Transport for NSW

New Intercity Fleet Springwood to Lithgow Rail Corridor Modifications

Review of Environmental Factors
Volume 2

August 2017

Appendix C Construction compounds

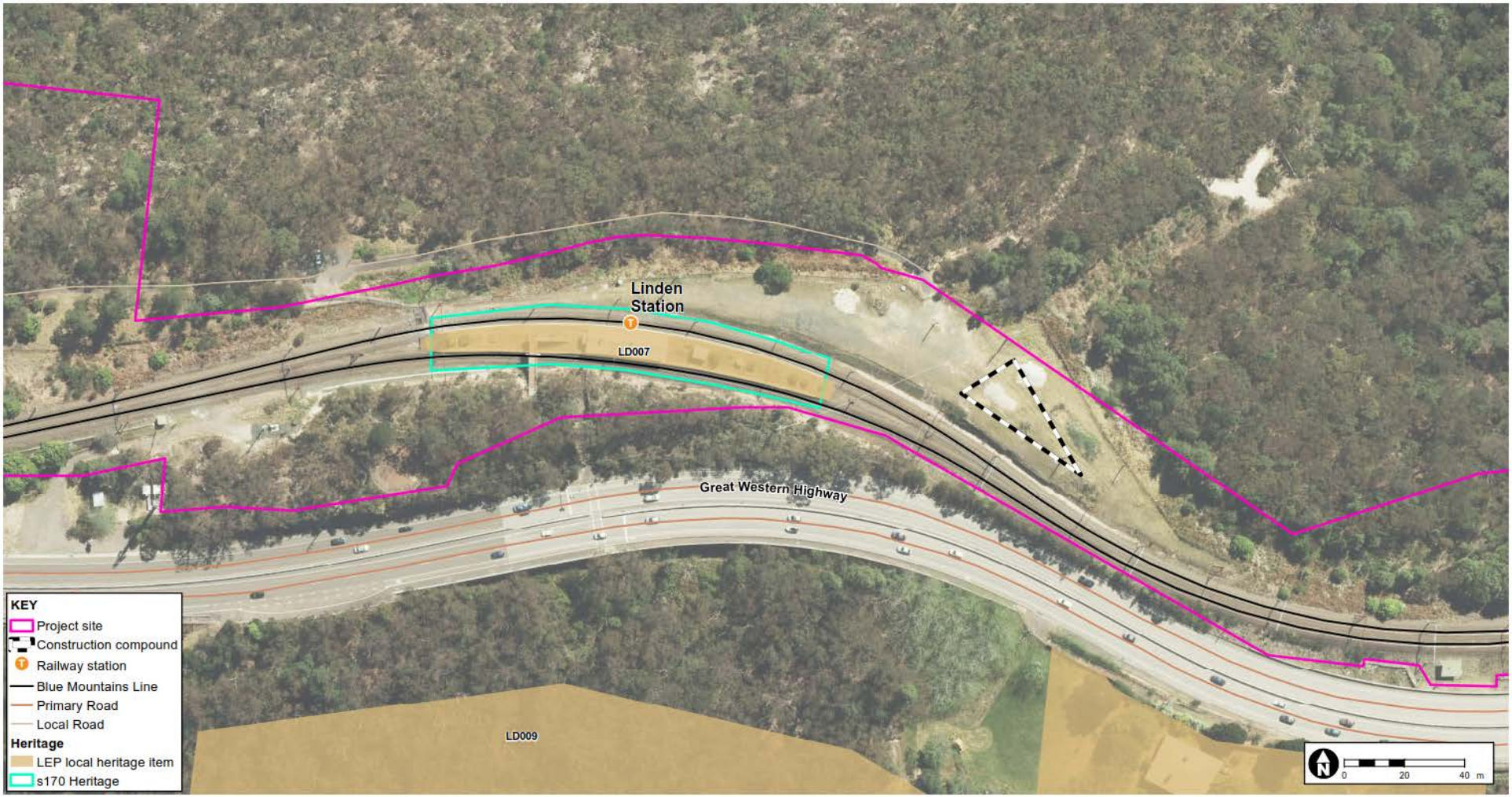


Figure 17 Linden Station - locations of primary construction compounds and registered heritage items

Figure 18 Woodford Station – locations of primary construction compounds and registered heritage items

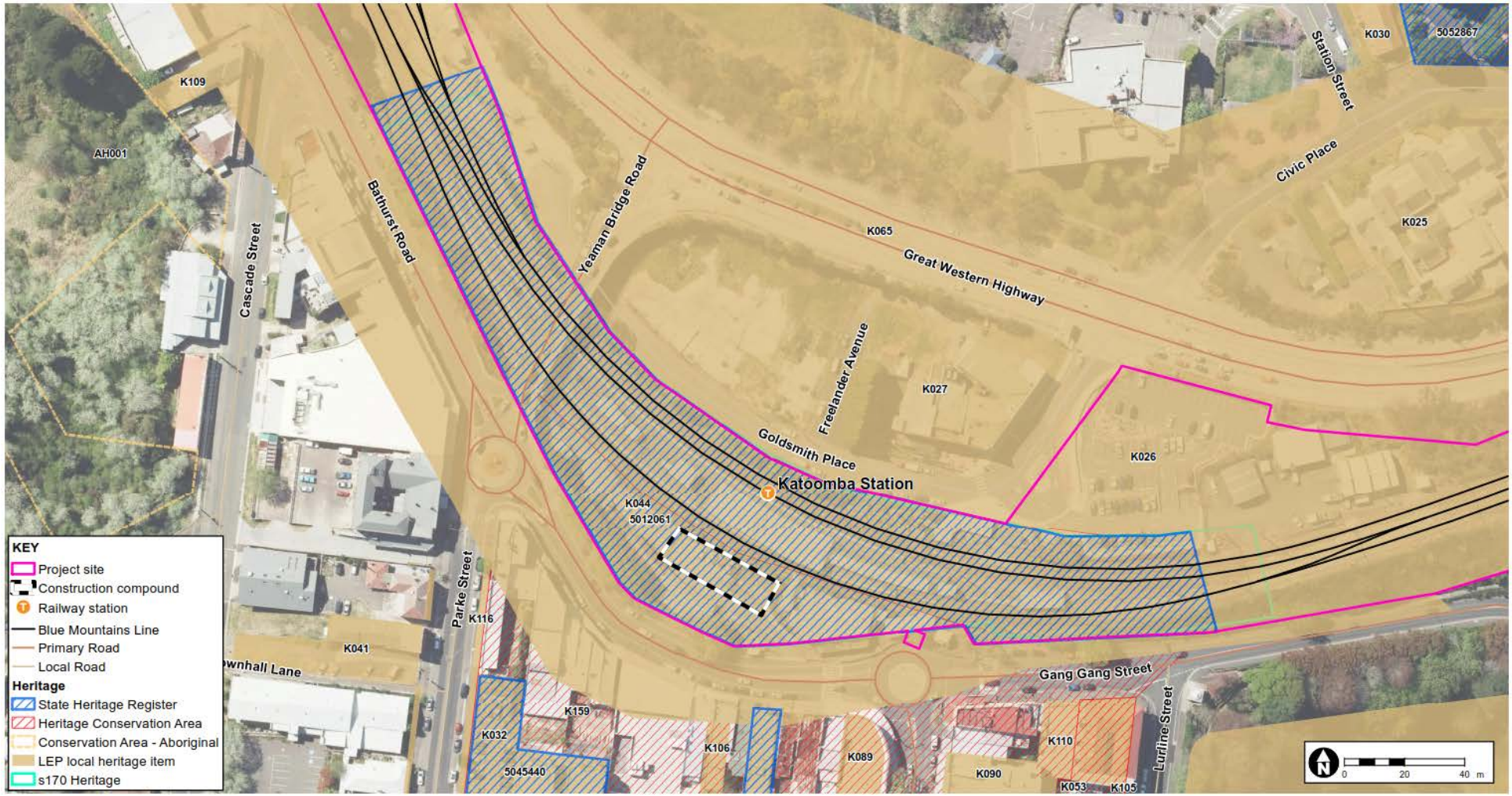


Figure 19 Katoomba Station - locations of primary construction compounds and registered heritage items

