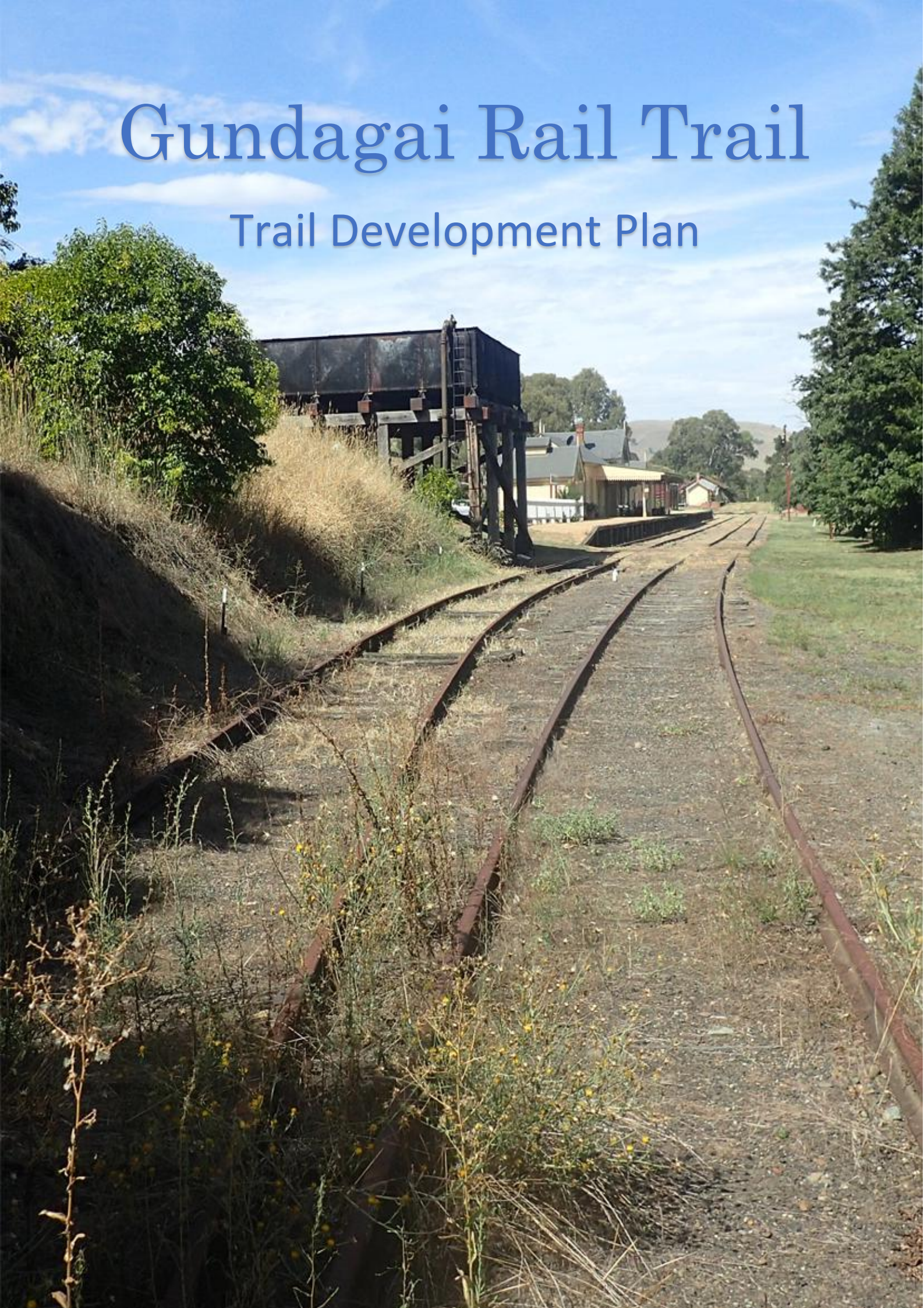


Gundagai Rail Trail

Trail Development Plan



GUNDAGAI RAIL TRAIL TRAIL DEVELOPMENT PLAN

DRAFT REPORT



**COOTAMUNDRA -
GUNDAGAI** REGIONAL
COUNCIL



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EXECUTIVE SUMMARY

This Trail Development Plan sets out a detailed set of activities for the progressive construction of a trail on the disused railway corridor within the “town” section of Gundagai (from Ann Street in the north to Gocup Road in the south). Section 4.0 contains three tables where a comprehensive works list for each of the proposed stages of the rail trail development is set out, and an estimate of probable costs for each task.

One of the most significant benefits of the proposed trail/pathway is that, if constructed, it will provide a key non-motorised link between the town centre and businesses and residences to the north of town, and to residences and workplaces in South Gundagai. The path would become a strategic link in the town’s path network.

The estimated detailed cost of the project is **\$1,282,560**.

In the cost estimates that follow, an estimate has been made for the removal of the steel track and sleepers. It is a major cost (at \$33/metre for a total of \$174,900). The ownership of the track and responsibility for removal (and any sale proceeds) is yet to be resolved and is part of the Tumbarumba-Rosewood Rail Trail pilot project currently underway. If the removal of track and sleepers can be a cost-neutral exercise, this will significantly reduce the trail costs.



The proposed rail trail will provide a sealed pathway from residential areas and workplaces in the north of Gundagai to the centre of town; and to residences and businesses in South Gundagai.

When the contractors are removing the track and sleepers, the project manager should ensure that the embankments and cuttings of the former railway are left in an acceptable condition. Furthermore, the contract should ensure that when the track is being removed the contractors should be required to grade and level the embankment/formation following removal of the track.

The scope of work excludes assessment of the viaduct bridge over the Murrumbidgee River.

Should the bridge not be able to be restored (or should an alternative be needed for a period of time), the existing footpath network can be used for the rail trail (though the present bridge crossing is not ideal). There are no other significant bridges on the corridor within the study area. In all instances, replacement of damaged structures with pre-fabricated bridges has been recommended.

There are unknowns when dealing with the construction of rail trails such as this. The extent of approvals needed prior to development of the trail and the requirement for permits and additional studies is not known but an allowance has been made.

It is worth noting that the benefits of this project are not included in this report. These benefits have been addressed at length in the 2009 Feasibility Study (albeit for a longer corridor).



The historic Gundagai Railway Bridge – at 809 metres the longest timber truss bridge in Australia – would be an extremely popular attraction – and not just for trail users.

RECOMMENDATIONS

It is recommended that the Cootamundra Gundagai Regional Council:

-  Use this Trail Development Plan, and other documentation (including letters of support from the community) in future funding applications to the NSW Government.
-  Use this Trail Development Plan and the previous Feasibility Study as supporting documentation as it goes through the processes set out by the NSW Government for the legal closure of railway corridors.
-  Take measures to ensure that the removal of rail and any necessary demolition is done with utmost care to ensure that the corridor and railway formation is left in a good condition for trail construction. The trail construction task (and associated costs) may be significantly impacted if the formation is damaged during rail removal.

SECTION 1 – BACKGROUND

The NSW Railway was the first government-owned railway in the British Empire – the Sydney Railway Company was formed in 1848. The first line in NSW was a 22 kilometre line opened in September 1855. From this initial network, NSW now has over 11,000 kilometres of rail network.

As road transport became steadily more efficient during the 1950s, the railways began to lose their primary function. Throughout the following decades, scores were abandoned. Many of these corridors remain in public ownership. In NSW, railway lines cannot be closed without a specific Act of Parliament;

consequently, many rail lines are classified as disused. The condition of these railway reserves varies widely, but many are still intact as 'linear corridors' in public ownership.

The Cootamundra to Gundagai branch line was opened in 1886, with an extension to Tumut opening in 1903 following the completion of the



The road and rail bridges across the Murrumbidgee River and floodplain are amongst Gundagai's most famous attractions. Development of a walking and cycling facility on the historic railway viaduct would be a major tourist attraction for the town.

railway bridge across the Murrumbidgee River flood plain. The railway ceased operations in 1984, following damaging floods. For much of the last 34 years, little use has been made of the corridor. The corridor remains in public ownership.

Some important reminders of the former railway remain within the urban area of Gundagai (the focus of this study). A classic railway station still exists in Gundagai – the restoration of the station and the surrounding railway infrastructure (such as the water tanks, goods shed and various signalling mechanisms) is testament to the passion and hard work of the volunteers of the Gundagai Historic Bridges Inc. According to the NSW Heritage Branch, Gundagai is a highly significant site with an excellent group of buildings and structures from the late 1880's. In particular the relationship of the station, yard and early timber road and rail viaducts adds to the particular significance of the area. The station features the only slate roofed Goods Shed in New South Wales and was restored to its original 1886 glory in the 1990's. Inside, displays recall the travelling past, when trains ran regularly on the now defunct Cootamundra-Tumut branch line (Source: Cootamundra Gundagai Regional Council website: www.cgrci.nsw.gov.au).

The magnificent Gundagai Rail Bridge and Viaduct (over the Murrumbidgee River) is on the NSW State Heritage Register and on the State Rail Authority s.170 Register. The NSW Heritage Branch indicates that:

“The timber viaducts are of very high significance because their size, their pairing and their construction are examples of an early engineering solution to crossing a major flood plain. The viaduct is an example of timber bridge construction on a grand scale. A multi-span, high level viaduct of timber deck trusses and timber trestles, it is one of the most impressive structures in Australia. It dominates the crossing of the Murrumbidgee flood plain more so than the adjacent low level timber beam road viaduct. Its combination with the steel truss over the river makes for a unique technical juxtaposition of bridge types.” (Source: NSW Heritage Database www.heritage.nsw.gov.au)

The viaduct in particular is listed on the Register of the National Estate (registered in 1989). The listing notes that:

“These approaches form a significant technical accomplishment. The northern approach consists of seventy two timber truss spans, typically of 10.7m span, with a further five similar truss spans on the south side. These timber trusses have spans totalling 819m; they were completed in 1903 and form the longest timber truss bridge ever constructed in Australia. There were longer timber girder bridges but only one remains with its original form and length (in Queensland), but was constructed much later (1935). The rail approaches at Gundagai remain as one of the greatest timber structures ever built in Australia. The main span of the bridge, although of considerable interest is less significant historically. Completed in 1903, it has a 61m main truss span with pinned joints.” (Source: Australian Heritage Database www.environment.gov.au)

Even within the small town section (some 5.3 kilometres), cuttings and embankments are a common feature.

Since the closure of the operating railway over 30 years ago, little maintenance has been carried on within the railway reserve – with the notable exception of the station grounds. In most locations through Gundagai, the steel railway track and old rotting sleepers remain. The steel bridge across the Murrumbidgee River and the magnificent timber viaduct across the river floodplain remain intact (though they have deteriorated since the railway closure). Some lengths of the steel railway track have been removed.

In 2009 a Feasibility Study examining the merit of developing a ‘rail trail’ on the disused railway line (from Coolac to Tumblong) was undertaken. (A rail trail is the conversion of a disused railway into a multi-use recreation path, typically for walking, cycling and sometimes horse riding. The characteristics of abandoned railways - flat, long, frequently running through historical areas - are appealing to numerous potential user groups).

That 2009 Feasibility Study found that a trail from Coolac to Tumblong (on the railway corridor) was feasible from a technical and economic viewpoint.

In 2017, the (newly formed) Cootamundra Gundagai Regional Council determined to proceed to the next stage of work – a detailed Trail Development Plan – but limited to the “urban section” of the railway corridor from Ann Street in the north to Gocup Road in the south.

This Trail Development Plan provides the Council with a construction blueprint, enabling it to proceed with the establishment of the rail trail (should it determine this to be the

appropriate course of action) once funds become available and legislative impediments are removed.

Rail trails in NSW are being progressed through the development of a pilot project – a rail trail from Tumbarumba to Rosewood (southern NSW). The NSW Government is using the pilot project to answer a number of questions including enabling legislation and “project success”. It is understood that there will be no progress on other rail trails until the pilot project has been assessed (though Government actions with respect to other corridors – notably the Northern Rivers Rail Trail – do not reinforce this position). Once this project has been assessed, the Government may determine to fund other rail trail projects.

SECTION 2 – THE SCOPE OF WORKS FOR THIS PROJECT

There are no formal Terms of Reference for the Trail Development Plan. The original proposal, submitted to the former Gundagai Council in 2016, was for a Trail Development Plan for the entire corridor between Coolac and Tumblong (a distance of approximately 32 kilometres), building on the groundwork already available in the Murrumbidgee Valley Rail Trail Feasibility Study (prepared in 2009 by Transplan Pty Ltd and Mike Halliburton Associates). In late 2017, a new proposal was submitted to the Cootamundra Gundagai Regional Council to prepare a Trail Development Plan for the “urban section” of the railway corridor from Ann Street to Gocup Rd, Gundagai. Whilst there were no formal terms of reference, the main aim of the project was to prepare a detailed trail development plan for the proposed rail trail along the disused rail corridor within Gundagai township. The trail development plan will provide sufficient detail for a funding application to be prepared and to guide the actual construction once funding has been obtained.

SECTION 3 – TRAIL DESIGN AND DEVELOPMENT CONSIDERATIONS

3.1 GENERAL CONSIDERATIONS

This section of the Trail Development Plan addresses a series of matters relating to trail design and development of the Gundagai Rail Trail – to achieve a rail trail that is constructed with minimal disturbance to the natural environment, is sustainable and that requires minimal maintenance.

During construction of the original Cootamundra Tumut Railway (of which this section is a part), effective drainage was important, as it is with all public infrastructure. Locating a trail on the formation of the former railway is important, and reinstatement of bridges where they have fallen into disrepair, is vital for the success of the rail trail.

In addition to the major viaduct and bridge, there are several other small bridges (mostly in the 3-5 metre size) on the rail corridor between Ann Street and Gocup Road. These have been severely damaged and need replacement. In all instances, replacement of damaged structures with pre-fabricated bridges has been recommended.

Construction of the railway involved the cutting and filling of the landscape to create a surface that was relatively flat to enable the passage of steam trains. The result was a series of cuttings and embankments along the entire length of the rail corridor. Effective drainage will be required, especially within most cuttings, to ensure stormwater is quickly and effectively removed from the sides of the trail (as it was when the trains were running).

Culverts and other drainage controls should be used to direct run-off away from the trail. Stormwater must drain freely, and where possible, pass beneath the trail without impact on either the base formation or the surface itself. Rail trails, by their very nature, tend to deal with these problems relatively well. Numerous culverts inspected during fieldwork were completely or partially block, thereby inhibiting the free flow of stormwater under and away from the railway embankment. Regular cleaning of blocked culverts is essential to avoid serious soil and water degradation problems.

Particular care must be given to reinstating the side (cess) drains through cuttings.

Construction of the rail trail and associated signage should comply with relevant Australian Standards and Austroads guidelines. The works lists outlined in Section 4 delivers a trail to meet these requirements.

At some point in the future, (when the rail trail is funded) contractors will be engaged to remove the steel railway track and sleepers. Care will need to be taken by the contractors to ensure that the formation and bridges are left in as good a condition as possible to minimise rail trail construction difficulties.

3.2 TRAIL WIDTH AND HEIGHT

To function effectively as a shared use facility (for cyclists and walkers), the Gundagai Rail Trail should have a width of 2.5 metres. Anything wider than that and the trail starts resembling a road, which is not what rail trail users want. The width of the existing

embankment/formation of the original railway will ultimately determine the width that the proposed rail trail can be constructed in some locations.

Some sections of the former railway reserve are currently used for farming purposes (grazing etc.), or as access to farming properties, or as access between paddocks, and this access can be retained without seriously diminishing trail user experiences (subject to trail manager approval).

The railway has been disused since 1984. During this time some sections of the corridor have become overgrown and will require clearing for the passage of trail users. Where vegetation has regrown, overhead clearance should be maintained to approximately 2.4 metres from the rail trail surface. All overhanging vegetation – and that which intrudes from the sides into this ‘corridor’ should be cut back on a regular basis. Care should be taken that sharp and dangerous ‘points’ are not left in this pruning process.

There are instances where side vegetation can be retained, as the trees are attractive and provide shade. They also provide an attractive vista along the cutting or embankment. The works lists also contain recommendations for locations where trees should be replanted to provide shade for users.

3.3 TRAIL SURFACING

A smooth compacted surface is most appropriate for a shared use rail trail. The surface should be firm enough to provide cyclists (the predominant user group of rail trails) with a relatively smooth ride.

Most rail trails developed in Australia use a locally available earth surface (gravel, decomposed granite, crushed limestone, etc.) to produce a firm surface easily capable of accommodating walkers and cyclists.

However, Cootamundra Gundagai Regional Council has expressed a desire for this rail trail to function as an urban commuter path as well as a more traditional rail trail. Sealing the trail is a more appropriate surface given this stated desire; this will mean that users on road bikes are able to use such a trail). The very successful Murray to the Mountains Rail Trail (Victoria) and the Amy Gillett Rail Trail (South Australia) are both sealed trails.

Given the nature of the existing railway where a considerable amount of ballast remains in place in some sections, and in many other parts of the corridor numerous small stones are evident, grading will be required prior to a surface material being applied. No ballast is to be left on the trail formation.

Contractors engaged to remove the steel railway track and sleepers should be required to grade the formation to provide a level surface (after removal of the infrastructure). This will be a significant cost saving measure and has been factored into the trail surfacing costs. Side drains must be maintained and not filled in when grading. It is recommended that the contractors engaged to remove the steel railway tracks and sleepers be instructed to undertake their tasks with maximum care so as to leave the formation/embankment in a usable condition. Despite this care, and given the nature of the formation, some grading and re-surfacing will be required. The removal of the sleepers will leave what is often called a ‘sleeper shadow’ – the indentation that is left once the sleepers have been removed. Simply

filling these indentations with fill will in time result in an undulating surface as the newly placed fill material settles in.

After the removal of the sleepers, a light grading of the surface is recommended. Care should be taken not to create berms of ballast on the side of the trail which have the effect of trapping the water in the trail formation i.e. creating a dam effect. Care should also be taken to ensure in cuttings that the ballast is not simply pushed in to the existing drainage measures (cess drains) on the side of the trail or these will have the effect of preventing the drains from performing as they should. Grading should be followed by the installation of the new surfacing material.

In the costs estimates that are included within this Trail Development Plan, an allowance has been made for clearing of the trail corridor (vegetation and top soil and ballast), further grading and shaping of the formation to create as smooth a surface as possible, and additional fill material.

3.4 SAFETY CONSIDERATIONS

The most significant safety issue is that of potential conflict between road users (cars and trucks) and users of the proposed rail trail – especially at road crossings. This is more fully dealt with in ‘Road Crossings’ (see Section 3.5).

Possible conflicts between different types of trail users is a potential safety issue. Users in conflict can be both legal and illegal – for example, between trail users (walkers and cyclists) and trail bikes or 4WD’s that have illegally accessed the rail trail. Effective signage and vehicle exclusion barriers (management access gates and chicanes) will greatly limit this potential problem.

Dogs can be a potential safety consideration. However, given the urban nature of the trail, dogs should be permitted and managed in accordance with relevant local laws.

3.5 ROAD CROSSINGS

Road / trail crossings always present a special hazard which must be addressed carefully. A crossing should have enough space cleared and levelled on both sides of the road to allow cyclists travelling together to gather in a group and cross en masse. One-at-a-time crossing greatly increases the overall time in the roadway and therefore increases the likelihood of encountering a vehicle. The crossing should ideally be at a straight, level area allowing both trail user and vehicle driver good visibility and the driver ample stopping distance (if possible). All trail crossings should be perpendicular to the road.

The 8 road crossing concept drawings that form part of this Trail Development Plan (see Appendix 1) illustrate the signage that is required at each road crossing and the positioning of gates (for management access vehicles and for trail users). Trail users will not cross Ann Street and Gocup Road as the trail ends on the southern side of the former and the northern side of the latter. The road crossing drawings detail how to deal with these “trail ends”.

Signs required to create safe road crossing are outlined in Section 3.6. The rail trail should be clearly marked on each side of the road for easy recognition and the crossing be designed to move the trail user away from the road reserve as quickly as possible.

Details pertaining to shared path crossings of roads can be found in *Austroads Guide to Road Design Part 4: Intersections and Crossings – General (Australia)*.

Generally, the road crossing treatment required includes:

-  Installation of signage on the rail trail (both sides of the road crossing) advising (or warning) of the upcoming crossing of the road. The recommended treatment is the installation of (either or both) “Give Way” (or “Stop” signs if it is a major road) and “Road Ahead” signs on both sides of the crossing;
-  “Trail Crossing Warning Signage” on the road (both sides of the trail crossing) alerting road users of the upcoming trail crossing;
-  Management access gates and chicanes (permitting access by legitimate trail users and authorised vehicles, such as emergency services vehicles and management vehicles) in certain locations. A technical drawing setting out the specifications for chicane gates can be found in Appendix 2, as well as a photo of such a gate on the Lilydale Warburton Rail Trail in Victoria;
-  Installation of pipe culverts (where required); and
-  Miscellaneous signage (including Rail Trail name and logo; distance signs; Emergency Marker signs; road name signs; “Unauthorised Vehicles Prohibited” signs; “Trail Bikes Prohibited” signs, etc.).

3.6 SIGNAGE

Several kinds of signage are required on the Gundagai Rail Trail, including distance, directional, warning, promotional, etiquette and interpretive signs. Each should be standardised along the rail trail and, where appropriate, concordant with relevant local or Australian ‘standards’ or practices. The chosen colours of all signs should be uniform throughout the trail.

Themes and styles already established for other rail trails in Australia, and in keeping with the uniformity in signage sought by Railtrails Australia, may dictate what style of signs and marker posts are used along this rail trail. Trail markers and signage on other rail trails are sometimes affixed to old (recycled) railway sleepers or recycled plastic posts.

