

10.2.5 Management of impacts

Table 10-4 identifies mitigation and management measures for soils and water quality impacts. These measures have been incorporated into the draft statement of commitments in Chapter 11. Measures associated with the management of hazardous materials are provided in Section 10.5.3.

Table 10-4 Soils and water quality mitigation and management measures

Potential impact	Mitigation and management measure
<i>Construction</i>	
▪ Erosion of soils	▪ Stabilise exposed areas progressively.
▪ Reduction in surface water quality	▪ Develop and implement primary and progressive erosion and sediment control plans through the CEMP for the project in accordance with <i>Soils and Construction: Managing Urban Stormwater</i> (Landcom 2006) and <i>Managing Urban Stormwater: Soils and Construction, Volume 2D, Main Road Construction</i> (DECC 2008b). ▪ Contain spills immediately. Use bunded areas for storage of potentially hazardous and/or contaminating materials and activities.
<i>Operation</i>	
Reduction in surface water quality	▪ Install structural and non-structural measures to control road runoff into environmentally sensitive areas (Mountain and Sandy creeks). ▪ Implement scour protection works at proposed bridge abutments and piers, and watercourse crossings.

10.3 Visual amenity and landscape

10.3.1 Assessment approach

The visual amenity and landscape assessment built on the *Hume Highway Woomargama Bypass Preliminary Urban/Landscape Design and Visual Issues Investigation* (RTA 2008e) prepared as part of the preliminary environmental investigations for the project. The assessment was undertaken in accordance with the objectives, principles and recommendations of the *Hume Highway Urban Design Framework, Prestons (WM7) to Albury* (RTA 2009b) (refer Section 5.2.2), and the RTA's urban and regional design practice notes, *Beyond the Pavement* (RTA 1999b) and *Guidelines for Landscape Character and Visual Impact Assessment* (RTA 2009c).

The assessment included:

- The objectives of the *Hume Highway Urban Design Framework* were adopted and used as the primary basis for evaluating the project.
- The visual impact assessment area extended one kilometre from the outside boundary of the construction site boundary. This was considered the most sensitive area for visual change to both the existing landscape character and viewpoints. The main viewpoints within this one kilometre boundary were identified.
- The 'sensitivity' and 'magnitude of change' was assessed for each identified viewpoint, and was ranked either low, low to moderate, moderate, moderate to high or high.

- The visual catchment for the project was divided into three landscape character units: the northern undulating rural unit, the central hilly rural town unit and the southern creek line/undulating rural unit.
- The 'sensitivity' and 'magnitude of change' was assessed for each identified landscape unit; these were combined to provide an overall ranking of the impact to the landscape character.

10.3.2 Existing landscape and views

Landform, land use and scenic quality

The landscape of the visual impact assessment area has a distinct landform characterised by relatively steep, high rounded hills. To the north and south the landform flattens to become more undulating. The existing Hume Highway near the project winds gently through the landscape curving over the hills. The assessment area is dominated by cleared agricultural land with scattered paddock trees.

The general scenic quality of the landscape is considered moderate.

The village of Woomargama is located about 1.5 kilometres from the project and would not be visible from the project.

Key viewpoints

Ten viewpoints from rural residential properties were identified within one kilometre of the project. These viewpoints are identified in the visual environmental analysis plan, which is shown in Figures 10-3 and 10-4.

Northern undulating rural unit

This landscape unit is defined by the flatter landscape at the northern end of the project. This low-lying area lies north-east of Mount McKenzie and includes the upper tributaries of Sandy Creek. The landscape varies from flat to undulating and is relatively clear of vegetation. The main stands of trees occur alongside the section of the existing Hume Highway.

Within this landscape unit, Sandy Creek is a narrow, meandering watercourse with infrequent patches of vegetation. The unit includes a number of rural homes.

Views from this landscape unit are generally restricted to the north due to the presence of higher hills in other directions.

This landscape unit is common and contains little vegetation. There are no dramatic landscape features or landform changes. It has low sensitivity.

Central hilly rural unit

This unit covers the hilly central section of the project, including Mount McKenzie. Vegetation cover is sparse, particularly in the northernmost part. Towards the south there is more vegetation present on the surrounding hillsides and the upper parts of Mount McKenzie.

