6. Construction

This chapter describes the proposed construction of the project. The chainages referred to throughout this chapter refer to those along the southbound carriageway of the project.

6.1 Construction activities and equipment

Table 6-1 provides a summary of the likely construction phases and associated activities that would occur for the project, and the likely plant and equipment that would be used for those activities. Conventional techniques employed on most highway construction projects would be used during these construction activities.

The construction period for the project is expected to be approximately two years. An indicative program of activities is provided in Figure 6-1.

Table 6-1 Proposed construction phases and activities, and plant and equipment

Construction phase	Activities	Plant and equipment
Preconstruction		
Investigations	▪ Land acquisition. ▪ Survey of construction footprint. ▪ Geotechnical investigations.	▪ Survey equipment ▪ Backhoes ▪ Water carts ▪ Drilling equipment ▪ Excavators ▪ Explosives.
Environmental management system (EMS)	▪ EMS. ▪ Environmental management plans. ▪ Statutory approvals and licensing.	
Property adjustments	▪ Fencing of construction site boundary. ▪ Relocation of farm fencing. ▪ Notify residents of commencement of work.	▪ Augers ▪ Backhoes/Excavators ▪ Light vehicles.
Site access	▪ Temporary sidetracks tie-in — north and south.	▪ Graders ▪ Dozers ▪ Loaders ▪ Compactors ▪ Excavators ▪ Light vehicles ▪ Cranes ▪ Scrapers ▪ Trucks and dogs ▪ Water carts ▪ Rollers ▪ Backhoes ▪ Concrete batch plants.

Construction phase	Activities	Plant and equipment
Site establishment and preparation	▪ Demarcation of environmentally sensitive areas. ▪ Establishment of site compounds and other construction support facilities (including crib facilities). ▪ Services/utilities provision and relocation. ▪ Installation of erosion and sediment control measures (temporary sediment control basins, silt fences and cross drainage). ▪ Establishment of turn in/turn out lanes. ▪ Minor access road. ▪ Construction of temporary creek crossings. ▪ Minor clearing of non-threatened species. ▪ Construction of temporary access for landowners and operators of equipment on Mount McKenzie.	▪ Graders ▪ Dozers ▪ Loaders ▪ Compactors ▪ Excavators ▪ Light vehicles ▪ Cranes ▪ Scrapers ▪ Trucks and trailers ▪ Water carts ▪ Rollers ▪ Backhoes ▪ Concrete batch plants.
Construction		
Earthworks	▪ Clearing and grubbing of vegetation. ▪ Mulching. ▪ Stripping and stockpiling of topsoil. ▪ Pavement drainage. ▪ Excavation of cuttings. ▪ Rock blasting (if required). ▪ Stockpiling of materials. ▪ Processing of excavated material (rock crushing and screening).	▪ Rollers ▪ Trenchers ▪ Primary and secondary screeners ▪ Loaders ▪ Drilling rigs ▪ Backhoes ▪ Trucks ▪ Scrapers ▪ Graders ▪ Excavators ▪ Water carts ▪ Trucks and trailers ▪ Compactors ▪ Explosives trucks ▪ Dozers.
Bridgeworks	▪ Embankment construction. ▪ Structure construction. ▪ Finishing works.	▪ Jack hammers ▪ Cranes ▪ Boom lifts ▪ Concrete pumps ▪ Welders ▪ Pumps ▪ Excavators ▪ Trucks ▪ Pile rigs ▪ Drill rigs ▪ Trucks ▪ Concrete trucks.

Construction phase	Activities	Plant and equipment

Other works	▪ Property accesses.
	▪ Local road intersections.
	▪ Tie-ins.
	▪ Permanent sedimentation and erosion control:
	  ▸ Run-off collection pond and erosion protection downstream.
	  ▸ Vegetated medians and swales, cross drainage, diversion and drains (if required).
	▪ Removal of redundant Hume Highway sections (if required).
		▪ Texture curers
		▪ Water carts
		▪ Resin trailers
		▪ Jack hammers
		▪ Grinders
		▪ Saw cutters
		▪ Backhoes
		▪ Trucks
		▪ Concrete trucks
		▪ Pavers
		▪ Excavators
		▪ Rock hammers.