In the case of the Gundagai Rail Trail, given the large number of railway sleepers to be removed from the line when it is removed, one approach may be to pick the best of the available timber sleepers and re-cycle them as signage.

3.6.1 DISTANCE SIGNAGE

Recognising that users will join a rail trail at any number of points, installing distance and direction signs at road crossings will not only benefit those joining the rail trail at that location, but provide additional information for users already on the rail trail. Given the urban nature of the trail, the plate should indicate the distance to the upcoming road crossings along the rail trail.

Trail distance signage will need to be placed at regular intervals along the route. The obvious location is at each road crossing (and at the trailhead) where trail users are likely to join the trail. It is proposed to implement standard signage addressing distance requirements every 1 km.

The recommended distance sign plates (as with all other signs) should be affixed with at least 4 stainless security screws to prevent them being removed. In addition, the distance signs (as well as the various other sign panels used on the posts) should be affixed with silastic or 'liquid nail' products

3.6.2 WARNING SIGNAGE

There are a number of locations along the proposed Gundagai Rail Trail that demand warning signage, primarily at the many road crossings facing trail users. In the case of road crossings, (either or both) a "Road Ahead" yellow diamond warning sign (W6-8A) some 50-70 metres before a crossing is recommended (on a stand-alone post), with a triangular "Give Way" sign (R1-2) on the verge at the road crossing (on a stand-alone post) – or a "Stop" sign where appropriate (R1-1 – 300 x 300). Bicycle/pedestrian (i.e. Trail Crossing) warning signs (W6-9) with arrow (W8-23) (or W6-V105) are recommended for installation on roads, either side of a trail crossing, or use of "Crossing Ahead" signs as indicated above.

The proposed rail trail has 6 road crossings along the route (as well as the end point on road verges at Ann Street and Gocup Road), and some of these provide both challenges and opportunities for trail development. The challenges come in ensuring that these crossings are safe for future trail users, while the opportunities surround the passing road users who can be alerted to the trail's presence. Such 'opportunistic' promotion can only be good for the future of the rail trail in raising awareness and increasing user numbers.



Above: Signage for the Tiger Rail Trail in Victoria warns of the upcoming road crossing as well as promoting its existence to road users.

3.6.3 PROMOTIONAL SIGNAGE

Promotional signage has been used to great effect on other rail trails throughout Australia, increasing general awareness of the trail among the broader community. For the proposed Gundagai Rail Trail, the recommended 'promotional' sign should be incorporated into the on-road 'Crossing Ahead' warning signs (such as has occurred on the Forrest Birregurra Tiger Rail Trail). They are an excellent means of communicating the message to road users that they need to be alert for the presence of cyclists and pedestrians.

Though the railway corridor may be quite likely familiar to many local residents, it is recommended that a number of "Trailhead" signs also be erected to give prominence to the trail when constructed. The installation of these signs will enable local people and visitors become more aware of the trail (a good example is the High Country Rail Trail).



Signs pointing in to the "Trailhead", as used on the High Country Rail Trail in Victoria, are an excellent means of directing trail users to a Trailhead and serve to promote the existence of the rail trail to passing motorists, tourists and local people.

3.6.4 PERMITTED USER SIGNAGE

Signs (in the form of pictograms) indicating user groups that are permitted (or not permitted) on the various sections of the Gundagai Rail Trail should be installed at every road crossing and entry point. These small signs can easily be installed on the totem posts near to the proposed trail user access gates (chicanes) or even on the gates/chicanes themselves. Pictogram signage could include "No Motor Vehicles", "No Motor Bikes", "No Smoking", "No Alcohol" and "Dogs on Lead". The installation of "No Motor Vehicles" and "No Motor Bikes" are recommended at the outset, and the trail manager will ultimately determine what other signage may be required.

3.6.5 INTERPRETIVE SIGNAGE

On-trail interpretation is becoming more and more of a feature of trails built in recent times. When well done, it can add significantly to the depth of the user's experience. It can also generate a sizeable cost and can be subject to ongoing vandalism in urban and rural areas.

All rail corridors are inevitably rich with history, not just European settlement history but also indigenous and natural history. The Gundagai Rail Trail corridor is no different. People

will move along this trail at a leisurely pace. This slower rate of travel, a more relaxed frame of mind and openness to new experiences provide ideal circumstances to educate trail users on all aspects of the country through which they pass. There are many stories that can be told along rail trails. The provision of interpretive material will greatly enrich the experience of visitors to the rail trail.

Effective interpretive material gives a specific “flavour” of the events, landforms, wildlife, and vegetation relevant to a specific site. The intention is for the traveller to develop a deeper understanding of the multitude of stories contained in a region. Conversely, the themes can be designed to spark interest, encouraging people to explore any story that interests them. It may also encourage them to extend their stay in the region to further pursue an interesting story or theme.

Interpretive signage does not need to be in place from the trail opening (though this would be a commendable outcome) but at least some information should be embodied in the trail brochure. Interpretation should be an integral part of any trail’s development process.

The works tables make allowance for the placement of a number of panels along the rail trail.

3.7 EROSION CONTROL

Proper drainage is of considerable importance in constructing a lasting, maintenance-free trail. Water should be removed from trail surfaces as fast as possible, wherever possible. Given the flat terrain or gentle slopes involved on much of the proposed rail trail, erosion control should be relatively easy. As the railway has not operated for many years, maintenance of the formation and its drainage structures has been non-existent. Consequently, many of the culverts under the formation and drains along the formation have become overgrown with weeds, grasses and other vegetation. Most require cleaning out.

Those sections of the railway formation which do have blocked culverts or dysfunctional drains should be attended to in the trail construction process, as allowing water to stand on the proposed trail surface or run down even a gentle slope is to invite surface damage followed by costly repairs.

It may be necessary to clear existing drains on a regular basis, or to install additional culverts under the trail in some locations to remove standing water effectively – if this is done, care must be taken to ensure the surface is soundly patched afterwards.

While the cuttings appear to be in good condition, it may be necessary to build up the trail within the cuttings to ensure the cess (or side) drains operate effectively. It may be more effective to “build up” the trail formation to 300mm (rather than 150mm) rather than excavating the cess drains in cuttings – this can be determined at the time of construction. Sealing the trail (rather than providing a compacted earth surface) may present its own solutions to this particular issue.

3.8 BRIDGES

Bridges are one of the most obvious reminders of the heritage value of disused railways. They are also one of the most significant attractions of trails along disused railways and one of the costliest items in the development of trails on former railways.

There is only one substantial bridge on the corridor across the Murrumbidgee River. As noted previously, the repair and re-use of this bridge is outside the scope of this trail development plan. However, re-use is highly recommended as the bridge would become a significant tourist attraction in its own right. It can be re-purposed as a rail trail bridge, needing only to be suitable to carry pedestrians and bike riders. It would not need to carry vehicles (often rail trail bridges provide a much easier way for emergency and management access vehicles to traverse a rail trail and access surrounding properties). Given the proximity of suitable roads, such a need does not emerge for the Gundagai Rail Trail – the bridge is not “isolated” - emergency vehicles can get onto the trail very easily either side of the bridge.

Handrails will be required where the fall from the bridge decking to the ground is greater than 1 metre (this applies to all sites where pre-fabricated bridges have been recommended). This is a Standards Australia requirement. Handrails will help ensure the safety of users of the bridges, preventing people from falling over the sides and giving a sense of safety, uniformity and consistency along the trail.

There are designated standards for handrails for pedestrians and cyclists (1.0 – 1.1m high for walkers and 1.3m for cyclists with a number of detailed specifications regarding design).

Fieldwork showed a number of locations where small bridges are (or were) in place but have fallen into significant disrepair. These bridges are all timber structures. A simple option at these locations (6 in all) is to install pre-fabricated bridges (ranging in size from 3m to 15 m). Landmark is one company that specialises in supplying such bridges but there are other suppliers. The Council may be able to negotiate a reasonable rate on these bridges given the number needed and the relatively simple process of installation (none of the locations are particularly difficult working environments). These locations all have some remnants of the old crossings – notably timber abutments and posts and these are in varying condition. These need to be cleared away and the bridges installed on-site.

The pre-fabricated bridges are unlikely to need to carry vehicles. At most of the locations, there is sufficient “go-round” space to allow vehicles access along the trail elsewhere within the former railway corridor (alternatively road crossings are close by). The trail construction process will need to work out which of the locations will require the pre-fabricated bridges to be able to carry vehicles (this will affect the costs; costings have been developed based on pre-fabricated bridges not needing to carry vehicles).

3.9 TRAIL FURNITURE

There are a number of scenic locations along the corridor well suited to the placement of seats that would benefit all trail users. An allowance has been made for the eventual installation of seats – at sites selected by the trail manager. Sites should have views over the adjoining countryside and should not be placed as to provide views into people’s backyards.

Between Ann Street and the Gundagai station, there are locations with good uninterrupted views to the east over Morleys Creek and beyond to the hills, while on the south side of the river locations between Ridge Street and Mount Street provide good views to the west over the river valley. These southern locations will require some care in seat placement as neighbouring properties on the eastern side of the corridor are quite close. Care should be taken in the selection of styles of seating and tables. Many styles commonly used on trails are more suited to backyard gardens, or city parks. Few look 'right' in the natural environment.

Placement of simply constructed seats at intervals along the trail will benefit all trail users.

3.10 TRAILHEADS AND PARKING

A trailhead is usually defined by the existence of a car parking area, often with picnic facilities, interpretive signage, a map panel of the trail showing sites of interest and distances to features along the trail and a Code of Conduct. It is a location where a (short or long) trail walk or ride can begin or end.

The most logical trailhead location (and the only one necessary given the urban nature of this rail trail) is at the Gundagai station. Basic facilities such as parking, and a picnic table or seats in the shade, interpretive information (on a map panel) showing distances to features along the rail trail is important and will prove useful to all rail trail users.

A concept plan for the trailhead is included in Appendix 3 of this Trail Development Plan.



A typical trailhead interpretive shelter. Usually these shelters may contain two information panels (front and back, incorporating general information, a map with the trail route and key features and important safety information for trail users.

3.11 FENCING

Given this is primarily an urban rail trail, fencing serves a limited number of purposes:

-  At the southern end of the corridor between Middle Street and Gocup Road, fencing will serve a livestock management purpose;
-  In many locations along the corridor, fencing will serve privacy purposes as a number of houses back directly on to the corridor and as an encouragement for trail users not to wander off the trail);
-  Fencing will prevent unauthorised access onto the rail trail;

-  Fencing will prevent authorised trail users (cyclists, walkers, horse riders) from attaining access onto adjoining properties, and to prevent unauthorised trail users (trail bikes, etc.) from illegally trespassing onto private property.
-  Fencing will delineate freehold (private property) from Crown land and to minimise encroachments and trespassing, unintended or otherwise; and
-  Fencing will prevent encroachments by adjoining landowners (in some locations, the corridor has been used as a dumping ground);

The works list identifies obvious locations for the installation of colourbond fencing as a privacy protection means. It is acknowledged that previous consultation by Council included requests by some landowners for colourbond fencing for screening purposes. These landowners did not identify themselves during fieldwork for this project. There are some locations (particularly between Ridge Street and Mount Street) where the need for fencing was obvious, primarily as there is no existing boundary fencing – fencing in these locations has been included in the works items as colourbond panelling. However, there are other adjoining landowners who currently have wire fences who have expressed a desire to Council for colourbond fencing for privacy purposes. Consequently, the works tables also contain a general allowance for further fencing to be negotiated with adjoining landholders should the trail proceed. This privacy fencing should be on the corridor boundary (in line with existing fencing). The only exception is south of Middle Street where the owner has requested a trail realignment and a fencing on the trail edge (2.5 m from the trail centreline) rather than on the boundary between the corridor and the adjoining property. Table 3 outlines these works.

In one location immediately north of South Street, it was noted that cattle are grazing the corridor. While the adjoining landholder did not contact the consultants indicating any desire to discuss this activity, it is assumed that this practice should continue (in addition to providing the landowner with grazing opportunities, it reduces the maintenance costs for the trail manager). Table 3 provides for the installation of fencing on both sides of trail to allow grazing to continue. The recommended fencing alignment will follow the edge or the top of the embankment (at edge of the railway formation). The adjoining landowner may wish to continue to utilise the 'spare' parts of the former railway corridor (i.e. that which is not required for the actual rail trail) and would need to enter into negotiations with the trail manager.

The installation of the fencing should be undertaken in close consultation with the adjoining landowner and only if they wish to continue grazing the corridor. If they do not wish to continue grazing, there is no need to install fencing.

It was also noted that along the corridor between South Street and Gocup Road, it appears as if the adjoining landholder crosses over the corridor with horses (the landowner in question contacted the consultants prior to fieldwork). Through this stretch of potential trail, some of the corridor is fenced and some is not fenced. Again, negotiation of the fencing options is needed with the landowner should the trail proceed. Table 3 makes some general allowances for additional landholder requests and also includes some specific fencing provision in this location.

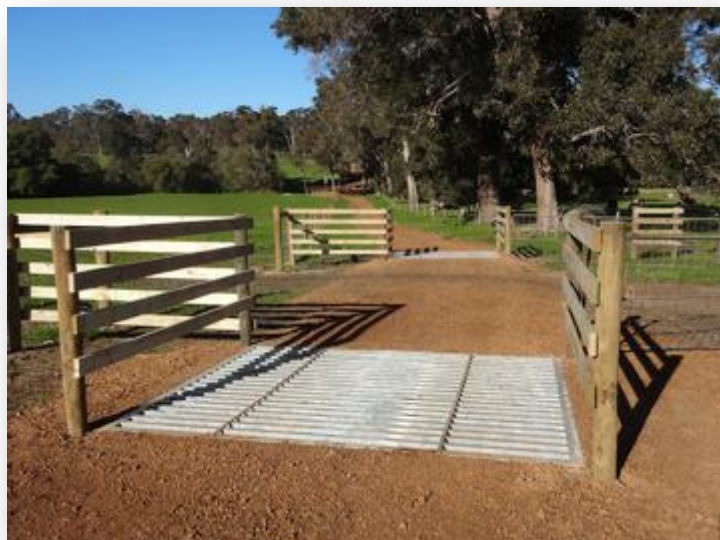
3.12 STOCK CROSSINGS

Given the primarily urban nature of the trail, the need for stock crossings is very limited. As noted in 3.11, the two most southern properties (either side of South Street) are where provision may need to be made to allow stock to cross from one side of the trail to the other.

North of South Street, this movement is easily provided for. A new bridge is proposed on the corridor to replace one which has deteriorated. Stock will be able to move easily under the bridge from one side of the corridor to the other. The bridge is needed regardless of whether the grazing continues.

On the corridor south of South Street, the owner appears to move horses in particular across the corridor. He has indicated in correspondence to the consultants that there are plans to utilise the paddocks adjoining the rail corridor for sheep holding paddocks to serve the Gundagai Meatworks. In both instances, it is suggested that stock would be making controlled movements across the corridor (under supervision). This allows for gating systems to be developed that allow the trail to stay “open” and be closed at specific times when stock are moved across.

The crossing locations are gated either side of the corridor (meaning that the adjoining landowners would be responsible for opening the gates when needed). This is also a much more acceptable solution on an urban sealed pathway (the alternative is trail users needing to open and close gates when using the trail which would allow unimpeded stock movement at all times across the corridor). Table 3 contains works items reflecting this proposal. In addition, it contains a proposal for a new bridge in this section (where the embankment has been removed to allow stock and machinery crossing). Stock and machinery should be able to move across the corridor under this bridge. As noted in Table 3, these items – their location and precise configuration – should be negotiated with the adjoining landholder.



Stock grids along rail trails, such as this one on the newly opened extension of the rail trail south of Margaret River in WA, can allow stock crossings to be open 24/7 thereby enabling stock and machinery to cross the trail unimpeded.

Another alternative is to use stock grids either side of the crossing that trail users must pass over. Care must be taken in the design and fabrication of the grids to ensure they are safe for trail users, particularly cyclists.



There are several options for moving stock across a rail trail. Above: crossings that are gated either side of the corridor allow the controlled passage of stock and/or machinery at certain times. Below: crossings where gates are across the rail trail, where trail users need to open/close the gate.



3.13 ENCROACHMENTS IN THE TRAIL CORRIDOR

Between the closure of the railway in 1984 and the present, several encroachments on to the former railway corridor have been made. Grazing of cattle occurs in one location. In several locations, industrial and household rubbish has been dumped within the corridor. Cross fences abound – their purpose is no longer clear; while they may once have been used to keep livestock within a section of the corridor, there is only one location where cattle now graze. In one location, a chook shed and water tank have been built within the corridor.

The most significant encroachment is the construction of a series of sheds across the corridor in the section between South Street and Gocup Road. It has been suggested that, given the presence of these sheds (and the farming practices associated with the sheds), the trail be taken off the corridor and routed around this section via Isaac Street and Gocup Road within the road reserves. The practical difficulties associated with developing a trail in this location are appreciated, given the development that already exists on the publicly owned corridor, particularly the sheds but other items such as driveways and fences. However, it is not desirable to pursue a course that takes the trail off the railway corridor (a trail can be developed within the railway corridor but not on the old formation as has been suggested for a location south of Middle Street). There are three significant reasons for this position:

-  Taking the trail off the railway formation and corridor has the potential to detract from the experience. Rail trails have a historical element to them involving travelling along the old railway formation, embankment or cutting. They also provide a safe off-road cycle and walk experience - hence their appeal. It is acknowledged that while the “historical” appeal is somewhat reduced in an urban environment, as this is, it does nonetheless have that appeal.
-  Rail trail opponents (in a number of projects) often suggest taking the trail off the corridor and putting it alongside the road or somewhere else so that it does not impact directly on them (they have negative perceptions of the impacts of rail trails). This approach, if taken to its logical conclusion, can mean that very little of the rail trail ends up in the rail corridor as providing this “concession” for one landholder inevitably creates a precedent used by other landholders. This then significantly detracts from the rail trail experience (as noted above). The development plan for the proposed rail trail from Wagga Wagga to Ladysmith has some 40% of the trail that is not on the rail corridor as the proponents have sought to mollify adjoining landholders – this is the logical conclusion of arranging for a trail to deviate off a corridor for one landholder. In fact, in discussions with rail trail opponents during the preparation of the plan, this very position was put by opponents (who are along the more extensive corridor from Coolac to Tumblong). They indicated that they would be seeking similar re-routing if concessions are made.
-  The NSW Government has indicated in public workshops for other rail trail proposals that there is no intention to sell off any sections of disused railway line once the railway line is closed (if a proposal proceeds that far). It is highly unlikely that the Government would countenance any form of land swap that would remove sections of the rail corridor from public ownership. A re-routing of the trail onto a road

reserve may be seen as a form of public land privatisation if the landholder was permitted to continue their activities using the rail corridor.

Table 3 (and comments above in 3.11 and 3.12) have included some suggested solutions to this issue that do not involve moving the rail trail way from the corridor. Negotiations with the landholder should be undertaken if the trail proceeds.

3.14 OTHER USERS AND TRAIL ETIQUETTE

Managing interaction between user groups is a primary prerequisite on all trails, and standard signage and protocols already exist. Providing adequate signage is installed and users are well aware of the likelihood of meeting other user groups, such interactions should generally be non-threatening and relatively safe.

Every attempt must be made to ensure the rail trail is not used by either four-wheel drives or trail bikes, though this is likely to be difficult to manage and hard to police. The proposed management access gates and chicanes at every road crossing will go part way to addressing this issue. The urban nature of the trail (and its sealed surface) will also limit its attractiveness to illegal vehicles.

Education through signage and use of gates or other vehicle exclusion barriers will help, as will encouraging bona-fide users – and local residents – to report registration numbers of illegal users.



The Murray to the Mountains Rail Trail has a Code of Conduct sign board at regular intervals along the trail ensuring that all trail users are aware of their rights and responsibilities.

3.15 CODES OF CONDUCT

A Code of Conduct for each user group provides all trail users with guidelines to minimise their impact on the environment, and on other trail users.

Codes of Conduct help to:

-  Prevent trespass;
-  Prevent soil erosion;
-  Minimise trampling;
-  Prevent the introduction and spread of noxious and exotic plants;
-  Protect waterways;
-  Reduce the risk of fire;
-  Protect significant and environmentally sensitive sites;

-  Minimise potential conflict with other users of the trail; and
-  Ensure the safety of all trail users.

Trailhead signage is the best place to provide Code of Conduct signage.

3.16 HERITAGE ISSUES

A number of structures along the trail corridor have historical or heritage value. These include station buildings, station signs, bridges, culverts, cuttings and embankments, and distance posts. A rail trail will enhance the appreciation of these historic assets.

It is strongly recommended that the trail manager seek to ensure all artefacts and relics of the railway remain in place during the construction of the trail. The existing station and other buildings in the station grounds are outstanding examples of preserved railway heritage.

All existing signs, signals and switches have been identified in the works tables and an allowance made for the retention and upgrading.

3.17 ENVIRONMENTAL ISSUES

A number of key environmental issues have been identified. These include:

-  Clearing of regrowth vegetation along the corridor, and the need for clearing permits and the possible future need for offset re-vegetation.
-  The potential for the spread of weeds (and pathogens) during the construction phase and, potentially, through usage of the trail.
-  Contamination of soils as a result of the operations of the railway and the manner in which former bridges were constructed and maintained.
-  The potential for sedimentation of watercourses as a result of trail construction and bridge works.

