Hamilton-Coleraine Rail Reserve

Environmental Audit & Revised Management Plan

2015

PR Bird & RE Raleigh
for the
Hamilton-Coleraine Rail Reserve Committee

Photographs and figures:
The cover photograph is of the historic Wannon River Railway Bridge, taken in April 2004 by R. Raleigh.

Members of the Committee, B. Warton, R. Raleigh & R. Bird provided most of the photographs.

R. Raleigh drew all figures and line drawings.

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The list of flora in Tables 1 & II in Appendix 3 have been updated from the 2008 edition to March 2015 in this edition.

The views and opinions expressed in this document are those of the authors, endorsed by the Committee for the Hamilton-Coleraine Rail Reserve in 2008.

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Purpose of this publication

The Public Transport Corporation closed the 35-km Hamilton-Coleraine rail line in September 1977 but continued to administer it until 1999, when it was surrendered to the Crown.

The *Disused Railway Line Management Plan* was produced by the Department of Conservation and Environment in 1991, to be reviewed 5 years after coming into force, to reflect changes in attitude and appropriateness of prescriptions. However, no review was made then or later.

The Hamilton-Coleraine Disused Railway Reserve was gazetted in April 2000 for *Public Purposes (Recreation and Conservation*), under Section 4 of the Crown Land (Reserves) Act 1978.

The first Committee of Management was appointed in May 2000. The committee needed to revise the outdated plan, describing the current condition of environmental and physical assests and introducing changes in management that reflect the new status of the Rail Reserve, and any changes in condition and community attitudes since 1991.

The task of conducting an audit of the condition and extent of resources (bridges, fences, gates, native vegetation, trail condition, pest plants, etc.) began in November 2003 and was largely accomplished by December 2004 and a draft report circulated for comment. The report was amended as more information became available, and as more botanic records were established for the various sections of the reserve. The early drafts provided guidelines for the conservation, restoration and management of the vegetation on the reserve.

A major purpose of this document is to inform the public about the Rail Reserve and to allow those concerned about future plans to put their viewpoint to the Committee of Management prior to implementation of final plans.

It should be noted that some time will elapse before any action can be taken with some sections of the line. Funding for any work is limited, the Committee's work is entirely voluntary, and the scope of the project is very large, therefore the time required to implement the entire plan is considerable. We ask that adjacent landholders be patient and recognize that our resources are limited, that we must deal with one section at a time, and that it may take some time to deal with everyone. However, we are committed to consultation with landholders before development occurs on sections adjacent to their land.

The development of a walking/cycling track along the entire course of the reserve will require a major investment in bridge reconstruction and, depending on the surface required, the preparation of a cycling path along the bed of the old railway line. Those developments are likely to be well into thefuture but smaller sections of the trail will be easier to prepare for walkers and possibly for cyclists.

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Project Background

The Hamilton-Coleraine Railway runs from the regional centre of Hamilton, from Dunn St, to the smaller township of Coleraine, ending at the Coleraine Station (Figure 1.). The linear reserve covers a distance of 35 km with an average width of approx. 40 m, an area of around 140 ha. The reserve also includes the station grounds of Bochara, Wannon and Coleraine, bringing the total area of railway reserve to approximately 170 ha.

The reserve passes through agricultural land for almost its entire length, traversing flat to undulating River Red Gum tablelands. The railway reserve passes through the townships of Hamilton, Wannon and Coleraine. The reserve crosses the Glenelg Highway four times, as well as crossing the Grange Burn waterway and the larger Wannon River. In the years following closure of the line in 1977 some grazing licences were issued over some sections of the line, but (in 2003) none are currently issued. As a result, some sections support significant remnant vegetation (and a regeneration of trees) while others contain mostly introduced pasture species.

History of the Rail Reserve

Construction of the line began in 1887 to serve the wool-growing area around Coleraine and Red Gum sleeper-cutting on the Dundas Tableland. The line opened on 20 Nov. 1888, but "*only a coloured boy sitting on an equally coloured stump awaited the arrival of the train*" at the official opening: the banquet also failed to arrive! Two trains ran daily from Hamilton (1 hr 20 min trip). The Wannon Falls became a favourite picnic destination for Hamilton residents. Features of the line include 15 bridges (3 major works) and several massive embankments and cuttings - some 26,000 cubic yards of earth was excavated on the rise west of the Wannon and 30,000 cubic yards west of Parkwood. Contractor Bloomfield was reported to have "*gained more experience than profit*" from the work. The massive engineering project appears to have been completed in little over one year, using horse power and manual labour. Such a feat wouild be extraordinary today.

The Public Transport Corporation closed the rail line in September 1977. The Department of Conservation, Forests and Lands (DCFL) conducted assessments in 1985 of conservation and recreational significance of disused railway reserves. In 1989, DCFL called for submissions on the future of the reserve – 81% of the 268 submissions supported retaining all the line in public ownership to protect remnant vegetation and provide habitat for native fauna. A Local Advisory Committee (LAC) of DCFL was formed in 1989 to further community consultation; 5 meetings of the LAC were held between 1989 and 1990, and one public meeting.

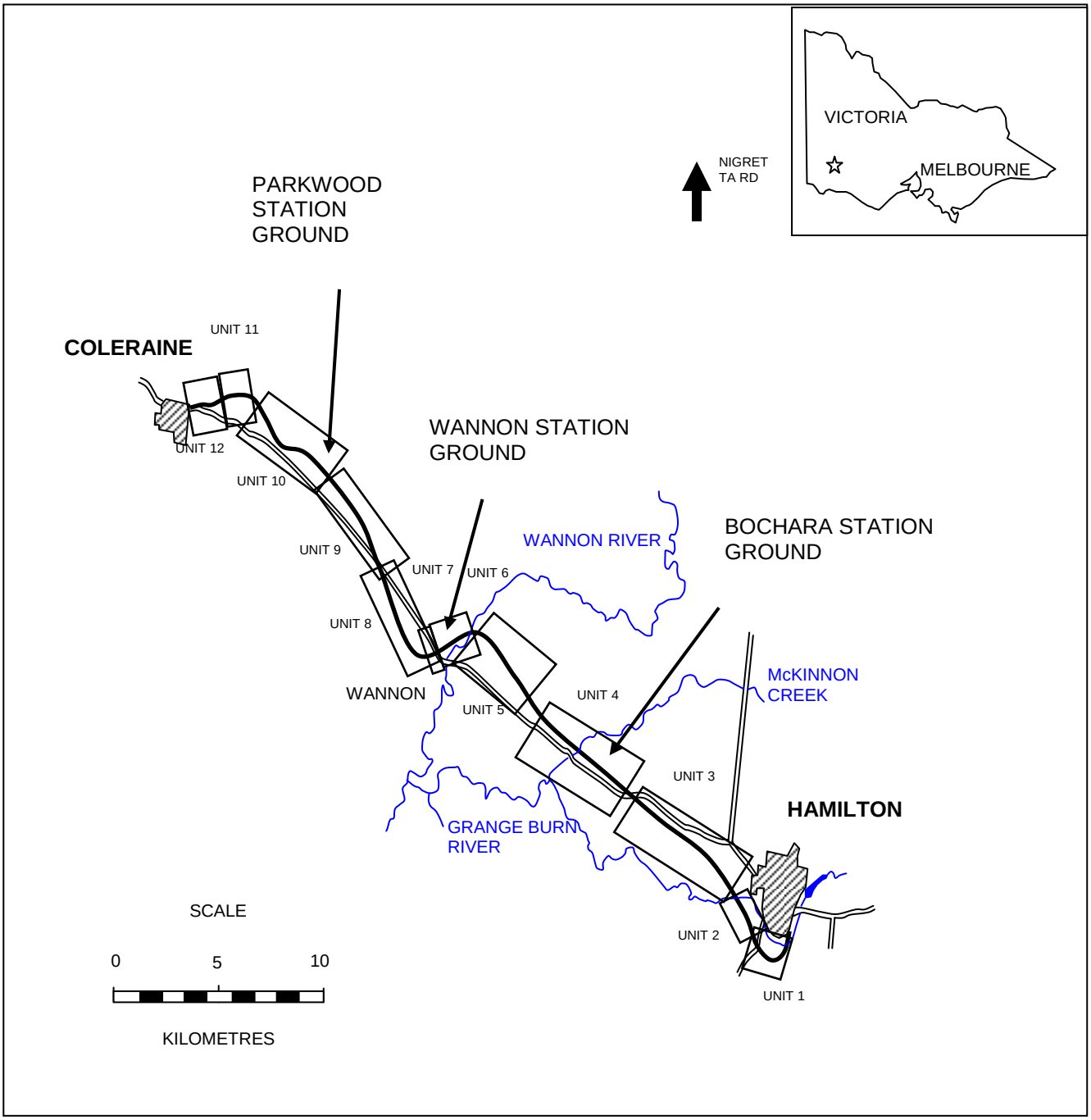
An interim document, *Disused Railway Line Management Plan* was produced by the Dept. of Conservation and Environment in 1991, defining 13 Management Units. This plan was to be reviewed 5 years after coming into force, to reflect changes in attitude and appropriateness of prescriptions. The Public Transport Corporation continued to administer the rail line until 1999 and approved the Wannon Conservation Society application to revegetate part of the line near Parkwood in 1996. The rail line was classified as crown land in 1999 after being surrendered by the Public Transport Corporation. In April 2000, the Hamilton-Coleraine rail line was gazetted as a *Reserve for Conservation and Recreation Purposes* and a Committee of Management appointed by the Minister for Environment & Conservation. The Explanatory Memorandum stated that "*It was resolved that the former railway land would be reserved for conservation and recreation purposes but because the local community was divided on the future of the land, it would not be developed as a Rail Trail at this time*".

The Hamilton-Coleraine Rail Reserve Committee

The first committee of management was formed in May 2000. The members of that committee were Alex Baulch (Chairman), Coralie Coulson (Secretary), Louise Byrne, Rowena Ford, Samantha Greiner, Sophia Vearing, Peter Cay, David Davies and Rod McGuigin. The second committee was appointed in May 2003 and comprised Alex Baulch (Chairman), Coralie Coulson (Secretary), Louise Byrne, Rowena Ford, Samantha Greiner, Ruth Raleigh, Rod Bird and Bruce Warton. Advertisement of positions for the Committee of Management occurs every 3 years. In the third term (2006) Jerry Chin replaced Bruce Warton.

Scope of the Environmental Audit and Management Plan

This document presents an assessment of the current status and condition of flora and physical assets along the reserve, and a plan of work to be conducted in specified sections of the line over the next few years. The *Disused Railway-line Management Plan Hamilton-Coleraine, 1991* is long outdated and in urgent need of revision. The present Audit and Management Plan provides current information to rectify that situation, and it will enable the Committee to proceed in a logical and sensible way to achieve the stated objectives.



Responsibilities & objectives of the Hamilton-Coleraine Rail Reserve Committee

The Committee was charged with managing the reserve in accordance with the Disused Railway Line Management Plan of 1991. This plan enabled the Committee to exclude grazing or any other use that adversely affected the conservation or restoration of native vegetation on the reserve, while at the same time providing a safe environment, particularly with respect to fire, control of weeds and vermin, and designated access points for landholders. The 1991 plan stipulated that there was to be a review after 5 years, which would reflect changes in attitude and appropriateness of prescriptions. Since 1991 there has also been a change in status – the Hamilton-Coleraine disused railway reserve became Crown Land in 1999 and was gazetted in April 2000 for *Public Purposes (Recreation and Conservation).* The Committee has therefore found it imperative to revise the Management Plan in order to account for these changes in the discharge of its duties.

A group of landholders with land adjacent to the reserve (Hamilton-Coleraine Rail Reserve Landcare Group) formed in the mid 1990s, with the objective of managing the rail reserve. One purpose was to allow adjacent landholders the use of the reserve for purposes of grazing. The group was not subsequently appointed to manage the rail reserve. Several members of that group applied and were appointed to the Committee of Management by the Minister for Environment & Conservation.

Historic Trestle Railway Bridge over the Grange Burn waterway, Young St-Elizah St, Hamilton
(Photo: B. Warton)

The 213 mile peg at Unit 8, amidst a relic of pristine native grassland that is protected by this rail reserve
(Photo: B. Warton)

The original objectives set out in the 1991 Disused Railway Line Management Plan, have been tuned to the current requirements of a Reserve gazetted in April 2000 *for Public Purposes (Recreation and Conservation)* under Section 4 of the Crown land (Reserves) Act 1978. These objectives as presented in the present Revised Management Plan are:

- To manage the 35-km rail reserve to improve, maintain and control the land for the purposes of protecting areas of remnant vegetation and restoring vegetation on degraded areas of the reserve in order to provide habitat for native fauna - the linear reserve is important for biodiversity conservation and the migration of some birds and other animals.
- Developing the reserve for the use and appreciation by the public as a walking/cycling trail. This will include removing impediments to the passage of walkers and reserve management vehicles for trail slashing, improving the visual appearance and amenity of the rail reserve and reducing the cost of establishment and maintenance of the walking trail/biodiversity corridor.

In order to achieve the above objectives the Committee has the responsibility of undertaking the following management tasks:

- Providing and maintaining a safe environment for walkers, cyclists and adjoining landholders, including a concern for fire control and access for CFA vehicles
- Undertake financial transactions, including borrowing (with the consent of the Victorian Treasurer), and entering contracts.
- Employing people to help maintain and enhance the reserve
- Enforcing regulations to help protect the natural assets of the reserve
- Entering tenure arrangements, such as leasing and licensing for part or all of the reserve, subject to the Minister's approval, for management of areas that require some level of grazing in strategic areas, or the use of limited, periodic grazing to promote the restoration of native grassland.

Walkers enjoying the tranquillity of a section of the reserve in Unit 8.
(Photo: B. Warton)

General policy for management of the Hamilton-Coleraine Rail Reserve

Natural values and status of the reserve

Ten of the 33 defined sections of this line have high conservation significance, each with at least 30 native flora species and representing important flora and fauna habitats, high scenic values (particularly around the Wannon and Coleraine escarpment), and good recreation and tourism potential (see Explantory Memorandum, April 2000). Some native grassland has been degraded since 1985, particularly where fences were allowed to fall.

This linear reserve contains Native Grassland (only 0.4% of this EVC remains in Victoria) and Plains Grassy Woodlands (only 3% remains in Victoria), and River Red Gum (*E. camaldulensis*) woodland, with associated tree species, such as Silver Banksia (*Banksia marginata*), Drooping Sheoak (*Allocasuarina verticillata*) and Blackwood (*Acacia melanoxylon*). Heath communities are represented from Sandy Creek to Wannon. Over 190 species are listed to date (*see* Appendix 3, Table 1), with some rare species such as New Holland Daisy (*Vitadinia cuneata*) and the uncommon Featherheads (*Ptilotus macrocephalus*), and many more to be found.

The 35 km rail reserve is Crown land. Under the *Vegetation Management* prescription in the *Disused Railway Line Management Plan (DCE 1991)* the Committee is empowered toconserve/restore/enhance remnant vegetation. The Committee has no obligation to allow grazing of the rail reserve as a whole – the objectives of managing the reserve for conservation and recreation could not be achieved were unmanaged grazing to continue on the critical sections. However, short-term grazing may be considered for specific areas, to achieve specific management objectives, including maintaining biodiversity in native grassland (*see* Appendix 1).

The Committee has not granted long-term leases on fenced sections of the reserve because grazing livestock prevent regeneration of trees and shrubs, while also transfering nutrients and weed seeds onto the rail reserve. Small sections near built-up areas where introduced grasses are rampant will have grazing permitted, and also stock crossing areas, but perceived fire hazards elsewhere will generally be dealt with by burning or slashing (see section on Fire Protection). Grazing leases may be granted on some presently unfenced sections.

Adjacent landholders do not have the right to occupy, graze, mow, cultivate, dump rubbish, plant vegetation or apply herbicide to any part of the reserve, unless they have the consent of the Committee.

Fencing

Under the *Fences Act 1968*, Government is exempt from maintaining or replacing boundary fences between private and public land. While the Committee has no obligation to restore boundary fencing it may elect to assist a landholder to re-fence part of the reserve boundary in order to achieve its conservation objectives – i.e. control of livestock for restoration/management of vegetation. In most cases the Committee will erect fences (some with locked gates) across the reserve at road crossings to exclude unauthorised vehicles.

In most cases internal cross-fences in each section will be removed. Such fences are a psychological and physical barrier to cyclists and walkers, and an impediment to management vehicles. An adjacent landholder has no automatic right to erect a fence of any kind within the reserve.

Landholders must ensure that their boundary fence is stock-proof. The Committee is able to have livestock impounded if they stray onto the reserve and are allowed to remain there.

Loss of side-fences in Unit 10 (Koroite Decline) has led to the degradation of the public asset; a lone indigenous Silver Banksia clings to life against the odds.
(Photo: B. Warton).

Possible variations to the fencing policy outlined above:

- an adjoining landholder owns land on both sides of the reserve the Committee may permit a fenced crossing at a place that is least damaging to the reserve – this crossing may be 10-20 m wide. An alternative is to install gates on the opposing sides. Existing crossings will be retained if required by a landholder they are specifically meant to serve (as defined in original agreements between the former PTC and NRE);

- as an interim measure, the Committee will allow an adjacent landholder who has either removed the side fence or failed to maintain it, time to repair or replace it. The Committee will endeavour to assist the landholder to replace the fence, if funding opportunities arise, but it is the landholder's responsibility to maintain or replace the fence *(Fences Act 1968)* and to prevent livestock wandering outside the property;

- as an interim measure, the Committee may determine that a cross-fence is required to enable a part of the reserve to be grazed to control rampant Phalaris and other weeds. The ultimate aim would be to remove the exotic species and establish a dense planting of trees and shrubs or native grasses in that area;

- where the Committee finds it necessary to maintain a cross-fence and gate on a section that has no fence on the cross-road entry point, to prevent through traffic by trail bikes and 4WD vehicles. A locked gate will be placed centrally on the line on each cross-fence at these points, to allow management and emergency vehicles access, with an additional 'tombstone' stile for walkers and cyclists;

- where the rail line crosses a minor road the Committee may need to retain or provide a cross-fence and locked gate on a reserve/road boundary, to prevent cattle drovers from exploiting a particular section of the reserve that could be damaged. Depending on the situation, the fabric of the barrier could consist of 3-4 wires (3.15 mm gauge standard galvanised soft fence wire) at cattle height – this would allow kangaroos or wallabies passage (but not trail bikes) and would also prevent sheep from being confined in the reserve.

Revegetation

Revegetation of the reserve shall be limited to areas that are poor in remnant vegetation. Restoration of species will be drawn from material of local provenance not more than 20 km distant from the site to be revegetated and will reflect estimated pre-1750 ecological vegetation classes for the site. Tree-planting will not be permitted in areas of pristine remnant grassland. Natural regeneration of native species will be encouraged by controlling threatening processes such as grazing, weed invasion and soil disturbance by rabbits or human activities. Supplementation of vegetation might be required where species once present have now been lost.

Once fencing is replaced and livestock are removed, many areas will naturally regenerate over time. Above: natural regeneration of *Allocasuarina verticillata* (Drooping Sheoak).
(Photo: B. Warton)

Fire protection

Introduction

The matter of establishing a fire management framework and communicating with landholders has been a lengthy and frustrating process, aggravated by those who would like to see the public excluded from the reserve and the area grazed. The emotive issue of fire safety appears to have been used as a device to achieve those ends. This committee takes this opportunity to deal with fire issues in some detail – most of which may be seen in Appendix 2 – for the benefit of landholders not familiar with such matters.

Risk assessment

The committee takes a serious view of fire protection. The first task is to make some objective assessment of the past, present and likely future hazard status of the rail reserve, comparing it with similar local examples. One may then consider whether measures taken are adequate and in line with similar action recommended and taken elsewhere.

Fire history on the reserve – we are aware of only 2 incidents of fire on the 35 km reserve in the last 15 years, and possibly since the closure of the line to railway use in 1977:

- The first incident occured some distance from the Glenelg Highway at Parkwood in 2000. This fire started adjacent to the reserve, apparently as a result of a landholder burning carcasses. It appears to have flared up on a subsequent total fire ban day and burned a few hectares and some fencing.
- The second incident occurred near Bochara, where children ignited the grass on or near the reserve. This fire was also quickly extinguished.

There may have been other incidents of which we are unaware but the evidence is that fire has not been a major hazard to date. Will the vegetation on the line be altered in the future, to the extent that the line will constitute a serious fire hazard? That question will be dealt with in detail below, together with our measures to deal with perceived hazards. The Committee of the Rail Reserve will take proper account of likely fire danger when attempting to achieve the objectives of conservation and recreation for which they have been appointed – but methods used to minimse a possible fire danger need to be compatible with other objectives.

Since 1977 (when the railway use finished) part of the line has been continuously grazed (e.g. most of the line from near Parkwood down the Koroite Decline to Coleraine). Many sections elsewhere have not been heavily grazed, if at all. Regeneration of trees and shrubs has occurred on many of those sections. Parts that remain native grassland have a low pasture mass, particulary on the infertile sections, and that is a desirable aim.

Similar local situations – the nearest equivalents to the rail reserve is the Glenelg Highway, both in width and direction. Other country roads could also be compared, for many are 1-2 chains in width and carry native vegetation (especially trees and shrubs) and mostly inflammable introduced grasses. When the rail reserve has the access track along the existing rail bed developed (for vehicles, cyclists and walkers) the comparison between rail and road reserves will be closer. On some roads, at some time past one side of the road has been cultivated or sprayed. That has resulted in a worse fire hazard because the native species have been replaced by more flammable exotic grasses. That is a danger when installing so-called "fuse breaks" in linear reserves carrying trees and shrubs. Slashing or burning is environmentally more acceptable.

Risk from a treed corridor

Many regard trees as a fire hazard. Some consider that revegetation works should provide for 'fuse breaks' at regular intervals (for a viewpoint on 'fuse breaks', see Appendix 2). One landholder expressed the view that in 20 years time the whole line would be treed and the woody debris resulting would create a terrible fire hazard. His concern was that the Rail Reserve would become a continuous belt of trees that would channel a fire into Hamilton or Coleraine. We believe that the concern is much overstated, and based on an incomplete understanding of the facts, as discussed in Appendix 2.

In a fire, burning embers blown from trees can threaten homes - trees can be a major hazard, given a specific context (such as a forest) and particular species (e.g. Stringybark), but the danger in farmland is less than often claimed. If the woodlot or copse is upwind from the house then burning embers may shower down upon the house some time after a grass fire has passed through. This is a cause for concern but must be put in context with other hazards (on bad days, even sheep manure can contribute embers) and safety measures around/on the building that can be taken to avert danger from all sources of embers. The potential problem from trees can be

reduced in the early years of a revegetation program by slashing rank grass between the trees. Trees that have a lower flammability can also be selected and that will reduce – but not eliminate – the problem.

Trees can assist fire control –The speed of the fire will be greatest in the open grassland. While "spotting" from a clump of trees can occur, from burning blown leaves and bark, it takes a minute or so for that to ignite, blow downwind and then develop into a new fast-running fire. In the absence of the trees, a running grass fire would be expected to reach the same position in less time. The great advantage of trees on farms in reducing windspeed near the ground (and thus reducing fire speed) is often not understood or promoted. Fires on grassland can be dramatically slowed by a belt of trees, and livestock and property protected (*see* Appendix 2).

Risk from grassland
Fire hazard is related to fuel load, its moisture content, wind speed and atmospheric conditions. However, on a bad fire day, such as Ash Wednesday in Feb. 1983, fires travelled across farmland almost regardless of the fuel load. One fire burned across a bare paddock adjacent and to the west of the Pastoral & Veterinary Institute – the paddock contained less than 0.3 t DM/ha, as a result of the preceding spring drought. The fire was carried there largely by windblown sheep manure, and it set light to a house at the Institute.

In most cases there will be more grass on the rail reserve than on a grazed paddock, although the difference may not be great, particularly after a lush spring when the grazed pasture mass may exceed 5-7 t DM/ha. The situation on the reserve will be worse where the native grassland has been cultivated or grazed in the past. There may also be a period following tree planting where there is an accumulation of grass. That will cause some uneasiness and the committee intends to reduce the concern by various actions, specified below.

Fire protection planning
The *Code of Practice for Fire Management on Public land* (CNR 1995) is the relevant guideline for this reserve. The Committee has consulted with the Manager of Community Safety, CFA Regions 4 & 5 and other officers. It will ensure that fire protection plans for the reserve is linked with *Municipal Fire Prevention Plan*. The committee sought the advice/assistance of the CFA in September 2000, and subsequently in October 2003. The main points raised by the CFA were:

1. Need to have 3.5 m access gates (or clearways at emergency crossings) for vehicles at appropriate points.
2. A track surface along parts of the reserve with culverts capable of taking 15 tonne trucks and with an overhead clearance of 4 m and a horizontal clearance of 3 m (as applied by DSE for bush tracks).
3. Revegetation works to allow for "fuse breaks" at appropriate points.
4. Planting of vegetation with lower flammability ratings close to residential areas.
5. Signs to raise awareness of fire danger and rules for trail users are needed.
6. A maintenance program should be developed.
7. CFA has the responsibility for fire suppression and for any prescribed burning within the reserve.

***Work carried out to date or proposed that addresses CFA/DSE issues of fire protection*:**

1. *Cross-fences on the reserve* – our policy is to have as few fences as possible, and there must be a 3.5 m (12 foot) gate located on the prepared track, capable of allowing passage of a fire truck.
2. *Emergency fire access crossings* - the CFA will help us identify points along the reserve where N-S crossings can be affected, allowing vehicles to quickly follow a fire and conduct suppression work on the flanks. Thus, where there are no convenient roads nearby, a section of open grassland will be selected and that opening kept free of trees thereafter. No gates will be needed. In an emergency, the fire brigade will cut the fences at this designated (and marked) point and drive across the reserve. Some minor work may be needed to ensure that the trucks can travel easily across the old rail line area.
3. *Track surface* – the old railway line bed is the track, a well-drained, level, all-weather surface capable of taking a heavy truck. Our aim is to maintain that central track along the entire course of the rail reserve. There are some culverts that will require attention, but in summer a truck could go around those. Where fire access is needed it will be necessary to have embedded culverts capable of taking a 15 tonne truck (it will not be possible to drive trucks over the existing bridges, which are in poor condition). The aim will be to provide for a 4 m clearway above the centre of the trail, to enable fire trucks to use the track. That will mean that tall trees should not be planted immediately adjacent to the trail.
4. *Grazed breaks* – several are maintained in the Parkwood section, particularly in places where there are no breaks afforded by road crossings. Some of these breaks correspond with stock access crossings. Many sections near built-up areas where introduced grasses are rampant have grazing permitted until (and if) such sites are revegetated – e.g. both sides of the Grange bridge, and the approach to Coleraine.

5. *Slashed or burned breaks* – we will allocate areas of ~100-200 m length that could be slashed or burned to create breaks and help restore native grasses. One such break in every Unit would maintain or restore to native grassland condition an appropriate treeless reach. The intention is to keep these short stretches free of trees, not because trees impose any threat to fire safety but because we want to retain representative areas of native grassland over the long term, e.g. 4 areas have been identified in Unit 3(F) between Balkin's and Chadderton's Rd. In general, these areas will be selected in stretches that approach or exceed 2 km in length and where there are no stock crossing points, other grazed sections or road crossings. That will provide a good buffer between stretches of a kilometre or less. Different areas within each section may be burned on a cycle of 4 years (the Committee is conscious of the need to minimise the workload of CFA volunteers), with adjoining landholders assisting the Fire Brigade.
6. *House protection in rural sections* – for houses immediately adjacent to the fence, a grazed or mown area not exceeding 150 m is allowed. Cultivation or application of herbicide will not be permitted anywhere on areas of native grassland, where the result would be an invasion of weeds and a future fire hazard.
7. *House protection in urban sections* – trees and shrubs will not be planted within 3 m of a fence, and where adjacent landholders perceive there to be a hazard they may slash a 2-m strip adjacent to the fence.
8. *Fire-resistant species* – trees and shrubs selected for areas near built up areas comprise species that have a degree of fire resistance or ability to suppress grass growth. Local (indigenous) species considered are:

   Acacia melanoxylon (Blackwood)
   Acacia mearnsii (Black Wattle)
   Acacia paradoxa (Hedge Wattle)
   Acacia verticillata (Prickly Moses)
   Allocasuarina verticillata (Drooping Sheoak)
   Banksia marginata (Silver Banksia)
   Bursaria spinosa (Sweet Bursaria)
   Eucalyptus camaldulensis (River Red Gum)
   Eucalyptus ovata (Swamp Gum)
   Eucalyptus viminalis (Manna Gum)
   Leptospermum continentale (Prickly Tea-tree)
   Leptospermum lanigerum (Woolly Tea-tree)
   Melicytus dentata (Tree Violet)
   Ozothamnos ferrugineum (Tree Everlasting)
   Viminaria juncea (Golden Spray)
   .

   Drooping Sheoak, when planted densely, will suppress all grassy understorey and is therefore a valuable tree for a site not within about 30 m of buildings. The least flammable species, and the best fire shields, are Blackwood, Black Wattle, Silver Banksia, Golden Spray, and Prickly Moses. The eucalypts are usually clean-limbed but do carry some loose bark. The upside is that these species, particularly the more shallow-rooted Manna Gum, will also suppresss grass if planted at sufficient density.

   Rampant weeds such as Phalaris and Yorkshire Fog Grass will be controlled in areas that we plant with trees. The techniques for control are well known and depend on the strategic use of herbicides (see *Trees and Shrubs for South West Victoria* (1996) by PR Bird, GA Kearney & DW Jowett (Agriculture Victoria Technical Report No. 205). The key is to eliminate those species before planting, and to follow up with spot-spraying thereafter. That is not difficult to do but it does require timely attention. A selective grass herbicide can be applied if grass is the dominant weed and glyphosate is a danger to the planted trees.
9. *Signage* – signs outlining trail users obligations (including no camping or lighting fires for any purpose on the reserve), and fire prevention messages, will be installed on each major section when that section is opened for use. This will be in accord with Rail Trail practise in Victoria (see www.railtrails.org.au).
10. *Management Plan* – the above prescriptions have been built into the work plan. Particular actions recommended for sections of each Unit can be seen on those pages (particularly Item 11 in each section). General actions that will occur in every section are given below:

    Track slashing – it is intended that the central track be slashed each spring to control the vegetation and mark the trail. That cannot be done on all sections until funds are available to clear the trail. Sections that are to be slashed or burned will be dealt with in conjunction with the adjacent landholders.

    Cross-fences – there is a hazard from cross-fences (few with gates and many electrified or of barbed wire) especially in the urban area of Hamilton, and we welcome Southern Grampians Shire and CFA assistance in resolving the problem. The committee does not yet have funds or resources to deal with this situation.

    Weeds – the committee is controlling weeds such as Gorse, Spiny Rush, Blackberry and Phalaris that can constitute a serious fire hazard. Unfortunately, some landholders and organizations do not appear to be greatly interested in the weeds on adjacent land and so our efforts in such areas may be compromised.

Strategic workplan required for the Hamilton-Coleraine rail reserve

General actions required

1. Fencing

Fencing of the reserve is the highest priority for the Committee. Existing poor fences continue to deteriorate, risking the natural resource and structural assets of the reserve through damage by livestock and unauthorised activities, such as dumping of rubbish. A lesson from the Gippsland Plains Rail Trail is that unless the fencing is completed then the Rail Trail is merely a partially realised dream, with the trail being achieved only along existing dual road/rail reserves. It will take some time to achieve fencing of the entire Hamilton-Coleraine reserve, but a start is required on ALL parts now, and landholders will be alerted to the fact that they are required to keep existing fences stock-proof. The Committee's main expenditure (and funding applications) must target replacement of poor fencing as soon as possible. Sections of the reserve with the highest value (intact remnant vegetation, bridges, creek crossings) must be the sections for which funding is sought first.

2. Access

The development or re-opening of a track along various stages of the rail reserve is necessary for management and eventual use of the rail reserve as a Rail Trail. Those sections with priority-listing based on criteria such as natural beauty, historical interest and tourism potential will have the highest priority for upgrading of necessary structures such as gates, culverts and creek-crossings. However, our prime objective over the next year is to establish the track along the centre line of the entire reserve so that it is accessible to walkers, cyclists, adjoining landholders and to management vehicles (fire control, construction work, fence inspection, weed control, etc.). Until that is accomplished little useful work can be done. This step can be achieved with relatively modest expenditure, since it does not require that side fences (where missing) be restored first, and the existing rail line for the most part already offers a serviceable all-season surface. *Rules of Usage of Hamilton-Coleraine Rail Reserve* will be developed and signs erected at strategic points to inform walkers and cyclists of their obligations and courtesy required in using the reserve.

3. Control of pest plants and animals

Control and eradication of declared noxious weeds (e.g. Gorse, Spiny Rush and Bridal Creeper) and rabbits is an obligation under the Catchment and Land Protection Act. Funding must be sought on an annual basis to control major infestations until pest plants and animals are minimised, requiring follow-up activities only. A major concern of the Committee is the need to control or eradicate environmental pest plants as part of management works in the area. Particular emphasis will be placed eradication of weeds such as *Sparaxis*, Ivy, Blackberry, Phalaris and Sallow Wattle from areas that are lightly infested, in order to prevent them becoming firmly established once grazing is removed from an area. These works will be on-going and can be partially addressed by the development of a volunteer group, the "*Friends of the Hamilton-Coleraine Rail Reserve*".

4. Interpretive signs

Interpretive signs will be required for all sections of the rail reserve, but those sections identified as priority for access will have first priority for interpretive signs. Historical information will be included at the station grounds and at any places where important events took place, for example accidents or details and history of bridge-building. Signs will be required to inform people as to what section of the line they are entering and if other places of interest are nearby (e.g. Wannon Falls). An indication of the time required for walking a particular section of the reserve will be needed along with an estimate of difficulty and/or access for disabled or wheelchair-bound members of the public. Signs might also be required identifying the roads that the rail reserve crosses to give people a better understanding of where vehicles can be left or for identification of pick-up points at the end of the walk.

5. Information brochures

Production of information brochures for Tourist Information Centres, tour operators, schools and the hospitality industry (e.g. Bed & Breakfast places, Motels, Hostels in the region) will be required to promote the use and value of the rail reserve. Such brochures should be generic, enabling their use over several years. Information for the Gippsland Plains Rail Trail was lacking at Sale, Traralgon and Maffra when these Tourist Information Centres were visited in 2004.

Specific actions and workplan for 2004-2007

The following items were listed for action:

- Public launch and field trip – the Environmental audit and Draft Workplan was released for comment at a seminar in Hamilton on 18 May 2004. The launch was accompanied by a slide presentation of features of the rail reserve from Hamilton to Coleraine. The field trip was attended by over 50 people and comprised a 2-hour bus trip with half-hour stops at Glenelg Highway crossing near Parkwood and at S. Reed's Rd. Features of the rail reserves were pointed out along the way. This day was funded by Glenelg-Hopkins Catchment Management Authority.
- Launch of a *Friends of the Hamilton–Coleraine Rail Reserve* group – this was done in May 2004 and we hope to achieve at least 50 members who will assist in promoting the rail reserve, assist in its management, and satisfy the requirement for taxation deductibity for donations received for the development of the reserve.
- Preliminary manual clearance work will be needed on some sections of the rail track, e.g. Unit 8Q-R and Unit 5N (a 2-3 m line must be cleared down the centre of the old rail track).
- Slashing (a 2-3 m strip) of the central rail track on all parts that can be accessed (most parts of Units 1-3 cannot be accessed, due to presence of unauthorised cross-fences) – the creation of the track is second only to fencing in importance for management (including fire protection) and restoration of the reserve.
- Fencing of the northern boundary fence on Unit 3F (east from Chadderton's Rd) in order to exclude cattle from that section.
- Resolving the issue of internal fences, grazing and revegetation on Unit 3F (Balkin's Rd to Chadderton's Rd).
- Install 2 gates and new fencing on the southern side of a ~130 m stretch on Unit 9U, Parkwood.
- Development of the walking trail from Balkin's Rd to Bochara Station Ground (Unit 3F to 4H) – the south boundary fence on Unit 4F and Unit 4G need to be repaired in order to remove stock from the reserve and restore the native vegetation.
- Development of the walking trail from Bochara Station to S. Reeds Rd (Unit 4I to Unit 5L).
- Development of the walking trail from S. Reeds Rd to Wannon Railway Bridge (Unit 5M to 5N).
- Development of the walking trail from Wannon River to Glenelg Highway Crossing (Unit 8Q to 8R).
- Development of a walking/cycling trail from Baulchs Lane to Coleraine (Unit 10X to Unit 12)
- Control of Gorse at Wannon Station Ground (Unit 6) – follow-up work from that done in 2003.
- Control of Sallow Wattle on Unit 4, Section L – follow-up from work done in 2003.
- Control of *Sparaxis*, Gorse, Bent Grass, Phalaris and other weeds from sites identified in spring 2003.
- Attention to rabbit control on specific areas, incl. Unit 5N east of the Wannon Railway Bridge.
- Tree planting on the ~200 m stretch on Unit 9, Section U, Parkwood – engage a contractor for this work
- Tree planting on strategic areas near Hamilton and Coleraine (including the site adjacent to Balkin's Rd) – aim to work with schools and volunteers.
- Participation/assistance in survey work for the Striped Leglesss Lizard (*Delma impar*) conducted by Gary Peterson (DSE, Warrnambool) – several sections of reserve, including Bochara and Wannon
- Development of *Rules of Usage of Hamilton-Coleraine Rail Reserve* guidelines, with particular reference to fire danger, restrictions on pets and preserving friendly relations with adjacent landholders.
- Holding a Friends Picnic Day at the Bochara Station Grounds, with a walk to S. Reeds Rd.
- Fostering community involvement in development and management of the reserve. Victorian Certificate of Applied Learning (VCAL) students from Monivae will assist in removal of old fencing material and replacing some fencing in Unit 3, mapping exercises, devising signage for Bochara Station, "event planning" for a Friends picnic day in Oct. 2004, devising a brochure and producing a virtual herbarium on CD. A linkage may also occur with Pauline McCarthy's education project on her Trust For Nature property 'Laancoorie', near S. Reed's Rd
- Further environmental survey of flora on the rail reserve, and updating of the flora records.
- Dealing with queries and comments from landholders and other interested parties with respect to plans and future management of particular sections of the rail reserve.
- Continuing to apply for funding to enable works to proceed – including application for erosion control works on the Koroit Decline section, fencing, weed control, and funding for works on bridges and culverts.
- Further refining the *Environmental Audit and Management Plan*, as a replacement for the outdated and obsolete *Disused Railway Line Management Plan* of 1991.

Specific aspects of management of the Hamilton-Coleraine rail reserve

Assessment of the significance of native vegetation

The first major task is a general survey of the existing native vegetation, and of potentially troublesome weeds, along the entire length of the reserve. Until this is done it is difficult to formulate a good overall plan for future work. Fortunately, a good start has been made; the committee walked about 80% of the line in November 2003 and the remainder in autumn-spring 2004 (although Units in and near Hamilton require more detailed assessment), and noted the condition of vegetation, fences, gates, culverts and bridges.