Road base	▪ Placement and compaction of road base. ▪ Watering and further compaction.	▪ Rollers ▪ Multi-tyre rollers ▪ Excavators ▪ Suction trucks ▪ Graders ▪ Sprayers ▪ Trucks ▪ Tankers ▪ Front end loaders.
Paving	▪ Operation of batch plants. ▪ Gravel base/sub-base layers and asphalt paving (flexible pavement). ▪ Placement of debonding layer. ▪ Concrete paving (rigid pavements).	▪ Backhoes ▪ Trucks ▪ Concrete trucks ▪ Pavers ▪ Texture curers ▪ Water carts ▪ Cranes ▪ Concrete batch plants ▪ Generators ▪ Hammers ▪ Grinders ▪ Resin trailers ▪ Saw cutters.
Finishing works	▪ Safety barrier(s). ▪ Bridge drainage system (Mountain Creek). ▪ Lighting. ▪ Line marking. ▪ Signposting. ▪ Signage. ▪ Site clean up and restoration. ▪ Landscaping and revegetation.	▪ Side tippers ▪ Rollers ▪ Water carts ▪ Excavators ▪ Trucks and trailers ▪ Graders ▪ Sweepers ▪ Rubber tyred excavators ▪ Pavers

Construction phase	Activities	Plant and equipment
		▪ Concrete pumps ▪ Saw cutters ▪ Concrete trucks ▪ Jack hammers ▪ Trucks ▪ Texturer/curers ▪ Cranes ▪ Auger/excavators ▪ Line making trucks ▪ Sweepers ▪ High pressure cleaners.

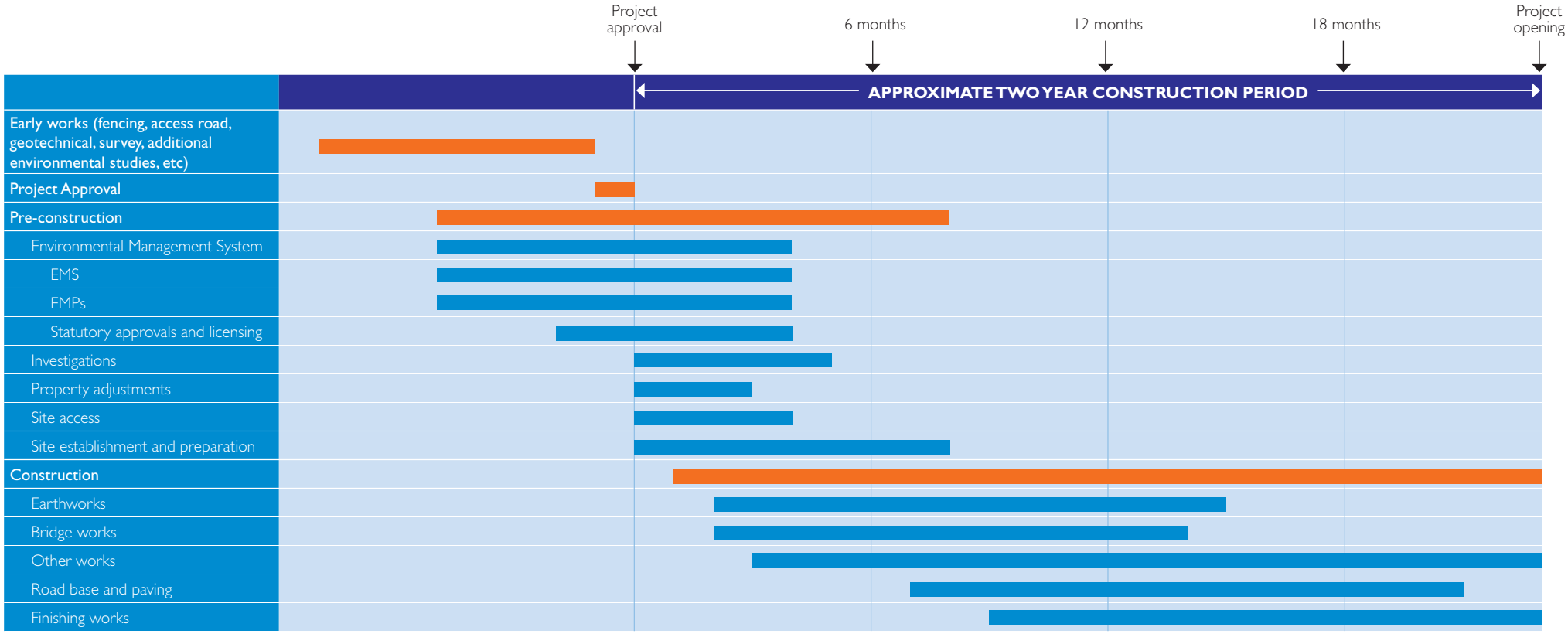

Figure 6-1 **Indicative construction program**

6.2 Construction programming and traffic management

6.2.1 Staging

No staging is proposed for the project.

6.2.2 Construction programming

The proposed construction works would be programmed to minimise the interaction between the construction works and the local and regional road network. This would minimise disruption to local and through traffic.

Temporary roadworks would be required during construction to tie the existing road network into the construction works and also at the intersection of the project with Fairbairn Road. Temporary roadworks may be constructed under traffic control and could result in some short-term traffic impacts to users of the existing road network.