In addition, care will need to be taken in the ongoing maintenance of the proposed rail trail to ensure weeds and pathogens are not unwittingly spread by maintenance machinery. Ongoing clearing at the sides of the rail trail will be required to keep the trail corridor at acceptable widths.

3.18 CLEARING FOR THE RAIL TRAIL

In the years since the railway last operated, vegetation (in various forms) has regrown along parts of the corridor that formerly was kept clear of vegetation. The amount of regrowth vegetation varies markedly along the corridor. In numerous places adjoining landowners may have kept the former railway reserve totally cleared of regrowth vegetation. At the other extreme, there are several sections of the former railway reserve that have considerable regrowth vegetation.

Three types of clearing have been identified along the length of the corridor. These are:

-  Minor clearing of vegetation required (only top soil needs removal and/or slashing prior to earthworks).
-  Moderate clearing of vegetation (some regrowth in trail corridor).
-  Heavy clearing of vegetation (substantial regrowth in trail corridor and/or thick undergrowth).

The estimates of probable costs reflect these various types of clearing of vegetation.

Generally speaking, a cleared 'trail corridor' of 3.5 - 4.0 metres will be required to enable a trail of 2.5 metres to be developed in the centre of the cleared corridor. Either side of this trail will be further clearing of vegetation up to 1.0m for drainage.

Ongoing maintenance will be required, on an 'as and when required' basis, to prune the vegetation alongside the trail to keep the trail corridor clear of overhanging vegetation. The regularity of the clearing of side growth vegetation will depend on numerous factors, particularly the type of vegetation growing alongside the trail over its length.

3.19 TOILETS

The proposed trail runs through an urban corridor; under these circumstances, it is not a normal requirement that toilets be provided (given easy access to public toilets elsewhere in town). However, the Gundagai Historic Bridges Inc have included the provision of a public toilet within their plans of development for the station ground. This is supported and would add to the convenience of rail trail users – particularly those arriving from elsewhere who park at the station and head off on the rail trail. Given that a toilet has been proposed under other plans, no costing provision has been included in the works tables.

SECTION 4 – WORKS LISTS AND PROBABLE COSTS

4.1 INTRODUCTION

Investigations undertaken during the fieldwork associated with this project enable a reasonably accurate picture of the work required to bring about the development of an urban pathway/rail trail within the disused railway corridor between Ann Street and Gocup Road, Gundagai.

4.2 LANDHOLDER CONSULTATION

Adjoining landholders were given the opportunity to meet with the consultants while fieldwork was underway. Letters were sent to all adjoining landholders by the consultants, indicating the dates of the fieldwork and inviting them to meet with the consultants on their property to discuss specific issues. Three landholders took advantage of the opportunity (although one of these was on the other side of the road to the corridor so will not be directly impacted). One in particular had significant issues and solutions were discussed and generally agreed to. Two others were spoken to over the phone (one had scheduled an on-site meeting but had to cancel it. This landholder has provided written information). One landholder expressed a desire to meet but was not contactable on the day of the fieldwork.

The consultants also met with Gundagai Historic Bridges Inc which holds a sub-lease over the station ground (two adjoining landholders were involved with that group and attended the meeting).

Solutions to concerns have been included in the following works tables. There is a generic allowance in the tables for each section of the rail trail for other items that may be requested by landholders in the future.

4.3 SECTION COSTS

For the purposes of determining costs, the per unit construction rates set out below have been used:

-  Trail construction. Construction includes stripping of top soil, boxing out, cleaning side drains, compacting subgrade, filling with roadbase (to 75mm), compacting and levelling and laying a 2 coat seal (10mm and 5 mm) with high bitumen content: \$87.50/lineal metre (for 2.5 m trail width). Assumes formation is clean and reasonably level (subsequent to steel track and sleeper removal).
-  Clearing. Clearing costs (prior to earthworks) vary:
 - minor clearing is \$3,000/km;
 - moderate clearing (most notably the removal of small trees in the formation) is \$6,800/km; and
 - heavy clearing (large trees and/or significant undergrowth in the formation) is \$14,000/km.

-  Installing pre-fabricated bridges (Landmark or similar) - \$4,000/lineal metre.
Handrails will be required (except where specified) as fall to the ground exceeds 1m.
-  Chicane gate and management access gate (primarily at road crossings) - \$2,700/set.
-  Plain wire fencing - \$15/metre installed.
-  Colourbond panel fencing - \$108/metre installed.
-  Removal of fences across corridor - \$200 average.
-  Purchase and installation of Trail Directional Markers – \$400 ea.

4.4 ADDITIONAL NOTES

The following notes are relevant when reading Tables 1 to 3:

-  Map references shown in the tables refer to works items shown on Plans in Appendix 5.
 - Plan 1 covers the section from Ann Street to Sheridan St (the northern section).
 - Plan 2 covers the section from Chandler Park to Gocup Road (the southern section).
-  Works items shown on maps are generally in the precise location (though measurements may vary slightly on the ground).

4.5 WORKS TABLES

Table 1: Ann Street to Sheridan Street (2,350 metres) (refer Plan 1 in Appendix 5)

Ref #	GPS Reference	Dist. from beginning (m)	Works Item	\$
1			Construct trail between Ann Street and Gundagai Station parking area (2,270 m).	198,625
2		0 - 1050	Minor clearing (1,050m).	3,150
3	35° 03.289 S 148° 07.088 E	0	Northern Trail terminus on south side of Ann Street: • Install chicane and management access gate and post and rail fencing to corridor boundary (\$4,700).	8,800

			• Install “road ahead” sign and “give way” sign (\$400). • Install “trail crossing” signs on Ann Street (\$1,200). • Install Trail Directional Marker. On south face, place “Cycleway” with Left turn arrow. On west face, place Gundagai Rail Trail with Right turn arrow (\$400). • Install misc. pictogram signage on chicane (\$600). Install pipe culvert and fill over (4 m long x 1m deep x 2.5m wide). Double rail track in this location 10m from road crossing. Retain track on western side for rail use.	
4		110 – 126	Install colourbond fence for privacy on eastern side (16 m).	1,730
5	35° 03.365 S 148° 07.092 E	155	Remove cross fence.	200
6	35° 03.427 S 148° 07.095 E	281	Clean out and maintain culvert. Place extra fill on trail to address collapsing formation (50 m x 3m). Plant shade trees on western side of corridor (allow 400 m x 3m deep).	6,450
7	35° 03.541 S 148° 07.100 E	513	Clean out and maintain large culvert.	400
8	35° 03.602 S 148° 07.102 E	631	Remove tree on formation.	700
9	35° 03.614 S 148° 07.103 E	653	Renovate/paint existing railway signal.	500

10	35° 03.637 S 148° 07.103 E	670 - 1030	Cutting (<i>GPS reference is midpoint</i>). Install sign “Fallen Rock” at northern end of cutting. Attend to drainage in cutting – clean out cess drains. Rock removal in cutting required (\$3,000).	3,600
11	35° 03.799 S 148° 07.107 E	1030	Southern end of cutting. Install sign “Fallen Rock” at southern end of cutting.	200
12		1030	Create formed vehicle access path (compacted earth) from Ovid Lane onto trail following existing vehicle track (allow 80m). Install fence and management access gate (allowance of 40 metres in total) between two existing property fences on east side of corridor to allow flood-free access to central Gundagai (keys to be made available to residents).	10,000
13	35° 03.807 S 148° 07.104 E	1050 - 1180	Medium clearing (130 metres).	890
14		1180 - 1230	Minor clearing (50 metres).	150
15	35° 03.883 S 148° 07.045 E	1230 - 1280	Medium clearing (50 metres)	340
16		1280 - 1295	Minor clearing (15 metres).	50
17	35° 03.899 S 148° 07.021 E	1294	Renovate/repaint existing railway signal. Install buffer stop. Trail from this point south runs on western side of existing railway track. Leave railway track in place. In this location (on western side), a “work table” has been constructed using old railway track. This may need to be removed to provide sufficient space for the	8,500

			trail alongside the remaining railway track.	
18	35° 03.899 S 148° 07.021 E	1295 - 1320	Heavy clearing (15 metres).	210
19	35° 03.896 S 148° 07.019 E	1305	Renovate/repaint existing point switches.	500
20	35° 03.900 S 148° 07.009 E	1305	Renovate/repaint existing railway post (possible distance or station signage).	500
21		1320-2242	Minor clearing (922 metres).	2,770
22	35° 03.899 S 148° 06.997 E	1361	Install 15m Landmark (or similar) bridge parallel to rail track at fettler's bridge remains.	60,000
23	35° 03.901 S 148° 06.988 E	1543	Railway track on western side of corridor to be removed for trail construction. This leaves 2 parallel railway tracks on eastern side. Construct trail on alignment of western railway track (but away from rock wall). Trail to run between goods shed and rock wall.	0 (costs included in WI 1)
24			Trailhead at Gundagai Station ground: • Install picnic table (\$8,000). • Install toilet (not costed). • Install trail directional marker posts (x2) (\$800). • Install trailhead sign (\$600).	9,400
25	35° 03.926 S 148° 06.774 E	1947	Existing post and rail fence at station ground. Remove fence panel to allow users to move between carpark and trail (\$200). Install map panel (\$5,500). Install line of rubber wheel stops in carpark 2.5 m from	7,700

			existing gutter to facilitate access through carpark for trail users (\$2,000).	
26	35° 03.934 S 148° 06.749 E	2041	Construct new trail heading south from carpark to Sheridan Street (309m). Trail to head down slope adjacent to water tank, across existing railway track (to be left in place). Trail surface to be laid between rail lines level with top of rail to ensure ease of railway operation and safe trail user access. Install existing switching infrastructure (see WI 29) in this general location to make this point the southern extent of the proposed railway operation. Install buffer stop.	8,000 (buffer stop). Work on switching infrastructure covered in WI 29 Trail costs covered in WI 1.
27	35° 03.946 S 148° 06.692 E	2142	New trail to be built on railway formation.	0 (covered in WI 1)
28	35° 03.945 S 148° 06.693 E	2156	Remove cross fence installed by John Holland.	400
29	35° 03.953 S 148° 06.682 E	2175	Existing switching structure. Remove and place at new switching site (at Works Item 26). Renovate and repaint. Track switching cannot take place at this location as space is too narrow for double track and rail trail.	3,000
30	35° 03.964 S 148° 06.656 E	2216	Renovate/paint existing railway signal.	500
31	35° 03.972 S 148° 06.639 E	2242-2292	Medium clearing (50 metres).	340
32		2292-2310	Minor clearing (18 metres).	60
33		2310	Excavate mound back to ground level.	1,000
34	35° 04.008 S 148° 06.595 E	2350	Sheridan St Road crossing:	6,300

			• Install chicane and post and rail fencing to corridor boundary (\$2,700). • Install “road ahead” and “give way” signs (\$400). • Install “trail crossing” signs on Sheridan Street (\$1,200). • Install Trail Directional Marker. On north face, place “Cycleway” with Straight Ahead arrow. On south face, place Gundagai Rail Trail with Straight Ahead arrow (\$400). • Install trailhead sign (brown chevron) on Railway Parade (adjacent to existing station sign – using the existing posts) (\$1,600).	
			Allowance for additional landowner requests.	1,000
			Allowance for additional landowner requests – fencing and vegetation screening.	1,000
			Allowance for removal of steel track and sleepers and shaping of basic track by contractor (\$33/metre).	77,550
			Allowance for installation of interpretive signage (at locations to be determined by trail manager and local historians) (8 signs).	24,000
			Allowance for Trail Directional Markers to be placed along trail every 1 km.	2,000

			Allowance for installation of trailside furniture (e.g. seats) at locations to be determined by trail manager.	3,000
			Allowance for marking trees to be cleared, pruned or left untouched.	1,800
			Allowance for marking centreline of trail with flagging tape prior to clearing and construction.	1,800
			Allowance for cable locator.	1,000
			Allowance for survey costs (for new or reinstated fencing).	280
			Allowance for purchase and installation of: • Regulatory signage (Shared Path; “No Trail Bikes”; “Authorised Users Only”); • Road name signs; • Trail name signs; • “No Trespassing” signs; • Local attractions sign; • Miscellaneous signs (Keep Out etc.)	1,200
			Allowance for traffic management (2 road crossings)	4,000
			<i>Sub-total (Section 1)</i>	<i>\$463,595</i>
			Approvals, permits, applications, designs, specifications, assessments (2.5% of estimated expenditure – \$463,595)	11,590
			Contingency amount (7.5% of estimated expenditure – \$463,595)	34,770
			Project management (5% of estimated expenditure – \$463,595)	23,180
			TOTAL (NOT INCLUDING GST)	\$533,135

Table 2: Additional Works

(These will guide to guide users along the existing footpath network to link with the rail trail adjacent to Chandler Park until the Gundagai Rail Bridge and Viaduct can be re-used)

Works Item	\$
Allowance for Trail Directional Markers to be placed on alternative footpath-based route from Sheridan St to Chandler Park at decision points and intersections (12).	4,800
Assessment of Prince Alfred Bridge Viaduct and Gundagai Rail Bridge and Viaduct for overhead safety (limited to relevant section of bridges).	Cost unknown
Works to ensure safety of users travelling under Prince Alfred Bridge Viaduct and Gundagai Rail Bridge and Viaduct (limited to relevant section of bridges).	Cost unknown
Rehabilitation of existing footpath from Sheridan Street (east side of Prince Alfred Viaduct Bridge) to existing “in-use” path on western side of railway viaduct.	Cost unknown

*Table 3: Gundagai Rail Bridge (South side) to Gocup Road (2,950 metres)
(refer Plan 2 in Appendix 5)*

Ref #	GPS Reference	Dist. from beginning (m)	Works Item	\$
1			Construct trail between Gundagai Rail Bridge (South side) to Gocup Road (2,815 metres).	246,315
2	35° 04.443 S 148° 06.324 E	0	South side of bridge.	0
3		0 – 56	Minor clearing (56 m).	170
4	35° 04.460 S 148° 06.218 E	42	Renovate/paint existing speed sign.	500
5	35° 04.462 S 148° 06.215 E	56 - 183	Medium clearing (127 m).	860
6	35° 04.483 S 148° 06.187 E	117	Remove cross fence.	200
7		131	Remove cross fence. Install boundary fence (4-strand plain wire) on eastern side (52 m) to Works Item 8.	980
8	35° 04.511 S 148° 06.145 E	183 - 240	Minor clearing (57 m). Remove cross fence.	370
9	35° 04.530 S 148° 06.123 E	240	Install pipe culvert and fill over at road crossing. (3m long x 3m deep x 2.5m wide).	1,500
10	35° 04.536 S 148° 06.111 E	243	Road crossing (Ridge St): • Install chicane and management access gate and fencing (4-strand plain wire) to corridor boundary (south side of Ridge St) (\$3,000). • Install “road ahead” and “give way” signs on trail (\$800). • Install “trail crossing” signs on Ridge Street (\$1,200).	7,900

			- Level formation on both sides of road crossing (\$2,000). - Install Trail Directional Marker with Straight Ahead arrows on both north east and south west faces (on one side of crossing only) (\$400). - Renovate/repaint existing point switches on south side (\$500).	
11		253 - 1040	Minor clearing (787m).	2,360
12	35° 04.557 S 148° 06.084 E	330	Remove cross fence. Install fencing (4-strand plain wire) on western side of corridor (190m).	3,050
13	35° 04.576 S 148° 06.053 E	400	Remove chookhouse built across corridor. Fabricate and install new South Gundagai Station sign in approximate location of old station (no remnants of station remain).	2,300
14	35° 04.609 S 148° 06.006 E	500	Renovate/repaint existing point switches.	500
15	35° 04.615 S 148° 05.999 E	520	Remove cross fence. End of requirement for new fencing (Works Item 12).	200
16	35° 04.628 S 148° 05.979 E	563	Install pipe culvert and fill over (3m long x 1m deep x 2.5m wide).	1,500
17	35° 04.650 S 148° 05.946 E	633	Remove cross fence. Install screen fencing (colourbond panelling) on eastern side of corridor (51m).	5,710
18	35° 04.659 S 148° 05.934 E	663	Clean out and maintain culvert.	300
19	35° 04.664 S 148° 05.923 E	684	Remove cross fence.	200

			End of requirement for new screen fencing (Works Item 17).	
20	35° 04.680 S 148° 05.901 E	725	Remove cross fence. Install screen fencing (colourbond panelling) on eastern side of corridor (75m).	8,300
21	35° 04.698 S 148° 05.890 E	760	Install pipe culvert and fill over (5m long x 2m deep x 2.5m wide).	1,500
22	35° 04.763 S 148° 05.848 E	919	Clean out and maintain large culvert.	400
23	35° 04.823 S 148° 05.826 E	1040	Driveway crossing.	0
24	35° 04.833 S 148° 05.824 E	1060	Road Crossing (Mount Street): • Install chicane and management access gate and fencing (4-strand plain wire) to corridor boundary (north east side of Mount St) (\$3,000). • Install “give way” signs on trail (\$400). • Install “trail crossing” signs on Mount Street (\$1,200). • Install Trail Directional Markers (\$800): • 1st marker on south eastern side of existing footpath: on north-western face, place Gundagai with Left turn arrow and Gundagai Rail Trail with right turn arrow. On south western face, place Gundagai with Straight Ahead arrow and Gundagai Rail Trail with left turn arrow. On north eastern face, place Gundagai Rail Trail with both	5,400

			Straight Ahead and Right turn arrows. 2nd marker on north-western of footpath where rail trail heads south: on north-eastern face, place Gundagai Rail Trail with Left turn arrow. On south eastern face, place Gundagai Rail Trail with Right turn arrow. On south western face, place Gundagai Rail Trail with Straight ahead arrow and Right turn arrow.	
25	35° 04.866 S 148° 05.814 E	1125	Remove cross fence.	200
26		1125 - 1425	Minor clearing (300m).	900
27	35° 04.979 S 148° 05.808 E	1365	Remove cross fence.	200
28	35° 04.986 S 148° 05.809 E	1385	Install pipe culvert and fill over (5m long x 2m deep x 2.5m wide)	1,500
29	35° 05.005 S 148° 05.813 E	1425	Road Crossing (Middle Street): - Install “trail crossing” signs on Middle Street (\$1,200). - Install “give way” signs on trail (\$400).	1,600
30		1435 -1490	Minor clearing (55m).	170
31	35° 05.025 S 148° 05.816 E	1464	Renovate/repaint existing speed sign.	500
32	35° 05.094 S 148° 05.837 E	1490	Remove cross fence.	200
33	35° 05.094 S 148° 05.837 E	1490	Corridor “enters” Smith property. Existing cattle stop. Remove and replace with chicane and management access gate (use existing fence) (\$2,700). Install pipe culvert and fill over (4m long x 2m deep x 2.5m wide) (\$1,500).	28,700 Trail costs covered in WI 1.