Condition of the native flora (and the presence of environmental weeds) is conveniently graded into Classes I-V used by PR Milne, who surveyed some of these areas in 1989:

I. ***Excellent condition*** – native species dominating (where native grasslands are largely intact trees should not be planted)

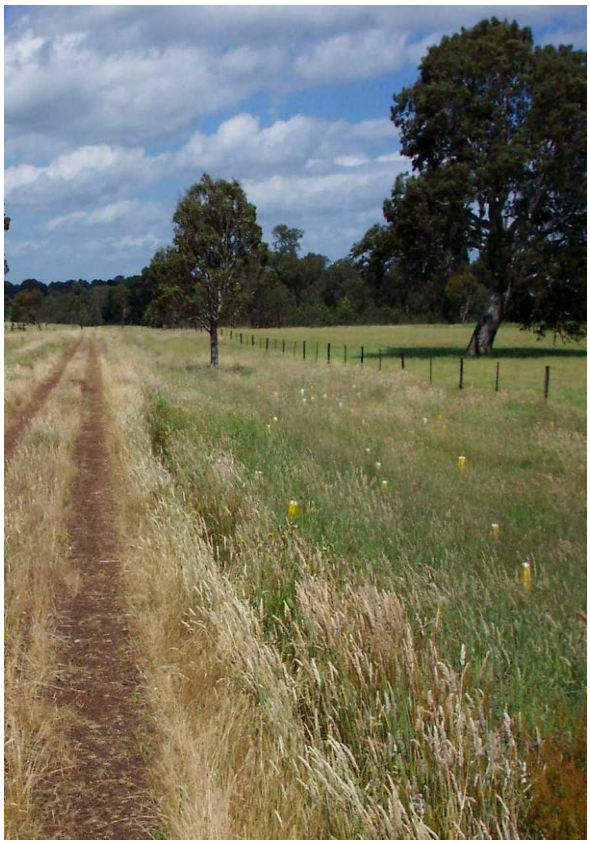
II. ***Good condition*** – with more than 50% of the species native (where native grasslands are largely intact trees should not be planted)

III. ***Average condition*** – with about 50% of the species composition native – scope for rejuvenation through management over time

IV. ***Poor condition*** – significant alienation by exotics – some long-term hope for rejuvenation of native grassland species but another option may be replanting of trees and shrubs.

V. ***Very poor condition*** – most species (except trees) aliens – not feasible to regenerate the native grassland species; the best option is to plant trees and shrubs on the affected areas.

Class I vegetation. ***Excellent condition.***
Native species are dominant.
(The degrading track will be shifted to centre of line).
Unit 5N - near Nigretta Road crossing.
(Photo: B. Warton)



Class V vegetation. ***Very poor condition.***
Pasture grasses and other weeds dominate the reserve.
(The track is on the centre of the reserve).
Unit 4. Bochara area.
(Photo: B. Warton)

Control of exotic weeds

This is a high priority. With the removal of grazing it is inevitable that certain problem species will become more obvious, and will have the potential to spread unless controlled in the early stages. The species that should be given priority are:

- *Sparaxis bulbifera (*Harlequin Flower) – an aggressive bulbous weed that is wiping out native ground flora and most likely to occur near waterways and roads - urgent, pre-emptive action is needed;
- *Ulex europaeus* (Gorse) – a declared priority weed for the catchment that occurs at a few places, for example the Wannon Station ground and must be eradicated; it will take years of persistent work to do this since it sets a great quantity of hard-coated seeds;
- *Asparagus asparagoides* (Bridal Creeper) – a pest at Wannon;
- *Allium triquetrium* (Angled Onion or Three-cornered Garlic) – a pest near Digby Rd, Hamilton
- *Juncus acutus* (Spiny Rush) – an aggressive, invasive pest of waterways;
- *Phalaris aquatica* (Phalaris or Canary Grass) – a pasture species that can dominate and eliminate all other ground flora, also creating a potential fire hazard. This pasture grass has invaded many sections, particularly where stock have been allowed to graze and camp on the reserve. Where the infestation is in the early stages it is possible to spray the isolated clumps or plants and to prevent its spread. Where the infestation is severe there is probably no practical, economic solution.
- *Agrostis capillaris* (Bent Grass) – this is a weed of pastures that is obvious in small patches at specific locations (e.g. east of Chadderton's Rd). There is an urgent need to spray small clumps to prevent the rhizomes from spreading and completely obliterating the native grassland species;
- *Pinus radiata* (Radiata Pine) – these must be eradicated from the line because they will inevitably allow thousands of wildlings to establish;
- *Cypress macrocarpa* (Monterey Cypress) – several trees need to be removed
- *Acacia longifolia* (Sallow Wattle) – a few outbreaks, especially near S. Reed's Rd and Wannon;
- *Lycium ferocissimum (*Box-thorn) – an aggressive, thorny pest, present towards Coleraine;
- *Rosa rubiginosa* (Briar Rose) – many examples occur along the reserve;
- *Rubus fruticosus* (Blackberry) – at the Wannon - not to be confused with the native *R. parvifolius;*
- *African Weed Orchid* – individuals first seen in spring 2003, west of S. Reed's Rd;
- *Genista*, *Grevillea rosmarinifolia*, Poplar, Peppercorn, Spanish Broom Hawthorn, Ivy, etc. - these should be removed wherever possible but are generally not major problems at present;
- *Other pasture weed species* – Yorkshire Fog-grass, Tall Wheat-grass, Cocksfoot, Wild Oats, Perennial Rye-grass, Paspalum, Kikuyu, Sweet Vernal, Sorrel, Flatweed, Dock, Rough Dogs-tail and thistles. There is little that can be done about most of these widespread species without drastically affecting desirable species, and incurring enormous costs in restoration. The best hope is that they will be suppressed with a reduction in fertility over time and the growth of native species. It is possible to reduce seedset of annual weed species by tactical grazing but that approach is not without problems.

Ulex europaeus (Gorse) at Wannon Station Ground – control measures required.
(Photo: B. Warton)

Boundary fencing

The objective of natural regeneration of flora cannot be achieved without control of grazing on the reserve. Thus, fencing is the major priority – with strict control of grazing on the various sections of reserves.
(Short-term grazing in summer may be necessary to maintain species diversity in specific areas of grassland).

The quality of fencing varies considerably along the length of the reserve.
Left, very poor fencing in Unit 6. Right, good fencing in Unit 5. (Photo: R. Raleigh).

Natural revegetation of native flora

The long-term objective is to allow natural regeneration from existing remnant native vegetation and, where necessary to achieve the objective, to facilitate that with appropriate management (such as burning, exclusion of grazing or strategic grazing, or spot-application of particular herbicides). Where areas have been invaded by patches of exotic species, spot-spraying will be employed to target those weeds, allowing the natives to re-colonize the sites. Heavily infested areas may be blanket-sprayed and planted with trees to suppress weeds.

Tree seedlings are already present in areas that have not been grazed for 2 years (as at Bochara). Regeneration of River Red Gum stands occur readily every 4 or 5 years, following flowering in summer, as occurred in summer 2003/04 in many parts of the district. Unlike Manna Gum or Swamp Gum, seed is shed in late winter-spring. The best chance for regeneration occurs on a receptive, weed-free surface – and no grazing stock.

Re-planting of native flora

This may be desirable in certain areas but should not take precedence over natural revegetation or other management approaches, such as fencing or stock control. It should only be done to achieve the objective of restoring original vegetation where there is little prospect of natural regeneration. This must not compromise the grassland flora where it is in a sound condition (Class I-III). The following rules should apply:

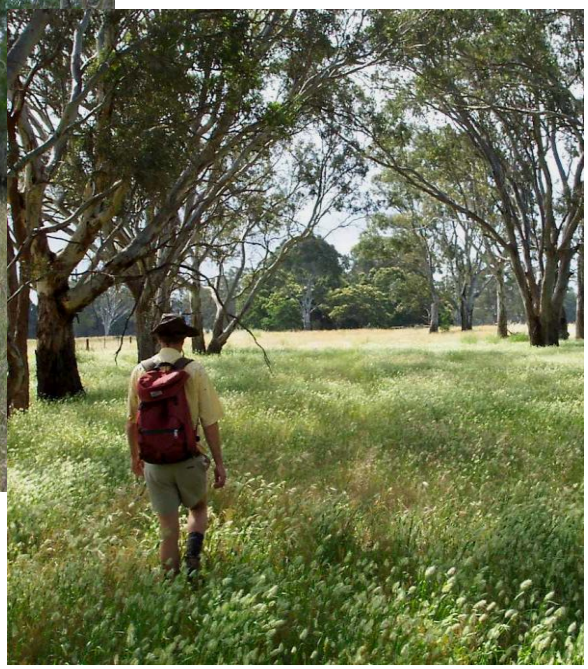
- Planting is only to be done in areas – or sites – where weeds dominate (Class IV & V). Trees will not be planted within 3 m of the side fence, but existing native trees in that area will not be disturbed;

- The genetic resource of seed must originate from the district – preferably from adjacent areas but certainly from a similar landscape within 20 km of the site to be planted, *i.e.* the species used must be known to have occurred on the particular area of line or close by;

  The species used must not include natives that are not indigenous to the site.

Track clearance and alignment

A narrow (2-3 m), slashed track should be made on the centre of the former rail line. This generally provides the best all-weather access and is already serviceable in most parts without further work. This position generally offers the least disruption to native vegetation, which is usually best on the verges (there are exceptions). Annual slashing of the line will be required to keep the trail open. Considerable work in the form of clearing over-hanging branches needs to be done on the steep section just west of Wannon (Unit 8) in order to provide access. Without such access it will not be possible to control weeds or grazing animals, maintain a walking/cycling trail or provide easy access for fire protection or control.



Variation in the type and degree of track clearance required. Removal of fallen limbs, overgrown pest plants (Sallow Wattle) and of some regenerated native vegetation is required.

All sections of the track require annual slashing to clear the path for walkers/cyclists.
(Photos: B. Warton and R. Raleigh).

Fences and gates

Access along the reserves, cross-fences and gates are contentious issues. Clearly, access by pedestrians and cyclists must not be unduly impeded, whilst motor cycles, other recreational vehicles or other unauthorized vehicles need to be excluded. Adjacent landholders have a legitimate need for access. Access is also required for maintenance of the track and for management. The policy is as follows:

- Cross-fences will be kept to a minimum, since these are very disruptive to walkers and workers and discourage usage of the walking trail. The objective is to eliminate all internal cross-fences.
- On some sections, one end of the reserve may be left unfenced to prevent stock from being left in the reserve to graze it out.
- Under no circumstances should there be unshielded electric wires on any cross-fences – these are unpleasant for those trying to cross the fence and can also be dangerous.
- All gates should be centred on the old rail track. Gates that are not in that position must be re-located to allow access to management vehicles and walkers at all times of the year, without interfering with the grassland areas.
- A 'tombstone gate' is to be constructed alongside any <u>locked</u> main gate at entry points (chiefly at cross-roads), to allow pedestrians and cyclists access.

  The construction is shown in the photo. Two posts are placed 55 cm apart, then 2 short posts are installed between those, standing 80 cm high and leaving a 10-12cm gap to allow feet and legs to pass through.

  This interim form of 'gate' is relatively inexpensive, vandal-proof and capable of excluding most livestock but is not ideal for cyclists.

Photo (right) - a "Tombstone gate" for walkers, installed alongside the main gate on the rail line on Unit $2A_5$, Digby Rd.
(Photo: R. Bird)

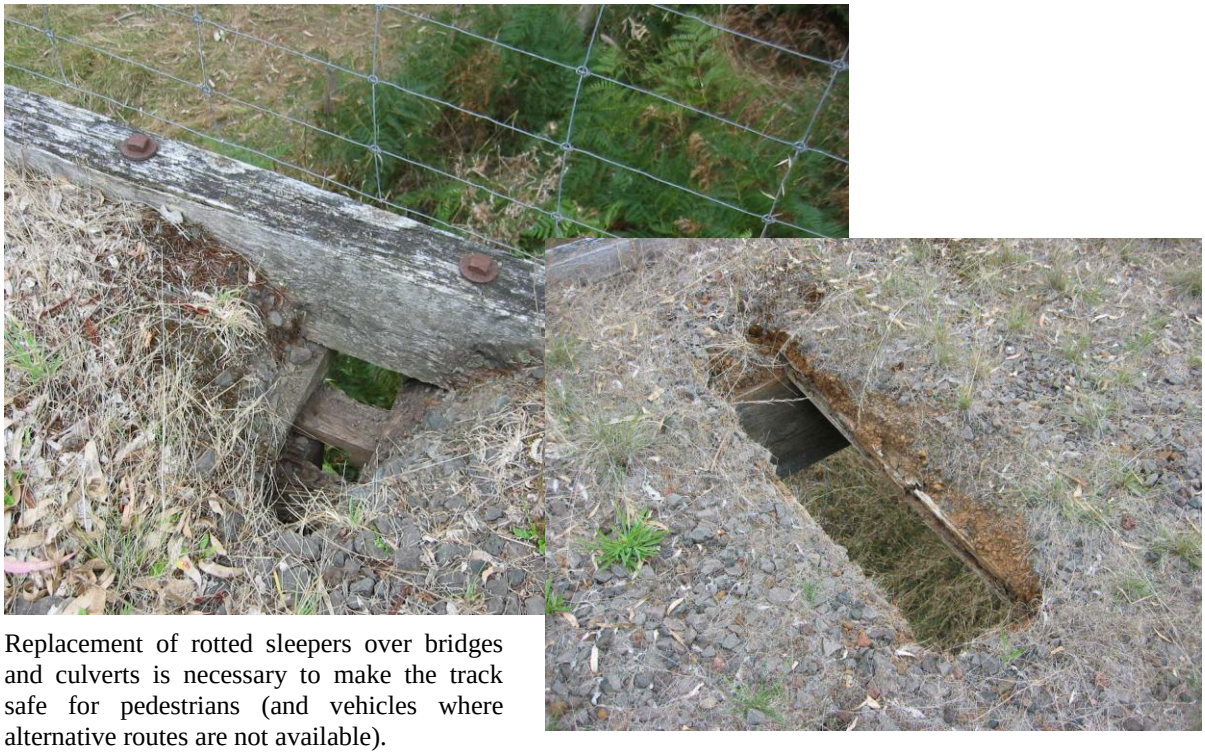
Photo (below) - a well-positioned gate on the rail bed in Unit 4K. This is also a grazed stock crossing point. "Tombstone" gates have subsequently been installed there.
(Photo: B. Warton)

Earthworks or repair of erosion areas

This does not appear to be a major problem for most of the line. There is some minor erosion around some culverts. The steeper sections from Baulchs Rd to Coleraine (Units 10-11) are a special case and action needs to be taken when funds become available. Certainly, the first action should be to stabilize the problem areas by fencing to exclude stock.

Structural work on culverts and bridges

There is a need for some rustic repairs to a few wooden culverts. Generally this entails the replacement of some sleepers in the wooden culverts (small bridges) to ensure safe passage of light vehicles, bicycles and walkers. It is not be feasible to attempt major works – such as a bridge over McKinnon Creek – and these difficulties must be overcome in other ways.



Replacement of rotted sleepers over bridges and culverts is necessary to make the track safe for pedestrians (and vehicles where alternative routes are not available).
(Photo: R. Raleigh).

Pest animals

Action is needed to control rabbits in one or two areas, particularly near the Wannon River. Fumigation by hand is required to prevent adverse effects to notable species of the indigenous vegetation at those sites, e.g. the sandy section immediately east of the Wannon Bridge (Unit 5N) has notable species among the rich flora represented there (see Appendix 3, Table III) and so, supervision will be needed to ensure these are not affected. European Wasps pose a public health hazard along certain sections of the line, particularly Units 6 & 7 in the Wannon area, and should be poisoned in late summer and/or autumn to ensure maximum destruction of nests prior to winter.

Interpretive signs

Within the next few years, when the various sections of the trail have been developed, signs will be needed at the points of interest and on the main points of contact with major roads.

Rules of Usage of Hamilton-Coleraine Rail Reserve

Some rules will be required in order to regulate the usage of the reserve. An opportunity will also be taken to provide useful information, such as the distance to the next cross-road or major destination on the route. A summary of possible rules is presented below, based largely on material provided by Rowena Ford and Alex Baulch.

The rules may include the following:

- Walkers and bicyclists may use the trail – access along the trail may, at some points, be impeded by locked gates but the "tombstone gate" alongside will allow passage.
- Trail bikes, 4-wheel motor bikes or 4WD vehicles (other than management or CFA brigade vehicles) are not permitted to use the rail reserve.
- Dogs are not permitted on the reserve – there is an obvious need to keep dogs away from livestock.
- Horses will not be allowed on the rural trail sections – horses spread weeds, pug up the ground in winter and can be an annoyance to other trail users, and livestock in adjacent paddocks.
- Walkers and cyclists must keep to the trail, in order to avoid damaging the native flora and frightening livestock in adjacent paddocks.
- Walkers and cyclists must avoid trespassing on adjacent private property.
- Gates must be closed if found closed.
- Bridges and culverts should be crossed with caution, as many are old. MacKinnon Creek can be crossed safely at times other than winter – it may be necessary at times to remove ones shoes and cross barefoot or carry a pair of rubber boots, or thongs, for the purpose.
- Fires may not be lit anywhere on the reserve – existing fireplaces, bar-b-que facilities and toilet facilities are available at Hamilton, Wannon Falls and Coleraine.
- Camping is not permitted on the reserve – facilities are available at the Wannon.
- Plants or flowers may not be taken from the reserve.
- Wildlife must not be interfered with – snakes must also be left undisturbed (all species of snake are protected); anyone trying to kill a snake is in serious danger of being bitten and killed).
- Firearms may not be taken onto the reserve by persons whom the Committee has not authorized to do so.
- Litter must be taken home – it must not be left in the reserve or allowed to blow onto adjacent farmland.
- Drinking water is not available along the way – walkers and cyclists need to take a supply.
- Firewood gathering is not permitted on the reserve, as fallen wood provides an essential habitat for insects, birds and other animals.

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Unit 12(N) - Part of the Koroite Decline, west of Baulch's Lane – a superb walking or cycling trail that will ultimately terminate in Coleraine. (Photo: B. Warton).

Report on a survey of Coleraine-Hamilton Rail Reserve, Nov. 2003 to Nov. 2004

This is a report on walks conducted along the rail reserves on 10 Nov. 2003 (Parkwood to Wannon), 16 Nov. 2003 (Bochara to Wannon), 30 Nov. 2003 (Crossing on Glenelg Highway to Bochara) and 2 Dec. 2003 (Wannon Station Ground). The remaining end-sections – Hamilton to Chadderton Rd/Glenelg Highway Crossing, and from Parkwood Station Ground to Coleraine – were inspected on Nov. 2003 and 28 Jan. 2004 or May 2004. Units 1 to 3 (Hamilton–Chadderton's Rd) were inspected in April 2004. These Units needed a more thorough survey in following springs, and that was subsequently done. The flora noted in the sections visited from 2003 is shown in Apendix 3, Table II. Earlier surveys are shown in Tables III-V. A complete list of species recorded is given in Table 1.

One aim of the walks was to access the general status of native vegetation on each section of line, using Milne's approach (see page 15). The lists of flora recorded are indicative only, since there was no time for an adequate survey and collection of specimens that could not be identified in the field. Visits at other times in the year are required to gain a complete picture. Botanical and common names for the species seen are given in the Tables. Maps are provided for each Unit. Global Positioning System (GPS) readings (latitude/longitude) cited are for Aust. Geod. 84 system.

Assessments undertaken for each section:

- List of flora species seen
- List of bird/fauna species seen
- Condition of vegetation
- Need for pest weed control
- Need for pest animal control
- Condition of fencing
- Condition of creek crossings and/or bridges and culverts
- Condition of access via gateways

Information describing the 12 units of the rail reserve are set out under the following headings:

1. *Landscape*
2. *Status of flora*
3. *Fencing*
4. *Gates*
5. *Structural works on culverts/bridges*
6. *Track clearance and alignment*
7. *Revegetation required*
8. *Weed control required*
9. *Pest control required*
10. *Interpretive/locality signs*
11. *Fire protection*

The railway cutting and track east of Sandy Creek (Unit 4K). There is a regeneration of Blackwood and gums on this section.

(Photo: B. Warton)

Unit 1 – Dunn Rd in Hamilton to Wedge St

$1A_1$ Dunn Rd (37-45-29.0/142-01-09.3) to Coffey St (37-45-25.1/142-00-44.3)

1. ***Landscape*** – basalt plains, town area but few houses adjacent to the reserve.
   - Area ($A_{1.1}$) – from Dunn Rd (37-45-29.0/142-01-09.3) west to a cross-fence at 37-45-28.0/142-00-59.0 (adjacent to the junction with an old railway Saleyards divergence cutting to SW). There is a row of pines close to the southern fence, and a small pond in the SE corner (37-45-29.6/142-01-08.8). This stretch has some excellent native grassland (with some patches of weeds) and is currently ungrazed. The old Coleraine railway joins the current Portland rail track about 100 m further east of Dunn Rd, a dead end. Dunn Rd is a logical point of access to the reserve, on a quiet lane with plenty of room to park. The first Management Plan shows Unit 1 starting at the west end of this section (A_{11}), clearly a drafting error, since the only direct public access to that point is from Dunn Rd, via the reserve. Dunn Rd also provides a good link with the Grange Burn walking trail, opposite Kennedy Oval. The opening of an alternative walking trail in Hamilton will be very welcome to the hundreds of urban people who have recently started to enjoy the health benefits of walking.
   - Area ($A_{1.2}$) – junction cross-fence at 37-45-28.0/142-00-59.0 west to Coffey St (37-45-25.1/142-00-44.3). This section begins in a cutting and then runs west along an embankment of approximate height 1 m. It is currently open to grazing from the paddock on the north. There is a narrow, fenced band of native trees on the southern fence for about half of the length of this stretch, beginning at the Coffey St end.

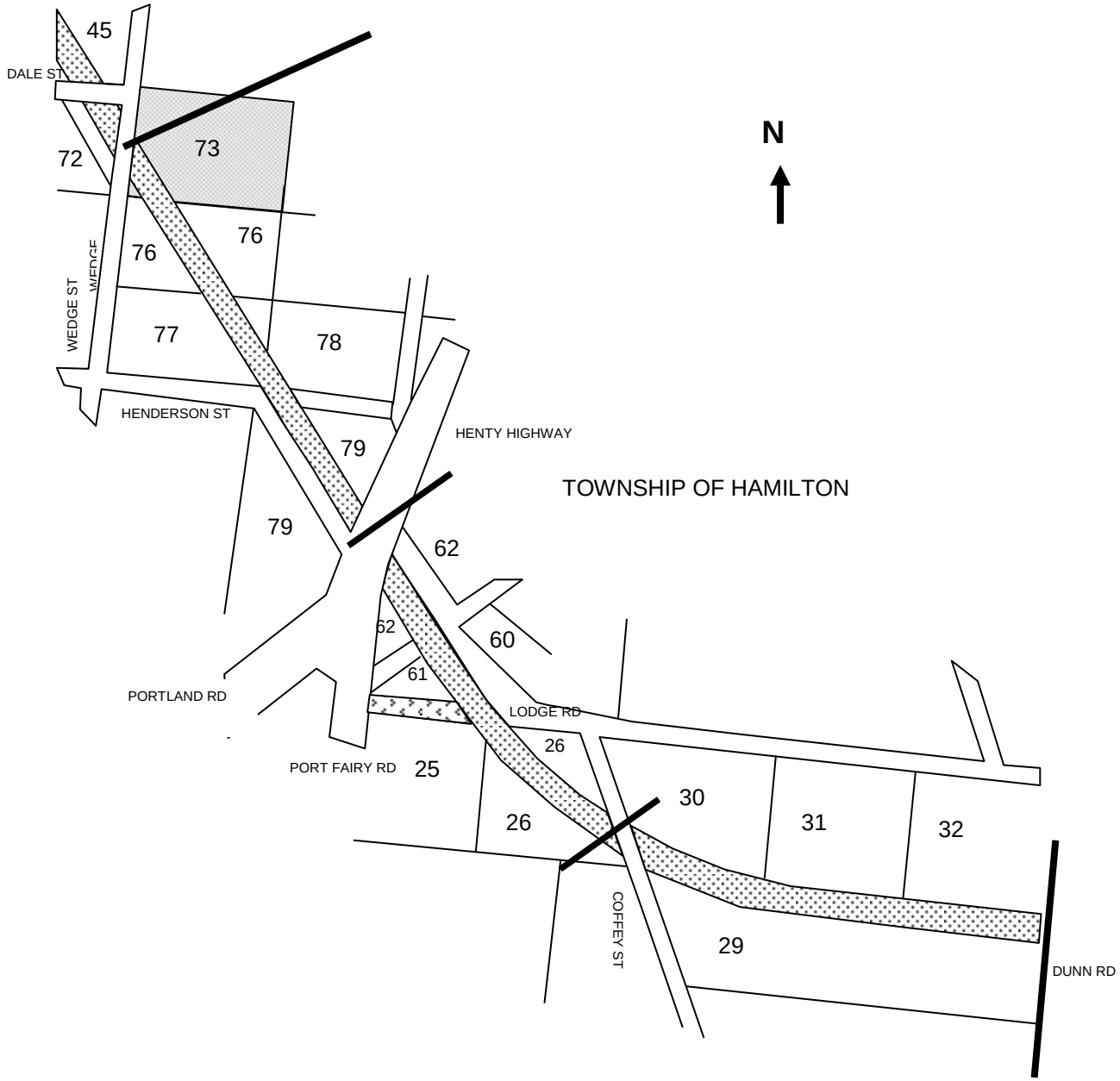


Figure 2. **Unit 1** showing allotment numbers.

2. ***Status of flora*** (provisional assessment in April 2004)
   - Area ($A_{1.1}$) – Class II - excellent stand of *Themeda* grassland, with *Austrodanthonia* spp., *Juncus pauciflora*, *Poa sieberana*, *Elymus scaber* and other species. There is some Yorkshire Fog and other weeds. A few Blackwood (*Acacia melanoxylon*) occur here, along with a few small clumps of *A. paradoxa* – good Eastern Barred Bandicoot habitat. Of further botanical interest is the mat of *Goodenia humilus* on the sides of the pond.

   Area ($A_{1.2}$) – Class IV or V – this area has been subject to heavy grazing for a long time and native species are not obvious. There is some Hawthorn along the embankment.
3. ***Fencing***
   - Area ($A_{1.1}$) – this is fenced on the sides, but not from the older cutting running to the SW. The cross-fence on the east end is old.
   - Area ($A_{1.2}$) – there is no fence on the north side.

   Recommendation - remove all cross-fences, including fences fronting roads, after adjoining landholders have been given notice.
4. ***Gates***
   - Area ($A_{1.1}$) – there are no gates on the cross-fences.
   - Area ($A_{1.2}$) – there are no gates on the cross-fences.
5. ***Structural works on culverts/bridges***
   - Area ($A_{1.1}$) – there is one pipe culvert at the east cross-fence.
   - Area ($A_{1.2}$) – nothing required.
6. ***Track clearance and alignment***
   - Area ($A_{1.1}$) – this is clear, would need an annual slashing.
   - Area ($A_{1.2}$) – this is clear, would need an annual slashing once grazing is removed.
7. ***Revegetation required***
   - Area ($A_{1.1}$) – none required - it is already good potential habitat for Barred Bandicoot
   - Area ($A_{1.2}$) – native vegetation for birds and other wildlife (including the Barred Bandicoot) could be established here, using *E. camaldulensis, E. ovata, Bursaria spinosa, Acacia melanoxylon, A. paradoxa, A. mearnsii, A. verticillata, Banksia marginata*, *Allocasuarina verticillata, Hymenanthera dentata* (Tree Violet), *Viminaria juncea* (Golden Spray), *Ozothamnos ferrugineum* (Tree Everlasting), *Leptospermum continentale* and *L. lanigerum* as the major indigenous species.
8. ***Weed control required***
   - Area ($A_{1.1}$) – there are a few small patches of Phalaris that need to be sprayed.
   - Area ($A_{1.2}$) – Hawthorn removal is needed.
9. ***Pest control required*** – nothing required.
10. ***Interpretive/locality signs*** – nothing required as yet, although if a Rail Trail were formed then some signage would be needed at Dunn Rd.
11. ***Fire protection*** – the cross-roads provide protection but cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track and other work, as described above.

The start of the trail – looking west from Dunn Rd in Hamilton. This stretch contains some excellent native grassland.

(Photo: R. Bird)

$1A_2$ Coffey St (37-45-24.5/142-00-43.1) to Henty Highway (37-45-14.8/142-00-32.7)

1. ***Landscape*** – basalt plains, town area with a few houses adjacent to the reserve. There is an embankment from east to the middle of up to 3 m height, and a cutting extending from there towards the highway.
   - Area ($A_{2.1}$) – from Coffey St to the convergence with Lodge Rd on the north (37-45-19.4/142-00-37.1). This includes the embankment section, 2-3 m high at the Lodge Rd end.
   - Area ($A_{2.2}$) – from the western end of the adjacent Lodge Rd to cross-fence at Henty Highway (37-45-14.8/142-00-32.7). This area includes the cutting.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area ($A_{2.1}$) – Class III - this area has *Poa sieberana*, *Themeda*, *Austrodanthonia* spp. and *Austrostipa* spp., as well as *A. mearnsii*. This area is grazed by sheep that enter from a paddock to the south on Area ($A_{2.2}$). It also has a large pine on the side of the embankment (37-45-21.3/142-00-38.2), Ivy growing on the Lodge Rd road reserve and extending onto the rail reserve, clumps of Gorse, Watsonia, Yorkshire Fog Grass and Phalaris.
   - Area ($A_{2.3}$) – Class III or IV – this section has been planted along both sides of the cutting, with a variety of trees and shrubs, but *A. mearnsii* seems to be dominant (perhaps self-seeded). There is a component of native grassland flora but a few sheep were grazing the site and there was little vegetation under the Black Wattles. There are big clumps of Gorse, with Pine and a Cypress at the western end (37-45-19.2/142-00-35.8).
3. ***Fencing***
   - Area ($A_{2.1}$) – there is a new cross-fence off Coffey St. The southern fence is old but stockproof.
   - Area ($A_{2.2}$) – there is a new fence along Lodge Rd and the frontage to Henty Highway. The southern fence needs maintenance but could be made stockproof. A landholder on the southern side has left a makeshift gate open into the reserve, and sheep have the run of this area and Area (A_{21}).

   Recommendation – remove all internal cross-fences after adjoining landholders have been given notice.
4. ***Gates***
   - Area ($A_{2.1}$) – no gate onto Coffey St or elsewhere.
   - Area ($A_{2.2}$) – no gate onto Henty Highway. A gate (of sorts) exists on the southern side (37-45-18.3/142-00-34.7) near a house. That "gate" must be closed.
5. ***Structural works on culverts/bridges***
   - Area ($A_{2.1}$) – none required.
   - Area ($A_{2.2}$) – none required.
6. ***Track clearance and alignment***
   - Area ($A_{2.1}$) – some trimming of branches of *A. mearnsii* and the Pine would be needed to allow a management vehicle access along the embankment near Coffey St. Annual slashing of the track would be needed.
   - Area ($A_{2.2}$) – annual slashing of the track would be needed to maintain the trail.
7. ***Revegetation required***
   - Area ($A_{2.1}$) – nothing required at present - this area could be good Barred Bandicoot habitat.
   - Area ($A_{2.2}$) – nothing required at present - this area could be good Barred Bandicoot habitat.
8. ***Weed control required***
   - Area ($A_{2.1}$) – urgent action to control Gorse, Ivy and Phalaris clumps.
   - Area ($A_{2.2}$) – urgent action to control Gorse, Ivy and Phalaris clumps. The Pine and Cypress could be removed at some future time and indigenous tree species planted there.
9. ***Pest control required*** – nothing required.
10. ***Interpretive/locality signs*** – none required.
11. ***Fire protection*** – the cross-roads provide protection but cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track. Provision has been made for a 3-m clearway along the perimeter, so that a 2-m strip can be slashed. We advise adjacent landholders that they may mow a 2-m strip immediately adjacent to their fence if they perceive the reserve to be a hazard.

$1A_3$ Henty Highway (37-45-13.3/142-00-31.8) to Wedge St (37-44-59.3/142-00-21.0)

1. ***Landscape*** – basalt plains, town area with no houses immediately adjacent to the reserve, but several commercial and Government service properties adjacent.
   - Area ($A_{3.1}$) – from Henty Highway to cross-fence at 37-45-08.3/142-00-27.8, opposite Henderson St deviation. This short section is adjacent to Kenny's Depot, where the reserve is used as access for trucks and earthmovers. There is a dump of large pipes at 37-45-11.4/142-00-30.0 and piles of earth at 37-45-10.7/142-00-29.7. The reserve is adjacent to Henderson St on the south fence.

- Area ($A_{3.2}$) – cross-fence at 37-45-08.3/142-00-27.8, opposite Henderson St deviation, to a cross-fence at 37-45-03.9/142-00-24.4, alongside a gate into a block to the north. The rail line is on a slight embankment, the area either side being wet in winter. The rail line is used as an access track through locked double gates off Henderson St to a property on the opposite side.
- Area ($A_{3.3}$) – cross-fence at 37-45-03.9/142-00-24.4 to Wedge St (37-44-59.3/142-00-21.0). This section has been planted recently, and extensively, with trees and shrubs indigenous to the area. There is a large European Wasp nest on the roadside, midway along the fence.

2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area ($A_{3.1}$) – Class V - little vegetation of any kind.
   - Area ($A_{3.2}$) – Class IV – there is much *Agrostis avenacea* (Blown Grass) and *Juncus pauciflora* (and probably other native species) on the damp areas, but many thistles, Dock, Phalaris, Sorrel, Fog and Ryegrass elsewhere.
   - Area ($A_{3.3}$) – Class IV or V - this area contains mainly exotic grasses but was extensively planted out in spring 2003, with the trees doing well.
3. ***Fencing***
   - Area ($A_{3.1}$) – there is a cross-fence (without a gate) on the Henty Highway, but that serves no real purpose. In fact, it appears to be set further east than the true boundary (NE corner post at 37-45-12.3/142-00-31.5) and therefore approaches the sealed road quite closely, and could be a hazard. There is a western cross-fence (with no gate) but no fence on the northern side (alongside Kenny's shed and yard). The southern fence is almost derelict and serves little purpose.
   - Area ($A_{3.2}$) – this section is fenced on both sides, with cross-fences (albeit temporary) at each end.
   - Area ($A_{3.3}$) – there is a cross-fence at Wedge St but no gate.

   Recommendation – remove all cross-fences, including fences fronting roads, after adjoining landholders have been given notice.
4. ***Gates***
   - Area ($A_{3.1}$) – none (the area is effectively open).
   - Area ($A_{3.2}$) – there is a locked double gate off Henderson St (at 37-45-08.1/142-00-26.9) and a track along the rail reserve to another gate into the paddock opposite at 37-45-03.7/142-00-24.9. There are no gates on the cross-fences.
   - Area ($A_{3.3}$) – there do not appear to be any gates entering this section.
5. ***Structural works on culverts/bridges***
   - Area ($A_{3.1}$) – none required.
   - Area ($A_{3.2}$) – none required.
   - Area ($A_{3.3}$) – -none required.
6. ***Track clearance and alignment***
   - Area ($A_{3.1}$) – this area is clear.
   - Area ($A_{3.2}$) – annual slashing required.
   - Area ($A_{3.3}$) – annual slashing required.
7. ***Revegetation required***
   - Area ($A_{3.1}$) – this is a problem area and the easiest solution is to do nothing, as the problem may be intractable. The area is currently almost bare and if kept that way could be a useful firebreak from any fire travelling west-east along the line.
   - Area ($A_{3.2}$) – this area should be revegetated, using some of the species suggested for other areas, plus *Leptospermum continentale* (Prickly Tea-tree) and perhaps *L. lanigerum* (Woolly Tea-tree). This stretch could be made good Eastern Barred Bandicoot habitat.
   - Area ($A_{3.3}$) – this area has been revegetated.
8. ***Weed control required***
   - Area ($A_{3.1}$) – none
   - Area ($A_{3.2}$) – Phalaris clumps could be sprayed.
   - Area ($A_{3.3}$) – Phalaris clumps could be sprayed.
9. ***Pest control required*** – nothing required.
10. ***Interpretive/locality signs*** – none required.
11. ***Fire protection*** – the cross-roads provide protection but cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track. Provision has been madefor a 3-m clearway along the perimeter, so that a 2-m strip can be slashed. We advise adjacent landholders that they may mow a 2-m strip immediately adjacent to their fence if they perceive the reserve to be a hazard.

Unit 2 – Wedge St, Hamilton to Young St Railway Bridge

$2A_4$ Wedge St (37-44-58.1/142-00-20.1) to Pioneer St (37-44-50.6/142-00-14.4)

1. ***Landscape*** – basalt plains, town area with a house or two adjacent, but not near, to the reserve on the north. There is a good fenced tree belt along the south side, with Silver Banksia, Black Wattle, River Red Gum, Sweet Bursaria, Drooping Sheoak and other species growing well, a legacy of Peter Milne's work in the late 1980s. Incidentally, there is little rank grass in this narrow belt (particularly near Drooping Sheoak), testament to the long-term effect of treeplanting in controlling grass. This area has been grazed sporadically by horses.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   Class II or III – good cover of *Austrodanthonia* spp., with *Poa sieberana* and *Themeda*, but also patches of Phalaris and some Briar Rose.
3. ***Fencing*** – cross-fence at Wedge St has no gate. There is a cross-fence (an electric tape) across the reserve at the eastern end of the tree belt, at 37-44-56.4/142-00-18.8, about 20 m from Wedge St. There is a cross-fence at Pioneer St, also fitted with an electric tape and small gate. The side fences are OK.
   Recommendation – remove all cross-fences, including fences fronting roads, after adjoining landholders have been given notice.
4. ***Gates*** – the only gate is a small opening onto Pioneer St.
5. ***Structural works on culverts/bridges*** – none required.
6. ***Track clearance and alignment*** – annual slashing of the trail.
7. ***Revegetation required*** – nothing as yet, although this could be used for opportunistic planting by a school group, using indigenous trees of the type listed previously.
8. ***Weed control required*** – there are a few clumps of Phalaris, a few Briar Rose, and one patch of Gorse at the SE corner.
9. ***Pest control required*** – nothing required.
10. ***Interpretive/locality signs*** – none required.
11. ***Fire protection*** – the cross-roads provide protection but cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track. Provision has been made for a 3-m clearway along the perimeter, so that a 2-m strip can be slashed. We advise adjacent landholders that they may mow a 2-m strip immediately adjacent to their fence if they perceive the reserve to be a hazard.

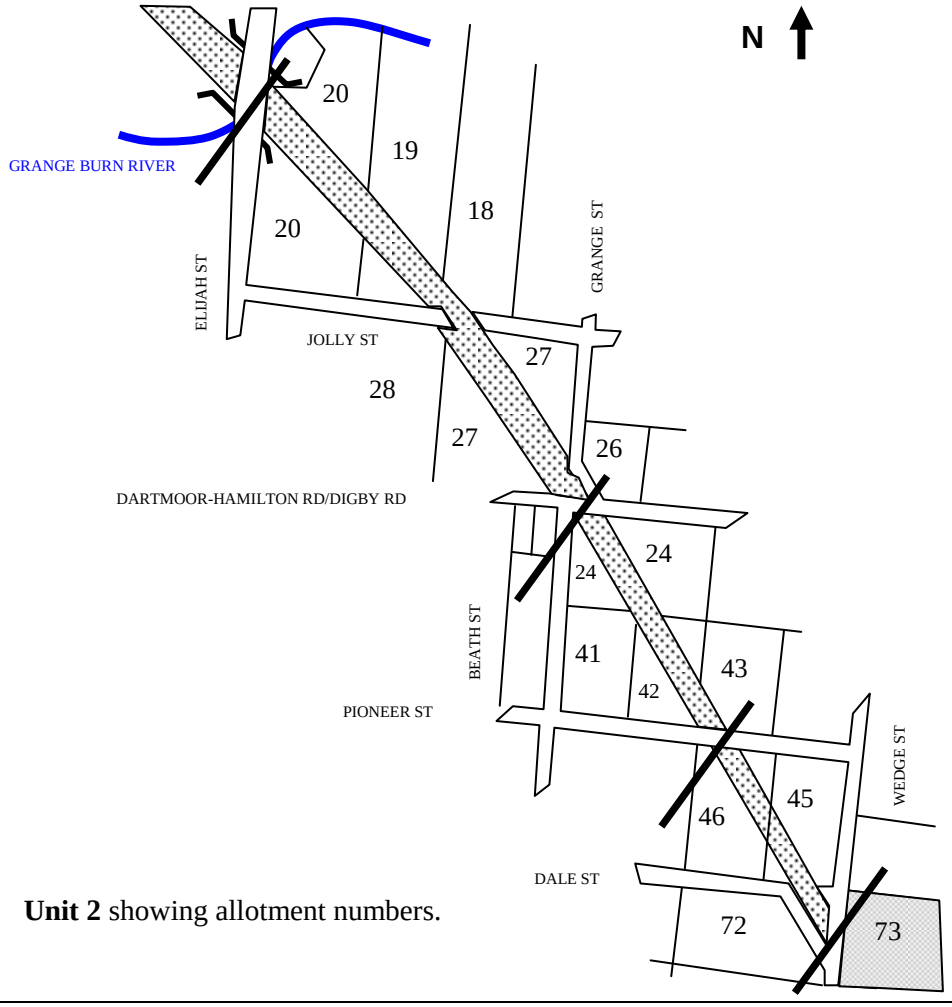


Figure 3. **Unit 2** showing allotment numbers.