The opportunity for distant views varies within this landscape unit. In the lower parts of the valley, views are limited due to the surrounding landform. There are no homes within this unit, although there are some located outside that have views of it.

This landscape unit is the most likely to be affected by the project due to the deep cuttings required. It has a moderate visual sensitivity.

Southern creek line/undulating rural unit

This unit extends from Mountain Creek to the southern boundary of the project. The landscape is quite visually enclosed as it is lower-lying and is surrounded by hills. The vegetation cover is fairly sparse, with most trees occurring around existing rural homes and in linear bands along Mountain Creek, property fence lines and the existing Hume Highway.

It is a common landscape unit and is not dominated by vegetation with no dramatic landscape features or landform changes. This landscape type has a low visual sensitivity.

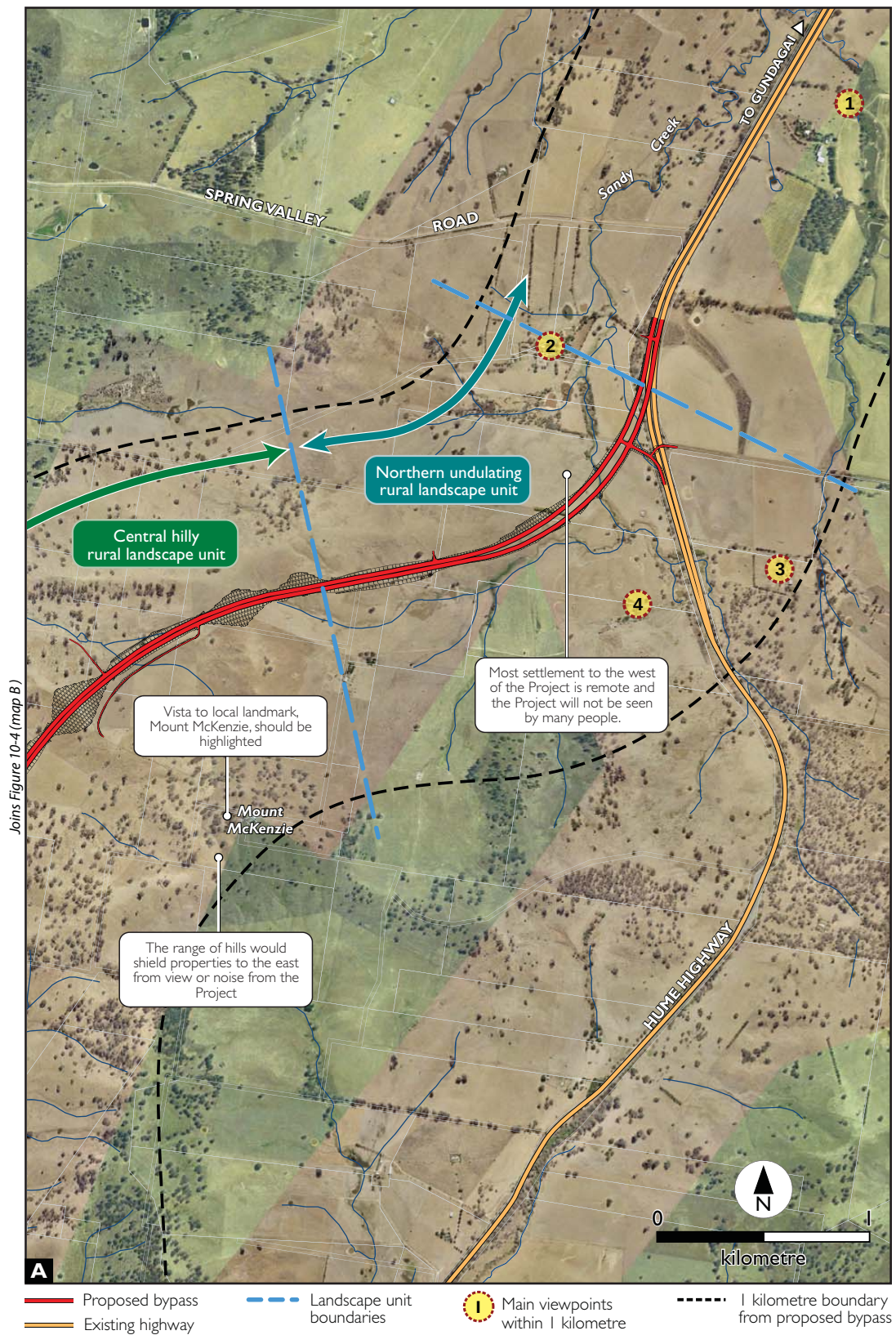
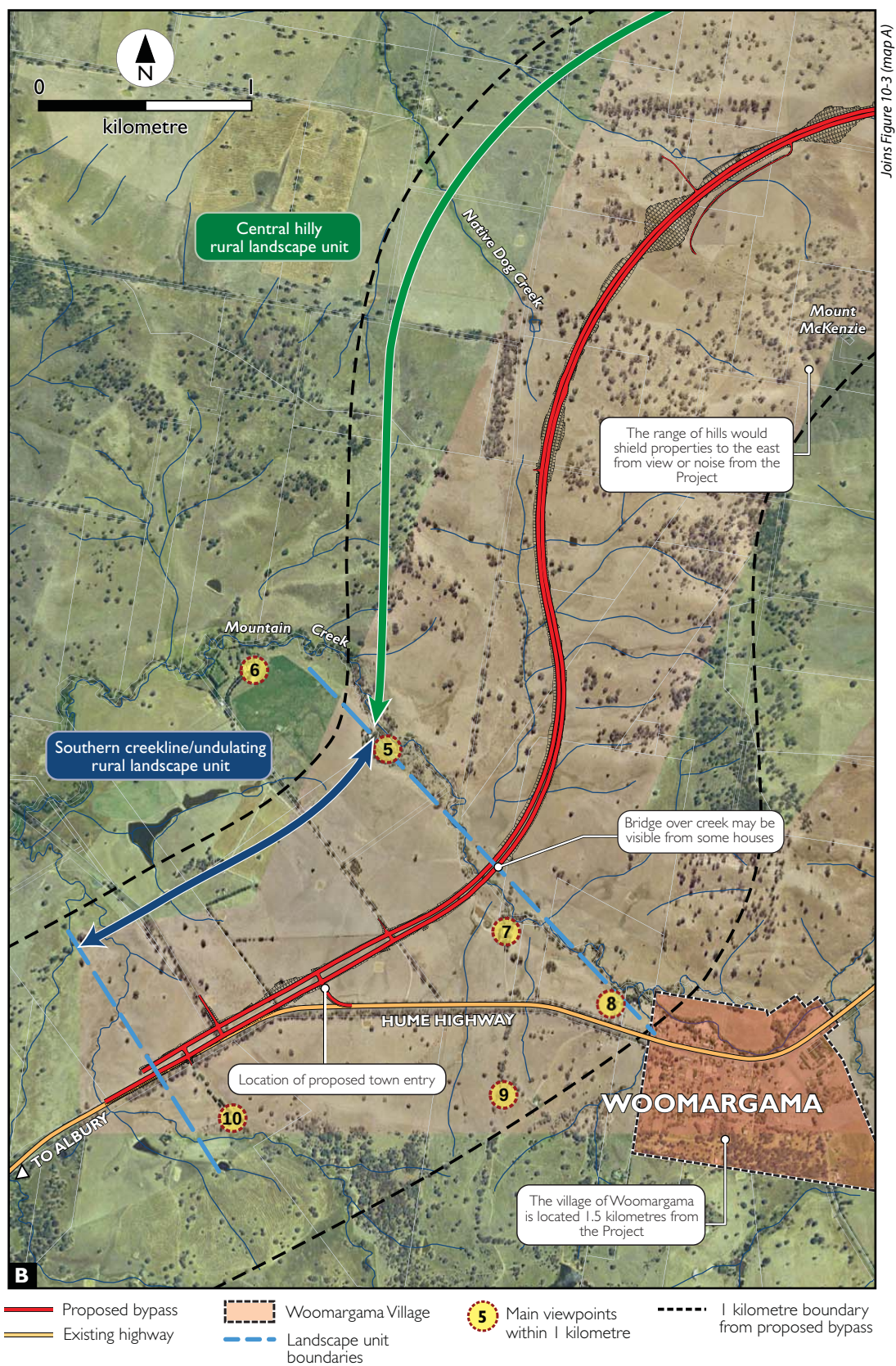


Figure 10-3 Visual environmental analysis plan (northern section)



Joins Figure 10-3 (map A)

Figure 10-4 Visual environmental analysis plan (southern section)

10.3.3 Construction visual impacts

Potential visual impacts during the construction phase of the project would result from the following:

- Operation of plant and equipment.
- Temporary construction compounds and ancillary facilities.
- Temporary stockpiles.
- Removal of vegetation.