			Construct trail on north eastern boundary of corridor through property i.e. not on existing formation but within corridor at furthest point from Smith residence and shed. Install screen fencing (colourbond panelling) on both sides of trail (fence on south western side to be within corridor close to trail) (\$24,200). Bring trail back onto formation on western side of bridge (Works Item 34). Install water pipe under trail during construction – location to be agreed with landowner (\$300). Clearing may also be needed.	
34	35° 05.094 S 148° 05.837 E	1602	Install 7m Landmark (or similar) bridge at eastern end of Smith property.	28,000
35		1602 - 1743	Minor clearing (141m).	420
36	35° 05.094 S 148° 05.837 E	1610	Remove cross fence.	200
37	35° 05.165 S 148° 05.855 E	1743	Install 5m Landmark (or similar) bridge. Remove cross fence.	20,000
38		1748 - 1768	Minor clearing (20m).	60
39	35° 05.173 S 148° 05.857 E	1768	Road crossing (Camphor Street): • Install chicane and management access gate on both sides of road crossing (use existing fences) (\$5,400). • Install “trail crossing” signs on Camphor Street (\$1,200). • Install “give way” signs on trail (\$400). • Install Trail Directional Marker on both sides of road	8,200

			crossing with Gundagai Rail Trail Straight Ahead arrows (\$800).	
40	35° 05.187 S 148° 05.857 E	1800	Remove cross fence.	200
41		1800 - 1861	Minor clearing (61m).	180
42	35° 05.213 S 148° 05.867 E	1861 - 1866	Medium clearing (5m).	40
43		1866 - 2073	Minor clearing (207m).	620
44	35° 05.255 S 148° 05.872 E	1940	Install pipe culvert and fill over (3m long x 2m deep x 2.5m wide).	1,500
45	35° 05.286 S 148° 05.869 E	1998	Clean up rubbish on corridor. Install 4 strand plain wire fence on both sides of trail to allow grazing to continue (section currently being grazed). Fence to be installed on top of embankment (118 metres).	3,800
46	35° 05.321 S 148° 05.856 E	2073	Install 3m Landmark (or similar) bridge. Fencing to be installed on both sides of bridge. Livestock can pass under bridge to move between sides of embankment – no need for separate stock crossing on corridor.	12,000
47		2076 - 2140	Minor clearing (64m).	190
48	35° 05.343 S 148° 05.847 E	2116	End side fencing.	0
49	35° 05.353 S 148° 05.840 E	2140	Road crossing (South Street): • Install chicane and management access gate on both sides of road crossing (use existing fence) (\$5,400). • Install “trail crossing” signs on South Street (\$1,200). • Install “give way” signs on trail (\$400). • Remove cross fence (\$200).	7,200
50		2145- 2196	Medium Clearing (51m).	350

51	35° 05.361 S 148° 05.838 E	2159	Remove cross fence.	200
52	35° 05.377 S 148° 05.827 E	2196	Install 10m Landmark (or similar) bridge.	40,000
53		2206 - 2227	Minor clearing (21m).	60
54	35° 05.386 S 148° 05.820 E	2227 - 2305	Medium Clearing (78m).	530
55		2305 - 2595	Minor clearing (290m).	870
56	35° 05.420 S 148° 05.793 E	2320	Driveway crossing on horse farm. Allowance for stock crossing (management access gates in fencing).	2,000
57	35° 05.486 S 148° 05.717 E	2495	New fencing required on north-east side of corridor with access gates into the corridor for adjoining landholder. Final outcomes may depend on negotiation with landowner.	3,000
58	35° 05.514 S 148° 05.678 E	2595	install 10m Landmark (or similar) bridge (bridge allows movement of stock under corridor under controlled conditions). Free movement (i.e. uncontrolled movement) of stock will require embankment to be fenced.	40,000
59		2605 - 2725	Minor clearing (120m).	360
60	35° 05.566 S 148° 05.632 E	2725	Private farm access road. South of this point, stables built on corridor. Remove structures which have been built within rail corridor. Note that a 5m width is required for trail. Structures outside a 5m width can be left intact but it is suggested that negotiations occur with landholder to ensure structures are approved. Given nature of corridor in this location, trail can be routed anywhere within the railway corridor (as with the Smith property – WI 33). Locate trail within corridor	Trail costs covered in WI 1. Allowances included at end of table for additional landholder requests

			through negotiation with landholder. Minor clearing may also be needed depending on implementation of solution.	
61	35° 05.635 S 148° 05.521 E	2950	Road crossing (Gocup Road) (extent of study area): • Install chicane and post and rail fencing to corridor boundary (\$3,700). • Install “road ahead” signs on trail (\$200). • Install “trail crossing” signs on Gocup Street (to raise awareness) (\$1,200). • Install “stop” sign on trail (could also include “trail ends” sign at this location) (\$400). • Install Trail Directional Marker. Signage placed on Marker will be determined by possible future provision of connection to Gundagai Meatworks. May include “Trail ends” sign (\$400).	5,900
			Allowance for additional landowner requests.	5,000
			Allowance for additional landowner requests – fencing and privacy screening.	5,000
			Allowance for removal of steel track and sleepers and shaping of basic track by contractor. \$33/metre.	97,350
			Allowance for installation of interpretive signage (at locations to be determined by trail manager and local historians) (5 signs).	15,000
			Allowance for Trail Directional Markers to be placed along trail every 1 km and road crossings.	2,400

			Allowance for installation of additional trailside furniture (e.g. seats) at locations to be determined by trail manager.	3,750
			Allowance for marking trees to be cleared, pruned or left untouched.	1,800
			Allowance for marking centreline of trail with flagging tape prior to clearing and construction.	1,800
			Allowance for cable locator.	1,000
			Allowance for survey costs (for new or reinstated fencing) (1,000 m).	5,000
			Allowance for traffic management (6 road crossings).	12,000
			Allowance for purchase and installation of: • Regulatory signage (Shared Path; “No Trail Bikes”; “Authorised Users Only”); • Road name signs; • Trail name signs; • “No Trespassing” signs; • Local attractions sign; • Miscellaneous signs (Keep Out etc.)	1,200
			<i>Sub-total (Section 2)</i>	<i>\$651,665</i>
			Approvals, permits, applications, designs, specifications, assessments (2.5% of estimated expenditure – \$651,665)	16,290
			Contingency amount (7.5% of estimated expenditure – \$651,665)	48,880
			Project management (5% of estimated expenditure – \$651,665)	32,590
			<i>TOTAL (NOT INCLUDING GST)</i>	<i>\$749,425</i>

Table 4: Total Costs: Ann Street to Gocup Road (excludes use of major rail bridge)

Section	Cost
<i>Section 1: Ann Street to Sheridan Street</i>	<i>\$533,135</i>
<i>Section 2: Chandler Park to Gocup Road</i>	<i>\$749,425</i>
<i>Total (excluding GST)</i>	<i>\$1,282,560</i>

NB: This cost does not include any work required to take users from Sheridan Street crossing to Chandler Park (see Table 2), nor does it include any costs for restoration and re-use of the Gundagai Rail Bridge and Viaduct

SECTION 5 – CONSTRUCTION MANAGEMENT

Should the trail proceed, prior to the construction of the rail trail between Ann Street and Gocup Road, the project manager should prepare a Construction Management Plan (CMP).

The purpose of a Construction Management Plan is to provide a framework reference document detailing how the Council and any contractors will manage and control aspects of the trail construction. The CMP will be used as a working document to ensure that obligations and commitments provided in the relevant licences, permits and approvals are made known to all site personnel and implemented effectively as an integral part of trail construction.

It also aims to detail processes to minimise impacts associated with the construction of the rail trail on adjacent areas. Given sufficient thought and consideration prior to construction, risks can be mitigated and impacts can be minimised.

Concerns of adjoining landholders during construction often include:

-  Adjoining landowners are to be advised well in advance of construction activity taking place.
-  Construction machinery and contractors' vehicles are not to use private property or private roads to access the former railway corridor (except where permission has been granted). Access should either be along the corridor or adjacent gazetted roads.
-  Fencing needs to be maintained at all times during construction.
-  Contractors and Council employees are not to trespass on private property during construction (unless prior written agreement is obtained from the landowner).
-  Spread of weeds along the corridor by construction machinery is to be controlled and minimised. Vehicle and machinery wash down facilities are needed.
-  Leaving of rubbish within the corridor during/after construction of the trail should not occur.
-  Construction crews should work closely with adjoining landowners over various issues, such as water pipes that cross the corridor, location of stock crossings, new fencing etc.

The general process for the development of the Gundagai Rail Trail will involve the following tasks:

-  Notification of adjoining landowners well in advance of construction commencing.
-  Ongoing consultation with adjoining landowners to clarify/confirm need for, and precise location of, requested items.
-  Removal of cross fences where they still exist.
-  Installation of new side fencing and gates (where required) and/or relocation of existing fencing.

-  Removal of steel track and sleepers.
-  Clearing of regrowth vegetation, and removal of weeds.
-  Identification and establishment of stockpile locations and machinery wash down facilities.
-  Utility identification/relocation (if required).
-  Environmental and other surveys (e.g. flora if required, site pegging and on ground delineation).
-  Replacement/reinstatement (or removal in some instances) of culverts, bridges and cattle stops.
-  Installation of erosion and sediment controls such as silt fences.
-  Haulage and stockpiling of material.
-  Trail base layers and surfacing.
-  Installation of signage (including warning, advisory, trailhead, distance/directional, emergency and interpretive signage).
-  Installation of management access gates, and chicanes and associated fencing.
-  Landscaping and revegetation.
-  Site cleanup.

Consideration will need to be given to the following matters in the preparation of the CMP:

Landholder Communication Plan

The Council should prepare a Landholder Communication Plan before work commences to ensure that all adjacent landowners are aware of the construction program well in advance and are individually consulted regarding exact placement of recommended works items. This includes the early removal cross fences (across the railway corridor), replacement of old cattle stops with fences and gates and the installation of new (or repairs to old) side fences.

Safe Work Statement Method (SWMS)

A Safe Work Method Statement (SWMS) documents a process for identifying and controlling health and safety hazards and risks. Under Occupational Health and Safety Regulations, a SWMS must be prepared before high risk construction work begins, if anyone's health and safety is at risk because of the work, but SWMS can be used for any other work activities. A SWMS is designed to help contractors and their employees think through the hazards and risks involved in the work, and to choose effective control measures. As a matter of course, a SWMS will be required and the CMP must address all risks and address how they will be controlled. Matters to be addressed include construction activity at road crossings.

Preparation of Other Works Method Statements

The appropriate environmental authorities (prior to work commencing) may require several other 'Works Method Statements' such as Clearing Work Method Statement, Minor Earth Works Method Statement and Drainage Works Method Statement. These statements will address a range of potential concerns such as the spread of weeds during vegetation clearing (on and offsite), water pollution or sedimentation due to working near to

watercourses, and the discovery or impact to any new sites of Aboriginal or non-Aboriginal heritage or archaeological sites.

Environmental and Other Surveys (e.g. flora if required, site pegging and on ground delineation)

Prior to selection of stockpile sites and construction activity, it may be necessary to carry out a variety of environmental and other surveys. The CMP will need to schedule the activity to occur at appropriate times of the year, and prior to construction.

Geotechnical/engineering Investigations for Drainage Crossings

Various investigations may be required at and around watercourses prior to refurbishment/adaptation of the bridges and culverts. The CMP will need to schedule in this activity prior to construction occurring at these sensitive locations.

Utility Identification/Relocation (if required)

Fieldwork did not reveal the existence of utilities (telecom cabling etc) within the corridor. However, the CMP should allow for a cable locator to establish the precise locations of utilities and services prior to construction activity (including removal of steel track and sleepers) occurring.

Installation of New Gates and Fences and Stock Crossings

In order to ensure stock are kept out of the rail trail corridor, fencing will need to be repaired or relocated or new fencing erected along parts of the corridor. This activity should be undertaken early in the construction process. Cooperation and consultation with adjoining landowners will be required to ensure any new fencing is installed in the appropriate location and that stock crossings (if any) are located in the optimum locations. This is primarily an issue between Camphor Street and Gocup Road – the only obvious locations on the corridor where stock are present.

Fencing and Stock Control During Construction

Construction of the rail trail will mean numerous (existing) fences erected across the corridor (particularly at property boundaries and road crossings) will need to be removed. One of the first steps in construction will be to erect new fences and gates (where appropriate) to ensure stock are contained to their paddocks and to ensure construction machinery have unlimited access along the corridor. The CMP will need to program this activity, including the necessary consultation with adjoining landowners and contractors. This is primarily an issue between Camphor Street and Gocup Road – the only obvious locations on the corridor where stock are present.

Selection of Material Stockpile Sites

Construction of the rail trail will involve the removal of material from the corridor (discarded timber sleepers, steel, old fencing material, miscellaneous waste/rubbish material) and the delivery of materials to be used in the construction of the trail (gravel, fencing materials, bridge components, etc). Numerous stockpile sites will be required along the alignment to enable the management of surfacing material, culvert materials, fill and potentially topsoil and vegetation. Care will need to be taken to ensure the selected sites are safely located, secure, and minimise the invasion of the privacy of neighbours of the proposed rail trail. The

stockpile sites should also be located on already cleared sites (minimising the vegetation clearing requirements) and with little or no impact on watercourses or other environmentally sensitive sites. It is imperative that access to the corridor be via public land, unless agreement has been obtained from neighbouring landowners. Preparation of the CMP should address these issues.

Remediation of Contaminants in Sleepers and Along Formation

Although no contamination investigations are known to have been undertaken, it is possible that there are contaminants in the soil and sleepers from years of maintenance of the railway track, railway corridor and associated infrastructure. The CMP should specify how potential contamination is to be dealt with.

De-contamination of Construction Equipment

As good practice, it is imperative that any construction equipment be kept clean. The CMP should specify the process by which construction equipment will be kept clean of potential diseases, weeds and contaminants.

Management of Fire Risk (incl. Spark Control)

There is a risk of accidental fires being caused by sparks from machinery and (in the case of the removal of the steel railway track) the cutting of steel. The CMP will need to address ways of ensuring fires are not inadvertently caused by the construction activity, and consideration given to the time of the year that different construction activities are undertaken. The CMP will identify the general requirements regarding fire prevention and management during construction, especially at times of total fire ban.

Weed Management – Control and Eradication

There is a legal obligation to control noxious weeds. The control/eradication of weeds within the former railway corridor is of particular importance and the CMP will need to ensure that construction of the rail trail does not cause weeds to spread.

Marking Trees for Retention or Removal

In some areas, vegetation has re-grown within the former railway corridor and even between the sleepers of the railway. Clearing of (some of) the regrowth vegetation will be required. However, some of the regrowth should be retained to provide shade for trail users, as it is sufficiently clear of the proposed trail corridor so as to not be of concern. Prior to construction commencing trees that are to be retained (for their shade and aesthetic values) should be marked with flagging tape. The CMP should specify the process for marking trees for retention.

Clearing, Mulching and Disposal of Waste Vegetative Material

Some regrowth vegetation will need to be removed from the rail trail corridor. The CMP will address the process for clearing, and the manner in which vegetative material will be removed from the corridor (such as by mulching and spreading in the immediate area or by other methods).

Disposal, Re-use or Recycling of Sleepers

There may be good quality sleepers available for re-use should they be needed for signage. The remainder can be used for erosion control, or chipped if they are in very poor condition.

The CMP should specify where poor sleepers can be used and where the good ones will be used and other methods of disposal.

Erosion Control and Drainage Along Corridor

The railway (when operating) had functional erosion control techniques in place. The construction of the rail trail must ensure that no damage is done to existing drainage channels and erosion control devices and that erosion is mitigated rather than exacerbated. This is particularly important when working in and around the numerous watercourses, along embankments and through cuttings. The CMP will need to address how erosion will be controlled, both during the construction of the rail trail and afterwards.

Pollution Control at Watercourses/Bridges

There will be considerable construction activity in the vicinity of watercourses at the time when bridges and culverts are being replaced and/or refurbished. The CMP will need to specify the installation of erosion and sediment controls, such as silt fences, to be deployed at sensitive locations such as bridges and other watercourses. Utmost care needs to be taken to avoid damage to banks of creeks.

Access Considerations

The CMP will need to determine the most efficient means of access to all parts of the corridor (and to stockpile sites), with minimal noise, dust and inconvenience to nearby residents. Given the large number of road crossings and the urban nature of the corridor, access should not be an issue but disturbance to nearby residents during construction will be more of an issue than for a rail trail which is predominantly rural.

Traffic Control

There are 8 road crossings along the proposed rail trail. Each road crossing will require various improvements, such as the construction of the trail, the installation of gates and fencing, and the installation of signage. The CMP will need to address the issue of traffic management and control to ensure the safety of contractors involved in construction activity in the vicinity of each road crossing – particularly at Gocup Road. While not a road crossing (given the trail ends on the northern side of the road), this road presents particular hazards that require careful management during construction.

SECTION 6 – AN IMPLEMENTATION PROGRAM

6.1 NSW GOVERNMENT PROCESSES

The NSW Government has set out a number of steps (in public meetings on other rail corridors) that proponents need to go through before the development of rail trails can occur (in addition to the necessary legislation passing Parliament). These steps appear to include the preparation of trail feasibility studies and trail development plans (or similar) both of which have been done for this proposed trail, public workshops facilitated by the NSW Government, a gauge of public support for a rail trail (including but not limited to the public workshops), and agreements with affected adjoining landholders about works that are needed on the trail as it passes their property. Whilst this Trail Development Plan has offered the opportunity for adjoining landholders to nominate issues and work on solutions, it is reasonable to state that not all landholders have provided feedback that may satisfy the NSW Government requirements. That is one reason why the works tables include allowances for additional landholder requests. This will need to be done at some point before the trail proceeds. Previous correspondence with Council from adjoining landholders has been noted and generally included in the allowances at the end of Tables 1 and 3. This correspondence would be an element of the consultation process.

6.2 TRAIL CONSTRUCTION STAGES

Development of trails can often be staged so that parts of trails are developed in line with available funding sources. It is often not possible to open the full length of a trail simultaneously as significant physical, financial, community and institutional work needs to be undertaken. This is the case in many rail trails (and indeed many recreational trails) around Australia. Opening a new trail in stages also allows those who are opposed or undecided about a project to see a clear demonstration of its use and lack of issues (almost inevitably, problems identified by concerned people do not arise).

A staged approach to planning and development is often the best approach as it better suits the capacity of the entity charged with delivering the project.

The Gundagai Rail Trail is a (relatively) small urban pathway project without many of the difficulties inherent in larger rail trails passing through both urban and rural landscapes. There is a good argument for completing the trail in one stage.

However, given a range of factors (primarily the need to determine the end use of the major bridge, the practicalities of getting the bridge to the stage where it can be re-used if that decision is made, the potential difficulties associated with the use of the southern end of the corridor between South Street and Gocup Road as outlined in Section 3.13, and the desire to see a “return on investment” at the Gundagai Station), it may be appropriate to develop the trail in two stages – the first from Ann Street to Sheridan Street and the second stage being the rest of the rail trail (whether this includes the bridge or not).

6.3 IMPACTS ON NATIVE VEGETATION

Trail construction will require the removal of vegetation along the length of the former railway corridor. Clearing will be required. Generally speaking, much of the corridor has been kept free of vegetation – in some sections, there has been regrowth though this is not extensive.

The Office of Environment and Heritage (OEH), in partnership with Local Land Services (LLS), manages the implementation of the Native Vegetation Act 2003 and Native Vegetation Regulation 2013.

The Native Vegetation Regulation 2013 makes provision for and with respect to the following:

-  development consent for clearing of native vegetation;
-  the form and content of property vegetation plans (PVPs), the variation and termination of PVPs and a register of PVPs;
-  the assessment of broad scale clearing, including the adoption of an Assessment Methodology for determining whether proposed broad scale clearing will improve or maintain environmental outcomes;
-  clearing for private native forestry;
-  routine agricultural management activities;
-  special provisions for vulnerable land; and
-  miscellaneous and savings and transitional matters.

It is unclear whether the clearing of regrowth vegetation for the purposes of constructing the trail will be required. The Council will need to liaise with the OEH to determine whether permits will be required and/or whether offset revegetation will be required.

SECTION 7 – CORRIDOR MANAGEMENT AND OPERATIONS PLAN

7.1 A CORRIDOR MANAGEMENT PLAN

As the trail development planning moves towards completion and the various landowner and development issues are resolved, a number of decisions need to be made about the ongoing management, operation and maintenance of the rail trail.

The best approach to deal with these issues is through a Corridor Management Plan, which forms the basis for ongoing trail management, operation and maintenance. A well-prepared and comprehensive corridor management plan (undertaken in close consultation with the community and neighbouring landowners) serves to ensure the rail trail functions and operates as a high quality experience.

This a small rail trail and functions as much as an urban pathway as a rail trail. Consequently, Council will have its own policies for managing such pathways. The following information is provided for information so that Council can consider a range of factors in managing the trail.

7.1.1 WHAT IS IN A CORRIDOR MANAGEMENT PLAN?

There are four major components to a Corridor Management Plan:

-  A 'Trail Policy' or a set of Guiding Principles which incorporates a set of decisions made about how the rail trail will operate;
-  A Trail Management Plan;
-  An Emergency Response Plan (incorporating a Fire Management Plan); and
-  A Trail Maintenance Plan.

Bringing all four elements together in one framework (a Corridor Management Plan) makes ongoing trail development and management an efficient process and ensures ongoing seamless transitions as personnel involved with the trail change over time.

7.1.2 GUIDING PRINCIPLES

The preparation of a set of overarching principles is a useful exercise. Adherence to these principles will serve as a guide to the use, upgrading, maintenance, promotion and management of the Gundagai Rail Trail. The following principles provide guidance for the Council (and have been adopted from several other rail trail projects). The scope of principles indicates the scope of issues considered in the development of the Rail Trail.

-  **Access for all** - where practical and appropriate, the Gundagai Rail Trail will be developed/upgraded to enable access by as wide a range of potential users as possible including people in wheelchairs, people with disabilities, family groups and the elderly.
-  **Providing enhanced outdoor recreational opportunities** - the Gundagai Rail Trail will be promoted as an additional component to the range of low cost outdoor recreational opportunities within the Gundagai region.

-  **Minimal conflict between trail users** – the Gundagai Rail Trail will cater for walkers and cyclists with minimal conflict.
-  **Providing access to, and an enhanced understanding of, the natural attributes of the Gundagai region** - the Gundagai region has a diverse and outstanding range of physical attributes, and the Gundagai Rail Trail will contribute to the provision of greater opportunities to access these natural features.
-  **Providing access to and an enhanced understanding of the history of the Gundagai region** - the many physical reminders of past land uses and activities can be a major component of interpretive information available on the Gundagai Rail Trail, and a greater inducement for visitors to use the trail.
-  **Quality promotion** - the trail manager will give significant emphasis to promoting the Gundagai Rail Trail as part of a broader visitor experience of the region.
-  **Effective and ongoing maintenance** - the Gundagai Rail Trail will be the subject of a regular maintenance regime, and a detailed audit every 2–3 years, ensuring that all defects along the trail receive quick attention, thereby keeping the trail up to the requisite standard and quality.
-  **Quality construction** – the Gundagai Rail Trail will be built to appropriate standards, and to a high quality, thereby minimising the need for maintenance, and giving users a quality experience.
-  **Quality information**, including brochures and mapping - the Gundagai Rail Trail will have quality on-trail information, as well as a professionally produced and widely available trail brochure and map. All means of distribution of trail information need to be utilised, including a web site and social media.
-  **Outstanding interpretive material** - the Gundagai Rail Trail will have on-trail interpretive material, and will be included within other trail and publicity brochures, providing trail users with a greater appreciation of the more interesting features to be found along the trail.
-  **Consistency and uniformity of signage** - signage is recognised as an essential element of a quality trail, and all signage erected at trailheads, along nearby and adjoining roads and along the Gundagai Rail Trail will conform to accepted standards, and will maintain a consistent theme along the entire trail.
-  **Adherence to recognised standards** - trail construction, signage and trail markers, and trail classification will comply with recognised Australian Standards, thereby ensuring a high quality and safe experience for all trail users.
-  **Community involvement** – the management and maintenance of Gundagai Rail Trail will consistently seek to involve adjoining landowners and the local community along the corridor on an on-going basis and in the formulation of critical decisions. This on-going involvement with adjoining landowners and the community will ensure that the use of the rail trail does not impinge on private operations and that disputes are resolved wherever possible to the satisfaction of both the trail manager and the landowner. The on-going involvement with other sectors of the community will ensure that the trail is meeting their expectations. Again, this is not so critical given the urban nature of the

trail but should be considered by Council, particularly given the active role of Gundagai Historic Bridges Inc in the planning of the rail trail to date. Their involvement in an on-going way is critical.

