

5. Project description

This chapter and Chapter 6 provide a detailed description of the concept design for the project.

DGRs	Where addressed
Detailed description	
Include a detailed description of the project, including:	Chapters 5 and 6
▪ Route alignment and corridor width.	Section 5.3.2
▪ Design elements, eg:	
▶ Construction of temporary crossings.	Sections 6.6.3
▶ Bridges, culverts, creek diversions.	Section 5.3.4
▶ Geotechnical investigations.	Section 5.3.5
▶ Excavating or reclaiming the bed or banks of any waterways.	Section 5.3.4
▶ Requirements for level of service (LoS).	Section 3.2.1
▶ Pedestrian and cyclist facilities, etc.	Section 5.3.9
▪ Potential staging.	Section 6.2.1
▪ Ancillary facilities (eg compound site, batching plants etc).	Section 6.6
▪ Resourcing (eg construction material needs, spoil disposal, natural resource consumption including water).	Section 6.3

The chainages referred to throughout this chapter refer to those along the southbound carriageway of the project and are approximate wherever used.

5.1 Project overview

The project would include the following key components:

- Approximately nine kilometres of dual carriageway.
- An at-grade intersection with the existing Hume Highway approximately 6.5 kilometres north of Woomargama village.
- Bridges over Sandy Creek.
- Six deep cuttings.
- Twin bridges over Mountain Creek.
- An at-grade intersection with the existing Hume Highway approximately two kilometres south of Woomargama village.
- An upgrade to the at-grade intersection at Fairbairn Road.

The project would be undulating and form an elongated curved alignment. It would lie to the west of Woomargama village at a maximum distance of approximately three kilometres from the existing Hume Highway.

At its northern extent, the project would tie-in to the existing Hume Highway. The project would continue south and gradually veer away, in a slight westerly direction, from the existing highway. At approximately 500 metres from the start of the project, a new at-grade intersection would be constructed. This intersection would tie-in the project with the existing highway about 6.5 kilometres north of Woomargama village and would provide access to Woomargama village from the north.

The project would deviate to the west and cross Sandy Creek on bridges. The project would continue in a westerly direction gradually ascending and traversing through the saddles of Mount McKenzie and would require three deep cuts on the ascent.

The project would then gradually descend in a southerly direction and pass through two further cuts. Still descending, the project would travel adjacent to a drainage line.

Twin bridges would be constructed to enable the crossing of Mountain Creek and its floodplain. The project would continue travelling in a south-westerly direction.

A new at-grade intersection would be constructed approximately 900 metres south of Mountain Creek. This intersection would tie-in with the existing Hume Highway approximately two kilometres south of Woomargama village. This would provide access to the village from the south.

A final deep cut would then be required for the project. The project would include an upgrade of the intersection at Fairbairn Road. It would then connect to the new section of Hume Highway dual carriageway scheduled to be completed in December 2009.

Figure 5-1 provides an overview of the project.