With the exception of the vegetation removal, these impacts would be short term and minor in nature. Adjacent residents would likely be most affected. The loss of vegetation, and particularly the removal of trees along Mountain Creek, would be a medium-term impact, but would be mitigated over time as re-established vegetation grows and matures.

10.3.4 Operational visual and landscape impacts

The project would have potential impacts on the 10 identified residential property viewpoints. The visual impact rating for each of the 10 identified residential property viewpoints is summarised in Table 10-5. Measures would be provided to mitigate impacts on those viewpoints assessed as having a high, or moderate to high, potential impact (see Section 10.3.6).

Table 10-5 Summary of visual impacts of the project for the identified rural residential property viewpoints

Viewpoint ¹	Overall visual impact rating	General comment on visual impact
1	Low to moderate	Has views of existing Hume Highway Would have limited views of project.
2	High	Has views of existing Hume Highway Would have views of project.
3	Low to moderate	Has views of existing Hume Highway Would have limited views of project.
4	High	Has views of existing Hume Highway Would have views of project.
5	Moderate	Has limited views of existing Hume Highway Would have views of project.
6	Moderate	Has limited views of existing Hume Highway Would have views of project.
7	High	Has views of existing Hume Highway Would have views of project.
8	Moderate	Has views of existing Hume Highway Would have limited views of project.
9	Moderate	Has views of existing Hume Highway Would have views of project.
10	Low to moderate	Has views of existing Hume Highway Would have views of project.

Note: 1. Refer to Figures 10-3 and 10-4 for viewpoint locations.

The visual changes and landscape character impacts associated with the project for the identified landscape units are summarised in Table 10-6.

Table 10-6 Summary of visual changes and landscape character impacts for each landscape unit

Visual change to landscape	Landscape character impacts	Overall ranking of impacts
<i>Northern undulating rural unit</i>		
The project would tie into the existing highway then head west to curve around the base of Mount McKenzie. Bridges would be provided as the crossing across Sandy Creek. A number of cuttings and fill embankment would be necessary south of the Sandy Creek crossing.	▪ Introduction of an urban element into a predominantly rural setting. ▪ Removal of a limited amount of vegetation. ▪ Introduction of bridges over Sandy Creek. ▪ Construction of cut and fill embankments. ▪ Light spill from intersection.	Low to moderate
<i>Central hilly rural unit</i>		
Extensive earthworks would be required due to the hilly terrain. A number of deep cuttings would be made in the northern portion of this landscape unit. The largest cutting would be up to 40 metres deep. On the southern part of this unit, the project would be constructed on a low embankment.	▪ Introduction of an urban element into a rural setting. ▪ Substantial earthworks, including three deep cuttings ▪ Removal of a limited amount of vegetation.	Moderate to high
<i>Southern creek line/undulating rural unit</i>		
Twin bridges would be constructed over Mountain Creek. The project would be constructed on an embankment throughout most of this unit. A deep cutting would be provided on the western side of the project to the north of Fairbairn Road.	▪ Introduction of an urban element into a predominantly rural setting. ▪ Removal of a limited amount of native vegetation, particularly along Mountain Creek and the existing Hume Highway. ▪ Construction of cut and fill embankments. ▪ Introduction of twin bridges over Mountain Creek. ▪ Light spill from intersection.	Low to moderate

The project generally satisfies the urban design objectives. Any residual visual and landscape character impacts of the project would be mitigated through the measures provided in Section 10.3.5.

10.3.5 Management of visual and landscape impacts

A draft urban and landscape design strategy has been developed for the project to mitigate visual and landscape character impacts. This is illustrated in Figures 10-5 and 10-6. The strategy would be finalised during detailed design. In addition, Table 10-7 identifies mitigation and management measures that would be implemented for specific visual and landscape impacts of the project. These measures have been incorporated into the draft statement of commitments in Chapter 11.