2A_5 Pioneer St (37-44-49.9/142-00-13.8) to Digby Rd (37-44-40.8/142-00-06.9)

1. ***Landscape*** – basalt plains, town area with a few houses adjacent to the reserve on both sides.
   - Area ($A_{5.1}$) – This is a problem stretch, for it has been grazed absolutely bare by horses from an adjacent property. There is an old Cypress belt along the southern fence for part of the way. There is an excellent tree belt on the northern side from 37-44-48.5/142-00-32.7 to 37-44-43.7/142-00-09.9, with a gateway in the middle giving access into the paddock on the north.
   - Area ($A_{5.2}$) – there is another excellent tree belt along the southern side from the cross-fence at 37-44-44.8/142-00-10.1 to 37-44-43.2 to 142-00-08.2. There is a pile of mostly burnable pile of rubbish in the trail at 37-44-43.6/142-00-08.9, and this appears to have originated from an adjacent property. The area near Digby Rd - extending approx. 40 m along the reserve - is degraded by dumped rubbish from an adjacent house, Phalaris, Yorkshire Fog Grass and Onion Weed and needs to be restored.
2. ***Status of flora***
   - Area ($A_{5.1}$) – Class III or IV - grazed almost bare by horses, although there are native grasses adjacent and *Austrostipa* and *Austrodanthonia geniculata* would probably emerge again from grazed crowns. The rail track contains mostly exotic species.
   - Area ($A_{5.2}$) – Class II (eastern part) – an excellent stand of *Themeda*, *Austrostipa* spp. and *Poa sieberana* on the banks around the rubbish pile and extending eastwards along the trail. Notable species there include *Goodenia pinnatifida* and *Dianella revoluta.* There are clumps of *Themeda* and *Poa* and a few Black Wattles on the south side near Digby Rd.

     – Class V (western 30-m stretch) – this has been badly degraded and full of exotics, although some natives survive near the south fence.
3. ***Fencing***
   - Area ($A_{5.1}$) – there is a cross-fence at Pioneer St, with an additional electric wire across the gateway, and a vicious barbed-wire and electric cross-fence (with no gate) at 37-44-44.8/142-00-10.1. Other fences are OK.
   - Area ($A_{5.2}$) – there is a good end cross-fence at Digby Rd but this serves little purpose at present.

   Recommendation – remove all internal cross-fences, after adjoining landholders have been given notice. Access now is fraught with danger, because of the electric wires and barbed wire.
4. ***Gates***
   - Area ($A_{5.1}$) – there is a gate on the Pioneer St end and one into the paddock on the north
   - Area ($A_{5.2}$) – the cocky gate on the NW corner near Digby Rd must be relocated to the line of trail.
5. ***Structural works on culverts/bridges***
   - Area ($A_{5.1}$) – none required.
   - Area ($A_{5.2}$) – none required.
6. ***Track clearance and alignment***
   - Area ($A_{5.1}$) – annual slashing of the trail.
   - Area ($A_{5.2}$) – annual slashing of the trail.
7. ***Revegetation required***
   - Area ($A_{5.1}$) – a future inspection, after the area is closed from grazing, is required to determine what can be done here.
   - Area ($A_{5.2}$) – the area near Digby Rd could be solidly planted with indigenous species, once the rubbish is removed from the site and the weeds sprayed. Parts of this area are very wet.
8. ***Weed control required***
   - Area ($A_{5.1}$) – nothing obvious noted.
   - Area ($A_{5.2}$) – the area near Digby Rd is almost entirely overrun with exotic weeds (Phalaris, Flatweed, Couch, Fog Grass, Paspalum, Wild Garlic, Thistle) and there is little point in blanket-spraying the area until follow-up action is planned [spraying and planting was done in spring 2004].
9. ***Pest control required*** – nothing required.
10. ***Interpretive/locality signs*** – nothing, until a walking trail is organised.
11. ***Fire protection*** – the cross-roads provide protection but internal cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track and other work, as described above. Provision has been made, in recent works, for a 3-m clearway along the perimeter, so that a 2-m strip can be slashed. Some adjacent landholders have made this impossible to do where they have dumped house tiles, old machinery and rubbish [the committee has since removed the tiles and other rubble from the east boundary near Digby Rd]. We advise adjacent landholders that they may mow a 2-m strip immediately adjacent to their boundary fence if they perceive the reserve to be a hazard.

2A_6 Digby Rd (37-44-38.8/142-00-04.5) to Young St Bridge (37-44-22.0/141-59-47.8)

1. ***Landscape*** – basalt plains, town area with a few houses adjacent to the reserve on the north.
   - Area ($A_{6.1}$) – this troublesome short section extends some 100 m from Digby Rd to the eastern end of the first tree belt (37-44-37.3/142-00-03.5). The landholder to the north, nearest Digby Rd, currently leaves trailers and other material on the reserve near his fence, and keeps 2 dogs in kennels on the reserve. Part of the area was planted with native grasses in spring 2003. There is a small pond on the south side of the embankment. A new sewer connection was cut across the reserve at 37-44-43.6/142-00-04.5 in early 2004, disturbing a 5-m strip of planted and unplanted grassland.
   - Area ($A_{6.2}$) – this section runs from the eastern end of the first tree belt (37-44-37.3/142-00-03.5 to a cross-fence near the end of a cutting, at 37-44-29.3/141-59-56.8. There is an adjacent, unmade (fenced) extension of Jolly St on the top southern half. The first fenced tree belt runs about 40 m to 37-44-36.4/142-00-02.8. There is a 5-m gap then the second belt runs from 37-44-36.4/142-00-02.6 to 37-44-34-34.8/142-00-01.2. After another gap, the third tree belt (approx. 60 m long and 7 m wide) runs from 37-44-34.2/142-00-00.7 to 37-44-32.6/141-59-59.2. After another gap, which has been slashed, the fourth tree belt (approx. 50 m long and 11 m wide) runs from 37-44-31.0/141-59-57.4 to 37-44-29.9/141-59-56.0, at the cross-fence. There is also a tree belt of 50 m length and width 7 m on the north side, opposite the fourth belt. There is a house on the north side opposite the start of the western tree belts, and a further 2 houses between there and Hill's house. The cutting along the railway is quite deep - to at least 3 m - and there is an interesting cross-section of soil profile and basaltic bedrock. There is a thicket of various native and exotic vegetation on the northern bank.
   - Area ($A_{6.3}$) – this section runs from the cross-fence at 37-44-29.3/141-59-56.8 to the Grange Burn. The beginning of the high railway bridge is a 37-44-23.9/141-59-49.7, from the end of an embankment some 8-10 m high at that point. The eastern end of the embankment is in line with a corner post on the north side, at 37-44-29.3/141-59-56.8. The cutting is about 1.5 m deep at the cross-fence. The width of the reserve is approximately 46 m. Almost all of this section is unfenced on the side boundaries.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area ($A_{6.1}$) – Class IV - efforts were made in spring 2003 to replace the exotic grasses on the southern side with *Poa labillardiera*, *Austrodanthonia* and other species. However, it remains to be seen if that will succeed, given the presence of Phalaris, Kikuyu and other exotic grasses. Ideally, the existing vegetation should be completely eliminated before attempting a replacement - that was not done. And then, after planting, careful follow-up control of exotic weeds is essential. This work is laborious, tedious and time-consuming - only small plots can be handled with success at one time. The Committee does not have that time to devote to these areas. A more realistic solution is to eliminate the exotic vegetation and plant densely with indigenous native trees and shrubs, including a high proportion of Drooping Sheoak that will, in time, suppress grass.
   - Area ($A_{6.2}$) – Class I to IV - there is an excellent stand of *Themeda-Poa-Austrostipa* grassland along the southern bank, despite the irresponsible action of some person who has sprayed herbicide along the edge of the first and second tree belts, creating bare ground that will promote the invasion of exotic grass. The grassy southern bank has been slashed. *Bossiaea prostrata* was noted in the tree belts. The northern bank is partly clothed with trees, with an open floor but there is a thicket of mainly exotic shrubs (including Briar, *Genista* and grapevines) and Ivy opposite the third belt. There is also some *A. paradoxa* and *A. mearnsii* near the western end. Poa tussocks, Phalaris and Yorkshire Fog Grass grow in profusion in the cutting near the western end.
   - Area ($A_{6.3}$) – Class V - this area has been heavily and continuously grazed for years. Obvious vegetation includes *Genista*, Briar Rose, thistle and Yorkshire Fog Grass.
3. ***Fencing***
   - Area ($A_{6.1}$) – there is a cross-fence at Digby Rd and an effective southern fence. Part of the fence adjoining Hill's property is missing.
   - Area ($A_{6.2}$) – the fences on this section are OK. There is a cross-fence on the western end at 37-44-29.3/141-59-56.8.
   - Area ($A_{6.3}$) – apart from a short section on the northern side (to a corner post at 37-44-26.5/141-59-54.4) there are no side fences currently standing. The section ends at the Grange Burn, where there is a mess of electric wires and fencing. If the landholder to the north also owns the land on the south of the reserve then a 10-m wide farm crossing may need to be installed at a suitable position (see below).

   Recommendation – remove all imternal cross-fences (excepting the possible stock-crossing), after adjoining landholders have been given notice.

4. ***Gates***
   - Area ($A_{6.1}$) – Mr Hill has complained about the locking of the gate onto Digby Rd, because he uses that as an alternative access to his property. The Committee fitted a heavy chain and lock to that gate in early 2004.
   - Area ($A_{6.2}$) – there are no obvious gates into the reserve.
   - Area ($A_{6.3}$) – there are no gates on the cross-fences at the eastern end or at the Burn. If the landholder to the north of the reserve owns the land on the southern side then provision must be made for a 10-m farm crossing, at the point where the cutting ends and embankment begins (about level with the corner post on the north fence, 37-44-29.3/141-59-56.8). That would mean having a gate fitted at the centre of each cross-fence.
5. ***Structural works on culverts/bridges***
   - Area ($A_{6.1}$) – none required.
   - Area ($A_{6.2}$) – none required.
   - Area ($A_{6.3}$) – see comment for Unit 3.
6. ***Track clearance and alignment***
   - Area ($A_{6.1}$) – annual slashing.
   - Area ($A_{6.2}$) – a little work in clearing a path along the cutting, plus annual slashing.
   - Area (A_{63}) – annual slashing.
7. ***Revegetation required*** – the existing fenced tree belts have Silver Banksia, Black Wattle, Blackwood, River Red Gum, Sweet Bursaria, Drooping Sheoak and other species growing well, a fine legacy of Peter Milne's work as Crown Lands Management Officer in the late 1980s.
   - Area ($A_{6.1}$) – suggest that this area - particularly the areas of Kikuyu - should ultimately all be densely planted with indigenous species (see comments in (2) above).
   - Area ($A_{6.2}$) – nothing required (herbicide spraying of the native grassland should be stopped immediately).
   - Area ($A_{6.3}$) – there is a great opportunity here to plant this wide block (up to 50 m width) with *E. camaldulensis, E. ovata, E. viminalis, Bursaria spinosa, Acacia melanoxylon, A. paradoxa, A. mearnsii, A. verticillata, Banksia marginata, Allocasuarina verticillata, Hymenanthera dentata* (Tree Violet), *Viminaria juncea* (Golden Spray), *Ozothamnos ferrugineum* (Tree Everlasting), *Leptospermum continentale* and *L. lanigerum* (the latter pair in the wet fringe) as an arboretum of the major indigenous species. This would provide an excellent connection with the Grange Burn and complement the development of the proposed wetland complex off Baimbridge Road. The adjoining landholder would need assistance to fence the reserve.
8. ***Weed control required***
   - Area ($A_{6.1}$) – Kikuyu will need to be controlled.
   - Area ($A_{6.2}$) – Ivy and other exotic vegetation need controlling.
   - Area ($A_{6.3}$) – Briar and *Genista* needs controlling.
9. ***Pest control required*** – nothing required.
10. ***Signage required*** – see Unit 3 notes.
11. ***Fire protection*** – the cross-roads provide protection but cross-fences should be removed to allow for vehicular access for fire suppression. Annual slashing of track and other work, as described above. Provision has been made, in recent works, for a 3-m clearway along the perimeter, so that a 2-m strip can be slashed. Some adjacent landholders have made this impossible to do where they have dumped house tiles, old machinery and rubbish. We advise adjacent landholders that they may mow a 2-m strip immediately adjacent to their boundary fence if they perceive the reserve to be a hazard.

Unit 3 – Railway Bridge at Young St on Grange Burn, west to Chaddertons Rd

This unit is divided into 5 sections (B-F). It contains one river crossing at the Grange Burn, with a large trestle bridge, 1 small waterway crossing and 6 road crossings at Young St, Kenny St, Fairburn Rd, Pelchens Rd, Balkins Rd and the Glenelg Highway near Chaddertons Road.

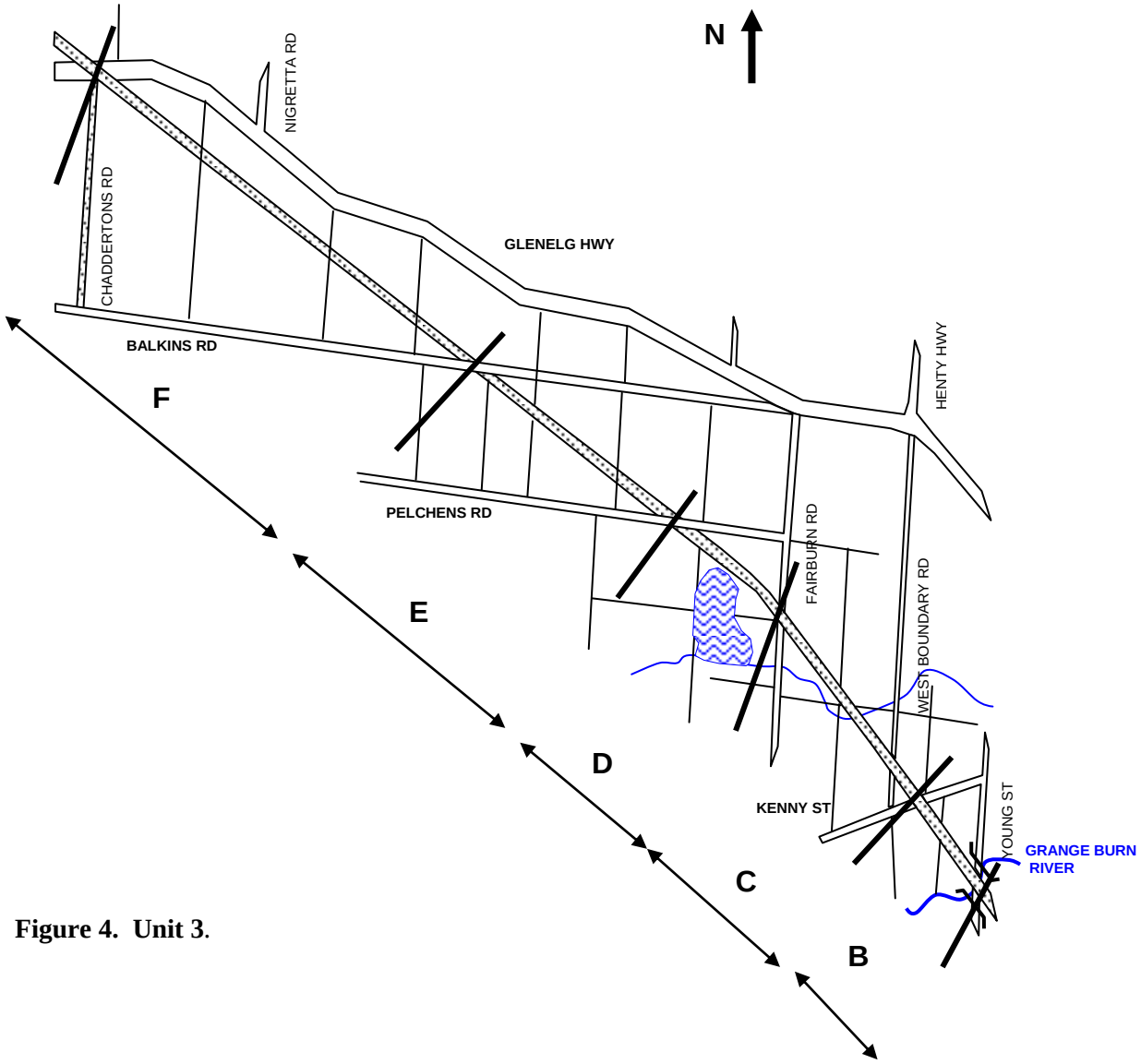


Figure 4. Unit 3.

3B Railway Bridge at Young St on Grange Burn (37-44-22.0/141-59-47.8) to Kenny St (37-44-13.3/141-59-35.8)

1. ***Landscape*** – land rising steeply from the cracking clay soils of the Grange Burn and slopes above, to the basaltic plains to the west at Kenny St. The reserve is about 50 m wide near the bridge.
   - Area (B_1) – The bottom part of the section is an embankment, rising to 10 m or so in height where the bridge begins. There is a fine view up the Burn to Hamilton. A cross-fence (at 37-44-16.7/141-59-40.4) marks a change in adjacent land ownership.
   - Area (B_2) – The top part is a cutting of perhaps 2-3 m depth on the shoulder of the plateau. There is an adjacent house and sheds on the NW near Kenny St, and an old truck and trailer need to be removed from the reserve at that point.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area (B_1) – Class IV - the first stretch, the slope unfenced on the south side from the Burn to the cross-fence has been grazed tightly and appears to contain very few native species. There is Cane-Grass (*Phragmites*) and other water plants in the Burn. A large, dead tree (probably *E. ovata*) occurs just upslope from the bridge.

- Area (B_2) – Class V – this is the section from the cross-fence to Kenny St (37-44-13.3/141-59-35.8). Except for a remnant of *Themeda*, *Austrostipa* and other species near the road, the entire section has been overgrown with Phalaris. Each bank has been slashed on this section but not grazed.

3. ***Fencing***
   - Area (B_1) – the boundary fence on the south side of this lower section is absent.

   Recommendation – When this fence should be replaced will depend on when tree planting is to be done there, and whether the owner of the adjacent paddock could graze the western end of the reserve (B_2) as well. If grazing is possible then the present temporary cross-fence should be removed. That should also be done if/when the areas (B_1) and (B_2) are both planted with trees (see discussion below).
   - Area (B_2) – the north side fence adjacent to a shed near Kenny St has been removed. Other fences are OK.

   Recommendation – the north side fence should be restored but the cross-fence at Kenny St should be removed when the area is to be planted. The area should be grazed in the interim.
4. ***Gates***
   - Area (B_1) – there is a gate into the reserve from Young's St underneath the bridge. That serves as access to the farmers paddock to the south, too.
   - Area (B_2) – there is no gate off the eastern side of Kenny St (37-44-13.3/141-59-35.8) - that will need to be fitted on the centre line if a decision is taken to graze the area rather than leave the entry open.
5. ***Structural works on culverts/bridges***
   - Area (B_1) – the bridge has been barred to traffic, using a mesh barrier at each end. If a rail could be fixed to each side of the bridge then it may be possible to open the bridge to Rail Trail foot traffic. The structural timbers of the bridge appear to be sound, but at least 6 planks are currently missing from the decking of the bridge, and it has a cover of soil over the planks. An alternative might be the laying of a narrow deck for foot traffic across the lower bridge support beams. That is at a much safer level, about 5 m from the ground. If that cannot be done then some other way must be found to cross the Burn – a feasibility study is required. The railway bridge is an excellent example of trestle construction and worthy of restoration.
   - Area (B_2) – not applicable.
6. ***Track clearance and alignment***
   - Area (B_1) – there is a gate into the reserve from Youngs St underneath the bridge. That serves as access to the farmers paddock to the south, too. Currently it is only possible to cross the Burn at this point in summer, when the water level is low. There is space for parking on Young St or Elizah St (across the Burn on the south), although the steep muddy track on that side would prove difficult to drive up in winter. Apart from that, this could be a good starting point for a walk. In time, it may also be possible to extend the walk from the proposed wetland project planned near Baimbridge Rd/Digby Rd, along the north side of the Burn to the Railway Bridge.
   - Area (B_2) – walking trail along cutting and embankment to Kenny St needs slashing annually.
7. ***Revegetation required***
   - Area (B_1) – all of Areas (B_1) and (B_2) could be grazed in the interim, since it appears to contain mostly Phalaris and is quite fertile soil. Ultimately the area should be re-fenced on the southern side and planted densely with trees and shrubs. That would provide an excellent width of native vegetation for birds and other wildlife (including the Eastern Barred Bandicoot) near the Burn. *Eucalyptus camaldulensis*, *E. ovata*, *Bursaria spinosa*, *Acacia melanoxylon*, *A. paradoxa*, *A. mearnsii*, *A. verticillata*, *Banksia marginata*, *Allocasuarina verticillata* and *Hymenanthera dentata* (Tree Violet), *Viminaria juncea* (Golden Spray), *Ozothamnos ferrugineum* (Tree everlasting), *Leptospermum continentale* and *L. lanigerum* are the major indigenous species to plant there.
   - Area (B_2) – this part is presently ungrazed and could be planted densely with trees that might, in time, suppress the Phalaris (especially where Drooping Sheoak is planted).
8. ***Weed control required***
   - Area (B_1) – most of the pasture appears to be alien species - see notes above.
   - Area (B_2) – a bad problem with Phalaris - see notes above.
9. ***Pest control required*** – none required
10. ***Signage required*** – some historical detail of the railway line could be provided at the Railway Bridge over the Grange Burn.
11. ***Fire protection*** – the cross-roads provide protection. Annual slashing of track and other work, as described above. The line east of Kenny St is to be grazed in the interim before an alternative is found.

3C. Kenny St (37-44-12.5/141-59-34.9) to Fairburns Rd (37-43-49.5/141-59-04.8)

1. ***Landscape*** – basaltic plains - from elevated area at Kenny St to a stream and cracking clay soils of low-lying areas in the middle, extending to Fairburn's Rd.
   - Area (C_1) – Kenny St to a bridge on a stream (37-44-01.9/141-59-20.0) - the reserve runs down a slope through a cutting to a tributary of the Burn. There is a sealed road adjacent on the north side for some distance west. Two or three houses abut this reserve on both sides. At least one of the landholders in the middle and lower sections has installed electric tapes across the reserve and uses it to hold a horse. Some planting along the line has been done at the top and lower ends. The bridge has been partly demolished.
   - Area (C_2) – Tributary of the Burn (37-44-01.9/141-59-20.0) to Fairburns Rd (37-43-49.5/141-59-04.8). This is a fairly low-lying area, the rail line is on a slight embankment, and there is no fence on the south side. There is a dam nearby to the north.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area (C_1) – Class III – there are patches of *Themeda triandra*, *Austrostipa* spp. and *Austrodanthonia* spp. on the banks but horses have severely affected the middle areas. *E. camaldulensis* (River Red Gum) and *E. ovata* (Swamp Gum) occur here. Quite a few shrubs have been planted on this section, including a few *Bursaria spinosa* and *Banksia marginata*, and a greater number of *Melaleuca decussata* on the eastern end. Some old Blackwood occur near the western end, near the stream and bridge.

   Area (C_2) – Class III - there is a fine, large patch of *Juncus pauciflorus* on the mid-section, and 5 large River Red Gums here. Otherwise, the area is obviously wet in winter and would contain many other native species if it were not grazed. This could be prime Eastern Barred Bandicoot habitat.
3. ***Fencing***
   - Area (C_1) – boundary fences are not intact, at least on north side. At least 2 electric strips cross the reserve in the mid section, making mini-paddocks for horses. There is an electric fence on the eastern edge of the bridge (37-44-01.9/141-59-20.0).

   Recommendation – this area is very messy and no cross-fence should be permitted at all in this short section because there are too many adjacent landholders. Through-access for management or recreation would be severely restricted if cross-fences are left there. If there is need for a fence at the bridge then the electric fence there needs to be replaced with a conventional fence.
   - Area (C_2) – the boundary fence on the southern side has been removed. There is an electric fence across the reserve at 37-43-59.2/141-59-17.7.

   Recommendation - it appears that the landholder owns both sides of the reserve at this point, for there is a gate here on the north fence. The southern boundary fence needs to be replaced, with provision for a 10-20-m stock crossing (and fuel break). The electric fence at 37-43-59.2/141-59-17.7 will need to be removed.
4. ***Gates***
   - Area (C_1) – there is no gate off the western side of Kenny St (37-44-12.5/141-59-34.9) and none is required if the fence is removed there
   - Area (C_2) – if the landholder owns paddocks both sides of the reserve then a crossing of approx. 20 m has to be allowed at 37-43-59.2/141-59-17.7. If the southern boundary fence is replaced then that will mean 2 gates placed centrally on the trail. The gate at Fairburn's Rd (37-43-49.5/141-59-04.8) is not easily opened now - it and the fence there should be removed if a stock crossing is put in near the bridge.
5. ***Structural works on culverts/bridges***
   - Area (C_1) – this low, 20 m bridge (at 37-44-01.9/141-59-20.0) has partially disintegrated. A few of the planks have bowed under the burden of 20 cm of soil and stones, and collapsed. Planks on the eastern section appear to have been deliberately removed. However, this short bridge could be made usable to pedestrians by removing the overburden and replacing damaged or missing planks, for the general structure of the bridge seems to be sound (incidentally, the cross-poles are routed with 10⬩67 or 12⬩64). Foot traffic along this reserve will be impeded in winter if there is no bridge, since the stream may be too wide to use stepping-stones.
   - Area (C_2) – repairs to bridge (near 37-44-01.9/141-59-20.0) as detailed above. There is also a platform off Fairburn's Rd (37-43-49.5/141-59-04.8) that appears to be sound.
6. ***Track clearance and alignment***
   - Area (C_1) – the rail line is generally clear but may need slashing on an annual basis, from Kenny St down to the western bridge (37-44-01.9/141-59-20.0).
   - Area (C_2) – the rail line is clear but may need slashing on an annual basis, from Fairburn's Rd back to the bridge (37-44-01.9/141-59-20.0).

7. ***Revegetation required***
   - Area (C_1) – there has been a lot of planting in this area, mostly in sympathy with the environment, and presumably by adjacent landholders. Nothing more envisaged at present.
   - Area (C_2) – regeneration of River Red Gums (and probably Blackwood) would be prolific if the area were fenced from stock. If fenced, consideration could be given to application of herbicide to large patches in the vicinity of the remnant trees. This would only be effective if the River Red Gums had flowered in the summer and had seed to drop in early spring. Some planting of other local species suited to that position in the landscape (e.g. *Acacia verticillata*, *Leptospermum lanigerum* and *E. ovata* (on the wetter sites), *Bursaria spinosa* and *Banksia marginata* (on the drier sites) could be done.
8. ***Weed control required***
   - Area (C_1) – patches of Gorse, *Genista* and Briar Rose at lower end.
   - Area (C_2) – a couple of patches of Gorse need to be treated.
9. ***Pest control required*** – nothing required
10. ***Signage required*** – none required.
11. ***Fire protection*** – the roads and grazed break at the eastern end provide protection. Annual slashing of track and other work, as described above.

3D Fairburns Rd (37-43-49.1/141-59-04.0) to Pelchens Rd (37-43-35.6/141-58-35.6)

1. ***Landscape*** – basaltic plains - from cracking clay soils of low-lying areas up a slope to Pelchens Rd, the start of a more elevated plain to the west.
   - Area (D_1) – Fairburns Rd (37-43-49.1/141-59-04.0) to corner post on north where Pelchens Rd deviates from the reserve (37-43-38.3/141-58-43.2). This stretch is very wet in winter and appears to be saline in parts. One wet portion, near the dam on north side, appears to have had pigs contained on the north side of the embankment. This low-lying section has been degraded by stock and contains juvenile clumps of *Juncus acutus* (also prevalent in paddocks to south).
   - Area (D_2) – corner post on road reserve (37-43-38.3/141-58-43.2) to Pelchens Rd (37-43-35.6/141-58-35.6) – this is the upper slope and the railway passes through a cutting 2-3 m deep at the shoulder.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area (D_1) – Class V and III - Fairburns Rd to corner post on north where Pelchens Rd deviates from the reserve (37-43-35.5/141-58-35.1). The better flora is on this western, higher slope where there are 2 live and one dead very old Blackwood.
   - Area (D_2) – Class II or III - from the corner post of road reserve (37-43-35.5/141-58-35.1) to Pelchens Rd crossing (37-43-35.6/141-58-35.6). This elevated stretch has not been so heavily grazed (it seems much less fertile) and it contains significant *Austrodanthonia*, *Themeda*, *Poa sieberana*, *Elymus scaber* and probably other native grasses.
3. ***Fencing***
   - Area (D_1) – from Fairburns Rd to a dam (at 37-43-42.9/141-58-52.0) there are cross-fences, at 37-43-47.9/141-59-02.1, 37-43-44.9/141-58-56.7 and 37-43-42.9/141-58-52.0 (the latter is electrified, as is the Fairburn's roadside fence). There is now no fence on the north side.

   Recommendation – the cross-fences need to be removed. The north side must be restored.
   - Area (D_2) - there is a north boundary fence only where Pelchens Rd runs along the rail reserve (from the corner post at 37-43-35.5/141-58-35.1) to Pelchens Rd crossing (37-43-35.6/141-58-35.6). The wires (and many posts) have been removed from the north side of the rail reserve fence extending east from the corner strainer post.

   Recommendation – the north side fence must be restored; the cross-fence and gate at Pelchens Rd crossing could be retained to deter trail bike usage. However, if illegal cross-fences are installed again in the middle section then this fence should be removed to counter the problem.
4. ***Gates***
   - Area (D_1) – there is no gate onto Fairburns Rd, and none on cross-fences. No gate will be needed on the centre line of the trail at Fairburns Rd if both ends of the reserve are left open (unfenced).
   - Area (D_2) – the gate is centred on the track at Pelchen's Rd.
5. ***Structural works on culverts/bridges***
   - Area (D_1) – the large pipe culvert through the embankment near the little dam at 37-43-42.9/141-58-52.0 has been boarded almost over.
   - Area (D_2) – this section has a rather deep cutting.
6. ***Track clearance and alignment***
   - Area (D_1) – nothing required (the track is on the embankment) apart from annual slashing.
   - Area (D_2) – nothing required (the track will lie mostly in the cutting) apart from slashing.

7. ***Revegetation required***
   - Area (D_1) – this is an area where an active restoration program could be implemented to improve a very degraded section. Local species suited to that position in the landscape (e.g. *Acacia verticillata*, *Leptospermum lanigerum, E. camaldulensis* and *E. ovata* (on the wetter sites), *Bursaria spinosa, A. melanoxylon* and *Banksia marginata* (on the drier sites) could be planted. *A. melanoxylon* occurs on the western slope and should regenerate if protected from grazing.
   - Area (D_2) – there is scope for planting *Bursaria spinosa*, *A. melanoxylon*, *Banksia marginata* and *Allocasuarina verticillata* on this section, avoiding areas that have good native grass presence.
8. ***Weed control required***
   - Area (D_1) – *Juncus acutus* urgently requires control measures (some action has been taken by the landholder in the adjacent paddock on the south side).
   - Area (D_2) – one or two briar roses could be removed and a few small *Juncus acutus* in the cutting need attention (there are also *J. pauciflorus* present that should not be sprayed).
9. ***Pest control required*** – nothing required.
10. ***Signage required*** – nothing required.
11. ***Fire protection*** – the roads and grazed break at the western side of Pelchens Rd provide protection. Annual slashing of track. Cross-fences within the reserve to be removed.

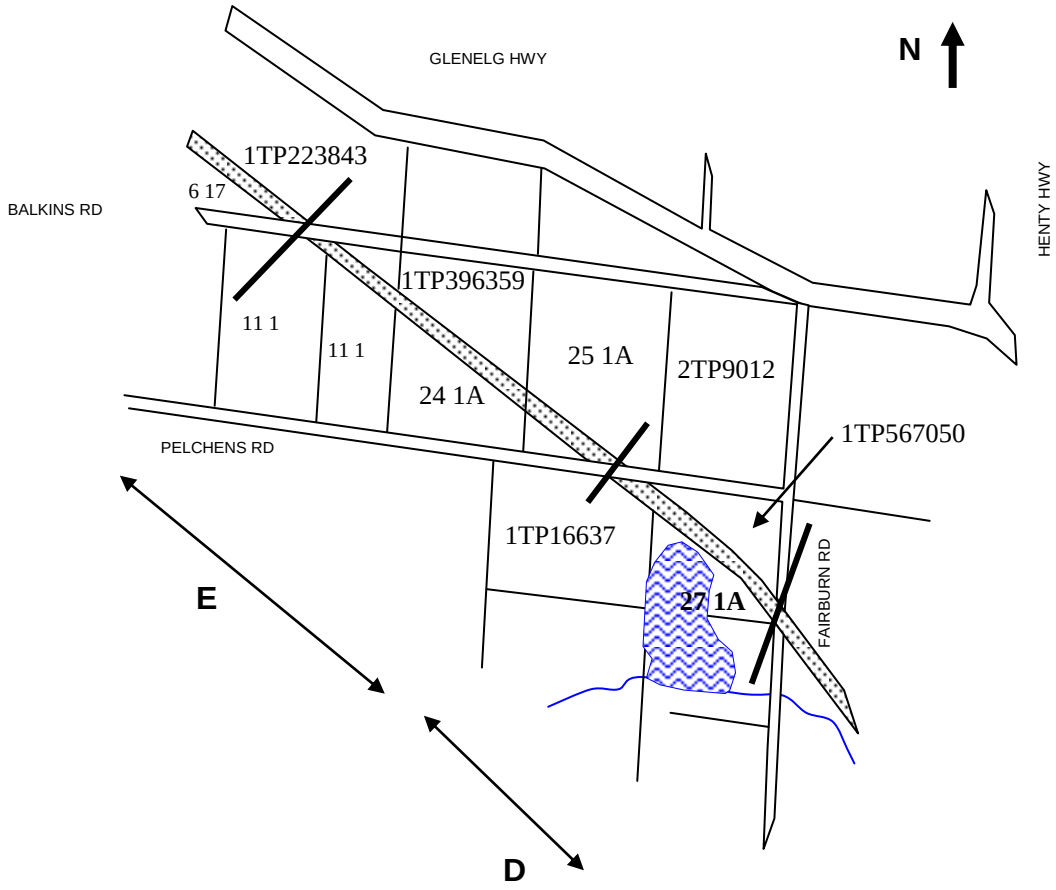


Figure 5. Unit 3E & D showing allotment numbers

3E Pelchens Rd (37-43-35.5/141-58-35.1) to Balkins Rd (37-43-19.3/141-57-57.9)

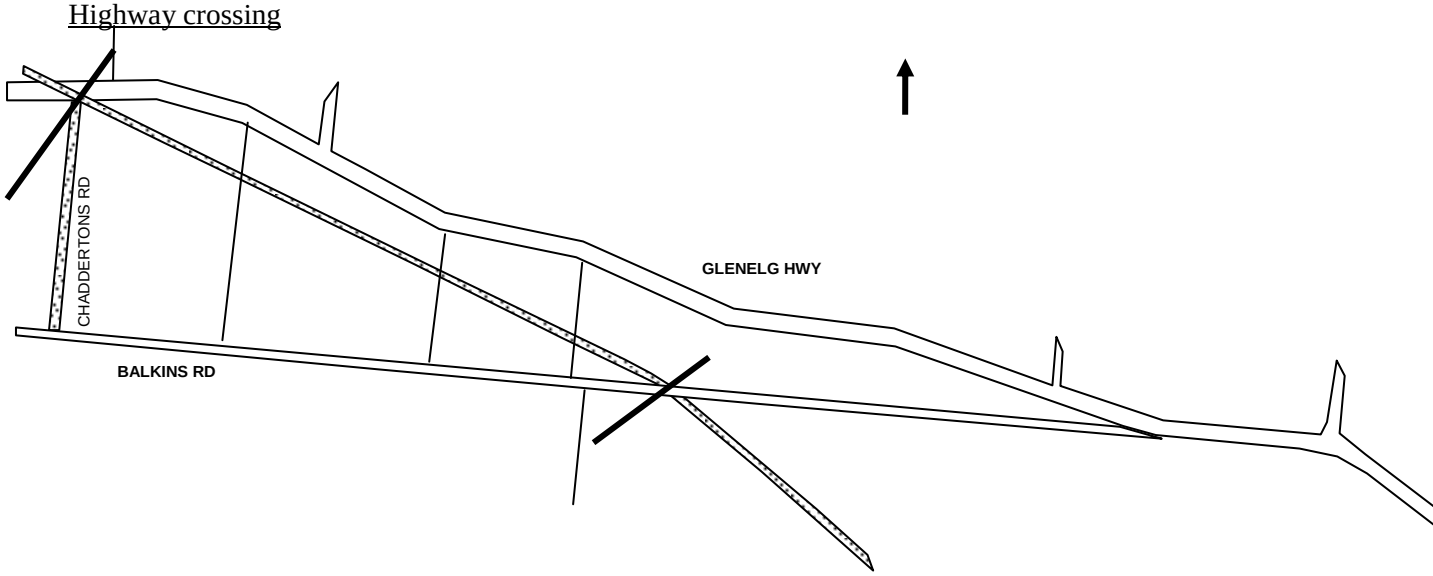
1. ***Landscape*** – basaltic plains, comparatively flat. The Dept Property & Services set up the Dundas EDM baseline installations (concrete-filled metal pipes of some 50 cm diameter) here, starting at 37-43-18.5/141-57-56.4 near Balkins Rd and extending eastwards to near Pelchens Rd, with pipes every 100 m or so for 1 km along the northern edge of the track. DPS request that the track be kept open.
   - Area (E_1) – Pelchens Rd (37-43-35.5/141-58-35.1) to a cross-fence at 37-43-27.8/141-58-17.6. This area is now unfenced to the south and resembles the adjacent grazed paddock.
   - Area (E_2) – cross-fence and gate at 37-43-27.8/141-58-17.6 to a cross-fence and gate (37-43-23.8/141-58-08.4). The fences on this central section have been retained and both sides planted.
   - Area (E_3) – cross-fence and gate (37-43-23.8/141-58-08.4) to Balkins Rd 37-43-19.3/141-57-57.9). This western section abuts a small paddock to the north, where the adjoining fence has broken down.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Area (E_1) – Class VI or V - degraded to pasture species from Pelchens Rd to a cross-fence at 37-43-27.8/141-58-17.6. The site appears to have been fertilised and treated as an improved pasture. There is one old pine at 37-43-30.2/141-58-22.2, and 2 River Red Gums on this section.
   - Area (E_2) – Class II or III - this stretch has been planted along both sides of the line, mainly with indigenous species, although a few *C. glauca* were planted that will sucker and degrade the area if left there. There are 2 mature River Red Gums present, also a good stand of *Themeda*, although also considerable Phalaris. One *A. baileyana*, at the eastern end, ought to be removed.
   - Area (E_3) – Class II - the western section from the cross-fence and gate (37-43-23.8/141-58-08.4) to Balkins Rd (37-43-19.3/141-57-57.9). The north fence has fallen down and a sheep were seen in this section. Nevertheless, it contains a good stand of Swamp Gum and River Red Gum, together with some excellent *Themeda*, *Austrodanthonia* and *Austrostipa*. There is also some good native grass near the first cluster of EDM pipes, between the reserve cross-fence at Balkins Rd (37-43-19.3/141-57-57.9 and the actual Balkins Rd crossing.
3. ***Fencing***
   - Area (E_1) – there is a farm "crossing" over the reserve, alongside the Pelchens Rd (a gate near the road opens through the north boundary fence to a paddock). There is no south boundary fence.

