Aboriginal) Heritage.
	Include a statement of heritage impact for all heritage items (including significance assessment)	Summary statements of heritage significance are in Table 13-2. Statements of heritage impacts are in Working paper – Historical (non-Aboriginal) Heritage.
	Consider impacts from vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment.	Section 13.3
	Develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations and include the results of these excavations.	Section 13.3.1

13.1 Assessment methodology

13.1.1 Terminology

- Archaeological test excavation: sub-surface investigation used where potential archaeological resources of a heritage item are unclear to clarify the potential of the heritage item, to establish significance and to determine appropriate further action.
- Archaeological salvage excavation: a structured program of on-site activities to realise the research potential of a heritage item including site preparation, excavation, sampling, artefact recovery, photography, drawing and recording; and off-site activities including contextual research, artefact cataloguing and analysis, reporting, conservation and lodgement of artefacts and records.

These definitions are from Archaeological assessments: archaeological assessment guidelines (NSW Heritage Office, 1996).

13.1.2 Assessment approach

The assessment was undertaken by a team of qualified and experienced archaeologists (refer to section 2.1 of the Working paper - Historical (non-Aboriginal) Heritage). It involved:

- Reviewing background studies including thematic histories, field surveys and assessments undertaken during the four previous route development projects (Woolgoolga to Wells Crossing, Wells Crossing to Illuka Road, Illuka Road to Woodburn and Woodburn to Ballina)
- Reviewing archaeological reports, historical heritage studies, local heritage studies, conservation management plans, and regional and local history documents and maps where available
- Searching all available historical heritage registers for heritage items within or near the project boundary, including the Register of the National Estate, State Heritage Register, State Heritage Inventory, RMS Section 170 Heritage and Conservation Register, local environmental plans, National Trust of Australia (NSW) list, Commonwealth Heritage List and National Heritage List
- Developing a predictive model for the occurrence of historical site types in the landscape and applying this to the study area to inform further field survey requirements
- Undertaking a field survey within the project boundary (in areas not covered by previous surveys) to identify known historical heritage items and unrecorded historical heritage items, and to assess the potential for any unrecorded historical heritage items
- Undertaking a desktop assessment of proposed areas for ancillary facilities to identify known historical heritage items and assess the potential for any unrecorded historical heritage items
- Identifying heritage items within or near the project boundary and their heritage significance, and preparing Statements of Heritage Impacts for historical heritage items potentially impacted by the project
- Assessing the cumulative impacts on non-Aboriginal historical heritage (including cultural landscapes and previous and existing highway infrastructure)
- Undertaking additional consultation with relevant councils and the Heritage Branch of the Office of Environment and Heritage regarding heritage significance and the curtilage of heritage-listed items.

More information on some of these steps is presented below.

13.1.3 Predictive model

The predictive model was developed to identify the most likely types of historical heritage sites to be found in the project area and areas of greater or lesser potential for the presence of historical heritage sites. The predictive model was then used to inform further requirements for field survey.

The model was developed by reviewing all background information from previous heritage investigations, known and recorded heritage sites and historical sources. Key historical themes were identified and a thematic history developed for the region. Consideration of this background information and the current landscape and land use of the project area enabled development of predictive statements for each of the project sections.

13.1.4 Field survey

An initial field survey was undertaken as part of the non-Aboriginal historical heritage assessment during August 2010. Prior to the survey, historical heritage areas with higher sensitivity were identified using background information gathered in the desk-based investigations and predictive model. The field survey technique for the project aimed to conduct a sample survey of different land uses and landforms within and near the project boundary. There was a focus on riverine, rural and built environments with the aim of maximising coverage in areas considered to be of higher sensitivity.

Additional field surveys were undertaken in August, October and November 2011. These covered areas not investigated in the previous surveys as well as identified non-Aboriginal heritage items within and adjacent to the project boundary. Previously identified historical heritage sites were also surveyed to provide additional detailed recording and information on these items.

The field surveys (including those undertaken for the previous route development projects) covered 87 per cent of the area within the project boundary. It was not possible to survey the entire project boundary due to a number of constraints in some areas. These included property access permission not being granted, limited ground-surface exposure (due to vegetation cover such as sugarcane plantations) and limited access due to heavily waterlogged land. The remaining 13 per cent of land within the project boundary has therefore been assessed using the predictive model, based on known site locations, aerial imagery and observations during previous field surveys.

13.1.5 Desktop assessment of ancillary facilities

There are 81 potential locations for ancillary facilities – refer Chapter 6 (Description of the project – construction). A desktop assessment was undertaken to identify the likelihood of previously unrecorded or unknown historical heritage sites being present at these locations. The assessment drew upon the field surveys undertaken within the project boundary and considered the predictive model. The following criteria were used to determine the likely presence of sites:

- The presence of known historical heritage sites
- Any visible historical features in aerial imagery
- The level of disturbance, cultivation, vegetation and development of the area.

No field investigations were undertaken at these locations. These investigations are occurring concurrently with the display of this EIS, with results identified in the project submissions report.

13.1.6 Cumulative impacts

A desktop assessment was undertaken to assess the impact on known heritage items in the region (comprising Coffs Harbour, Clarence Valley, Richmond Valley and Ballina local government areas).

This desktop assessment assessed the cumulative impact of the project on all heritage items listed on the local environmental plans of the region and other heritage registers, including the State Heritage Register and the RMS Section 170 Heritage and Conservation Register, which records all heritage items in the ownership or under RMS' control. Cumulative impacts were assessed based on the proportion of known heritage places within the project area to be impacted by local government area, and by type of heritage items/places. These included:

- Towns and villages
- Agricultural and pastoral
- Migrant contribution
- Brickmaking
- Transport.

13.2 Existing environment

13.2.1 Historical context

Exploration and settlement of the North Coast was primarily driven by timber getting. The Clarence River was noted by the escaped convict Richard Craig in 1830. He made a report in Sydney detailing the quantity and quality of the timber in the area, hopeful that this news would grant him his freedom.

Cedar cutters were on the Macleay and Clarence Rivers by 1839 and the Richmond River in 1842 (Trudgeon, 1977:1). Temporary camps were built along the rivers as cedar getters and their families moved upstream to exploit available resources (Trudgeon, 1977:2).

Early sawmills were opened at Ballina in 1853, with another sawmill established at Blackwall (Wardell) in 1868 (Gahan 2004:28). This sawmill was situated to take advantage of the Richmond River logging operations.

As cedar resources were depleted, attention was diverted to other timber types such as hardwoods like mahogany and tallowwood. Up until World War II, hoop pine was the main harvest timber. Construction after the war caused a demand for timbers that were previously considered inferior, such as spotted gum, flooded gum and brush box (Trudgeon 1977:27).

While cedar getters entered the lower reaches of the river valleys, squatters were occupying the grasslands of the upper reaches. In 1840, Henry Clay and George Stapleton arrived in the region and marked out and claimed Cassino Station on the Richmond River (Mullins 2001:1). Pastoral licenses were issued on an annual basis from 1843 until 1848, after which time the leasehold period was lengthened (Olley, 1995:17).

By 1845, 21 stations were settled on the Richmond River, stretching north from the Clarence River and bounded by the mountains to the north and west. These included Ellangowan Station on the southern side of the Richmond River, which covered an area of 31,080 hectares, including the current location of the town of Woodburn.

Until the mid 1850s, the majority of people in the region did not own the land they lived on. When the early towns in the region were surveyed by F.S. Peppercome and allotments were offered for sale, settlement began in earnest (Daley, 2001:12). The Robertson Crown Lands Act 1861 allowed people to buy land on Conditional Purchase before survey with the land to be paid off within three years (Daley, 2001:12). These new settlers faced the daunting task of clearing the scrub, building some form of shelter and supplementing their meagre rations with home-grown produce. Bark huts with dirt floors were the quickest and cheapest form of shelter. The influx of settlers during the 1860s created a hierarchy of towns, villages and hamlets throughout the region, depending on the agricultural pattern and the density of the settlement. Along the Richmond and Clarence rivers, small ports linked to maize or sugar were established. Some grew to be major centres, such as Ballina and Maclean. The partial clearing of the 'Big Scrub' (an area of around 75,000 hectares covered by subtropical rainforest), led to the occupation of the area for dairying. This created an inland network of small towns (Kass, 1989:20).

Early dairy farming was limited by due to the re-growth of cleared land, and the abundance of native grasses such as kangaroo and foxtail which were unsuitable for milk production (Trudgeon et al. n.d.:5). The first jersey cows were brought into the region in 1878. By 1910 the North Coast region was the prime focus for dairying in NSW, and by the 1930s dairying challenged sugar cane as the main activity in the Clarence Valley. In 1931 the Ulmarra butter factory exported just under 4.5 million pounds of butter and the Grafton butter factory 2.5 million pounds which equated to 60 per cent of all butter produced in NSW (Kass 1989:27-28). The changes in technology following World War I meant that the dairy industry was no longer dependent upon the local processing of raw milk into butter. Farmers began leaving the industry in increasing numbers following World War II (Kass 1989:28). With the decline of the dairy industry some farmers diversified into growing other crops including bananas, avocados and potatoes.

The agricultural industry saw an early decline with overproduction by hundreds of selectors in the region and cheap imports of other fodder crops flooding the market. This saw the focus of agricultural production turn to sugar cane (Kass 1989:14). Sugar cane was first grown near Lismore as early as 1861 and on the lower Richmond River in 1866 (Trudgeon et al nd:1). Sugar was initially produced in very crude conditions at Yabsley's ship building shed in Coraki. By 1871 six small mills had been erected in the region, however, none of these were capable of processing large commercial quantities. Eventually mills were established at Woodburn, Broadwater, Wardell, Pimlico and Harwood within the project region. By the 1880s the network of mills run by the Colonial Sugar Refining Company (CSR) was firmly in place on the Tweed, Richmond and Clarence Rivers. The development of ports to service the sugar industry saw a network established along the Richmond and Clarence rivers for transport of cane to the mills. Some ports, such as Maclean, later became major ports (Kass 1989:16).

A range of other industries developed alongside the timber getting, agriculture and pastoral activities in the region. These included shipbuilding, commercial fishing, gold mining, and brick making.

The major migrant influences in the project region can be traced to Italian migrant workers who first settled on land now known as New Italy and Chinese itinerant migrant workers who worked throughout the region.

In early 1882, seven Italian migrant families applied for a selection of land close to a creek on the South Woodburn-Chatsworth Island coach route (Clifford 1889:4). Within a year this number had grown to 19 families and by 1887 a school, post office, tavern and church had been established (Pesman and Kevin 1998:2). The settlement harvesting timber for railways sleepers, production of sugar cane, tobacco, maize, oats and barley, growing of fruit trees including lemons, apples and stone fruits and grapes and vegetables (Gardiner and Cotter 2002:15). Silk farming was also commenced in 1890. The New Italy Settlement prospered until the 1920s and then gradually declined.

The cessation of convict transportation in the 1840s resulted in an increasing demand for labour and large numbers of Chinese people arrived as indentured labourers to work as shepherds and irrigation experts for private landowners (Williams 1999: 4). Between 1848 and 1853, over 3,000 Chinese indentured workers arrived via Sydney for employment in the NSW countryside.

Thousands of Chinese men migrated to the upper Clarence region in the 1850s in search of gold. There were at least six Chinese mining settlements, referred to as Chinatowns. From the mid-1880s North Lismore became a Chinese enclave, with the men mainly growing fresh fruit and vegetables to supply the European settlers.

13.2.2 Predictive model

The predictive model for the project identified the following types of non-Aboriginal historical and archaeological sites and associations likely to occur in the project area:

- Exploration: Survey markers, shipwrecks and blazed trees
- Cedar getting: Camp sites, huts (standing buildings or ruins), sawpits, remnant sawn logs, sawmills, trees marked with holes for planks and Big Scrub remnants
- Farming and pastoral activities: Homesteads, sheds, barns, farm machinery, stock routes, fences or fencelines and sugar mills
- Water management infrastructure: Canals, channels, regulator structures and wells
- Mining and quarrying: Diggings, spoil heaps, alluvial traces, quarries (often disguised as dams) and kilns
- Migrant influence: Domestic artefact scatters, house remains, wells, fences, exotic trees, agricultural contours in landscape, Chinese temples, irrigation ditches, gardens, bamboo clumps, hearths, ovens and graves
- Road and river transport: Early roads and associated structures, coach routes, timber or stone jetties and wharves, dry docks, cane derricks and timber or sugarcane tramways
- Towns and villages: Churches, schools, memorials and residential properties.

13.2.3 Non-Aboriginal heritage items

There are 38 non-Aboriginal heritage items identified within or near the project boundary. These were identified through a search of heritage databases, a review of previous studies undertaken in the area (including reports from the four previous route development projects) and through field survey. These items are detailed in Table 13-1 and shown in Figure 13-1 to Figure 13-11.

Of the 38 heritage items identified:

- 21 items are not listed on any heritage register
- 17 items are listed on heritage registers including:
 - Three listed on the State Heritage Register (New Italy Settlement, Vineyard Haven and High Conservation Value Old Growth Forest)
 - 16 are listed on local environmental plans¹.

No heritage items within or near the project boundary are listed on the Register of the National Estate, RMS section 170 Heritage and Conservation Register, National Trust of Australia (NSW) list, Commonwealth Heritage List or National Heritage List.

Table 13-1 provides a summary of all identified historical heritage items within the project boundary. The sites are generally listed from south to north (from Woolgoolga to Ballina).



Photo 1: Tramway transporting cane in Harwood (National Library of Australia, ref 4590846)

¹ New Italy Settlement is listed on the State Heritage Register, with elements also listed on the Richmond Valley Local Environmental Plan 2012.

Table 13-1: Non-Aboriginal heritage items or sites within and adjacent to the project boundary

Item no	Item name	Location	Description	Where listed
Project section 1				
1	Stockyard and sheds, south of Corindi River, Corindi Beach	Lot 51 DP851056	- The item comprises post-and-rail stockyards and a timber shed - Components of the timber shed and posts and rails of the stockyards have been modified or repaired over time - The curtilage of the site has not been documented in detail and is recorded as the entire property.	Not listed
2	House, sheds and stockyards, Milleara	Lot 9 DP707325	- The item is a farm complex comprising a house, two outhouses, three sheds, stockyards and items of movable heritage - Movable heritage items include: - Machinery including an old tractor chassis, old rusted tractor and slasher, a 'Sunshine' branded tilling and seeding disc plough, a 'Crown 12' branded incinerator and blacksmith equipment - Old timber planks and sleepers - Glass soft-drink bottles - Old metal gates - Piles of broken bricks and concrete - The curtilage of the site is around the items identified above (refer to Figure 13-23).	Not listed
3	Tree stumps, Milleara/Halfway Creek	Lot 7 DP707325 and Lot 61 DP751368	- The item is an old tree stump with springboard cuts for loggers - The curtilage of these two sites has been recorded as the coordinates of each tree.	Not listed
4	Schoolhouse, Halfway Creek	Lot 15 DP879175	- The item is a typical weatherboard schoolhouse built by the NSW Education Department - The curtilage of the site is recorded as the entire property.	Not listed

Item no	Item name	Location	Description	Where listed
Project section 2				
5	Stockyards north-west of Lemon Tree Road, Halfway Creek	Lot 1 DP558503	- The item is the timber post-and-rail stockyards. Components of the posts and rails have been modified or repaired over time - The curtilage of the site is recorded in the road reserve of the existing Pacific Highway.	Not listed
6	Bridge and culvert, Halfway Creek	Within Pacific Highway road reserve, south of Halfway Creek	- The item comprises the remains of a timber culvert and a few posts of the original road bridge at Halfway Creek - The curtilage of the site is recorded in the road reserve of the existing Pacific Highway.	Not listed
7	Service station complex, Halfway Creek	Lot 411 DP883976	- The site comprises the former Halfway Creek Wine Bar/Restaurant, a cottage and potential archaeological remains of the former coaching waystation and stables. The curtilage is recorded as the entire property - The archaeological potential is high, and according to oral sources the remains of the original coach way station are located beneath the existing restaurant.	Not listed
8	Survey mark, Halfway Creek	Lot 7300 DP1144709	- The item is a tree stump with survey mark '223' - The curtilage is recorded as the coordinates of the marked tree.	Not listed
9	Bridge at Wells Crossing	Pacific Highway road reserve, Wells Crossing	- The item is the concrete Pacific Highway bridge over Wells Crossing, built in 1940 - The curtilage of the site is recorded as the extent of the bridge under the Pacific Highway, including footings and abutments.	Not listed
35	Six Mile tick gate remains, Glenugie	Lot 20 DP1123940	- The item comprises the structural and other remains of the 1930s–1970s tick gate operations - The item has been partially destroyed by the construction of a heavy vehicle inspection area on the Pacific Highway. Items still in existence include a large concrete slab thought to be the living quarters for the gate-keeper, a fenceline and blocks of concrete.	Not listed
36	North Coast Railway Branch Tramway, Glenugie	Lot 74 DP751380, road reserve	- The item comprises the remnants of 1915 tramway formation from the North Coast Railway to Glenugie Peak - The curtilage of the North Coast Railway Branch Tramway is the entire alignment from Glenugie Peak to the North Coast Railway line.	Not listed

Item no	Item name	Location	Description	Where listed
Project section 3				
11	Tyndale residence, Tyndale	Lot 2 DP586049	- The item is a Victorian residence and mature bunya pine - The curtilage of the site is recorded on the State Heritage Inventory as the residence and mature tree plantings.	Clarence Valley Local Environmental Plan 2011, site ID I389
• Project section 4				
10	Tyndale shed and cane barracks, Tyndale	Lot 2 DP210874 and Lot 19 DP1007618	- The item comprises a weatherboard cane-cutters barracks and external amenities block - The curtilage of the site is recorded on the State Heritage Inventory as the area immediately adjacent to the former barracks, including the toilet. The heritage items are located on the western end of the property.	Clarence Valley Local Environmental Plan 2011, site ID I387
12	Maclean punt and former Ashby ferry, Maclean	Lot 434 DP823599	- The item comprises a cane barge, the former Ashby ferry and a sugarcane hoist - The Ashby ferry is of timber construction with metal hull, cabin and workings. The ferry is intact but is in very poor condition - The cane barge is yellow in colour and has steel sides, a timber hull and timber uprights at either end. The barge is in poor condition and has rust and lichen on the outside - The sugarcane hoist consists of a wooden pole with metal brackets at the top and bottom which once supported a wooden swinging arm - The curtilage surrounds each of the heritage items.	Clarence Valley Local Environmental Plan 2011, site ID I194
22	Former house site, Goodwood Street, Maclean (Property 315)	Lot 376 DP751388	- The item is a concrete-lined brick well and concrete slab foundation for a former house. The house and well are estimated to date back to the 1940s to 1950s - The curtilage of the site is defined as all of the property.	Not listed
34	Townsend Residence, Townsend	Lot 1 DP501255	- Residential property with weatherboard cottage built around 1870s. It has been substantially modified - The curtilage encompasses the entire allotment at 3 Jubilee Street, Townsend.	Clarence Valley Local Environmental Plan 2011, site ID I377

Item no	Item name	Location	Description	Where listed
Project section 5				
13	'Highfield' residence, James Creek	Lot 30 DP1136907 and Lot 31 DP1136907	- The item is a double-brick Federation-style bungalow surrounded by mature trees - The curtilage is not provided on the State Heritage Inventory, but should be recorded as the entire property.	Clarence Valley Local Environmental Plan 2011, site ID I158
14	James Creek residence, James Creek	Lot 1811 DP1079120	- The item is a weatherboard residence - The curtilage of the site is recorded on the State Heritage Inventory as the house and yard of the property.	Clarence Valley Local Environmental Plan 2011, site ID I161
15 ²	Harwood School residence, Harwood	Lot 1 DP818005	- The item is a late Victorian Georgian-style building - The curtilage of the site is recorded on the State Heritage Inventory as the yards of both the school and school residence.	Clarence Valley Local Environmental Plan 2011, site ID I139
16	Harwood School, Harwood	Lot 1 DP818005	- The item comprises a school classroom block and single-storey school residence that date from 1880–81 - The curtilage of the site is recorded on the State Heritage Inventory as the yards of both the school and school residence.	Clarence Valley Local Environmental Plan 2011, site ID I139
17	Harwood tram tracks, Harwood	Old Pacific Highway road reserve, Harwood Petticoat Lane, Harwood	- The item is the Harwood Tram Tracks, which comprise two sections of tramline remnants known as the Old Pacific Highway Tram Tracks and the Petticoat Lane Tram Tracks - The curtilage for the Harwood Tram Tracks includes the known curtilage of the Old Pacific Highway Tram Tracks and the Petticoat Lane Tram Tracks and the likely route of the tramway between the two known sections.	Clarence Valley Local Environmental Plan 2011, site ID I141
18	Harwood Water Brigade Hall, Harwood	River Street, Harwood Lots 168 and 169 DP751373, Reserve 44087	- The item is the Harwood Water Brigade Hall, which was built in 1906 to houseboats of the Water Brigade. An upper room was used as the village reading room - The curtilage of the site has been recorded on the State Heritage Inventory as the property boundary and that part of the river which is covered by the hall.	Clarence Valley Local Environmental Plan 2011, site ID I143

² Harwood School residence and Harwood School are listed on the Clarence Valley LEP 2011 as one item, however are identified as two separate items in this assessment.