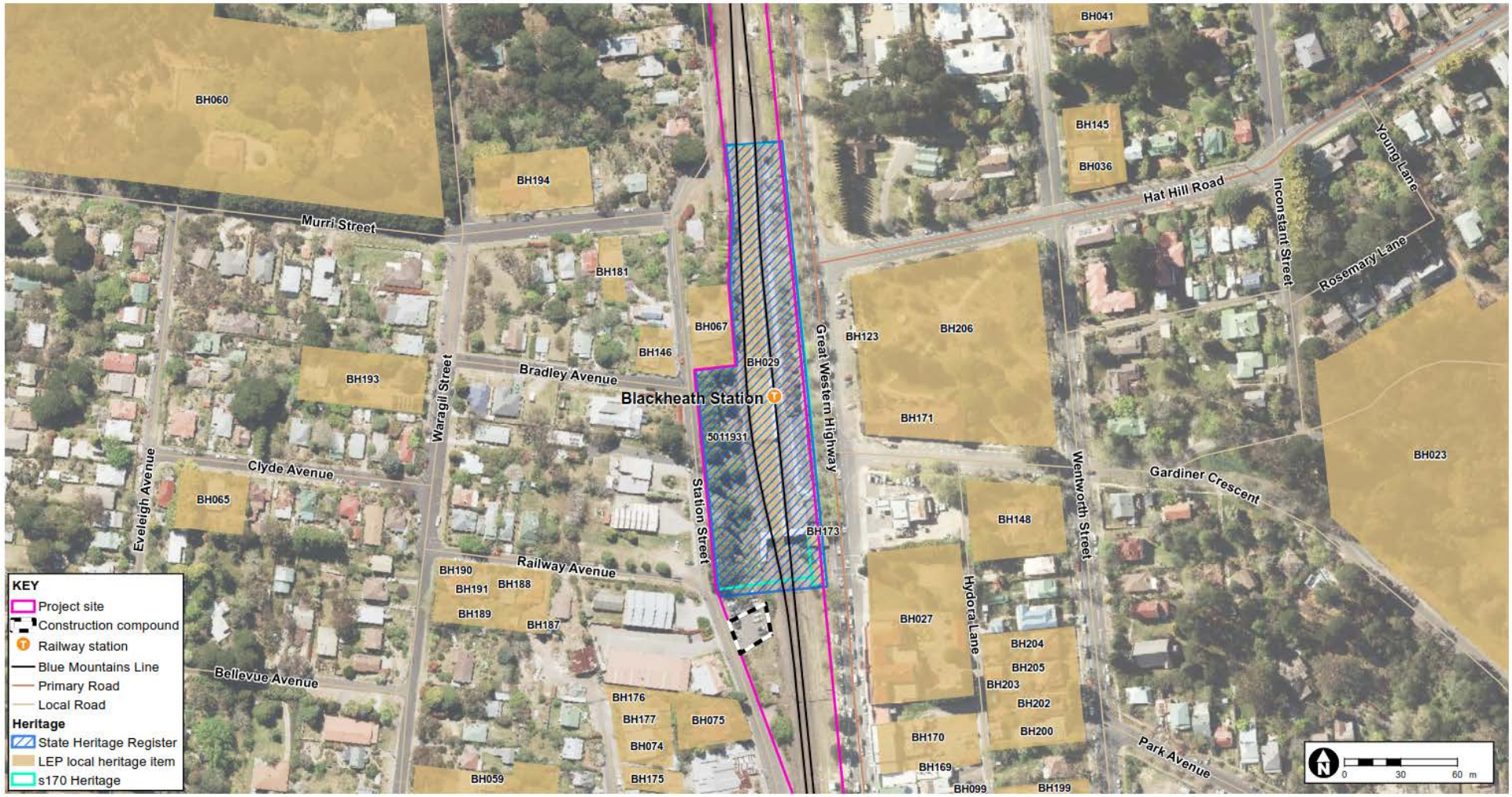


Figure 20 Blackheath Station - locations of primary construction compounds and registered heritage items

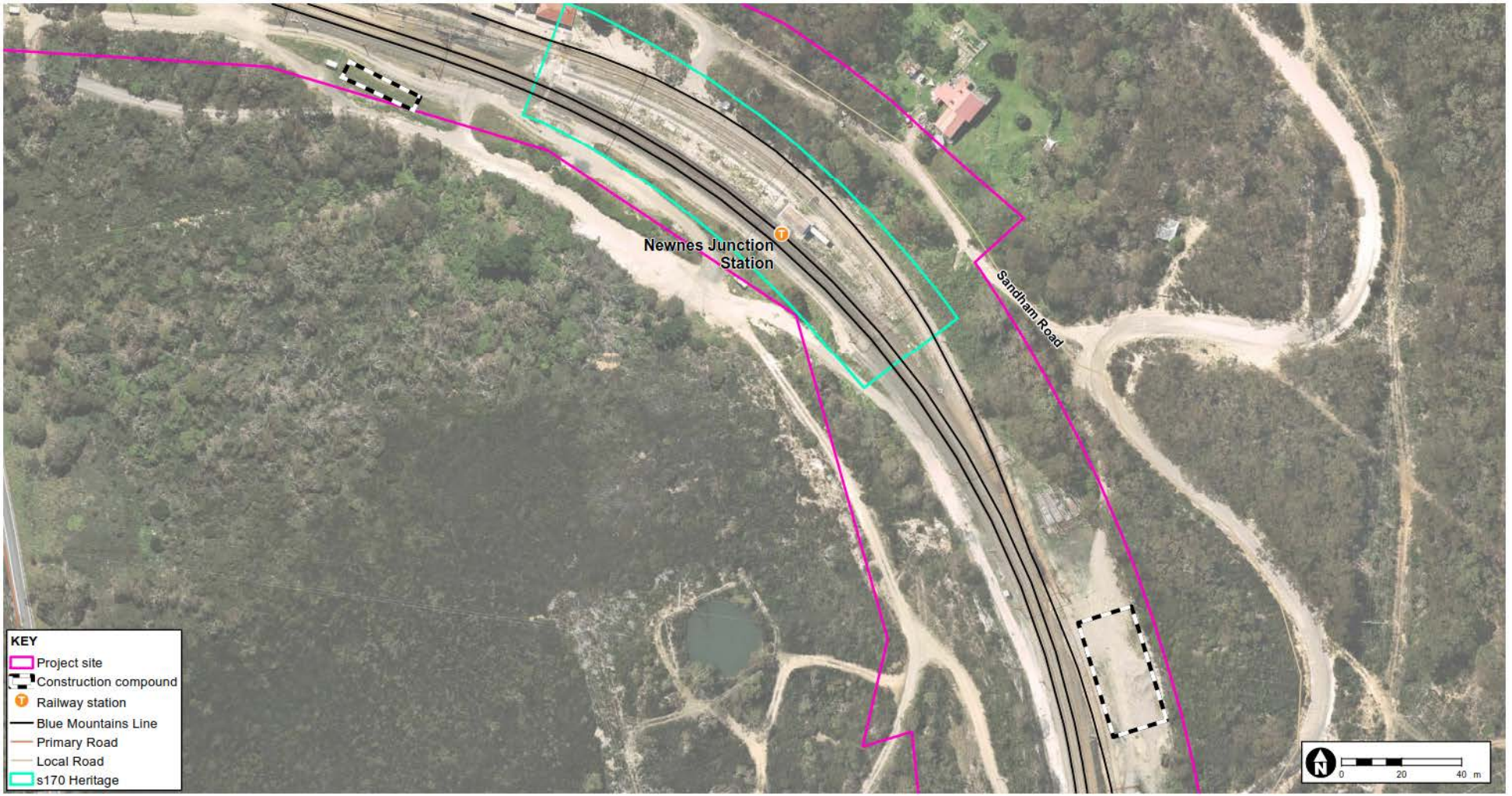


Figure 21 Newnes Junction Station - locations of primary construction compounds and registered heritage items

Figure 22 Construction compound located approximately 1.8 kilometres south west of Newnes Junction Station and registered heritage items