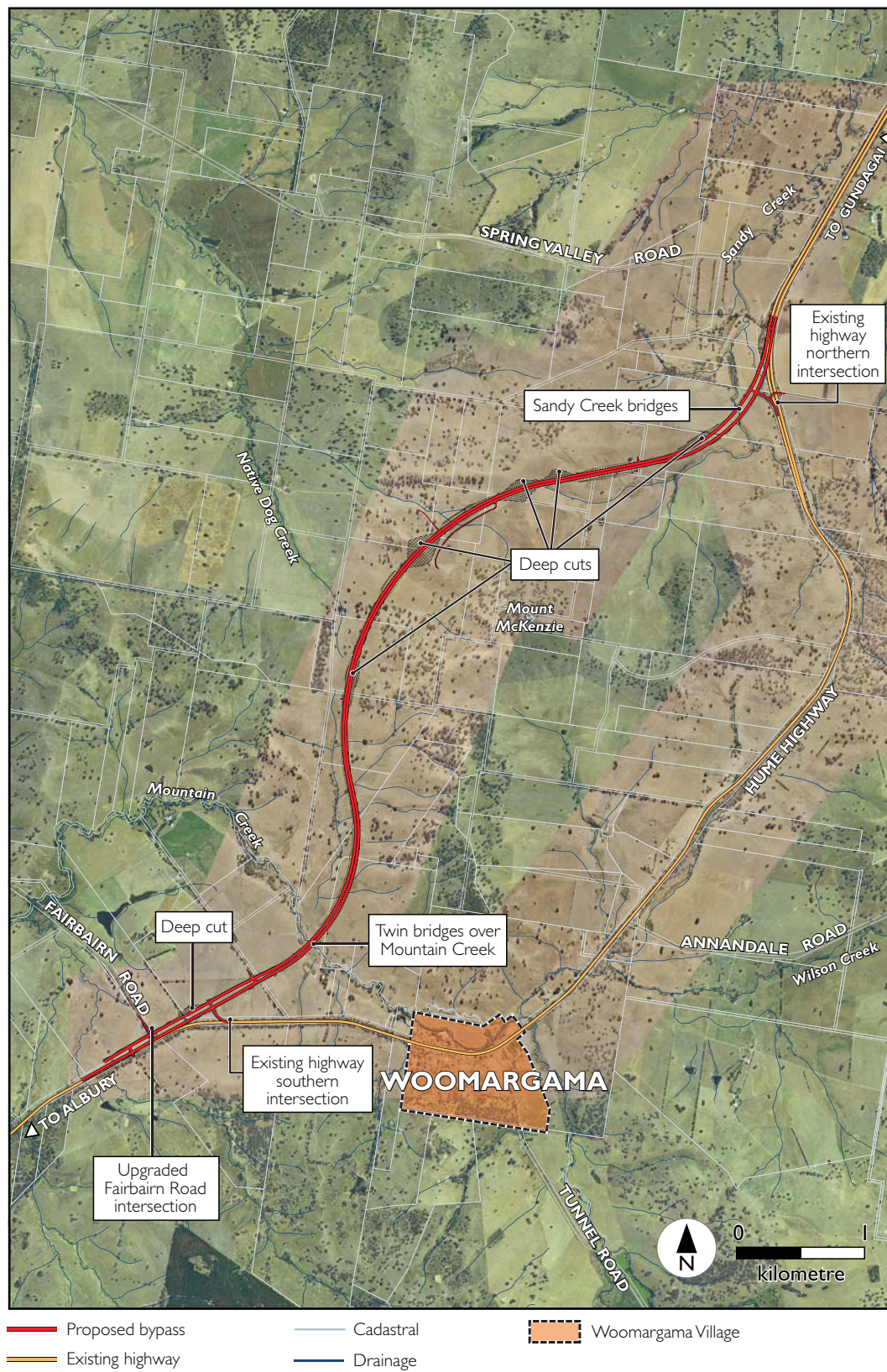


Figure 5-1 Overview of the project

5.2 Design criteria

5.2.1 Design parameters

Table 5-1 summarises the design parameters for the project.

At-grade intersections may be provided for connection to the existing Hume Highway, local roads and private properties, consistent with road safety considerations. The design criteria of private property or local road access to the project would be determined during the detailed design phase (and in accordance with relevant standards). Such access would be minimised and only provided where essential.

Table 5-1 Summary of design parameters for the project

Design element	Required standard
Design speed	110 kilometres per hour.
Sight distance	110 kilometres per hour stopping sight distance (2.5 second reaction time).
Grade	4.5 per cent desirable maximum. 6.0 per cent absolute maximum.
Cross section	- Basic configuration of dual carriageways, with new carriageways providing two travel lanes in each direction. - Traffic lane width: 3.5 metres. - Outer (verge) shoulder width: 2.5 metres (where barrier is required there would be a 3.0 metre offset from the edge of trafficable lane). - Inner (median) shoulder width: 1.0 metre (where barrier is required there would be a 2.0 metre offset from the edge of trafficable lane). - Median width: - Generally provide a 12.0 metre depressed median with landscaping. Consideration to be given to the provision of safety barrier at critical locations. - Consider a 5.0 metre median with safety barrier and landscaping at locations where design provides a major cost saving (eg deep cuts) and where sight lines permit. - All median breaks and cross-overs with at-grade intersections should accommodate turning of an articulated vehicle of up to 26 metres where possible (ie a B-double). - Lay-bys and breakdown bays: - Lay-bys on the outside shoulder on each carriageway are to be provided at approximately 10 kilometre intervals to allow trucks to stop along the highway. They are to be at least 4.5 metres wide and 50 metres long. Where possible, they are to be located on or near the crest or where flat or downhill areas occur, for example, near the cut/fill line. Opportunities for inclusion of these facilities within the project are to be investigated.
Intersections	Intersections shall be designed in accordance with the RTA <i>Road Design Guide, Beyond the Pavement</i> (RTA 1999a).
Town access	At-grade accesses shall be provided to Woomargama.