Item no	Item name	Location	Description	Where listed
19	Harwood War Memorial, Harwood	River Street, Harwood Road reserve	- The item is an obelisk on a substantial concrete foundation with a free stone basement consisting of three tiers of steps. The obelisk bears the names of those who served in World War I. It is surrounded by a fence built of cement pillars and two metal rails. A flagpole is also located within the fenceline. Mature camphor trees grow adjacent to the site - The curtilage of the site has been recorded on the State Heritage Inventory as the riverbank and associated mature tree plantings.	Clarence Valley LEP 2011, site ID I144
20	Harwood Bridge, Harwood	Bridge over Clarence River, Harwood	- The item is a steel truss bridge built in 1966 - The curtilage of the site has been recorded as the entire extent of the bridge over the Clarence River at Harwood, including footings and abutments.	Not listed
21	Convent, Harwood	Lot 1 DP230181	- The item is a timber Federation/interwar Queenslander style building constructed as the Convent of Mercy in 1928 - The curtilage of the site is the entire property.	Not listed
32	Harwood Heritage Conservation Area	North of Clarence River at Harwood	The Harwood Heritage Conservation Area encompasses a large proportion of the town of Harwood.	Clarence Valley LEP 2011
37	River Street trees, Harwood	River Street, Harwood Road reserve	- The item comprises the camphor trees planted by the residents of Harwood some time before 1920 to improve the foreshore of the town (with some now forming the backdrop to the war memorial) - The curtilage includes the mature camphor trees planted on the riverbank of the Clarence River between the Water Brigade Hall (item 18) and the War Memorial (item 19), in what is known as Riverbank Park.	Clarence Valley Local Environmental Plan 2011, site ID I145

Item no	Item name	Location	Description	Where listed
Project section 7				
23	New Italy Settlement Landscape (incl. Historic New Italy Village Area)	Lot 2 DP616005, Part Lot 72 and Part Lot 73 DP755609	The item is New Italy Settlement area including the New Italy Museum, Park of Peace and the New Italy School site.	State Heritage Register 1648
		Lot 59 DP755609, Lot 25 DP755610, Lot 2 DP616005, Lot 1 DP207390, Lot 97 DP755609, Lots 30 and 37 DP755609	- The item comprises Bazzo's well, Cypress Road stone-lined well, memorial and stone lined well, Roder's stone-lined well and mango tree orchard, former St Peter's Church and wells, and former Pezzuli's wine shop - The memorial (Monument to the Pioneers) was built in 1961 and is a concrete obelisk with the names of the original settlers inscribed on the sides. The stone-lined well is situated south-west of the memorial - The Cypress Road stone-lined well is a circular well, located in the Double Duke State Forest on Cypress Road - Roder's stone-lined well is round and lined with sandstone cobbles. A mango tree orchard is located to the north of the well.	Richmond Valley LEP 2012 sites IDs I145, I147, I148, I149, I150, A5, A7
24	Vineyard Haven, New Italy Settlement	Part Lot 2 DP828347	The item is a property consisting of relics and archaeological items including a dam site, a timber-lined well, a mound, vines, vine contours on the landscape, former water trenches and other archaeological evidence.	State Heritage Register 1715 Richmond Valley LEP 2012, site ID I146
Project section 8				
25	Woodburn slaughterhouse, Trustums Hill	Lot 15 DP864108	- The item is a rectangular building made from timber, zinc sheeting and corrugated iron. A number of depressions are present in the concrete floor of the structure and surrounding the perimeter of the building. Other features include: - An iron copper used to make animal fat into products such as soap - A concrete pond used for tallow works - A circular yard with a post-and-rail fence and iron gates - Another structure with an iron gabled roof - Drainage channels The curtilage includes the structures, yards, ramp, concrete pond, tree stump and post, and all drainage channels.	Richmond Valley LEP 2012, site ID I166

Item no	Item name	Location	Description	Where listed
Project section 9				
26	Maloney property, Broadwater	Lot 5 DP 1142669	- The item is a property that consists of a residence, buttery/creamery, dairy with an open bay with an adjoining large open bay shed and timber stockyards - The dairy, buttery/creamery, sheds, residence and stockyards are included within the curtilage.	Not listed
38	Cemetery reserve, Broadwater	Lot 7008 DP92609	- The item comprises Crown Land which was originally gazetted as a reserve (R23109) for the preservation of graves on 26 October 1895 and remains a cemetery reserve. The land within the reserve comprises an open, grassed, low-lying area in the south-east corner of the reserve with the remainder of the reserve comprising tree cover - No physical evidence of any graves or burials (such as monumental masonry, grave markers, surface topography, soil disturbance or vegetation marks) was found during the survey - The curtilage of the site is recommended to be the entire property.	Not listed
28	Byrne property, Broadwater	Lot 6 DP 1043232	- The item is a former local brickworks and sugar cane farm site, including a brick-lined well, a clay pit, a stone quarry and historical artefact scatters all situated in the south-east corner of the property - The curtilage includes the majority of the vegetated area in the south-east corner of Lot 6 DP1043232 and incorporates the well, quarry, clay pits, artefact scatters, pig-sties, and stockyard.	Not listed

Item no	Item name	Location	Description	Where listed
Project section 10				
27	Meerschaum Vale brickworks, Wardell	Approximate location is Lot 7 DP 866508	- The item is the possible location of former brickworks. No physical evidence of the site was located during survey due to the lack of ground surface visibility, the large potential area where the remains may be located and the lack of any previous physical evidence being sighted - The curtilage of the site is recommended to be the entire property.	Not listed
29	'Stonehenge' property, Wardell	Lot 2 DP 543525, Via Lumleys Lane, Wardell	- The item is a former dairy farm containing a main residence (around 1880), secondary residence (around 1940s), sheds, yards, dairy and old machinery and equipment associated with the dairy and regional engineering projects such as the construction of drainage channels. A drainage channel which forms part of a network of channels in the local area dates to around 1910 - The curtilage includes the main dwelling (partially comprising the original 1880s structure), former dairy buildings, the 1940s dwelling, the early 20th century drainage and the surrounding land which contains other artefactual evidence of the operation of the property.	Not listed
30	Bamboo stands, properties 723 and 725, Wardell	Lot 7 DP866508, Lot 172 DP755691	- The item comprises two mature stands of bamboo, near Thurgates Lane, possibly associated with Chinese gambling and Aboriginal people who lived on Cabbage Tree island - The recommended curtilage is the entire two properties.	Not listed
31	Potential house site, Wardell	Lot 158 DP755731	- The item consists of a rectangular concrete building foundation, possibly a house or shed, a circular water tank with corrugated iron on the outside and concrete lining inside, and a small series of furrowed earth mounds, possibly evidence of a small market garden or potato field - The curtilage of the site has been defined as the extent of the foundations, the water tank and the earth furrows.	Not listed
Multiple (sections 2, 6 and 7)				
33	High Conservation Value Old Growth Forests	Multiple locations along corridor	- The item is an ecologically mature eucalypt forest showing few signs of human disturbance. - The area of the listing on the State Heritage Inventory is shown in Figure 13-12).	NSW State Heritage Register- State Heritage Register 1487