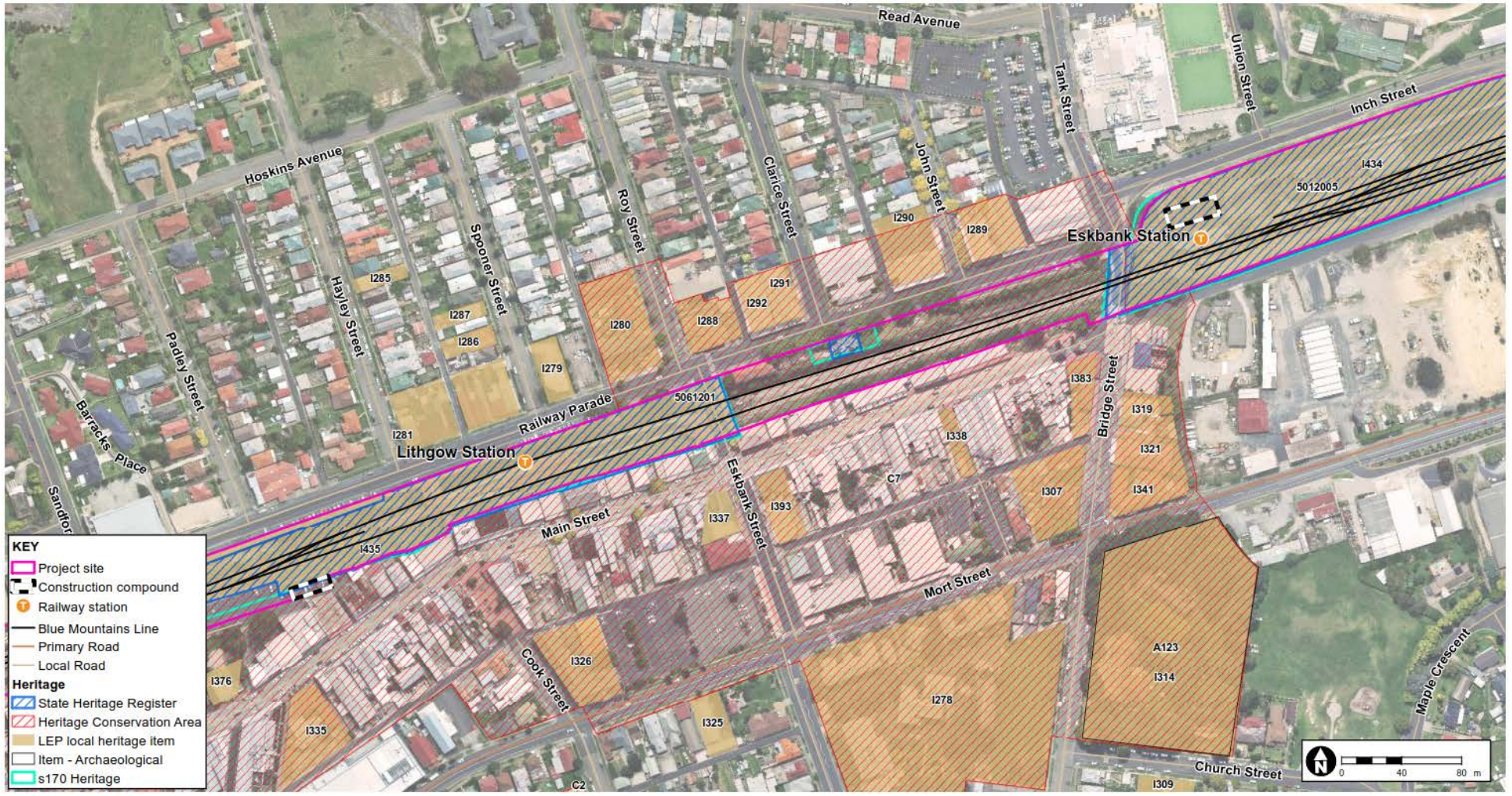


Figure 23 Lithgow Station and Eskbank Station - locations of primary construction compounds and registered heritage items

Appendix D Neutral or beneficial effect assessment

NorBE assessment – will there be a neutral of beneficial effect on water quality?

(Assessment must consider surface and ground waters and must consider construction & operational stages.)

1. Are there any identifiable potential impacts on water quality? What pollutants are likely? Major potential pollutants are sediments (fine and coarse), nitrogen, phosphorus, pathogens and hazardous chemicals and contaminants such as oil/fuel.

During construction and/or post construction?

Potential pollutants during construction include sediments from excavation and ground disturbance, chemicals, materials and fuels from plant and equipment. Furthermore track slewing (moving of ballast, existing tracks and foundations) could temporarily affect the local hydrology/flow paths and results in sediments being discharged to the drainage network. There are a number of minor drainage structures, stormwater networks and track drainage in the vicinity of and under the Project site. Construction activities may also directly impact the underground stormwater network and surface water runoff. However, existing drainage points would be protected during construction to minimise the potential for damage. Post construction, during operation, there would not be significant difference from current operation and hence would not generate any further pollutants, sediments or contaminants that could impact on water quality.

2. For each pollutant list the safeguards needed to prevent or mitigate potential impacts on water quality (these may be Water NSW endorsed current recommended practices and/or equally effective other practices)?

Sediments and potential contaminants generated during excavation and construction would be managed through the following:

- Prior to commencement of works, a site-specific Erosion and Sediment Control Plan for each site would be prepared in accordance with the 'Blue Book' *Managing Urban Stormwater: Soils and Construction Guidelines* (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures would be implemented prior to commencement of works and maintained throughout construction.
- Stockpiles would be appropriately maintained, covered and contained which could include covering or regular watering to minimise dust.
- Traffic movements on any disturbed areas would be limited.
- Wash down areas would be appropriately constructed, and the collected material disposed of off-site.
- Disturbed surfaces would be stabilised as soon as possible.
- Wash down of concrete mixers, concreting equipment and trucks would take place in an appropriate area away from drainage lines and stormwater drains.
- If groundwater is encountered during excavation works, it would be managed in accordance with the requirements of the *Waste Classification Guidelines* and *Water Discharge and Reuse Guideline* (TfNSW, 2015b).

For a more in-depth explanation around potential impacts to water quality and for further mitigation measures in relation to soils and water, refer to sections 6.8 and 7.2 in the REF.

Chemicals and fuels from plant and equipment used during construction:

- Chemicals must be appropriately stored and handled in accordance with relevant Safety Data Sheets (SDS).
- Refuelling of vehicles or machinery is to occur within a containment or hardstand area designed to prevent the escape of spilled substances to the surrounding environment. Plant and equipment used during the works would be properly maintained and routinely inspected to minimise the risk of fuel or oil leaks;
- Spill kits containing spill response materials suited to the appropriate to products used on site must be readily available.
- All required chemicals and fuels must be located within a bunded enclosure located away from drainage lines and stormwater drains.
- Plant and equipment must be regularly inspected to check for oil leaks.

3. Will the safeguards be adequate for the time required? How will they need to be maintained?

Given the short length of construction at each site and the minor nature of the works, the safeguards proposed are considered to be adequate. The points of drainage for the sites can be adequately protected with the implementation of standard mitigation measures. Mitigation measures will be implemented and maintained and inspected through a CEMP prepared for the works.

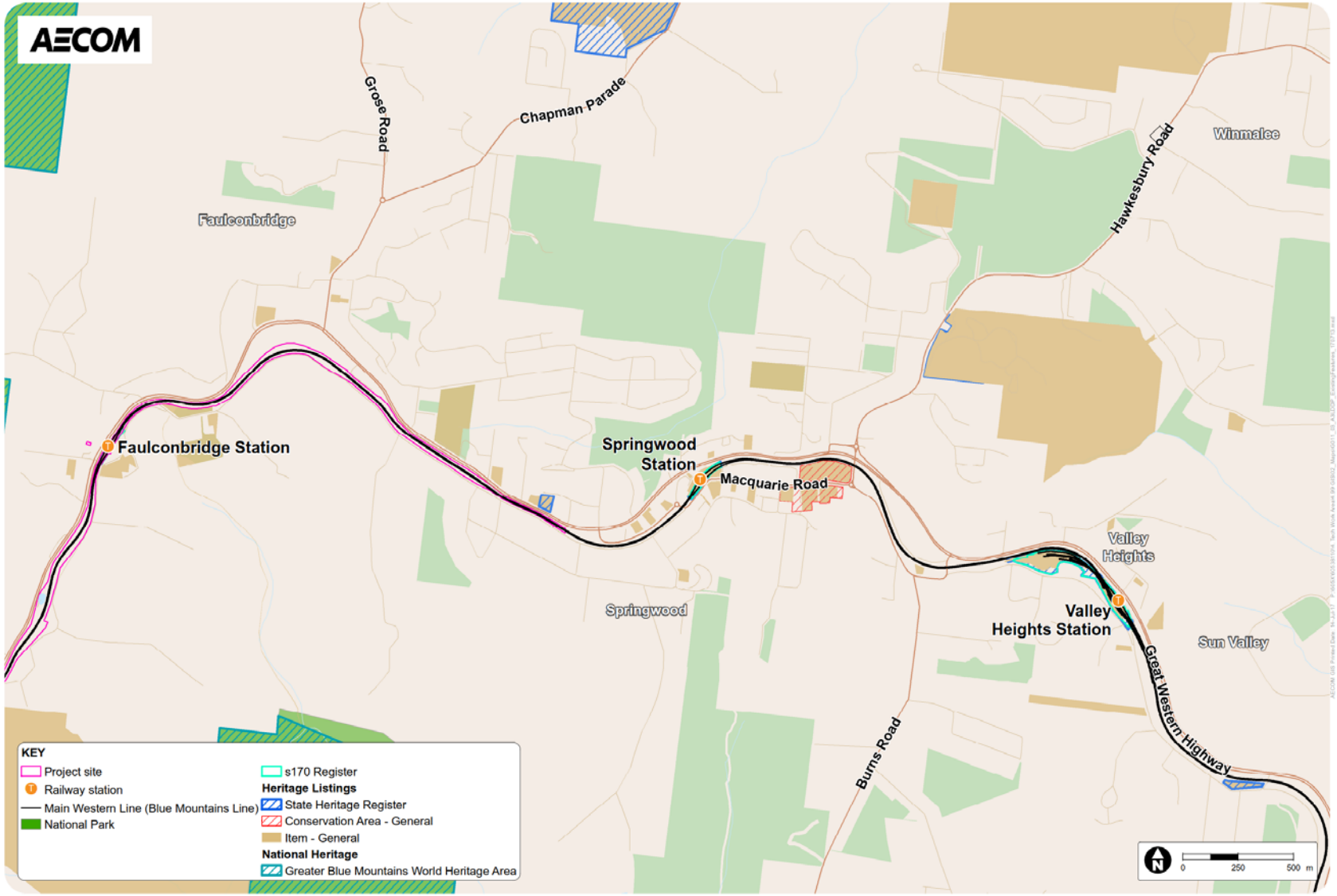
4. Will all impacts on water quality be effectively contained on the site by the identified safeguards (above) and not reach any watercourse, waterbody or drainage depression? Or will impacts on water quality be transferred outside the site for treatment? How? Why?