- ✚ **Trail user survey** – trail users will be surveyed on a bi-annual basis to ensure the trail is meeting their needs and expectations, and a survey of adjoining landowners and businesses will be undertaken to ensure the trail is meeting their expectations.

Due to the nature of a rail trail (a corridor surrounded by a range of activities), it can be vulnerable to the negative impacts of surrounding development. The Rails-to-Trails Conservancy (USA) suggests that trail planning include the development of a trail protection policy to prevent damage to the trail corridor. The policy sets out primary uses of the corridor – recreation, transportation, and historic preservation. Any use deemed incompatible with this primary use will be denied; those uses compatible with the primary use will be considered and carefully regulated.

A comprehensive **trail protection policy** provides the trail manager with the authority to do the following:

- ✚ Regulate all secondary uses of the trail corridor in a fair and consistent manner;
- ✚ Minimise inconvenience to trail users, and assure protection of wildlife habitat and natural and historic resources within the trail corridor;
- ✚ Minimise damage to the trail corridor at all times;
- ✚ Establish uniform standards for construction and restoration of the trail corridor if it is damaged by a secondary use;
- ✚ Ensure that the managing agency recovers all its administrative costs and receives appropriate compensation for use of, and damage to, the trail corridor by secondary uses;
- ✚ Inform all public and private interests of the expectations and intentions of the trail managing agency with respect to secondary uses;
- ✚ Issue permits and licences for secondary uses; and
- ✚ Prohibit the transfer of ownership rights through the use of easements or other mechanisms.

7.1.3 THE INITIAL DECISIONS

Some basic initial questions need to be answered, and some crucial decisions made. These inform the management decisions about the ongoing management of the rail trail. The following discussion covers the range of issues generally addressed in trail management. Questions are posed and some possible answers are included. These answers will need to be considered and more fully answered by the Council. Trailhead Code of Conduct signage should reflect the Council's position on the following matters.

Enforcement Procedures

What enforcement procedures will be in place? The Council will have existing local laws covering a range of matters such as riding motorbikes in parks (a common issue). These local

laws should form the basis for enforcement – the enforcement infrastructure is the key issue.

Dogs on the Trail

Given the urban nature of the trail, dogs should be permitted and managed in accordance with relevant local laws.

Weed Eradication and Control

What will be the weed eradication and/or long-term control program? The options are grazing, slashing or using poisons. The Council will have an obligation to deal with weeds.

Open Fires and Barbecues

Any lighting of open fires or barbecues at any time of the year should not be permitted along the rail trail.

Trail Construction and Infrastructure Standards

This Trail Development Plan has recommended a range of infrastructure. This includes the level of development of parking at the trailhead, user information, on-trail signposting, facilities etc. Decisions need to be made as to whether a high or low standard of infrastructure will feature on the trail. This may also include timetables for ongoing enhancements or embellishment of infrastructure. A decision on standards to be adopted on a permanent basis has implications for ongoing trail maintenance.

Strategies for the Protection of Native Vegetation

Together with road reserves, railway reserves played an important role as wildlife corridors and habitats for native birds and animals. In many instances they hold important remnants of the indigenous vegetation that has been all but lost. It is important to manage railway reserves in a manner that maintains and enhances their nature conservation values.

In order to improve aesthetic and nature conservation values, the removal of introduced weeds and grasses and revegetation with native species is desirable. Revegetation is also important in some areas for visitor comfort. Any revegetation areas should be fenced off from stock and planted with native trees, shrubs, herbaceous plants and grasses. The Works Tables make an allowance for revegetation at the northern end of the trail near Ann Street as a way of providing shade for users.

The assistance of dedicated volunteer groups will help ensure that revegetation programs are quickly implemented and successful.

Once the rail trail is developed, the Council will be responsible for management of revegetation and the control of weeds within the corridor.

Complaints/Communications – Procedures and Responsibilities

It is critically important for the rail trail users, adjoining landholders and the public to have contact with authorities to ensure that the rail trail is managed properly, that maintenance matters are attended to readily, that any regulations are enforced and that general feedback can be given. It is important that this person or agency is easily contactable. Contact details need to be on all trail literature and maps, on trailhead signage, and on relevant websites.

It is important that the public and users know who to contact about the trail and about management issues. Responsibility rests with an accountable person or group. The Council needs to take responsibility for organising maintenance and for any necessary trail closures and for being the first point of contact for most matters.

On-trail Events and Group Use Policy

One form of group usage is the on-trail special event and how these are to be managed. The Council should notify, and seek input from, local police and other emergency service personnel when any sizeable event is planned. It builds good community relationships. Major events not involving alcohol may also require assistance from police; for example, police are often involved with events, providing some traffic control services. It is good practice to involve local service personnel in the early stages of event planning.

Target User Groups Need to be Identified

A promotion and marketing plan will need to be included in the set of initial decisions. Tasks will need to be allocated both in the initial stage and in ongoing trail development and operation.

The opening of the rail should be well advertised via local media (TV, radio, newspapers), throughout the Riverina region and in Sydney. Opening events should be arranged to make potential users well aware of the existence of the new trail.

On-trail Advertising

Will on-trail advertising be allowed? The Council needs to be aware that advertising can be an advantage to users and commercial operators, it should be controlled, it is a source of funding for ongoing maintenance/upgrades, it should be to a standard, and style guides should be determined including rail trail logo. On-trail advertising is one avenue of revenue generation. The main impacts of such advertising would be visual impacts and safety impacts. Any permitted advertising signs should not impede trail users nor create a safety hazard (for example, by obscuring a road crossing warning sign).

Visual impacts are much more difficult to judge. Local governments have a range of signage policies that are likely to address visual amenity. Policies that regulate road-side advertising would be the most



Commercial establishments, such as accommodation providers, alongside the Otago Central Rail Trail in New Zealand are obliged to comply with advertising design guidelines and pay for the advertising.

relevant. Where these are not compatible, the Council should determine the criteria. On-trail advertising is likely to be directly connected to trail-side businesses (this could be one of the criteria) but the Council would not be endorsing the service nor directing trail users to that facility under any agreement.

Use of the Trail Corridor by Utilities

A linear corridor such as a rail trail does lend itself to a range of potential future uses – many of which are not excluded by the possibility of the corridor being converted into a recreation trail. This former railway corridor, like so many others around the world, is also ideally suited for the placement of utilities, such as wires, cables and pipes. Data, telephony and energy can and are all carried in pipes alongside or underneath rail trails. These uses can be complementary to the corridor's use as a recreation trail.

Provided the intended co-use does not disturb the natural, scenic and historical qualities of the trail, it can be permitted in accordance with the Trail Protection Policy (discussed above). In other jurisdictions, utilities are charged an annual fee for corridor use.

Consideration and Amelioration of Impacts on Adjoining Landholders

This covers issues such as fencing, privacy issues, trespassing, the rights to graze the corridor, who will pay for construction works that allow farmers to continue activities etc. The Corridor Management Plan needs to set a basis for how these are dealt with on an on-going basis. One of the guiding principles for the Gundagai Rail Trail should be that the management and maintenance of the trail will consistently seek to involve the local community on an on-going basis and in the formulation of critical decisions. This on-going involvement with adjoining landowners and the community will ensure that the use of the rail trail does not impinge on private operations and that disputes are resolved wherever possible to the satisfaction of both the trail manager and the landowner.

A spirit of cooperation with adjoining landholders needs to be continued throughout the life of the rail trail. Building community support is critical – adjoining landholders can provide a significant boost for wider community support. There are no rules for on-going engagement with adjoining landholders – a willingness to sit down and listen and discuss openly is required. Having a single contact point for the trail would be a significant advantage to ensure ongoing good relationships with landholders. Inviting landowners to 'adopt-the-trail-section' adjacent to their property may be warranted.

Grazing the "Remnant" Corridor

It is obvious that at least one part of the corridor (north of South Street) is grazed. As noted in Section 3.11, grazing the "remnant" corridor not required for the trail has the benefit of reducing maintenance costs for the Council. Given the urban nature of the corridor and likely use rates and patterns, the provision of fencing to allow permanent grazing is more appropriate than allowing seasonal grazing using electric fences.

Any capital costs required to install fencing (either permanent or temporary) needs to be offset against a reduction in maintenance costs (notably slashing and weeding) as a result of livestock on the corridor.

Management Structures and Management Planning

Decisions about management structures, timetables for change and the reasons for decisions should also be included in the Corridor Management Plan. Ongoing community involvement which will be driven through the management structures needs to be also included in the Corridor Management Plan – the why, the how and the who need to be clearly articulated in an accessible document.

7.2 A TRAIL MANAGEMENT PLAN

A Trail Management Plan is essential to setting both the long-term and day-to-day management objectives for the trail and provides a framework against which a range of decisions can be made. Such a document - as with all management plans - should be both flexible and responsive to change, yet set a clear management framework for future directions and priorities. Trails that do not have a Management Plan suffer from decisions taken on the run, out of context or as knee-jerk responses to critical situations.

Council may have existing maintenance plans for their urban pathway network. The rail trail could be simply added to the list of assets and managed accordingly. The following is provided for information purposes if Council wish to manage the rail trail as a separate type of asset.

The trail manager (Shire of Mundaring) for the Railway Reserves Heritage Trail (RRHT) in Western Australia prepared a Trail Management Plan several years ago. It is a useful model to consider the issues that need to be dealt with by a Trail Management Plan. The issues covered were:

-  Philosophical background to RRHT development;
-  A statement of guiding principles;
-  Review of how RRHT is, and can be further linked to other trails, especially the Munda Biddi Trail, the Bibbulmun Track, the Kep Track, the Farming Heritage Trail and those in the eastern portion of the City of Swan.
-  Clarification of management roles and responsibilities for the various trail sections;
-  Risk management policy;
-  Group and commercial usage policy and guidelines;
-  Provision of essential services for trail users, such as water points, toilets, rubbish bin, lighting and other desirable trail furniture;
-  Identification of any outstanding access /egress works for the RRHT, including disability works;
-  Fire management and emergency evacuation procedures;
-  Preparation of a promotional and interpretation management sub-plans, including specifications for signage and suggestions for interpretation along the trail between the townsites;
-  Mapping and brochures – guiding principles;
-  Formation of a Friends of the RRH Trail Group; and
-  Timetable for reviewing and updating the Management Plan

Some of the initial decisions mentioned above flow into a trail management plan and should be included.

A timetable for reviewing and updating this Plan should be set, with annual reviews and three (or five) year updates recommended. The Plan must outline a professional program of management, designed to ensure that there is no lapse into a belief that trails, once built, will manage themselves.

Further, this plan must clearly define who is responsible for what – it is crucial that everyone knows what their role and responsibility is. Without this, it is all too easy for everyone to sit back expecting someone else to do the work. Trail management plans need to be specific about roles in management and maintenance.

7.3 GENERAL RISK MANAGEMENT

A risk is the chance of something happening as a result of a hazard or threat that will impact on an activity or planned event. Risk arises out of uncertainty. It is measured in terms of the likelihood of it happening and the consequences if it does happen. Risk therefore, even on trails, needs to be managed. Ignoring the risks that apply to a recreation trail or events planned along a trail could impact on:

-  The health and safety of trail users, staff, volunteers and event participants;
-  The reputation, credibility and status of the trail and its manager (or trail association);
-  Public and customer confidence in the trail manager;
-  The trail manager's financial position; and
-  Plant, equipment and the environment.

A systematic approach to managing risk is now regarded as good management practice. Risk management is a process consisting of well-defined steps which, when taken in sequence, support better decision making by contributing to a greater insight into risks and their impacts. It is as much about identifying opportunities as it is about avoiding losses. By adopting effective risk management techniques, the trail manager can help to improve the safety of trail users, the quality of experience for trail users and business performance of the trail organisation. Sound risk management can prevent injuries from occurring, and help to reduce insurance claims and costs. Risk management is of particular importance to nature based and adventure tourism operations, and requires careful consideration in how it is planned for and dealt with. The courts expect that a business (including local governments) will exercise due diligence in carrying out hazard assessment, risk management planning and emergency response planning. There are many benefits in implementing risk management procedures. Some of these include:

-  More effective strategic planning;
-  Better cost control;
-  Increased knowledge and understanding of exposure to risk;
-  A systematic, well-informed and thorough method of decision making;
-  Increased preparedness for outside review;
-  Minimised disruptions;

-  Better utilisation of resources;
-  Strengthening culture for continued improvement; and
-  Creating a best practice and quality organisation.

Though the rail trail would be located on a reasonably flat grade, and is wide enough to accommodate several user groups, there will be risks associated with use of the trail.

Some of the risks involved are:

-  Encountering motor vehicles at road crossings;
-  Conflict between user groups;
-  Encountering illegal trail users such as cars/4WD and trail bikes;
-  Falling from unprotected bridge crossings (though handrails on all bridges over 1 metre high would be required);
-  Falling from high embankments, where there are no barriers;
-  Being caught in a grass fire;
-  Being caught in a flood; and
-  Being bitten by a snake.

Good design and construction address some of these risk elements. Many trail projects have in place a maintenance plan which sets out clearly the items which require regular inspection, the frequency of that inspection and assessment, the actions to take in response to degraded surface conditions or infrastructure, and remedial action to rectify a problem or fault.

The threat of fires is always present. Though snakes are rarely encountered, it may be prudent for trail promotional material to carry a warning about possible encounters and to provide information about dealing with a snakebite.

7.4 AN EMERGENCY RESPONSE PLAN

Major fire events throughout Australia in recent years have put the need for emergency planning and management into sharp focus. Trail managers need to be very conscious of the need to prepare emergency response plans and work out how to deal with emergencies on trails. This is not limited to fires. Flooding can be just as serious an issue.

In other rail trail projects, it has been desirable to set out the parameters of an Emergency Response Plan. Given the urban nature of this trail, such a requirement seems onerous. One matter of relevance is that Table 2 provides for the development of the trail as an emergency access route for residents of Ovid Lane in particular in times of flood. The works item recommends use of a gated system with keys being made available to existing residents of Ovid Lane (and other likely affected properties). Council will need to determine whether such keys are made available when the trail opens (if it proceeds) or simply as the need arises.

7.5 A TRAIL MAINTENANCE PLAN

7.5.1 INTRODUCTION

Ongoing trail maintenance is a crucial component of an effective management program – yet it is often neglected until too late. Countless quality trails have literally disappeared because no one planned a maintenance program and no one wanted to fund even essential ongoing repairs. It is therefore essential that funds be set aside in yearly budgets for maintenance of this trail - to ensure user safety and enjoyment, and to minimise liability risks for land managers.

7.5.2 THE MAINTENANCE TASK

Ongoing maintenance can be minimised by building a trail well in the first place. A well-constructed trail surface will last considerably longer than a poorly built trail. Signs, gates, and posts installed in substantial footings stand less risk of being stolen or damaged. Well designed, well built and well installed management access gates and trail user gates (as proposed) will keep motor vehicles and motorised trail bikes off the trail with a consequent lessened need for surface repairs. Trail furniture (such as bench seats, trail directional marker posts and interpretation) should be installed in substantial footings sufficient to withstand high winds and theft. These should require minimal ongoing maintenance. Vehicles moving along a sealed pathway have the capacity to crack the surface if tyres sit on the trail edge. Care needs to be taken by maintenance vehicles.

The presence of trees along some of the trail means that time will be spent removing damaged and fallen trees and branches in the aftermath of a storm.

The most frequent maintenance task will be attending to fallen branches and limbs, repairing trail surfaces, replacing stolen or damaged signs (including road signs), clearing culverts and under bridges and ensuring gates and fences are functioning as intended.

As noted above, building good trails in the first place is the very best way of minimising future problems and costs. As a second line of defence, a clear and concise Management Plan with a regular maintenance program written into it will aid significantly in managing ongoing resource demands.

The goals of a Trail Maintenance Plan are to:

-  Ensure that trail users continue to experience safe and enjoyable conditions;
-  Guard against the deterioration of trail infrastructure, thereby maintaining the investment made on behalf of the community;
-  Minimise the trail manager's exposure to potential public liability claims arising from incidents which may occur along the trail; and
-  Set in place a management process to cover most foreseeable risks.

Erosion (caused by weather and unauthorised users), regrowth of vegetation (including grass and weeds on the trail corridor but not on the trail surface), fallen trees and branches, and damage to signage and fences are likely to be the greatest maintenance activities on the trail. Providing these effects are attended to early, they are largely labour intensive rather

than capital expensive. Calamitous events such as fire or major flood will naturally generate significant rebuilding activity and consequent costs. These events are generally unmanageable, and should simply be accepted as part of the longer-term reality of trail management.

7.5.3 PUBLIC LIABILITY AND RISK MANAGEMENT

It is important that Cootamundra Gundagai Regional Council is aware that – whether or not visitors are actively encouraged to come to the trail – they carry a significant duty of care towards those visitors accessing the trail. The maintenance of a quality trail is therefore critical from this perspective. Liability generally rests with the land managers and hence, every attempt should be made to minimise the risk of accident or injury to trail users (and therefore the risk of legal action).

While public liability is certainly an issue for all land managers, it is not a reason to turn away from providing safe, sustainable and enjoyable resources. It is simply a mechanism by which to recognise the responsibilities inherent in managing natural and built resources. Dealing with a perceived liability threat is not about totally removing that threat – it is about doing all that is manifestly possible to provide safe access opportunities for visitors, thereby minimising the risk of liability claims.

A formal Hazard Inspection process is crucial in the ongoing maintenance plan. Not only will this define maintenance required and/or management decisions to be addressed, it is vital in ensuring safe conditions and therefore in dealing with any liability claim which may arise in the future. Courts are strongly swayed by evidence of a clear and functional program, and a regular series of reports, with follow-up actions, will go a long way to mitigating responsibility for injuries. Further, clearly defined ‘User Responsibility’ statements in brochures, maps, policy documents, plans and public places will assist this process.

7.5.4 TRAIL MAINTENANCE

The following information is provided as general maintenance guidance. An inventory of works and locations needs to be prepared for maintenance purposes – this cannot be prepared until construction is completed. An example of a checklist for a trail is included in Appendix 4. The Council will need to create a specific checklist based on this example once the trail is completed.

Maintenance on the trail should be divided between regular inspections and simple repairs, a one (or two) person job, and quarterly programs undertaking larger jobs such as significant signage repairs or weed / vegetation control. A range of basic machinery, tools and equipment will be required for this work.

At the core of any trail maintenance program is an inspection program. The relevant Australian Standards sets out the basis for frequency of trail inspections. It only covers walking tracks and provides for inspections every 30 days (or less) for Class 1 trails, every 90 days for Class 2 trails, and annually for Class 3-6 trails. This sets the minimum standard for inspections and is a guide only. What the Australian Standards do not include but should include is an inspection of any trail after significant weather events such as storms, fire,

floods, and high winds in addition to the regular inspection program. The proposed inspection regime recommends inspections every 90 days.

Clear records of each activity/inspection will be kept by the body with responsibility for maintenance. Pro-formas serve to maximise user safety and minimise liability risks. It will also provide a valuable record of works undertaken and make for efficient use of maintenance resources over time.

In general, Maintenance Plans are based around regular inspections, at which time simple maintenance activities should take place concurrently. More time-consuming maintenance activities should take place every six months, while detailed Hazard Inspections should occur annually. Further, the capacity to respond immediately to random incoming reports of hazards or major infrastructure failures should be built into the Plans. Table 5 gives a suggested schedule for general maintenance activities to achieve acceptable maintenance levels and provides explanatory notes pertaining to each Activity.

Table 5: General Maintenance Activities

<i>Activity</i>	<i>Activity Description</i>	<i>Site</i>	<i>Frequency</i>
Undertake full inspection of the trail	At trailheads The trailhead should be carefully checked to ensure that all signage is present, and that all signs are clearly visible and legible. An inventory needs to be prepared to assist in regular maintenance. Surface of access tracks and parking areas need to be checked and potholes eliminated. Inspect and check trailhead facilities and infrastructure: ○ Parking areas and access tracks (check surfaces) ○ Wheel stops ○ Trailhead (map) panel ○ interpretive panel ○ Seating/shelter/picnic tables ○ Trailhead signage (on road) ○ Trail directional marker posts At Road crossings Particular attention needs to be given to signs at road crossings or junctions. Each crossing should be carefully checked to ensure that all signage is present, and that all signs are clearly visible. Particular attention must be given to ensuring that “Trail Crossing ahead” signs (on roadside at approach to trail crossing) are not obscured by overhanging vegetation.	Entire trail	Every third month

Replace damaged and/or missing signs. Check management access gates and trail user chicanes for structural stability and function. Fencing Check and make repairs to side fencing. To be done by arrangement with adjoining landowners.			
Check signage and clean, replace or repair as required esp. road crossing signage and directional markers. All signage should be checked for vandalism and cleaned if necessary. If damage is too great, replacement is essential. An inventory of locations of all signs needs to be prepared to assist in regular maintenance.	Check, repair or replace all trail signage, including interpretive signage, trail distance and directional markers (logo/arrow plates). Replace missing and/or damaged signs.	All locations	Every third month - at each trail inspection
Slashing of trail environs		Various locations	Timing dependent on seasonal growth patterns
Check trail surface and arrange repair as required		Entire trail	Every third month. Arrange repairs immediately if acute, or schedule maintenance for six monthly work sessions if not.