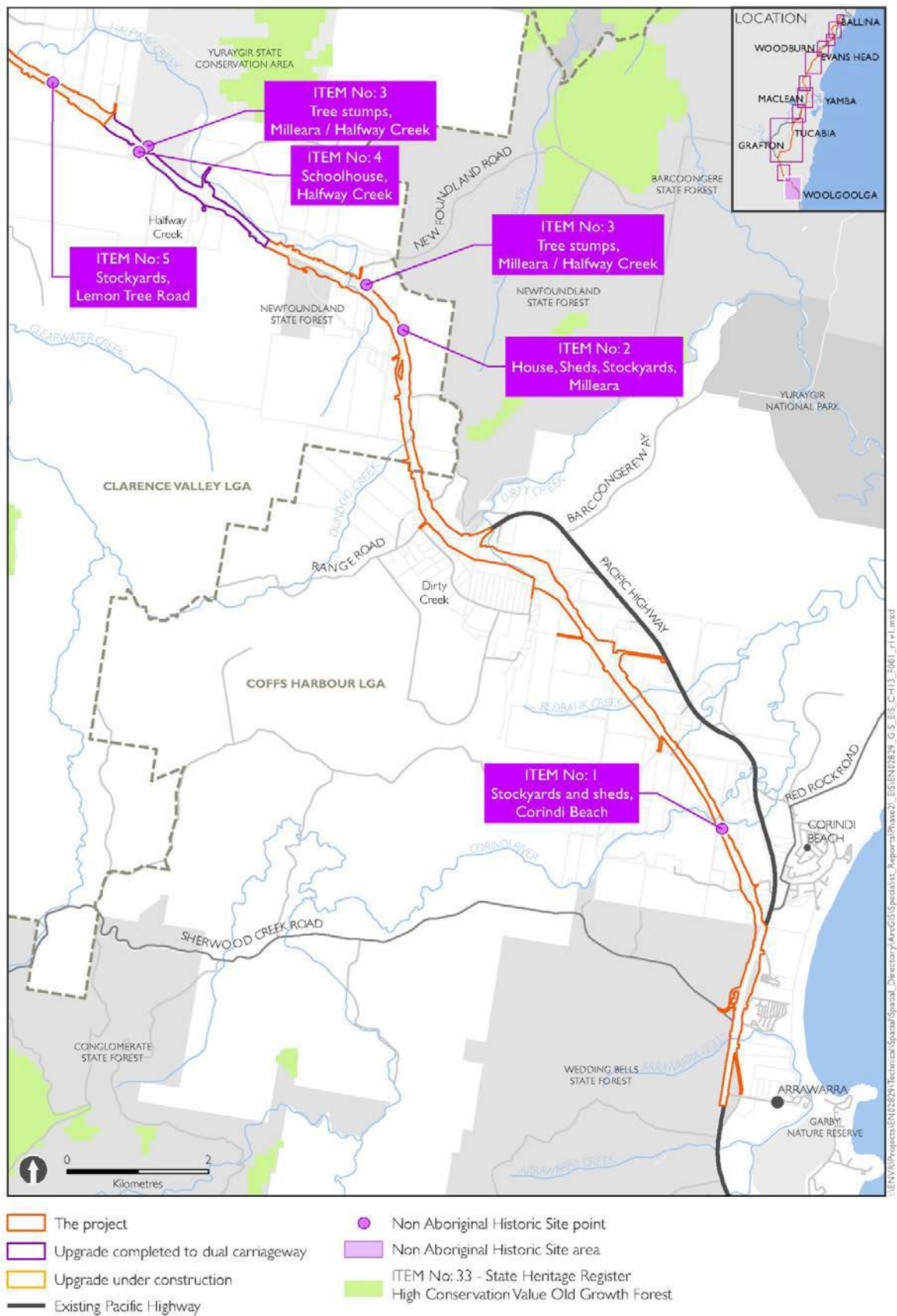


Figure 13-1: Heritage items within or near the project boundary: Section 1

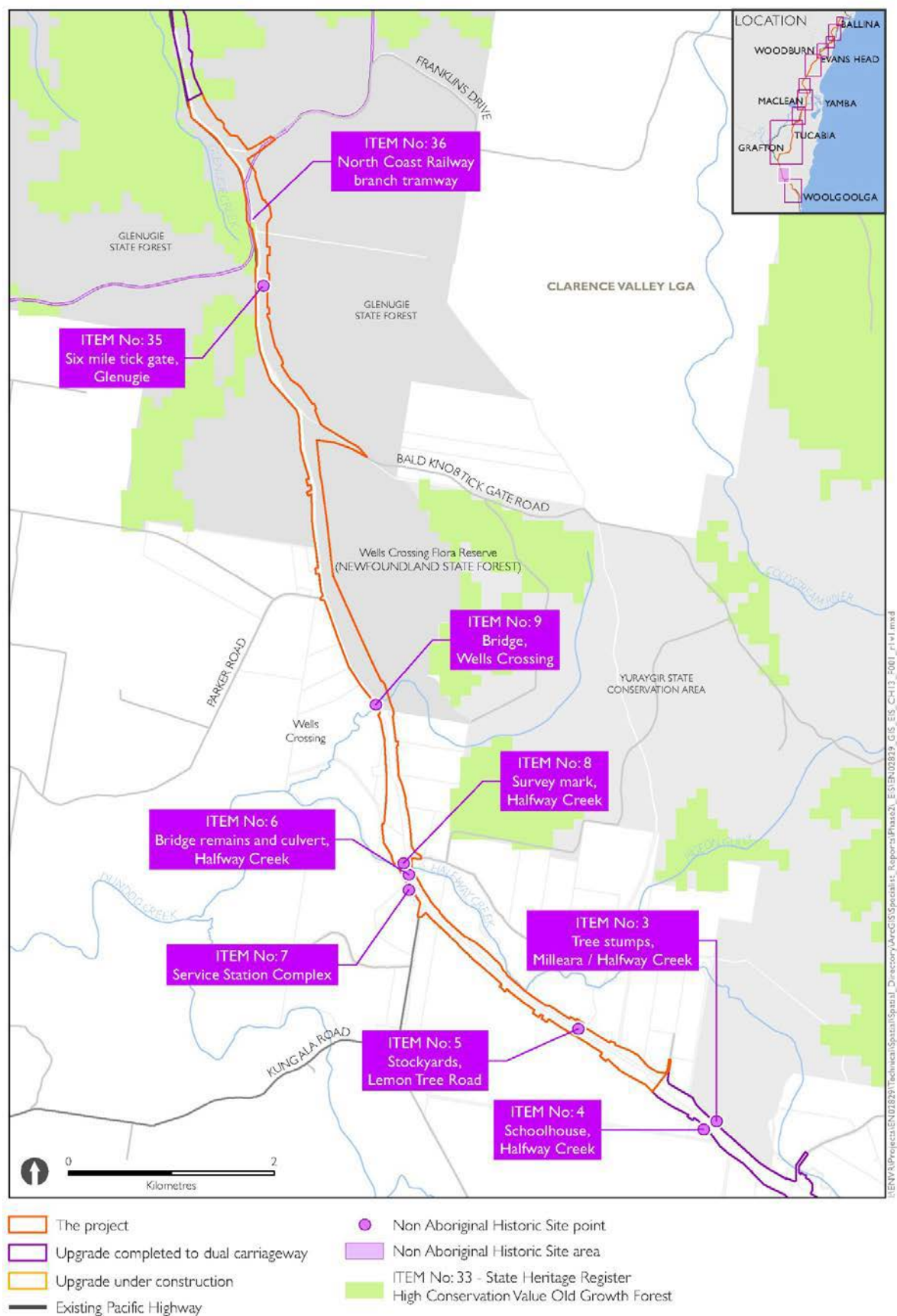


Figure 13-2: Heritage items within or near the project boundary: Section 2

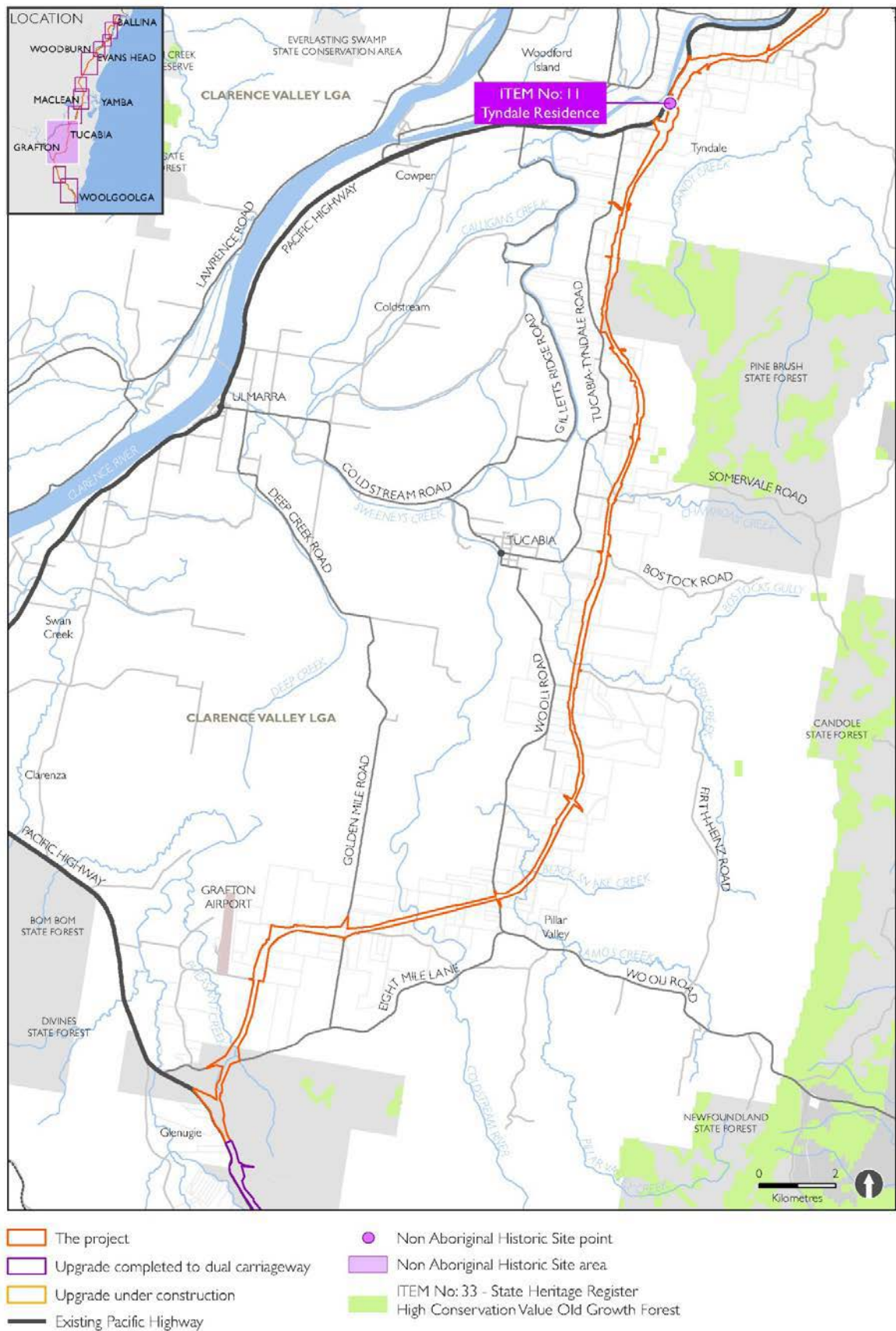


Figure 13-3: Heritage items within or near the project boundary: Section 3

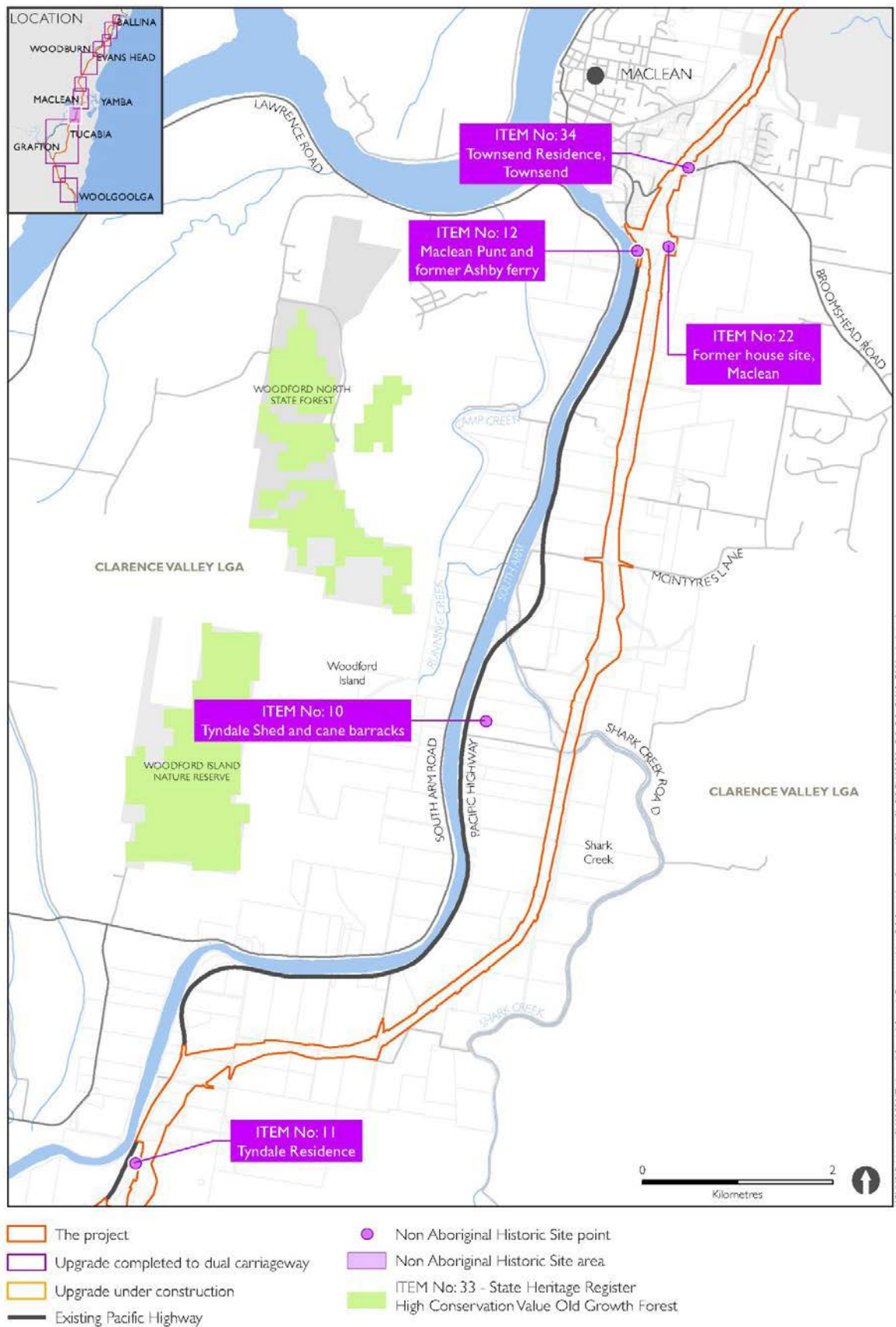


Figure 13-4: Heritage items within or near the project boundary: Section 4

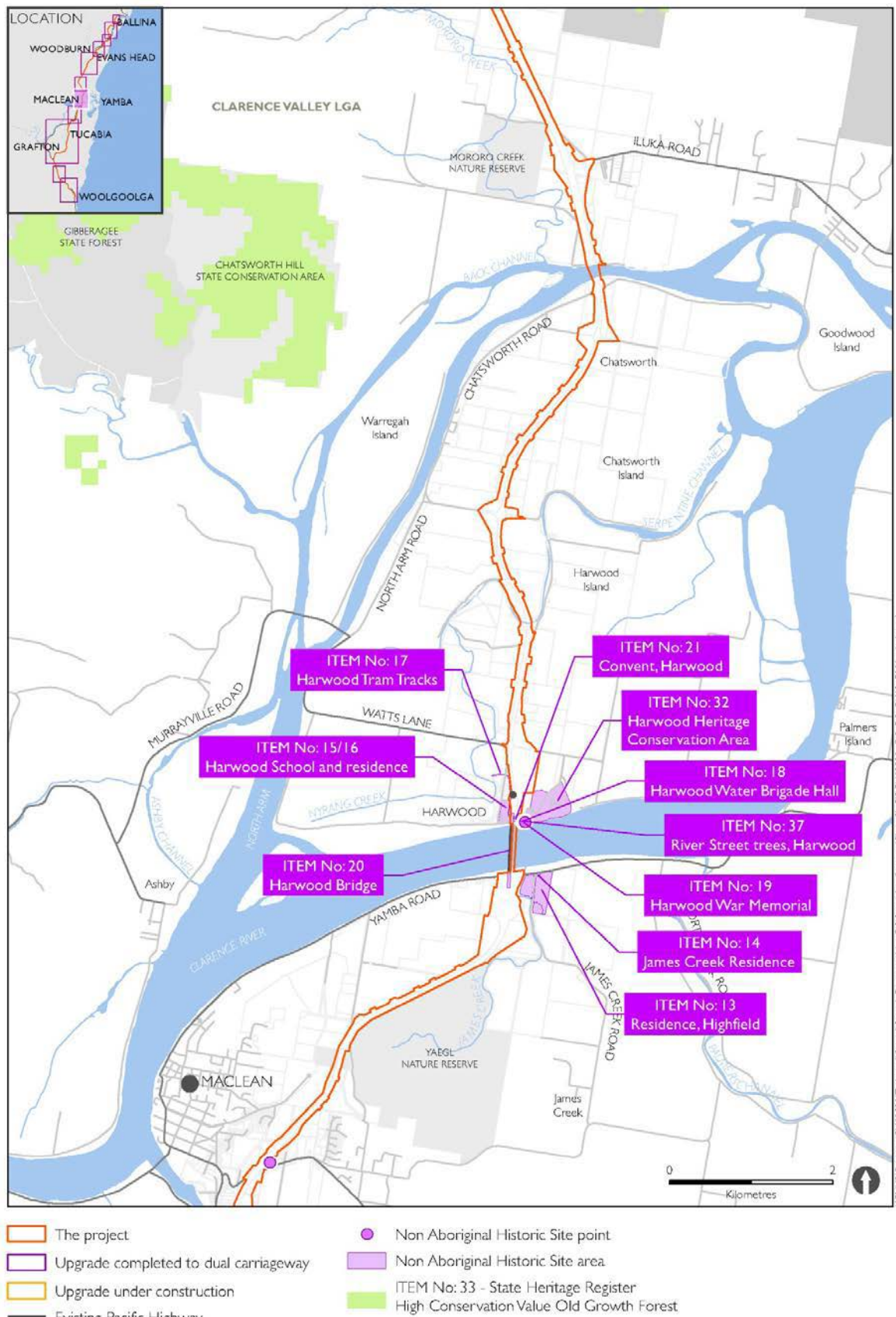


Figure 13-5: Heritage items within or near the project boundary: Section 5

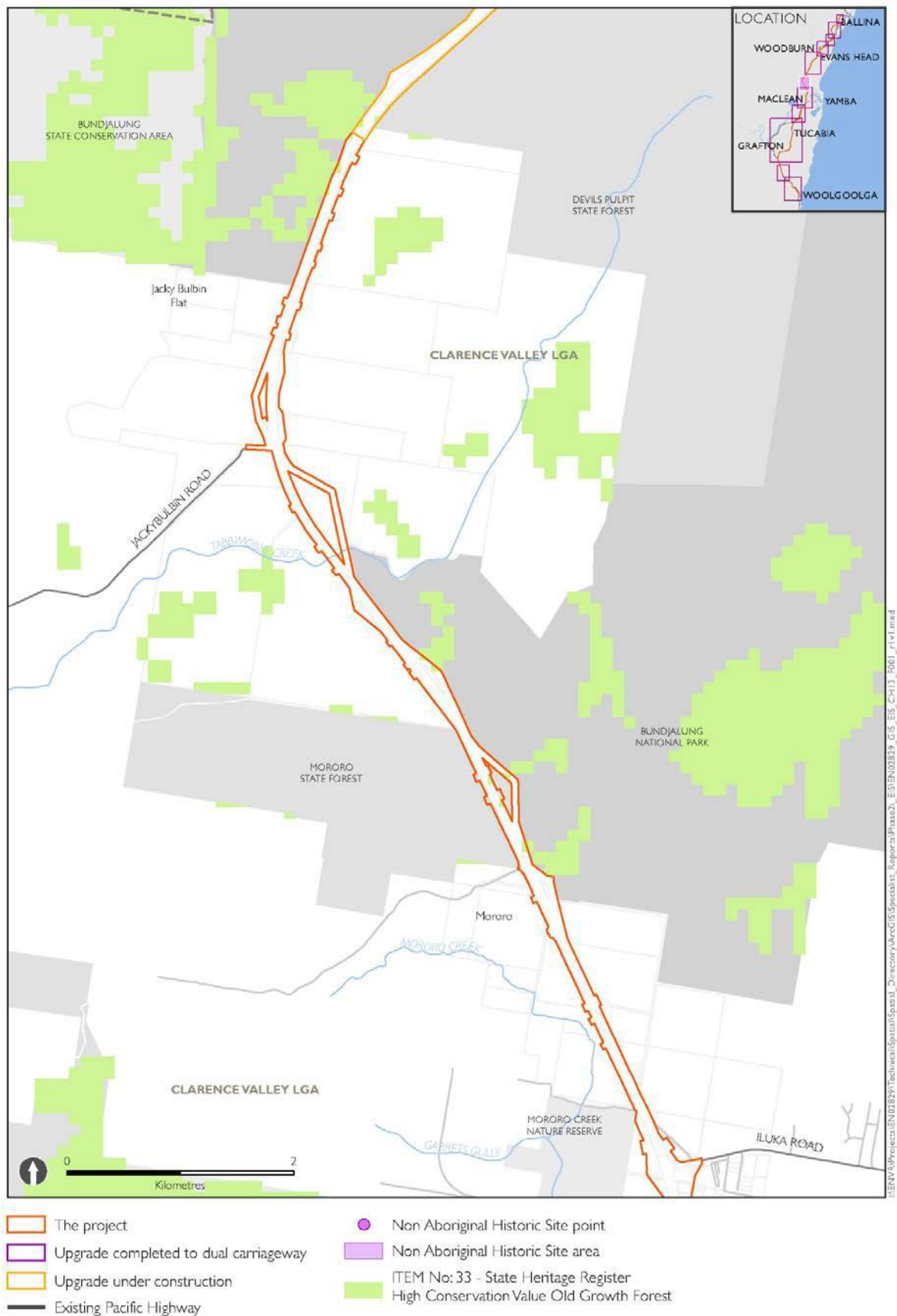


Figure 13-6: Heritage items within or near the project boundary: Section 6

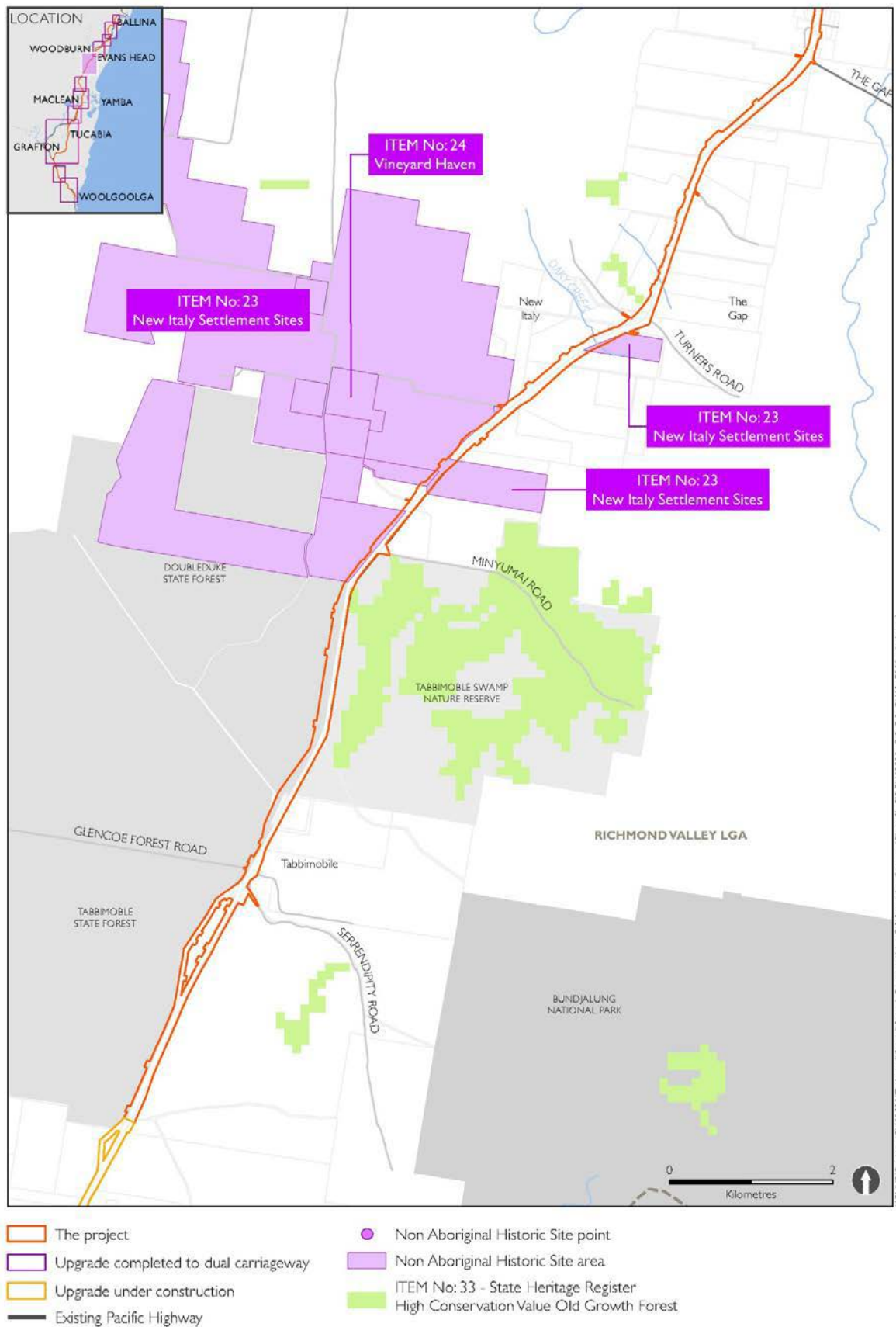


Figure 13-7: Heritage items within or near the project boundary: Section 7

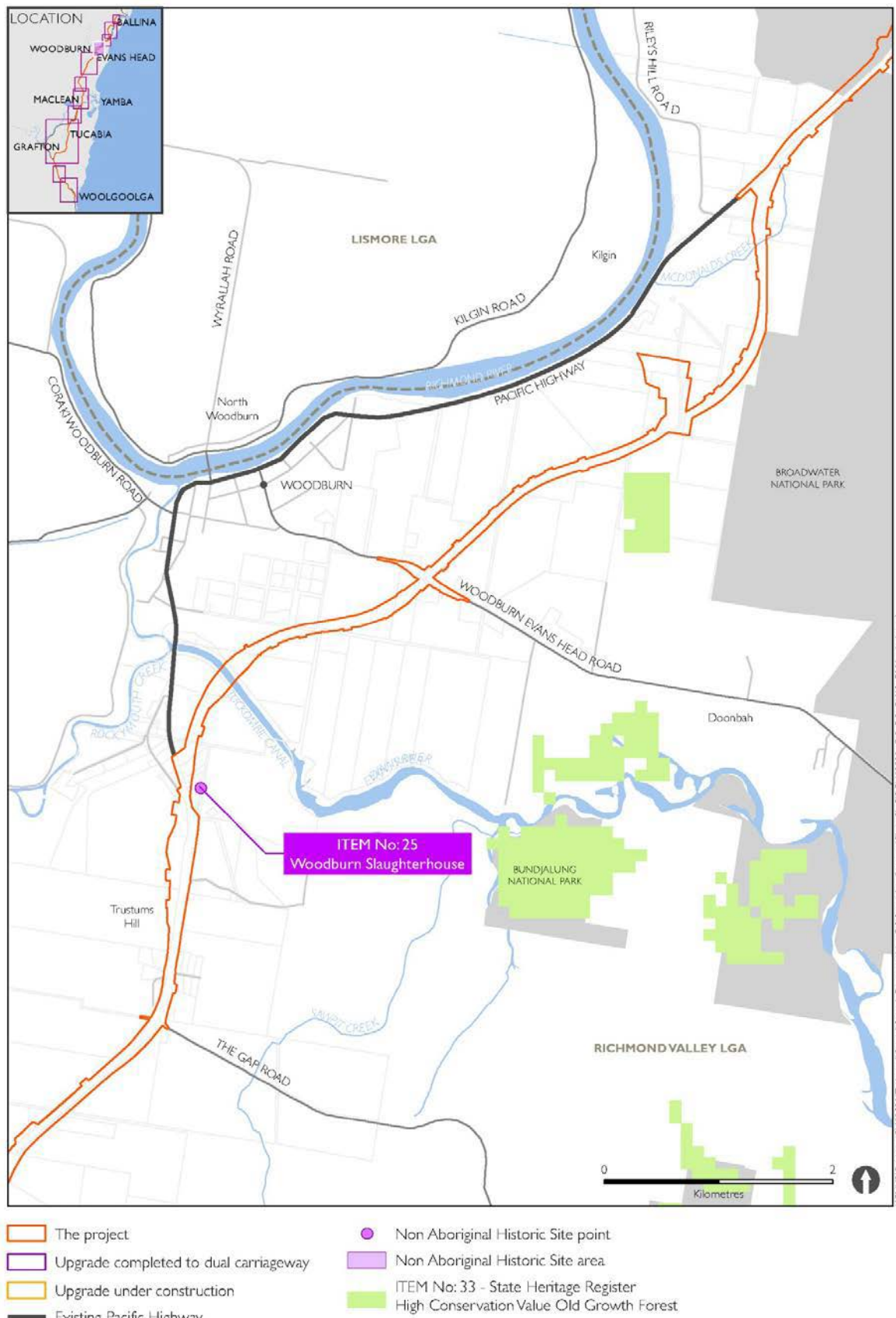


Figure 13-8: Heritage items within or near the project boundary: Section 8

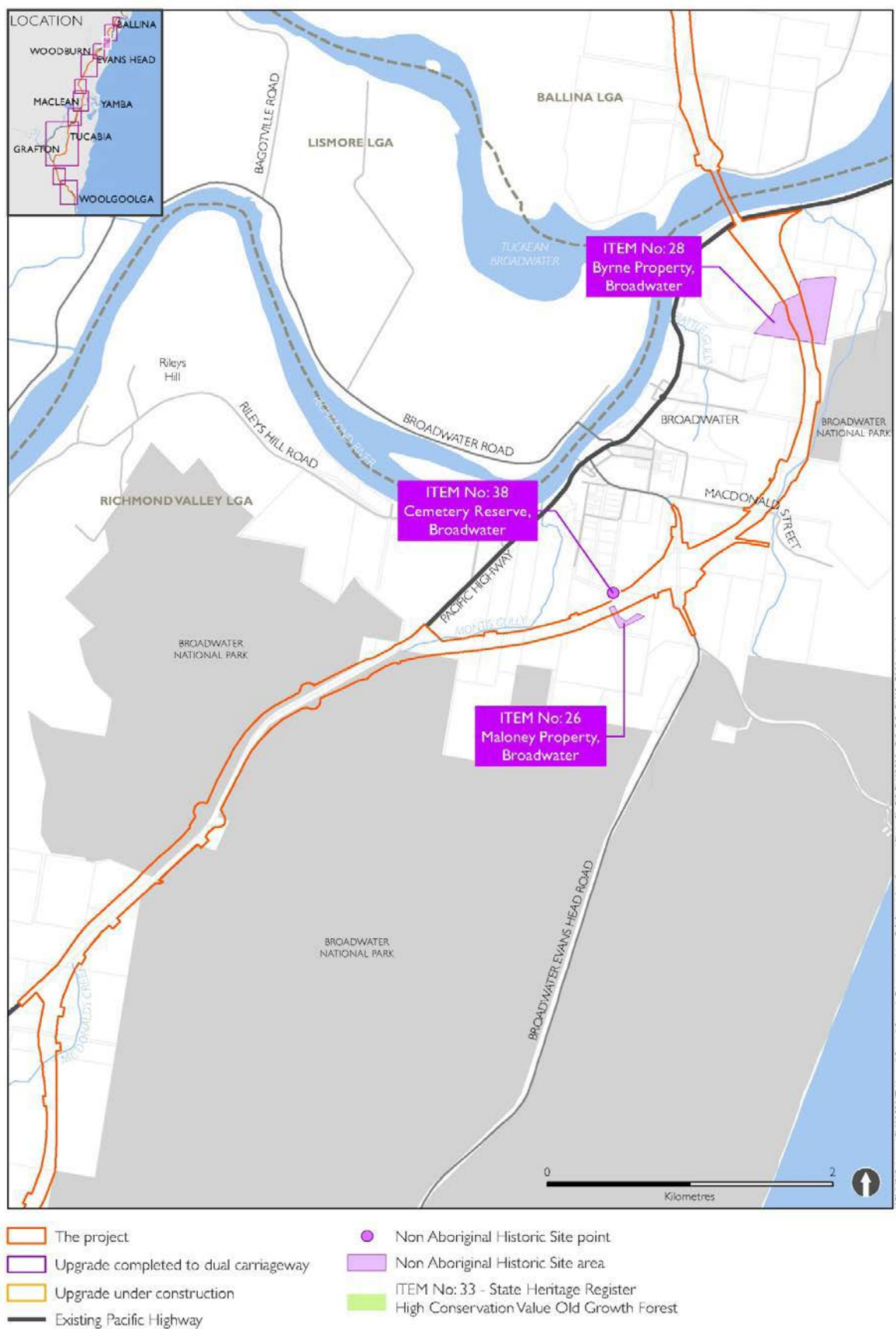


Figure 13-9: Heritage items within or near the project boundary: Section 9

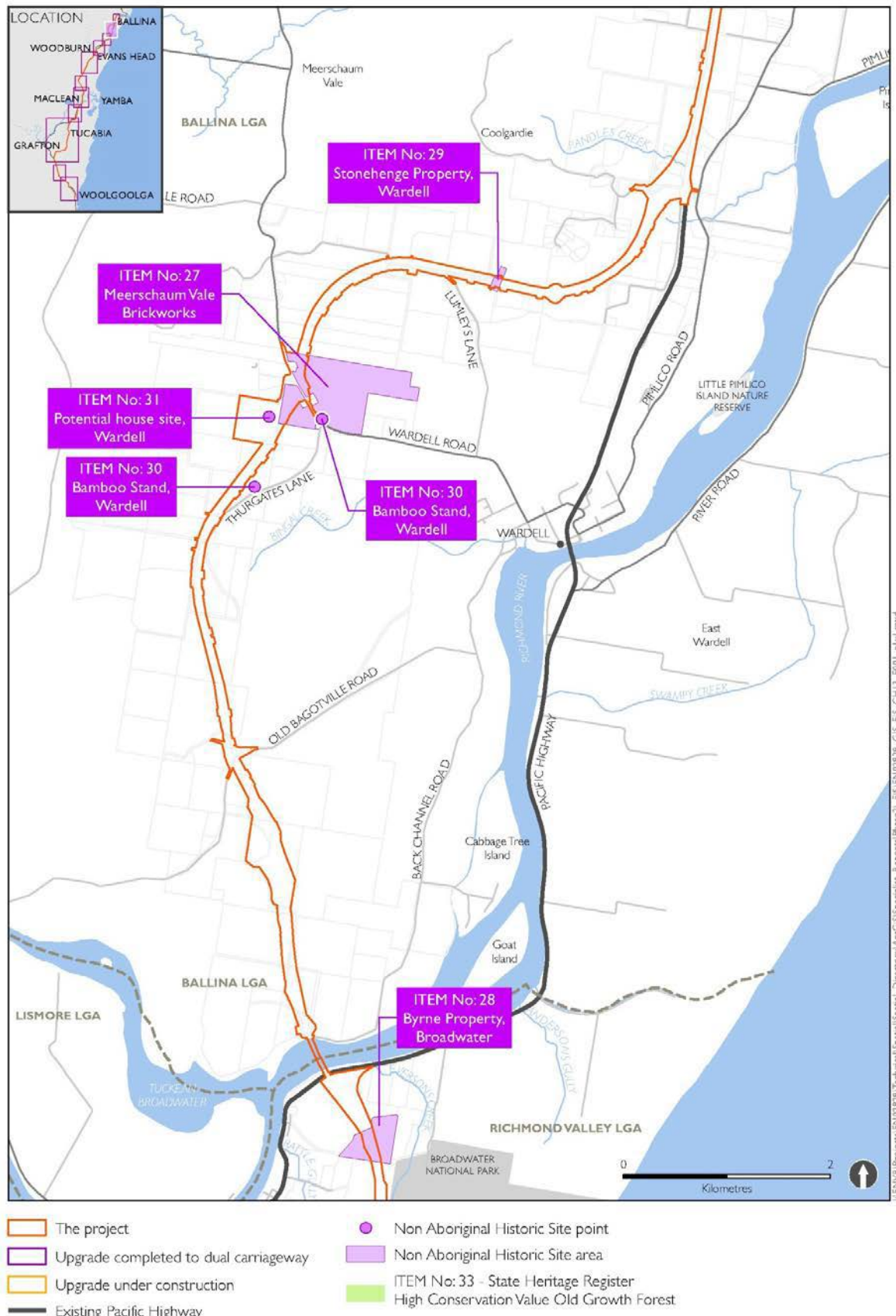


Figure 13-10: Heritage items within or near the project boundary: Section 10

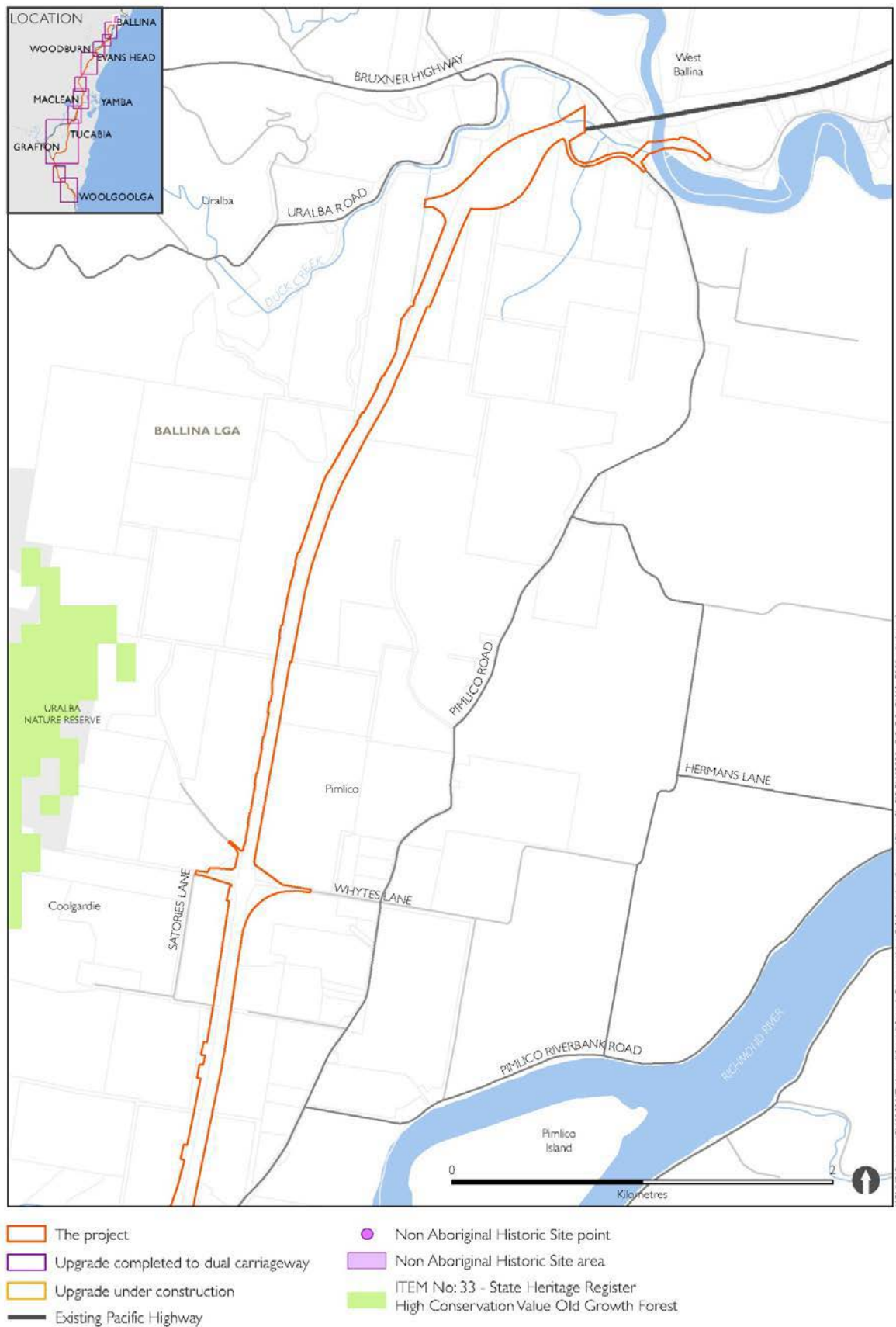


Figure 13-11: Heritage items within or near the project boundary: Section 11

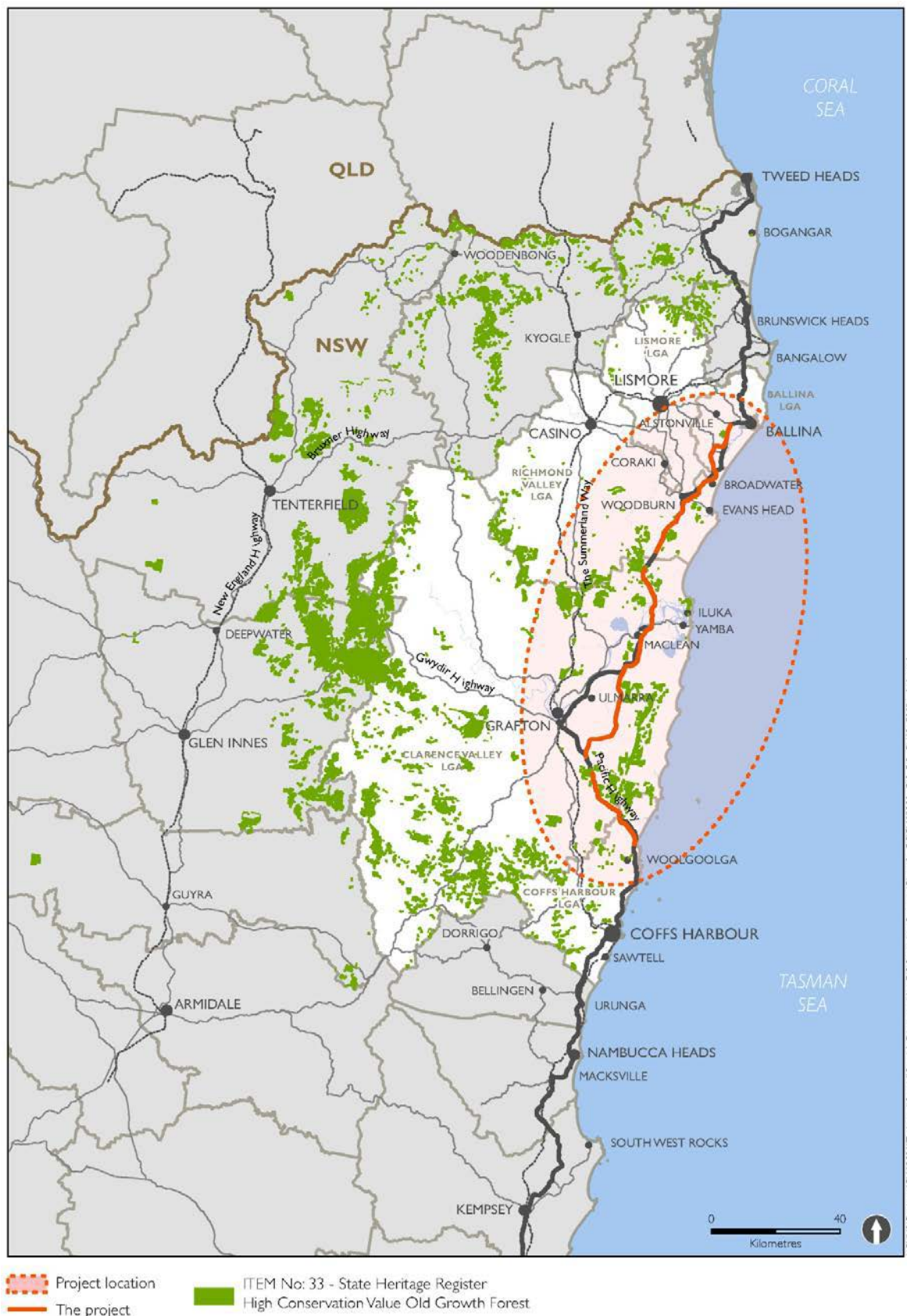


Figure 13-12: Heritage curtilage of High Conservation Value Old Growth Forest

13.3 Assessment of impacts

13.3.1 Heritage significance assessment

The NSW Heritage Manual (NSW Heritage Branch, 1996b) provides a set of specific criteria for assessing the significance of an item, including guidelines for inclusion and exclusion. The significance assessment of the identified heritage items has been prepared with reference to these guidelines. The seven criteria on which the significance assessment is based are:

- An item is important in the course, or pattern, of NSW cultural or natural history
- An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW cultural or natural history
- An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW
- An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons
- An item has potential to yield information that would contribute to an understanding of NSW cultural or natural history
- An item possesses uncommon, rare or endangered aspects of NSW cultural or natural history
- An item is important in demonstrating the principal characteristics of a class of NSW cultural or natural places or cultural or natural environments.