All impacts on water quality would be effectively contained on the site provided that the mitigation measures are implemented effectively. The implementation of standard erosion and sediment controls would be sufficient to protect the drainage points on site. Implementation of the described mitigation measures would prevent any potential spills or leaks reaching any drainage points or watercourses.

5. Is it likely that a neutral or beneficial effect on water quality will occur? Why?

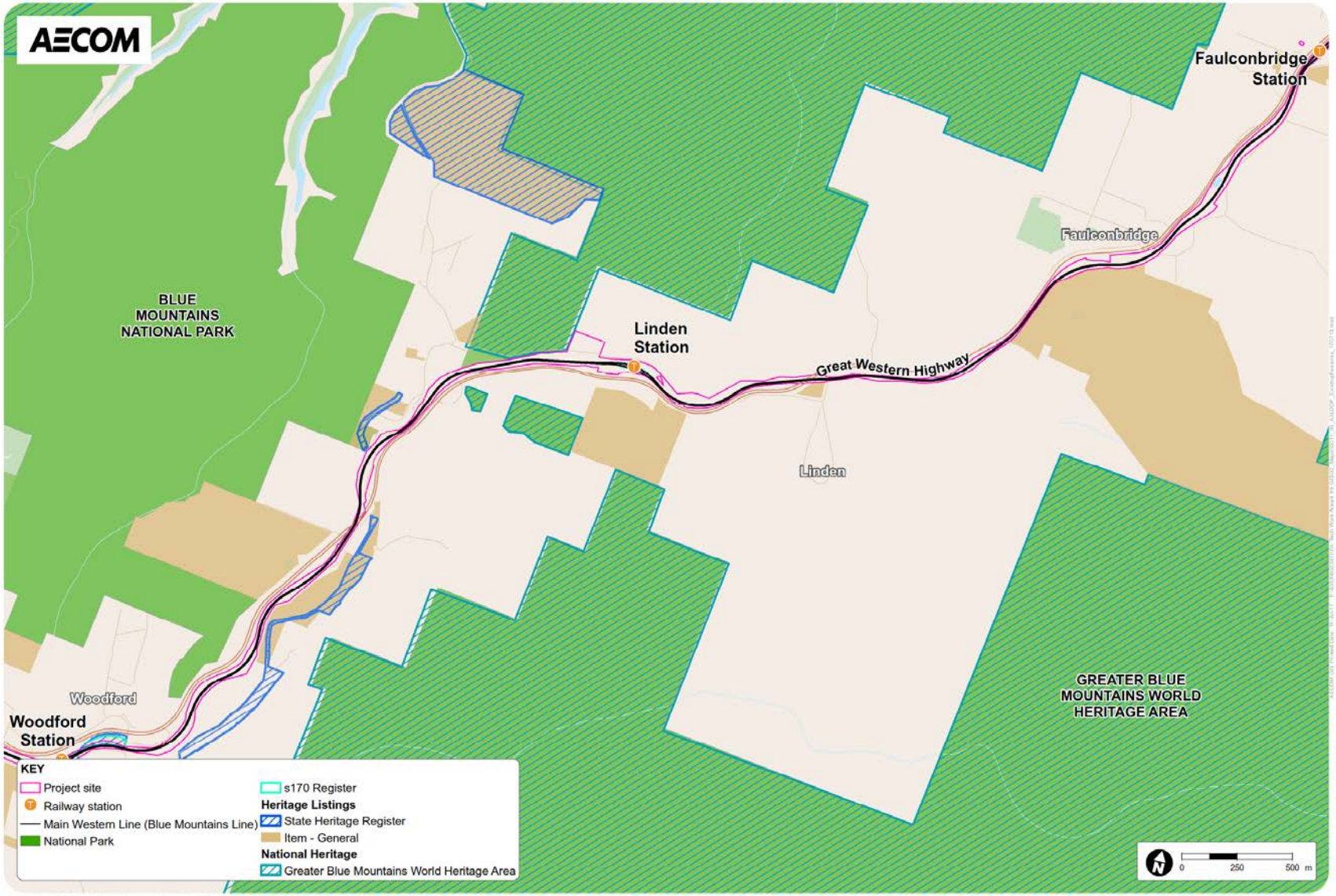
The implementation of the described safeguards would be adequate to prevent contamination of waterways during construction. The Project would not result in major differences from current operations. Hence it is considered that the Project is likely to have a neutral effect on water quality.

Appendix E Non-indigenous heritage maps and database search results



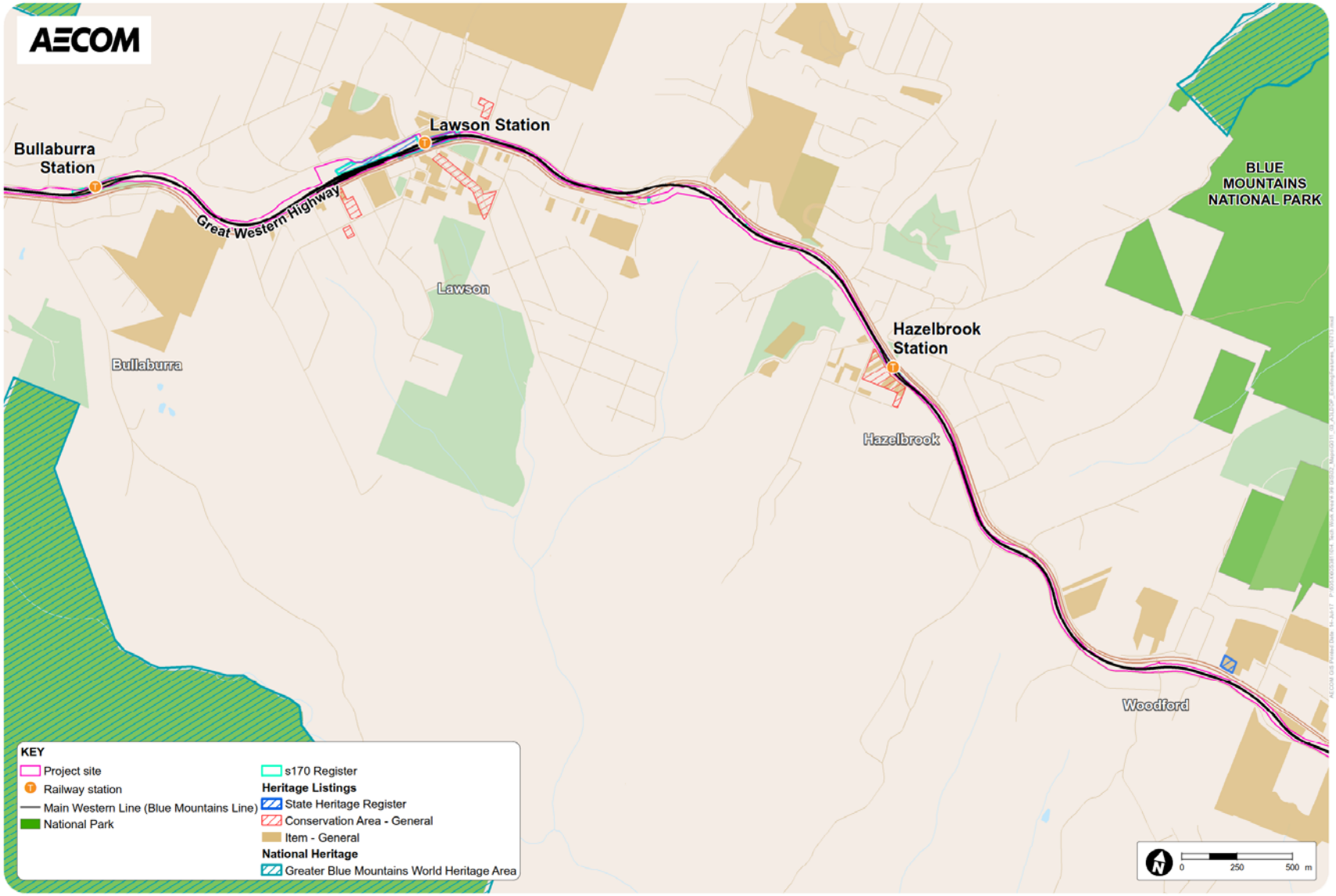
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 24 Registered heritage items along the Project route (part 1 of 11)