Table 10-7 Mitigation and management measures for visual and landscape impacts

Potential impact	Mitigation and management measure
<i>Construction</i>	
Visual changes during the construction phase.	Rehabilitate disturbed areas as soon as possible after completion of construction.
<i>Operation</i>	
Overall visual and landscape character impacts of the project.	- Implement the design objectives of the urban and landscape design strategy for the project in the development of built elements and landscaping treatments. - Include native plant species endemic to the local area in landscaping treatments.
Introduction of lighting at interchanges and overpasses.	Design lighting to minimise light spill and in accordance with RTA standards.

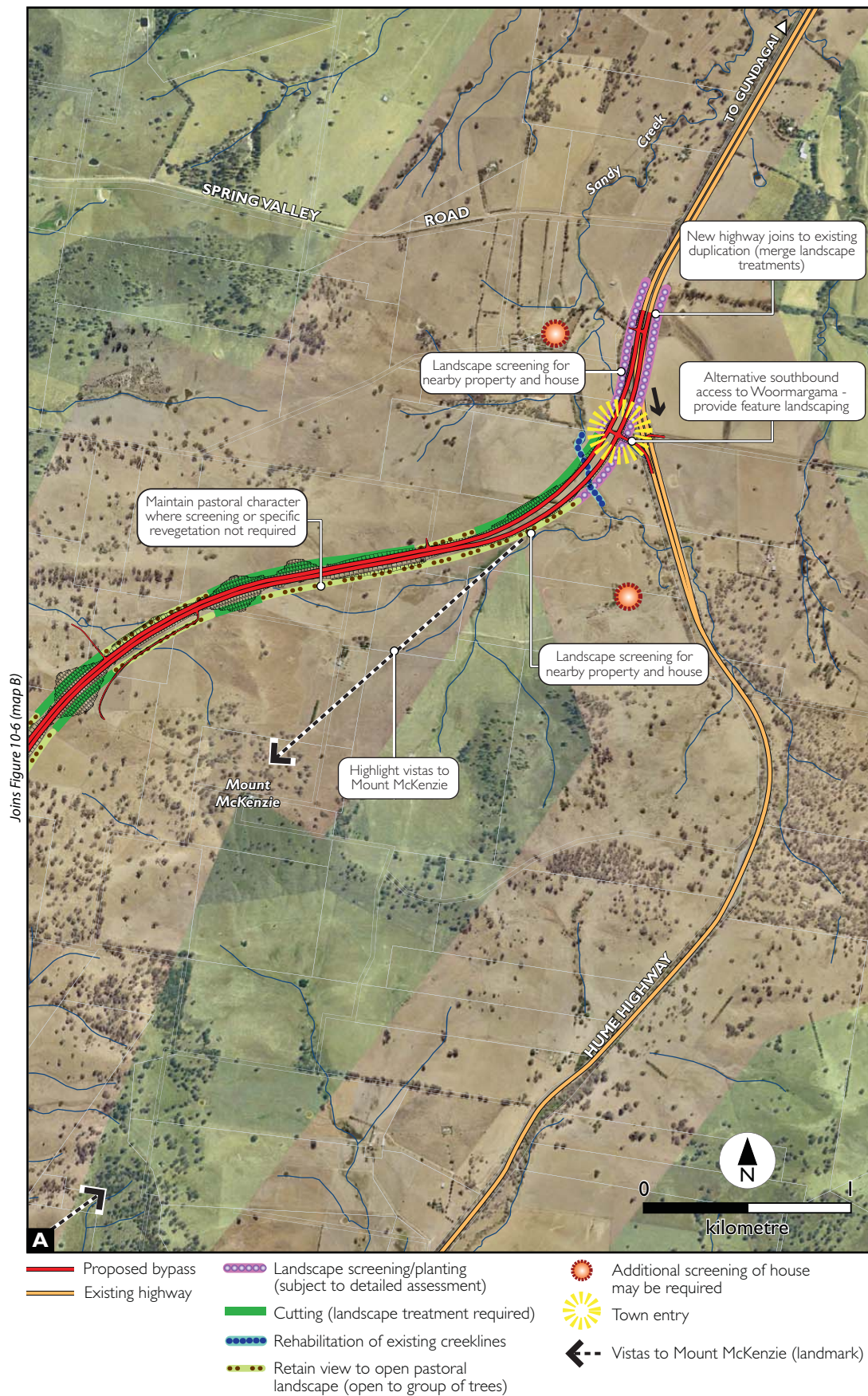


Figure 10-5 Draft urban and landscape design strategy (northern section)