The level of significance of each item has also been assessed based on *Levels of Heritage Significance* guidelines (NSW Heritage Office 2008) and in accordance with the definitions of local and State heritage significance in section 4A of the NSW *Heritage Act 1977*. Table 13-2 identifies the significance of each of the heritage items within the project boundary, based on the criteria identified above. Detailed Statements of Heritage Significance are provided in Working paper – Historical (non-Aboriginal) Heritage.

Each of the significance assessments were developed based on a combination of available information including previous assessments, personal communications or field investigations, following standard heritage assessment practice.

Of the 38 identified sites within the project boundary, eight sites (items 1, 4, 5, 6, 8, 9, 22 and 31) are not considered to be of sufficient heritage significance to fulfil criteria for local or State heritage listing and are not considered further in the impact assessment. Twenty seven sites or places are considered to have local heritage significance, and three sites are considered to have State heritage significance.

It is considered that archaeological test excavations are not required at any heritage site to help provide understanding of the heritage item, its significance or the development of appropriate management measures.

Table 13-2: Heritage significance of non-Aboriginal heritage items

Item no	Item name	Statement of significance	Where listed
Project section 1			
1	Stockyard and sheds, south of Corindi River, Corindi Beach	Item has no significance when considered against the criteria for State or local listing.	Not listed
2	House, sheds and stockyards, Milleara	The site is of historical and scientific significance and has the potential to yield information relating to the early settlement of the Milleara region. It may provide evidence of the social, industrial and domestic activities of Milleara early settlement, including a family involved in the timber industry. The site is of local heritage significance .	Not listed
3	Tree stumps, Milleara/Halfway Creek	The tree stumps with logging marks are considered to have local historical significance with the potential to yield information about timber harvesting methods in the North Coast. The integrity of these stumps is fair. The stumps are slowly decaying through natural processes. The archaeological potential of these items is negligible. The site is of local heritage significance .	Not listed
4	Schoolhouse, Halfway Creek	The item is considered to have no significance when considered against the criteria for State or local listing. The archaeological potential is low.	Not listed
Project section 2			
5	Stockyards north-west of Lemon Tree Road, Halfway Creek	The item is considered to have no significance when considered against the criteria for State or local listing as modifications to the structures over time have reduced its potential to provide information. The integrity of the site is fair, but the archaeological potential is low.	Not listed
6	Bridge and culvert, Halfway Creek	The item is considered to have no significance when considered against the criteria for State or local listing as decay and degradation of the structure over time have reduced its potential to provide information. The remains are in poor condition and the archaeological potential is assessed as negligible.	Not listed
7	Service station complex, Halfway Creek	The site has historical and scientific significance and provides scope for further research into the history of the region. The integrity of the remains ranges from fair to good. The archaeological potential is assessed as high, and according to oral sources the remains of the original coach way station are located beneath the standing restaurant. The footprint of the stables may also exist in the adjoining paddock. Refuse dumps are also likely to occur in the vicinity. This site may provide significant evidence of the early transportation links in this area. The site is of local heritage significance .	Not listed
8	Survey mark, Halfway Creek	The item is considered to have no significance when considered against the criteria for State or local listing. It demonstrates a method commonly employed by surveyors in rural areas. The integrity of the item is fair but the timber is decaying. The archaeological potential of the item is negligible.	Not listed

Item no	Item name	Statement of significance	Where listed
9	Bridge at Wells Crossing	The item is considered to have no significance when considered against the criteria for State or local listing. Bridges of this method of construction are relatively commonplace. The archaeological potential of the item is negligible.	Not listed
35	Six Mile tick gate, Glenugie	The Six Mile Tick Gate was one of the control strategies the Department employed during the 20 th century to prevent the spread of the cattle tick into the Grafton quarantine area. The site is important for its role as part of the control strategies for controlling the spread of cattle tick in NSW. The site is of local heritage significance .	Not listed
36	North Coast Railway Branch Tramway, Glenugie	The North Coast Railway Branch Tramway is important in demonstrating the necessary methods, such as the need to build a branch line to obtain suitable construction material, employed for the construction of the North Coast Rail line in the local area, and the importance of the local basalt resource of Glenugie Peak to the development of the early 20 th century rail network in that area. The tramway has a strong association with works of the Chief Engineer for Railway and Tramway Construction, and the NSW Department of Public Works and their role in the construction of the North Coast Rail line in the local area. The tramway possesses uncommon aspects of the cultural history of the local area due to the need to obtain 'suitable stone' from the nearby outcrop of basalt. The tramway alignment is important in demonstrating the principal characteristics of subsidiary branch lines/ tramways during mainline rail development throughout NSW. The site is of local heritage significance .	Not listed
Project section 3			
11	Tyndale residence, Tyndale	The house, and associated mature bunya trees, is significant as a good example of a large Victorian residence. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I389
Project section 4			
10	Tyndale shed and cane barracks, Tyndale	This unmodified cane-cutters barracks is of historical significance as it represents a significant change in the type of accommodation provided for workers in the sugar industry. Previously, cane cutters had slept in tents and cooking was undertaken in galvanised iron galleys. It is a particularly good example of its type. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I387
12	Maclean punt and former Ashby ferry, Maclean	The former Ashby ferry, cane barge and sugarcane hoist in Ferry Park are historically significant as they demonstrate the importance of river transport in the Maclean district. The Ashby ferry and the cane barge worked the river in the vicinity of Maclean and the sugarcane hoist helped to load local sugarcane onto cane barges. All three heritage items are of local significance. Ferries are now rarely seen on the Clarence River, cane barges are never visible and sugarcane hoists such as the one on display are no longer used. This display, at the entrance to Maclean, therefore has significance for its educational value. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I194

Item no	Item name	Statement of significance	Where listed
22	Former house site, Goodwood Street, Maclean (property 315)	The item is considered to have no significance when considered against the criteria for State or local listing. The site and surrounds are highly disturbed and the remnants are fragmentary.	Not listed
34	Townsend residence, Townsend	The significance of this cottage lies in its original c1870s architectural simplicity, having a double-pitched roof extending smoothly over encircling verandahs. However, it has been substantially modified. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I377
Project section 5			
13	'Highfield' residence, James Creek	'Highfield' is significant for its association with the Cameron family, its links to river transport and Page's brickworks. It is also significant for its association with early land subdivision. Architecturally the building is significant as a rare example of a substantial brick residence in the region. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I158
14	James Creek residence, James Creek	The house is significant as a well maintained example of a 1930s bungalow built in a prominent location on the main Yamba Road. The house is significant for its association with the second generation of the pioneering Cameron family. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I161
15	Harwood School residence, Harwood	The Harwood Island Public School and residence is a particularly substantial and relatively rare remaining example within the region of late Victorian schoolhouse and residence. The building group provides evidence of the development of Harwood Island in the latter half of the 19 th century and particularly the importance of the sugar industry in the southern part of the island. The site has continued as a public school to the present day. The Victorian Gothic schoolhouse and Victorian Georgian residence are the oldest buildings on the site and typical representative examples of their periods and styles. Their significance is enhanced by their grouping together and by the degree to which they have retained important early fabric and features. Later alterations and additions, however, particularly to the schoolhouse/classroom have detracted from the building's aesthetic significance as good representative examples of their particular period and architectural style. The library building located nearby is a significant prefabricated building from circa 1930. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I139
16	Harwood School, Harwood		Clarence Valley Local Environmental Plan 2011, site ID I139
17	Harwood tram tracks, Harwood	These sections of tramline are historically significant as they illustrate the changing nature of the sugarcane industry, an industry which was initially labour intensive but which now sees most tasks undertaken by mechanical harvester. These small sections of tramline are representative of the tramlines once used throughout the region. It is rare to find them in situ and only three examples are known to exist on Harwood Island. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I141

Item no	Item name	Statement of significance	Where listed
18	Harwood Water Brigade Hall, Harwood	The Water Brigade Hall has historical significance as a rare example of the need to provide emergency services to those affected by flooding. The hall tells of the early importance of water transport to the Clarence Valley communities. The fact that the building contained a reading room illustrates the need for multipurpose buildings in small communities. Halls constructed with the sole purpose to house the water brigade are rare and this appears to be the only one still standing on the Clarence River, giving it some regional significance. The hall is socially significant to the Harwood community who now use it for boat storage and as a meeting place. It is also associated with the famous rower Henry Searle and his family, who lived nearby on Esk Island. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I143
19	Harwood war memorial, Harwood	The Harwood War Memorial is an elegant memorial located on the riverbank. It is significant to Harwood families who had relatives serving in World War I and links Harwood to world events. Its form, in the style of an obelisk, is representative of other war memorials on the Clarence River. The site is of local heritage significance .	Clarence Valley LEP 2011, site ID I144
20	Harwood Bridge, Harwood	The Harwood Bridge is of historical significance as it represents the solution to a major transport issue in the mid 20 th century. The bridge is of architectural significance as it is a functional and well maintained example of the last 20 th century steel truss bridge built in northern NSW. The bridge is aesthetically distinctive and representative of the town of Harwood, demonstrated in its use in the logo for the Harwood Public School. The bridge demonstrates the principal characteristics of steel truss bridges, a technology that is no longer used in NSW. The site is of local heritage significance .	Not listed
21	Convent, Harwood	The convent is of historical significance as it demonstrates the growth, development and decline of the town of Harwood and its associated requirements for education and religion. It is also located within the Harwood Conservation Area, which incorporates sites associated with Harwood Sugar Mill, including structures in the village itself whose growth and demise are linked to the history of the mill. The site is of local heritage significance .	Not listed
32	Harwood Heritage Conservation Area	Harwood Heritage Conservation Area demonstrates the development and decline of the town through its association with Harwood Sugar Mill, the oldest continuously operating sugar mill in NSW. It also demonstrates the importance of the sugar industry to the local region from the 19 th century onwards. The area has the potential to yield information regarding the change and development of sugar industry processes and technology through research into items such as the <i>Beardmore</i> Tug, a cane grab, an early cane planter and other pieces of equipment. The site is of local heritage significance .	Clarence Valley LEP 2011
37	River Street trees, Harwood	The street trees are historically significant as they show the endeavours of early residents to improve their town. The trees demonstrate aesthetic characteristics in providing an attractive backdrop to the War Memorial. The site is of local heritage significance .	Clarence Valley Local Environmental Plan 2011, site ID I145

Item no	Item name	Statement of significance	Where listed
Project section 7			
23	New Italy Settlement Landscape (incl. Historic New Italy Village Area)	The New Italy Settlement Landscape is of State significance as evidence of a settlement built through the tenacity, forbearance and technical skills (especially horticultural and architectural) of a unique group of Australian settlers. It is also significant to those displaced Italian migrants who were allowed assisted passage to Australia by Sir Henry Parkes after the ill-fated Marquis de Ray expedition of 1881. Linked to this surviving archaeological heritage both by location and trust management by descendants of these early settlers is the current New Italy Museum Complex. This museum complex stands as a vibrant and living monument to the important contributions made by these (and other) Italian migrants to the past and present cultural and social identity of the North Coast region and the whole State of NSW. Moreover the Museum complex is a continuing celebration of multicultural Australia and the important links forged between the Italian and wider Australian community. The ongoing patronage of the site by Italian and non-Italian local and State dignitaries is evidence of the esteem in which the heritage of New Italy is held by the broader community. The commitment and cooperation of various groups in maintaining and developing the museum complex and school sites as well as the broader New Italy landscape by numerous community groups and individuals provides a continuity of partnership between the Italian and non-Italian communities which began when the Italian settlers first arrived. New Italy Settlement Landscape (including Historic New Italy Village Area) is of State heritage significance.	State Heritage Register 1648 Richmond Valley LEP 2012 sites IDs I145, I147, I148, I149, I150, A5, A7
24	Vineyard Haven, New Italy Settlement	'Vineyard Haven' occupies the property originally taken up by the French Palis Brothers, and then the Italian Giovanni Guarischi, and contributes to the State significant New Italy Settlement Landscape. The whole landscape is of State significance as evidence of a settlement built through the tenacity, forbearance and technical skills of a unique group of settlers. It contains remnants of the landscape encountered by the settlers and evidence of their domestic and work practices. These relics and archaeological items include a dam site, a timber lined well, a mound, vines, vine contours on the landscape, former water trenches and other archaeological evidence. The site's context is also important. The original track from Chatsworth Island to Swan Bay traversed Vineyard Haven according to a line drawing and written comment on the Original Survey Plan of Portion 36, which was surveyed on 14 March 1883. This track is very closely aligned to the walking path that the first settlers took from Swan Bay (the landing place upstream a few kilometres from Woodburn on the Richmond River) to take up this land. The gateway to the property of Vineyard Haven is opposite the site of the Italian Settlers Saint Peter's Church which was erected in 1907 after an earlier church was destroyed by a fire. This church was demolished in 1945 after being damaged by a storm. Another important aspect of the context is the bushland setting, much of which has regrown on Vineyard Haven and which is reminiscent of the setting and circumstances that would have faced the first Italian and French settlers when they arrived in 1882. Vineyard Haven, New Italy Settlement is of State heritage significance.	State Heritage Register 1715 Richmond Valley LEP 2012, site ID I146

Item no	Item name	Statement of significance	Where listed
Project section 8			
25	Woodburn slaughterhouse, Trustrums Hill	The Woodburn slaughterhouse has historical significance as it demonstrates the importance of local food production and distribution in the Woodburn-Evans Head region. It is representative of its type, having both slaughtering and condensing facilities. As meat processing regulations became more stringent in the 1960s and cattle were sent to large abattoirs, slaughterhouses were closed throughout the Richmond Valley; most have been demolished. This is the only known slaughterhouse extant in the Richmond Valley. This site is of local heritage significance .	Richmond Valley LEP 2012, site ID I166
Project section 9			
26	Maloney property, Broadwater	The Maloney Property is considered to be of importance in the pattern of NSW's history as it demonstrates the pattern of early settlement in the Broadwater region and has the potential to yield information about the nature and evolution of dairy farming in the 19th and 20th centuries. The site has special associations with the local brickmaker Patrick Sheehy and is also significant for its ongoing connection with the Maloney family, an early settler family in the region who continue to own, run and occupy the property. The site is considered rare as the dairy-farming industry was once important in the region but is now uncommon. The buttery/creamery is also representative of its type. The site is of local heritage significance .	Not listed
38	Cemetery reserve, Broadwater	While little is known of the history of the cemetery, the declaration of the cemetery reserve is linked to the history of Broadwater and its growth and development as a township associated with the sugar industry. It may also demonstrate the pattern of declaration of reserves by centralised government without consideration for local requirements and conditions. There is no physical evidence of grave markers in the reserve and it is unclear from the historical documentation whether it was actually used as a cemetery. However it is known to long-term local residents as the location of a cemetery. The site is of local heritage significance .	Not listed
28	Byrne property, Broadwater	The Byrne property demonstrates the pattern of settlement in the North Coast region from the 19 th century to the present day with the early development and ongoing importance of the sugar industry to the region. The site is of historical significance as it is associated with early European settlement in the district. The site is of significance for its strong and ongoing association with the Byrne family, one of the earliest families in the district, who continue to run the property as a sugarcane farm. The site is significant for its potential to yield information about the region's past. The surface artefacts and other features indicate a rich archaeological resource with high research potential for answering questions associated with historical research themes identified for the study area including 'Developing local, regional and national economies' and 'Building settlements, towns and cities'. Specifically the site has potential to provide information on the little-documented, everyday lives of workers associated with the sugar industry, a key industry for the entire region. There is also the potential to yield information about the variety of activities undertaken in supporting the operation of an early sugarcane farm including the attitude towards self-sufficiency particularly highlighted by the presence of brick-making and stone quarrying on the site. The site is of local heritage significance .	Not listed

Item no	Item name	Statement of significance	Where listed
Project section 10			
27	Meerscham Vale brickworks, Wardell	The site has historical significance. Prior to extensive road transport, bricks were produced to meet local demand at several local brickworks, this site may demonstrate a local solution to a resource need. The site is of local heritage significance .	Not listed
29	'Stonehenge' property, Wardell	The site represents an intact example of different farming techniques including share farming, dairy farming and cane farming. The buildings on site and the moveable heritage items have the potential to yield information of an historical nature. The site is of local heritage significance .	Not listed
30	Bamboo stands, properties 723 and 725, Wardell	The bamboo stands may be linked to Chinese migrants in the region in the 19 th century, demonstrating the variety of cultural influences in NSW's history. The site has moderate archaeological potential for evidence of gambling activities. The site is of local heritage significance .	Not listed
31	Potential house site, Wardell	Although the property has some associations with local families, it has no significance when considered against the criteria for State or local listing. The site remnants are fragmentary and do not contain potential for archaeological deposit.	Not listed
Multiple (project sections 2, 6 and 7)			
33	High Conservation Value Old Growth Forests	Old growth forest is ecologically mature eucalypt forest showing few signs of human disturbance. The upper canopy trees are no longer growing in height or spreading their crowns and show signs of old age. As the historical context for this project demonstrates, initial European settlement of the region focused on timber getting and land clearing for agriculture, pastoralism and townships. The remains of examples of old growth forests are therefore rare. HCVOG Forest represents the best examples remaining of such forests. The Forest is of State heritage significance .	NSW State Heritage Register- State Heritage Register 1487

13.3.2 Impact criteria

The impact on the heritage significance of the 30 sites of local or State heritage significance was assessed in accordance with the NSW Heritage Manual.

The assessment addressed the potential impact of the project in terms of:

- Direct impact: This is defined as physical change to an item or place situated within the project boundary, which results in the decrease of the historical heritage values of that item or place. Direct impact may include minor and peripheral changes, potential archaeological disturbance, large-scale removal and demolition of structures
- Indirect impact: This is defined as an impact on an item or place outside of the project boundary, or on its surroundings (where it contributes to the historical heritage values of that item or place), as a consequence of the project. The potential for indirect impact varies according to the nature of the item or place, and its proximity to the corridor. Indirect impacts considered in this assessment include vibration, altered historical arrangements and access, landscape and vista (visual impacts) and the introduction of architectural noise treatments.

13.3.3 Potential impacts

Of the 30 sites of local or State heritage significance, the project would:

- Not impact on 10 items
- Physically impact two properties that contain heritage items, but result in no impact to the heritage significance of the item or curtilage³
- Potentially impact 18 items, directly or indirectly.

The 18 items that would be potentially impacted are shown in Figure 13-13 to Figure 13-36. Potential impacts are identified in Table 13-3. Most of the impacts would result from the construction of the project, with operational impacts occurring in half of the identified items. Where differing impacts would occur under the initial arterial upgrade, compared to the motorway upgrade, both impacts have been identified.

A Statement of Heritage Impact has been prepared for potentially impacted items to determine the impact level and to help develop and assess the effectiveness of management measures. Statements of Heritage Impact are provided in Working paper – Historical (non-Aboriginal) Heritage Assessment.

KEY TERM – Statement of Heritage Impact

An assessment of the impacts of a proposed development on the significance of a heritage item or conservation area as required under the NSW Heritage Act 1977.

³ The heritage curtilage of each of these heritage items was defined during field surveys.



Photo 2: Item 23 Memorial and stone lined well, New Italy

Table 13-3: Summary of impacts on non-Aboriginal heritage items or sites

Item no	Item name	Impact	Impact description	Timing
Project section 1				
1	Stockyard and sheds, south of Corindi River, Corindi Beach	N/A	N/A	N/A
2	House, sheds and stockyards, Milleara	Indirect (initial upgrade)	Construction of the project near this item could result in indirect impacts through potential physical damage by vehicles and equipment and impacts from materials blowing or spilling on the stockyards. The property has been identified for architectural noise treatments to control noise levels.	Construction and operation
3	Tree stumps, Milleara/Halfway Creek	No direct or indirect impact	N/A	N/A
4	Schoolhouse, Halfway Creek	N/A	N/A	N/A
Project section 2				
5	Stockyards north-west of Lemon Tree Road, Halfway Creek	N/A	N/A	N/A
6	Bridge and culvert, Halfway Creek	N/A	N/A	N/A
7	Service station complex, Halfway Creek	Direct and indirect (motorway upgrade only)	Archaeological disturbance of site during construction of the motorway upgrade, particularly on the existing car park area, could impact on the remains of the original coach way station and remnants of the early coach road. These potential direct impacts could reduce the site's high potential for archaeological research. The impacts would be mitigated through the opportunity to undertake salvage excavations in the carpark area prior to construction. There would be no demolition of any structures on the site. Indirect impact from the project could involve physical damage to the bar/restaurant building by vehicles and equipment and impacts from materials blowing or spilling on the building. Vibration impacts could also occur, however are unlikely to damage the structural integrity of the structures. The old residence building has been identified for architectural noise treatments to control noise levels.	Construction and operation

Item no	Item name	Impact	Impact description	Timing
8	Survey mark, Halfway Creek	N/A	N/A	N/A
9	Bridge at Wells Crossing	N/A	N/A	N/A
35	Six Mile tick gate remains, Glenugie	Direct (initial upgrade)	The project would be constructed on top of the remaining undisturbed part of the site, resulting in its complete demolition. However, previous demolition of part of the site by a separate project has reduced the site's significance. Prior to the previous demolition, photographic recording of the entire site was undertaken	Construction
36	North Coast Railway Branch Tramway, Glenugie	Direct (initial upgrade)	The project would result in the demolition of about a 250-metre remnant of the tramway alignment near the Franklins Road intersection. This remnant represents less than 3% of the overall length of the original tramway. However, there is no intact evidence on site of the tramway (such as wooden sleepers, metal objects or the remains of hopper trucks), with only earthen embankments remaining.	Construction
Project section 3				
11	Tyndale residence, Tyndale	Indirect (initial upgrade)	Potential visual impacts would result from the project. Cut batters from the project on Bondi Hill would be visible from the house. However, the architectural significance of the house would not be impacted. Any visual impacts are likely to be minimised by the existing mature trees planted around the property and the significant screening of vegetation between the rear of the house and the proposed location of the project. The project may also have potential indirect impacts on the mature bunya trees, such as physical damage from vehicles or machinery traversing the property. The property has been identified for architectural noise treatments to control noise levels.	Construction and operation
Project section 4				
10	Tyndale shed and cane barracks, Tyndale	No direct or indirect impact	N/A	N/A
12	Maclean punt and former Ashby ferry, Maclean	Indirect (initial upgrade)	The project could potentially result in a reduction in visitors to the site due to obstruction of view from the highway. This would, in turn, reduce the educational value of the heritage items. Potential indirect impacts could also result from materials blowing or spilling onto the heritage item during construction. Vibration during construction is unlikely to damage the structural integrity of the heritage items.	Construction and operation