   Recommendation – restore the fence on the southern side, leaving a stock crossing of 20 m width adjacent to the road. The end of the reserve would need to be fenced, and this could be angled so as to facilitate stock passage across the reserve. A gate would be needed on the centre of this cross-fence. The gate on the cross-fence at the western end would be removed.
   - Area (E_2) – this section is well fenced, with good gates centred on the track at either end.
   - Area (E_3) – the fence on the north side, adjacent to a small, triangular paddock, has almost collapsed and allows stock into the reserve.

   Recommendation – the north fence needs to be made stock-proof or replaced. The cross-fence and gate off Balkins Rd would be removed.
4. ***Gates***
   - Area (E_1) – the gate is centred on the track at Pelchens Rd. If a stock crossing is put in (see above) then another gate would be needed.
   - Area (E_2) – both gates are centred on the track on this fenced area – both should be removed.
   - Area (E_3) – the gate off Balkins Rd at 37-43-19.3/141-57-57.9 is centred on the rail line. There is also a gate on the south fence at 37-43-19.7/141-57-59.2, opening into the paddock.
5. ***Structural works on culverts/bridges***
   - Area (E_1) – there is a culvert just west of the fence at 37-43-27.8/141-58-17.6
   - Area (E_2) – there is a culvert at the gate and cross-fence at 37-43-23.8/141-58-08.4
6. ***Track clearance and alignment*** – access has been maintained along this section, due to the EDM posts.
   - Area (E_1) – no action required if this stretch remains open to stock. The walk trail would need slashing on an annual basis if the reserve is fenced from stock.
   - Area (E_2) – annual slashing of path.
   - Area (E_3) – annual slashing of path.
7. ***Revegetation required***
   - Area (E_1) – this stretch could be revegetated (except for a 20-m stock crossing) if it is decided to replace the southern fence. Indigenous species listed above could be planted here. The present vegetation appears to be pasture species, therefore a dense planting would be desirable.
   - Area (E_2) – this area has been planted and nothing more is needed.
   - Area (E_1) – this area has enough indigenous species, incl. *E. camaldulensis* and grassland species.

8. ***Weed control required***
   - Area (E_1) – the pine at 37-43-30.2/141-58-22.2 should be removed if the area is to be re-fenced.
   - Area (E_2) – there are a few exotic planted tree species (*C. glauca* and *A. baileyana*) that need to be removed – and there are a few clumps of Phalaris present.
   - Area (E_3) – attention is needed to spray any clumps of Phalaris that appear, as well as Briar-rose.
9. ***Pest control required*** – nothing required.
10. ***Signage required*** – nothing required.
11. ***Fire protection*** – the roads and grazed break at the eastern end provide protection. Annual slashing of track and other work, as described above.

3F Balkins Rd (37-43-17.0/141-57-53.9) to Chaddertons Rd (37-42-41.3/141-56-31.6) at the Glenelg Highway crossing



1. ***Landscape*** – basaltic plains, elevated at either end of this section. This reserve is approximately 34 m wide. It is a valuable refuge for birds, even given the lack of understorey. Birds seen on a walk-through included: Grey Shrike-thrush, Brown Treecreeper (a significant sighting), Eastern Rosella, Red-rumped parrot, Whistling Kite, Willie Wagtail, White-plumed Honeyeater, Kookaburra.
   - Area (F_1) – Balkins Rd (37-43-17.0/141-57-53.9) fence to a cross-fence adjacent to the house on the south side (at 37-43-13.7/141-57-46.0) – [a temporary fence to be removed in 2008 or shortly after].
   - Area (F_2) – from the cross-fence at the house to another fence at 37-43-09.9/141-57-37.2, 220 m to the west. There was a water trough at 37-43-03.6/141-57-35.4.
   - Area (F_3) – from the cross-fence described above to a temporary cross-fence at 37-43-03.7/141-57-22.7, just west of a dam on the south side. The 203 mile peg is a few metres east of the cross-fence. Sheep once had the run of this section, through a gate on the south side. There is a water trough in this reserve, close to the south fence, at 37-42-58.1/141-57-09.3 [this trough has been removed].
   - Area (F_4) – cross-fence at 37-43-03.7/141-57-22.7 to Chaddertons Rd (37-42-41.3/141-56-31.6), at the Glenelg Highway crossing. This section also abuts Templeton's land, leased for grazing with cattle that broke into the reserve, until refenced in June 2004. The mid-section has an embankment, beginning at 37-42-54.6/141-57-01.8. This extends west of a dam on the north side at 37-42-48.8/141-56-49.3 and there is a long, shallow, pool there, lined both sides with 110-year-old trees.
2. ***Status of flora***
   - Area (F_1) – Class IV or V – there are one or two *E. ovata*, with small patches of *Themeda* but mostly Fog Grass, sub-clover and other pasture species. This area each side of the track had been slashed fairly frequently. That, and grazing, has severely reduced the content of native species (there is more *Themeda* immediately adjacent on the roadside and in (F2)). The best option is to establish trees.
   - Area (F_2) – Class IV – this area is grazed by a horse. There is also a dump of mulch material near the north fence. However, there are significant patches of *Themeda* between areas of Yorkshire Fog and other pasture species, a fact that suggests that the grazing has not been as severe as usually observed with horses (horses can crop herbage very close to the ground, especially when hungry, destroying the crowns). Occasional grazing of native grassland areas may be beneficial where fire cannot be used as a management tool but continuous grazing is inevitably deleterious (see App. 1).
   - Area (F_3) – Class III – this area was grazed by sheep, given access through a gate in the south fence. There is some *Austrodanthonia*, *Poa sieberana* and *Themeda triandra*, although the grassland has been badly degraded by stock. This vegetation may recover, given cessation of grazing.

There are several mature Swamp Gums near the eastern end and many River Red Gums and 20 Blackwoods near the west end of this stretch. The best option is to allow regeneration of those species.

- Area (F_4) – Class II or III – this stretch contains at least 60 mature River Red Gums, 10 Blackwoods and a mature Manna Gum. The latter tree (near 37-42-54.6/141-57-01.8) has been windthrown but survived. There is much evidence of *Themeda triandra*, *Juncus pauciflora*, *Austrodanthonia* spp., *Lomandra filiformis*, *Lomandra mutilflora*, *Austrostipa* spp., *Pelargonium*, *Pimelia curviflora, Eryngium ovinum, Arthropodium strictum* and *Caesia calliantha.* However, the area has been heavily grazed by cattle in recent time and the dung pats have allowed pasture weeds (including small patches of Bent Grass) to invade. Even so, 43 native species were found here (see Table 3) and it has good potential for restoration. *Acacia paradoxa* and *Allocasuarina verticillata* are present on the western boundary and will slowly infiltrate the reserve once stock are excluded. The eucalypts will regenerate too, and a few 10-cm tall seedlings were seen in Nov. 2005 in the vicinity of mature trees.

3. ***Fencing***
   - Area (F_1) – the side fences are in good order. The fence on Balkin's Rd is electrified, without a gate.
   - Area (F_2) – there is an electric cross-fence adjacent to the house, with a gate near the side fence at the house. Other fences are sound.
   - Area (F_3) – a cross-fence west of the house (at 37-43-09.9/141-57-37.2) was elexctrified and had no gate. The fence on the southern side is wonky but could, with a little effort, be rendered sheep-proof.
   - Area (F_4) – there is a cross-fence at 37-43-03.7/141-57-22.7 (just west of the dam on the south side). The fence on the southern side is just adequate, although the owner needs to repair it to keep it stock-proof. The fence on the north side had been knocked down by cattle, which roamed the reserve.

   Recommendation – the fencing arrangements on this section of reserve must be rationalised, in order to overcome what the Committee sees as a most unsatisfactory condition for conservation, access for walkers and management vehicles, and what adjacent landholders might see as a need for privacy, grazing or fire protection. A compromise is proposed, to achieve the following objectives:

   i. at the eastern end, reduce the total length of alienated reserve to an extent that is compatible with fire protection (a break of 150 m is provided, consistent with the arrangements at Parkwood) yet not excessively detrimental to conservation, aesthetics and the functioning of a walking trail;
   ii eliminate some cross-fences (reducing the number of "paddocks"), making it less obstructive to walkers, management vehicles and CFA, and removing grazing from much of the reserve, providing greater opportunity for restoration of native flora on this important area;
   iii at the eastern end, reduce the potential impact walkers might have on the privacy of occupants of the house adjacent to the reserve by removing the cross-fence at the house;
   iv shift the fence at Balkins Rd 100 m to the west, and place a gate centrally on the line;
   iv replace the northern side fence so that cattle cannot graze the reserve on the western portion (F_4);
   v encourage the adjacent landholder south of Area (F_4) to effect repairs to the side fence.

   Proposed work – the above objectives can be satisfied by the following actions, and provide a grazed break of over 200 m in front of the house [this was agreed at a site meeting on 6 August 2004]:

   (i) remove the cross-fence at Balkin's Rd, shifting it approx. 100 m west, and fit a locked gate in the middle of that fence, with a "tombstone" entry for walkers alongside;
   (ii) remove the cross-fence now adjacent to the house (this fence is a needless barrier to trail users);
   (iii) further west, shift the cross-fence that was at 37-43-09.9/141-57-37.2 and place it approx. 70 m to the east (to reduce the grazed section near the house), and fit a gate in the middle of that fence;
   (iv) remove the next cross-fence near the first dam [it was agreed on 6 Aug 2004 that this could stay as an interim measure until the south fence was repaired];
   (v) fit a central gate in the cross-fence at Chadderton Rd, with a "tombstone" entry for walkers;
   (vi) the fence on the south side (Area F_4) is old – the recently attached barbed wire needs to be shifted to between the bottom 2 & 3 wires, and new droppers used to replace those broken, or replace fence.

4. ***Gates***
   - Area (F_1) – a locked gate, located centrally on the line, needs to be provided for the eastern end.
   - Area (F_2) – the proposed gate, in the new position, has since been located centrally on the line.
   - Area (F_3) – there is a broken-down cocky gate at 37-43-56.9/141-57-28.7, opening to the south.
   - Area (F_4) – there is a gate to the south at 37-42-55.4/141-52-02.7 but no gate at Chadderton's Rd.

5. ***Structural works on culverts/bridges***
   - Area (F_3) – there is a pipe culvert at 37-43-04.9/141-57-25.1 that needs a little attention.
   - Area (F_4) – there is a pipe culvert at 37-42-52.0/141-56-55.1, and a wood culvert at 37-42-48.8/141-56-49.3, near the dam, that needs attention. Further west there is a culvert at 37-42-45.0/141-56-39.9.

6. ***Track clearance and alignment***
   - Area (F_1)-(F_4) – OK - will need annual slashing (2 m width is ample) to allow easy access.
7. ***Revegetation required***
   - Area (F_1) – the reconstituted 80-m section off Balkin's Rd was planted with Swamp Gum, River Red Gum, Blackwood, Manna Gum, Sweet Bursaria, Silver Banksia and Drooping Sheoak in 2006. The latter species, when planted densely, is very effective at suppressing infestations of exotic grass.
   - Area (F_2) – this section will be grazed or mown. Most, except the track, was slashed in 2004-2007.
   - Area (F_3) – no systematic revegetation program is planned here because the main species will regenerate since grazing has been removed. Shifting the cross-fence 70 m to the east will put the best of the *Themeda* grassland into the ungrazed area. In Nov. 2004 and thereafter, ~100 m of the S side of the reserve was slashed. This will provide a comparison of 2 grassland management methods.
   - Area (F_4) – this area will regenerate the main species now that grazing has ceased. In addition, 3 x 100-200 m areas west of the trees near the dam will be burned on rotation to promote native flora.
8. ***Weed control required***
   - Area (F_1) – some Phalaris may need controlling here when grazing/mowing is stopped. The area is not badly infested with Phalaris and this can be eliminated with herbicide.
   - Area (F_2) – grazing and mowing should control weeds here, although any Phalaris should be sprayed.
   - Area (F_3) – Phalaris near the dam needs control. There are a few spots of Bent Grass - a bad weed. Slashing is only permitted on southern edge (eastern end).
   - Area (F_4) – some *Juncus acutus* (about 30 small plants) needs to be spot-sprayed just west of the dam and cross-fence at 37-43-03.7/141-57-22.7. No *Sparaxis* seen near drains. There are at least 20 small (0.5-2 m diameter) circles of Bent Grass that must be eradicated before it takes control. There are many isolated plants of Phalaris, exotic Soursob (large-leaf, not the native *Oxalis perennans*) Paspalum, Briar and Spiny Rush– urgent action (with follow-up) is needed to control these threats.
9. ***Pest control required*** – nothing required, although there are old rabbit burrows in one part of the bank.
10. ***Signage required*** – the Chadderton's Rd end is a good starting point for a walk in either direction along the rail reserve. A future sign should indicate the presence of the trails and provide other information.
11. ***Fire protection*** – the Glenelg Highway is adjacent (200 m to the north) and roads at either end provide protection. There is a grazed 250 m stretch near the house and a 200 m section burned in 2005 in an open stretch west of the dam. There are 2 other almost treeless 200-m stretches further west. Adjacent landholders may arrange and assist with burning of <u>one</u> section each year (no stretch to be burned more often than every 4 years). This will assist restoration of native flora through suppression of exotic pasture grasses. No cultivation or grading is to be undertaken to provide perimeter breaks. A note (or sketch map) must be made of the section burned each year.

Unit 3F (Area F4) – Looking east from Chadderton's Rd in spring 2004 – excellent native grassland degraded at this time by cattle. (Photo: B. Warton).

Unit 4 – Glenelg Highway Crossing at Chadderton's Rd to Sandy Creek

This unit is broken into 5 sections (G-K) and includes the Bochara Station Ground, 2 creek crossings and one road crossing at Russell's Road (Figure 6).

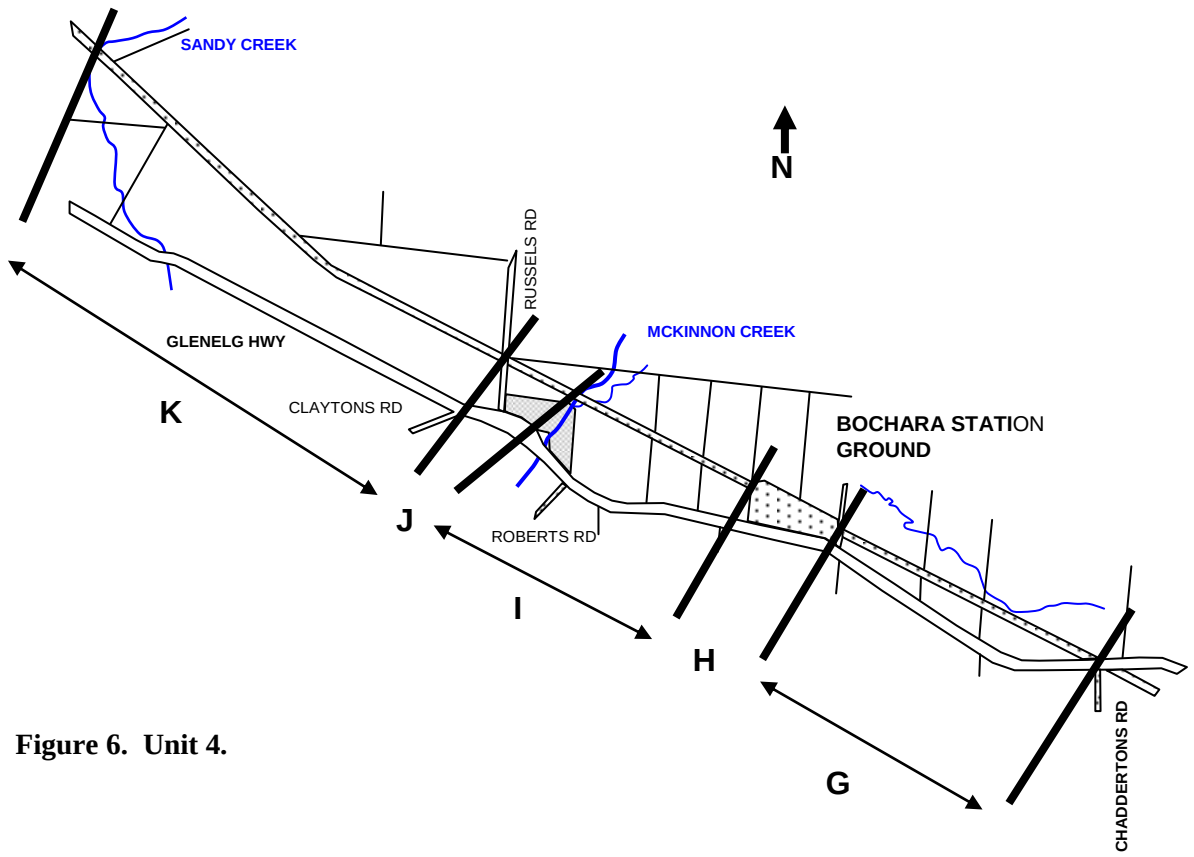


Figure 6. Unit 4.

4G Glenelg Highway (37-42-39.7/141-56-28.1) to McDonald's Rd at Bochara Station (37-42-16.1/141-55-34.1).

1. ***Landscape*** – an interesting and easy walk on open river red gum country, with a view north across a creek. There is a convenient parking bay on the south side of the highway, some 200 m east of the grove of *Allocasuarina verticillata* (Drooping Sheoak) and railway crossing, as a starting point. The first part of the railway reserve is a cutting, then along an embankment, then back to tableland.
2. ***Status of flora/fauna***
   - Class I – the first stretch has excellent patches of *Themeda triandra* (not well represented further towards Wannon) and Red-legged Grass (*Bothriochloa macra*), with *Austrodanthonia* (Wallaby Grass), *Austrostipa* (Spear Grass), *Microlaena stipoides* (Weeping Grass), *Elymus scabrum* (Common Wheat-grass), *Poa* (Tussock Grass), *Drosera* spp. (Sundew), *Convolvulus remotus* (Pink Bindweed), *Lomandra filiforme* (Mat-lily), *Caesia caliantha* (Blue Grass-lily), *Tricoryne elatior* (Yellow Grass-lily), *Dichelachne micrantha* (Short-hair Plume-grass) and other grassland species. *Amphibromus nervosus* (Swamp Wallaby-grass) and *Eleocharis acuta* (.Arrow-grass) are prominent in wet areas (e.g. near the Bochara end). There is excellent native grassland at the Glenelg Highway entrance and *Allocasuarina verticillata* (Drooping Sheoak) occurs on the roadside. Some good, mature *E. camaldulensis* (River Red Gum) and a few *Acacia melanoxylon* (Blackwood) are present.
   - Class II or III – the major middle part of this section has rather sparse cover. A few mature pines need removing. Sheep camps in the reserve are a current problem, as is the all-year access to the reserve by stock (native grassland must not be continuously grazed; spelling is essential from spring through to early summer). There are about 10 large River Red Gums along this middle stretch. Four Striped Legless Lizard (*Delma impar*), a Three-lined Skink (*Bassiana duperreyi*) and a Copperhead Snake have been located by survey on this section in November 2004.
3. ***Fencing*** – the north side fence is good but the south side is very poor, with 3 cocky gates left open to allow stock free run of the reserve. A fence has recently (mid 2003) been put across the reserve on the east end opening onto the Glenelg Highway. The Committee was not consulted on that action.

Recommendation – a new south-side fence is required along this 2-km section. This should be a priority for action for conservation of the Striped Legless Lizard and potential habitat for Eastern Barred Bandicoot. Urgent action is required. [The south side fence was renewed in 2005 and stock removed].

4. ***Gates*** – the gateways on the southern fence line (at 37-42-28.7/141-56-01.4, 37-42-26.9/141-55-57.3 and 37-42-21.8/141-55-45.8) should be closed off, since access can be obtained from either end (at Glenelg Highway and at the Bochara Station ground) and from a gate on the Glenelg Highway. [The gates on both ends of the reserve were re-located to the centre of the track in 2005].
5. ***Structural works on culverts/bridges*** – there is erosion below one culvert on the embankment (37-42-31.5/141-56-09.2) and a small amount of rock fill is needed to control/rectify the problem.
6. ***Track clearance and alignment*** – none required.
7. ***Revegetation required*** – none at present. The open grassland should be maintained on pristine areas. Some natural regeneration of trees is occurring.
8. ***Weed control required*** – there is no *Sparaxis* present. There is a significant but isolated presence of Phalaris, Yorkshire Fog Grass, Sweet Vernal, Paspalum, Bent Grass and other species, and these need to be spot-sprayed in the short term. [this has been undertaken annually in spring/summer since 2005 but remains a large problem at the western, fertile end of the reserve].
   There are 8 Pines (1 v. large, 3 large, 3 medium & 1 small tree) that need to be removed to prevent them throwing seeds along the reserve once sheep are removed. The root competition and blanket of needles from the pines has also affected the vegetation within influence of the crowns.
9. ***Pest control required*** – nothing required.
10. ***Signage required*** – sign ultimately needed at start of section near Glenelg Highway.
11. ***Fire protection*** – the Glenelg Highway at one end and the lane at Bochara Station at the western end provide protection but there is also an opportunity to provide a burned break of 100-150 m in the central section. That would be done in a stretch free now of trees and where burning would help restore the native grassland. Annual slashing of the track is also required.

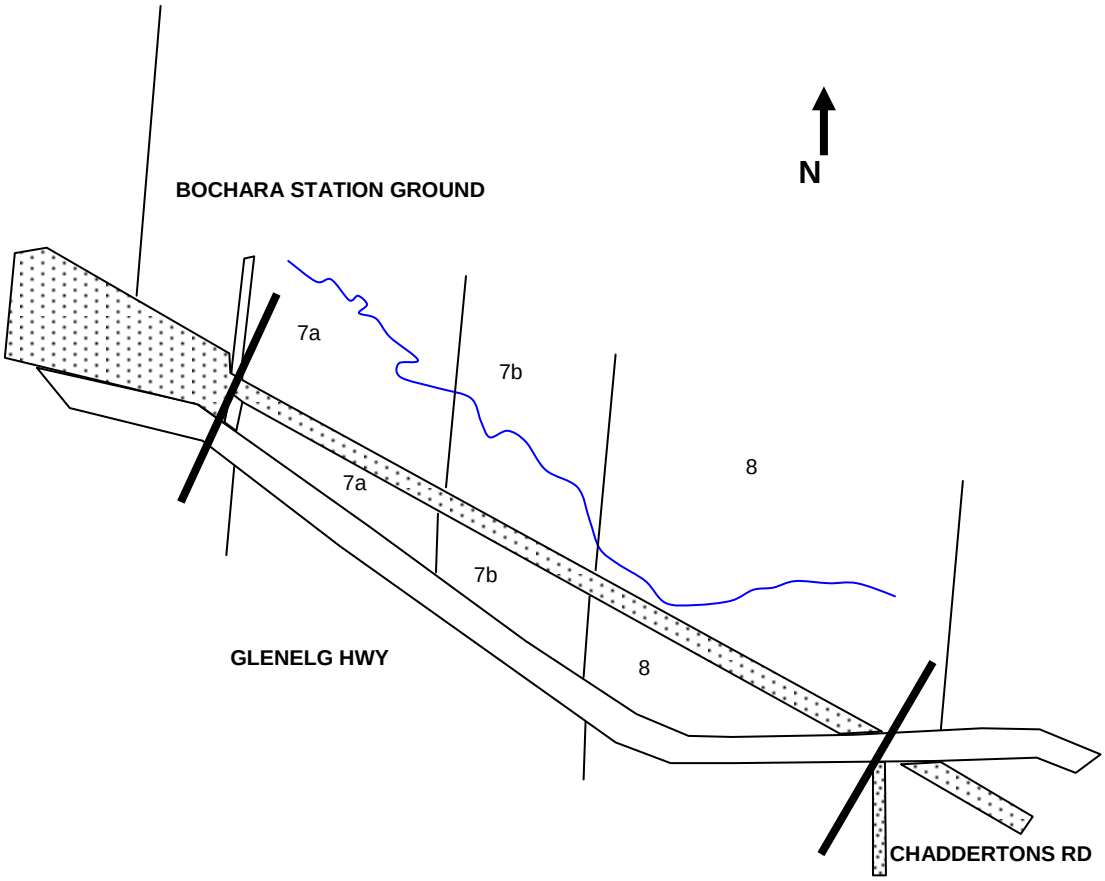


Figure 7. Unit 4 Section G.

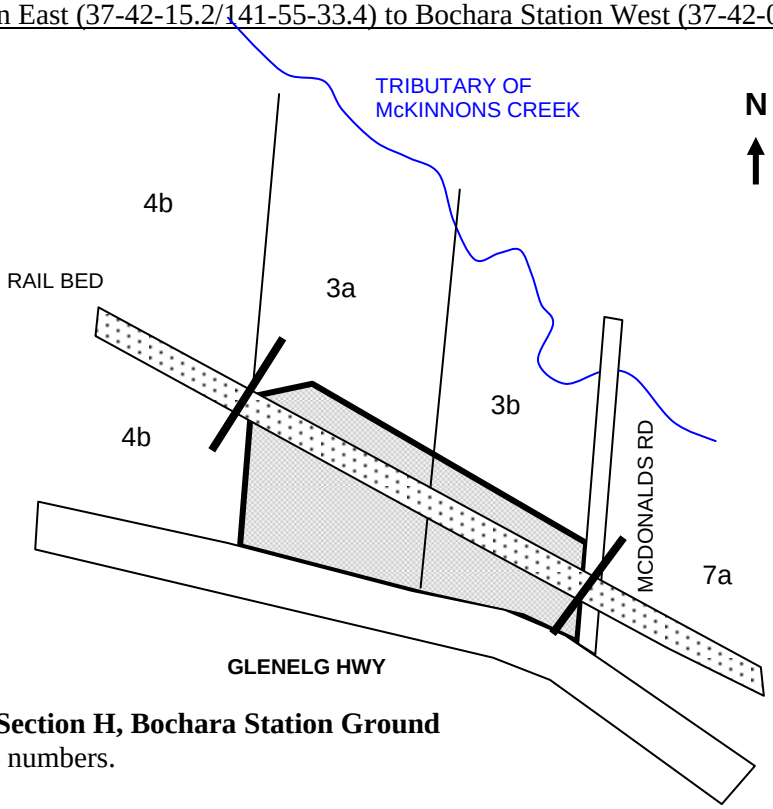


Figure 8. Unit 4 Section H, Bochara Station Ground showing allotment numbers.

1. ***Landscape*** – The Station Ground occupies approx. 8 ha of tableland, the southern part winter-wet. Some mature river red gums, with a hedge of *Acacia paradoxa* on southern edge. There is a wide ditch near the NW corner, apparently resulting from extraction of earth to form the station platform. This ditch contains water in winter and spring and is lined with River Red Gums that may date from 1887.
2. ***Status of flora/fauna***
   - Class IV or V – the area has been degraded by agricultural and other practices. There are many weeds present (e.g. Wild Oats, Sorrel, Paspalum, Flatweed, Thistle, Rough Dogstail-grass and Sweet Vernal), with some native grassland species interspersed. The worst patches of Phalaris occur along the south edge of railway line near the middle, near the first circle (37-42-13.0/141-55-23.0), on the eastern edge south of the rail line and in the corner north of the line, and 3 large patches along the southern boundary. There are also 2 small patches of Bent Grass there. Severe infestations of *Oxalis purpurea* occur on the W third, both sides of the track, with the furthest expansion on S.
   - Class III – some regeneration of river red gums is occurring along southern side where there are significant areas of native grassland species, including *Themeda triandra*, *Austrodanthonia* spp., *Poa labillardiera*, *Austrostipa* spp., *Microlaena*, *Elymus scaber*, *Geranium spp.*, *Pimelia curviflora*, *P. humilus*, *Agrostis avenaceae* (Blown Grass), *Drosera peltata*, *Convolvulus*, *Lomandra filiformis*, *Rhagodia nutans* (Nodding Saltbush), *Acaena echinata* (Sheep Burr), *Acaena novae-zelandiae* (Bidgee-widgee). The strip between the northern boundary and railway line is also in this class. *A. paradoxa* (Hedge Wattle) is prominent on the southern side and road reserve. Surveys in 2004 have revealed the presence of Striped Legless Lizard (*Delma impar*), Three-lined Skink (*Bassiana duperreyi*), Copperhead Snake and Swamp Rat (*Rattus lutreolus*) on the reserve. A management objective is to restore the native grassland species and optimize the habitat for Striped Legless lizard. [Spot-spraying of Phalaris &Paspalum in 2005-2007 has partially restored several large areas]
3. ***Fencing*** – an old section of post-and-rail fence exits on the west end. A new fence has been erected inside the old post-and-rail fence on the west side of the reserve. In about 1991, two small fenced circles were installed (at 37-42-13.0/141-55-23.0 and 37-42-11.0/141-55-18.0) to exclude grazing. The remnants of those fences are still present and one has continued to exclude stock.
   Recommendation – the reconstruction of a post-and-rail fence might best be achieved on the visible eastern end of the reserve, adjacent to McDonald's Rd.
4. ***Gates*** – OK, although the gate on the eastern end is not on the rail line. The current slashed line follows a line to the north of the line, perhaps on an old Station service track, to the end of the ramp and thereafter follows the bed of the old line. There is also a good 'cocky' gate onto the Glenelg Highway (at 37-42-15.4/141-55-22.2) and formed track onto the railway line area from that point. There is a good gate on the line at the western end (37-42-07.2/141-15-14.1), adjacent to a farm shed to the south.

A remnant of an old post-and-rail fence at Bochara Station Ground. The committee hopes to install a replica section on the eastern end.

Another fence occurs 8 m west, installed when the Sugar Gums were planted in this belt pre-2000.

(Photo: B. Warton)

5. ***Structural works on culverts/bridges*** – none
6. ***Track clearance and alignment*** – annual slashing required
7. ***Revegetation required*** – sow or plant *Bursaria spinosa* (Sweet Bursaria), *Allocasuarina verticillata* (Drooping Sheoak), *Acacia melanoxylon* (Blackwood), *Banksia marginata* (Silver Banksia) and *Eucalyptus viminalis* (Manna Gum) on areas sprayed for Phalaris control. Natural regeneration of River Red Gum and Hedge Wattle will occur. Native flora will expand once exotic grasses are controlled.
8. ***Weed control required*** – there are many large patches (and many isolated plants) of Phalaris – these need spraying but other weeds can be discouraged by periodic burning. Spot-spraying (a tedious operation) is essential, to allow native grasses to expand. The Station Ground can be burned with assistance from the Bochara CFA brigade. The adjacent landholder has made an 8-m-wide slash near the west fence and along the centre of the reserve and that should continue, since it might help control pasture grasses. The large infestation of *Oxalis purpurea* in the W half (including the fenced W end) needs to be controlled, if possible, since it will continue to advance through the grassland. It presently infests areas in total 1 ha.
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – historical sign boards to be erected.
11. ***Fire protection*** – the adjoining landholder has instituted a mown break inside the reserve on the western boundary, and that practice will be continued. There is an 85-m grazed break on the rail reserve immediately west of the Station Ground. Contacts have been made with the Bochara Fire Brigade with respect to burning of sections of the Bochara Station Ground, although the timing would need to fit in with the conservation of the Striped Legless Lizard that has been found there (a late autumn burn seems preferable, when the lizard retires underground).

A rural scene west of Bochara Station Ground – with some River Red Gum regeneration in the foreground.

(Photo: B. Warton)

4I Bochara Station West (37-42-07.2/141-55-14.1) to McKinnon Creek (37-41-50.6/141-54-36.3)

1. ***Landscape*** – tableland, with scattered, mature River Red gums.
2. ***Status of flora***
   - Class III or Class IV – a good stand of River Red Gum occurs near McKinnon Creek and a good scattering along the whole length.
3. ***Fencing*** – 2 old, temporary cross-fences need removing (at 37-41-57.7/141-54-52.8 and 37-41-55.9/141-54-48.1). There was a tree across a fence on southern side (at 37-41-54.0/141-54-44.2).
4. ***Gates*** – there is one gate on a cross-fence (at 37-42-06.2/141-55-11.4).
5. ***Structural works on culverts/bridges*** – the original bridge here was quite impressive and described as '*a pile bridge which has 21 openings of 15 feet each*' (therefore approx. 100 m in length). This was the only bridge demolished when the line closed in 1977. The timbers were taken to Portland. Crossing of the creek is difficult when in flood. It may eventually require some engineering – the creek floods periodically and impressively. Passage is impeded by the growth of Spiny Rush in the stream and a sharp descent from the high mounds that form the base of the track at each end of the former bridge.
   When there is only a little water in the stream an interim solution is for the walker to cross the narrow stream bed in thongs or in rubber boots – this can be done with no danger at all in seasons other than winter or early spring.
6. ***Track clearance and alignment*** – OK
7. ***Revegetation required*** – none required at present.
8. ***Weed control required*** – some *Juncus acutus* (Spiny Rush) on both sides near McKinnon Creek needs attention (this also occurs abundantly in adjacent paddocks and complementary action there is needed from the landholders). Spiny Rush seed is swept down the creek from sources far removed and the problem will recur until those massive infestations are eliminated. That process takes much time. There are also 4 large Pines on the south boundary of this reserve and they need to be removed.
9. ***Pest control required*** – OK
10. ***Interpretive/locality signs*** – none
11. ***Fire protection*** – Russell's Rd and the McKinnon Creek provide protection on the western end. Annual slashing of track will be done where accesss can be gained. Cross-fences within the reserve to be removed to improve access.

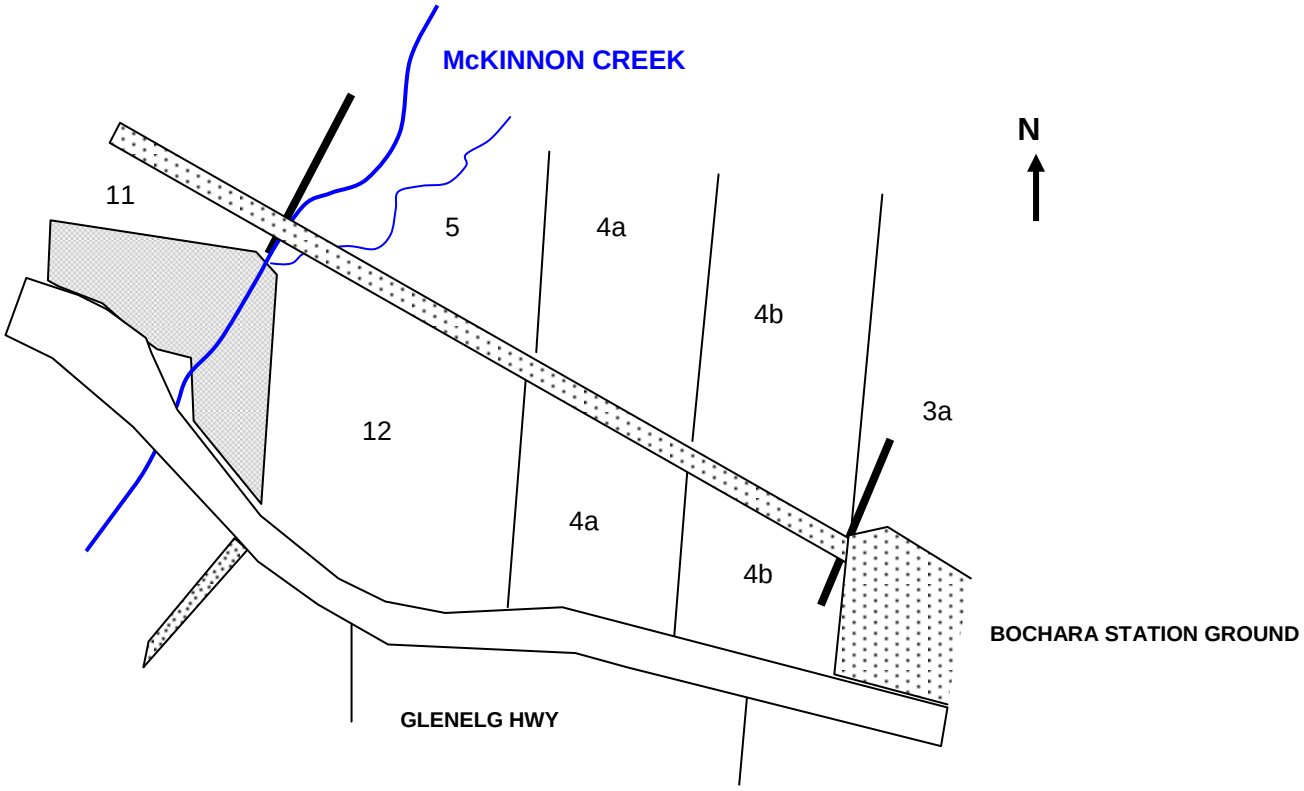


Figure 9. Unit 4 Section I, showing allotment numbers.

4J McKinnon Creek (37-41-50.6/141-54-36.3) to Russell's Rd (37-41-44.2/141-54-21.2)

1. ***Landscape*** – sandy rise to tableland. Mile peg 206 occurs at 37-41-48.2/141-54-30.4
2. ***Status of flora***
   - Class I or II – this short section has some excellent grassland species, including *Bothriochloa macra* (Red-leg Grass), *Stylidium gramminifolium* (Grass Trigger-plant), *Leptorhynchos squamatus* (Wiry Buttons), *Astroloma humifusum* (Cranberry Heath), *Wahlenbergia* spp. (Bluebells), *Goodenia geniculata* (Bent Goodenia), *Pimelia curviflora* (Curved Rice-flower), *Convolvulus remotus* (Pink Bindweed), *Thelymitra aristata* (Scented Sun-orchid) and *T. rubra* (Pink Sun-orchid). *E. camaldulensis* (River Red Gum), *E. viminalis* (Manna Gum) and *Acacia melanoxylon* (Blackwood) are also present.
3. ***Fencing*** – old but OK on north side. Open on south side. Sheep have currently got access to this reserve and that needs to be controlled by new fencing [an Envirofund project in 2008 will provide 300 m of fencing on the S side, with the committee erecting the posts, but difficulties may still occur regarding the creek bed area – the adjacent landholder proposes to exclude sheep from that zone, except in transit].
4. ***Gates*** – gate on lane should be centred on the line and a 'Tombstone' access way installed [that was attended to in 2006].
5. ***Structural works on culverts/bridges*** – creek crossing needs attention (see previous comment)
6. ***Track clearance and alignment*** – OK, although the track needs to be slashed annually.
7. ***Revegetation required*** – none
8. ***Weed control required*** – Spiny Rush needs controlling near creek and in adjacent freehold land [a project partially funded by Envirofund and the committee in 2008, addresses this problem].
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – none
11. ***Fire protection*** – Russell's Rd and the McKinnon Creek provide protection for this very short section. Annual slashing of track will be done.