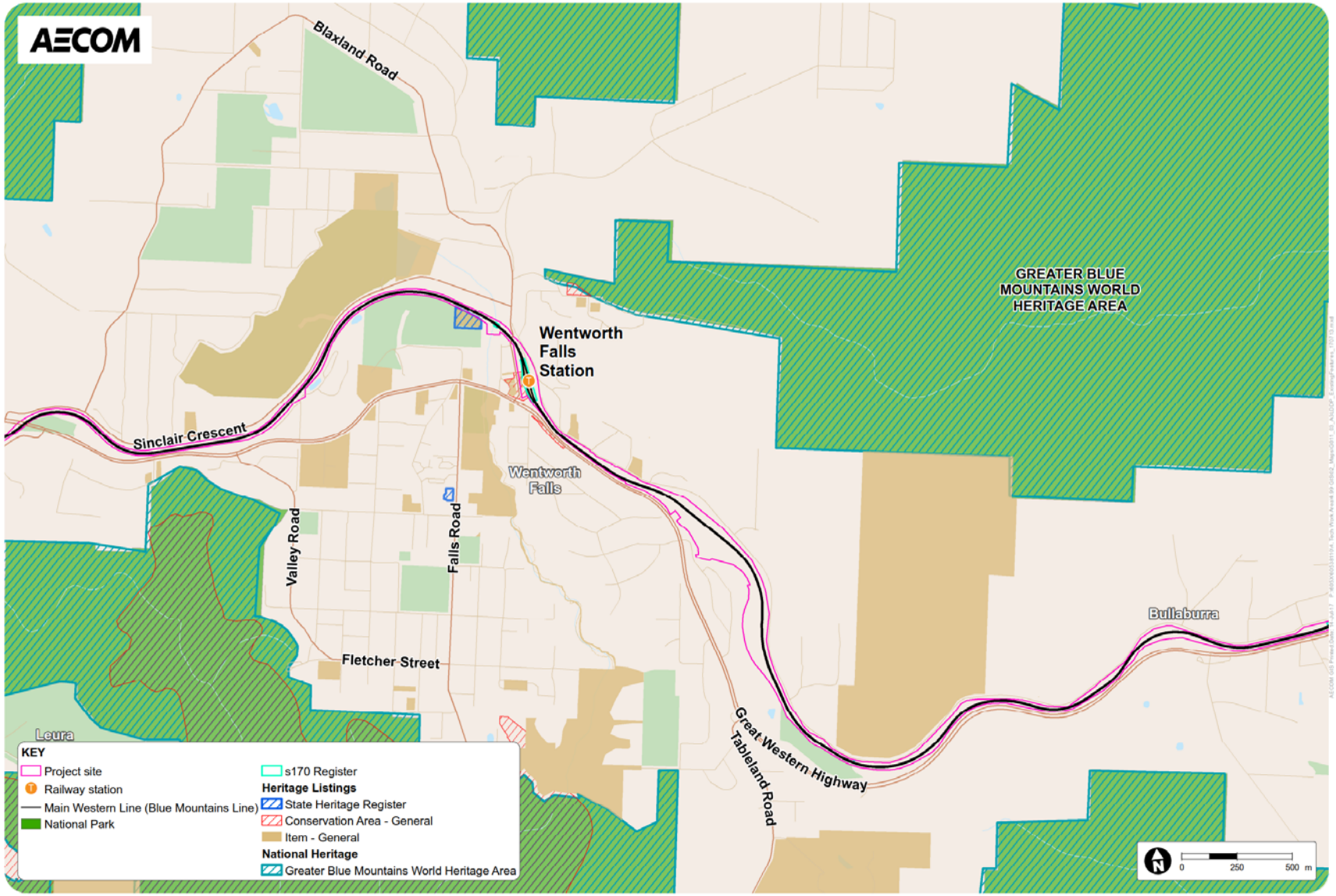
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 25 Registered heritage items along the Project route (part 2 of 11)



* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 26 Registered heritage items along the Project route (part 3 of 11)



* Works at Mount Victoria and Zig Zag Station do not form part of the Project

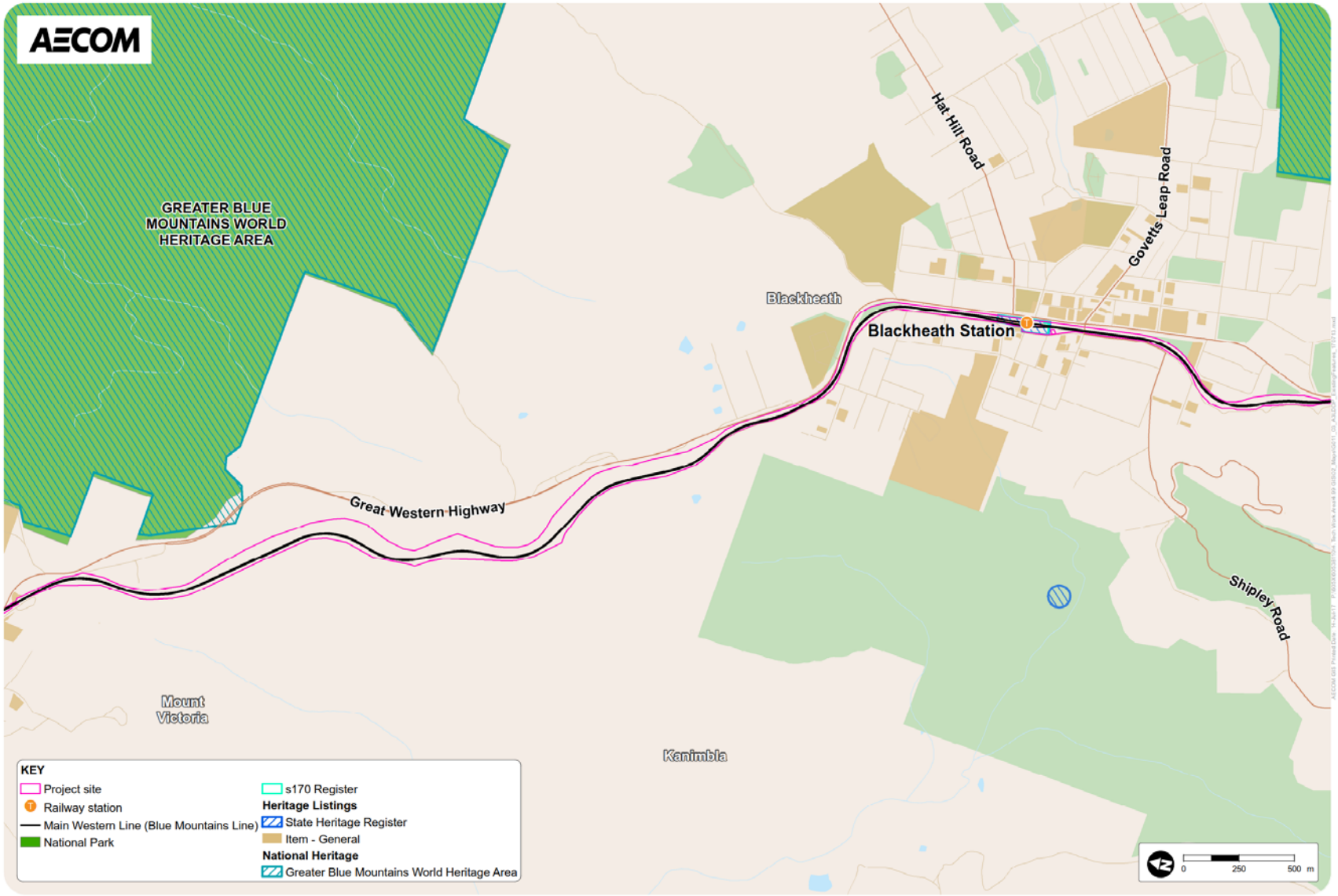
Figure 27 Registered heritage items along the Project route (part 4 of 11)

* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 28 Registered heritage items along the Project route (part 5 of 11)