Item no	Item name	Impact	Impact description	Timing
22	Former house site, Goodwood Street, Maclean (property 315)	N/A	N/A	N/A
34	Townsend residence, Townsend	Indirect impact	This property has been identified for architectural noise treatments to control noise levels.	Operation
Project section 5				
13	'Highfield' residence, James Creek	No direct or indirect impact	N/A	N/A
14	James Creek residence, James Creek	No direct or indirect impact	N/A	N/A
15	Harwood School residence, Harwood	No direct or indirect impact	N/A	N/A
16	Harwood School, Harwood	No direct or indirect impact	N/A	N/A
17	Harwood tram tracks, Harwood	Direct (initial upgrade)	Construction traffic associated with construction of the Clarence River bridge would pass directly over the Petticoat Lane tram tracks and could result in physical damage to the tram tracks. Physical damage to the tram tracks would affect the historical significance. No archaeological disturbance is anticipated.	Construction
18	Harwood Water Brigade Hall, Harwood	No direct or indirect impact	N/A	N/A
19	Harwood war memorial, Harwood	No direct or indirect impact	N/A	N/A
20	Harwood Bridge, Harwood	Indirect (initial upgrade)	The Harwood Bridge would not be directly impacted by the project, but it may be indirectly impacted by the close proximity of the proposed bridge, with associated visual impacts. These impacts would reduce the aesthetic significance of the heritage item by obscuring the view of the bridge from most angles. The proposed bridge would have a very strong visual presence on the river. Embankments and approach structures to the proposed bridge would be visible above cane fields and be out of scale with the surrounding streets and buildings within Harwood village.	Operation
21	Convent, Harwood	Direct (initial upgrade)	The project would involve the complete demolition of the convent building for construction of the bridge across the Clarence River, affecting the heritage significance of the site.	Construction

Item no	Item name	Impact	Impact description	Timing
32	Harwood Heritage Conservation Area	Direct (initial upgrade)	The project would involve the complete demolition of the convent building (see item 21). There is also the potential for construction traffic to damage the Petticoat Lane Tramway Tracks (item 17) and indirectly impact the Harwood Bridge (item 20). However, the cumulative impact of the project on the conservation area would be minor. The impact on the heritage significance of the conservation area would also be minimised by positioning the proposed bridge close to the existing Harwood Bridge, rather than traversing the conservation area in a completely different location.	Construction
37	River Street Trees, Harwood	No direct or indirect impact	N/A	N/A
Project section 7				
23	New Italy Settlement (Museum complex) (SHR 1648, LEP I148)	Indirect impact	There would be no direct impacts on the State Heritage Register or Local Environmental Plan curtilage at the Museum Complex. Indirect impacts could occur from the project and could include impacts from materials blowing or spilling on the items or if vehicles and equipment enter or disturb the ground surface within State Heritage Register boundary. Vibration during construction is unlikely to damage the structural integrity of the heritage items. Additional indirect impacts from the motorway upgrade would be through the removal of direct highway access, reducing the accessibility for visitors. This would impact on the social significance of the site in the continuing celebration of the early immigrants by the broader regional visitor community.	Construction and operation
	Memorial and stone-lined well (LEP I150)	Direct and indirect impacts	The stone-lined well would not be directly impacted by the project, but could be subject to indirect impacts. Indirect impacts could include physical damage to the structures if road construction materials blow or spill onto the items, or physical damage from machinery. Continued access as part of the museum complex would enable the social significance of the site to be maintained. The initial arterial upgrade would require the removal/demolition of the memorial and flagpole from their current location and reinstated within the boundary of the same property outside of the project boundary. Vibration during construction is unlikely to damage the structural integrity of the items.	Construction
	Cypress Road stone-lined well (LEP I145)	Indirect impacts	The project would impact on the curtilage of the site, however there would be no direct or indirect impact on any known heritage features or impact on the heritage significance of the site.	Construction
	Roder's stone-lined well and orchard (LEP I149)	Direct and indirect impacts	Roder's stone-lined well and orchard would be subject to direct and indirect impacts from the project. The initial upgrade would result in the removal of the stone-lined well, and possibly physical damage to the mango orchard if machinery enters or disturbs the ground surface close to the orchard, or if materials blow or spill onto the site. A salvage excavation prior to the demolition of the well may realise the site's research potential. Vibration during construction is not expected to damage the mango orchard.	Construction

Item no	Item name	Impact	Impact description	Timing
			The mango orchard would be removed for the motorway upgrade for construction of the service road.	
	Historic New Italy Village Area (LEP)	Direct impact	The project would impact on the curtilage of several lots that fall within the Historic New Italy Village Area, however would not impact on any known physical remains and would not affect the heritage significance of the sites.	Construction
24	Vineyard Haven, New Italy Settlement	No direct or indirect impact	N/A	N/A
Project section 8				
25	Woodburn slaughterhouse, Trustrums Hill	No direct or indirect impact	N/A	N/A
Project section 9				
26	Maloney property, Broadwater	Direct and indirect (initial upgrade)	The project would have a direct impact on the heritage item as it would require the complete demolition of the dairy and buttery/creamery. The homestead has been identified for architectural noise treatments to control noise levels. The project would not have any direct or indirect impacts on the stockyards.	Construction and operation
38	Cemetery reserve, Broadwater	Direct (initial upgrade)	The project would encroach into the south east corner of the site. There is the potential that construction could disturb the ground and potential subsurface features due to the close proximity of the road embankment to the reserve boundary. The area of the reserve within the project boundary is a grassed, low-lying area subject to inundation and is unlikely to contain burials.	Construction
28	Byrne property, Broadwater	Direct (initial upgrade)	The project would be constructed over the majority of this site and directly impact on a number of features at the site including the stone quarry, one of the clay pits and domestic artefacts and archaeological disturbance may impact on subsurface features. Salvage excavations may mitigate impact to the site's significance through the realisation of some of its research potential. The project would also potentially indirectly impact on the well, which is within the project boundary through vibration impacts. The well may need to be closed or in filled for safety reasons.	Construction
Project section 10				
27	Meerscham Vale brickworks, Wardell	Direct (initial upgrade)	The remains of the brickworks were not visible on site, with test excavations not guaranteed to find any remains. However, as any remains on site (such as remnant brick and brick waste, footings of kilns or other buildings) would be unobtrusive and possibly below the ground surface, construction activities in and near the site could result in archaeological disturbance, damaging or destroying any remains. However, there is only a low likelihood of uncovering artefacts due to the sparse historical evidence and lack of physical evidence.	Construction

Item no	Item name	Impact	Impact description	Timing
			If brick material or any other historical heritage remains are discovered during construction, appropriate measures would be implemented (refer to section 13.4).	
29	'Stonehenge' property, Wardell	Direct and indirect (initial upgrade)	The project would require complete demolition of the main residence (original house) and would destroy a large section of the drainage canal on the property. However, it would only have a low impact on the heritage item, as the heritage significance of the site relates to the dairy buildings, yards and movable heritage items on the property, and these would not be affected by the project. As no evidence of potential sub-surface archaeological artefacts has been found on the site, salvage excavations are not warranted. The 1940s residence has been identified for architectural noise treatments to control noise levels.	Construction and operation
30	Bamboo stands, properties 723 and 725, Wardell	No direct or indirect impact	N/A	N/A
31	Potential house site, Wardell	N/A	N/A	N/A
Multiple project sections (sections 2,6 and 7)				
33	High Conservation Value Old Growth Forests	Direct (initial and class M upgrade)	The project would remove trees that fall within the listing, with all impacted areas adjacent to the existing highway. It should be noted that in some areas, mapping of the item covers non-timbered land such as the existing highway. The project would impact on 2.14 hectares (0.001 per cent) of the total 172,257 hectares of listed area (calculated based on the construction footprint as identified in Chapter 6 (Description of the project – construction)). Areas impacted are in project sections 2 (Glenugie State Forest), 6 (north of Mororo Road and south of Devils Pulpit upgrade) and 7 (adjacent to Tabbimoble Swamp Nature Reserve). All impacted areas are adjacent to the existing highway, with some of the area within the heritage boundary comprising the existing highway. The project would not impact on any Old Growth Forest that is located within any conservation reserve. Indirect impacts (such as increased exposure to light) would not impact on the heritage significance. Most areas affected by the project are situated adjacent to the existing Pacific Highway and are therefore currently subject to this type of indirect impacts. The removal of trees in these locations would have little impact on the heritage significance of the entire heritage item due to the small area of clearing required.	Construction