6.2.3 Construction traffic management

Standard traffic management measures would be employed to minimise the short-term traffic impacts expected during construction. These measures would be identified in specific traffic management plans and would be developed in accordance with the RTA's *Traffic Control at Works Sites Manual* (RTA 2003a).

A detailed assessment of traffic and transport impacts is presented in Section 9.6. Construction traffic impacts are discussed in Section 9.6.3 and measures to mitigate these impacts are identified in Section 9.6.5.

6.3 Resource consumption

6.3.1 Materials and spoil disposal

The project has been design to achieve an overall balance of earthworks to minimise excess spoil or the need to import material. At present, the project assumes a cut and fill balance, with approximately 1.5 million cubic metres of material to be excavated and 1.5 million cubic metres of fill material required. This calculation assumes that the excavated material is suitable for base and select layers with minimal reprocessing on site (ie crushing and screening). As geotechnical investigations are yet to be completed, the suitability of the excavated material is still to be confirmed.

If the excavated material on site is not suitable for the select zone material, fill would be required to be imported from off site. Potential locations to source this material include existing quarries at Rockley Falls or Culcairn (north of the project).

Given that the design of the project has aimed to achieve an overall balance of earthworks, excess material is not anticipated to be generated during construction. Should the project result in excess material it would potentially be used for the nearby construction of the proposed Holbrook bypass, which may require material to be imported. This material would be temporarily stockpiled on site until required. Any material found to be unsuitable for reuse would be disposed of in accordance with the *Waste Classification Guidelines, Parts 1 and 2* (DECC 2008a).

Other natural resources required for construction of the project include aggregates for use in concrete batching, sand, aggregate and select material for use as backfill around pipes and production of concrete as well as densely graded base and sub-base. Where feasible, materials would be sourced from existing regional quarries.

Manufactured items, including reinforcing steel, pre-cast bridge components, and stormwater pipes and pits, would also be required for the project.

6.3.2 Water

Water would be used during construction of the project for dust suppression, washing of plant and equipment, drinking water, hand washing, toilets, watering of landscaped areas, compaction and pavement stabilisation during earthworks, and concrete batching. The activities with the highest water consumption include concrete production and general construction water (dust suppression and compaction activities).

Concrete production requires relatively high quality water. Water required for general construction purposes, such as dust suppression, moisture control of general fill and wetting of road base material for compaction is not required to be as high quality, but must be of a high enough standard that it can be handled and used near watercourses without causing any detrimental effects.

Water could be supplied from a number of sources. It is expected that water supply would be from a combination of the options described below.

- Groundwater from the Woomargama township supply: There is potential for the project to access potable water for construction site compounds from the town water supply. This would be undertaken in agreement with Riverina Water County Council (the authority responsible for supplying water to Woomargama). As part of the agreement, the project may upgrade the existing town bore infrastructure. The transfer of water from the town bore to the project would likely be via a pipeline placed on the ground surface.
- Extraction of water from the Hume Weir: The RTA currently extracts water from the Hume Weir via a licensed extraction point for the Hume Highway duplication (Woomargama to Mullengandra) to the south of the project. The water is currently pumped to two sites via a surface pipeline. This pipeline currently extends to Mullengandra (approximately nine kilometres south of the project). Should this water be required for the project, the pipeline would be extended from Mullengandra to the project. The pipeline would be placed on the ground surface along the project and the existing highway. The pipeline would be temporary and would not require earthworks or vegetation clearing. Figure 6-2 shows the location of the existing pipeline under the Hume Highway duplication (Woomargama to Mullengandra) project and the proposed extension of the pipeline for the project. The Hume Weir has a maximum capacity of 3,038,000 megalitres and is currently at 25 percent capacity. In recent years, the capacity has been as low as one percent. The water requirements for construction of the project (400 megalitres over the two year construction period) would have a minimal impact on this water supply were this source to be used.
- Recycled effluent water from industrial facilities in the surrounding region: Should a suitable source be identified, water would either trucked or piped to the site. If a pipe is required it would be constructed in a similar manner to the pipeline described above. One potential source of effluent, Norske Skog Paper Mills in Albury, has a licence to discharge 20 megalitres of effluent per day.

- Construction of offline water storages to store water from sediment basins: Potentially three large water storage dams would be constructed, one at either end of the project and one in the middle of the project (up to 50 megalitres in total volume). Water from temporary sediment basins and/or the industrial sources would be diverted to these dams and used during construction. This would provide added flexibility in the management of stormwater run-off after rainfall. These dams may be left in place at the completion of the project subject to the provision of harvestable rights, and in consultation with landowners, if applicable.
- Use of existing on-site and off-site farm dams: There are some existing farm dams on surrounding land that may be used for the project as a localised supply of construction water. Water from farm dams may be purchased from landowners when a surplus exists. Landowners would be consulted with during the construction period.