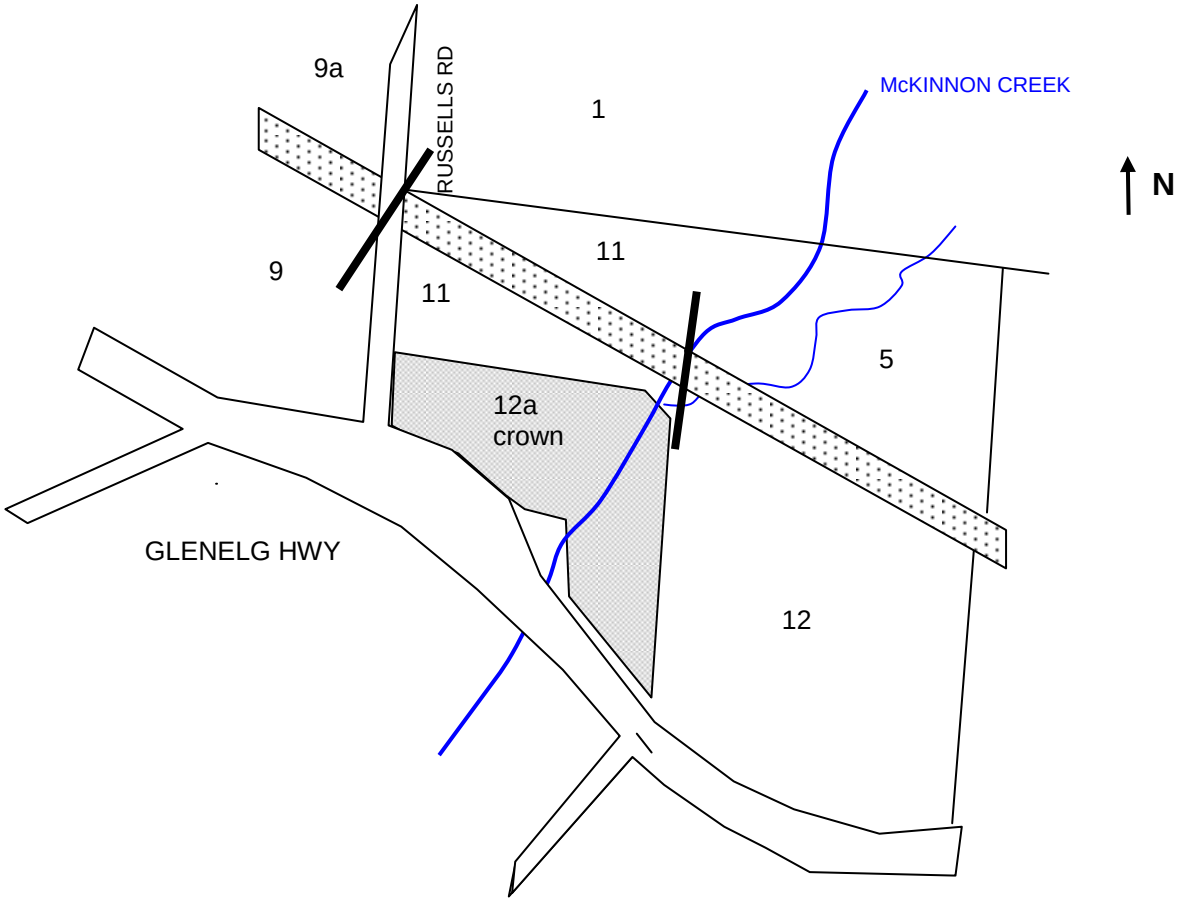


Figure 10. Unit 4 Section J, showing allotment numbers.

4K Russell's Rd (37-41-43.1/141-54-20.4) to Sandy Creek Bridge (37-40-48.8/141-52-54.5)

1. ***Landscape*** – sandy, tableland. There are 2 large, old pines and 8 Monterey Cypress on the southern side. There is an embankment approaching Sandy Creek. There is an intrusion of a sheep yard onto the reserve at about 37-41-29.9/141-53-49.1 (there has been an agreement to realign a fence some 100 m to the west and on the northern side of the line, to compensate with a similar area of land).
2. ***Status of flora***
   - Class II or Class I – most of the section, with some excellent grassland *Austrodanthonia* spp., *Poa*, *Austrostipa* spp., *Microlaena stipoides*, *Elymus scabrum*, *Bulbine bulbosa* (Bulbine lily), *Themeda triandra*, *Juncus pallidus* (Pale Rush), *Drosera* spp., *Burchadia umbellata* (Milkmaids), *Schoenoplectus sp.* (Rush), *Chrysocephalum apiculatum* (Common Everlasting), *Lepidosperma* spp. (Sword Sedge), *Pelargonium rodneyanum* (Magenta Storksbill), *Xanthorrhoea minor* (Small Grass-tree), *Dianella revoluta* (Flax Lily), *Geranium spp.*, *Pimelea curviflora*, *P. humilus*, *Caesia caliantha* and *Arthropodium strictum* (Chocolate Lily). Large *E. viminalis*, *E. camaldulensis* and *E. aramophloia* (Scentbark) occur at 37-41-21.1/141-53-35.5 and at 37-41-03.7/141-53-13.6. *Hymenanthera dentatum* (Tree Violet) occurs near the wonky bridge across Sandy Creek.
   - Class III or Class IV – some small areas along the reserve are degraded as a result of grazing.
3. ***Fencing*** – There is a stock crossing near the eastern end (at 37-41-39.7/141-54-11.3) with gates centred on the reserve, and another crossing (a 25 m gap) near the middle of the section (at 37-41-26.3/141-53-42.6). A fence on north side near the sheep yard had been cut (at 37-41-29.9/141-53-49.1) and stock had access to reserve. There was a tree on fence further to west (at about 37-41-11/141-53-23) [the problems were subsequently attended to]. Some old temporary fencing must be removed (e.g. at 37-41-34.3/141-53-58.9 and 37-41-11.1/141-53-22.8). The northern side fence on the west end is not in good order [this has since been replaced by the landholder].
   Recommendation – re-locate the gate at Russell's Rd and install "Tombstone" access ways at all gates.
4. ***Gates*** – there is an old gate into a paddock (at 37-41-11/141-53-23). The gate at Russell's Rd is not centred [this has since been placed centrally on the line].
5. ***Structural works on culverts/bridges*** – repairs are needed to a wooden bridge (37-41-08.4/141-53-19.5)
6. ***Track clearance and alignment*** – some minor clearance of fallen branches needed to allow slashing.
7. ***Revegetation required*** – none required.
8. ***Weed control required*** – need to remove 8 Cypress trees and some pines. These trees, once mature, would also significantly degrade the excellent *Themeda* grassland along this stretch. There is a patch of *Sparaxis* some 500 m east of Sandy Creek and some areas badly infested with Sweet Vernal grass.
9. ***Pest control required*** – there are active rabbit burrows on the embankment east of Sandy Creek.
10. ***Interpretive/locality signs*** – none required.
11. ***Fire protection*** – Russell's Rd provides protection on the eastern end. Annual slashing of track will be done. There are 2 grazed stock crossings within the reserve that provide breaks.

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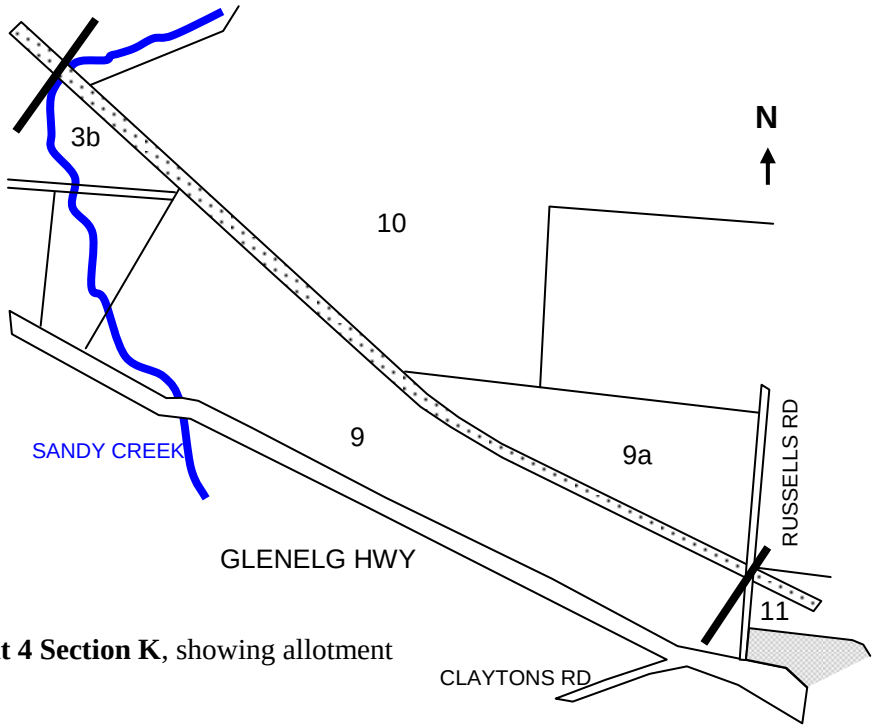


Figure 11. Unit 4 Section K, showing allotment numbers

Unit 5 - Sandy Creek Bridge to Wannon River Bridge

This unit is broken into 3 sections (L-N) and includes a creek crossing at Sandy Creek, 2 road crossings at S. Reed's Road and Wannon-Nigretta Road, and a river crossing on the Wannon River trestle bridge.

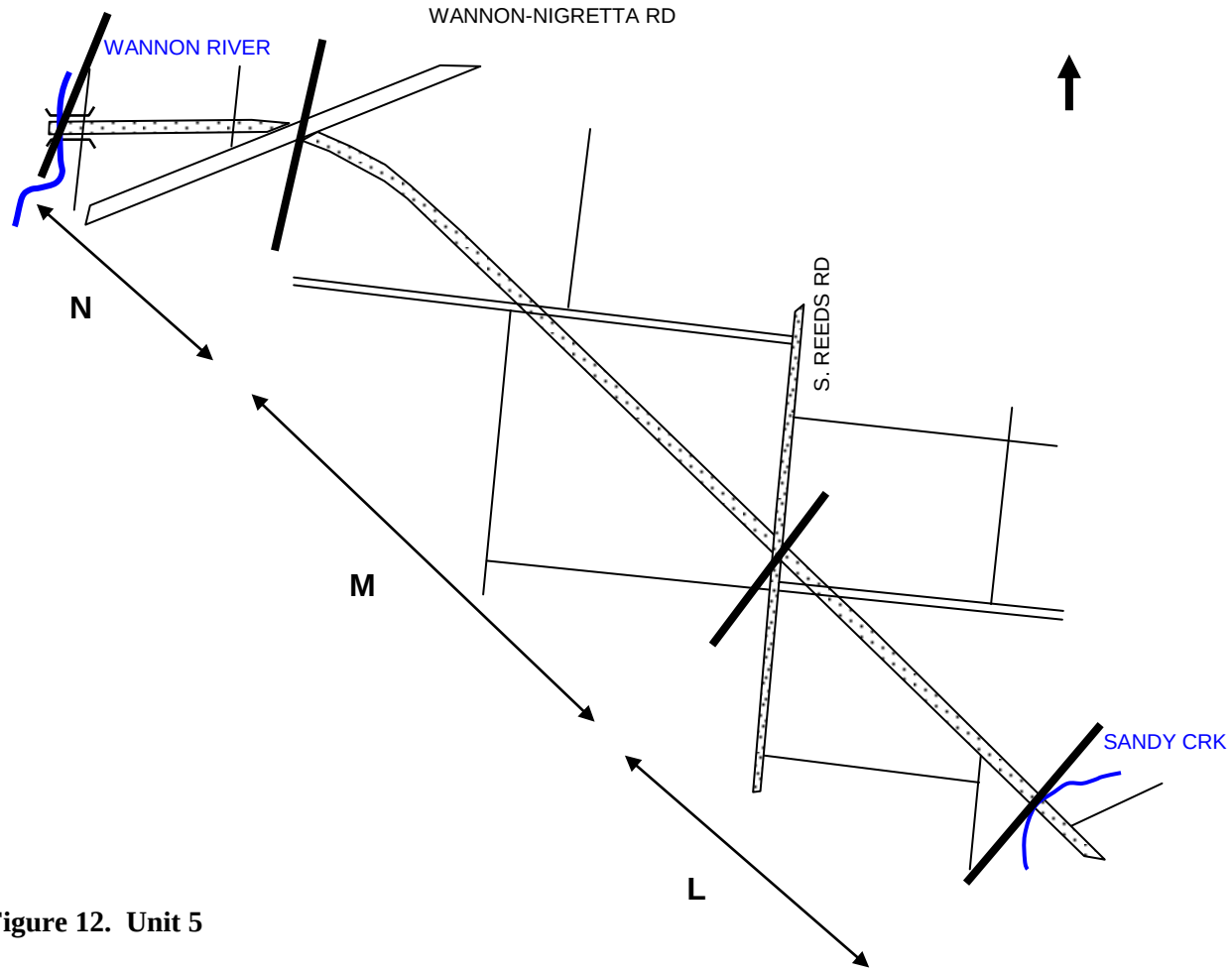


Figure 12. Unit 5

Good remnant vegetation including Grass-trees, but invasion by Sallow Wattle (*Acacia longiflora*) requires pest plant management [the *A. longifolia* has since been removed]. (Photo: B. Warton)

5L Sandy Creek (37-40-47.7/141-52-53.2) to S Reeds Rd (37-40-27.2/141-52-27.5)

1. ***Landscape*** – sandy-loam heath section, parts subject to waterlogging in the winter (except for the central track that has been raised to form a substantial embankment)
2. ***Status of flora***
   - Class I & II – an excellent stretch of native vegetation with 85 natve species seen to date, especially rich towards S Reed's Rd. Species seen included *Austrodanthonia* spp., *Poa, Austrostipa (3 species), Microlaena stipoides, Elymus scabrum, Bulbine bulbosa, Themeda triandra, Drosera* spp., *Burchadia umbellata, Schoenoplectus* spp., *Chrysocephalum apiculatum, Helichrysum scorpioides* (Showy Buttons) *Lepidosperma* spp., *Pelargonium rodneyanum, Xanthorrhoea minor, Lomandra filiforme, Dianella revoluta, Geranium* spp., *Pimelea curviflora, P. humilus, Caesia caliantha, Arthropodium strictum, Stylidium gramminifolium, Arthropodium milleflorum* (Pale Vanilla Lily), *Microtis* spp. (Onion Orchid), *Villarsia umbricola* (Marsh Flower), *Leptorhynchos squamatus* (Scaly Buttons), *Hibbertia stricta* (Erect Guinea-flower), *Diuris sulphurea* (Tiger Orchid), *Thelymitra aristata, Dillwynia hispida* (Red Parrot-pea), *E. camaldulensis, Leptospermum myrsinoides* (Heath Tea-tree), *A. melanoxylon* and *A. mearnsii* (Black Wattle) – *see* Appendix 3, Table 3).
3. ***Fencing*** – OK – recent work has been done on the entrance from S Reed's Rd. The defunct southern fence between the road and Sandy Ck bridge was replaced in 2005 by the Blue Gum company.
4. ***Gates*** – OK but the gate near S Reeds Rd should be shifted just east of the private access points.
5. ***Structural works on culverts/bridges*** – repairs needed to Sandy Ck bridge (this is unsuitable for vehicles).
6. ***Track clearance and alignment*** – OK – the Telstra cable is situated in private land to the north of this section of reserve. Annual slashing of the 2-3 m pathway is required.
7. ***Revegetation required*** – none required.
8. ***Weed control required*** – some *Acacia longifolia* (Sallow Wattle) must be removed near S Reeds Rd [an extensive work effort in 2005 resulted in the removal of *A. longifolia* from this stretch but an on-going effort is needed to remove further germinants]. There is a patch of Blackberry and Kikuyu Grass at 37-40-37.5/141-52-41.2, northern edge of the line, with *Sparaxis* and *Oxalis purpurea* just east of the road.
9. ***Pest control required*** – none required.
10. ***Interpretive/locality signs*** – none required.
11. ***Fire protection*** – S. Reed's Rd provides protection on the western end. A Blue Gum plantation on the southern side provides protection. Annual slashing of track will be done.

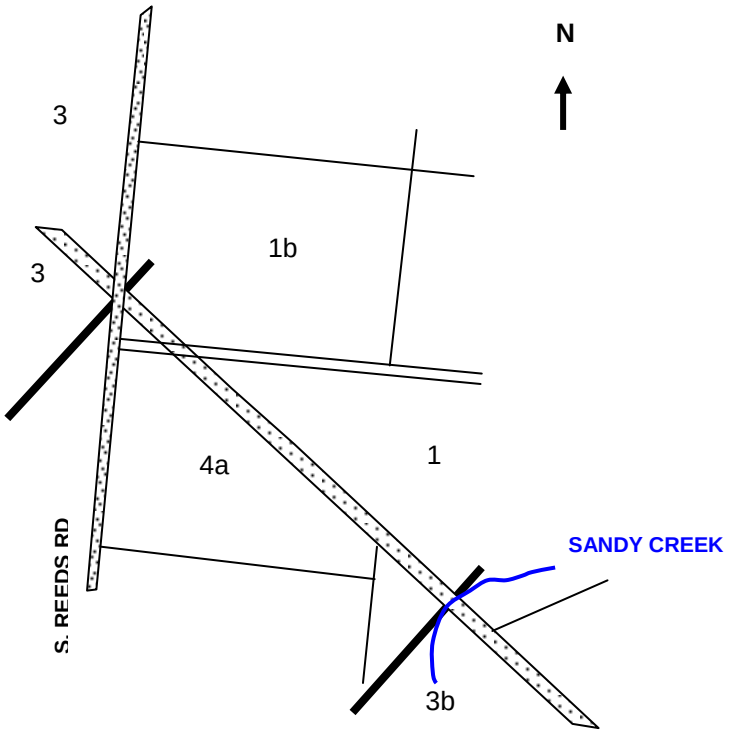


Figure 13. **Unit 5 Section L**, showing allotment numbers.

5M S. Reed's Rd (37-40-27.2/141-52-27.5) to Wannon-Nigretta Rd Rd (37-38-50.2/141-51-35.4)

1. ***Landscape*** – sandy-loam heathy woodland
2. ***Status of flora***
   - Class II or I – mostly grassland species with occasional River Red Gum. The section approaching the Wannon-Nigretta Rd is rich in native grassland species, including *Diuris sulphurea* (Tiger Orchid), *D. behrii* (Golden Moths), *T. aristata* (Scented Sun-orchid), *Dilwynnia hispida*, *Burchardia umbellata* (Milkmaids), *X. minor* (Small Grass-tree), *Helichrysum scorpioides* (Showy buttons), *Astroloma humifusum* (Cranberry Heath), *Hibbertia* and *L. myrsinoides* (Heath Tea-tree)
   - Class V – one patch of exotic grass and weeds extends into trees about 100 m east of an old cross-fence (see below), indicating that the section was a stock camp.
3. ***Fencing*** – OK - except for a cross-fence with a gate at 37-40-05.1/141-52-00.1. There is a broken down cross-fence on the Nigretta Rd. An occupational crossing was granted some 50 m E of the fence.
   Recommendation – the internal cross-fence and gate at 37-40-05.1/141-52-00.1 must be removed. The cross-fence on the Wannon-Nigretta Rd will need repairing at some stage.
4. ***Gates*** – the gate onto S. Reeds Rd is not on the centre of the track and must be relocated, with a tombstone entry installed alongside for walkers. There are gates into paddocks on both sides of the reserve (at 37-4-06.6/141-52-01.2) and these should be closed off if there is no satisfactory reason for their existence. There is also an old cross-fence nearby, with a gate (37-40-05.1/141-52-00.1) that needs to be removed. Approximately 200 m from the Wannon-Nigretta crossing there is a gate into a block to the south (37-39-51.8/141-51-37.7). The landholder is apparently driving up the reserve and entering this block at that point. There is a gate on the line at the Wannon-Nigretta Rd.
5. ***Structural works on culverts/bridges*** – none required
6. ***Track clearance and alignment*** – OK, but the track needs to be slashed annually.
7. ***Revegetation required*** – none at present (the 100-m stretch of pasture grass could be a site for trees/shrubs in future, or be used as a burned fire break).
8. ***Weed control required*** – 2 plants of African Weed Orchid (AWO) found near S Reed's Rd in spring 2005, a new weed threat for SW Victoria. The AWO were dug up and bulbs and seed heads removed from the site. More than 2,000 plants were removed in Oct-Nov 2007 (and 35 E of S Reeds Rd).
9. ***Pest control required*** – none required.
10. ***Interpretive/locality signs*** – Sign required to indicate the time required for walking through to Wannon-Nigretta Road.
11. ***Fire protection*** – S. Reed's Rd on the east end and the Nigretta Rd on the west end provides protection. A section in the centre could be burned to provide an extra break. Annual slashing of track will be done.

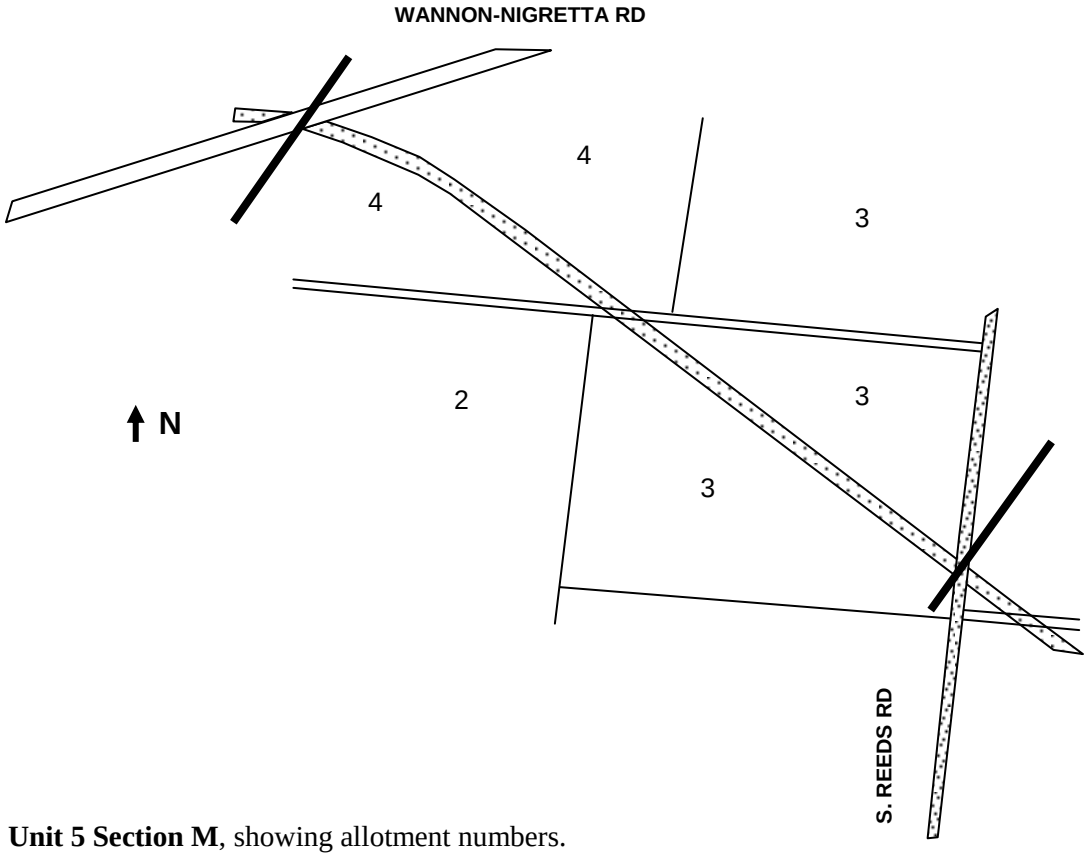


Figure 14. **Unit 5 Section M**, showing allotment numbers.

5N Wannon-Nigretta Rd (37-39-50.9/141-51-35.4) to Wannon River Bridge (37-38-50.2/141-51-13.4)

1. ***Landscape*** – sandy heath. The rail line is on a substantial embankment towards the river.
2. ***Status of flora***
   - Class I – this is an area of exceptional floristic value. Ninety-one species are listed for this short section (App. 3, Table II). One oddity was the record of *Triodia scariosa* (Porcupine Grass) near the Wannon-Nigretta Rd crossing – this species was not found this time, possibly because an old track down the northern edge may have removed it [in Oct 2004 a patch was found further north along the Wannon-Nigretta Rd – this unusual species should be re-introduced to the rail reserve in order to preserve it]. Other species of particular note here are *Calytrix tetragona* (the only occurrence along the rail reserve, the Wannonfrontages or in the district), *Allocasuarina paludosa (*Scrub Sheoak), *Leptospermum myrsinoides* (Heath Tea-tree), *L. continentale* (Prickly Tea-tree), *Ptilotus macrocephalus* (Featherheads), *Thelymitra aristata*, *Diuris sulphurea* & *Platylobium obtusangulum*.
3. ***Fencing*** – OK on sides. The southern fence is approx. 1 m inside the reserve, as shown by original posts. There is a grazed 27 m gap under the bridge, with a gate at 37-39-50.1/141-51-11.7 against the river reserve fence, providing stock access across the reserve.
   Recommendation – the gate off Wannon-Nigretta Rd must be relocated to the centre line.
4. ***Gates*** – the cocky gate off Wannon-Nigretta Rd needs to be replaced with a steel fabricated gate and relocated in the centre of the track. There is a locked (unused) gate at 37-39-49.6/141-51-13.3, on the NW corner at the bridge where the fenced section ends.
5. ***Structural works on culverts/bridges*** – the Wannon Bridge is still trafficable to pedestrians but about 10 planks need replacing. The bridge is not suitable for vehicular traffic. The bridge is 130 m long. A Telstra cable is on N side of the reserve, at varying distances from the fence.
6. ***Track clearance and alignment*** – the central track needs to be cleared (a narrow, slashed trail only), requiring pruning of *A. paradoxa* and removal of some decrepit Prickly Tea-tree at one point on the line. The track along the northern edge must then be closed to allow restoration – proximity to pasture grass in the paddock has allowed some weeds to invade that track [these tasks accomplished by early 2008].
7. ***Revegetation required*** – none.
8. ***Weed control required*** – there is a patch of Blackberry on the embankment near the bridge (at 37-39-50.3/141-51-16.1) that needs to be removed as a matter of urgency. A Pine also needs to be removed, along with *A. decurrens* (~30 small trees), from the middle section [this was done in early 2008].
9. ***Pest control required*** – there will be an on-going problem with rabbits, both here and on adjacent sandy ground. Great care is needed in the control measures adopted – bulldozing or use of a back-hoe to destroy burrows will do great damage to the flora and should be avoided. Gassing of burrows is needed.
10. ***Interpretive/locality signs*** – Signs required to indicate closeness of Wannon Falls with estimated time for the diversion. This line could be part of a round walk from the Wannon Falls, along Wannon-Nigretta Rd to the railway crossing, across the old railway bridge, along Brung Brungle Rd to the Old Highway Bridge and back to the Falls.
11. ***Fire protection*** – Wannon-Nigretta Rd on the east end and the Wannon River to the west provides protection for this short section of reserve.

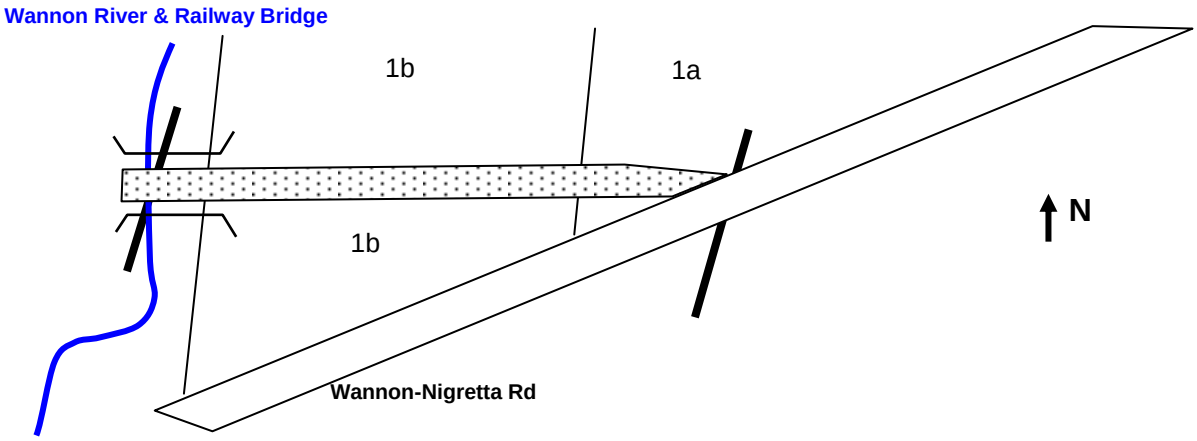


Figure 15. Unit 5 Section N, showing allotment numbers.

Unit 6 - Wannon Bridge to Wannon Station Grounds, Brung Brungle Rd

6O West end of Wannon Bridge (37-39-50.2/141-51-36.0) to crossing of Brung Brungle Rd at the Wannon Station Ground (37-40-00.8/141-50-35.9)

1. ***Landscape*** – sandy-loam River Red Gum and grassland. The section adjacent to Brung Brungle Road is very sandy (but with considerable near-surface rock) and wet in winter, and prone to flooding from run-off from the slope to the west.
2. ***Status of flora***
   - Class III or Class IV – from the Bridge to near Brung Brungle Rd
   - Class II – patches along the Brung Brungle Rd and private land adjacent where there are seepage areas that contain the summer-flowering orchid *Spiranthes australis* (Austral Ladies Tresses). *Bothriochloa macra* (Red-leg Grass) and the rare *Aristida ramosa* (Cane Wire-grass) occurs on adjacent private land to the west and may occur on the road or railway reserve.
3. ***Fencing*** – There is a 20-m-wide grazed stock crossing under the bridge on the western side of the river. The fence for the stretch running to Brung Brungle Rd begins at 37-39-52.3/141-50-49.2. Most side-fences are OK. A cross-fence occurs near Brung Brungle Rd where there are tracks off east into houses (at 37-39-54.1/141-50-51.2). Fencing along north side of allotment 14 is poor.
   Recommendation – replace the cross fence with Kangaroo-friendly fence and gate, to prevent livestock from accessing the reserve while moving along Brung Brungle Road. Replace fence north of allotment 14 to protect excellent regeneration adjoining this property.
4. ***Gates*** – no gates exist. One gate or stile is needed at the eastern end of the Wannon Station Ground.
5. ***Structural works on culverts/bridges*** – there is a small bridge over a little creek near Brung Brungle Rd (at 37-39-52.3/141-50-49.2).
6. ***Track clearance and alignment*** – the central part of the line is fairly rough and, because there is good revegetation on the original rail line that runs alongside the Brung Brungle Rd (adjoins Allotment 14), the trail should probably diverge onto Brung Brungle Rd for the last part. Cyclists should use the road. Walkers might choose to walk along the rough railway line or the roadway.
7. ***Revegetation required*** – none
8. ***Weed control required*** – patches of Phalaris, Gorse, Sugar Gum and Briar Rose. Part of the wetter section adjoining the Brungle Rd is badly infested with *Sparaxis*, which is a pity for that area is floristcally rich. It needs urgent attention.
9. ***Pest control required*** – Removal of rabbits from bridge embankment is required. Three European Wasp nests were located and destroyed in summer and autumn of 2004.
10. ***Interpretive/locality signs*** – signs are needed at the old railway bridge and at Wannon Station Grounds.
11. ***Fire protection*** – The Wannon River to east and the Brung Brungle Rd to the west provides protection.

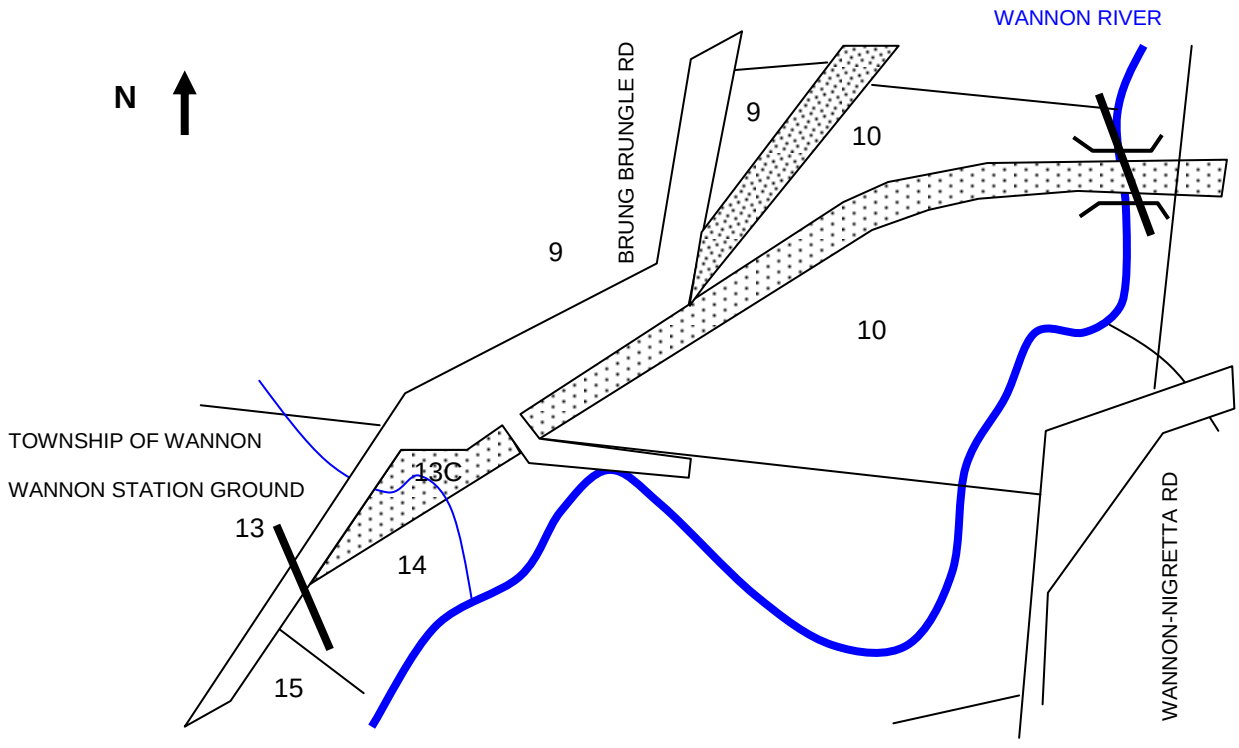


Figure 16. Unit 6 – Wannon Railway Bridge to Wannon Station Ground

6P Wannon Station Grounds to crossing of Glenelg Highway

1. ***Landscape*** – flats and sandy heath rising through a mature Manna Gum woodland slope to Dundas Tableland. The western corners are at 37-39-54.1/141-50-17.6 and 37-40-00.8/141-50-15.9, on the eastern edge of the unused road reserve. A 25-m-wide road reserve also runs down the northern side of the Station Ground to Brung Brungle Rd. On the NE edge a garden and fowl house appear to encroach on the reserve. The area adjacent has been disturbed by gravel extraction and there are heaps of earth and old machinery or materials lying about. An unused road reserve runs NE across the Station Grounds to 37-40-00.2/141-50-31.6 (the corner with a house yard) and then deviating east to connect with Brung Brungle Rd. There is a faulty culvert at 37-40-05.2/141-50-20.9 towards the SW end of the road reserve. A substantial drain and bank also runs NE across the slope just below the upper slope (from 37-40-00.7/141-50-17.1 to 37-40-00.2/141-50-31.6). A patch of erosion occurs near 37-40-03/141-50-21.
2. ***Status of flora***
   - Class I – the central area of Station Ground has patches of excellent grassland (Red-leg Grass - *Bothriochloa macra* - is one species here), kept cropped by Eastern Grey Kangaroo, Black Wallaby and rabbits. Onion Orchids and Sun Orchids abound on the infertile and wet slopes.
   - Class II or Class III – there is an excellent mature woodland of *Eucalyptus viminalis* on the hillside, although the understorey is badly infested with Gorse. The understorey includes Blue Pincushions (mostly on the adjacent School Reserve, Allotment 2, that is mostly Manna Gum woodland – most of this was mounded in 2004 but planting of pines was aborted since no permit for clearing had been obtained), Common Everlasting, Tree Violet, Prickly Tea-tree, Kangaroo Apple and Tree Everlasting – 62 species in all (Table III). This will be an even more attractive area once the weeds are under control. We noted many birds, including Blue-winged Parrot, Rufous Songlark, Crested Shrike-tits, Sacred Kingfisher, Dusky Woodswallow and Brown Treecreeper in the woodland on the slope.
   - Class V – other areas, including part of the flats near Brung Brungle Rd, are dominated by Phalaris.

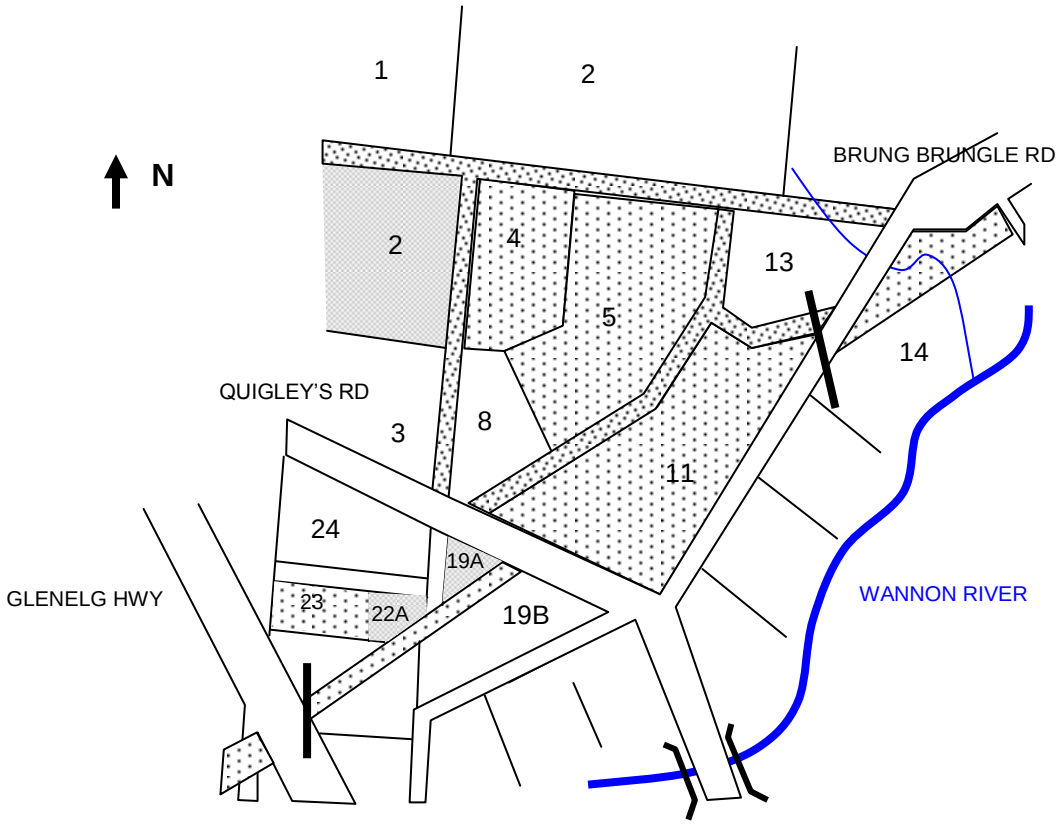


Figure 17. Unit 6 Section P, showing allotment numbers.

3. ***Fencing*** – Poor along Brung Brungle and Quigleys Roads and open to the roads in some places [this section was fenced in 2007 to prevent damage from recreational vehicles]. There is no fence on the western side (on the unused road reserve between School Reserve and Station Ground).
4. ***Gates*** – locked gates are needed at each end of Wannon Station Ground when the fence is renewed.
5. ***Structural works on culverts/bridges*** – faulty culvert/bridge towards Quigley's Rd needs to be removed.
6. ***Track clearance and alignment*** – annual slashing required

7. ***Revegetation required*** – none until Phalaris and Gorse is under control and some native grass can be re-established on the weed-ridden parts of the lower flats.
8. ***Weed control required*** – urgent on-going action for Gorse eradication is needed. The worst-affected area on the slope above the Station Ground was bulldozed to remove Gorse in 2002. Among the problems created is a tremendous germination of Gorse and Hedge Wattle. Careful spot-spraying of individual plants, using a single-nozzle back-pack sprayer, is needed now, a large and tedious job because at least 2 ha is involved with many thousands of seedlings. It will take many years to achieve control because the area has been badly neglected and there will be crops of seedlings emerging over many years. Seeds of Gorse are viable for up to 30 years. An excellent start has been made in 2003-04, where Peter Dowling carefully spot-sprayed Gorse plants with Ally (*Metsulfuron methyl)* resulting in the destruction of over half the population of Gorse on the woodland area without much effect on adjacent native plants. The Hedge Wattle will also need to be controlled in the bulldozed area, otherwise it will dominate the site.
   Clumps and large expanses of Phalaris need to be sprayed on the wet flats, although that action should be followed up (when the Phalaris is all removed) by an effort to re-establish Poa tussocks. Failure to do that would probably result in an influx of other pasture species and thistles. There is a small occurrence of *Sparaxis* at 37-40-01.5/141-50-19.0, near a bend below the NW corner. There are also infestations of Gorse there that need controlling.
9. ***Pest control required*** – control of Gorse will largely remove the cover that rabbits enjoyed.
10. ***Interpretive/locality signs*** – historical signs are needed at Wannon Station Grounds.
11. ***Fire protection*** – assistance from Bochara Fire Brigade to conduct periodic burning of the open flats would materially reduce the hazard from rank Phalaris and would also be advantageous to the native grasses, through reducing seed-set of the aliens.