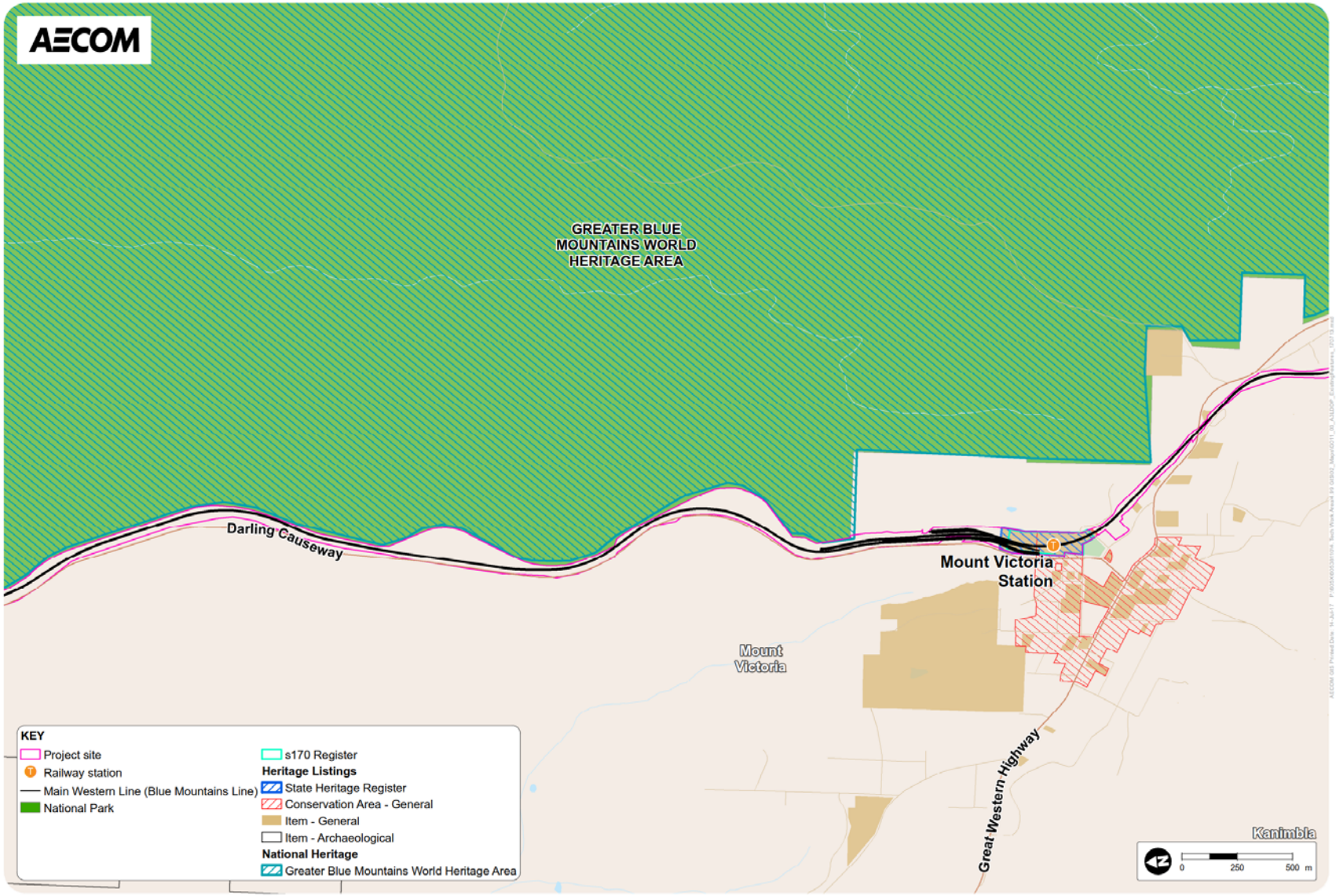
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 29 Registered heritage items along the Project route (part 6 of 11)



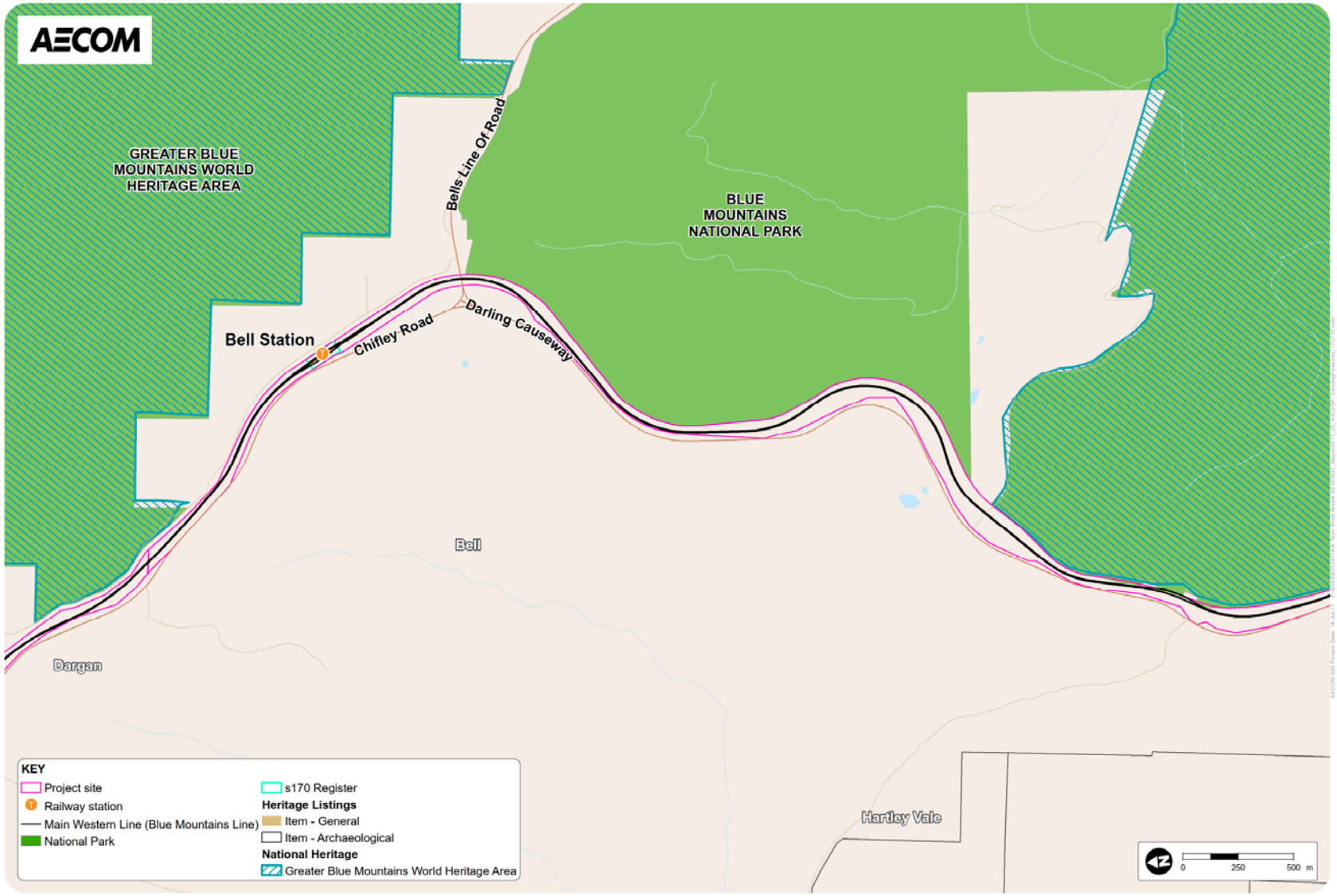
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 30 Registered heritage items along the Project route (part 7 of 11)