Section 9.3.3 addresses the potential impacts of water requirements for construction on water sources and surrounding water users.

6.3.3 Estimated quantities of natural resources

Table 6-2 lists the estimated quantities of natural resources required for construction of the project. These quantities are indicative and are subject to change during detailed design.

Table 6-2 Estimated quantities of natural resources for construction

Material	Estimated quantity required
Select fill	0 cubic metres (100,000 cubic metres[1])
Concrete	100,000 cubic metres
Asphalt	30,000 tonnes
Base/sub-base	23,000 cubic metres
Water	400 megalitres

Note: 1. If the excavated material is unsuitable for select fill, importation of up to 100,000 cubic metres would be required.

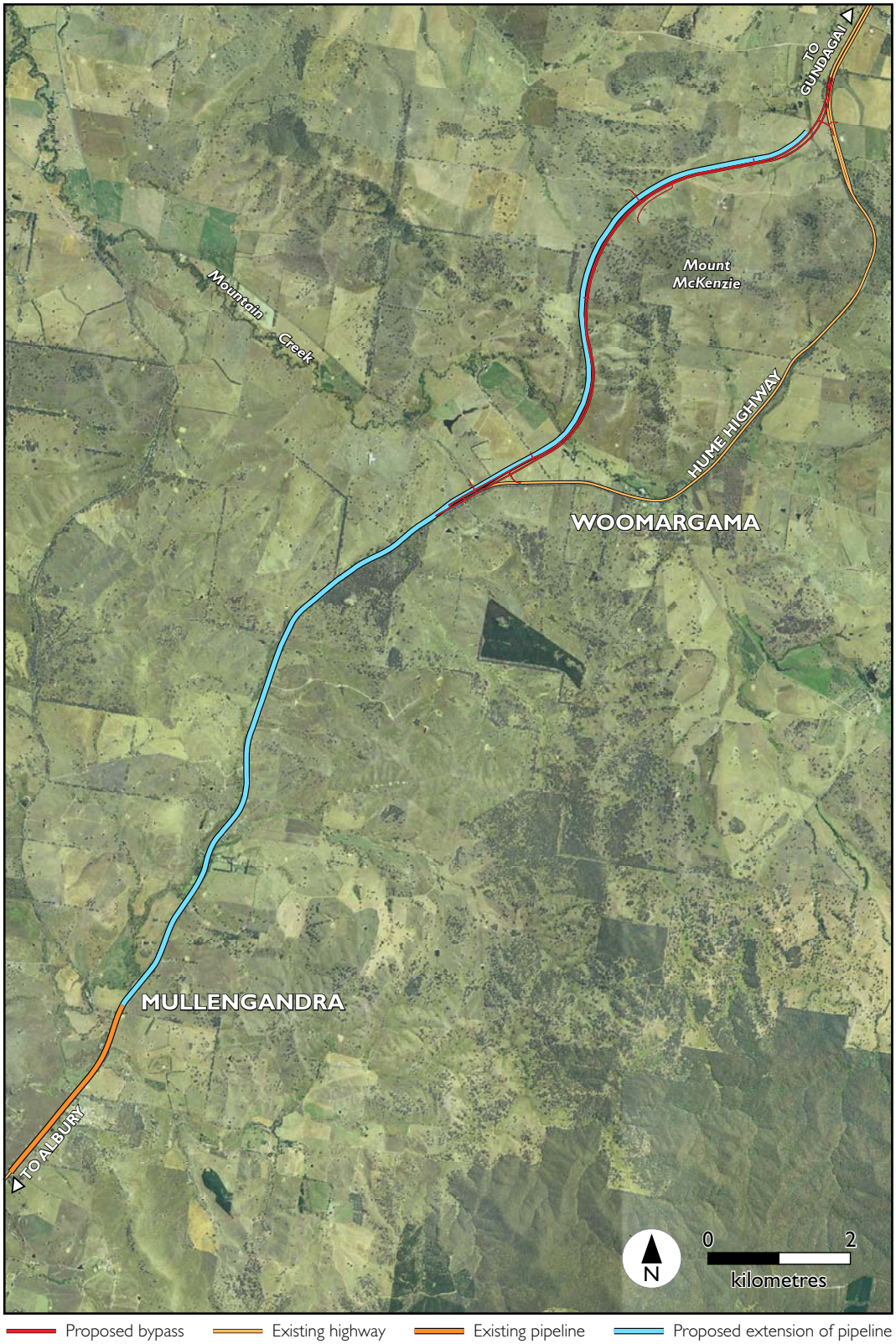

Figure 6-2 **Proposed extension to existing water pipeline from Hume Weir**

6.4 Erosion and sediment control

Potential erosion and sedimentation of waterways and the landscape is assessed in Section 10.2. An assessment of site constraints was undertaken to identify the nature of soil, landform and hydrological constraints associated with the project. The assessment has enabled the identification of indicative temporary sediment basin locations along the project. These sediment basins would be designed and maintained in a manner consistent with the measures identified in Section 10.2.5 to avoid impacts on the surrounding environment. A number of these construction sediment basins may be retained as permanent spill containment basins during operation of the project. The remaining temporary basins would be removed and rehabilitated upon operation of the project.