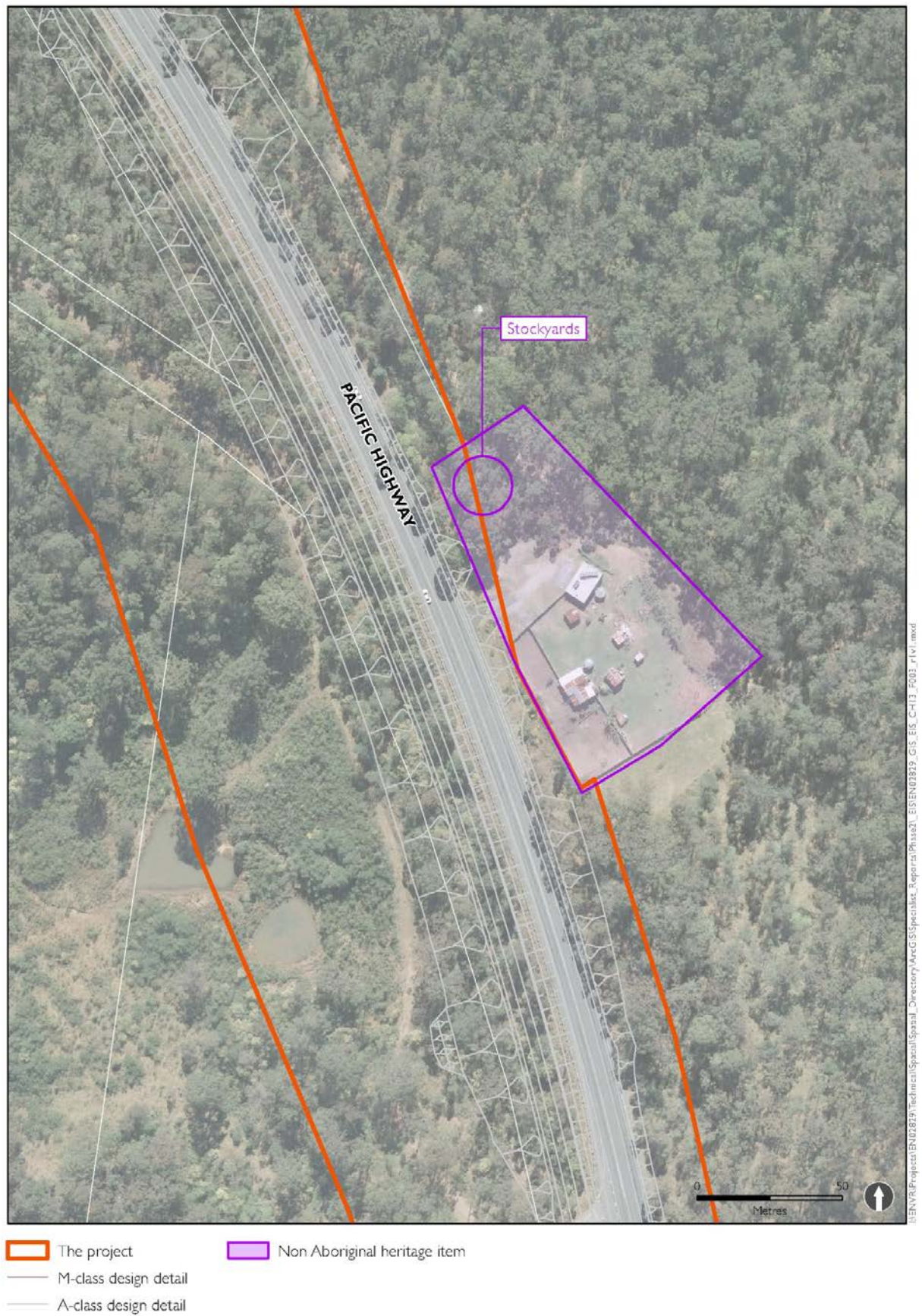


Figure 13-13: Heritage item 2: House, sheds and stockyards, Milleara

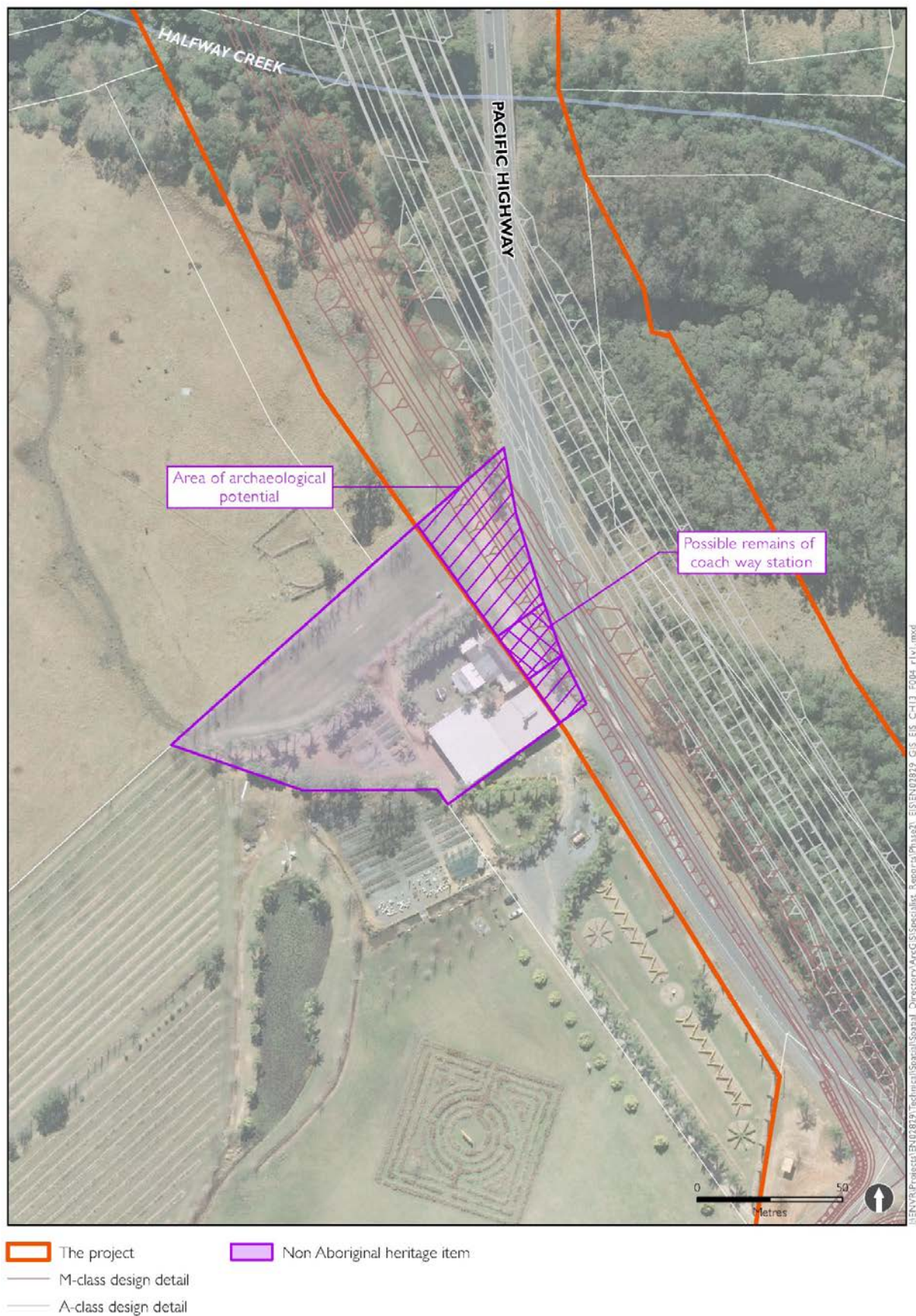


Figure 13-14: Heritage item 7, Service station complex, Halfway Creek

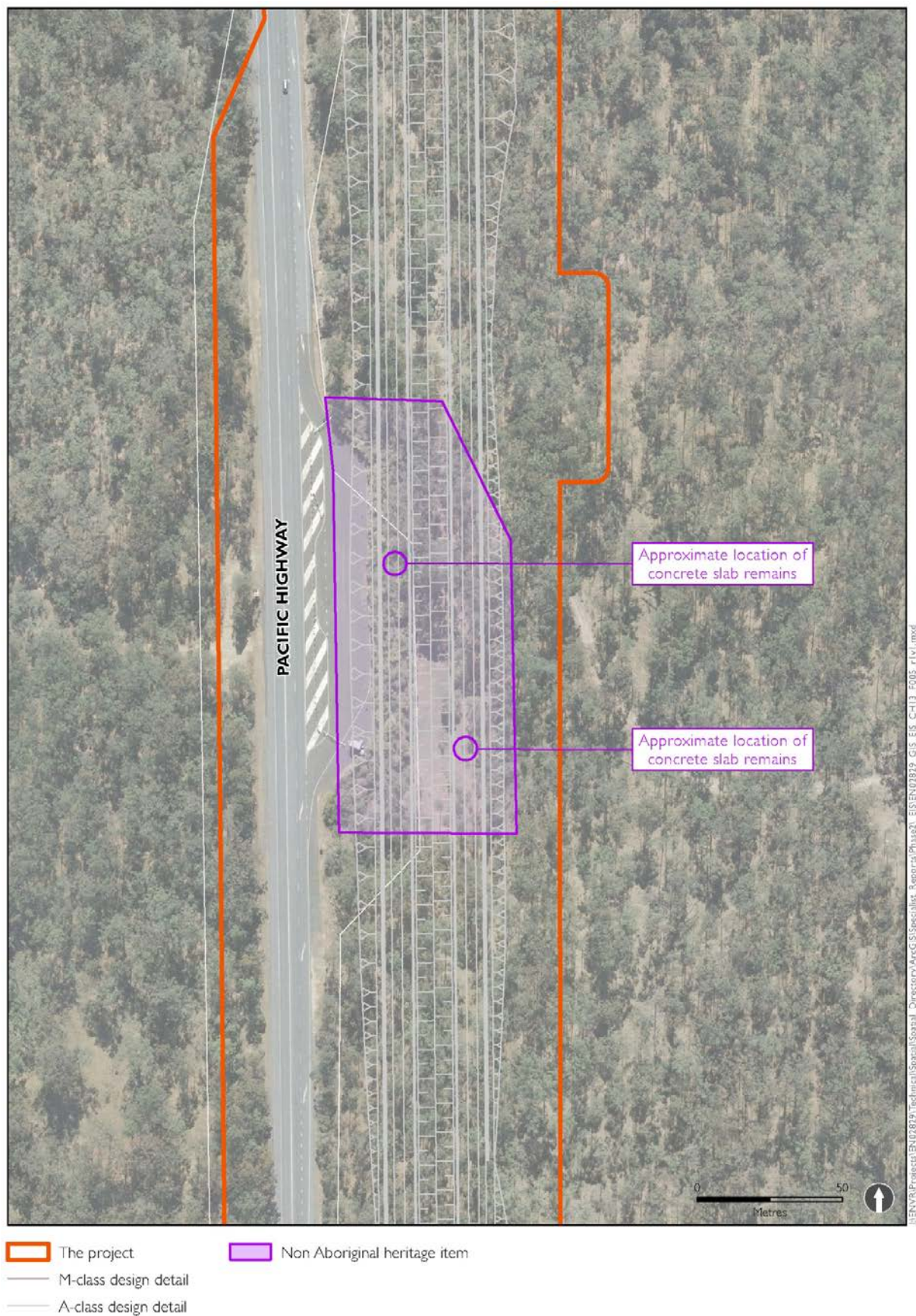


Figure 13-15: Heritage item 35, Six Mile tick gate remains, Glenugie



Figure 13-16: Heritage item 36, North Coast Railway Branch Tramway, Glenugie



Figure 13-17: Heritage item 11, Tyndale residence

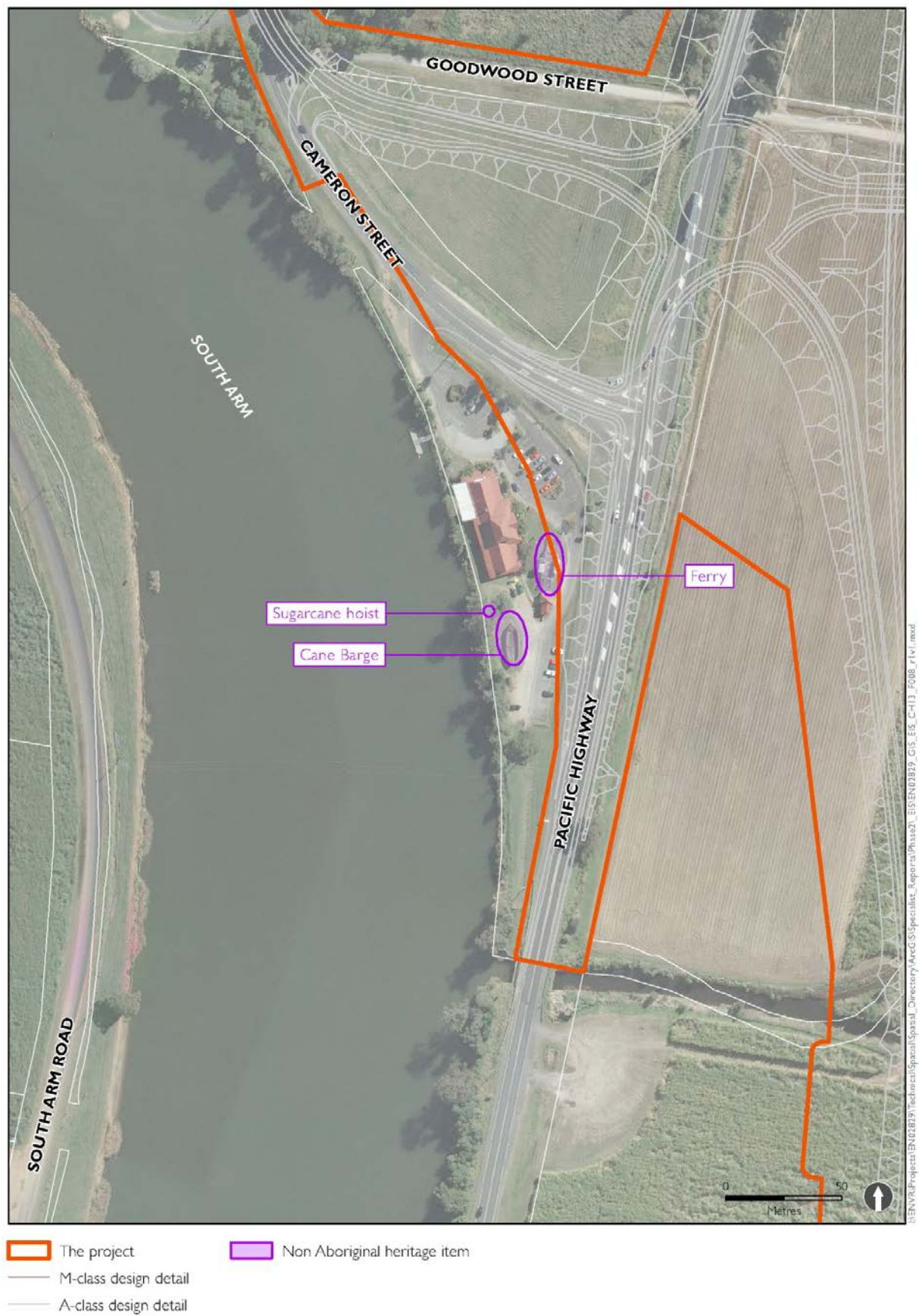


Figure 13-18: Heritage item 12, Maclean punt and former Ashby ferry

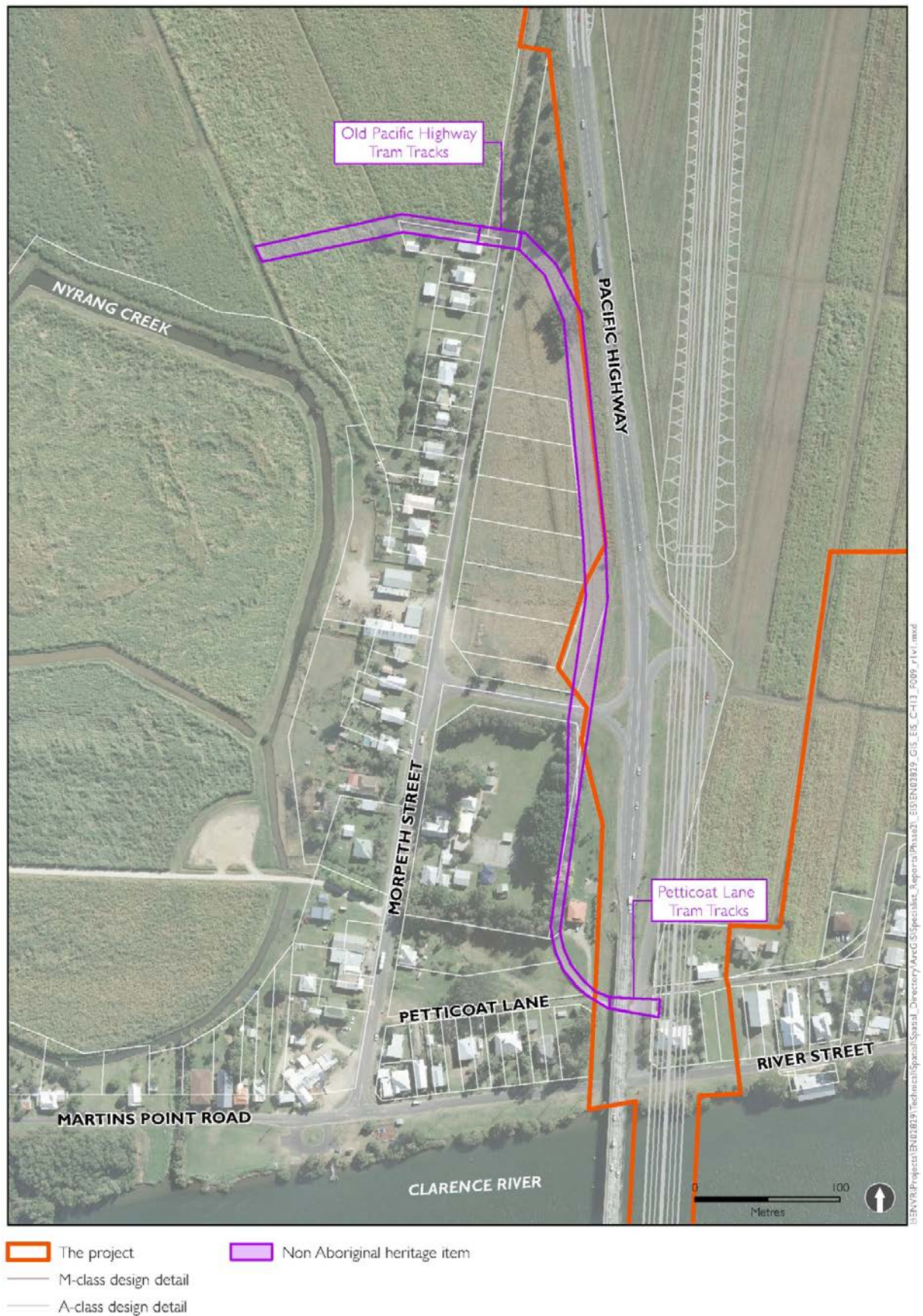


Figure 13-19: Heritage item 17 Harwood tram tracks, Harwood

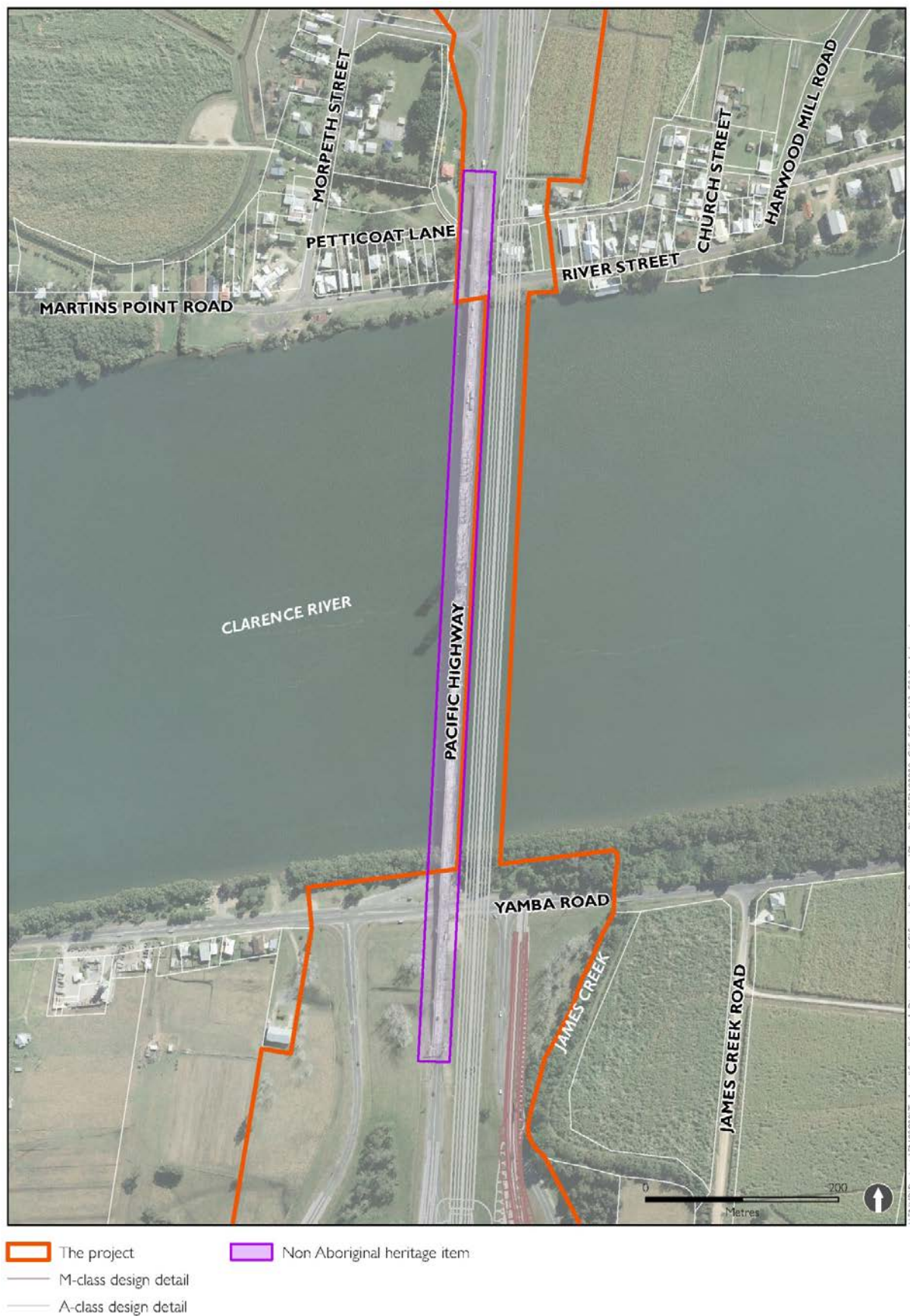


Figure 13-20: Heritage item 20, Harwood Bridge, Harwood



Figure 13-21: Heritage item 21 Convent, Harwood

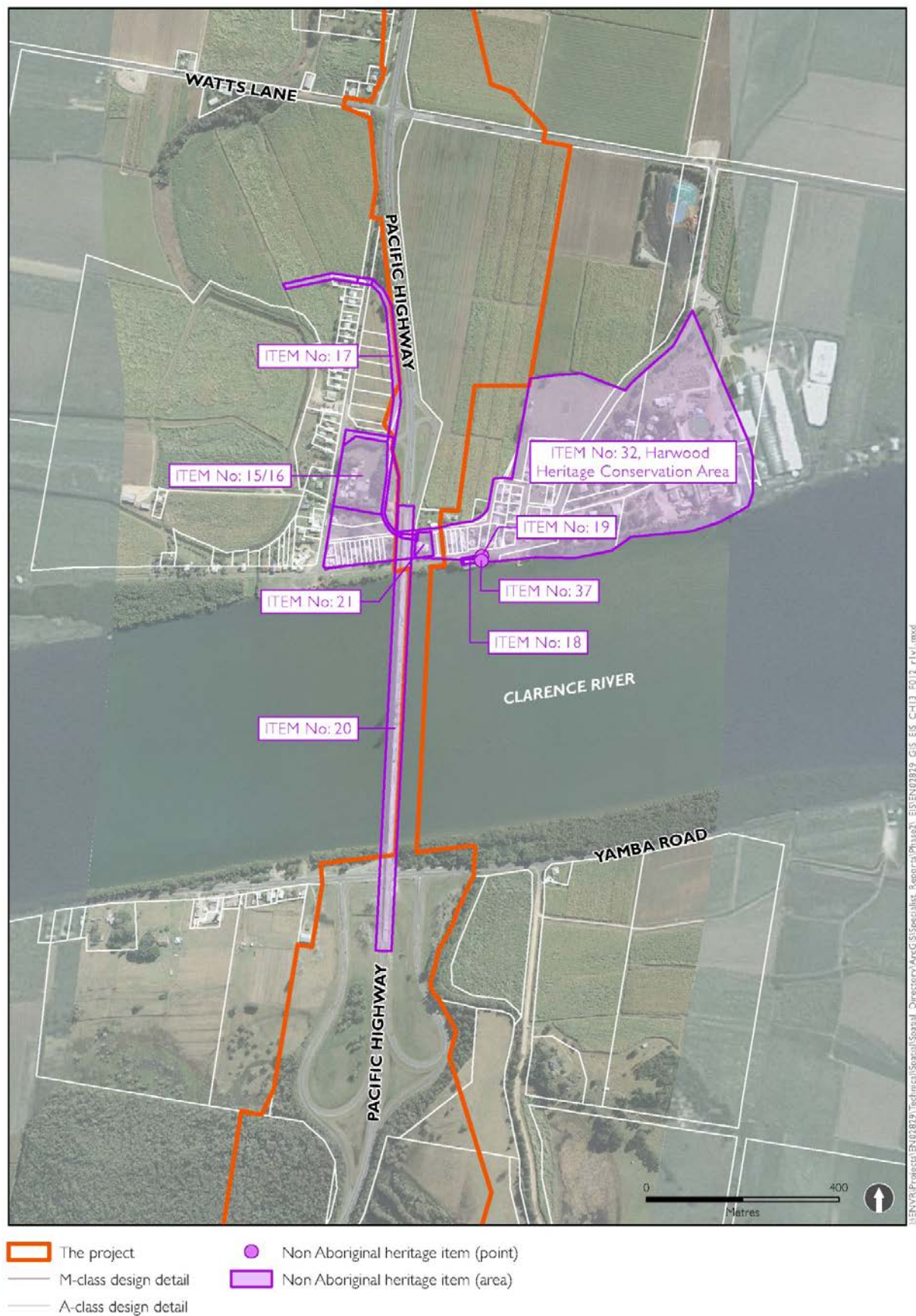


Figure 13-22: Heritage item 32 Harwood Heritage Conservation Area

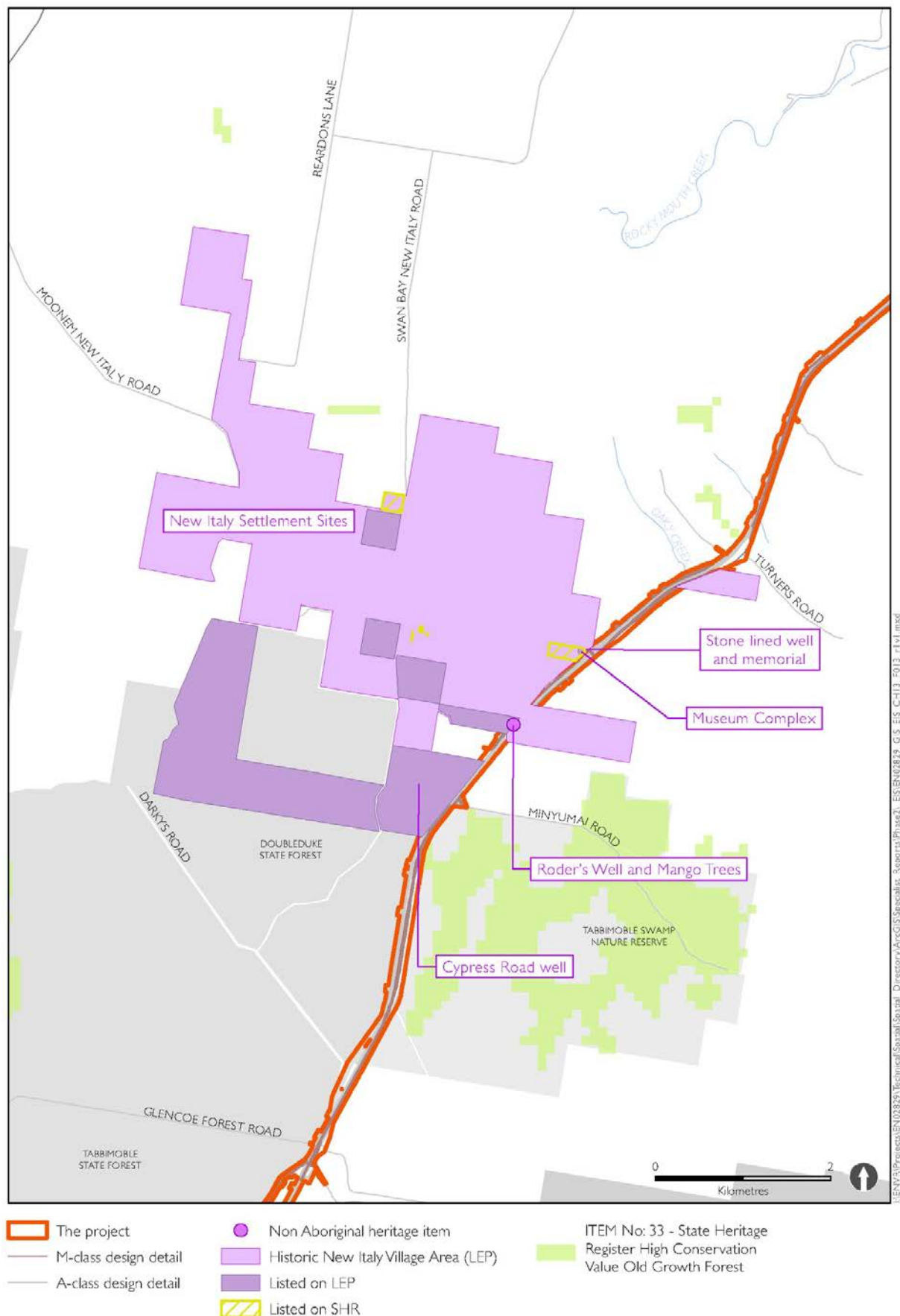


Figure 13-23: Heritage item 23 New Italy Settlement sites

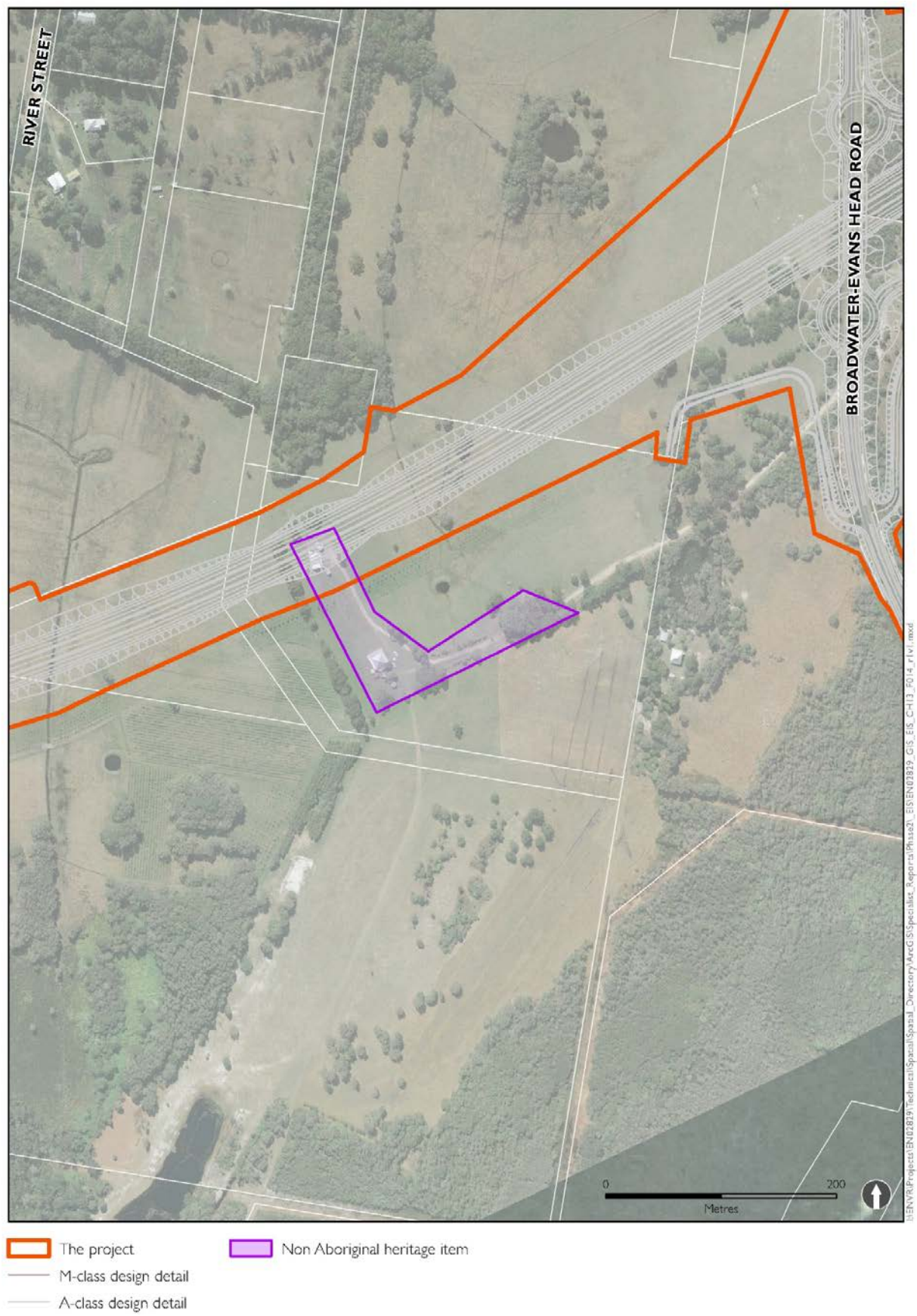


Figure 13-24: Heritage item 26 Maloney property, Broadwater

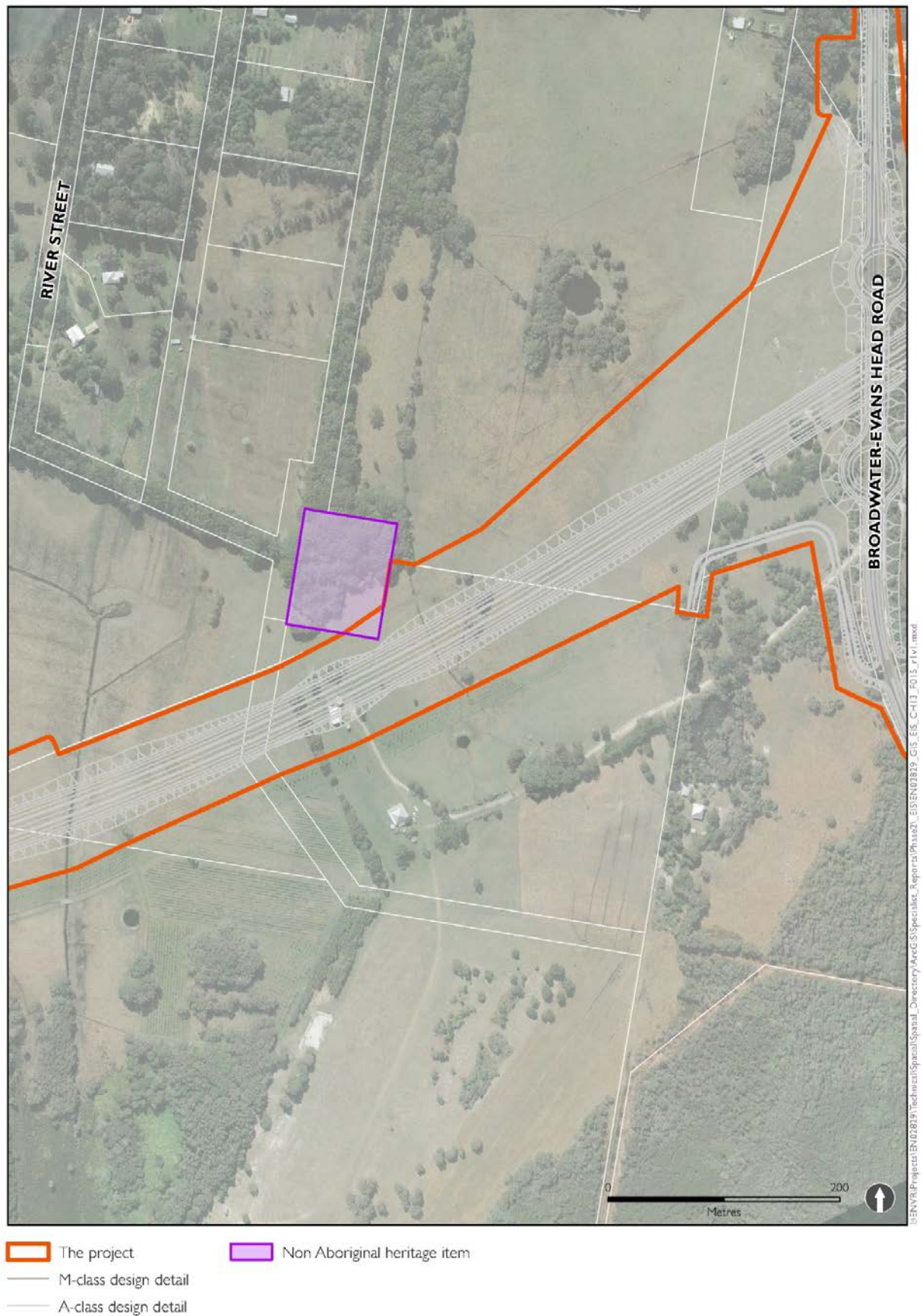


Figure 13-25: Heritage item 38 Cemetery reserve

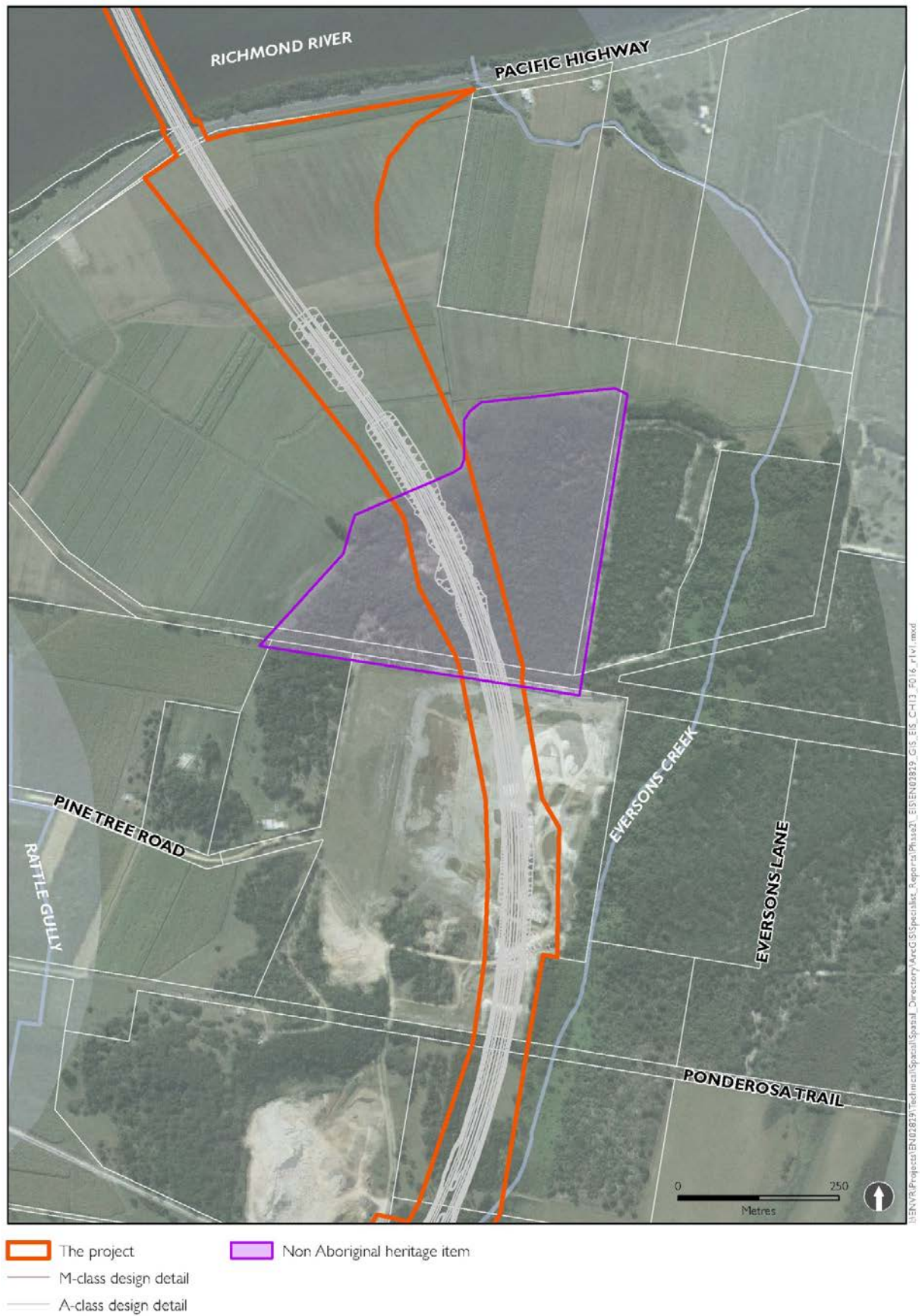


Figure 13-26: Heritage item 28 Byrne property, Broadwater

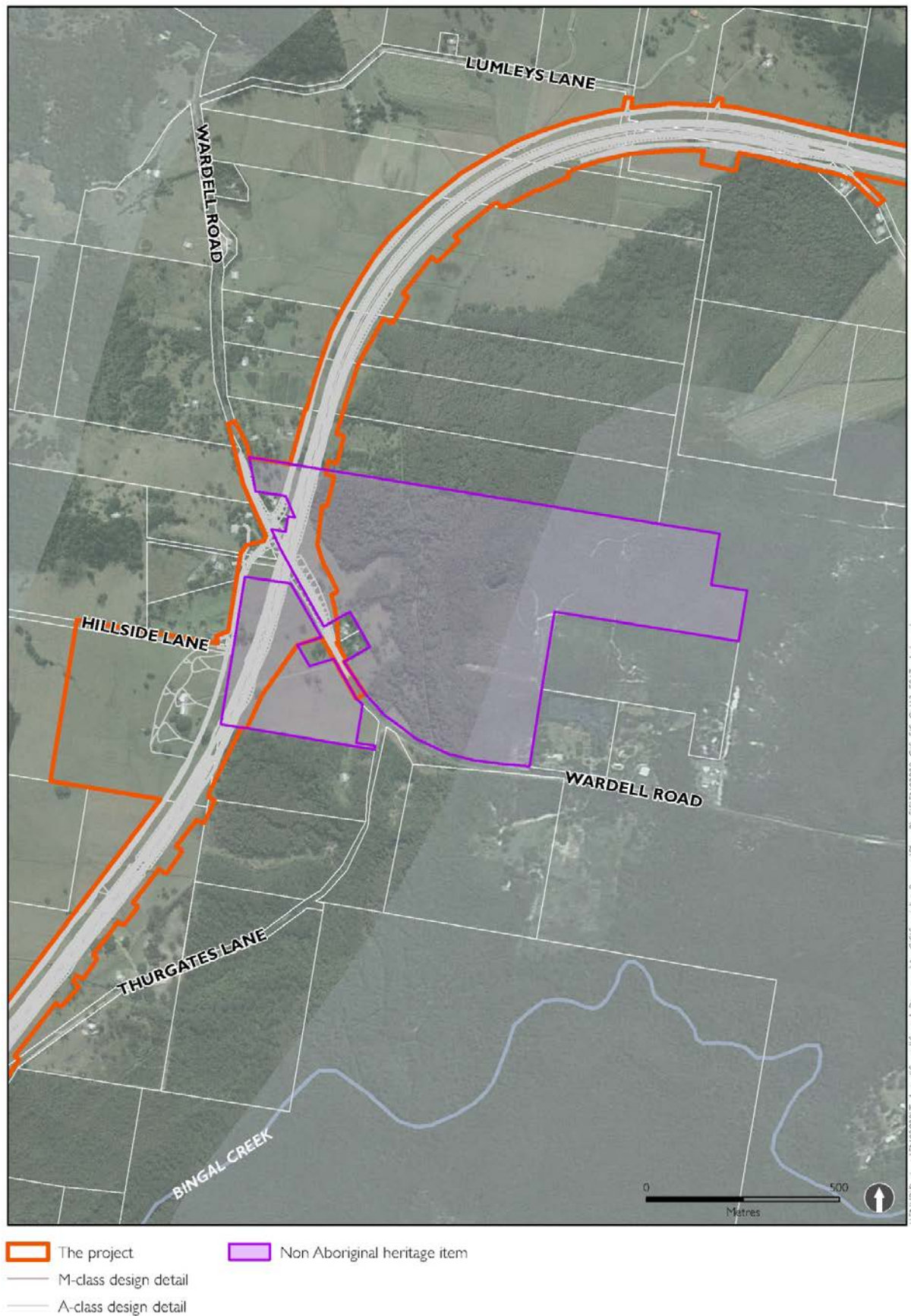


Figure 13-27: Heritage item 27 Meerschaum Vale brickworks, Wardell