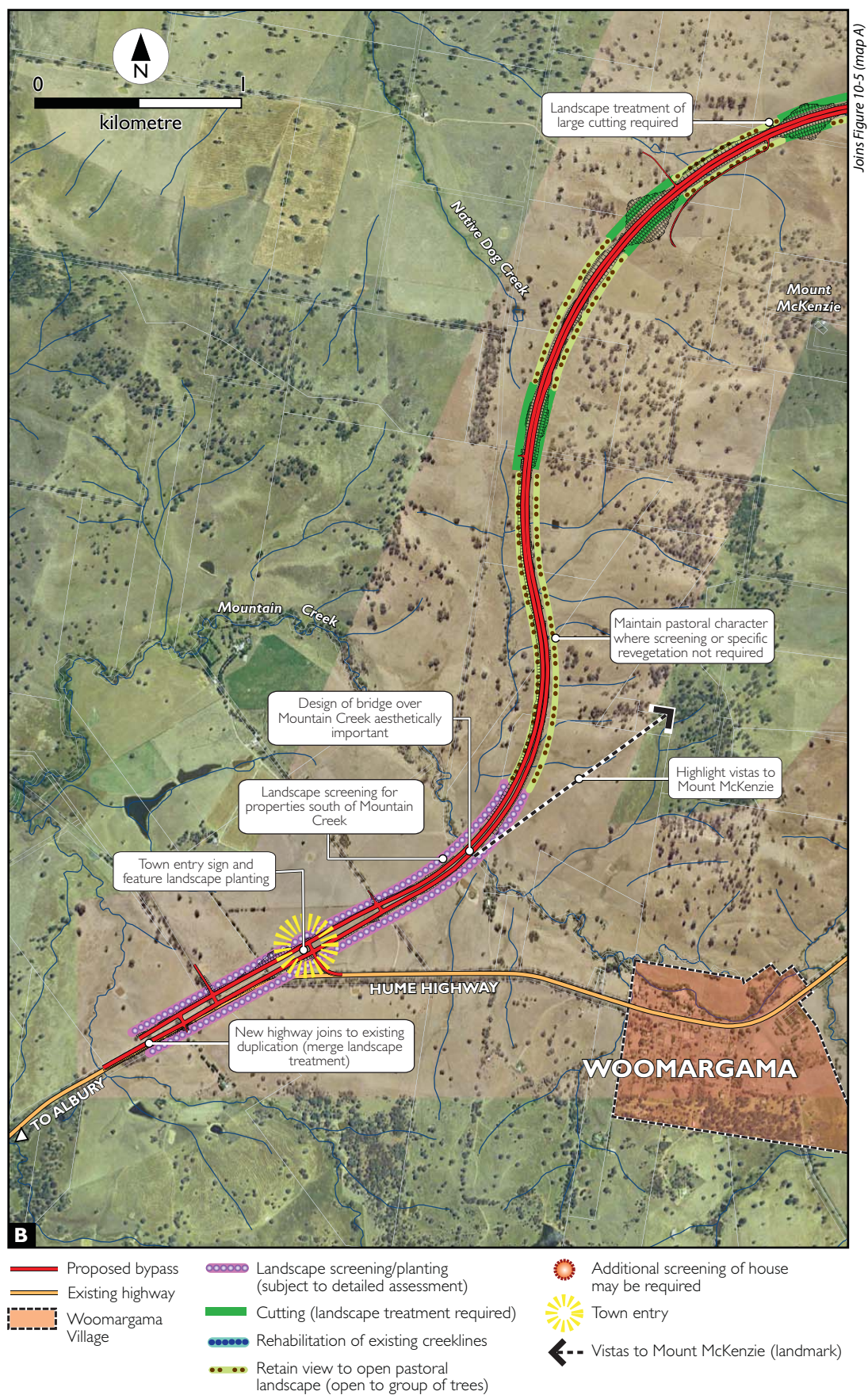


Figure 10-6 Draft urban and landscape design strategy (southern section)