Figure 6-3 shows the indicative locations of sediment basins required for construction.

Erosion and sediment control measures would be constructed in accordance with the 'Blue Book' *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom 2006) and *Managing Urban Stormwater: Soils and Construction, Volume 2D, Main Road Construction* (DECC 2008b).

6.5 Workforce and working hours

6.5.1 Construction workforce

The construction workforce would vary depending on the phase of construction and associated activities. The workforce would include construction and design personnel. An on-site workforce approximately 300 persons would be engaged at any given time during the construction period.

6.5.2 Construction working hours

The majority of construction activities would take place from 6am to 7pm, Monday to Friday, and 7am to 4pm Saturday (the daytime period), with no work on Sunday or public holidays. However, certain activities would be required to take place during the evening and night-time periods due to:

- Technical considerations (such as the need to meet particular quality specifications for placement of concrete pavement).
- The climatic environment (cold winters and hot summers).
- An accelerated construction program.

The proposed working hours and associated activities are outlined in Table 6-3.

Table 6-3 Construction working hours and associated activities

Day	Time	Activity
Monday to Friday	Daytime (6am to 7pm)	▪ Compound operation. ▪ Earthworks. ▪ Structures. ▪ Drainage. ▪ Ancillary/finishing works. ▪ Paving. ▪ Concrete saw cutting. ▪ Concrete batch plant operation. ▪ Maintenance activities. ▪ Blasting activities (would only occur between 9am and 5pm and be limited to two blasts per day).
	Evening (7pm to 10pm) and Night-time (10pm to 6am)	▪ Compound operation. ▪ Paving. ▪ Concrete saw cutting. ▪ Concrete batch plant deliveries. ▪ Concrete batch plant operation. ▪ Maintenance activities. ▪ Commissioning of services.
Saturday	Daytime (7am to 4pm)	▪ Compound operation. ▪ Deliveries. ▪ Earthworks. ▪ Structures. ▪ Drainage. ▪ Ancillary/finishing works. ▪ Paving. ▪ Concrete saw cutting. ▪ Concrete batch plant deliveries. ▪ Batch plant operation. ▪ Maintenance activities.
Sunday and public holiday	No scheduled work	

Construction activities not identified above would be undertaken during the daytime or, if in the evening and night-time periods, only if:

- Works do not cause construction noise to be audible at any sensitive receiver; or
- Delivery of materials is required by the Police or other authorities for safety reasons; or
- Work is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or
- On a case-by-case or activity specific basis, which would be subject to consultation with the Department of Planning, the Department of Environment Climate Change and Water (DECCW) and affected sensitive receivers.

6.5.3 Justification for activities in the evening and night-time periods

Concrete paving

The RTA has specifications for placement of concrete pavement that relate to temperature and rainfall. For jointed concrete base, the specifications prohibit the placement of concrete during rain or when the ambient air temperature is below 5°C or above 32°C. As hot weather affects the quality of concrete pavement, paving in the early evening and into the night is recommended as it takes advantage of night-time cooling. For cold weather concreting, early morning paving is recommended, to take advantage of daytime solar radiation and heat generation to promote concrete strength.

It is highly likely that concrete paving would need to be carried out during summer. Due to the climatic conditions experienced in the region during summer months, where daytime ambient temperatures often exceed the maximum temperature threshold of 32°C, concrete paving would need to occur during the day, evening and night-time periods as indicated in Table 6-3.

Concrete saw cutting

The project would most likely use plain concrete pavement, which is an unreinforced pavement. To manage cracking associated with drying shrinkage, saw cutters would be used to cut the pavement (usually in 4.2 metre long sections). The timing of concrete cutting is governed by the hydration rate of the pavement, and may require cutting at any time within four and 24 hours after paving, with a 'cutting window' as short as 30 minutes. As the timing of cutting is critical to the quality of the pavement and acceptance of the finished product, concrete saw cutting may need to be undertaken at any time, including outside normal construction hours. Concrete saw cutting is a construction activity that is transient in nature, and each 'saw cut' would be of a short duration.

As mentioned above, concrete paving is highly likely to be carried out during summer months. Following concrete paving, concrete saw cutting would take place within a four and 24 hour period, during the day, evening and night-time periods as indicated in Table 6-3.

Concrete batch plant operation and deliveries

Section 6.6.1 identifies that wet and dry concrete batch plants are proposed as part of the project. The wet concrete batch plant would need to operate approximately one month prior to and in conjunction with concrete paving works, including during the evening and night-time periods as indicated in Table 6-3.