Unit 7 - NW from Glenelg Highway Crossing to southern end (unused) of Morris Rd at Wannon
This very short section outside the Wannon Township should in future be dealt with as part of Unit 8.

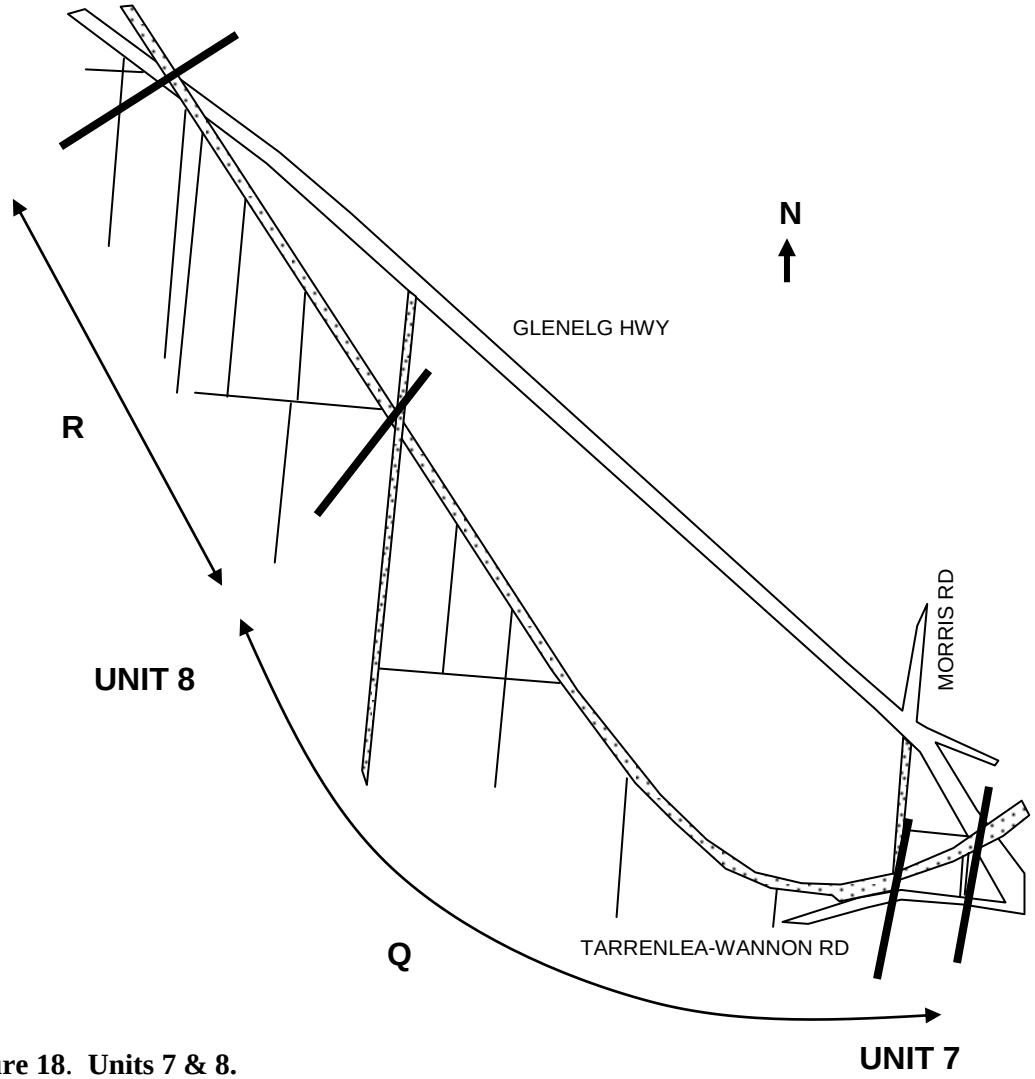


Figure 18. Units 7 & 8.

Unit 8 - Glenelg Highway Crossing at Wannon to Glenelg Highway Crossing east of Parkwood

8Q Wannon Glenelg Highway Crossing (37-40-14.9/141-50-07.4) to a fence and culvert on Tableland (37-39-22.6/141-48-39.9)

1. ***Landscape*** – steep rise from the river to the Dundas Tableland; sandy heath and woodland/grassland. The first part has a high embankment, followed by a deep Cutting (extending to 37-40-04.2/141-49-14.9) that now direct water down the track towards the Wannon. There is a small swamp on the north side of the line, just extending into the reserve. The first part of the walk through rolling hills onto the tableland is quite spectacular: the effort in building this embankment and cutting in the period before 1900 must have been enormous and is of historical interest. The remaining part of the section is flat tableland.
2. ***Status of flora***
   - Class IV (first 200 m) and Class III for the embankment and cutting, although there are good stands of *E. viminalis*, *E. ovata* (Swamp Gum), *A. mearnsii* and *A. melanoxylon* at various points. Phalaris, *Sparaxis, Asparagus asparagoides* (Bridal Creeper) and other garden weeds occur along the embankment area and need to be sprayed.
   - Class III-IV – a short stretch west of the cutting to a culvert (at 37-38-57.6/141-49-08.3), although there are at least 2 good *Banksia marginata* (Silver Banksia) there. Spiny Rush, *Sparaxis* and *Phalaris* also occur in the cutting.
   - Class II – a stretch extending to a temporary fence (at 37-39-22.6/141-48-39.9) and culvert (at 37-39-22.1/141-48-39.9). This stretch contains some excellent *E. viminalis*, an excellent thicket of *Allocasuarina verticillata* and ground flora including *Austrodanthonia* spp., *Chrysocephalum apiculatum* (Common Everlasting) and *Wahlenbergia* spp. (Bluebells). Mistletoe (*Amyema pendula*) was evident in the black wattles.
3. ***Fencing*** – there is an old temporary fence at the Highway and at 37-39-22.6/141-48-39.9. The boundary fences are OK.
   Recommendation – the old cross-fence at Glenelg Highway Wannon needs to be replaced, with a gate placed centrally on the trail. The purpose of this gate is to prevent trail bikes entering at this point and damaging the high banks and cutting. The temporary cross-fence at 37-39-22.6/141-48-39.9 need to be removed, to improve access for fire control and to prevent stock being kept continuously in the reserve
4. ***Gates*** – there are no obvious gates into the reserve from paddocks and only one at the highway is required.
5. ***Structural works on culverts/bridges*** – OK
6. ***Track clearance and alignment*** – much work is needed. The stretch near Wannon needs the most attention. A 2m path down the centre of the line needs clearing of overhanging Black Wattle branches and some re-growth seedlings. The cutting needs work to allow access in winter. The problem lies in the amount of water that is directed down the cutting. That has resulted in boggy sections and the growth of Spiny Rush. Some work will be needed to create a slightly raised 3-m line in the centre line of a few spots where bogs exist.
7. ***Revegetation required*** – the first 200 m weedy stretch near the Wannon could be planted with *Eucalyptus viminalis, Allocasuarina verticillata, Acacia melanoxylon, Banksia marginata* and *Bursaria spinosa.* No other planting is required.
8. ***Weed control required*** – removal of Spiny Rush and *Sparaxis* in the cutting is of utmost importance. There are also outbreaks of garden weeds (including Briar Rose) where people have dumped refuse in years past. *Sparaxis, Phalaris* and Spiny Rush occur around the west end of the cutting (37-40-04.2/141-49-14.9) and need to be removed. Another small patch of *Sparaxis* occurs near a culvert at the western end of this stretch (at 37-39-38.0/141-48-52.0).
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – sign at Wannon Highway Crossing, start to the trail with estimate of time taken to reach the Glenelg Highway crossing at the end of Unit 8.
11. ***Fire protection –*** the major work required here is to get the access track in order – particularly the rise from the Wannon - and to control weeds, including Spiny Rush.

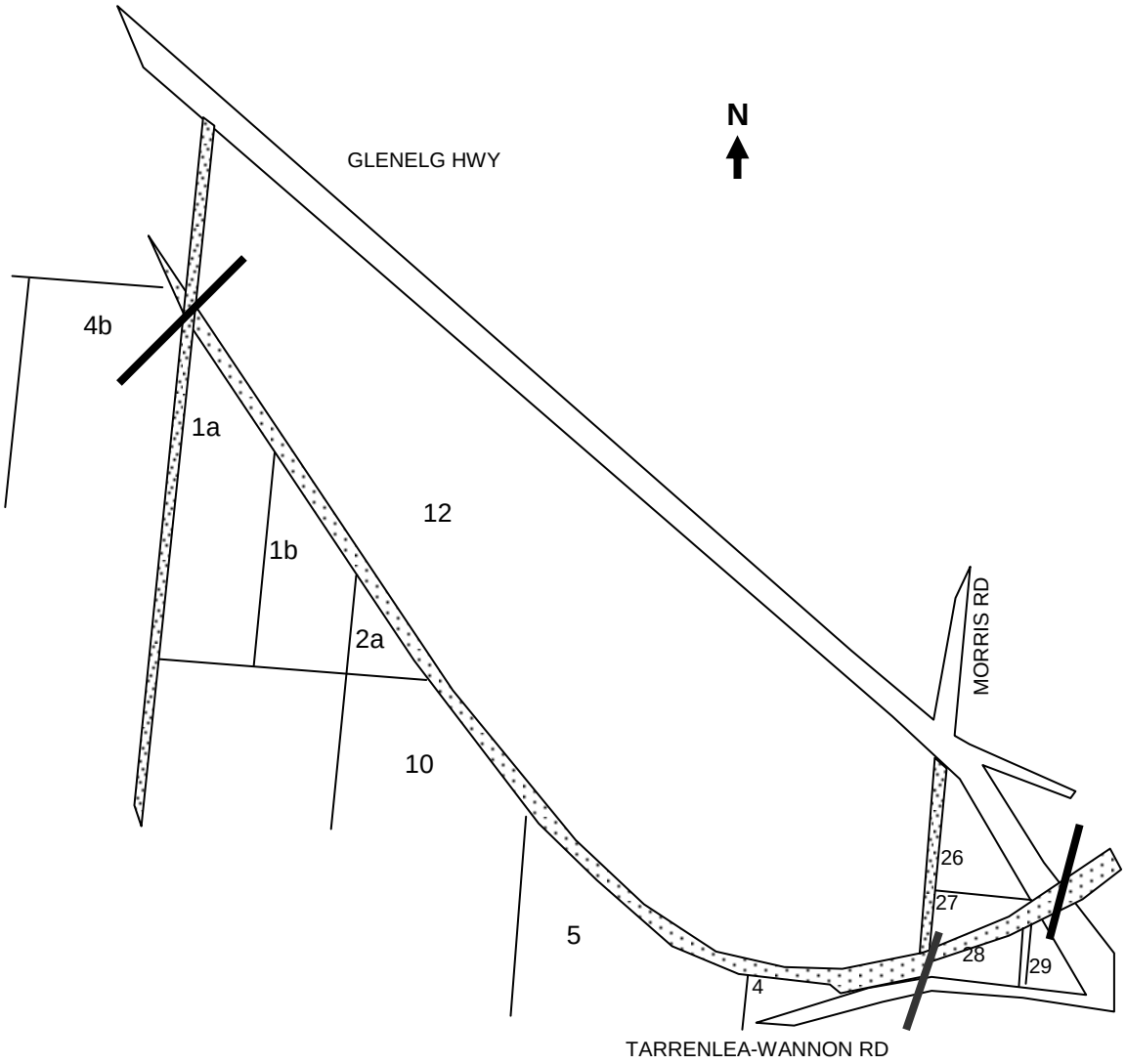


Figure 19. Unit 7 & 8 Section Q, showing allotment numbers.

One section of the rail reserve that is regenerating – note the Drooping Sheoaks – but some will have to be removed from the track.

(Photo: B. Warton)

8R Midway from the Wannon section (37-39-22.6/141-48-39.9) to Crossing on Glenelg Highway east of Parkwood (37-38-44.7/141-48-11.2)

1. ***Landscape*** – this is Dundas Tableland; flat River Red Gum woodland/grassland. A small dam is adjacent to the reserve on the southern side (at 37-38-59.3/141-48-22.5), with water close to the edge.
2. ***Status of flora***
   - Class I – first stretch on the eastern end - an excellent native grassland for a few hundred metres either side of the 213 mile peg and culvert at 37-39-12.4/141-48-22.4. The species here include: *Juncus pallidus, Burchardia umbellata, Austrostipa* spp., *Themeda triandra, Microlaena stipoides, Austrodanthonia* spp., *Poa* spp., *Bulbine bulbosa, Arthropodium strictum, Caesia calliantha, Villarsia umbricola, Acaena* spp., *Stylidium gramminifolium, Drosera* spp., *Leptorhynchos squamatus, Goodenia geniculata, Pimelea curviflora, Pimelia humilus, Convolvulus erubescens, Diuris behrii* (Golden Moth Orchid), *Microtis* spp. (Onion Orchid), *Cynoglossum australe* (Sweet Hounds-tongue). Some *A. mearnsii* occur on the western end of this stretch, just east of a culvert at 37-39-03.6/141-48-25.5. A patch of *Sparaxis* also occurs there and needs to be sprayed.
   - Class II & III – this is the stretch running through to the Glenelg Highway crossing. There are parts that contain exotic grasses in the middle section, along with native species. There are some *Banksia marginata*, *Allocasuarina verticillata*, *A. melanoxylon* and *E. viminalis* along this important stretch, just to the east of a culvert at 37-38-53.6/141-48-17.8. Another patch of *Allocasuarina verticillata* regeneration is found a little further east. A nice patch of *Burchardia umbellata* and other species occur near the crossing.

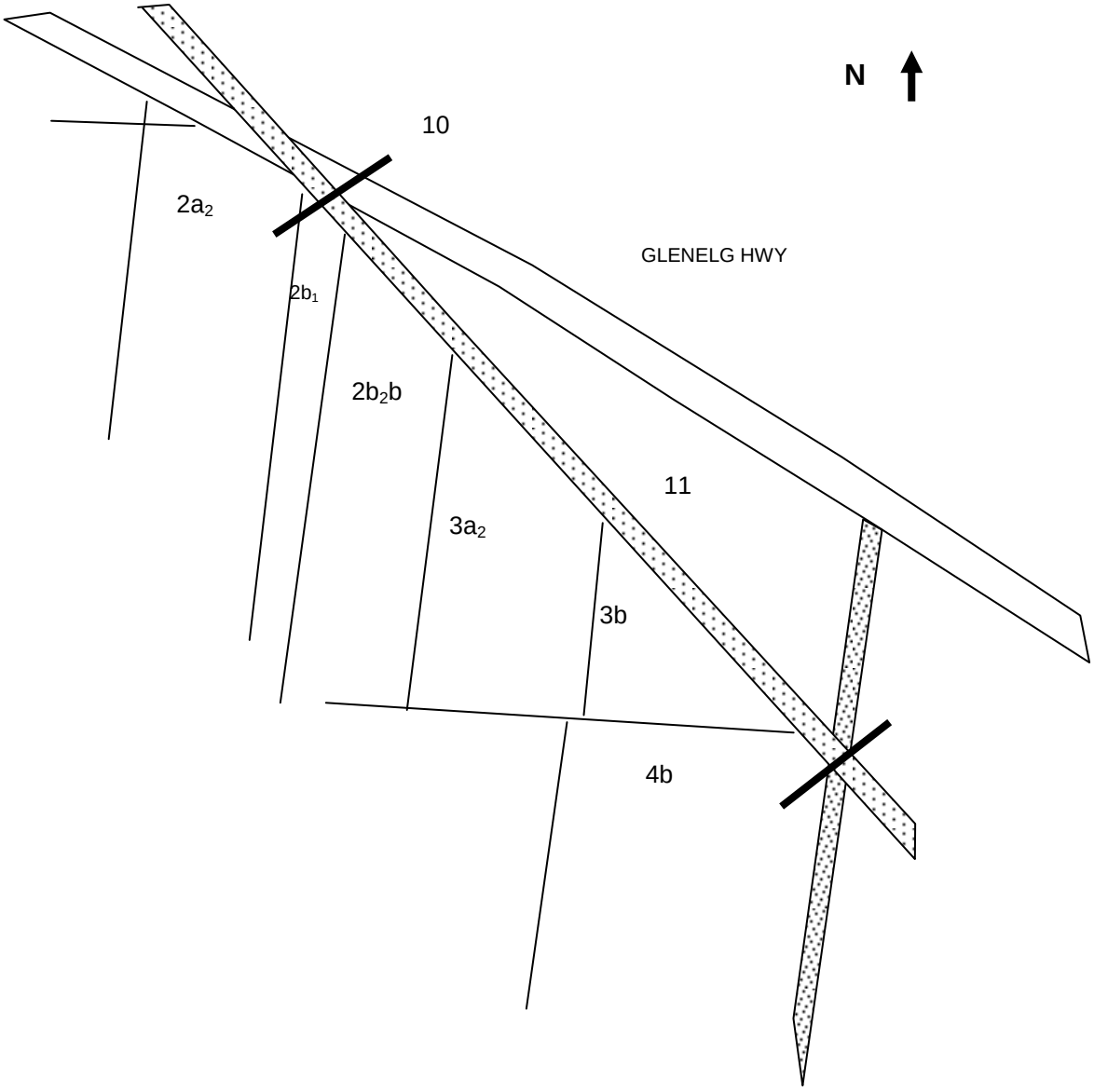
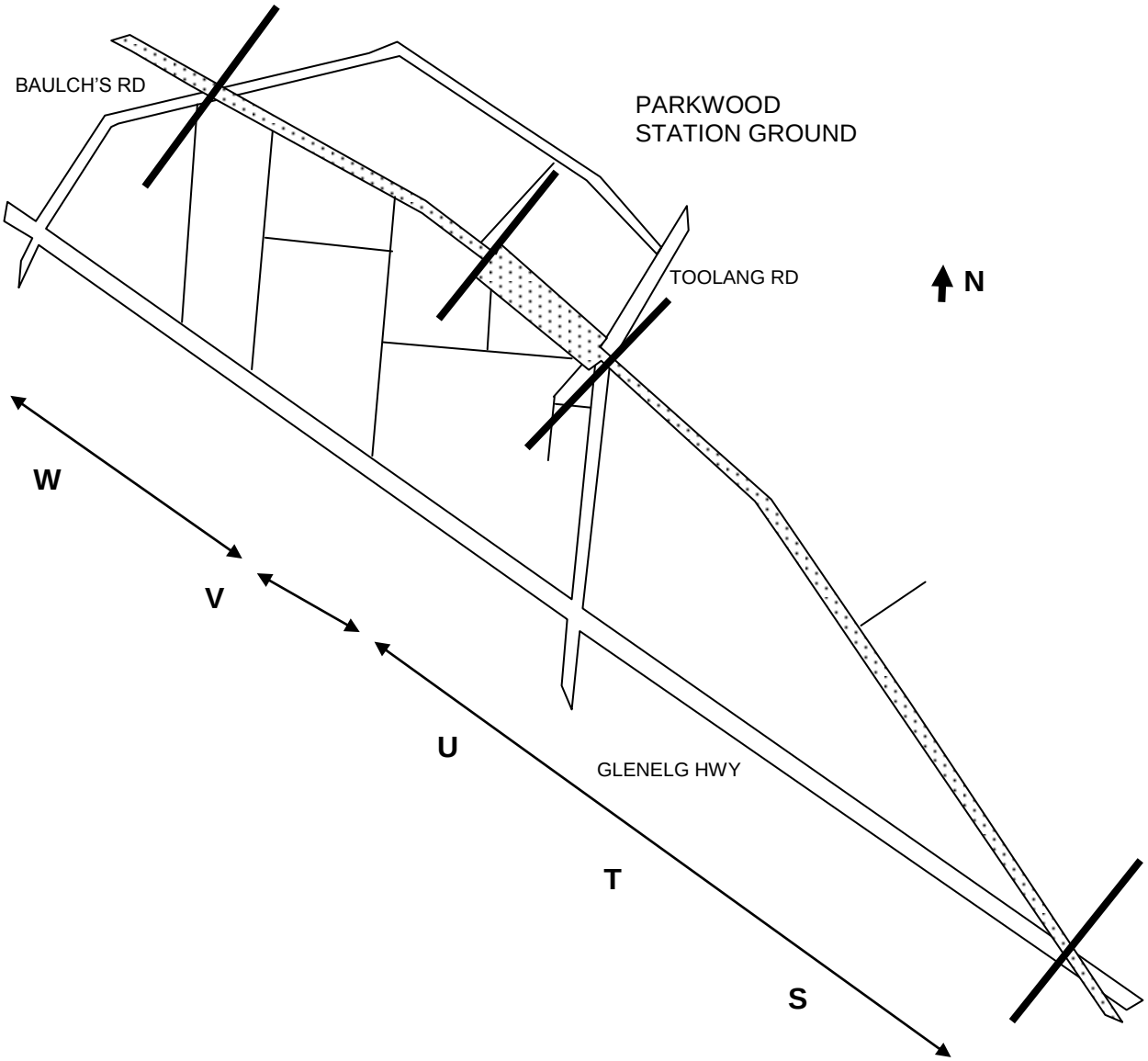


Figure 20. Unit 8 Section R, showing allotment numbers.

3. ***Fencing*** – there are new boundary fences. There is a temporary fence on the Glenelg Highway near Parkwood.
   Recommendation – the temporary fence on the Highway needs to be replaced with a new fence and gate (with adjacent "tombstone" access for walkers) placed centrally on the line. A locked gate will prevent cattle drovers from targeting the reserve.
4. ***Gates*** – landholders adjoining the reserve have gates into the reserve and use them to retrieve stock that stray. The proposed new gate onto Glenelg Highway will be locked and keys provided to the landholders who have land adjoining the reserve.
5. ***Structural works on culverts/bridges*** – OK
6. ***Track clearance and alignment*** – some regeneration will need to be removed where sheoaks have grown on the track, but it should be possible to wind a trail through most of it
7. ***Revegetation required*** – none – this area should be left alone, apart from future attention to weeds
8. ***Weed control required*** – generally none required at present on this stretch, although there are some moderately degraded areas. Phalaris near the Highway should be spot-sprayed, as also a small patch of *Sparaxis*.
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – walking trail sign required on the Highway
11. ***Fire protection*** – the track requires annual slashing. If the adjoining landholders desire, there is an opportunity to install a burned strip in the middle reach, at a point where there are few trees and where the pasture grasses that are present could be suppressed by burning. The position of that 100-150 m strip should be rotated with others, perhaps on a 4-year cycle. These burned sections could be adjacent but clear of the areas of regenerating Drooping Sheoak and Silver Banksia. This section is easily accessible from the Glenelg Highway.

A comparatively treeless vista in the middle of Unit 8 (R) where there has been some intrusion of exotic species, whose presence could be reduced by burning. There is a good presence of native species, particularly sundews (*Drosera* spp.) and lilies (*Bulbine bulbosa*, *Arthropodium* spp. and *Caesia calliantha*), mixed with the pasture grasses. The central trail needs to be slashed to define the path.
(Photo: B. Warton)



Unit 9 – Glenelg Highway Crossing to Parkwood Station Ground through to Baulchs Rd

9S Glenelg Highway Crossing (37-38-39.0/141-48-06.6) to west end of an unfenced break (37-38-16.3/141-47-49.2

1. ***Landscape*** – Dundas Tableland, with a scattering of River Red Gums. The native flora has been substantially degraded by agricultural practices in this unit, but the walk through the River Red Gum landscape is still very appealing.
2. ***Status of flora***
   - Class II – a stretch of about 250 m from the Highway to a patch of regenerating sheoaks contains some excellent ground flora, including *Pimelea humilis*, *Themeda triandra*, *Burchardia umbellata*, *Arthropodium strictum* and *Poa* spp. The native grassland areas will not be planted with trees. Some trees have been planted on the first 100 m and a fire occurred there shortly afterwards in 2000. The fire regenerated some River Red Gum and *Acacia exudans*. Regeneration of *Allocasuarina verticillata* has occurred at one spot in the absence of fire, around a few old, dead sheoaks.
   - Class III – there is some infestation of this 250-m stretch of the reserve by pasture species, particularly towards the western end.
3. ***Fencing*** – good fences. There is a new cross-fence at 37-38-17.6/141-47-50.4, with a gate located centrally on the line. The next 100 m stretch, to 37-38-17.6/141-47-50.4, is open to the paddock on the south side (but is not a gazetted stock-crossing) and therefore completely degraded by stock. There are 3 other grazed breaks over a distance of 2 km to the west. However, the owner has stated that the 200-m grazed stretch in the next section will be reduced in length to a 20-m stock-crossing when new gates are installed – if that is done then the present impediment at 37-38-17.6/141-47-50.4- should stand.

   Recommendation – the cross-fence and gate at the Glenelg Highway could be removed if unauthorized grazing of the reserve occurs – that would also provide easier access for walkers and for fire control.
4. ***Gates*** – see above.
5. ***Structural works on culverts/bridges*** – OK

6. ***Track clearance and alignment*** – OK
7. ***Revegetation required*** – the eastern end has been planted and is also regenerating naturally.
8. ***Weed control required*** – OK - not much can be done about pasture species other than Phalaris, and that species does not appear to be present here (Perennial Ryegrass is common)
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – none
11. ***Fire protection*** – the track requires annual slashing. The Glenelg Highway forms a break on the eastern end and there is a grazed 100-m break on the western end.

9T Middle section of Reserve east of Parkwood (37-38-16.3/141-47-49.2 to 37-37-56.4/141-47-33.9

1. ***Landscape*** – this is a continuation of previous section of Dundas Tableland to the east; this stretch is between the grazed 100-m break and the actual 200-m farm crossing and a major break some 600 m to the west, and two other 20-m grazed breaks across the reserve further west again. There is a farm dam adjacent to the reserve on the south side at about 37-38-14.8/141-47-48.2.
2. ***Status of flora***
   - Class IV – there are elements of native flora - e.g. *Arthropodium strictum*, *Austrodanthonia* spp. and *Poa labillardiera* - but the dominant species are pasture grasses, such as Perennial Rye Grass, Sweet Vernal and Yorkshire Fog Grass.
3. ***Fencing*** – the side fences are good. The electric cross-fence at the grazed, open, east end of this section (37-37-56.4/141-47-33.9) has been replaced by conventional fencing. The 200 m grazed stretch in the next section will be reduced in length to a 20-m stock-crossing when new gates are installed
   Recommendation – the electric wire was unacceptable in that situation and the landholder agreed to put it in a polythene conduit. No gate has been provided for entry into this section, and that must be done.
4. ***Gates*** – a centrally-located gate must be placed on the cross-fence at 37-37-59.3/141-47-37.0)
5. ***Structural works on culverts/bridges*** – OK
6. ***Track clearance and alignment*** – OK
7. ***Revegetation required*** – part of the 200 m stretch that is presently grazed is to be fenced out and should be revegetated by direct-seeding and/or planting. The species to be planted here would include *A. melanoxylon*, *B. marginata*, *Bursaria spinosa* and *Allocasuarina verticillata* - species that have been eliminated from this Unit over the years. Other species to be considered include *E. camaldulensis*, *E. ovata*, *A. paradoxa*, *A.exudans*, *A. mearnsii*, *A. verticillata*, *Melicytus dentata* (Tree Violet), *Viminaria juncea* (Golden Spray), *Ozothamnos ferrugineum* (Tree Everlasting) and *Leptospermum continentale.*
8. ***Weed control required*** – a patch of *Sparaxis* at 37-38-11.5/141-47-46.0 needs to be controlled
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – none
11. ***Fire protection*** – the track requires annual slashing. There are wide, grazed breaks at either end.

9U End of Reserve adjacent to Toolang Rd, east of Parkwood Station (37-37-56.4/141-47-33.9 to 37-37-28.7/141-47-01.6)

1. ***Landscape*** – Dundas Tableland. There is an impressive swamp to the south of the reserve (at 37-37-50.2/141-47-28.9) and the 215 mile peg a little to the west. A power line crosses the reserve at 37-37-43.7/141-47-22.0, adjacent to a 20-m-wide farm crossing at 37-37-42.3/141-47-20.5. There is also a farm crossing immediately adjacent to the Toolang Rd (37-37-28/141-47-01).
2. ***Status of flora***
   - Class IV or V – only remnants of native flora amidst a sea of pasture species. Some tree planting has been done in the last 2 years on the eastern end; a 200-m stretch.
3. ***Fencing*** – the boundary fences are in good condition.
   Recommendation - a section of fencing is needed on the south side, where the gap is excessive
4. ***Gates*** – some of the gates on cross-fences need to be re-sited to the centre of the line.
5. ***Structural works on culverts/bridges*** – OK
6. ***Track clearance and alignment*** – a 2-m-wide trail down the centre of the original line needs to be slashed annually to allow access for management vehicles and define the walking trail
7. ***Revegetation required*** – none required at present.
8. ***Weed control required*** – the planted trees would have each benefited from a 1-m-radius weed-free circle. Spraying out larger areas tends to allow germination of thistles. Clumps of Phalaris could be sprayed.
9. ***Pest control required*** – none required at present
10. ***Interpretive/locality signs*** – signs required opposite, in the Parkwood Station Grounds
11. ***Fire protection*** – the track requires annual slashing. There is a wide break on the eastern end, a stock-crossing in the middle and another on the western end adjacent to the Toolang Rd.

9V Parkwood Station Ground on Toolang Rd (37-37-28.2/141-47-00.2 to 37-37-24.4/141-46-56.5)

1. ***Landscape*** – Dundas Tableland – half of the Station Ground (the lateral flanks off the line to the west) was sold. The landscape is dotted with River Red Gums. The area is about 100 m wide and 140 m deep.
2. ***Status of flora***
   - Class V – there is a stand of 21 River Red Gums in the NW corner of the Station Ground and 3 Blackwood trees just outside the reserve to the north. There are some native species (*Austrodanthonia* spp., etc) but weeds (Yorkshire Fog-grass, Phalaris, Bent Grass, Cocksfoot, Sorrel and Dock) dominate as a result of past grazing practices.
3. ***Fencing*** – OK – a stock-crossing has been applied for
4. ***Gates*** – only one, needs to be re-positioned on the line. Two more gates will be needed on the western side when a stock-crossing is put in adjacent to the wide end of the Station Ground.
5. ***Structural works on culverts/bridges*** – none
6. ***Track clearance and alignment*** – the track at the start needs to be re-positioned to follow the original rail line (it does so beyond the narrowing at 37-37-24.4/141-46-56.5, the start of the next stretch).
7. ***Revegetation required*** – trees could be planted or direct-seeded here. There is little prospect of restoration of native grassland. Regeneration of Blackwood and River Red Gums would follow burning of the reserve and that is an option worth following.
8. ***Weed control required*** – control of Phalaris clumps is required
9. ***Pest control required*** – none
10. ***Interpretive/locality signs*** – signs to be erected near the Toolang Rd, adjacent to the gateway
11. ***Fire protection*** – the track requires annual slashing. The Toolang Rd forms a break on the eastern end, while a stock-crossing has been applied for near the western end, adjacent to the wide portion of the Station Ground. Parts of the Station Ground itself could be burned.

9W West of Parkwood Station Ground (37-37-24.4/141-46-56.5) to Baulchs Rd (37-36-55.8/141-46-06.6)

1. ***Landscape*** – Dundas Tableland – only one part of this 25-m-wide section contains a good stand of native grassland. The remainder has been degraded by stock grazing and cattle camps, although some old trees will provide seed for natural regeneration. There is a small creek at 37-37-16.0/141-46-44.8, and this drains into a dam. There is a 26-m-wide stock crossing at 37-37-09.7/141-46-35.1. The 216 mile peg occurs at 37-37-12.6/141-46-38.8. A trough inside the reserve at the western end needs to be removed.
2. ***Status of flora***
   - Class IV or V – degraded for the 400 m from Station Ground to a former cross-fence adjacent to the first dam on the south side (37-37-18.0/141-46-47.6). Soft Brome, Sweet Vernal, Cocksfoot, Bent Grass present. There is some *Austrodanthonia* along the northern margin and a Manna Gum at west end. The vegetation changes abruptly west of former cross-fence.
   - Class I or II – from dam, good *Themeda* grassland for approx. 400 m to west, straddling the creek.
   - Class IV or V – remaining stretch to Baulch's Lane. There are 22 large, old River Red Gums in the stretch to the stock crossing and 17 River Red Gums, 3 Manna Gums and an old Drooping Sheoak in the otherwise much degraded run to Baulch's Rd. Cattle camps near the River Red Gums have allowed Marsh Mallow, Dock, Fog Grass, Soft Brome, Cockfoot and Perennial Ryegrass to flourish.
3. ***Fencing*** – side fences OK. There are cross-fences at a stock-crossing (37-37-09.7/141-46-35.1 and 37-37-09.9/141-46-34.7) and at Baulch's Rd.
4. ***Gates*** – gate off Baulch's Lane ultimately needs to be re-positioned to the rail line, as do the 2 gates at the stock crossing. A ramp on the fence at 37-37-09.9/141-46-34.7 has to be removed to place a gate.
5. ***Structural works on culverts/bridges*** – the culvert at 37-37-16.0/141-46-44.8 needs sleepers replaced.
6. ***Track clearance and alignment*** – OK – the centre of the rail line bed is some 7 m from the south fence
7. ***Revegetation required*** – natural regeneration preferred - may need some assistance (e.g. spraying strips)
8. ***Weed control required*** – control of Phalaris clumps and *Sparaxis* at the creek (37-37-16.0/141-46-44.8).
9. ***Pest control required*** – none
10. ***Signage required*** – none
11. ***Fire protection*** – the track is to be slashed annually. There is a grazed break in the middle. Baulch's Lane at the west and the crossing at Parkwood provide further breaks.

Unit 10 – Baulch's Lane to intersection with Four Mile Lane east of Coleraine-Cavendish Rd

This Unit – the **Koroite Decline** – is where trains once descended from the Dundas Tableland to Coleraine in the Casterton Land System. The descent provides spectacular views of the hills and valley.

The rail reserve and adjacent land is subject to severe erosion and, in 2006, a grant of $55,000 was obtained from the GHCMA Regional Catchment Investment Project (RCIP) for erosion-control works. Those works began in 2007, concentrating on water diversion from the culverts and fencing to remove stock from the reserve.

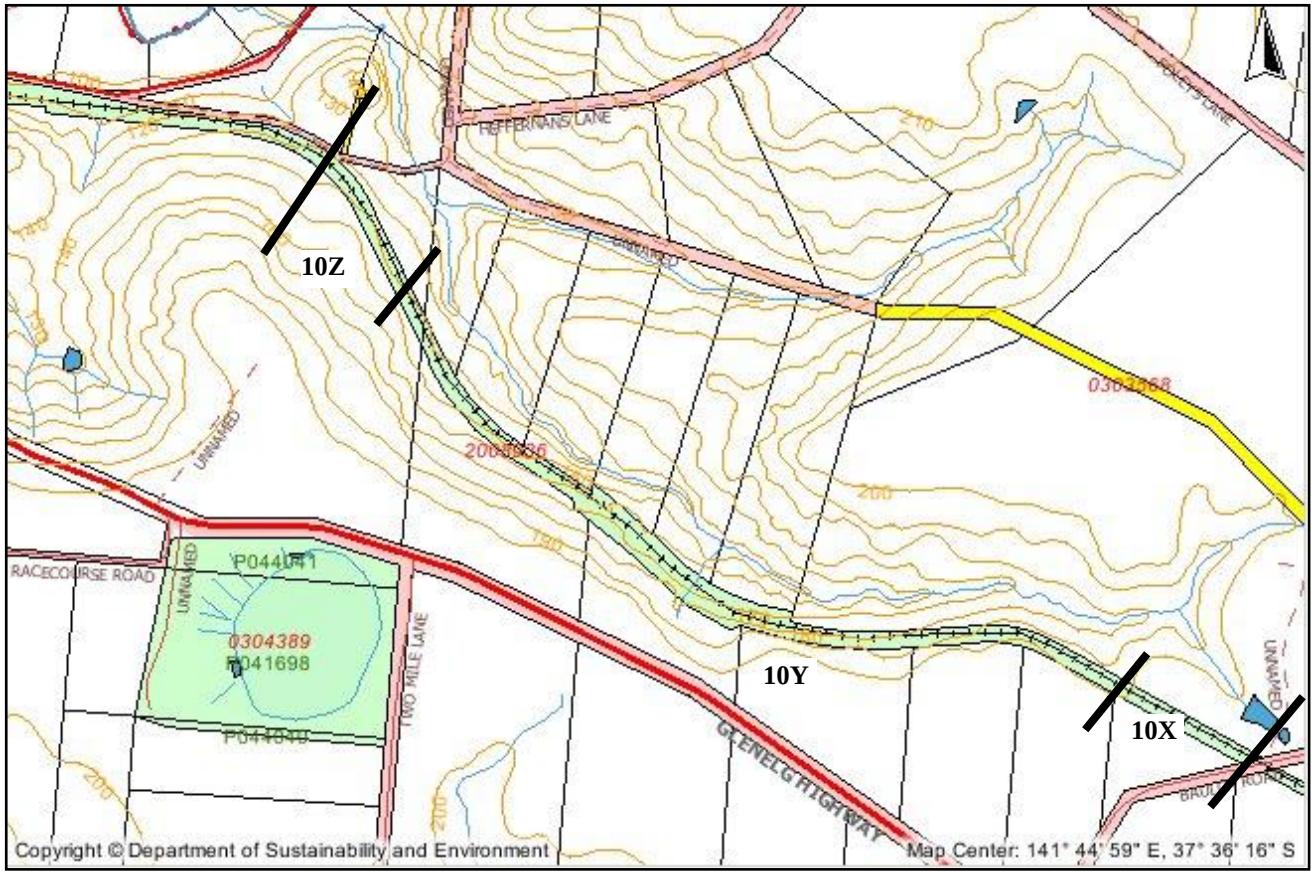


Figure 22. Unit 10, showing contours, waterways and crown reserves shaded in green.

10X Baulch's Lane (37-36-55.5/141-46-06.1) to 1st stock-crossing point (37-36-48.0/141-45-51)

1. ***Landscape*** – Dundas Tableland – this ~300 m stretch (~ 50 m wide) is to the edge of the plateau. Cattle yards run 100 m on the N side, with 50 Oaks planted in the reserve. An adjacent ditch runs to the W.
2. ***Status of flora***
   - Class II & IV – parts heavily invaded by exotic species [survey in spring 2007 revealed much native grasses, particularly *Austrodanthonia* spp. and *Themeda*, with some *Eryngium* on the north side]. There is a patch of 12 semi-mature River Red Gum, 2 *E. viminalis* (Manna Gum), 2 Blackwood and 1 Drooping Sheoak, and some young regeneration along the shallow cutting.
3. ***Fencing*** – missing on the south due to current removal of old pine trees. There is a gate off Baulch's Lane by the cattle yards on the NE corner and a "cocky" gate off the wide road reserve on the SE side. Recommendation – fence on south side to be replaced after the pines are cleared away. Retain the cross-fence off Baulch's Lane since cattleyards are adjacent. [work in 2007-08 has set up new fences].
4. ***Gates*** – the 'cocky' gate off Baulch's Lane to be removed and main gate put on railway line. Two gates needed at 37-36-48.0/141-45-51.0, the end of this section, where a stock crossing is to be installed. Ideally, those gates should be left open when no stock are being driven across the reserve. Gates on the ends of this crossing (on the landholders fences) are required to keep stock off the reserve at other times.
5. ***Structural works on culverts/bridges*** – none
6. ***Track clearance and alignment*** – present track does not follow the line but follows a line to the south. The cutting area has several trees on the bed, therefore the present track to the SE gate could be retained. However, only a few trees would need to be removed on the rail bed and this route would allow the native grasses on the current track to be restored.
7. ***Revegetation required*** – trees could be planted or direct-seeded on the S side
8. ***Weed control required*** – control of Phalaris clumps is required
9. ***Pest control required*** – none
10. ***Signage required*** – this is a good starting place for an exhilarating, downhill cycle or walk to Coleraine.
11. ***Fire protection*** – the eastern end of this short section is Baulchs Lane.