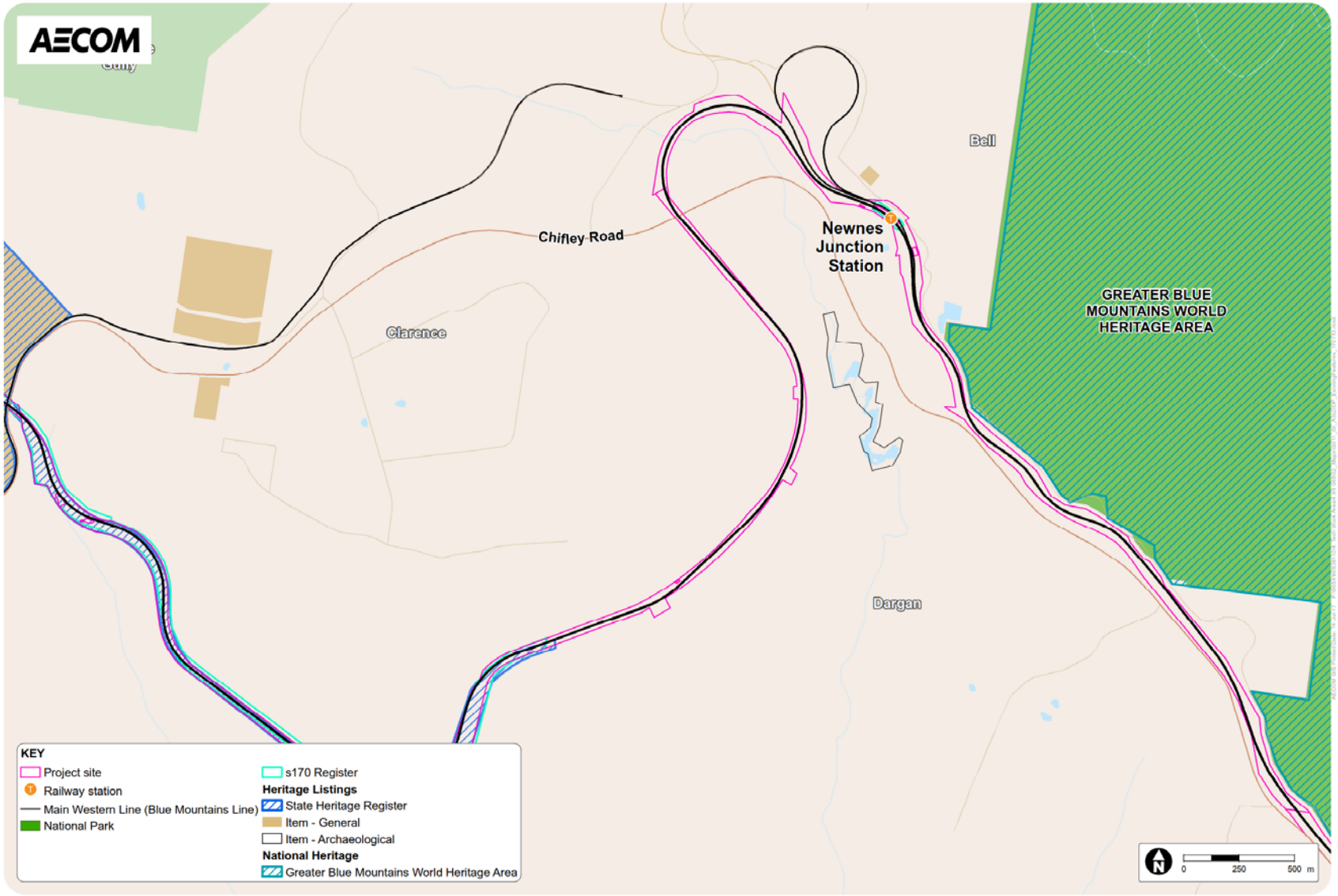
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 31 Registered heritage items along the Project route (part 8 of 11)



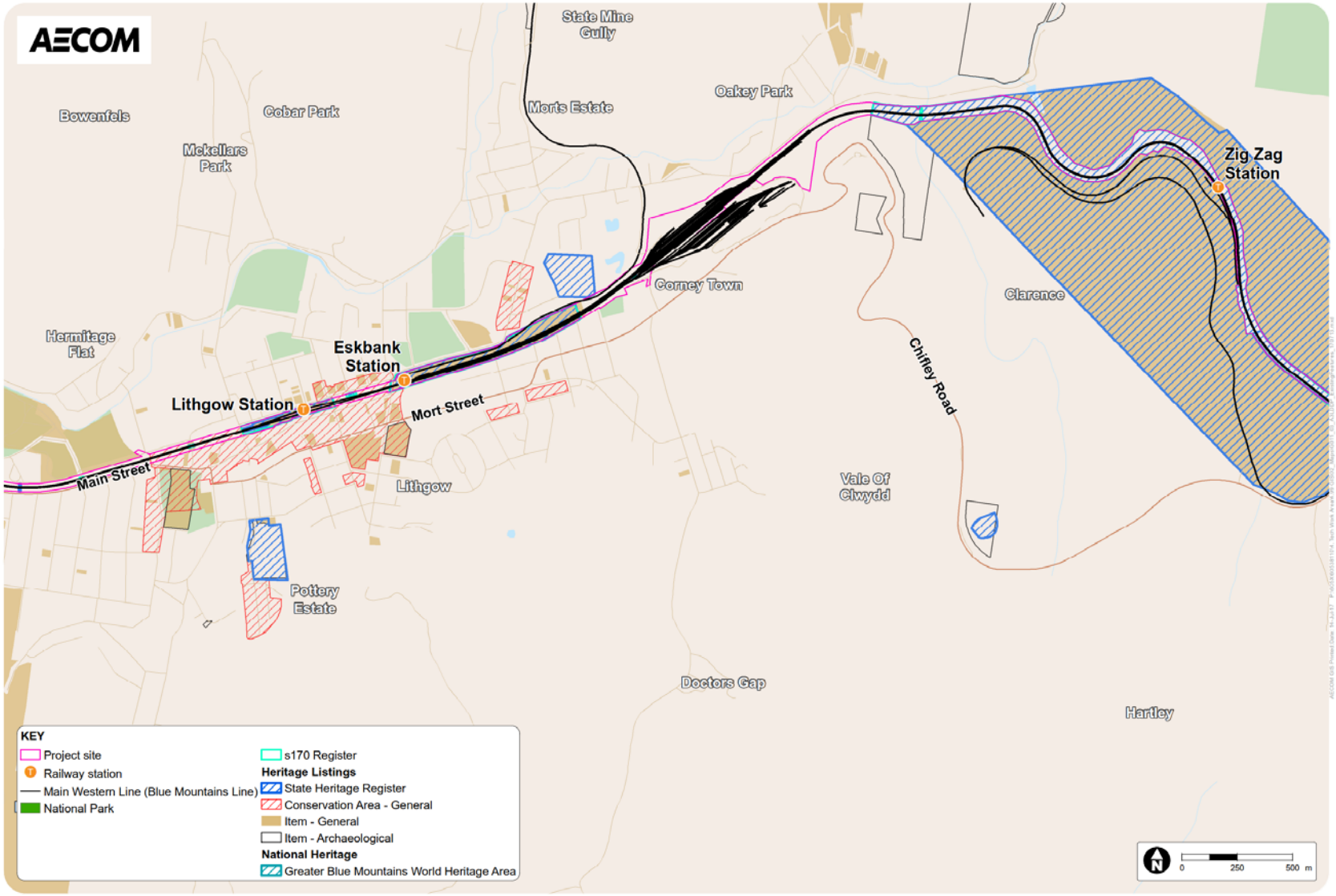
* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 32 Registered heritage items along the Project route (part 9 of 11)



* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 33 Registered heritage items along the Project route (part 10 of 11)



* Works at Mount Victoria and Zig Zag Station do not form part of the Project

Figure 34 Registered heritage items along the Project route (part 11 of 11)

Registered items within the Project site

Heritage item	Item ID	Heritage List	Level of Significance
Eskbank Railway Station group / precinct	01138 I434 4801018	State Heritage Register *Lithgow Local Environmental Plan 2014* Section 170 Register	State
Lawson Railway Station Group / Lawson Railway Station, Residence	01177 LN010	State Heritage Register *Blue Mountains Local Environmental Plan 2015* Section 170 Register	State
Blackheath Railway Station Group	01088 BH029 4801010	State Heritage Register *Blue Mountains Local Environmental Plan 2015** Section 170 Register	State
Medlow Bath Railway Station group	01190 MB003 4801011	State Heritage Register *Blue Mountains Local Environmental Plan 2015* Section 170 Register	State
Great Zig Zag Railway and Reserves	00542 I443	State Heritage Register *Lithgow Local Environmental Plan 2014*	State
Lithgow Blast Furnace	00548	State Heritage Register	State
Mount Victoria Railway Station group	01203 MV027	State Heritage Register *Blue Mountains Local Environmental Plan 2015* Section 170 Register	State
Lithgow Coal Stage Signal Box	01832 I433 4800108	State Heritage Register *Lithgow Local Environmental Plan 2014* Section 170 Register	State
Cooerwull Railway footbridge	01115	State Heritage Register	State
Weatherboard Inn Archaeological Site	00595	State Heritage Register	State
Lithgow (James Street) Underbridge	01831 4801535	State Heritage Register Section 170 Register	State
Lithgow Railway Station Group and Residence	01138 I435 4801025	State Heritage Register *Lithgow Local Environmental Plan 2014* Section 170 Register	State
Katoomba Railway Station and yard group	01174 K044 4801008	State Heritage Register *Blue Mountains Local Environmental Plan 2015* Section 170 Register	State
Cox's Road and Early Deviations - Woodford, Appian Way Precinct	01955	State Heritage Register	State
Rotary Directory	BH174	*Blue Mountains Local Environmental Plan 2015*	Local
Banool	LD011	*Blue Mountains Local Environmental Plan 2015*	Local
Avenue of Radiata Pines	MB015	*Blue Mountains Local Environmental Plan 2015*	Local