A dry concrete batch plant would be operational for the entire construction period to supply concrete to a number of other project components, including during the evening and night-time periods, if required.

To keep up with materials demand during the peak periods of concrete production, the batch plants would likely require materials deliveries outside of normal working hours. Due to the regional location of the project, the timing of deliveries may be determined by the pattern of supplier fleet movements (ie at night).

The number of deliveries would be dependent on the size of the batch plant and its storage capabilities. There is potential for up to a total of eight deliveries per night during peak production periods.

Concrete batch plant deliveries may be undertaken during the evening and night-time periods during the following hours:

- 12am to 6am and 7pm to 12pm Monday to Friday.

Maintenance activities and site compound operation

Maintenance and operation of the site compound would be required to support the activities described above.

Management of impacts

An assessment of likely noise impacts resulting from these activities has been undertaken and is presented in Section 9.4. Specifically, Section 9.4.6 identifies the management measures that would be implemented to minimise these impacts.

6.6 Ancillary facilities and temporary works

A range of ancillary facilities and temporary works would be required during construction of the project. These are identified and discussed in the following sections.

The proposed locations of ancillary facilities have been assessed against safety and technical criteria and the following environmental criteria:

- More than 40 metres from waterways (excluding pipelines, temporary haul roads, creek crossings and access roads).
- Of low ecological and heritage conservation significance.
- No significant clearing of native vegetation beyond that already required for the project.
- Minimises impact on amenity of the closest sensitive receiver (unless a negotiated agreement is in place).
- Of relatively level ground.

Adopting the above criteria would ensure environmental impacts are minimised. Where criteria cannot be met, the associated impacts are discussed below.

Any ancillary facilities not identified in this environmental assessment would be located to comply with the above criteria.

6.6.1 Construction work sites

Construction work sites would be required for main site compounds, satellite compounds and concrete batch plants.

The likely new construction work sites are shown in Figure 6-3 and would be located within the construction site boundary. The construction site boundary defines the likely extent of the area required for construction of the project.

Operation of the construction work sites would have the potential to result in some noise and vibration, traffic, water quality and air quality impacts. Mitigation measures would be implemented as required to manage these impacts (see Sections 9.4, 9.6, 10.2 and 10.4).