10Y First stock crossing point (37-36-48.0/141-45-51.0) to the 2nd planned stock-crossing point (37-36-04.6/141-44-23.0), some 300 m from Four Mile Lane end

1. ***Landscape*** – Casterton Rolling Hills – this section has very difficult brown, sandy loam, with some deep, cracking clays. The landform is steep and easily eroded where culverts have diverted flows to those points and where stock have bared the ground. There are high embankments in parts, a massive monument to those who laboured with horsepower to construct them! There is one wider section (The Springs) near another gate on the south side (37-36-38/141-45-02) where there are pools from springs on the hill above, and remnant *A. melanoxylon*. There are several points where erosion ocurrs below culverts – e.g. (a) 37-36-42/141-45-30, (b) 37-36-42/141-45-22, (c) 37-36-38/141-44-46, (d) 37-36-37/141-44-58, (e) 37-36-24/141-44-38. The embankment extends west down the long slope and across into the next section on the flat. This section of the reserve provides superb views of the eroded hills and valleys leading down to Coleraine. There is an old cross-fence at 37-36-17.7/141-44-30.5
2. ***Status of flora***
   - Variously Class III-IV – west towards The Springs – much of the area has been closely grazed and trampled over many years. The wetter spots are dominated by Phalaris, Cocksfoot, Wild Oats and Yorkshire Fog Grass. *Ptilotus* and a relic Silver Banksia (with many old stumps) occur on the cutting ~300 m west along this section. A large Blackwood near a culvert is found 200 m further west (37-36-42/141-45-29). A further 200 m west is a culvert at 37-36-42/141-45-25 and 2 big Sugar Gums on S side; earthworks and a new gate was installed on the S fence in 2007. Patches of *Themeda, Austrodanthonia* spp., *Austrostipa, Convolvulus, Oxalis perenans, Acaena* occur all along.
   - Class II-III – The Springs (37-36-38/141-45-02) – wet areas on the S bank contain *Triglochin striata*, Bullrush, Canegrass, *Cotula*, Toadrush, *Pseudognaphalium, Rumex brownii* and *Lythrum*. The wide, drier slope above had an excellent stand of *Austrostipa* spp., *Austrodanthonia pilosa* and *setacea, Tricoryne elatior*. An *A.paradoxa* grows in the eroded gully to the west. On the N side are degraded Blackwood, with *Hypochaeris, Cotula*, Perennial Ryegrass, Barley Grass, Cocksfoot and Strawberry Clover on the wetter areas. There are remains of *Allocasuarina verticillata* to the west.
   - Class I-II – S bank of eroded cutting at about 37-36-30/141-44-48 – *Eryngium ovinum, Acacia aculeatissima* (at least 200 tiny plants in Nov. 2007 – the only record on the Hamilton-Coleraine line), *A. vernicflua* (20 shrubs, most tiny, in Nov. 2007), *Convolvulus erebescens, Ptilotus macrocephalus* (>55 plants), *Wahlenbergia* sp., *Tricoryne elatior, Sebaea ovate, Oxalis perenans, Dystichlis, Eryngium, Acaena, Kennedia prostratum* and *Austrodanthonia* spp. were found near (just W of the 218 mile marker). The best preserved flora extends further W to ~ 200 m E of the RCIP water diversion at the corner of the existing fenced tree block (37-36-21/141-44-35).
   - Class V – this section stretches effectively from just E of the culvert and erosion works at 37-36-21/141-44-35 right through to the 2nd planned stock-crossing point (37-36-04.6/141-44-23.0). Except for a few small spots, this part of the reserve is almost entirely pasture grasses.
3. ***Fencing*** – there is a cross-fence at the start of this section. Side fences were not present on the reserve in 2004, except for 2 km on the north side, ending at a corner post and culvert at 37-36-21.2/141-44-35.3, above the adjacent stream. That old fence had been cut at one point and needs some minor repairs.
   Recommendation – assistance with funding to replace boundary fences is needed. At least 2 stock-crossings will be needed (for the entire length X-Z) to allow stock access to pastures on either side of the reserve. in 2007 the RCIP erosion-control project has resulted in the fencing of most of this reserve.
4. ***Gates*** – a new gate was installed on the S side in 2007, some 900 m from the start, where a new 7-wire fence (with 2 hot wires) proceeds W. Other access gates on both sides of the reserve occur ~200 m W of The Springs, near a huge old Sugar Gum.
5. ***Structural works on culverts/bridges*** – the wooden culvert at 37-36-24/141-44-38 may need attention in the future. Erosion control works may be required at several places, incl. 37-36-42/141-45-30 and 37-36-38/141-44-46 and 37-36-24/141-44-38. There is a pipe culvert at 37-36-21.9/141-44-35.3 where RCIP erosion control works were undertaken in 2007. The damaged culvert 100 m E at 37-36-24/141-44-38 is now blocked and water diverted to the next culvert W. There is a large concrete culvert near the old cross-fence at 37-36-17.7/141-44-30.5 and one at 37-36-13.5/141-44-27.6.
6. ***Track clearance and alignment*** – minor work is needed to clear rocks and branches from the rail line.
7. ***Revegetation required*** – trees could be planted or direct-seeded on degraded parts of the reserve where access is possible. That would assist in the future control of water flow and erosion. Areas of native grassland species must be avoided and the priority for revegetation should be the Class V areas. A limited selection of species should be used, and restricted to those that presently occur, or occur locally (see list for 10Z)
8. ***Weed control required*** – Tamarisk and Willows near The Springs need to be removed. Control of Phalaris clumps is also required, but this is impracticable in some sections. The long-term objective is to

establish trees/shrubs on those sections. There are a few old Sugar Gum (*E. cladocalyx*) and Pine, along the line [a row of pines along approx. 100 m of the reserve on the S side were fenced out in the RCIP project, with the new line of fencing placed approx. 10 m inside the actual reserve boundary].

9. ***Pest control required*** – none at present
10. ***Signage required*** – this section has an intriguing geology and history that could be displayed in a sign or brochure. The vegetation here is also interesting and that could be highlighted.
11. ***Fire protection*** – there may be a need to provide a fuel-reduced gap, perhaps in the degraded last part of 10Y, e.g. a 100 m flat stretch west of the runoff diversion into the creek. Other stretches could be fuel-reduced from time-to-time but much of the terrain is steep and the logistics of doing so are doubtful. There is also the need to maintain vegetative cover to reduce the erosion potential.

The eroded south side of a cutting in 10Y, a site of particular botanical importance with *Acacia exudans* (this Casterton variety is now regarded as a new species), *Acacia aculeatissima*, *Ptilotus macrocephalus* and other species growing on the southern slope and *Austrodanthonia* and other native speciesgrowing there and higher up.

Featherheads and Varnish Wattle are shown here, looking west. The trail curves right, past Sugar Gums and embankment in the top, centre picture and on to the left of the dark block of trees.

The wooded creek is seen below. Photo: R. Bird, Nov. 2007

The same site as above, on 10Y, looking east up the Koroite Decline to the plateau (Dundas Tableland). The track curves left from centre to the top left corner.

Display of Thin-leaf Wattle (*Acacia aculeatissima*) – the dark green spots – Featherheads (*Ptilotus macrocephalus*) and Wallaby-grass (*Austrodanthonia* spp.) on the eroded cutting at 10Y in Nov. 2007, since fencing the section in early 2007.

Photo: R. Bird, Nov. 2007

<u>10Z From proposed stock-crossing at 37-36-05/141-44-23.0 to cross-fence adjacent to Four Mile Lane (37-35-52.8/141-44-13.1), the exit to Coleraine-Cavendish Rd</u>

1. ***Landscape*** – as for Y, above. This part rises from the valley, west to the top of the hill. The soil is a more friable, black-cracking type towards the western end where the cutting is 1-1.5 m deep. A power line crosses the reserve at 37-36-10.5/141-44-26.1, over a short cutting. There is a substantial embankment starting at 37-36-12.1/141-44-26.9 and extending east, rising to about 6 m at 37-36-13.5/141-44-27.6, where there is a concrete tunnel. The reserve is approx. 45 m wide at the west end.
2. ***Status of flora***
   - Class V – the entire section is dominated by pasture species (especially Phalaris) and Thistles. There are a few Peppercorn trees at 37-36-02.7/141-44-21.7, above the short cutting [these were cut down

recently], a short row of Lemon-scented Gum hard against the old fence line to the south (37-36-05.5/141-44-23.4) and a clump of Sugar Gum just outside the reserve near the lane.

3. ***Fencing*** – this 350 m section of the reserve was also unfenced on the N and S boundaries, save for a 30 m section on the western end from 37-35-55/141-44-16 to a side gate on the SW corner, and resembled the adjacent grazed paddock. In 2007 the RCIP project fenced both sides of the reserve through to the west end, in order to remove livestock. The wonky cross-fence at the western end was replaced. End fences, with central gate and tombstone walker-access adjacent, were installed at 37-36-05/141-44-23 and at 37-35-53/141-44-13 stock-crossings. When cyclists and walkers begin to use this reserve the gates on the cross-fences should be left open when stock are not being driven across the reserve. Gates will need to be installed on the side fences to keep stock out.

   There is one good gate from the reserve onto the laneway to the north and another from the reserve into a paddock on the south. The line of the boundary east from the north side begins at a corner post on the lane at 37-35-53.7/141-44-15.6.

   Recommendation – as for 10Y above.

4. ***Gates*** – as for Y above (see also α_1 below)
5. ***Structural works on culverts/bridges*** – there is a small pipe culvert at 37-36-05.5/141-44-23.4
6. ***Track clearance and alignment*** – as for 10Y
7. ***Revegetation required*** – this entire stretch should be revegetated with trees/shrubs. The species required are the same as for 10Y. A dense establishment is needed to eventually suppress the pasture species. . That would include *Allocasuarina verticillata*, *Acacia melanoxylon*, *A. mearnsii*, *A. vernicflua*, *A. aculeatissima*, *Banksia marginata*, *E. camaldulensis*, *Bursaria spinosa* and possibly *E. pauciflora* (Snow Gum). Snow gum occurs in the Wando Heights area, while Sweet Bursaria also occurs in the district. Silver Banksia, Drooping Sheoak, Blackwood, Manna Gum occur on the rail reserve just east of the Glenelg Highway (Unit 8R) and could be used for propagation of these species at Unit 10.
8. ***Weed control required*** – there will be a problem with Phalaris and Thistles. The thistles will decline when grazing (and bare ground) is removed and grass cover is obtained. The only long-term solution is to slash the rail line annually and to revegetate the sides with a dense cover of trees and shrubs.
9. ***Pest control required*** – nothing required
10. ***Signage required*** – nothing required
11. ***Fire protection*** – burning is not thought to be important in this section; if necessary, that could be done in 10Y, as a measure to prevent a fire running up the erosion-susceptible escarpment. The stock-crossing point between 10Y and 10Z provides a break.

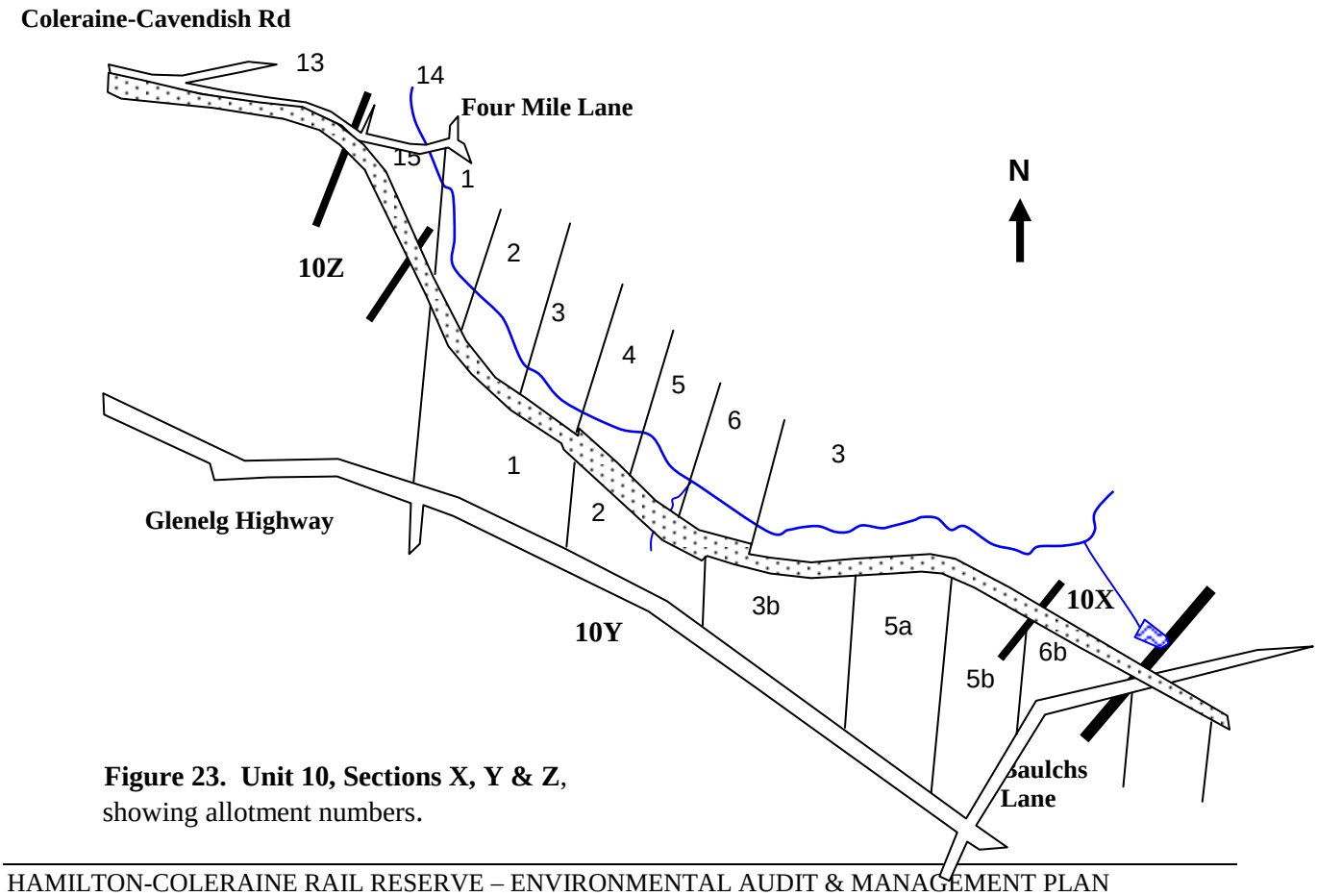


Figure 23. Unit 10, Sections X, Y & Z, showing allotment numbers.

Unit 11 – Cross-fence adjacent to Four Mile Lane 500 m east of Cavendish Rd (37-35-52.8/141-44-13.1) to Heard St off Glenelg Highway (37-35-55.7/141-42-53.5)

11α_1 Cross-fence adjacent to Four Mile Lane, 500 m east of Cavendish Rd (37-35-52.8/141-44-13.1) to cross-fence on the alluvial plain (37-35-50.4/141-43-19.3)

1. ***Landscape*** – Casterton Rolling Hills – friable black clay soils, brown clay soils and glacial tillite or other stone exposed on lower slopes. This section is fenced and, in the last few years, only lightly grazed (evidence of the recent presence of cattle in the reserve was obvious). There is a cutting at the eastern end, an embankment up to 5 m high in the middle section, and a cutting from about 37-35-46.6/141-43-34.8 extending to the western end. The reserve is about 45 m wide at the eastern end and 34 m wide at the western end. There is a considerable extra width of reserve adjacent to the Coleraine-Cavendish Rd, in the area of a small pond near 37-35-46.8/141-43-22.3, adjacent to the road. Presumably that is now part of the reserve, although there is an old corner post at 37-35-46.6/141-43-34.8 near the rail line cutting.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Class II in parts – significant *Austrodanthonia, Themeda, Poa sieberana* and probably other native grasses, with a significant remnant of the broad-phyllode form of *Acacia exudans* (Varnish Wattle) at 37-35-48.1/141-43-43.8 and adjacent 37-35-55.7/141-42-53.5) at the western end of this fenced section. Two remnant Drooping Sheoak also occur here. Other parts contain semi-mature River Red Gums, particularly at 37-35-46.4/141-44-33.0, where the native grassland was also good.
   - Class IV in parts – due to stocking of the reserve in the past, the proximity of invasive pasture species adjacent, and the type of soil, there has been a substantial degeneration of the native *Austrostipa*, *Austrodanthonia* and *Poa* pasture, and its replacement with Phalaris, Yorkshire Fog Grass and other species. These areas have been planted by the Committee in the last 3 years and there is an expectation that the trees and shrubs will ultimately suppress the Phalaris. There is also an indication that the native species (particularly *Poa sieberana*) are re-emerging in some areas. *J. pauciflorus* and *J. pallidus* is present in some areas.
3. ***Fencing*** – **t**here are cross-fences at both ends of this section. A new 6-wire pine post fence has been installed by the Committee along the bulk of the northern side of the reserve, although the purpose of that fence is not clear, since it abuts the road reserve. The fence on the southern side is old but still adequate.
   Recommendation – the 2 cocky gates on the road reserve could be removed to prevent cattle being confined in the reserve, as appears to be happening at present, with negative consequences to the revegetation project. A locked gate and pedestrian access will be required on the centre of the cross-fence at the eastern end (at 37-35-52.8/141-44-13.1) if there is justification for a stock crossing or transport access there. In the interim period before the re-fencing of Unit 12 is accomplished, there will need to be a cross-fence and centrally located locked gate and pedestrian access at the western end (37-35-50.4/141-43-19.3). The gate into the southern paddock at this end should be removed (see note below).
4. ***Gates*** – there is a cocky gate in the eastern cross fence (near 37-35-52.8/141-44-13.1) but none on the western end (37-35-50.4/141-43-19.3). There are good cocky gates into the new northern side fence off the lane and Cavendish road (at 37-35-46.1/141-43-26.1) just east of the pond, and near the junction of the lane and Cavendish Rd, opposite Peppercorn trees and Box-thorn at 37-35-48.0/141-43-46.6 on the line. There is a gate into the southern paddock at the western end of the reserve (37-35-50.4/141-43-19.3). There does not appear to be any good reason for the existence of this gate - there is no stock crossing here - and it should be removed. There is also an old iron gate at 37-35-49.4/141-43-20.0, on the southern side fence, some 30 m east of the end of this section of reserve. This does not appear to have been opened in years. However, it could remain as it would give emergency access to the line through the little paddock adjacent and the gate at 37-35-47.7/141-43-18.3 on the Cavendish Rd.
5. ***Structural works on culverts/bridges*** – there is a pipe culvert at 37-35-50.1/141-44-04.7 and bricked flume/pipe culverts for erosion control at 37-35-47.2/141-43-39.6 and 37-35-47.0/141-43-30.2.
6. ***Track clearance and alignment*** – the track is on the embankment and nothing is required apart from removal of Box-thorn and Peppercorn trees and annual slashing of the track.
7. ***Revegetation required*** – there are 4 rows of replanting on the southern side and 2 rows on the northern side, starting from the eastern end of this section. The pattern varies further west, where there is more space on the northern side. Local species appear to have been used (Manna Gum, River Red Gum, Tree Violet, Drooping Sheoak, Prickly Moses, Blackwood and Black Wattle), although a greater number of Drooping Sheoak could be employed, and *A. exudans* (Varnish Wattle) should have been included here, from seed collected from the remnants. Attention to second-year weed control would have payed dividends, both in improving survival and the growth of the seedlings. A selective grass-killer (e.g. Verdict - a herbicide that will not affect broad-leaved species) should be applied as a spot-spray over the top of the trees now to reduce the competition.

8. ***Weed control required*** – there are a few Briar Roses and several Box-thorn that urgently need to be removed (there is also a stand of Box-thorn across the road, at a sheep yard, that must be removed too, or Blackbirds will take the seed back onto the reserve). The Peppercorn trees must be removed.
9. ***Pest control required*** – nothing required
10. ***Signage required*** – nothing required
11. ***Fire protection*** – the sections to the east and west are currently grazed.

11α_2 Cross-fence on the alluvial plain (37-35-50.4/141-43-19.3) to Heard St off Glenelg Highway (37-35-55.7/141-42-53.5)

1. ***Landscape*** – this is a descent to the alluvial floodplain of the Koroite Creek valley. This part of the reserve is about 34 m wide
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Class IV or V – degraded to pasture species, with line now unfenced on north side. There is a River Red Gum on the line 10 m west of the bridge, and another tree further west. Large gums occur in the paddock to the north. *Juncus pauciflorus* occur along the reserve.
3. ***Fencing*** – **t**he side fence on the south is OK but the north fence has gone, except for many of the posts. There is an old cross-fence on Heard St (a gravel lane).
   Recommendation – the ultimate aim must be to have the north side fence replaced. The cross-fence at Heard St can then be removed.
4. ***Gates*** – there is no gate onto Heard St (37-35-55.7/141-42-53.5) – none will be needed when the north side fence is replaced. However, in the interim a gate will be required here, centrally on the line, to allow walkers access along the line.
5. ***Structural works on culverts/bridges*** – there is a good low bridge on the creek at 37-35-52.8/141-43-14.2. The deck is iron.
6. ***Track clearance and alignment*** – no works required, except annual slashing of the walking track
7. ***Revegetation required*** – this stretch could be revegetated once the northern fence is replaced. *Acacia exudans, A.verticillata, A. melanoxylon, A. mearnsii, E. camaldulensis, E. ovata, E. viminalis, Bursaria spinosa, Banksia marginata, Allocasuarina verticillata, Leptospermum continentale* could be planted here. A dense planting would be desirable.
8. ***Weed control required*** – none at present
9. ***Pest control required*** – nothing required
10. ***Signage required*** – nothing required
11. ***Fire protection*** – the entire section is currently grazed.

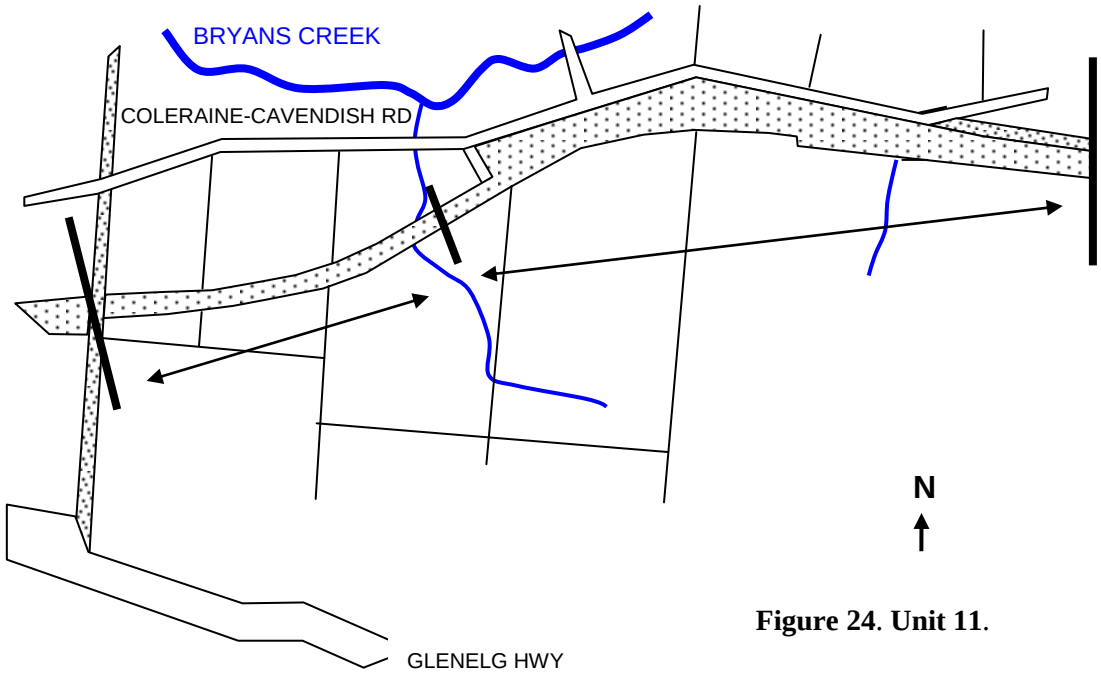


Figure 24. Unit 11.

Unit 12 – Heard St off Glenelg Highway (37-35-55.7/141-42-53.5) to Glenelg Highway at Coleraine Highway (37-36-03.3/141-42-10.5) opposite Coleraine Community Parkland)

12β_1 Heard St off Glenelg Highway (37-35-55.8/141-42-52.7) to new cross-fence to the west (37-35-56.7/141-42-36.0)

1. ***Landscape*** – alluvial floodplain of the Koroite Creek-Bryan's Creek valley. There is a small dam just outside but hard against the reserve on the SE corner and another on the SW corner. The reserve is 70 m wide on the Heard St end (the corner posts are at 37-35-57.4/141-42-52.5 and 37-35-55.2/141-42-52.7) and 45 m wide on the western end. This is a very flat section.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Class IV – while this area has been extensively grazed (the southern fence has been neglected) there are some native species, including plentiful rushes (*Juncus pauciiflorus*) and some sign of *Poa* spp. There are 2 mature River Red Gum in the paddock immediately adjacent to the northern boundary at 37-35-56.2/141-42-45.2. Opposite there is a line of about 12 Cypress, just outside the southern boundary but having an impact on the reserve (thistles occur in the area of shade and stock camps). Several of these trees are dead. The pasture species here is mainly Perennial Rye Grass rather than Phalaris.
3. ***Fencing*** – the south side fence needs repair. The northern fence is OK but will also need some attention in the future. There is a new cross-fence on the western end.

   Recommendation – that the landholder on the southern side be requested to repair his fence so as to exclude stock from the reserve. The cross-fence on Heard St should be removed to prevent grazing of this section of the reserve. Ultimately, the cross-fence on the western end of this section should also be removed, when the section of line to the west is fenced again.
4. ***Gates*** – there is a gate on the NW corner of the western cross-fence. That should be re-located to the centre of the line, locked, and a walker access gap provided alongside.
5. ***Structural works on culverts/bridges*** – none
6. ***Track clearance and alignment*** – no works required, except annual slashing of the central walking track
7. ***Revegetation required*** – this is an ideal area for re-planting, with species listed for the section opposite from Heard St (α_2). There is a good width and no great incidence of Phalaris. Due to it's proximity to Coleraine it would make an excellent site for a school planting exercise. The site is also well suited to a direct-seeding job, with follow-up planting with tube-stock (for *Bursaria* etc). The presence of mature River Red Gums on the north side will also mean natural regeneration of this species will occur.
8. ***Weed control required*** – nothing required at present
9. ***Pest control required*** – nothing required
10. ***Signage required*** – nothing required.
11. ***Fire protection*** – the entire section is currently grazed.

12β_2 New cross-fence (37-35-56.7/141-42-36.0) to Glenelg Highway at Coleraine Highway (37-36-03.3/141-42-10.5) opposite Coleraine Community Parkland)

1. ***Landscape*** – alluvial floodplain of the Koroite Creek valley. This is the final open country section before houses are encountered along the Glenelg Highway. The reserve runs along the rear of about 5 houses at that point and fronts the Glenelg Highway at an angle. The reserve appears to be about 35 m wide at the western end and 45 m wide at the eastern end.
2. ***Status of flora*** (provisional assessment in April 2004, pending a further examination in spring)
   - Class V – the reserve is grazed by stock, being open to stock. There are no trees on the paddock section and the pasture appears to be exotic species. There are a few trees behind the houses, predominantly willows.
3. ***Fencing*** – there is no side fence on the northern side of the reserve. There is also no side fence on the southern side, until the houses are encountered, where the back fences are constructed of corrugated iron. There is an old cross-fence at 37-36-00.8/141-42-18.4, with a 20-m section of fence (part of an unused Gordon St road reserve) leading west to connect with a paddock fence then extending north.

   Recommendation - ultimately this section should be re-fenced on the sides. There would appear to be need to provide stock access across the reserve for the eastern portion, and that would best be done by allowing a 10-20 m crossing on the western end of those paddocks, near the houses.
4. ***Gates*** – there is no gate off the Glenelg Highway. A locked gate will need to be provided there, with an access way for walkers alongside. There is currently a cocky gate on the cross-fence at 7-36-00.8/141-42-18.4, but that will need to be replaced. Another gate will be needed for the stock crossing there, when that fence is constructed.
5. ***Structural works on culverts/bridges*** – none required
6. ***Track clearance and alignment*** – the walking track will need annual slashing

7. ***Revegetation required*** – this area should ultimately be re-vegetated, with species noted for the adjacent section to the east. That would make a fine entrance to the town and connect a corridor of native vegetation from Coleraine to the Wannon. The area adjacent to the houses should be planted principally with Sweet Bursaria, Silver Banksia, Blackwood and Drooping Sheoak. The latter species, when planted densely, is very effective at suppressing infestations of exotic grass. The other species provide a visual barrier to the back yards of the houses and are also comparatively fire retardant, offering additional protection to the houses from grass fires from the NW.
8. ***Weed control required*** – nothing at present. Action will be needed to control any Phalaris that emerges when the area is fenced off and tree-planting is done. The residents may wish to mow the strip immediately behind their corrugated iron back fence.
9. ***Pest control required*** – nothing required
10. ***Signage required*** – in future a sign near the Glenelg Highway should indicate the presence of the walking trail.
11. ***Fire protection*** – the entire section is currently grazed.most of this section is currently mown.

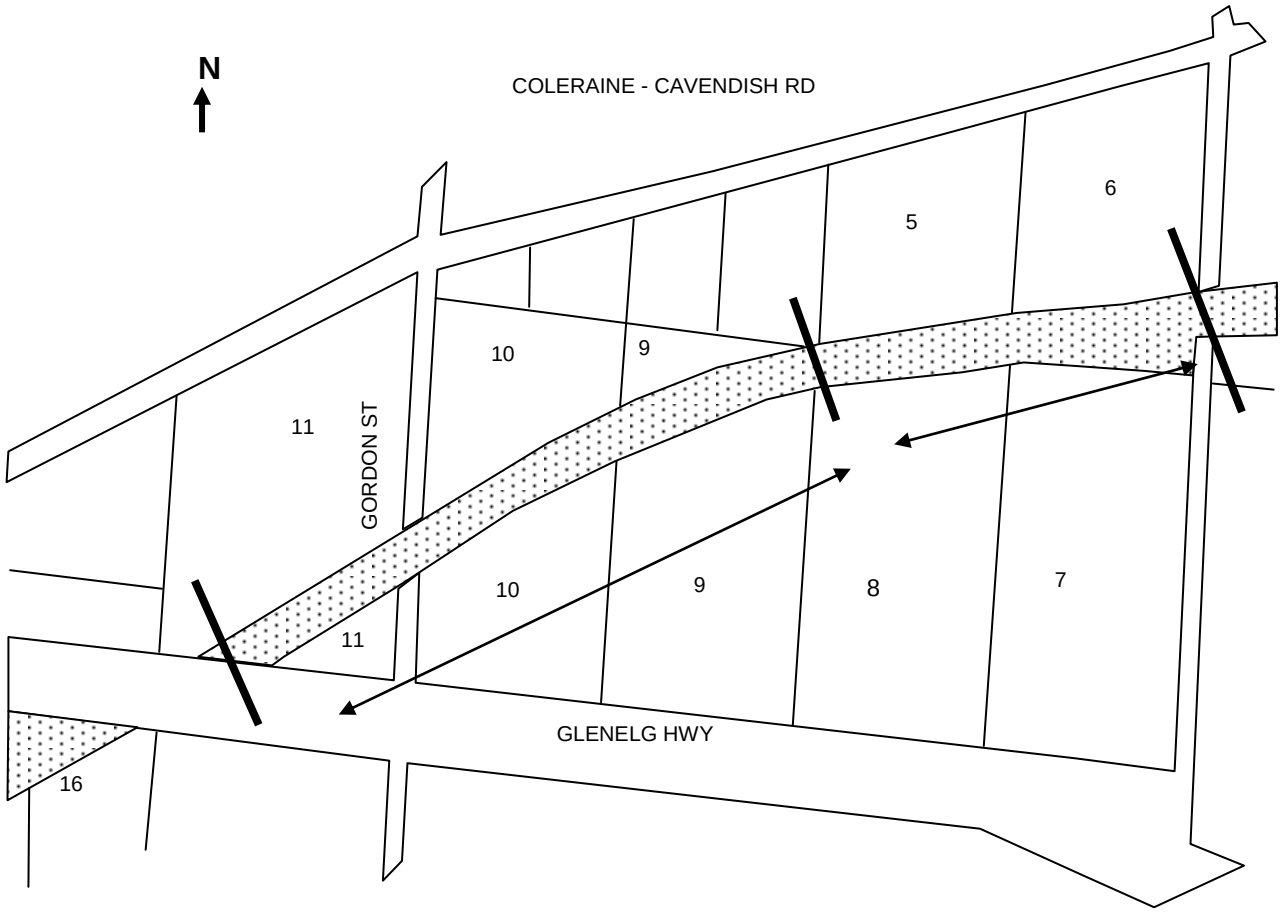


Figure 25. Unit 12, showing allotment numbers.

Unit 13 – Coleraine Community Parkland off Glenelg Highway (37-36-03.3/141-42-10.5) to Coleraine Railway Station (37-36-10.4/141-42-46.4)

13δ_1 Coleraine Community Parkland off Glenelg Highway (37-36-03.3/141-42-10.5) to Robertson St crossing (37-36-07.1/141/41-58.2)

1. ***Landscape*** – this is all part of the Community Parkland and managed by the Shire. The old railway line runs through to the Coleraine Railway Station (37-36-10.4/141-42-46.4. The parking area off the Glenelg Highway offers an excellent start to the trail that leads east to Hamilton.
2. ***Status of flora*** – the vegetation here is planted grounds and lawns
3. ***Fencing*** – none
4. ***Gates*** – none
5. ***Structural works on culverts/bridges*** – none required, except that a small bridge would be needed to cross a ditch at Robertson St (37-36-07.1/141-41-58.2), if it is desired to walk along the exact route of the old line. Otherwise, skirt the wetland area on the lawn, cross Robertson St and continue on McLeod St.
6. ***Track clearance and alignment*** – nothing extra required
7. ***Revegetation required*** – nothing required
8. ***Weed control required*** – nothing required
9. ***Pest control required*** – nothing required
10. ***Signs required*** – nothing required
11. ***Fire protection*** – the entire section is currently mown.

13δ_2 Robertson St crossing (37-36-07.1/141/41-58.2) Coleraine Railway Station (37-36-10.4/141-42-46.4)

1. ***Landscape*** – this is part of the Community Parkland and managed by the Southern Grampians Shire. The rail line runs to the Coleraine Railway Station (37-36-10.4/141-42-46.4) - a track to the west off McLeod St leads there. There are bar-b-que facilities outside and information inside the Station building.
2. ***Status of flora*** – these are planted grounds and lawns
3. ***Fencing*** – none
4. ***Gates*** – none
5. ***Structural works on culverts/bridges*** – none required
6. ***Track clearance and alignment*** – nothing extra required
7. ***Revegetation required*** – nothing required
8. ***Weed control required*** – nothing required
9. ***Pest control required*** – nothing required
10. ***Signage required*** – information and signage will be required once the trail is opened
11. ***Fire protection*** – most of this section is currently mown.

Historic Coleraine Railway Station – front of the building, looking east along the route of the rail line to Hamilton. The Railway Station now serves as a tourist information centre and has a barbeque outside and other facilities in the building. (Photo: R. Bird)

APPENDICES

Appendix 1 – Strategic grazing to manage botanic diversity in native grasslands
Appendix 2 – Fire issues and trees
Appendix 3 – Flora surveys – *see* Tables I-V

Top left – A stand of Milkmaids (*Burchardia umbellata*) near S Youngs Rd (Photo: D. Luhrs)
Top centre – Varnish wattle (*Acacia exudans*) in Unit 8Y (Photo: R. Bird)
Top right – Tiger Orchid (*Diuris sulphurea*) in Unit 5L (Photo: D. Luhrs)
Bottom left – Red Parrot-pea (*Dilwynnia hispida*) & Erect Guinea-flower (*Hibbertia stricta*) in Unit 5L (Photo: D. Luhrs)
Bottom centre – Featherheads (*Ptilotus macrocephalus*) in Unit 5N (Photo: R. Bird)
Bottom right – Blue Devils (*Eryngium ovinum*) & Common Everlasting (*Chrysocephalum apiculatum*) in Unit 8Q)

APPENDIX 1. Use of fire or grazing to manage species diversity in native grasslands

Native grasslands that are left for many years without some form of mass reduction (through burning or grazing by native animals or domestic livestock) may become dominated by a few species of grass. This is particularly evident with *Themeda triandra* (Kangaroo Grass) swards, although in some situations *Austrodanthonia* (Wallaby Grass), *Austrostipa* (Spear Grass) or *Poa* (Tussock Grass) may be more important. The result is a dense mat of grass and few inter-tussock spaces available for other native groundcover species (lilies, orchids, sedges, forbs and herbs) to establish. The long-term result may be a loss of some of those species.

Fire effects – repeated burning (as on roadsides fuel-reduced annually, some for at least 50 years) has produced a native flora almost free of the pasture and weed species that occur in adjacent paddocks. This is due to destruction of the seed of pasture species and weeds and is often a further consequence of low fertility, no cultivation and no herbicides. Native species able to tolerate annual burning are mostly perennials that re-sprout from crowns (e.g. Kangaroo Grass rapidly forms a green cover over summer), has seed that avoids fire (e.g. Spear Grass, where awns push the seed into the soil), or has corms/bulbs in the soil (e.g. lilies/orchids).

Areas that have been burned as fire breaks for many years should continue to be burned, although perhaps not annually, but a price has been paid in terms of diversity for originally many more species would have been present but some did not survive the annual burning. For "new" areas, we must not blindly follow past practice with regards to fire – attention must be paid to the species present and the frequency and season of burning.

Grazing impacts – the following recommendations relate to grazing native grassland on productive farms and may not apply to the rail reserve. Short-term stocking in autumn with greater numbers of sheep may be a more appropriate and practical way of reducing pasture mass (less soil compaction, nutrient transfer and browsing of shrubs). Even if carefully managed, grazing can damage the flora, especially young trees and shrubs.

Winter:

- maintain a low stocking rate (2 sheep/ha), or defer grazing, to encourage the perennial grasses.

Spring:

- To reduce annual exotic grasses – use *short-term, high density* grazing before native grasses head. Remove up to 80% of pasture mass and then remove stock to allow native species to flower and set seed.
- To encourage seed-set of native grasses – remove grazing when native grass stems start to elongate and seed heads begin to emerge. *Austrodanthonia* begins to set seed in late September, so spell the paddock for 4-6 weeks from that time. *Themeda* sets set from early December, so spell the paddock for 4-6 weeks from that time. Where both occur, no grazing from late September to early February.
- To reduce clover content – use *short-term, high density* grazing (avoid pugging in very wet weather).

Summer:

- From February, maintain *low-moderate grazing* (2-4 sheep/ha) until seed set is complete. Sheep must be yarded overnight *before* bringing on site, to reduce weed seed transfer.

Autumn:

- Before the "break" – graze at mod-high stocking rates (4-8 sheep/ha) to remove most dead plant residues.
- After the "break" – *lightly* graze pasture, with 6-week spells to protect native grass seedlings.