Maintenance of trail surface	Check condition of trail surface for damage and arrange repairs if necessary; trim off regrowth vegetation.	Entire trail	Every six months
Sweep or rake debris from trail surfaces, especially at road crossing points		Various locations	Every six months
Maintenance of culverts and other drainage measures	Check and clear drains and culverts. Drains need to be checked and cleared once or twice/year and after heavy rainfall events. Regular maintenance especially after heavy rainfall is essential. Most maintenance will involve clearing of material from silted up or blocked drains. Drain blockages should be cleared as urgent priority. Silt traps at culvert discharges or entry points should be cleared regularly. Cess drains in cuttings should be checked to ensure they function effectively.	Entire trail	Every six months
Cut back regrowth, intruding and overhanging vegetation.	Check overhanging or intruding vegetation. Cut back where required. Clear fallen trees and branches. Undergrowth vegetation grows quickly, and over time will continue to intrude into the trail 'corridor'.	Entire trail	Every six months, unless obviously requiring attention at regular inspections.

	Such intruding vegetation needs to be cut back to provide clear and safe passage for trail users. "Blow-downs" - trees or limbs that have fallen across the trail – need to be cleared as/when required. Sight lines must be kept clear either side of road crossings, to ensure that users can clearly see a safe distance either way at road crossings.		
Check structural stability of interpretive signage, and interpretive shelters. Check structural stability of seating, distance posts. Inspect and replace when needed.	Interpretive panels should be checked for vandalism and cleaned if necessary. If damage is too great, replacement is essential. An inventory of locations needs to be prepared to assist in regular maintenance. Furniture alongside trails, if installed, needs to be checked regularly for damage to ensure safety and comfort of trail users.	Entire trail	Every six months
Undertake Hazard Inspection and prepare Hazard Inspection Report	This should be done annually. Inclusion of a formal Hazard Inspection process, crucial in addressing risk, is necessary in the ongoing maintenance plan. Not only will this define maintenance required and/or management decisions to be addressed, it is vital in ensuring safe conditions and therefore in dealing with any liability claim which may arise in the future. Courts are strongly swayed by evidence of a clear and functional program, and a regular series of reports, with follow-up actions, will go a long way to mitigating responsibility for injuries.	Entire trail	Annually

	Further, clearly defined 'User Responsibility' statements in brochures, maps, policy documents, plans and public places will assist this process.		
Check structural integrity of bridges. Inspect and maintain bridges. Check for obstructions and clearing under bridges.	Visual inspection is appropriate though detailed inspection should follow storm and flood events. After floods, bridge should be inspected and damaged components replaced as soon as possible. Handrails and surface decking on bridge should be inspected for damage at regular intervals.		Annually
Major repairs and replacements		Entire trail	Every 5 years
Major repairs and replacements		Entire trail	Every 10 years

It should be noted that this schedule does not allow for repair works above and beyond 'normal' minor activities. For example, if a section is subject to heavy rain, and erosion control fails, additional repair works will need to be undertaken).

7.5.5 MAINTENANCE COSTS

Resourcing a maintenance program is crucial, and funds will be required on an ongoing basis to enable this essential maintenance. It would be short sighted to go ahead and build the trail and then baulk at the demands of managing and maintaining it.

Estimating the cost of maintaining a trail is difficult due to the unpredictability of events such as floods, fires, high winds and stormwater runoff, as well as the tenure and management arrangements for the trail. Deliberate and wilful damage and vandalism can also contribute significantly to the need for ongoing maintenance and replacement of infrastructure. Volunteers can be organised (through a coordinated program) to carry out much of the work at a limited cost to the trail manager.

Evidence of actual trail maintenance costs for individual items along a rail trail, or any trail for that matter, are scarce. The Rail to Trails Conservancy in the USA (*Rail-Trail Maintenance and Operation – Ensuring the Future of Your Trails – A Survey of 100 Rail-Trails, July 2005*) provides two general answers for why it is difficult to estimate maintenance costs. First, the trail may be part of a larger budget for a single park or even an entire parks and recreation department. Specific costs for the trail aren't separated out. Second, small trail groups, though run by competent and extremely dedicated volunteers, tend to be 'seat-of-the-pants' operations. Maintenance is done "as needed," funds are raised "as needed," and the people are volunteering because they love the trail, not because they love doing administrative tasks like budgeting.

Maintenance responsibility does appear to significantly affect cost. Approximately 60% of the surveyed trails reporting costs were maintained primarily by a government agency, implying paid staff and/or contractors. The other 40% of trails were primarily maintained by a non-profit or volunteer organisation. Annual costs for government-run trails were just over \$2,000 per mile (\$1,250/km). This is not much more than the overall average of \$1,500/mile (\$940/km), but it nearly triples the average for volunteer-run trails of just under \$700 per mile (\$440/km).

In Victoria, the Murrindindi Shire Council manages and maintains approximately 85% of the (134km) Great Victorian Rail Trail. It spends around \$2,000/km on maintenance activities each year. Anecdotal information indicates that initial construction issues necessitate an increased level of maintenance of the trail surface (and drainage through cuttings). A higher level of (initial) construction quality (i.e. better trail surfacing) would mean less ongoing maintenance.

Volunteers could undertake much of the ongoing maintenance of the trail if a volunteer maintenance program is arranged. It should be ensured that whoever is charged with ongoing responsibility for managing the trails has genuine and specific trail knowledge. It is not sufficient to be a skilled gardener, conservationist or environmental scientist. If training is required to bring staff knowledge levels up to a high standard, this should be seen as a priority to be **undertaken early in the construction process. Trail skills are better learned** over a longer time, with hands-on practice, than in short briefing sessions.

The biggest maintenance costs involved are obviously maintenance of the items that initially cost the most to install – surfacing and bridges (though use of a sealed surface reduces the maintenance load, as will the use of pre-fabricated bridges).

It is difficult estimating the costs involved in maintaining a trail until every last bridge and other infrastructure items have been installed.

The use of volunteers to undertake many of the routine repairs and cleaning tasks can substantially reduce the costs.

Table 6 makes an attempt at estimating an amount that may be required on an annual basis for maintaining the proposed Gundagai Rail Trail.

Table 6: Estimate of Maintenance Costs (Gundagai Rail Trail – 5.3km)

<i>Task</i>	<i>Frequency/note</i>	<i>Possible costs</i>
Inspect and check trailhead facilities and infrastructure: - parking areas (check surfaces) - rubber wheel stops - interpretive panel - picnic tables - trailhead signage (on road) - trailhead (map) panel - trail directional marker posts	1 trailheads at average repairs of \$500 per site	\$500
Trail surface - allowance for incidental repairs to, and upgrading of, trail surface.	Allowance of 2% of replacement cost (i.e. 2% of \$444,940).	\$8,900
Check side vegetation growth and overhead vegetation and cut back where required. Clearing of fallen trees and branches.	Allowance of 3 person days per year (@ \$500/day).	\$1,500
Inspection and routine maintenance of bridges. Check for obstructions and clearing under bridges.		\$500
Check and clear culverts.	Allowance of 10 hours for checking and cleaning	\$1,000
Check road crossings. Replace damaged and/or missing signs and undertake other tasks: - Give Way signs - Road Ahead signs - Trail Crossing warning signs - Road name signs - Regulatory signs - Check sight distances and clear vegetation if necessary	8 crossings at average repairs of \$300 per crossing	\$2,400

Inspection of and allowance for replacement of trail directional marker logo/arrow plates and trail kilometre posts.	1 replacement per year	\$400
Allowance for repairs to trailside furniture and occasional replacements (when required).	Inspection and minor repairs every 6 months. 1 replacement per year.	\$1,000
Check miscellaneous signs along trail (e.g. Road Ahead, Give Way, trail name, distance signs, "No Trespassing", bridge load signs, etc).	5 replacements per year.	\$1,000
Check management access gates and fences at road crossings. Make repairs where necessary.	Allowance of \$4,000 per year for repairs.	\$4,000
Check interpretation along trail for damage and structural stability.	Allowance for replacement of 1 panel per year.	\$3,000
Inspection of rail trail (3 times/year).	Allowance for 3 inspection trips per year	\$4,500
Preparation of annual Hazard Inspection Report.	1 person days @ \$1000/day.	\$1,000
\$29,700 excl GST (per annum)		

This equates to a rate of approximately \$5,605 per kilometre per annum.

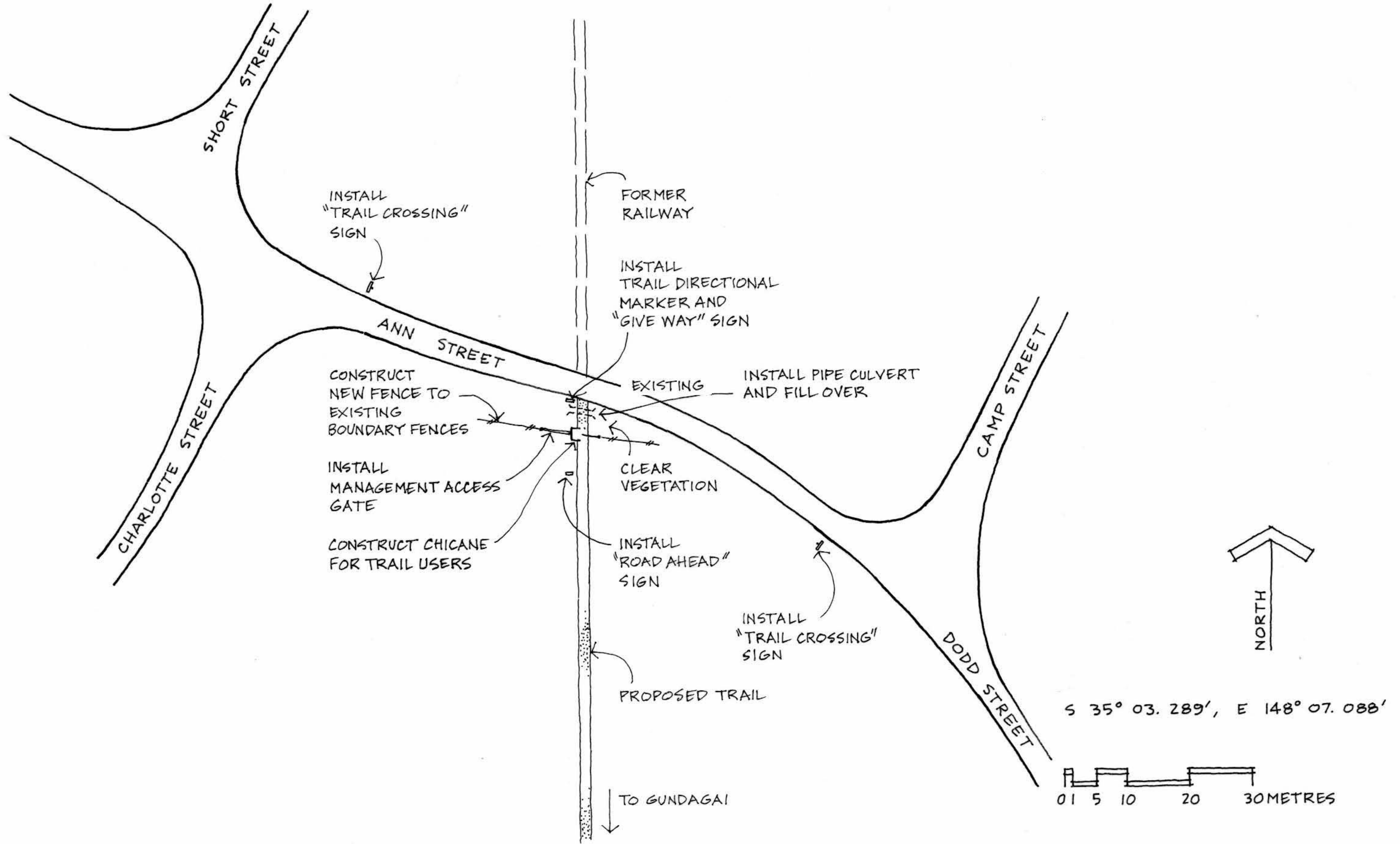
Note 1: This does not include any costs for maintaining the Gundagai Railway Bridge and Viaduct

Note 2: Reporting of routine maintenance requirements by trail users will obviate need for many scheduled inspections.

Note 3: Appointment of a Trail Manager, with responsibility for regular inspections of entire trail, will substantially reduce need for unscheduled and expensive maintenance.