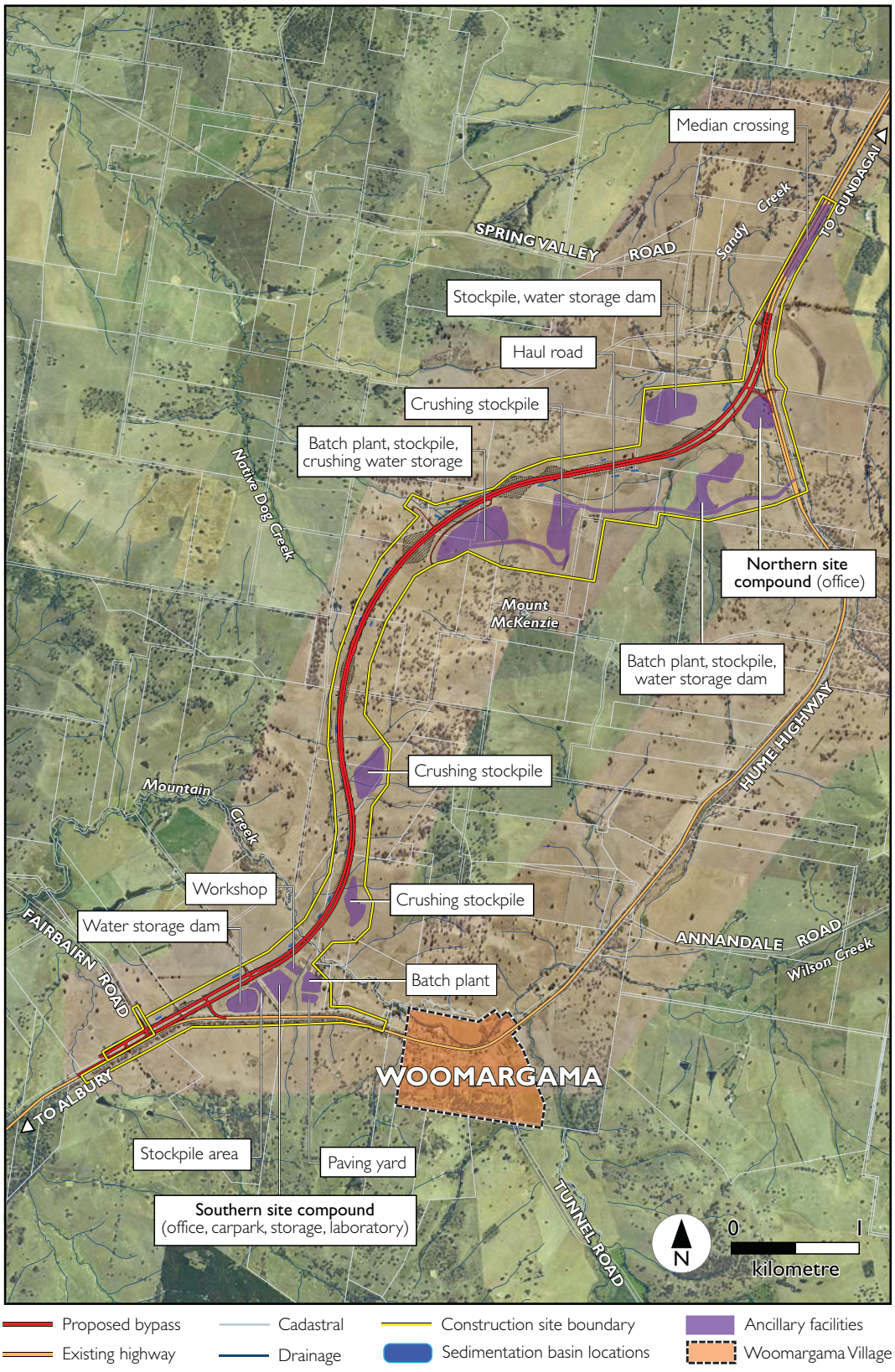

Figure 6-3 **Proposed construction site boundary and ancillary facilities**

Site compounds

Due to access and topography constraints, two new site compounds would be required for the project.

One new site compound would be located in the south of the project and would be approximately six hectares (60,000 square metres) in size. Access would be provided off the existing highway. Additional turn in/turn out lanes would be constructed to accommodate the expected traffic movements at the facility.

Another new site compound would be located at the north of the project and would be approximately three hectares (30,000 square metres) in size. Access would be via an existing access point off the existing Hume Highway. The access would be upgraded to accommodate the expected traffic movements at the facility.

An existing site compound, currently in use for the adjacent Hume Highway duplication (Woomargama to Table Top) project, may be used for the project during the early stages of construction, while the proposed new site compounds are being established. This site compound is located 25 kilometres to the south of the project, north of the Hume Highway, at the intersection with Knox Road ('Knox Road compound'). The site compound is approximately two hectares (20,000 square metres) in size. Access would be via an existing access point off the Hume Highway. While this site compound would be used in the early phase of construction, due to the distance from the project, it would not be feasible to operate this facility as the main site compound for the duration of construction (see Figure 9-7 for location).

The site compounds would include:

- Site offices.
- Parking.
- Geotechnical testing laboratory.
- Workshop and maintenance facilities.
- Storage sheds.
- Lay down areas.
- Staff amenities.
- First aid room.
- Septic system.
- Internal roads.
- Hazardous good storage areas.

Assessment against environmental criteria

A number of locations were investigated along the length of the project for the new site compounds. As identified above, investigations considered safety, technical and environmental criteria. The two proposed site compound locations are the only locations that would meet the safety and technical criteria. The locations will satisfy the majority of the environmental criteria. There will be some impacts on Aboriginal heritage and amenity. These are discussed in Sections 9.2 and 9.4 respectively.

Satellite compounds

It is likely that six temporary satellite compounds would be required for the project. These satellite compounds would be approximately one hectare (10,000 square metres) in area and would include:

- Gravel placed across the entire area.
- Shipping containers for secure storage of tools and equipment.
- Small offices.
- Limited parking.

- Crib sheds.
- Portable toilets.
- Generators.
- Bunded storage of chemicals (eg fuel).
- Laydown/storage of materials, scaffold.
- Fencing and security.
- Erosion and sediment controls.

Assessment against environmental criteria

Satellite compound locations would be determined during detailed design.

Concrete batch plants

Up to three new batch plants (including wet and dry batch plant facilities) are likely to be established to provide concrete for project construction. These would likely be located as follows:

- Adjacent to the north site compound — wet batch plant.
- Near the centre of the project — wet batch plant.
- Adjacent to the south site compound — dry batch plant.

These locations are shown on Figure 6-3.

In addition, an existing batch plant, currently in use for the adjacent Hume Highway duplication (Woomargama to Table Top) project, may be used for the project during the early stages of construction, while the proposed new batch plants are being established. This batch plant is located 25 kilometres to the south of the project, north of the Hume Highway, at the intersection with Knox Road ('Knox Road batch plant'). Access would be via an existing access point off the Hume Highway. While this batch plant would be used during the early phase of construction, due to the distance from the project, it would not be feasible to operate this facility as a main batch plant for the duration of construction (see Figure 9-7 for location).