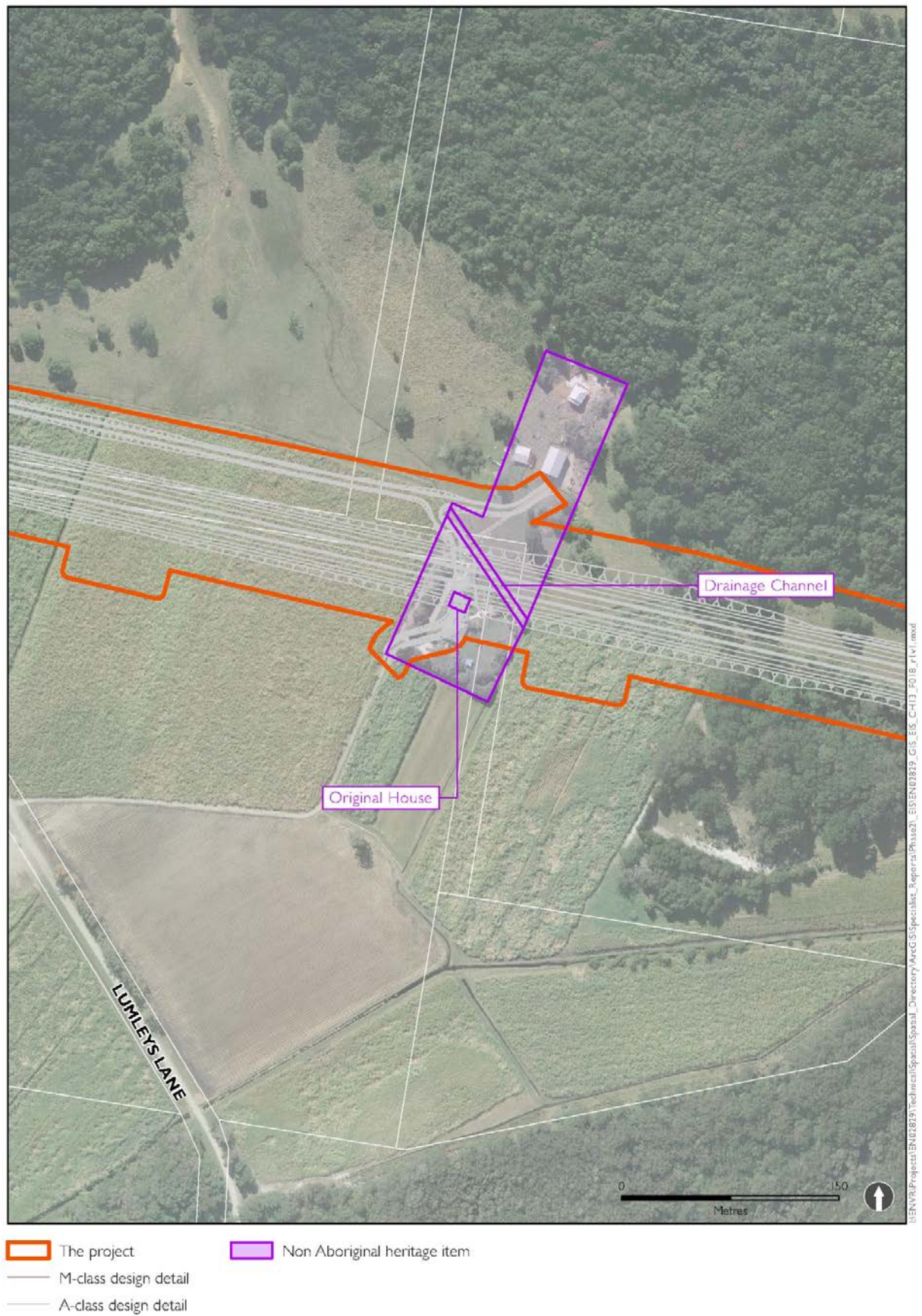


Figure 13-28: Heritage item 29 'Stonehenge' property, Wardell

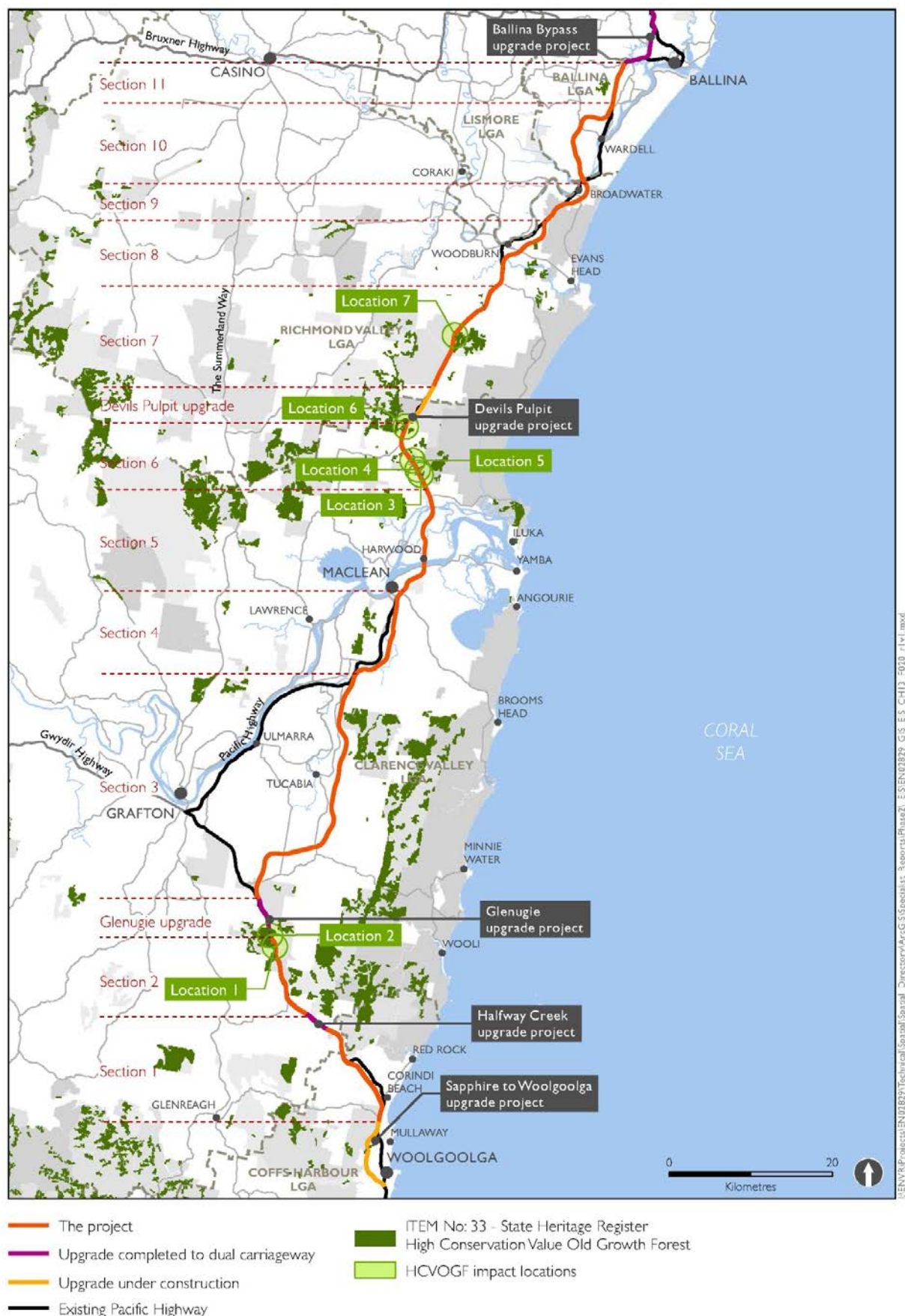


Figure 13-29: Heritage item 33 High Conservation Value Old Growth Forest

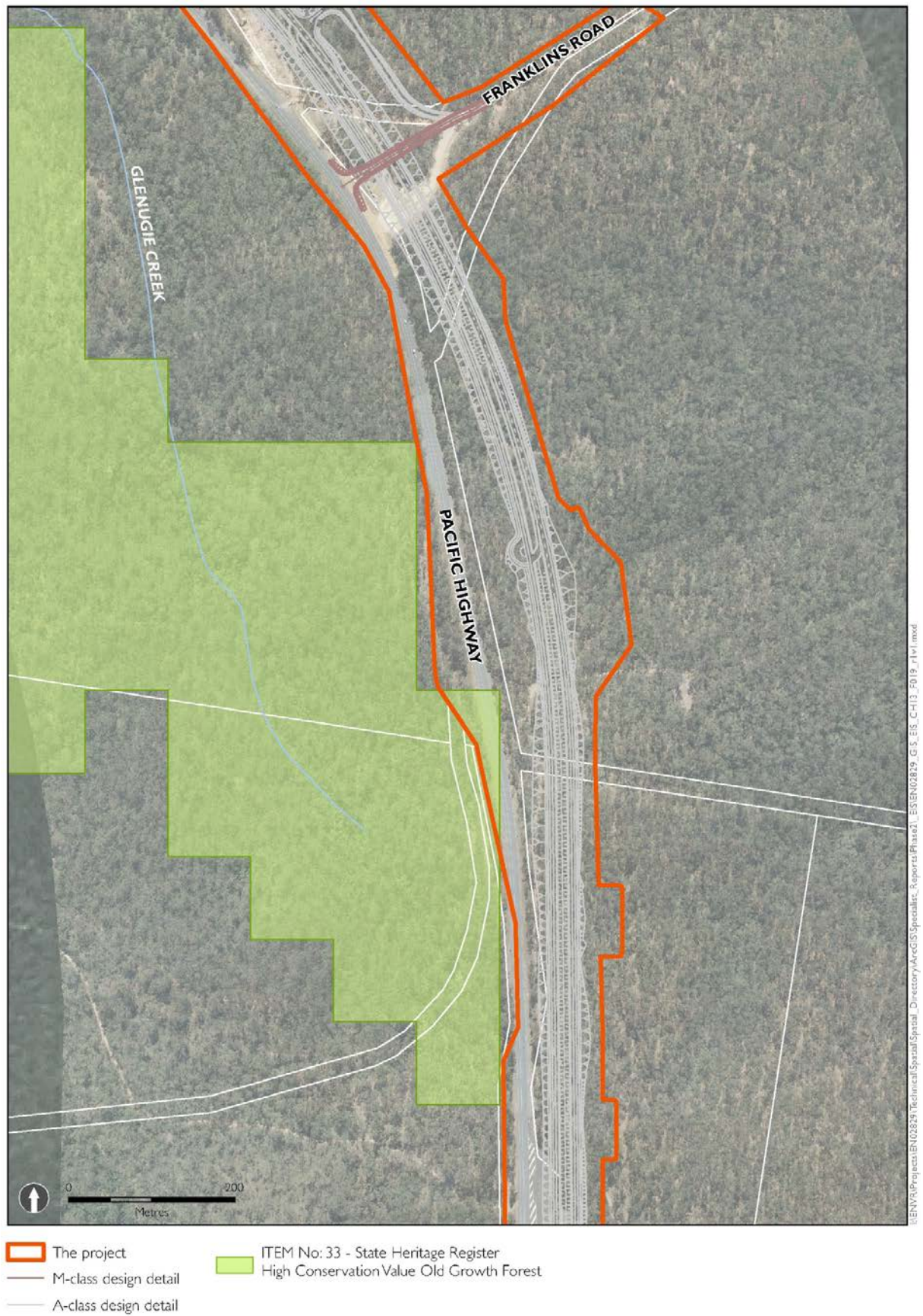


Figure 13-30: Heritage item 33 High Conservation Value Old Growth Forests Location 1

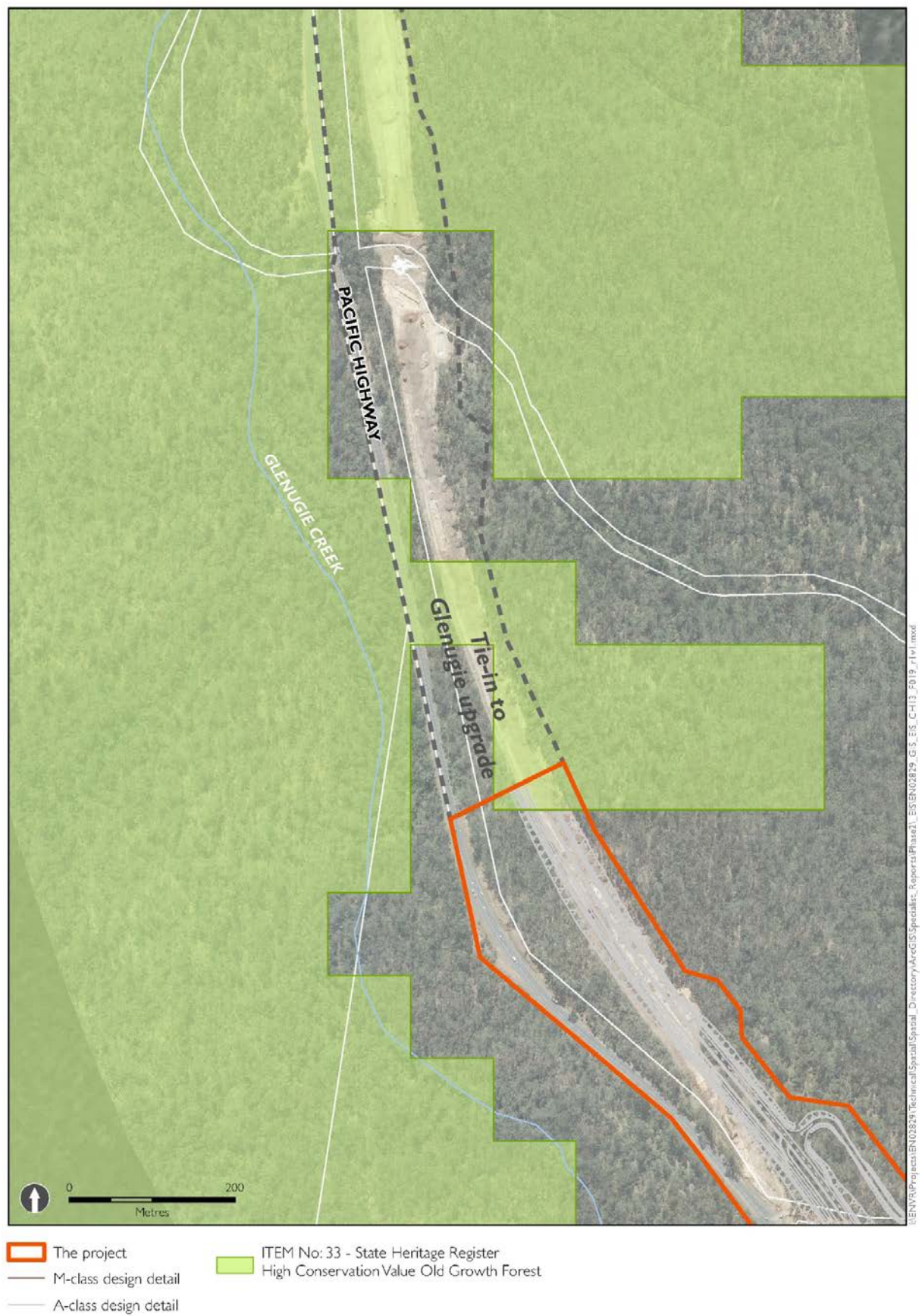


Figure 13-31: Heritage item 33 High Conservation Value Old Growth Forests Location 2

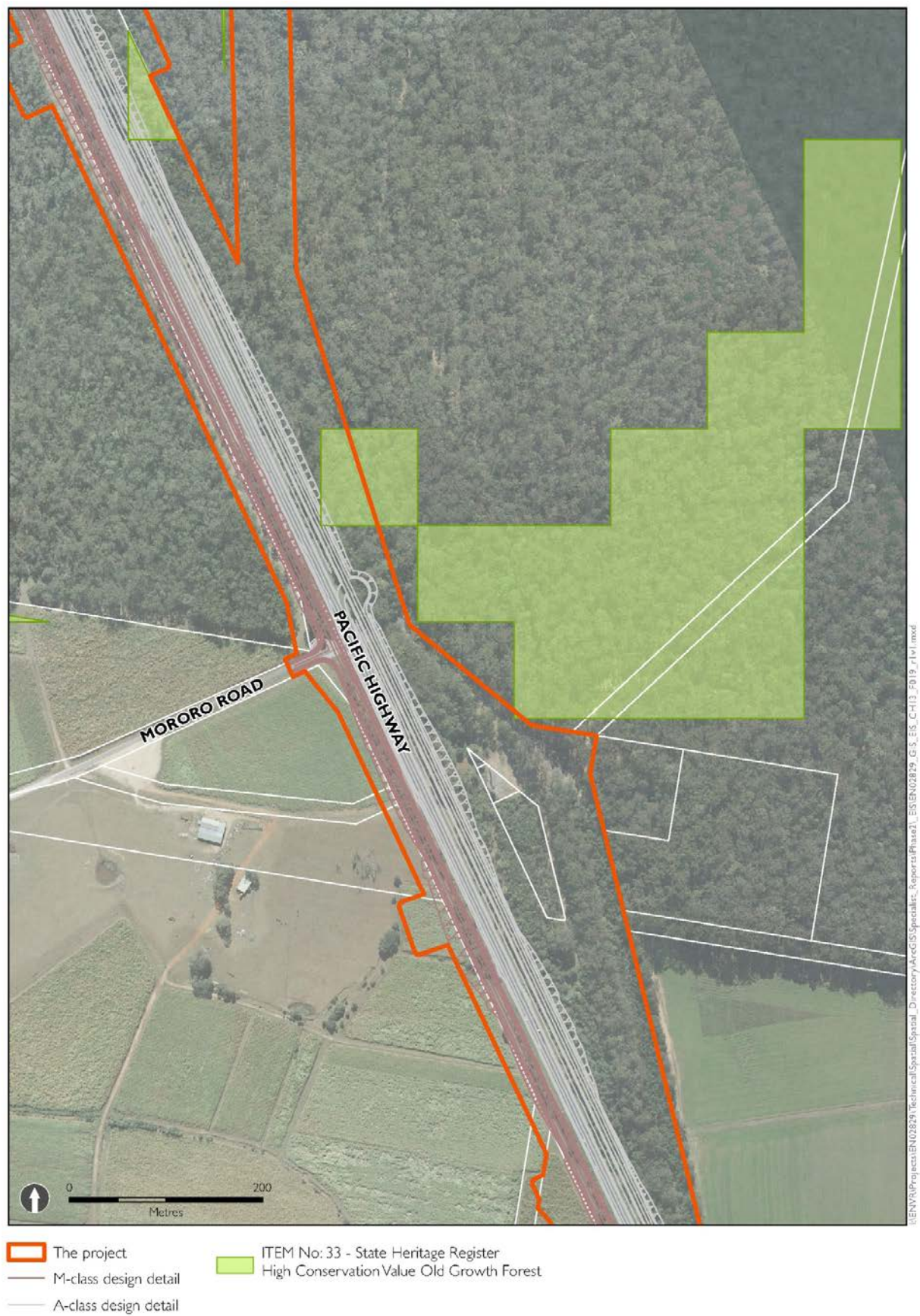


Figure 13-32: Heritage item 33 High Conservation Value Old Growth Forests Location 3



Figure 13-33: Heritage item 33 High Conservation Value Old Growth Forests Location 4



Figure 13-34: Heritage item 33 High Conservation Value Old Growth Forests Location 5



Figure 13-35: Heritage item 33 High Conservation Value Old Growth Forests Location 6



Figure 13-36: Heritage item 33 High Conservation Value Old Growth Forests Location 7

13.3.4 Assessment of impacts of ancillary facilities

Of the 81 identified potential ancillary facility locations, only nine were identified as having a medium likelihood of the presence of previously unrecorded or unknown historical heritage sites (refer to Table 13-4). At these nine locations, field surveys (and significance assessment and impact assessment where heritage items are identified) would be undertaken in parallel with the Environmental Impact Statement, to adequately manage the potential impacts.