Design element	Required standard
Road reserve corridor widths	Generally, to provide 10 metre minimum width from tops of cuts and toes of fills to Controlled Access Road boundary.
Property access	- Access control would apply on all sections of work when new boundaries are being established. On this section, the number of access points would be kept to a minimum. - The principal access to properties (residences) would be to both carriageways with appropriate median breaks. Access to both carriageways would be provided to other 'farm gates' where road safety requirements can be met. Access at farm gates should accommodate B-double movements.
Bridges	- Width: 10.5 metres between kerbs. - Design life: 100 years. - Load as per Austroads <i>Bridge Design Guide</i>.
Pavement	- Design Life: - New flexible pavement 30 years. - Concrete and asphalt/lean-mix pavements 40 years.
Drainage	- Culverts where surcharge is allowable — 50 year average recurrence interval flood event (ARI). - Culverts where surcharge is undesirable — 1 in 100 year ARI. - Major storm event check for no property damage — 1 in 100 year ARI. - Major storm event check for no structure damage — 1 in 2000 year ARI.
Signposting	Signposting to follow the format provided in the RTA's <i>Guide Signposting</i> (RTA 2007a) and <i>Tourist Signposting Manual</i> (RTA 2009a).

5.2.2 Urban design objectives

The *Hume Highway Urban Design Framework, Preston (WM7) to Albury* (RTA 2007b) identifies six overall urban design objectives for the highway. These objectives seek to highlight the positive characteristics of the surrounding area while minimising any potential negative impacts. The six objectives, which have been adopted for this project, are as follows:

- Objective 1: A highway that flows with the landscape — provide a flowing highway alignment that is responsive to, and best fits with, the landscape.
- Objective 2: A safe and memorable drive through NSW — provide a safe, enjoyable and memorable motoring experience that engages with the landscape of NSW, and makes best use of views and vistas.
- Objective 3: Well vegetated and responsive to natural systems — provide a well-vegetated, natural road corridor that protects and enhances the natural systems and ecology of the corridor.
- Objective 4: Town bypasses as an integral part of the towns' planning — create new town bypasses as an integral part of the towns' planning, clearly defining their relationship to each town for the motorist.
- Objective 5: Respond to the communities, history and culture — respect and respond to the communities along the corridor, and the historically and culturally significant aspects of the corridor.

- Objective 6: A simple and unified palette of details, and elements, which minimise maintenance — achieve a simple palette of highway details, elements and components consistent throughout the corridor, which meet safety requirements and minimise ongoing maintenance costs.

Urban and landscape design issues have been integral to the development of the concept design. The project minimises impact on areas of ecological and Aboriginal cultural heritage significance. The concept design developed in response to these constraints also offers benefits in terms of landscape and urban design integration as the impact on the mountainous landform in the area is reduced while also minimising the road grades to ensure a safe and functional route.

Section 10.3.6 presents the draft urban design and landscape strategy that has been developed for the project. This strategy has been based on ongoing refinement of the design, the above-mentioned urban design objectives, and the assessment of the visual amenity and landscape impacts of the project. It would be finalised during detailed design.