Heritage item	Item ID	Heritage List	Level of Significance
Bell Railway Station	BELL007 4801013	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Corridor of Oaks - Jackson Park	FB009	*Blue Mountains Local Environmental Plan 2015*	Local
Toll Bar Inn (site only)	LD004	*Blue Mountains Local Environmental Plan 2015*	Local
Toll Bar House (site only)	LD003	*Blue Mountains Local Environmental Plan 2015*	Local
Bullaburra Railway Station / Bullaburra Railway Station Group	BL002 4800202	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Former Railway Reservoir	LN026	*Blue Mountains Local Environmental Plan 2015*	Local
Woodford Railway Station	WD002 4801041	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Gatekeeper's Cottage	MB006	*Blue Mountains Local Environmental Plan 2015*	Local
Gatekeeper's Cottage	MV013	*Blue Mountains Local Environmental Plan 2015*	Local
Linden Railway Station	LD007 4801918	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Wentworth Falls Railway Station	WF022 4801039	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
The Crushers	K026	*Blue Mountains Local Environmental Plan 2015*	Local
Weemala	FB011	*Blue Mountains Local Environmental Plan 2015*	Local
Weatherboard Cottage	MV067	*Blue Mountains Local Environmental Plan 2015*	Local
War Memorial, Coronation Park	WF097	*Blue Mountains Local Environmental Plan 2015*	Local
Water Lily Pond	FB006	*Blue Mountains Local Environmental Plan 2015*	Local
Sydney Rock	LN009	*Blue Mountains Local Environmental Plan 2015*	Local
Sunnihi	MV071	*Blue Mountains Local Environmental Plan 2015*	Local
Stone Kerbing	K116	*Blue Mountains Local Environmental Plan 2015*	Local
Stone Kerbing	K116	*Blue Mountains Local Environmental Plan 2015*	Local
Gwandoban	BH096	*Blue Mountains Local Environmental Plan 2015*	Local
Hazelbrook Railway Station / Hazelbrook Railway Station Group	H007 4801914	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Station Master's House	BH067	*Blue Mountains Local Environmental Plan 2015*	Local

Heritage item	Item ID	Heritage List	Level of Significance
Station Master's Cottage Site	MV034	*Blue Mountains Local Environmental Plan 2015*	Local
St Mounts	BH052	*Blue Mountains Local Environmental Plan 2015*	Local
Memorial Park	WD010	*Blue Mountains Local Environmental Plan 2015*	Local
Memorial Park	WD010	*Blue Mountains Local Environmental Plan 2015*	Local
Shops adjacent to the Station	BH173	*Blue Mountains Local Environmental Plan 2015*	Local
Mount Victoria Railway Rest House	MV035	*Blue Mountains Local Environmental Plan 2015*	Local
Leura Railway Station	LA016 4801024	*Blue Mountains Local Environmental Plan 2015* Section 170 Register	Local
Quarry	FB020	*Blue Mountains Local Environmental Plan 2015*	Local
Shops adjacent to the Station	BH173	*Blue Mountains Local Environmental Plan 2015*	Local
Arched Stone Culvert	WF036	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Corridor	LA030	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Culvert	LN067	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Culvert	LN070	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Culvert	LN075	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Overpass	LD014	*Blue Mountains Local Environmental Plan 2015*	Local
1830s Road Alignment	LD020	*Blue Mountains Local Environmental Plan 2015*	Local
Acorn	MV070	*Blue Mountains Local Environmental Plan 2015*	Local
Railway Station	FB005	*Blue Mountains Local Environmental Plan 2015*	Local
Eurama	FB010	*Blue Mountains Local Environmental Plan 2015*	Local
Transport Corridor, Katoomba	K065	*Blue Mountains Local Environmental Plan 2015*	Local
Weatherboard Inn Archaeological Site	WF019	*Blue Mountains Local Environmental Plan 2015*	State
Railway culvert of Ida Falls Creek	A133	*Lithgow Local Environmental Plan 2014*	Local
Newvale Colliery and Coke-Ovans	A140	*Lithgow Local Environmental Plan 2014*	Local
Blast Furnace Site	A125	*Lithgow Local Environmental Plan 2014*	State
Showground Grandstand and Buildings	I340	*Lithgow Local Environmental Plan 2014*	Local

Heritage item	Item ID	Heritage List	Level of Significance
Eskbank Signal Box	I434	*Lithgow Local Environmental Plan 2014*	State
Stone Viaduct James Street	I436	*Lithgow Local Environmental Plan 2014*	State
Station Street Precinct	WF032	*Blue Mountains Local Environmental Plan 2015*	Local
Central Katoomba Urban Conservation Area	K159	*Blue Mountains Local Environmental Plan 2015*	Local
Central Mount Victoria Urban Conservation Area	MV023	*Blue Mountains Local Environmental Plan 2015*	Local
Lithgow Main St	C7	*Lithgow Local Environmental Plan 2014*	Local
Newnes Junction Signal Box	4807638	Section 170 Register	S170
Faulconbridge Railway Station Group	4801064	Section 170 Register	S170
Woodford (Cox's Road) Archaeolog	5063078	Section 170 Register	S170
Lawson Footbridge	4801682	Section 170 Register	S170
Lawson Railway Culvert (Ln070)	4807647	Section 170 Register	S170
Lawson Railway Culvert (Ln067)	4807646	Section 170 Register	S170
Blackheath Station - Shops	4804466	Section 170 Register	S170
	4801023	Section 170 Register	S170
Lawson Railway Culvert (Ln075)	4807648	Section 170 Register	S170
Wentworth Falls Culvert	4807653	Section 170 Register	S170
Rhondda Valley Railway Sign	4807652	Section 170 Register	S170
Bowenfels (George Coates St) Und	4805730	Section 170 Register	S170
Oakey Park Railway Culvert	5062533	Section 170 Register	S170
Bell to Zig Zag Ten Tunnel Railway	4800183	Section 170 Register	S170

Appendix F Landscape and visual impact assessment

LVIA magnitude / sensitivity descriptors

Magnitude				
	High	**Moderate**	**Low**	**Negligible**
Construction	A clearly evident or continuous change in landscape characteristics affecting an extensive area, which is likely to fundamentally change the character of the landscape	A considerable change in landscape characteristics, frequent or continuous and over a wide area or a clearly evident change, but over a restricted area	A barely perceptible change in landscape characteristics over a wide area, or a considerable change over a restricted area, but would not fundamentally change the character of the landscape	No change in landscape characteristics
Operation	Clearly perceptible changes in views at intermediate distances seen for moderate periods of time, or changes in prominent elements seen for long periods of time	Minor changes in views at moderate distances seen for moderate periods of time, or moderate changes in views visible for a short durations	Change which is barely visible, at a very long distance, or visible for a very short duration. The change only makes up a small proportion of the overall view	Change is not visible

Sensitivity				
	High	**Moderate**	**Low**	**Negligible**
Construction	A landscape with distinctive character and low capacity to accommodate the type of change envisaged	A landscape where its character, pattern and scale may have some capacity to accommodate a degree of the type of change envisaged	A landscape where its character, pattern and scale is likely to have the capacity to accommodate the type of change envisaged	A landscape where its character, pattern and scale are tolerant of the type of change envisaged, and the landscape has capacity to accommodate change
Operation	High number of observers, where viewers are specifically focussed on the landscape. Views to and from places with heritage or other significance	Moderate number of viewers where the viewer would be somewhat focussed on the landscape for extended periods of time	Low number of viewers with interest in the landscape, or moderate number of viewers where their attention would not be predominantly focussed on the landscape	Very occasional numbers of viewers with only a passing interest in their surroundings

Magnitude and sensitivity risk matrix

Risk Matrix				
Sensitivity **Magnitude**	**High**	**Moderate**	**Low**	**Negligible**
High	High	Moderate High	Moderate	Negligible
Moderate	Moderate High	Moderate	Moderate-Low	Negligible
Low	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Sensitivity and magnitude

The sensitivity of the landscape is assessed based upon the extent to which it can accept change of a particular type and scale without adverse impacts upon its character. Sensitivity varies according to the type of development and nature of the landscape.

The most sensitive receptors may include:

- users of outdoor recreational facilities
- communities where the development results in changes in the landscape setting or valued views enjoyed by the community
- occupiers of residences with views affected by the Project.

The number of viewers is also considered when assessing sensitivity of the landscape.

The magnitude of change affecting landscape character or visual receptors depends on factors such as the nature, scale and duration of the particular change that is expected to occur. In the landscape, the magnitude of change would depend on factors such as the extent of loss, change or addition of a feature, or changes in the backdrop, or outlook from a landscape that affects its character. The impact on a view would depend on factors such as the extent of visibility, degree of obstruction of existing features, degree of contrast with the existing view, angle of view, duration of view and distance from the Project.