Table 13-4: Likelihood of unknown historical sites/remains at ancillary facilities locations

Location	Site no	Outside project boundary	Known historical heritage sites	Obvious historical heritage features visible from aerial imagery
Project section 2				
17.2 – 17.5 RHS	1b	Yes	No	Yes. Cleared area behind service station, which appears to be building foundations. 2004 imagery appears to be stables or similar beside rectangular paddock.
Project section 3				
61.1 – 61.5 RHS	8	Yes	No	Yes. Possible old sheds/sawmill.
Project section 4				
77.1 – 77.2 LHS	4c	Partial	No	Yes. Possible modern house and older sheds.
79.5 – 80.0 LHS	6	Partial	No. 500 m south of item 22, <500 m south of item 12.	Yes. Late 19 th or early 20 th century house, corrugated shed, other outbuildings, farm equipment vehicles – possible significance. Modern brick house, outbuildings and fenced paddocks – not likely significant.
Project section 6				
103.1 – 103.8 RHS	3a	Partial	No	Yes. Large cleared paddock, some trees, large old shed and other structures. Part of this is in the design boundary and not identified during previous assessment so may not be significant.
Project section 8				
132.0 – 132.2 LHS	2b	Partial	No	Yes. Cleared paddock, dam, fences, modern house, possible yards/foundations and historical remains in front paddock/yard.
Project section 9				
136.8 – 137.2 LHS	1	Yes	No	Yes. Cleared paddock, tree plantation, pond areas, driveway lines with palms, formerly cultivated paddock – not likely significant. Large shed, damaged roof, appears old construction, possible associated house, equipment/vehicles – possible historical heritage.
Project section 10				
156.1 – 156.6 RHS	4	Yes	No. <1 km east of item 29 Stonehenge.	Yes. Possible drain part of the late 19 th century/ early 20 th century drainage union drain system.
158.3 – 158.7 LHS	6	Partial	No	Yes. Possible deposits/rubbish piles/house sites and water tanks likely related to pastoralism.

13.3.5 Cumulative impacts

The project would have a low cumulative impact on known heritage items (that is, items listed on heritage registers) in the region. (The region is defined as the local government areas of Coffs Harbour, Clarence Valley, Richmond Valley and Ballina, through which the project would pass.) It has been found that:

- There are 212 heritage sites listed on local environmental plans in the region, and only three of these (less than 1.5 per cent) would be impacted
- There are four heritage items in the localities passed through by the project, that are listed on the State Heritage Register, and only two of these would be impacted by the project (New Italy Settlement Landscape (item 23) and High Conservation Value Old Growth Forest (item 33)).

The cumulative impact on known heritage items by type of place in the region is identified in the following sections.

Towns and villages

The project would have a low cumulative impact on towns and villages.

The majority of places listed on local environmental plans and the State Heritage Register in the project region are buildings in towns and villages. As the project would bypass most towns, this would reduce the cumulative impact on 'town and village' type heritage items. Only one 'town and village' type heritage item would be impacted by the project – Harwood Convent (item 21).

The convent is also a religious heritage item, of which there are many (churches, cemeteries etc) in the region listed on local environmental plans; there is also one on the State Heritage Register. There are two other convents protected on local environmental plans in the region – the Woodburn Convent and the Maclean Convent and Rectory.

Therefore, the project would have a low cumulative impact on religious heritage items.



Photo 3: Item 21 Convent within Harwood village

Brickmaking

The project would have a low cumulative impact on known brickworks items/places.

The Meerschaum Vale Brickworks site (item 27) may potentially be impacted by the project. There are three other brickworks sites protected by local environmental plan listing in the region: at Broadwater, Maclean and South Grafton. These three sites are of greater integrity and have more substantial remains than are likely to exist at Meerschaum Vale.

Transport

The project would have a low cumulative impact on transport heritage items/places.

The project would have a low cumulative impact on the historical infrastructure of the Pacific Highway heritage item, and the majority of evidence of the earlier highway route and other transport infrastructure would not be impacted by the project.

There are a high number of listed transport-related heritage items in the region. The region's local environmental plans list 22 transport-related sites including roads, road bridges, rail bridges, road tunnels, ferry approaches and landing sites (most related to the Pacific Highway route), river crossings, wharfs, and dry docks. Seven road bridges within the region are listed on the RMS Section 170 Register.

Agricultural and pastoral

In terms of heritage place types, the project would have the greatest impact on agricultural and pastoral heritage items/places.

Five agricultural and pastoral heritage places would be directly impacted by the project. Fourteen agricultural/pastoral places were identified on the region's local environmental plans including homesteads, sheep/cattle dips, fencing, farm buildings, stockyards, a silo, bails and a tank.

The impacted places include representative examples of the important regional industries of sugarcane growing (eg Byrne property – item 28) and dairying (eg Maloney property – item 26, and Stonehenge property – item 29).

Heritage places that pertain to sugarcane growing and sugar production have a low representation in local heritage lists. There are only four sugar-specific places listed on the local environmental plans for the region: Tyndale cane barracks, a cane grab at Broadwater, and three sets of tramway lines (likely related to sugar) at Iluka, Empire Vale and Coffs Harbour. The additional three sections of cane tram tracks in Harwood would either not be directly impacted or could be protected from direct impact from the project.

Therefore, the direct impact on the area of the Byrne property (item 28), where the cane cutters and farm workers resided, would represent a substantial cumulative impact on known heritage items in the region.



Photo 4: Item 26 Maloney Property (Buttery/Creamery and Dairy), Broadwater

Similarly, heritage places that pertain to dairying also have a low representation in local heritage lists. There are two butter factories (Coffs Harbour and Lower Southgate) and one dairy and bails at Stockyard Creek.

Therefore, the direct impact on the dairy and creamery at the Maloney property and the house at the Stonehenge property would represent a substantial cumulative impact on the listed heritage items relating to dairying in the region.

Other agricultural/pastoral heritage places are at the New Italy Settlement sites (item 23), which were the scene of a variety of agricultural and pastoral pursuits. The project would have indirect impacts on one State Heritage Register-listed component of the New Italy Settlement Landscape, which would result from the proposed change of access for visitors to the New Italy Museum Complex under the motorway upgrade.

The project would also have direct impacts on two local environmental plan-listed components of New Italy:

- The memorial and stone-lined well (I150). The direct impact on the memorial can be mitigated through its relocation, while indirect impacts to the well may also be managed
- Roder's stone-lined well and mango trees (I149). The project would destroy these items.

There are several other wells situated elsewhere at the New Italy Settlement sites, and at least four other wells listed on the region's local environmental plans. Therefore, the cumulative impact on wells (which are important items related to agriculture and pastoralism) through the removal of Roder's Well would be moderate. Salvage excavations of Roder's Well and the future protection of the other wells would minimise the cumulative impact on this finite heritage resource and potentially provide information which would enhance knowledge of the agricultural and pastoral history of the area.

Migrant contributions

Cumulative impacts on heritage items/places relating to non-British migrants would be high, due to the very low number of sites of this type being listed on heritage registers.

The New Italy Settlement Landscape is a key heritage place that shows the contribution of non-British migrants to the region.

The project would have direct impacts on the local environmental plan-listed components of the New Italy Settlement sites. These impacts would not be minor, with two key components affected. Additionally, the motorway upgrade would adversely impact the State Heritage Register-listed component – the New Italy Museum Complex.

Given the uniqueness of the New Italy Settlement Landscape in the region and NSW, the cumulative impacts on the site would be high. The management of impacts through a salvage excavation of Roder's well and the relocation of the memorial would contribute towards reducing those impacts.

Cumulative impacts from the Pacific Highway Upgrade Program

The cumulative impact on historical heritage from other Pacific Highway upgrade program projects as a whole is also relatively low, with 35 heritage items identified as being subject to direct or indirect impacts for projects where data was available (further details are available in Working paper – Historical (non-Aboriginal) heritage). The types of heritage items impacted include towns and villages, road and river transport, farming and pastoral, mining and quarrying, and communications.

The category of heritage items impacted are similar to those identified for the Woolgoolga to Ballina upgrade - towns and villages, transport, farming and pastoral sites - however this is reflective of the character of the rural and regional areas through which the Pacific Highway passes along the majority of its length.

13.4 Management of impacts

Measures for managing impacts on non-Aboriginal heritage items are detailed in Table 13-5. These mitigation measures are a summary of those identified in Working paper – Historical (non-Aboriginal) Heritage.

The identified mitigation measures that would be put in place for impacted non-Aboriginal heritage items include the following range of outcomes:

- Protective measures resulting in avoidance of impacts to heritage significance
- Relocation of heritage item while maintaining heritage significance
- Realisation of the information/research potential of heritage item through archaeological salvage excavation or archival recording prior to destruction.

Mitigation measures for a number of heritage items include archaeological salvage excavations. These would be required to recover any subsurface artefacts prior to construction commencing and are not archaeological test excavations required for the purposes of impact assessment.

KEY TERM – Archaeological salvage excavation

A program of on-site activities to realise the research potential of a heritage item including excavation, sampling, artefact recovery, photography, drawing and recording; and off-site activities including contextual research, artefact cataloguing and analysis, reporting, conservation and lodgement of artefacts and records.



Photo 5: Item 2 House, sheds and stockyards, Milleara

Table 13-5: Non-Aboriginal heritage mitigation measures

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
Unidentified historical heritage materials, features and/or deposits	HH1	If at any time during construction associated with the project, unidentified historical heritage materials, features and/or deposits are found, the NSW Roads and Maritime Services' Standard Management Procedure: Unexpected Archaeological Finds (2011) would be followed, specifically: - All construction that could potentially harm the historical heritage materials, features or deposits would cease (including stopping all construction within at least 10 metres). Only construction that is required to comply with occupational and environmental health and safety standards and/or to protect the historical heritage would occur. Construction that does not have the potential to harm the historical heritage would continue only if it is outside the minimum 10-metre buffer - A suitably qualified and experienced archaeologist (the archaeologist) would be contacted as soon as practicable in relation to the unexpected discovery of any historical heritage and would be responsible for recording, in detail, the location and context of any historical heritage. Any materials, features and/or deposits would be analysed and/or catalogued and any official site records would be created or updated (where appropriate). The archaeologist would also make recommendations for the management of the historical heritage in relation to the project - If avoidance of the heritage item were not possible, the archaeologist would conduct a salvage excavation. The aims of the salvage excavation would be to obtain as much information as possible from the historical heritage materials, features and/or deposits - The archaeologist would provide a report detailing the excavation, salvage and analysis results to the Heritage Branch of the Office of Environment and Heritage at the completion of the salvage - RMS would be responsible for the costs associated with assessing, cataloguing, labelling and packaging (etc) any historical heritage materials, features and/or deposits - Construction would only recommence within the area of exclusion when appropriate protective measures have been undertaken, relevant records updated and/or completed and when all parties agree there is no other prudent or feasible course of action.	Construction	All
Human skeletal remains	HH2	Should human skeletal remains be identified during construction, the procedure outlined in AH7 would apply (refer to section 12.4 of this EIS).	Construction	All
Awareness of non-Aboriginal heritage items	HH3	Contractors would be given awareness training on non-Aboriginal historical heritage prior to commencement of construction works to ensure understanding of potential heritage items and the procedure in the event of discovery of historical heritage materials, features or deposits, or the discovery of human remains.	Construction	All

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
Ancillary facilities	HH4	At the nine proposed locations for ancillary facilities that have been identified as having medium potential for the presence of previously unrecorded or unknown historical heritage sites: Before the commencement of the use of the ancillary facilities, field survey would be undertaken by a suitably qualified and experienced heritage consultant. Any historical heritage items identified would be assessed for their level of significance. For those heritage items identified as being of state or local heritage significance an impact assessment would be undertaken and provided to the Heritage Branch of the Office of Environment and Heritage.	Pre-construction	All
	HH5	Where local or state significant heritage items are identified on an ancillary site and use of the site would impact on the heritage significance of the item, the site would not be used for ancillary facilities.	Pre-construction	All
	HH6	Where local or state significant heritage items are identified on an ancillary site and use of the site would not impact on the heritage significance of the item, appropriate management measures (such as barrier fencing) would be put in place to clearly identify the heritage item and exclude use of the ancillary site within the heritage item's curtilage. Use of these ancillary facilities may commence: - When the appropriate protective measures have been implemented - When the relevant records have been updated and/or completed.	Pre-construction	All
	HH7	Should any new ancillary facility locations not identified as part of this EIS be considered for use, a non-Aboriginal heritage assessment would be undertaken, with a database search and site walkover to identify any potential heritage items. If items are found, HH4-HH6 would be followed	Pre-construction	All
Impacts on item 2: House, sheds and stockyards, Milleara	HH8	A temporary barrier fence would be erected between the stockyards and the works area prior to road construction works commencing. The fence would remain in place until the conclusion of the works in the vicinity of the items at which time it would be removed. The batter slope would not be constructed within five metres of the stockyards.	Pre-construction and construction	1 (initial upgrade)
	HH9	The house has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact (SOHI) would be prepared for this item when the specific architectural noise treatments for the house are identified.	Pre-construction	1 (initial upgrade)
Impacts on item 7: Service station complex, Halfway Creek	HH10	Salvage excavation (to salvage any subsurface artefacts from the coach way station and early coach road) would be undertaken in an area extending from the project boundary running along the front of the complex buildings to the edge of the existing highway before construction starts in the vicinity of the heritage item. Excavations would be undertaken in accordance with Heritage Branch guidelines and under the supervision of an appropriately qualified and experienced historical archaeologist. An appropriate research design and methodology would be prepared to best realise the research potential of this area of the site.	Pre-construction and construction	2 (initial upgrade)

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
	HH11	The batter slope for the motorway upgrade would not be constructed within eight metres of the bar/restaurant building.	Construction	2 (initial upgrade)
	HH12	A temporary fence would be erected between the bar/restaurant building and the motorway upgrade construction before work starts in the vicinity of the heritage item. The fence would remain in place until construction is completed, at which time it would be removed.	Pre-construction and construction	2 (initial upgrade)
	HH13	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.	Pre-construction and construction	2 (initial upgrade)
	HH14	The old residence has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact (SOHI) would be prepared when the specific architectural noise treatments for the residence are identified.	Pre-construction	2 (initial upgrade)
Impacts on item 36: North Coast Railway Branch Tramway	HH15	Archival photographic recording would be undertaken in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its removal.	Pre-construction	2 (initial upgrade)
Impacts on item 11: Tyndale residence, Tyndale	HH16	Prior to the start of construction, the location and condition of the mature bunya trees would be recorded by an arborist. In consultation with an arborist, protective fencing would be erected adjacent to the property boundary to control impacts on the trees.	Pre-construction and construction	3 (initial upgrade)
	HH17	The residence has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact (SOHI) would be prepared when the specific architectural noise treatments for the residence are identified.	Pre-construction	3 (initial upgrade)
Impacts on item 12: Cane barge and former Ashby ferry, Maclean	HH18	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.	Pre-construction	4 (initial upgrade)
	HH19	Where appropriate, and before construction commences, any loose or unstable components of the heritage item would be secured to minimise vibration impacts and remain secured until the conclusion of construction, at which time the securing mechanism/s would be removed. Any methods to secure the heritage item would be reversible and not cause damage to the item.	Pre-construction and construction	4 (initial upgrade)
	HH20	RMS would install appropriate directional signage on both the northbound and southbound highway approaches to help maintain a high level of awareness regarding the heritage item's existence.	Operation	4 (initial upgrade)

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
Impacts on item 17: Harwood tram tracks, Harwood	HH21	The Petticoat Lane tram tracks section would have a protective covering placed over them, (eg a geo textile fabric and heavy duty metal sheeting or similar) to minimise impacts from construction in the area. The covering would be secured before construction and would remain in place until the end of construction.	Pre-construction and construction	5 (initial upgrade)
Impacts to item 20: Harwood Bridge, Harwood	HH22	The design of the new bridge would be undertaken in accordance with Bridge Aesthetics: Design Guidelines to Improve the Appearance of Bridges in NSW (RTA, 2012) with specific reference to section 6.1, New bridges next to existing bridges.	Pre-construction	5 (initial upgrade)
Impacts on item 21: Convent, Harwood	HH23	An archival photographic recording would be made of the convent building and its surrounds in accordance with the Heritage Branch guidelines How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998) prior to its relocation.	Pre-construction	5 (initial upgrade)
	HH24	The feasibility of relocating the building to an appropriate site within the Harwood Heritage Conservation Area would be investigated. The investigation would be undertaken in consultation with an appropriately qualified house removal contractor and an appropriately qualified heritage consultant.	Pre-construction	5 (initial upgrade)
Impacts on item 34 Townsend Residence, Townsend	HH25	The residence has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact (SOHI) would be prepared when the specific architectural noise treatments for the residence are identified.	Pre-construction	5 (initial upgrade)
Impacts on New Italy Settlement (State Heritage Register 1648), New Italy Museum Complex (item 23: New Italy Settlement sites, New Italy)	HH26	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.	Pre-construction and construction	7 (initial upgrade)
	HH27	Monitoring of dust would be undertaken at this location in accordance with the project dust management plan.	Pre-construction and construction	7 (initial upgrade)
	HH28	A temporary fence would be erected between the State Heritage Register boundary and the construction works before work starts in the vicinity of the heritage item. The fence would remain in place until construction is completed at which time it would be removed.	Operational	7 (initial and motorway upgrades)
	HH29	Appropriate directional signage to the New Italy Museum Complex would be installed at both the interchange at Woodburn and interchange at Illuka Road to divert visitors onto the service road in order to access the museum complex.	Operation	7 (motorway upgrade)

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
Impacts on New Italy Memorial and Stone-lined well (item 23: New Italy Settlement sites, New Italy)	HH30	Before construction starts, the memorial and flagpole would be removed from their current location and reinstated within the boundaries of Lot 1 DP207390, outside the project boundary to the north of the stone-lined well. This work would be undertaken under the supervision of an appropriately qualified monumental stonemason and a qualified heritage professional.	Pre-construction	7 (initial upgrade)
	HH31	An archival photographic recording and dilapidation survey would occur prior to the movement of the memorial and flagpole in accordance with Office of Environment and Heritage guidelines.	Pre-construction	7 (initial and motorway upgrades)
	HH32	A photographic condition survey would be undertaken of the condition of the heritage items in their re-located positions with any damage to the items from construction to be repaired once construction is complete.	Pre-construction	7 (initial and motorway upgrades)
	HH33	Monitoring of dust would be undertaken at this location in accordance with the project dust management plan.	Pre-construction and construction	7 (initial and motorway upgrades)
	HH34	A temporary fence would be erected between the new location of the memorial and flagpole and the construction works (with a buffer of five metres from the heritage items) before work starts in the vicinity of the heritage item. The fence would remain in place until conclusion is completed at which time it would be removed.	Pre-construction and construction	7 (initial and motorway upgrades)
Impacts on Roder's stone-lined well and orchard (item 23: New Italy Settlement sites, New Italy)	HH35	Salvage excavation would be undertaken to salvage any subsurface artefacts related to the well and adjacent wall. Excavations would be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist and in accordance with the Heritage Branch guidelines, including an appropriate research design and methodology in order to best realise the research potential of this area of the site.	Pre-construction and construction	7 (initial upgrade)
	HH36	Before construction starts in the vicinity of the orchard, the location and condition of each of the mango trees would be recorded by an arborist.	Pre-construction and construction	7 (initial upgrade)
	HH37	Protective barrier fencing to protect the mango orchard would be erected between the construction area and the trees with a buffer of at least five metres. This would be erected before construction starts in the vicinity of the items and would remain in place until the end of construction at which time it would be removed.	Pre-construction and construction	7 (initial upgrade)
	HH38	An archival photographic recording would be made of the mango orchard and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its removal.	Pre-construction	7 (class M upgrade)

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
Impacts on Historic New Italy Village Area	HH39	If any historical heritage remains are discovered at the New Italy Village Area during construction, management measure HH1 would be applied.	Pre-construction and construction	7 (class M upgrade)
Impacts on item 26: Maloney property, Broadwater	HH40	An archival photographic recording would be made of the buttery/creamery, the dairy and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to demolition.	Pre-construction	9 (initial upgrade)
	HH41	The homestead has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact (SOHI) would be prepared when the specific architectural noise treatments for the homestead are identified.	Pre-construction	9 (initial upgrade)
Impacts on item 27: Meerscham Vale brickworks, Wardell	HH42	If brick material or any other historical heritage remains are discovered during works, management measure HH1 would be applied.	Construction	10 (initial upgrade)
Impacts on item 28: Byrne property, Broadwater	HH43	An archival photographic recording would be made of the stone quarry and small clay pit in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) is to be undertaken prior to construction.	Pre-construction	9 (initial upgrade)
	HH44	Salvage excavations to the south of the quarry (to salvage any artefacts relating to of the impact area of the site situated to the south of the quarry) would be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist. Salvage excavation would be undertaken in accordance with the Heritage Branch guidelines including an appropriate research design and methodology in order to best realise the research potential of this area of the site.	Pre-construction	9 (initial upgrade)
	HH45	The brick-lined well would be retained in situ and protected from all impacts.	Pre-construction and construction	9 (initial upgrade)
	HH46	A photographic condition survey and structural audit of the brick-lined well would be undertaken of the current condition of the heritage item with any damage to the item from construction to be repaired once construction is complete.	Pre-construction	9 (initial upgrade)

Issue	Mitigation ID no.	Mitigation measure	Timing	Relevant section
	HH47	A detailed assessment of the level of vibration at the brick-lined well based on factors including distance from the blast site and the quantity of the explosive, and modelling of the predicted vibration levels at the brick-lined well. This assessment may result in additional mitigation measures for the structure including, but not limited to: • Construction of temporary or permanent supports or shoring within the brick-lined well • Stabilisation of the brick-lined well • Installation of vibration monitoring devices.	Pre-construction and construction	9 (initial upgrade)
	HH48	Protective barrier fencing would be erected around the brick-lined well with a 15-metre buffer before the start of construction and would remain in place until the conclusion of the work, at which time it would be removed.	Pre-construction and construction	9 (initial upgrade)
	HH49	Due to the proximity of the well to the roadway, the well may be closed for safety reasons. Any measures to close the well would ensure that the well could be accessed in the future for heritage research or other purposes and that no detrimental physical impact on the well occurs.	Operation	9 (initial upgrade)
Impacts on item 29: 'Stonehenge' Property, Wardell	HH50	An archival photographic recording would be made of the main residence and the drainage system and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its demolition. A detailed survey and recording of the location of the drainage system within the 'Stonehenge' property would also be undertaken.	Pre-construction	10 (initial upgrade)
	HH51	The 1940s residence has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed Statement of Heritage Impact would be prepared when the specific architectural noise treatments for the residence are identified.	Pre-construction	10 (initial upgrade)
Impacts on item 38: Cemetery reserve	HH52	To protect the heritage item from construction activities, the boundary of the reserve would be clearly identified on site/construction plans as an area of exclusion, and temporary barrier fencing would be constructed continuously along the project boundary: • Immediately south of the cemetery reserve • Where it crosses the south east corner of the cemetery reserve • Where it follows the east boundary of the cemetery reserve.	Pre-construction and construction	9 (initial upgrade)
Impacts on Item 33: High Conservation Value Old Growth Forest	HH53	During detailed design, further consideration would be given to minimising the area of High Conservation Value Old Growth Forest to be cleared.	Pre-construction	2, 6 and 7
	HH54	The area to be cleared would be clearly identified on-site. High Conservation Value Old Growth Forest adjacent to areas to be cleared would be delineated to avoid accidental disturbance on further areas.	Construction	2, 6 and 7

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