5.3 Design elements

5.3.1 Detailed design development

The concept design addresses and responds to the constraints and principles identified during the investigations undertaken to date. The concept design is intended to define a buildable concept that provides:

- A definition of property acquisition requirements sufficient to allow acquisition to proceed.
- A clear description of the design principles, extent of impacts and impact management requirements.
- A sound and clear basis for later development of the detailed design to a standard required to support project delivery.

The design of the project would continue to be refined during the detailed design phase and would be guided by the key principles developed during the concept design and environmental assessment phase. The development of the detailed design would:

- Be consistent with key design parameters as described in this environmental assessment and any subsequent RTA response to submissions or preferred project report.
- Address any unresolved issues associated with the development of the concept design proposed in this environmental assessment and any subsequent RTA response to submissions or preferred project report.
- Meet any conditions of approval arising from the approval process under Part 3A of the *Environmental Planning and Assessment Act 1979*.
- Incorporate community and government agency requirements by implementing a consultation plan to identify and resolve further concerns raised by the community and other stakeholders.
- Avoid identified environmentally sensitive areas and significant species and communities wherever possible.
- Further develop and refine mitigation measures.
- Appropriately develop and incorporate the urban design and landscape strategy.

- Establish detailed proposals for construction delivery method, addressing buildability, traffic capacity and safety during construction, geotechnical issues, all relevant RTA specifications and design requirements, current guidelines and policies, and practicality/cost effectiveness.
- Address risk management during construction and operation.
- Provide a level of definition sufficient to support a construction contract that will meet all of the RTA's requirements for the completed project.
- Ensure that the detailed design allows for safe and cost-effective maintenance of the project during operation in accordance with occupational health and safety requirements and relevant RTA specifications.

5.3.2 *Route alignment and corridor width*

The overall corridor width would be generally 100 metres but would vary from between approximately 90 and 250 metres depending on environmental and design requirements. At the major intersections, the corridor width would be at its widest to accommodate the new sections of road.

At its northern extent the project would tie-in to the existing Hume Highway. The project would continue south and gradually veer away, in a slight westerly direction, from the existing highway. At approximately 500 metres from the start of the project a new at-grade intersection would be constructed. This intersection would connect the project with the existing highway about 6.5 kilometres north of Woomargama village and would provide access to the village from the north. The location of the alignment in this section has been influenced by the need to avoid an area of Aboriginal cultural significance.

At approximately 800 metres from the northern end of the project, the route would include bridges over Sandy Creek. The final bridge design would be confirmed during detailed design. The alignment would continue in a westerly direction largely on fill embankments and gradually ascending. The location of the alignment in this section traverses through the saddles of Mount McKenzie. The project would require a deep cut (around 20 metres deep) near chainage 124250, closely followed by another two deep cuts near chainages 125400 and 125750 (around 20 metres and 30 metres deep respectively) at the highest point of the alignment.

The project would then gradually descend in a southerly direction and pass through two deep cuts near chainages 126650 and 127800 (around 40 metres and 20 metres deep respectively). The succession of deep cuts is required in order to maintain suitable gradient (ie less than six per cent, refer Table 5-1) on the alignment.

The project would continue to descend, in a south-westerly direction, adjacent to a drainage line. The location of the alignment in this section has sought to minimise impacts on the drainage through this area.

Twin bridges would be constructed to cross Mountain Creek and its floodplain. The final configuration of the bridges would be confirmed during detailed design and would ensure that flooding impacts are minimised.

The alignment from Mountain Creek to the end of the project is relatively flat (between approximate chainages 131750 and 130500).

A new at-grade intersection would be constructed approximately 900 metres south of Mountain Creek. This intersection would tie-in with the existing Hume Highway approximately two kilometres south of Woomargama village. This would provide access to the village from the south.

A final deep cut would be required near chainage 131150 (around 15 metres).

The project would include an upgrade of the intersection at Fairbairn Road. The project would then tie-in to the dual carriageway (scheduled to be completed in December 2009). The southbound carriageway tie-in may require some adjustments to the vertical and horizontal alignment of the existing Hume Highway.

The vertical alignment of the main carriageway would consist of large-sized vertical curves and gentle ascent and descent up and down the slopes of Mount McKenzie at grades that are consistent with the design parameters listed in Table 5-1.