The batch plant facilities would occupy areas up to 300 by 250 metres and would include:

- 'Wet mix' mobile batch plant.
- Diesel generator.
- Silos.
- Security fencing.
- Water storage tanks.
- Site office.
- Amenities.
- First aid room.
- Storage areas.
- Car park.
- Access road.
- Stormwater control drains.
- Erosion and sediment controls, including a sediment basin.
- Waste water system.

Assessment against environmental criteria

A number of locations were investigated along the length of the project for the new batch plant locations. The locations of the new and existing batch plants will satisfy the majority of the environmental criteria. There will be some impacts on amenity. These impacts are discussed in Section 9.4.

6.6.2 Pipeline

As identified in Section 6.3.2, water may be conveyed to site via a pipeline. The pipeline would be placed on the ground surface along the project and the existing highway (refer Figure 6-2 for likely location). Along the length of the pipeline, water pressure and pumping infrastructure (eg pumps, header tanks, power, fuel tanks) would be required to facilitate the transfer of water to the project.

Some pipeline infrastructure may be located in portions of existing ancillary facilities in use for the adjacent Hume Highway duplication (Woomargama to Mullengandra) project, where some of the required infrastructure is already in place. This may include the Mullengandra batch plant and Knox Road site compound (refer Section 6.6.1).

Assessment against environmental criteria

The pipeline and associated infrastructure would be temporary and would not require major earthworks or vegetation clearing. Pipeline infrastructure would be sited to have minimal impacts on Aboriginal and non-Aboriginal heritage and be designed to minimise impacts on amenity.

The location of the pipeline and associated infrastructure would be determined during detailed design.

6.6.3 Temporary haul roads, creek crossings and access roads

A number of temporary haul roads, creek crossings and access roads would be required for the project. A major haul road would be constructed along the length of the project to access major cuts and excavated areas. This haul road would also provide an alternative access when the carriageways are unavailable for trafficking (eg after paving). Minor haul roads would be required to access other areas of the project, the top of cuts and stockpile areas. Generally, the temporary haul roads would facilitate all-weather access and would be around 15 metres wide.

Two temporary creek crossings would be required over Mountain Creek. These crossings would be located either side of the bridge construction area. One crossing would be around 15 metres wide and the other around eight metres wide. These would cater for two-way traffic and an access crossing for bridge construction crews and light vehicles, respectively. Approximately four temporary creek crossings over Sandy Creek would be required.

All temporary creek crossings would be designed in accordance with Department of Industry and Investment's (formerly DPI) *Policy and Guidelines for Fish Friendly Waterway Crossings* (Fairfull and Witheridge 2003) and in consultation with the Department of Industry and Investment.

Temporary crossings would be designed to ensure sedimentation and erosion impacts are minimised. Generally they would allow crossing of the creek for rainfall events up to 1 in 2 year events and allow water to safely overtop in a larger flood event.

Temporary property access roads would be provided for landowners to ensure continued access to properties. This would also allow access to telecommunications equipment on Mount McKenzie. Access arrangements would be finalised during detailed design and construction, and developed in consultation with affected landowners.

Portions of the temporary haul and access roads may be retained during operation to provide permanent access to infrastructure such as spill containment basins and bridge abutments.

Assessment against environmental criteria

The locations of temporary haul roads, creek crossings and accesses will satisfy the majority of the environmental criteria. There will be some impacts on flora and fauna as a result of vegetation clearing for creek crossings and on Aboriginal heritage from the temporary haul road in the north. These impacts are discussed in Sections 9.1 and 9.2 respectively.

6.6.4 Rehabilitation of ancillary facilities

Following completion of construction, ancillary facilities not required for operation would be revegetated to their pre-existing condition, in consultation with the relevant landowner(s).

Should the project make use of existing ancillary facilities approved under the current Hume Highway duplication (Woomargama to Mullengandra) project (refer Sections 6.6.1 and 6.6.2), the rehabilitation works would ensure compliance with existing approval conditions.

6.7 Storage and stockpile areas

Several storage and stockpile sites are likely to be required for the project to store, prepare, process and distribute materials. Potential locations of the storage and stockpile areas are shown in Figure 6-3. The proposed locations of temporary storage and stockpile areas would be assessed against the following environmental criteria:

- Of low ecological and heritage conservation value.
- Constructed on the contour at least 40 metres from waterways.
- Outside the 1 in 10 year average recurrence interval (ARI) floodplain.
- Of relatively level ground.

Adopting the above criteria would ensure environmental impacts are minimised.

Any material that is suitable for road construction may be stockpiled and stored on-site for use for the construction of the proposed Holbrook bypass (if approved). On completion of construction storage and stockpile sites not required during operation would be revegetated to their pre-existing condition, in consultation with the relevant landowner(s).

6.8 Removal of existing Hume Highway sections

Sections of the existing Hume Highway dual carriageway that may become redundant following the opening of the project would be removed if required.