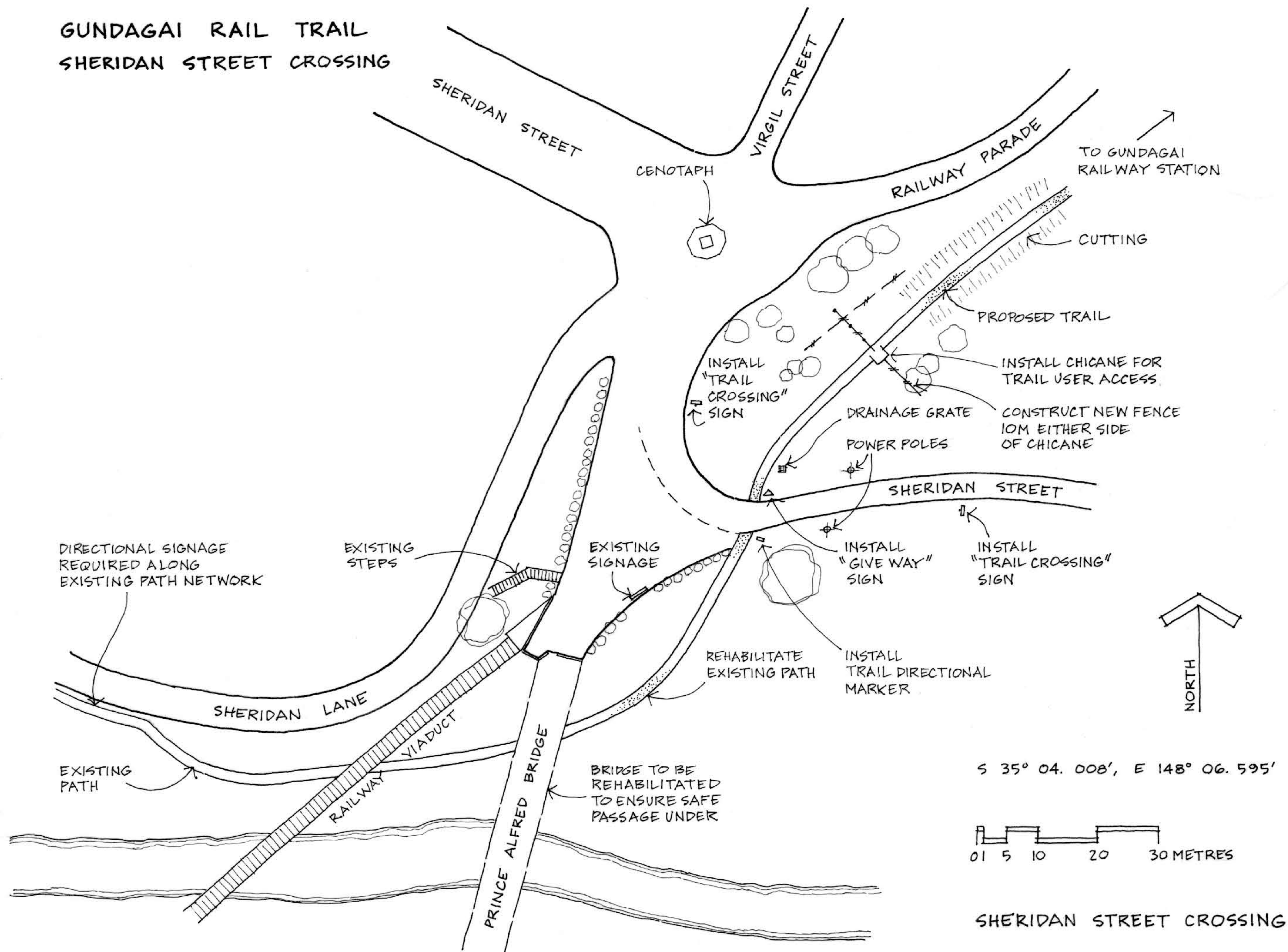
APPENDIX 1: ROAD CROSSING DRAWINGS

GUNDAGAI RAIL TRAIL ANN STREET CROSSING

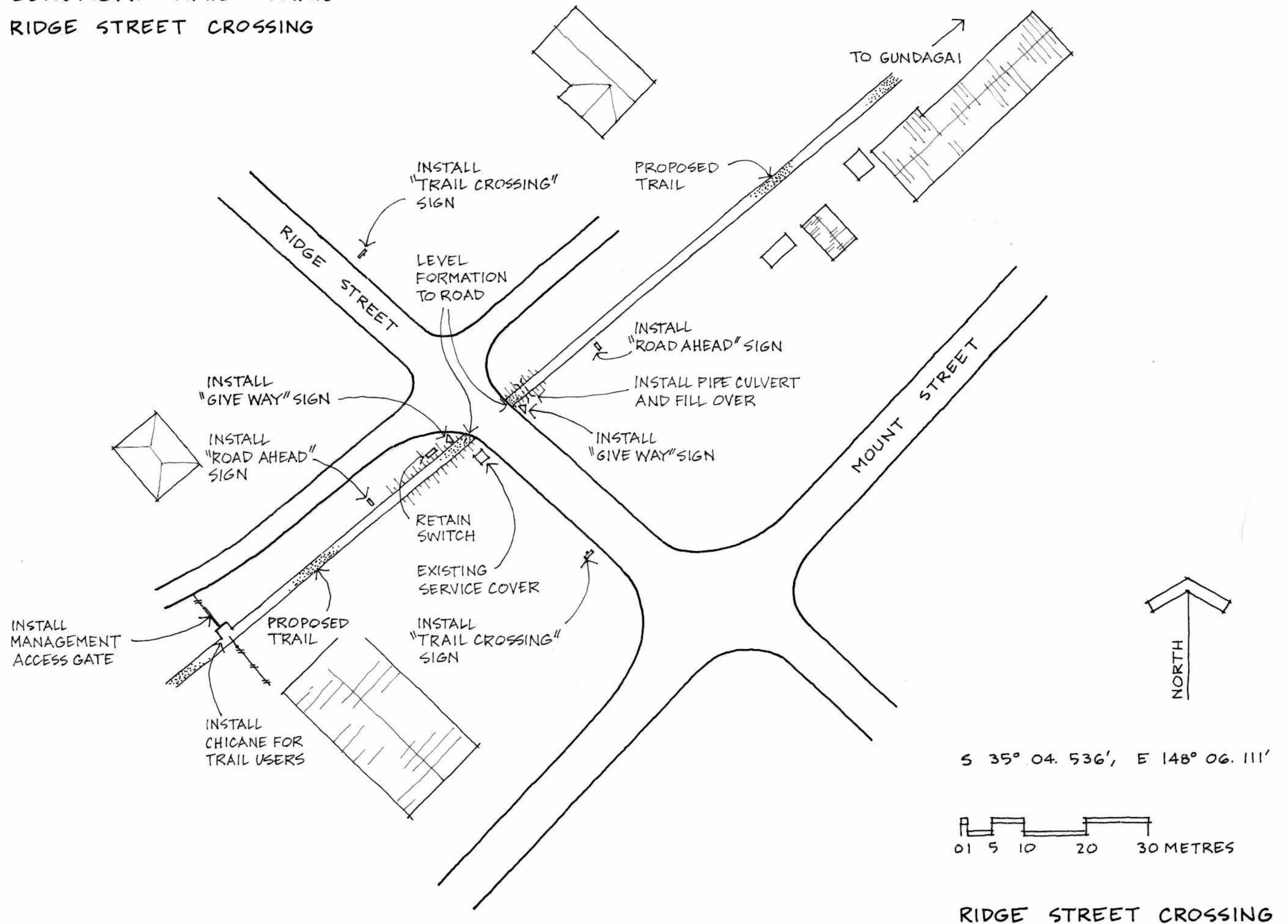


ANN STREET CROSSING

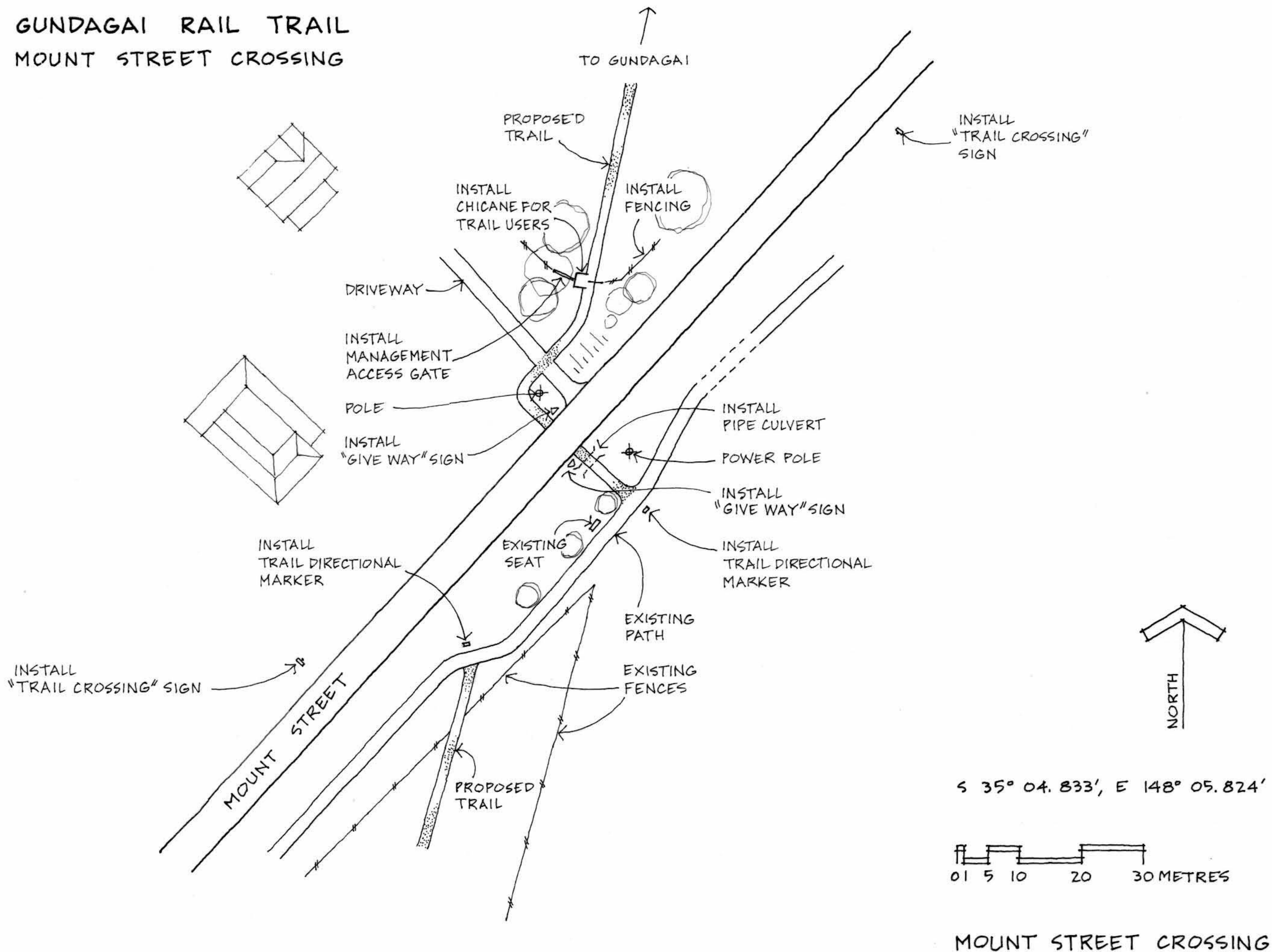
GUNDAGAI RAIL TRAIL SHERIDAN STREET CROSSING



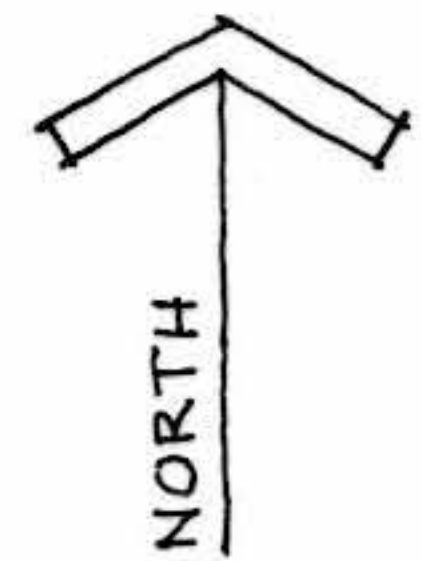
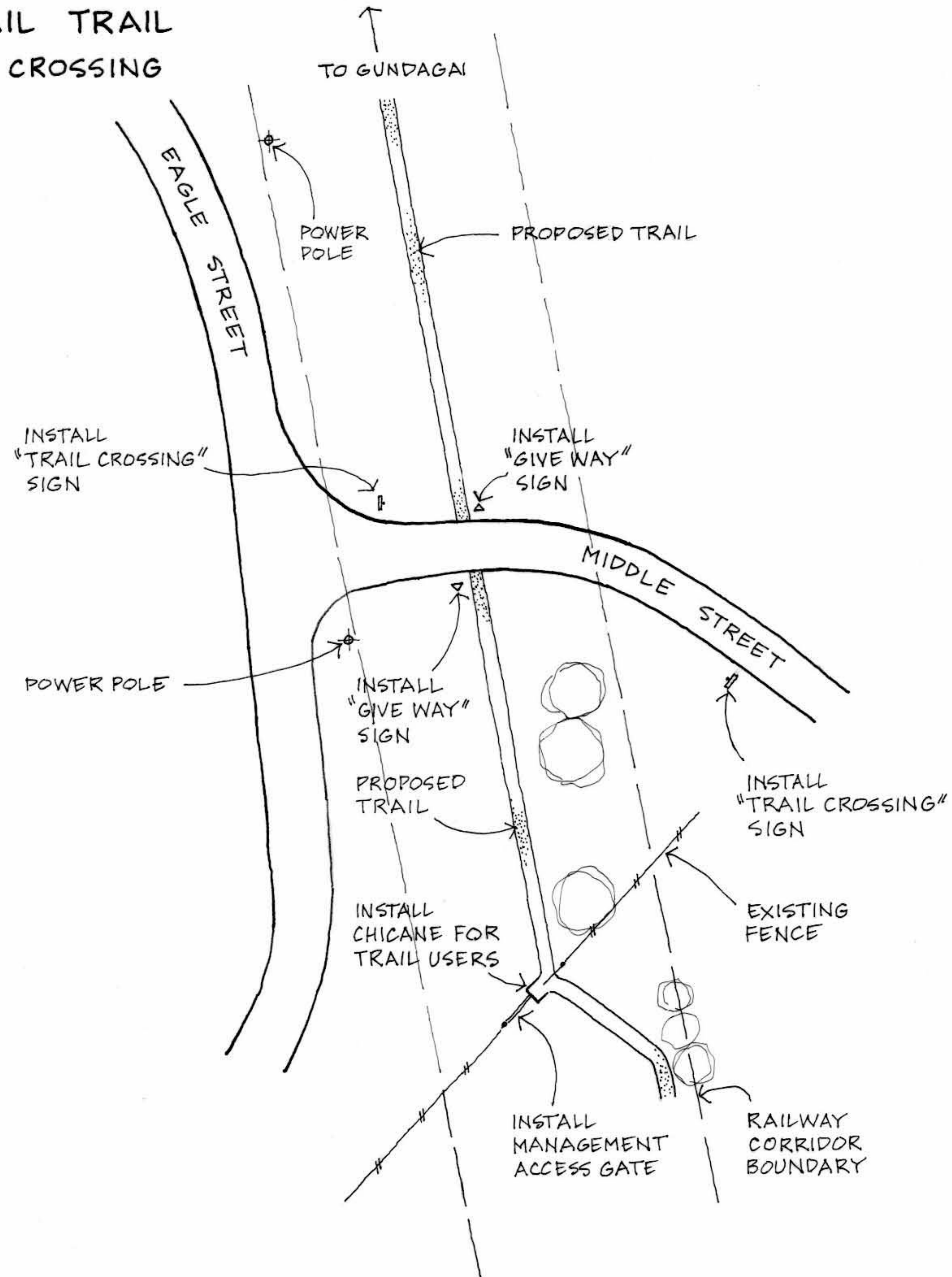
GUNDAGAI RAIL TRAIL RIDGE STREET CROSSING



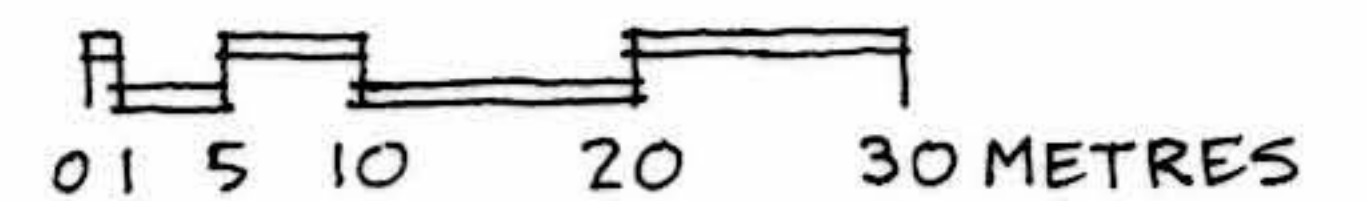
GUNDAGAI RAIL TRAIL MOUNT STREET CROSSING



GUNDAGAI RAIL TRAIL MIDDLE STREET CROSSING

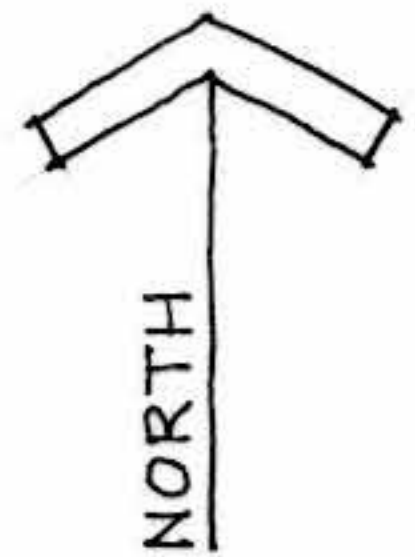
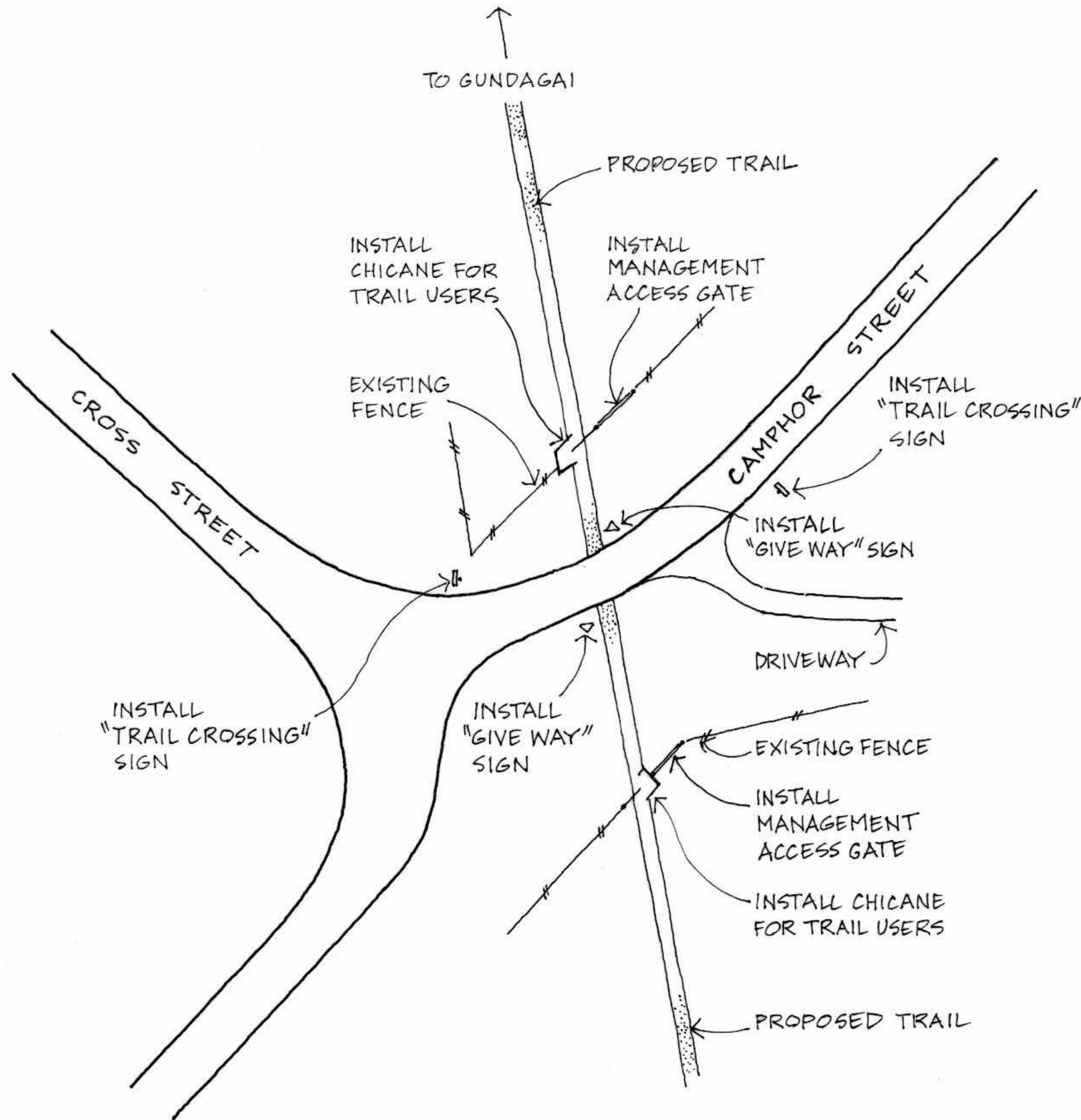


S 35° 05.005', E 148° 05.813'

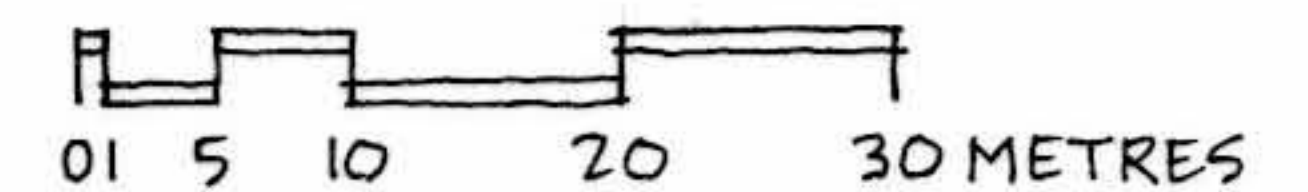


MIDDLE STREET CROSSING

GUNDAGAI RAIL TRAIL CAMPHOR STREET CROSSING

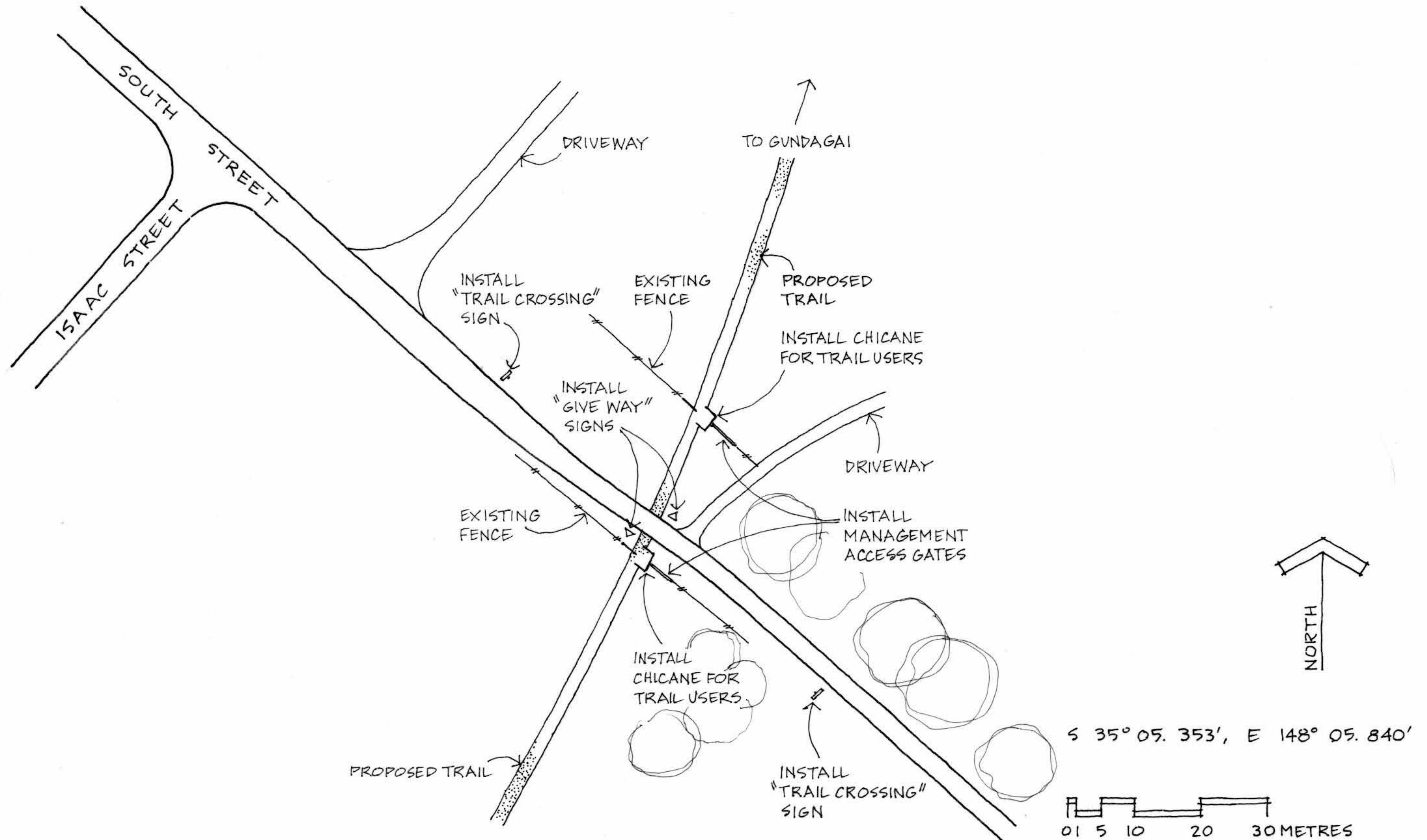


S 35° 05.178', E 148° 05.853'