The horizontal and vertical alignments for the project are shown on Figures 5-2 and 5-3.

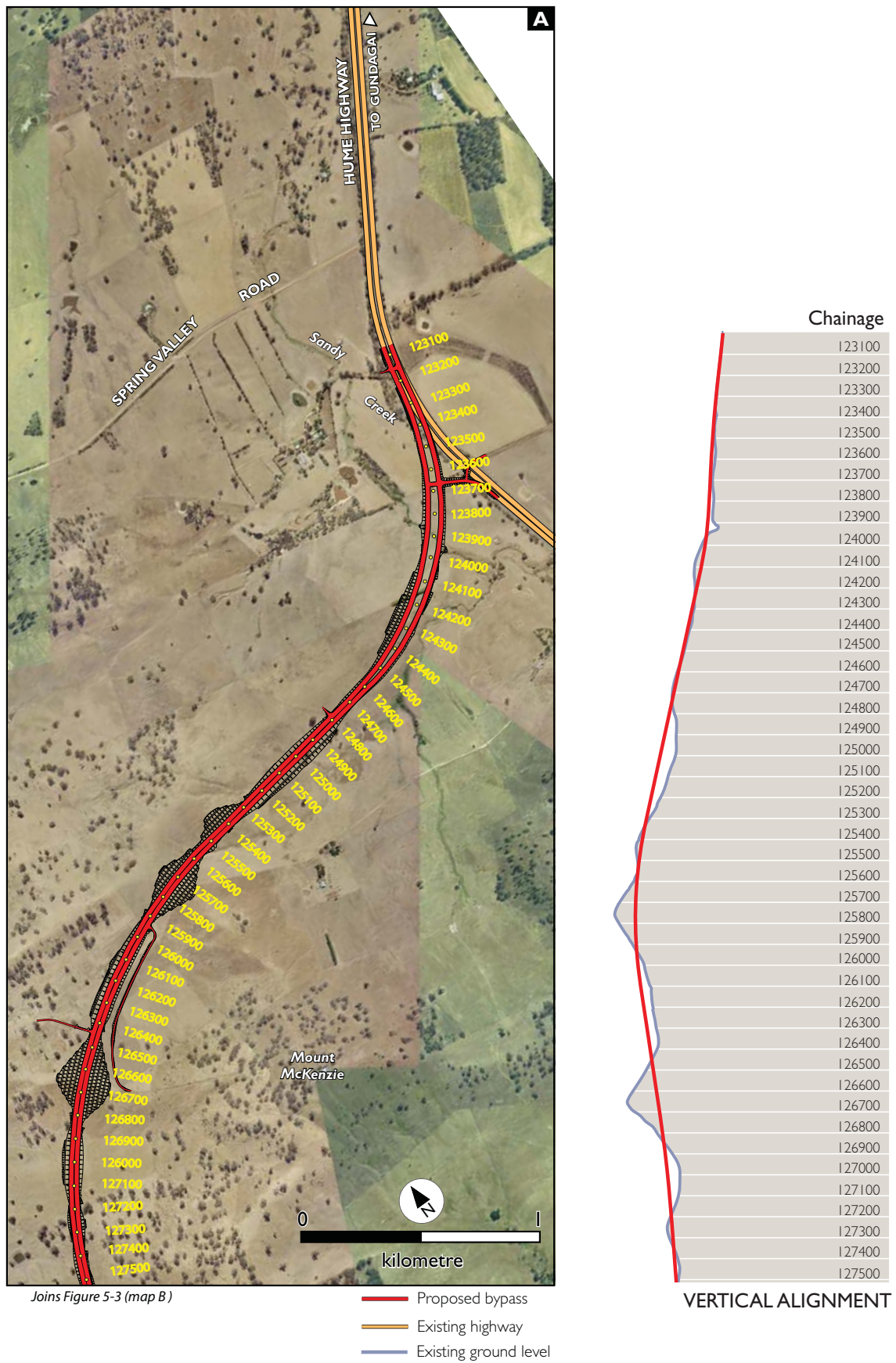


Figure 5-2 Concept design - horizontal and vertical alignments (northern section of the project)