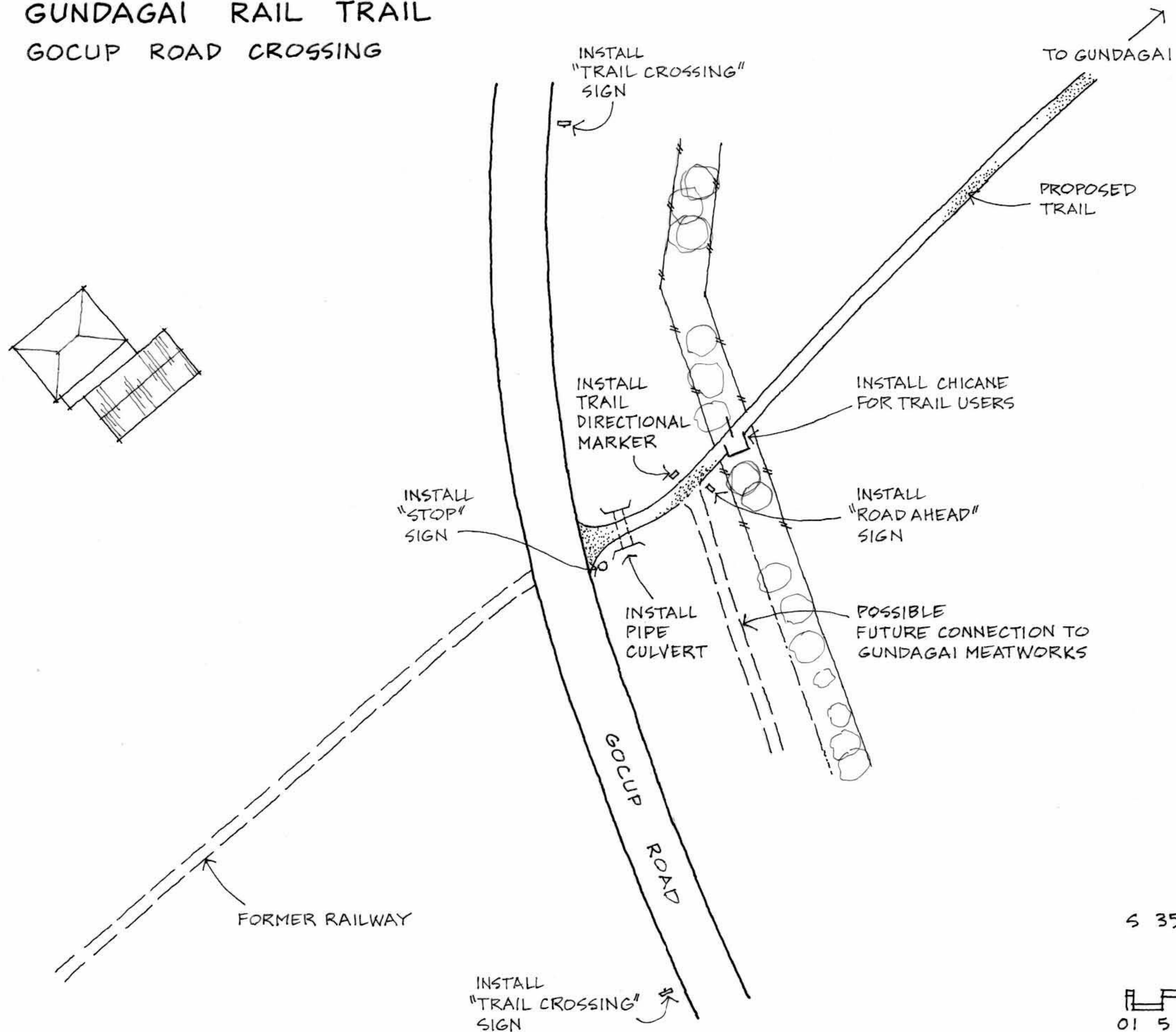
CAMPHOR STREET CROSSING

GUNDAGAI RAIL TRAIL SOUTH STREET CROSSING



SOUTH STREET CROSSING

GUNDAGAI RAIL TRAIL GOCUP ROAD CROSSING

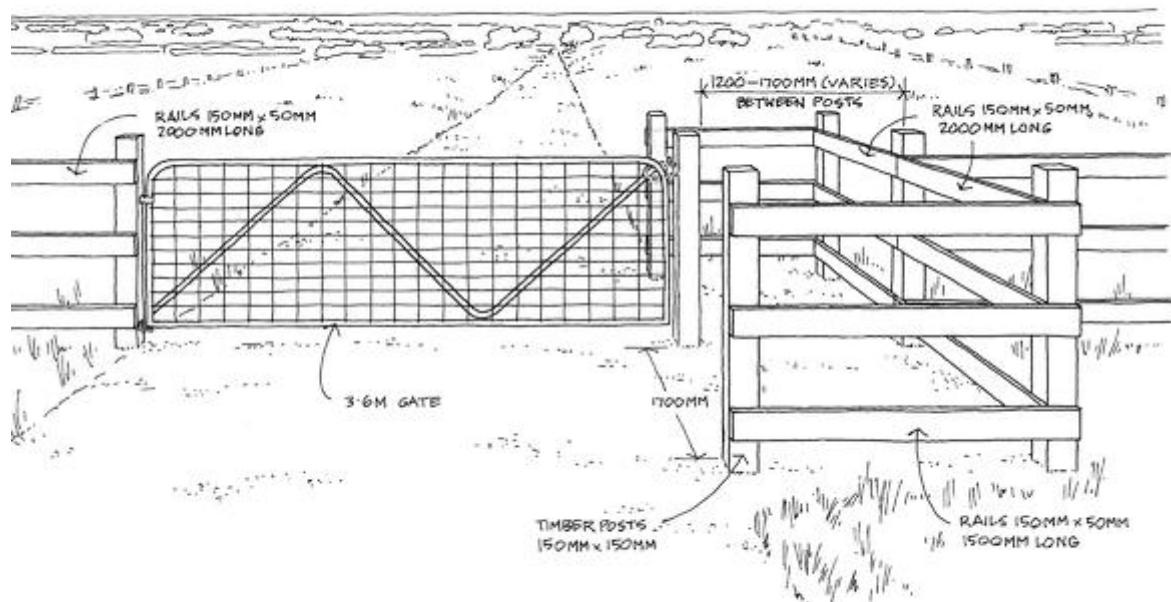


GOCUP ROAD CROSSING

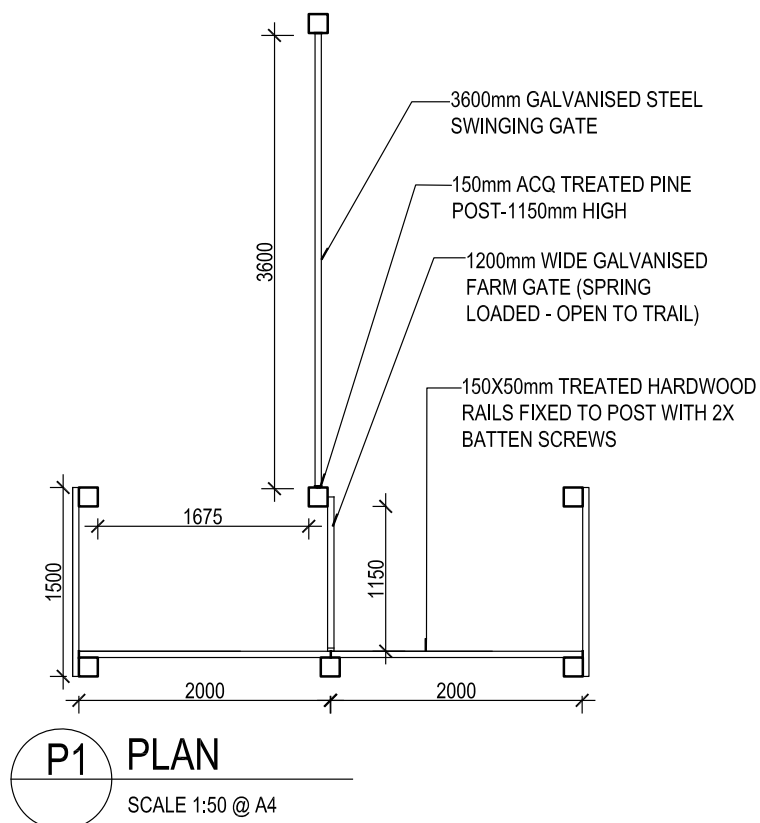
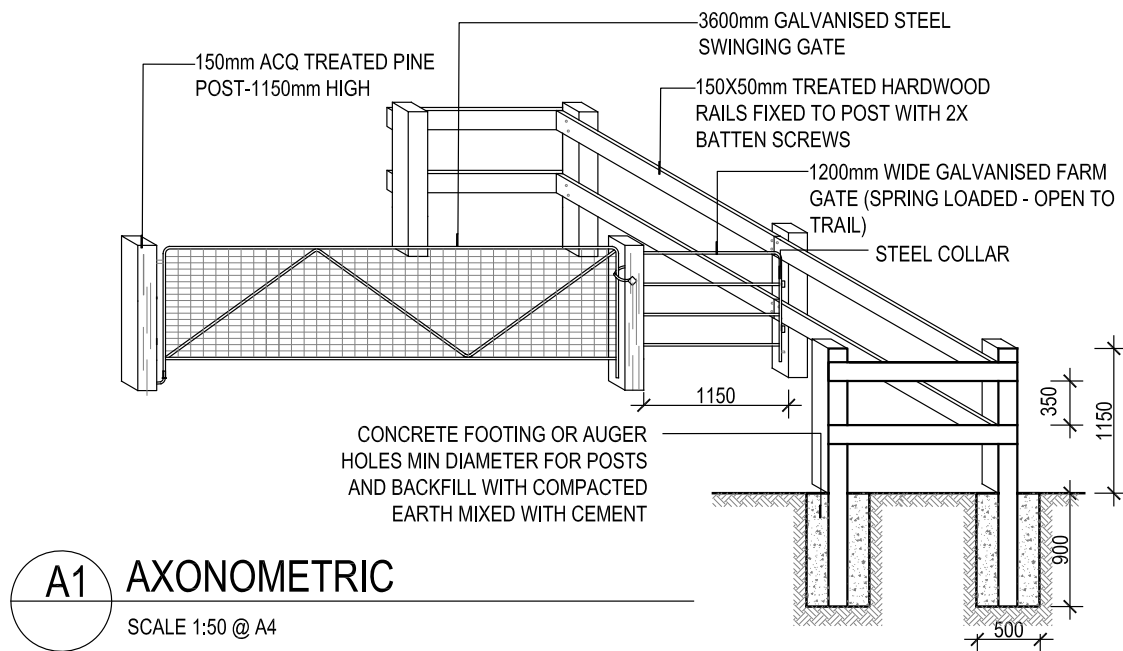
APPENDIX 2: ROAD CROSSING CHICANE DRAWINGS

The spring loaded 1200mm gate should only be installed where there is the likelihood of livestock on the trail (a possibility at the southern end of the trail). The gate should open “inwards” – to the trail rather than to the road (to prevent livestock pushing it open). The gate deliberately “stops” on the inside centre post (the gate is wider than the opening) to prevent livestock pushing it open.

Where there is no likelihood of livestock, a gate should be installed only if the trail manager has a need to lock the gate on a regular basis (such as for events). In these cases, a standard gate (with no spring) could be used (the photo from the Lilydale Warburton Rail Trail shows such a gate).



TYPICAL MANAGEMENT ACCESS GATE AND CHICANE

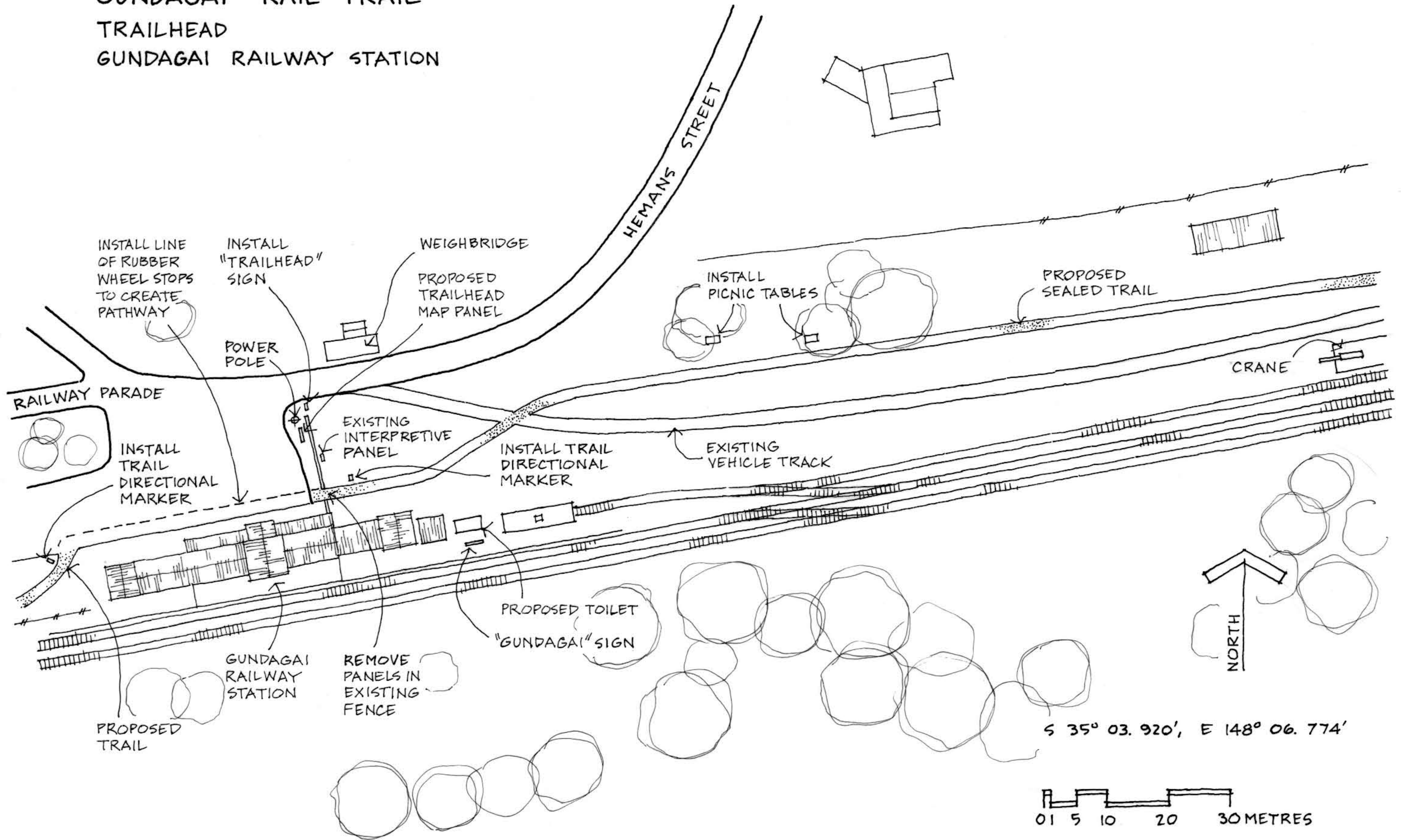


APPENDIX 3: TRAILHEAD DRAWING

GUNDAGAI RAIL TRAIL

TRAILHEAD

GUNDAGAI RAILWAY STATION



TRAILHEAD
GUNDAGAI RAILWAY STATION

APPENDIX 4: TRAIL MAINTENANCE CHECKLIST: AN EXAMPLE

YABURARA HERITAGE TRAIL MAINTENANCE CHECKLISTS**Short Loop from Visitor Centre****Inspection Date (circle a year and tick one box):**

- ☐ Jan 2013/4/5 ☐ Feb 2013/4/5 ☐ Mar. 2013/4/5 ☐ Apr 2013/4/5
☐ May 2013/4/5 ☐ Jun. 2013/4/5 ☐ Jul. 2013/4/5 ☐ Aug 2013/4/5
☐ Sep 2013/4/5 ☐ Oct. 2013/4/5 ☐ Nov. 2013/4/5 ☐ Dec 2013/4/5

Actual Date: _____**Person undertaking inspection:** _____**Signature:** _____

ACTION ITEMS	ACTION REQUIRED	TICK IF OKAY	ACTION TAKEN (if any)
Trailhead at Visitor Centre:			
1	Check road signage		
2	Check gravel surface of overflow parking area, and access roads		
3	Check trailhead map sign		
4	Check miscellaneous signage at overflow carpark		
5	Check gravel road to water tanks		
6	Check trail directional markers (posts, logos and arrows)		
Water tanks carpark:			
7	Check car park gravel surface		
8	Check trailhead map sign		
9	Check trail directional markers (posts, logos and arrows)		
10	Check miscellaneous signage		
11	Check interpretation		
12	Check lookout shelter		
13	Check trail surface to Salt Shakers Lookout		
14	Check all rock steps		

Salt Shakers Lookout:			
15	Check viewing platform		
16	Check interpretation		
17	Check seating		
18	Check directional dial		
Remainder of trail:			
19	Check all rock steps		
20	Check all rock water bars		
21	Check trail directional markers (posts, logos and arrows)		
22	Check interpretation		
23	Check seating		
24	Check overhanging vegetation and spinifex growth		
25	Check trail surface		
Any additional work required?			
Hazard Inspection	Whole trail - annually		
Annual budget allocation	Discuss with staff		

APPENDIX 5: RAIL TRAIL PLANS 1 – 2



Distant view of hills from the corridor will make this an appealing and attractive route.



The railway crane, goods shed and the railway dam are features that will attract users to the trail.



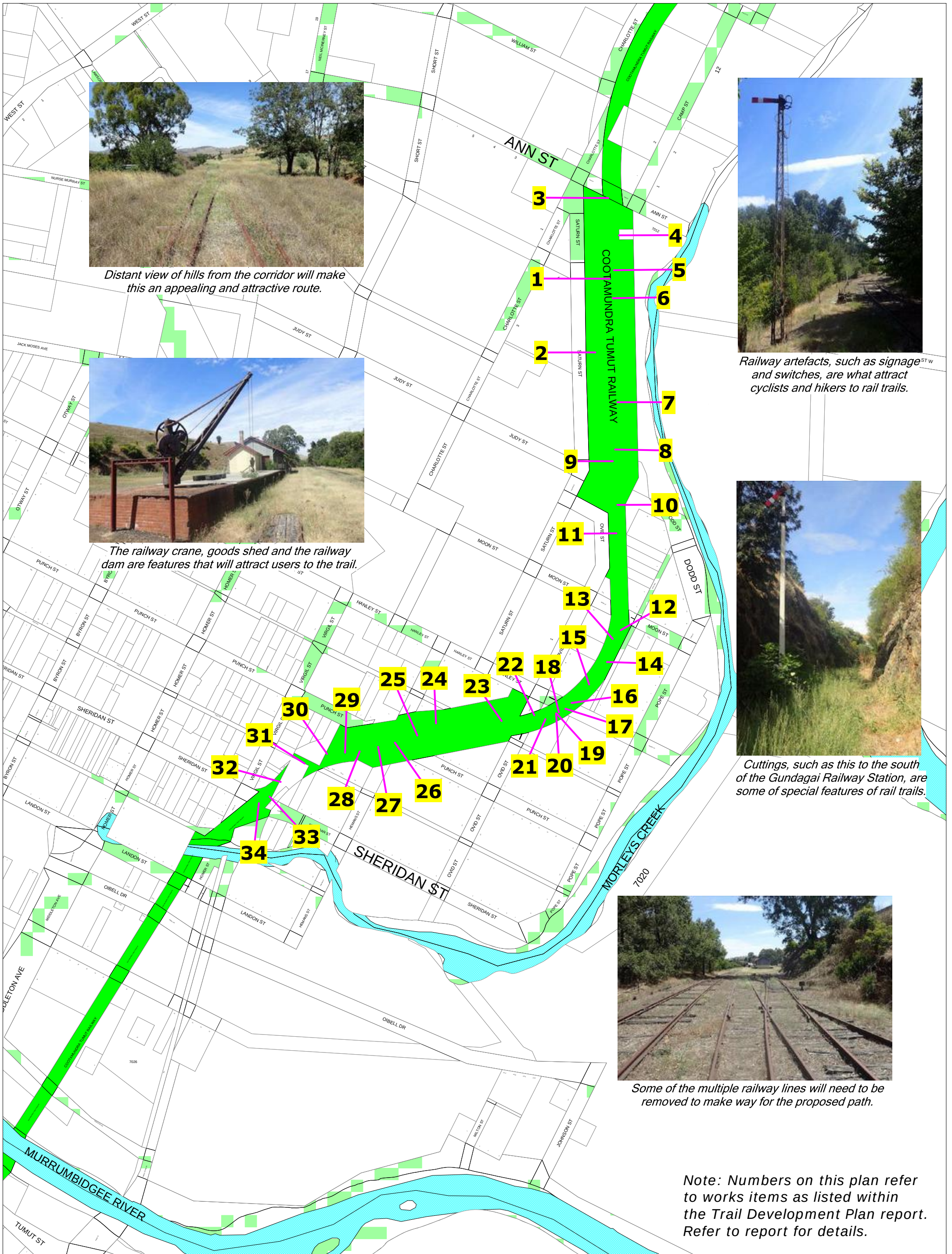
Railway artefacts, such as signage^{ST W} and switches, are what attract cyclists and hikers to rail trails.



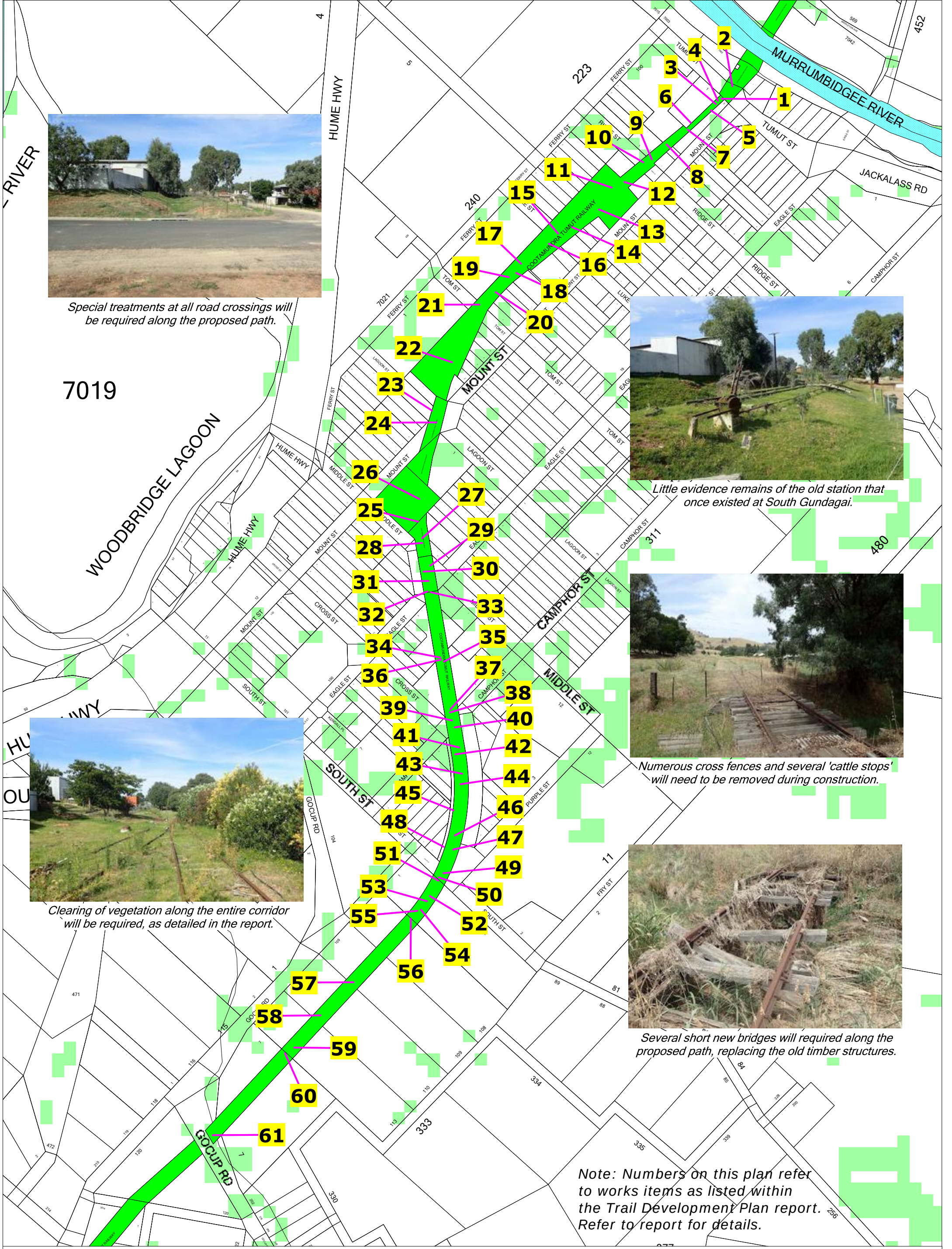
Cuttings, such as this to the south of the Gundagai Railway Station, are some of special features of rail trails.



Some of the multiple railway lines will need to be removed to make way for the proposed path.



Note: Numbers on this plan refer to works items as listed within the Trail Development Plan report. Refer to report for details.



Special treatments at all road crossings will be required along the proposed path.



Little evidence remains of the old station that once existed at South Gundagai.



Numerous cross fences and several 'cattle stops' will need to be removed during construction.



Clearing of vegetation along the entire corridor will be required, as detailed in the report.



Several short new bridges will be required along the proposed path, replacing the old timber structures.

Note: Numbers on this plan refer to works items as listed within the Trail Development Plan report. Refer to report for details.