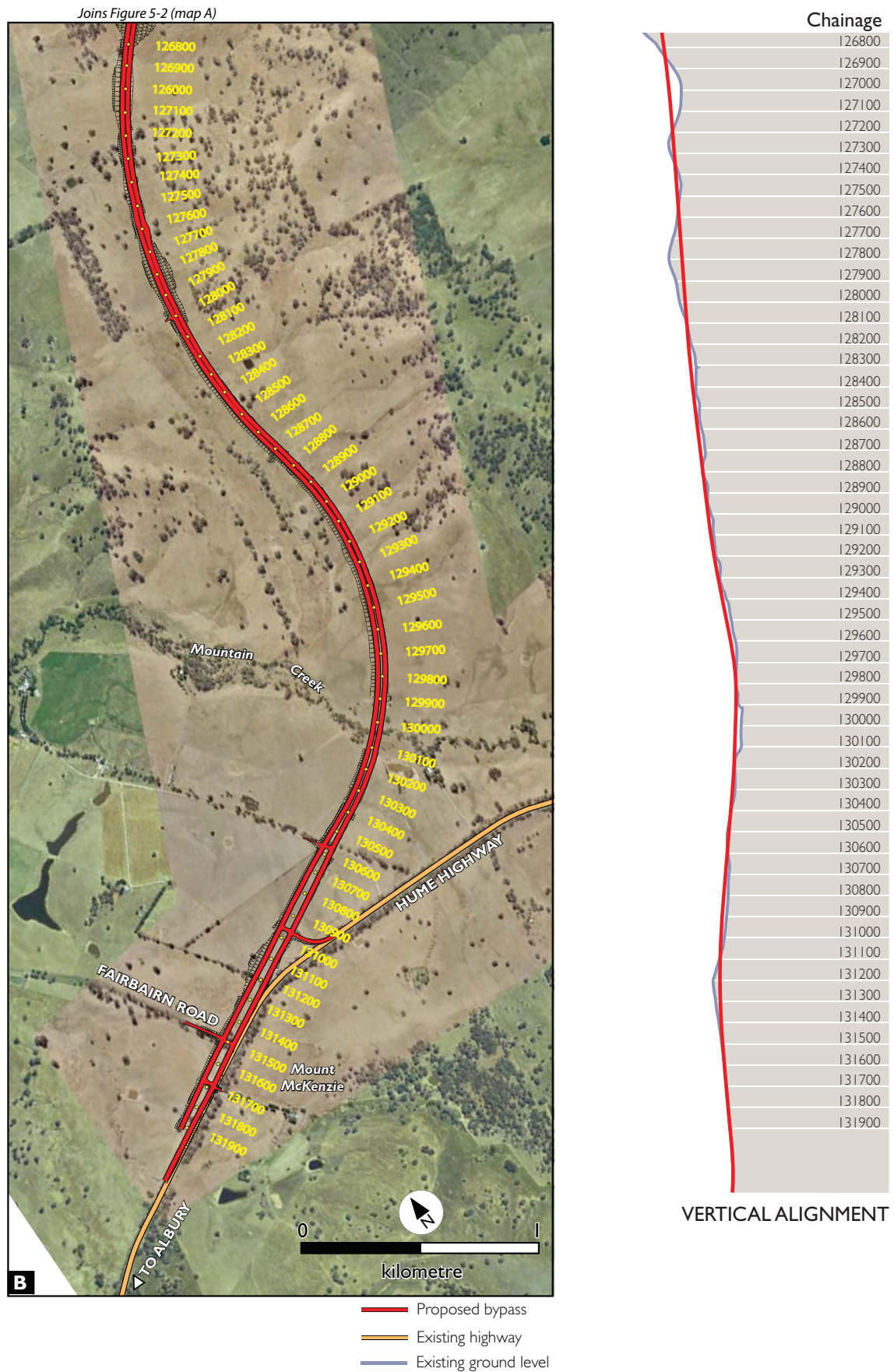


Figure 5-3 Concept design - horizontal and vertical alignments (southern section of the project)