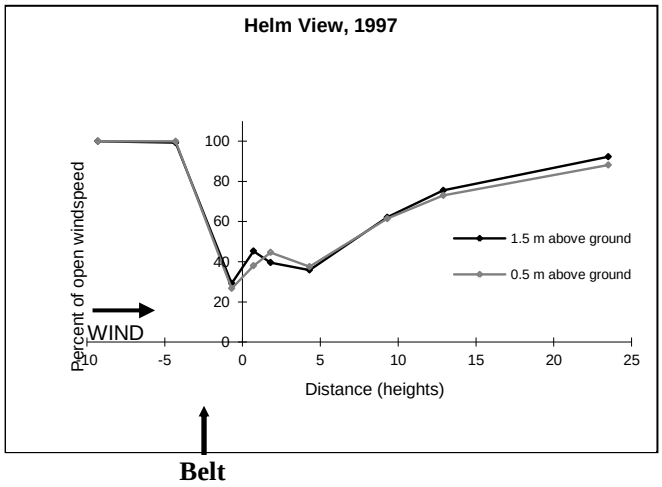
References:

- Land for Wildlife (1998) "Native grasslands of the basalt plains – an introduction to management for landholders". Note No. 41.
- Trust For Nature (1998) "Grasslands and grassy woodlands of the western plains".
- Barlow, T (1998) "Grassy guidelines – how to manage native grasslands and grassy woodlands on your property". Trust for Nature.
- Lunt, I, Ross, J and Barlow, T (1998) "A field guide to the native grasslands and grassy woodlands of south eastern Australia". Publ.:Vic. National Parks Association/Trust for Nature.
- MRC/SGS (1998) "Grazing management of *Danthonia* and *Microlaen*a-based pastures". In Tips and Tools No. 005, based on p. 43 of NSW Agriculture Technical Bulletin 47 –ed. by RD FitzGerald and G.M. Lodge (1997).
- Buchanan D (1999/2000) "Grazing effects on native pastures". Landcare News, NRE, Dec./Jan. issue.
- Anon (2006) "Greener Pasturesfor south-west Victoria". Ch. 11. Publ. DPI.
- For recent publications see http://land.vic.gov.au/dpi/vro/vrosite.nsf/pages/ecorich_publications

APPENDIX 2. Fire issues and trees

Trees can assist fire control – trees can be a major hazard, given a specific context (such as a forest) and particular species (e.g. Stringybark), but the danger in farmland is less than often claimed. The speed of the fire will be greatest in the open grassland. While "spotting" from a clump of trees can occur, from blown leaves and bark, it takes a minute or so for that to ignite, blow downwind and then develop into a new fast-running fire. In the absence of the trees, a running grassfire would be expected to reach the same position in less time.

The advantages of trees in reducing windspeed near the ground (and thus fire speed) are usually ignored. Fires on grassland can be slowed by a belt of trees. The evidence that trees reduce windspeed is well known – local evidence is shown in *Trees and Shrubs for South West Victoria* (1996) by PR Bird, GA Kearney & DW Jowett (Agric. Vic. Tech. Report No. 205) or in PR Bird *et al*. (2007) *Aust. J. Exp. Agric.* **47**:727-737. Windspeed is reduced to windward (to 4 heights) and to lee (20-70% decrease to 20 heights), depending on the structure of the belt or block. An example (from PR Bird *et al*. (2002) *Aust. J. Exp. Agric.* **42**: 809-830) is shown below.



Far from being a hazard, trees can be of assistance in controlling a grassfire (fire speed is governed largely by windspeed and fuel load) and in protecting an area to the lee – see an example in the following photograph where areas behind windbreaks escaped the fire. From observations in other fires, the fire may creep in from the head and sides later but livestock sheltering in such areas walked out onto burned ground.

Grass fire in SW Victoria 16 Feb 1983 – effect of windbreaks in protecting paddocks from fire (arrows show areas protected from fire by windbreaks)

Ember drift – as discussed earlier, while trees can shelter a house from a grass fire, in some circumstances trees can be a hazard when alight, due to the drift of embers onto houses and yards. If the woodlot or copse is upwind from the house then burning embers may shower down upon the house some time after a grass fire has passed through. This is a cause for concern but must be put in context with other hazards (on bad days, even sheep manure can contribute embers) and safety measures around/on the building that can be taken to avert danger from all sources of embers. Where trees are nearby then it is wise to inspect the property after the fire front has passed, in order to detect any fire that may start subsequently from blowing embers. Trees that have a lower flammability can also be selected and that will reduce – but not eliminate – the problem.

Woody debris – some argue that the buildup of wood will be a major hazard when the line becomes a tree corridor. Firstly, large wood on the ground has little influence on fire speed. Secondly, we can observe that over time, when decay organisms are not interfered with, the amount of tree litter present in the form of wood, twigs and leaves reaches a plateau (the actual level being dependent on several factors) – it does not continue to rise. If it was not so we would be buried in litter. Woody debris is vital for the functioning of ecosystems – without such debris to feed a host of small organisms, a large number of bird and other animal species that depend on that food supply cannot live in the area. Jim Radford (*Land For Wildlife News* 2004, Vol. 5, No.7. p.13 – "Let sleeping logs lie") presents a good discussion of the importance of woody debris in rural landscapes.

Fuse breaks

There is a deal of confusion in the minds of some landholders when the subject of "fuse breaks" arises. Many apply the term inappropriately because the linear corridor that is deemed to be the fuse is often virtually indistinguishable in potential hazard to the surrounding countryside. What then is the fuse?

Grassland condition

In most years there will be more grass on the rail reserve than on a grazed paddock, although the difference may not be great, particularly after a lush spring when the pasture mass in the paddocks may exceed 5-7 t DM/ha. Where the reserve has not received fertilser or had a history of heavy grazing (a practice that allows the transfer of nutrients and weed seeds onto the reserve) the plant growth will be much reduced, compared with farm paddocks that have been fertilised and sown to improved pasture species. The concept of a 'fuse break' then is very weak, since grass in the paddocks will carry a fire at a similar speed or greater speed. However, the situation on the reserve may be be worse where the native grassland has been cultivated or grazed in the past. Efforts should be made to restore the grassland to its original condition, or to grow trees on the area.

Fire hazard is related to fuel load and moisture content, wind speed, air temperature and humidity. However, on a bad fire day, such as Ash Wednesday in Feb. 1983, fires travelled across farmland almost regardless of the fuel load. One fire crossed a bare 200-m-wide paddock adjacent and to the west of the PVI - that paddock contained less than 0.5 t DM/ha, as a result of the preceding spring drought. The fire set alight a house at the Institute, and it was carried there largely by windblown sheep manure. On a bad day every paddock is a danger.

Where there is a demonstrated justification for fuse breaks, the optimal spacing between such breaks will be governed by many factors, including type of vegetation, which will vary along the reserve.

If there is a danger from these so-called "fuses" then it depends on when the fire starts and how long before the wind changes. When the wind changes the main fire will run with the wind, although an untended fire is also likely to burn slowly down the corridor. The greater danger results from the change in wind (e.g. the late afternoon SW windshift) that creates an extensive new fire front. Brigades are well aware of the need to mop up along the edges of such breakaway fires.

Wind speed and direction in relation to corridors

The wind does not blow continuously all day from one direction – the thought that the Glenelg Highway, the Henty Highway, or the Hamilton-Coleraine Rail Reserve is going to be a danger to Hamilton must be looked at with that knowledge. Data logged at the PVI on Ash Wednesday show how the wind can vary during the day:

6-8 am	5-10 km/hour, wind from NE
8-12 am	15-55 km/h, wind shifting slightly NNE to N
12-5 pm	55 km/h, wind drifting from N to NW
5-5.45 pm	70-90 km/h, wind from WNW
5.45 -7 pm	70-145 km/h (15-min peak just after 6 pm), wind from WSW
7-8 pm	30-70 km/h, wind WSW

APPENDIX 3 Vascular Flora of Hamilton-Coleraine Rail Reserve

Rod Bird

TABLE I – Vascular plant list for Hamilton-Coleraine Rail Reserve (1978-2015)

Indigenous native plants listed by AC Beauglehole (1996), PR Milne (1978-84) and PR Bird (1978-85, 2003-07 and incidental records to 2011-2015) for the entire Hamilton-Coleraine Railway Reserve and Station Grounds

No.	Botanical Name	Common Name	No.	Botanical Name	Common Name
1	*Acacia aculeatissima*	Thin-leaf Wattle	64	*Dillwynia hispida*	Red Parrot-pea
2#	*Acacia baileyana*	Cootamundra Wattle	65	*Distychlis distichlophylla*	Australian Salt-grass
3#	*Acacia decurrens*	Sydney Black Wattle	66	*Diuris behrii*	Golden Cowslip
4	*Acacia exudans*	Casterton Varnish Wattle	67	*Diuris sulphurea*	Tiger Orchid
5#	*Acacia longifolia*	Sallow Wattle	68	*Drosera auriculata.*	Pale Sundew
6	*Acacia mearnsii*	Black Wattle	69	*Drosera pygmaea*	Tiny Sundew
7	*Acacia melanoxylon*	Blackwood	70	*Drosera aberrans*	Scented Sundew
8	*Acacia paradoxa*	Hedge Wattle	71	*Einadia nutans*	Nodding Saltbush
9	*Acacia verticillata*	Prickly Moses	72	*Eleocharis acuta*	Common Arrow-grass
10	*Acaena echinata*	Sheep Burr	73	*Eryngium ovinum*	Blue Devils
11	*Acaena novae-zelandiae*	Bidgee-widgee	74	*Eryngium vesiculosum*	Prickfoot
12	*Allocasuarina muelleriana*	Slaty Sheoak	75	*Eucalyptus aromaphloia*	Scent-bark
13	*Allocasuarina palludosa*	Scrub Sheoak	76	*Eucalyptus camaldulensis*	River Red Gum
14	*Allocasuarina verticillata*	Drooping Sheoak	77	*Eucalyptus ovata*	Swamp Gum
15	*Acotriche serrulata*	Honey Pots	78	*Eucalyptus viminalis*	Manna Gum
16	*Amphibromus nervosus*	Swamp Wallaby-grass	79	*Exocarpos cuppessiformis*	Cherry Ballart
17	*Amyema pendula*	Drooping Mistletoe	80	*Ficinia nodosus*	Knobby Club-rush
18	*Anthosachne scabra*	Common Wheat-grass	81	*Ficinia* spp.	Sedge
19	*Apodasmia brownii*	Coarse Twine-rush	82	*Gahnia radula*	Thatch Saw-sedge
20	*Apodasmia tenax*	Slender Twine-rush	83	*Geranium potentilloides*	Cinquefoil
21	*Aristida ramosa*	Cane Wire-grass	84	*Geranium solanderi*	Austral Cranes-bill
22	*Arthropodium fimbriatum*	Nodding Lily	85	*Geranium retrorsum*	Storksbill
23	*Arthropodium milleflorum*	Pale Vanilla Lily	86	*Gonocarpus tetragynus*	Common Raspwort
24	*Arthropodium strictum*	Chocolate Lily	87	*Goodenia geniculata*	Bent Goodenia
25	*Asperula conferta*	Common Woodruff	88	*Goodenia humilis*	Swamp Goodenia
26	*Astroloma humifusum*	Cranberry Heath	89	*Goodenia pinnatifida*	Cut-leaf Goodenia
27	*Austrostipa pubinoidis*	Tall Spear-grass	90	*Haloragis heterophylla*	Varied Raspwort
28	*Austrostipa setacea*	Corkscrew Spear-grass	91	*Hibbertia riparia*	Erect Guinea-flower
29	*Austrostipa hemipogon*	Spear-grass	92	*Hydrocoytle foveolata*	Yellow Penny-wort
30	*Banksia marginata*	Silver Banksia	93	*Hydrocotyle laxiflora*	Stinking Penny-wort
31	*Bossiaea prostrata*	Creeping Bossiaea	94	*Hymenanthera dentata*	Tree Violet
32	*Bothriochloa macra*	Red-leg Grass	95	*Hypericum gramineum*	Small St John's Wort
33	*Brachyloma ciliatum*	Fringed Brachyloma	96	*Hypolaena fastigata*	Tassel Rope-rush
34	*Brachyloma depressum*	Spreading Brachyloma	97	*Isolepis levynsiana*	Tiny Flat-sedge
35	*Brunonia australis*	Blue Pincushions	98	*Imperata cylindrica*	Blady Grass
36	*Bulbine bulbosa*	Bulbine Lily	99	*Isolepis fluitans*	Floating Club-rush
37	*Burchardia umbellata*	Milkmaids	100	*Juncus amabilis*	Rush
38	*Bursaria spinosa*	Sweet Bursaria	101	*Juncus bufonius*	Toadrush
39	*Caesia calliantha*	Blue Grass-lily	102	*Juncus filicaulis*	Thread-rush
40	*Calytrix tetragona*	Common Fringe-myrtle	103	*Juncus holoschoenus*	Joint-leaf
41	*Carex appressa*	Tall Sedge	104	*Juncus pallidus*	Pale Rush
42	*Carex tereticaulis*	Sedge	105	*Juncus pauciflorus*	Rush
43	*Centipeda cunninghamii*	Sneezeweed	106	*Juncus planifolius*	Broad-leaf Rush
44	*Centrolepis aristata*	Pointed Centrolepis	107	*Juncus subsecundus*	Finger-rush
45	*Chamaescilla corymbosa*	Blue Stars	108	*Juncus vaginatus*	Clustered Rush
46	*Chorizandra enodis*	Black Bristle-rush	109	*Kennedia prostrata*	Running Postman
47	*Chrysocephalum apiculatum*	Common Eeverlasting	110	*Lachnogrostis aemula*	Blown Grass
48	*Convolvulus erubescens*	Common Bindweed	111	*Lachnogrostis avenacea*	Blown Grass
49	*Convolvulus remotus*	Grassy Bindweed	112	*Laphangium luteoalbum*	Jersey Cudweed
50	*Corybas sp.*	Helmet Orchid	113	*Leucopogon virgatus*	Common Beard-heath
51	*Cotula australis*	Common Cotula	114	*Lepidosperma carphoides*	Black Rapier-sedge
52	*Coronidium scorpioides*	Button Everlasting	115	*Lepidosperma congestum*	Clustered Sword-sedge
53	*Cyrtostylis reniformis*	Gnat Orchid	116	*Lepidosperma lineare*	Narrow Sword-sedge
54	*Cycnogeton procerum*	Water Ribbons	117	*Lepidosperma longitudinale*	Pithy Sword-sedge
55	*Crassula sieberiana*	Sieber Crassula	118	*Leptorhynchos squamatus*	Scaly Buttons
56	*Cynoglossum australe*	Australian Hounds-tongue	119	*Leptospermum continentale*	Prickly Tea-tree
57	*Cynoglossum suaveolens*	Sweet Hounds-tongue	120	*Leptospermum lanigerum*	Woolly Tea-tree
58	*Dianella callicarpa*	Swamp Flax-lily	121	*Leptospermum myrsinoides*	Heath Tea-tree
59	*Dianella longifolia*	Pale Flax-lily	122	*Leptospermum obovatum*	River Tea-tree
60	*Dianella revoluta*	Black-anther Flax-lily	123	*Lobelia pedunculata*	Mat Pratia
61	*Dichelachne crinita*	Long-hair Plume-grass	124	*Lobelia pratioides*	Angled Lobelia
62	*Dichelachne micrantha*	Short-hair Plume Grass	125	*Lomandra filiformis*	Wattle Mat-lily

63	*Dichondra repens*	Kidney-weed
127	*Lomandra longifolia*	Spiny Mat-lily
128	*Lomandra multiflora*	Many-flowered Mat-rush
129	*Luzula sp.*	Woodrush
130	*Lythrum hyssopifolia*	Loose-strife
131	*Microlaena stipoides*	Weeping Grass
132	*Microtis parviflora*	Slender Onion-orchid
133	*Microtis unifolia*	Common Onion-orchid
134	*Montia fontana*	Water Blinks
135	*Myosotis australis*	Austral Forget-me-not
136	*Myriocephalus rhizocephalus*	Woollyheads
137	*Neurachne allopecuroides*	Mulga Fox-tail
138	*Opercularia ovata*	Broad-leaf Stinkweed
139	*Oxalis perennans*	Wood Sorrel
140	*Ornduffia umbricola*	Marsh Flower
141	*Ozothamnus ferrugineus*	Tree Everlasting
142	*Pauridia vaginata*	Yellow Star
143	*Pelargonium rodneyanum*	Magenta Storks-bill
144	*Pentapogon quadrifidus*	Five-awned Speargrass
145	*Phragmites australis*	Cane-grass
146	*Pimelea curviflora*	Curved Rice-flower
147	*Pimelea glauca*	Smooth Rice-flower
148	*Pimelea humilis*	Common Rice-flower
149	*Platylobium obtusangulum*	Flat-pea
150	*Platylobium triangulare*	Ivy Flat-pea
151	*Poa labillardierei*	White Tussock-grass
152	*Poa sieberiana*	Tussock-grass
153	*Persicaria prostrata*	Creeping Cudweed
154	*Poranthera microphylla*	Small Poranthera
155	*Pteridium esculentum*	Austral Bracken
156	*Ptilotus macrocephalus*	Featherheads
157	*Ranunculus lappaceus*	Australian Buttercup
158	*Ranunculus robertsonii*	Slender Buttercup
159	*Rytidosperma sp.*	Wallaby-grass
160	*Rytidosperma caespitosum*	Common Wallaby-grass
161	*Rytidosperma duttonianum*	Wallaby-grass
162	*Rytidosperma erianthum*	Wallaby-grass
163	*Rytidosperma geniculatum*	Kneed Wallaby-grass
164	*Rytidosperma pilosum*	Velvet Wallaby-grass
165	*Rytidosperma setaceae*	Bristly Wallaby grass
166	*Rytidosperma tenulus*	Wallaby-grass
126	*Lomandra nana*	Pale Mat-lily
167	*Rumex brownii*	Slender Dock
168	*Samolus repens*	Brookweed
169	*Selliera radicans*	Swamp Weed
170	*Schoenus apogon*	Common Bog-rrush
171	*Sebae ovata*	Yellow Sebae
172	*Sencio pinnatifolius*	Variable Groundsel
173	*Senecio quadridentatus*	Cotton Fireweed
174	*Senecio squarrosus*	Leafy Fireweed
175	*Solanum laciniatum*	Kangaroo Apple
176	*Spiranthes australis*	Austral Ladies Tresses
177	*Stackhousia monogyna*	Candles
178	*Stylidium graminifolium*	Grass Trigger-plant
179	*Thelymitra antennifera*	Rabbit Ears
180	*Thelymitra aristata*	Scented Sun-orchid
181	*Thelymitra pauciflora*	Slender Sun-orchid
182	*Thelymitra rubra*	Pink Sun-orchid
183	*Themeda triandra*	Kangaroo Grass
184	*Thysanotus patersonii*	Twining Fringe-lily
185	*Thysanotus tuberosus*	Common Fringe-lily
186	*Tricoryne elatior*	Yellow Grass-lily
187	*Triglochin striata*	Streaked Arrow-grass
188	*Triodia scariosa*	Porcupine Grass
189	*Triptilodiscus pygmaeus*	Common Sunray
190	*Typha orientalis*	Bulrush
191	*Utricularia sp.*	Bladderwort
192	*Viminaria juncea*	Golden Spray
193	*Vittadinia cuneata*	New Holland Daisy
194	*Viola hederacea*	Ivy-leaf Violet
195	*Viola sieberiana*	Tiny Violet
196	*Wahlenbergia capillaris*	Tufted Bluebell
197	*Wahlenbergia gracilenta*	Hairy Annual Bluebell
198	*Wahlenbergia gracilis*	Sprawling Bluebell
199	*Wahlenbergia multicaulis*	Tadgel's Bluebell
200	*Wahlenbergia stricta*	Tall Bluebell
201	*Wurmbea dioica*	Early Nancy
202	*Xanthorrhoea minor*	Small Grass-tree

A. baileyana is not indigenous to this area
A. decurrens is not indigenous to this area
A. longifolia is probably not indigenous to this area

TABLE II – P.R. Bird Vascular plant survey, 2003-07 (with additions from October 2011 to March 2015)

Botanical and common names of plants seen by PR Bird on visits to various sections of the Hamilton-Coleraine Railway Reserve from November 2003 to November 2007 (X) and on informal subsequent visits (Y). *Keys to sections of the rail reserve are listed at the end of the table. # denotes species regarded as non-indigenous to the area

No.	Botanical Name	Common Name	Units of the Hamilton-Coleraine rail reserve*																																
			1			2			3					4					5			6		7/8		9					10			11	12
			A_1	A_2	A_3	A_4	A_5	A_6	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	x	y	z	α	β
1	*Acacia aculeatissima*	Thin-leaf Wattle																													Y				
2#	*Acacia baileyana*	Cootamundra Wattle																					X												
3#	*Acacia decurrens*	Sydney Black Wattle																			X														
4#	*Acacia longifolia*	Sallow Wattle																	X																
5	*Acacia mearnsii*	Black Wattle	X	X	X		X	X										Y	X	X	X	X	X	X	X										
6	*Acacia melanoxylon*	Blackwood	X	X							X		X	X			X	Y	X	X	X	X	X	X	X					X	Y				
7	*Acacia paradoxa*	Hedge Wattle						X					X	X	X			Y	Y	Y	X	X	X	Y								Y				
8#	*Acacia pycnantha*	Golden Wattle																					X												
9	*Acacia exudans*	Casterton Varnish Wattle																							Y						Y		X		
10	*Acacia verticillata*	Prickly Moses																				X	X												
11	*Acaena echinata*	Sheep Burr						X					X	X	X	X			Y	X	X	X	X	Y	X						Y	Y				
12	*Acaena novae-zelandiae*	Bidgee-widgee											X	X	X	X	Y			X	X			Y	X											
13	*Acotriche serrulata*	Honey Pots																	X	Y	X														
14	*Allocasuarina palludosa*	Scrub Sheoak																			X														
15	*Allocasuarina verticillata*	Drooping Sheoak											X	X						Y			X	X	X	X					X	X		X		
16	*Amphibromus nervosus*	Swamp Wallaby-grass												X				X													X				
17	*Amyema pendula*	Mistletoe																			X			X											
18	*Anthosachne scabra*	Common Wheat-grass	X							X		X	X	X	X	X	X	X	X		X														
19	*Aristida ramosa*	Cane Wire-grass																				X													
20	*Apodasmia brownii*	Coarse Twine-rush																	X	X	X														
21	*Arthropodium fimbriatum*	Nodding Lily												Y					X	Y															
22	*Arthropodium milleflorum*	Pale Vanilla Lily					X											Y	X			X	X												
23	*Arthropodium strictum*	Chocolate Lily					X	X					X	X	X	X	Y	X	X	X	X	X	X	Y	X	X	X				X				
24	*Astroloma humifusum*	Cranberry Heath															X	Y	Y	X	X		X												
25	*Austrostipa* spp.	Spear Grass		X			X	X	X	X		X	X	X	X		X	X	X	X	X		X	Y	X					X	Y	Y			X
26	*Austrostipa* sp. 2	Spear Grass											X						X	X	X														
27	*Austrostipa* sp. 3	Spear Grass					X											X	X	X															
28	*Banksia marginata*	Silver Banksia																						X	X						X				
29	*Bossiaea prostrata*	Creeping Bossiae						X											Y	Y															
30	*Bothriochloa macra*	Red-leg Grass												Y			Y					X	Y												
31	*Brachyloma ciliatum*	Fringed Brachyloma																			X														
32	*Brunonia australis*	Blue Pincushions																	X	Y			X												
33	*Bulbine bulbosa*	Bulbine Lily											X			X		X	X	X		X			X										
34	*Burchardia umbellata*	Milkmaids											X	X				X	X	X		X		Y	X	X									
35	*Bursaria spinosa*	Sweet Bursaria																	Y		Y														
36	*Caesia calliantha*	Blue Grass-lily											X	X				X	X				X	Y	X										
37	*Callitriche sp.*	Starwort												Y																					
38	*Calytrix tetragona*	Fringed Myrtle																			X														
39	*Carex appressa*	Tall Sedge																				X	Y												
40	*Centipeda cunninghamii*	Sneezeweed												Y																					
41	*Chamaescilla corymbosa*	Blue Squil																	Y	X			X												
42	*Chorizandra enodis*	Black Bristle-rush																	Y	X															
43	*Chrysocephalum apiculatum*	Common Everlasting																X	X	X	Y			X											
44	*Convolvulus erubescens*	Pink Bindweed					X						X	X	X			X		X			X	Y	X							Y			

TABLE II – P.R. Bird Vascular plant survey, 2003-15 (cont'd).

No	Botanical Name	Common Name	Units of the Hamilton-Coleraine rail reserve*																																			
			1			2			3					4					5			6		7/8		9					10				11	12		
			A_1	A_2	A_3	A_4	A_5	A_6	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	x	y	z	α	β		
45	*Convolvulus remotus*	Bindweed															X				Y																	
46	*Coronidium scorpioides*	Showy Buttons																	X	X	X																	
47	*Crassula sieberiana*	Sieber's Crassula																X			X	X																
48	*Cycnogeton procerum*	Water Ribbons																			X																	
49	*Cynoglossum australe*	Sweet Hounds-tongue												Y		X		X							X													
50	*Dianella longifolia*	Pale Flax-lily														X																						
51	*Dianella revoluta*	Black-anther Flax-lily					X							X				X	X	Y																		
52	*Dianella calycarpa*	Swamp Flax-lily																			X																	
53	*Dichelachne micrantha*	Short-hair Plume-grass												X						Y																		
54	*Dichondra repens*	Dichondra																	X	Y			X															
55	*Dillwynia hispida*	Red Parrot-pea																	X	X	Y																	
56	*Distichlis distichophylla*	Australian Salt-grass																														Y						
57	*Diuris sulphurea*	Tiger Orchid																	X		X																	
58	*Diuris behrii*	Golden Moth Orchid																		X					X													
59	*Drosera auriculata*	Tall Sundew											X	X	X		X	X	X	X		X	X	Y	X													
60	*Drosera* spp.	Sundew												X				X	X	X			X	Y	X													
61	*Drosera aberans*	Scented Sundew												X	Y						X		X															
62	*Eleocharis acuta*	Common Spike-rush											X	X				X	X																			
63	*Einadia nutans*	Nodding Saltbush													X																							
64	*Eucalyptus aromaphloia*	Scent-bark																X																				
65	*Eucalyptus camaldulensis*	River Red Gum								X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
66	*Eucalyptus ovata*	Swamp Gum								X		X	X											X														
67	*Eucalyptus viminalis*	Manna Gum											X				Y		Y	X	X			Y							X	X						
68	*Eryngium ovinum*	Blue Devils					X	X					X			X	Y	X					X	X	X						X	Y	X					
69	*Eryngium vesiculosum*	Prickfoot																				X																
70	*Exocarpos cupressiformis*	Cherry Ballart																	X																			
71	*Ficinia nodosa*	Knobby Club-sedge																X	Y	Y	X			Y														
72	*Geranium retrorsum*	Crane's-bill																	Y																			
73	*Geranium solanderi*	Austral Storks-bill											X	X	X	X		X	X	Y				Y														
74	*Gonocarpus tetragynus*	Rasp-wort												Y					Y	X	X																	
75	*Goodenia geniculata*	Bent Goodenia															X		Y	X	X	X	X		X													
76	*Goodenia humilis*	Swamp Goodenia	X																																			
77	*Goodenia pinnatifida*	Cut-leaf Goodenia					X							Y																								
78	*Haloragis heterophylla*	Varied Raspwort											X	X				X					X															
79	*Hibbertia riparia*	Erect Guinea-flower																	X	Y	X																	
80	*Hydrocotyle foveolata*	Yellow Pennywort																	X	Y	X		X															
81	*Hypericum gramineum*	Small St John's Wort												X					Y	Y	X	X																
82	*Isolepis levynsiana*	Tiny Flat-sedge																			X																	
83	*Juncus sp.*	Rush											X									X								X								
84	*Juncus amabilis*	Rush												Y							X	X																
85	*Juncus bufonius*	Toad Rush											X	X	X	X	X	X	X	X	X	X	X	X	X					X		Y						
86	*Juncus pauciflorus*	Loose-flower Rush	X		X					X			X	X	X	X			Y		X	X	X	X	X					X					X	X		
87	*Juncus pallidus*	Pale Rush																X	Y	X	X	X	X	Y								Y		X				
88	*Juncus subsecundus*	Finger-rush											X																									
89	*Kennedia prostrata*	Running Postman															X		X		Y	Y										Y						
90	*Lachnogrostis filiformis*	Common Blown Grass			X								X	Y	X			Y	Y	X			X															
91	*Leucopogon virgatus*	Common Beard-heath																	X	Y	X																	
92	*Lepidosperma carphoides*	Black Rapier-sedge																	X	X																		
93	*Lepidosperma congestum*	Clustered sword-sedge																	Y		X	X																

TABLE II – P.R. Bird Vascular plant survey, 2003-15 (cont'd).

No	Botanical Name	Common Name	Sections of the Hamilton-Coleraine rail reserve*																																			
			1			2			3				4					5			6		7/8		9						10			11	12					
			A_1	A_2	A_3	A_4	A_5	A_6	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	x	y	z	α	β					
94	*Lepidosperma laterale*	Variable Sword-sedge																X	X	X	X																		
95	*Leptorhynchos squamatus*	Scaly Buttons												Y			X	X	X	Y		X	X																
96	*Leptospermum continentale*	Prickly Tea-tree																	X		X		X																
97	*Leptospermum lanigerum*	Woolly Tea-tree																				X																	
98	*Leptospermum myrsinoides*	Heath Tea-tree															X	X	X	Y	Y	X	X																
99	*Leptospemum obovatum*	River Tea-tree																			X	X																	
100	*Lobelia pedunculata*	Matted Pratia																				X																	
101	*Lobelia pratioides*	Poison Lobelia					X							Y									X																
102	*Lomandra filiformis*	Wattle Mat-lily											X	X			X	Y	X		X		X																
103	*Lomandra nana*	Mat-lily											X								X	Y																	
104	*Lomandra longifolia*	Spiny Mat-rush																				X																	
105	*Lomandra multiflora*	Many-flowered Mat-rush											X						Y	Y	X			Y															
106	*Luzula sp.*	Wood-rush																				X	X																
107	*Lythrum hyssopifolia*	Loosestrife												Y				X																			Y		
108	*Melicytus dentatus*	Tree Violet																X			X		X															
109	*Microlaena stipoides*	Weeping Grass											X	X	X		Y	X	X	X	X		X	Y	X											Y			
110	*Microtis* spp.	Onion Orchid															X		X	Y		X	X		X													
111	*Myriocephalus rhizocephalus*	Woollyheads																				X																
112	*Myosotis australis*	Austral Forget-me-not																		Y																		
113	*Opercularia ovata*	Broad-leaf Stinkweed																					X															
114	*Ornduffia umbricola*	Marsh Flower																X	X				X		X													
115	*Oxalis perennans*	Grassland Wood Sorrel						X					X	X	X			X	Y	Y	X	X	X	Y												Y			
116	*Ozothamnus ferrugineus*	Tree Everlasting																					X															
117	*Pauridia vaginata*	Yellow Star																	Y	Y																		
118	*Pelargonium rodneyanum*	Magenta Storks-bill											X				Y	X	X	Y				Y														
119	*Pentapogon quadrifidus*	Five-awned Spear-grass												Y						Y	Y																	
120	*Persicaria prostrata*	Creeping Cudweed												Y				Y																				
121	*Phragmites australis*	Cane-grass (Common Reed)							X															Y												Y			
122	*Pimelea curviflora*	Curved Rice-flower					X						X	Y	X		X	X	X	Y				Y	X													
123	*Pimelia humilis*	Common Rice-flower					X						X	X	X	X		X	X	X	X		X	Y	X	X												
124	*Platylobium obtusangulum*	Flat-pea																			X																	
125	*Poa labillardierei*	White Tussock-grass						X						X	X		X	X			X	X	X	Y			X	X										
126	*Poa sieberiana*	Tussock-Grass	X	X		X	X	X			X		X	X	X	X	X	X	X	X	X	X	X		X	X										X	X	
127	*Poranthera microphylla*	Small Poranthera																	X		X	X	X															
128	*Pteridium esculentum*	Austral Bracken																	X	X	X	X	X	Y														
129	*Ptilotus macrocephalus*	Featherheads															Y	Y	Y	Y	X															Y			
130	*Ranunculus robertsonii*	Slender Buttercup																		X																		
131	*Ranunculus 1*	Buttercup																		X																		
132	*Ranunculus 2*	Swamp Buttercup?											X					X	X																			
133	*Rumex brownii*	Slender Dock											X		Y	X			Y	Y	X		X													Y			
134	*Rytidosperma sp.*	Wallaby Grass	X	X		X	X	X		X	X	X	X	X	X		X	X	X	X	X			X	X		X	X	X	X	X	X		X				
135	*Rytidosperma caespitosum*	Wallaby Grass											X	Y								X	X	Y						X								
136	*Rytidosperma duttonianum*	Wallaby Grass												Y			X																					
137	*Rytidosperma geniculatum*	Wallaby Grass					X		X				X	X	X			X	Y	Y	X		X													Y			
138	*Rytidosperma pilosum*	Velvet Wallaby Grass																		Y												Y	Y					
139	*Rytidosperma setaceum*	Wallaby Grass											X	Y	X			X	Y	Y		X	X							X	Y	Y						
140	*Samolus repens*	Creeping Brook-weed																	X																		
141	*Sebaea ovata*	Yellow Sebaea												Y																			Y					
142	*Selliera radicans*	Swamp Weed																				X															

No	Botanical Name	Common Name	Units of the Hamilton-Coleraine rail reserve*																																		
			1			2			3					4					5			6		7/8		9						10			11	12	
			A_1	A_2	A_3	A_4	A_5	A_6	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	x	y	z	α	β		
143	*Senecio pinnatifolius*	Variable Groundsel																	Y		X																
144	*Senecio quadridentatus*	Cotton Fireweed																Y	X	X	X	X	X														
145	*Senecio squarrosus*	Leafy Fireweed																	X	X	X	X	X														
146	*Schoenoplectus sp.*	Sedge											X					X	X		X																
147	*Solanum laciniatun*	Kangaroo Apple																					X	Y													
148	*Spiranthes australis*	Austral Ladies Tresses																				X															
149	*Stylidium graminifolium*	Grass Trigger-plant															X		X				X		X												
150	*Thelymitra antenifera*	Rabbit Ears																	Y																		
151	*Thelymitra aristata*	Scented Sun-orchid															X		X	X	X	X	X	Y													
152	*Thelymitra pauciflora*	Slender Sun-orchid											X	Y						X	X			Y													
153	*Thelymitra rubra*	Pink Sun-orchid															X																				
154	*Themeda triandra*	Kangaroo Grass	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	Y	X	X		X		X	Y	X		X			
155	*Triglochin striata*	Streaked Arrow-grass																			Y											Y					
156	*Tricoryne elatior*	Yellow Grass-lily											X	X			Y	Y	X	Y	Y	X	X	Y								Y					
157	*Triodia scariosa*	Porcupine Grass																		Y																	
158	*Typha orientalis*	Bulrush																														Y					
159	*Utricularia sp.*	Bladderwort																	Y																		
160	*Viminaria juncea*	Golden Spray																				X															
161	*Viola hederacea*	Ivy-leaf Violet																				X	X														
162	*Wahlenbergia capillaris*	Tufted Bluebell												Y																							
163	*Wahlenbergia multicaulis*	Tadgel's Bluebell											X	X			X	X	X	Y	X	X	X	X								Y					
164	*Wahlenbergia gracilenta*	Hairy Annual Bluebell																	Y			X	X														
165	*Wahlenbergia gracilis*	Sprawling Bluebell																X	X	X			X														
166	*Wurmbea dioica*	Early Nancy																	Y	Y	Y		Y														
167	*Xanthorrhoea minor*	Small Grass-tree																X	X	X	X		X														
	Species totals per section		**8**	**6**	**2**	**3**	**16**	**12**	**4**	**6**	**4**	**5**	**46**	**55**	**26**	**16**	**31**	**58**	**89**	**78**	**73**	**53**	**64**	**41**	**30**	**8**	**4**	**4**	**2**	**11**	**14**	**30**	**1**	**8**	**3**		

Unit 1 – Dunn St Hamilton to Wedge St

A_1 Dunn St (37-45-29.0/142-01-09.3) to Coffee St (37-45-25.1/141-00-44.3)

A_2 Coffee St (37-45-25.1/142-00-44.3) to Henty Highway (37-45-14.8/142-00-32.7)

A_3 Henty Highway (37-45-14.8/142-00-32.7) to Wedge St (37-44-59.3/142-00-21.0)

Unit 2 – Wedge St, Hamilton to Railway Bridge on the Grange Burn

A_4 Wedge St (37-44-59.3/142-00-21.0) to Pioneer St (37-44-50.6/142-00-14.4)

A_5 Pioneer St (37-44-50.6/142-00-14.4) to Digby Rd (37-44-40.8/142-00-06.9)

A_6 Digby Rd (37-44-40.8/142-00-06.9) to Young St Bridge, Grange Burn (37-44-22.0/142-59-47.8)

Unit 3 – Railway Bridge on Grange Burn to Chaddertons Rd

B Railway Bridge on Grange Burn (37-44-22.0/141-59-47.8) to Kenny St (37-44-13.3/141-59-35.8)

C Kenny St (37-44-13.3/141-59-35.8) to Fairburns Rd (37-43-49.5/141-59-04.8)

D Fairburn's Rd (37-43-49.5/141-59-04.8) to Pelchen's Rd (37-43-35.6/141-58-35.6)

E Pelchen's Rd (37-43-35.6/141-58-35.6) to Balkin's Rd (37-43-19.3/141-57-57.9)

F Balkin's Rd (37-43-19.3/141-57-57.9) to Glenelg Highway, Chadderton's Rd (37-42-41.3/141-56-31.6)

Unit 4 – Glenelg Highway Crossing near Chaddertons Rd to Sandy Creek

G Glenelg Highway (37-42-39.7/141-56-28.1) to lane at Bochara Station (37-42-16.1/141-55-34.1).

H Bochara Station East (37-42-15.2/141-55-33.4) to Bochara Station West (37-42-07.2/141-55-14.1)

I Bochara Station West (37-42-07.2/141-55-14.1) to McKinnon Creek (37-41-50.6/141-54-36.3)

J McKinnon Creek (37-41-50.6/141-54-36.3) to Russell's Rd (37-41-44.2/141-54-21.2)

K Russell's Rd (37-41-43.1/141-54-20.4) to Sandy Creek Bridge (37-40-48.8/141-52-54.5)

Unit 5 – Sandy Creek Bridge to Wannon River Bridge

L Sandy Creek (37-40-47.7/141-52-53.2) to S Reeds Rd (37-40-27.2/141-52-27.5)

M S Reed's Rd (37-40-27.2/141-52-27.5) to Wannon-Nigretta Rd crossing (37-38-50.2/141-51-35.4)

N Wannon-Nigretta Rd (37-39-50.9/141-51-35.4) to E end of Wannon Bridge (37-38-50.2/141-51-13.4)

Unit 6 – Wannon Bridge to Wannon Station Grounds and crossing on Glenelg Highway

O West end of Wannon Bridge (37-39-50.2/141-51-36.0) to where it crosses Brung Brungle Rd at the Wannon Station Ground (37-40-00.8/141-50-35.9)

P Wannon Station Ground and over to Glenelg Highway

Unit 7 & 8 – Glenelg Highway Crossing at Wannon west to Glenelg Highway Crossing east of Parkwood

Q Wannon Glenelg Highway Crossing (37-40-14.9/141-50-07.4) to a fence and culvert on Tableland (37-39-22.6/141-48-39.9) – i.e. this is Unit 7 and the eastern part of Unit 8.

R Midway from the Wannon section (37-39-22.6/141-48-39.9) to Crossing on Glenelg Highway east of Parkwood (37-38-44.7/141-48-11.2) – i.e. this is the western part of Unit 8

Unit 9 – Glenelg Highway Crossing to Parkwood Station Ground

S Glenelg Highway Crossing (37-38-39.0/141-48-06.6) to a cross-fence and gate (37-38-17.6/141-47-50.4), at the east end of a 100-m break unfenced on south side.

T Middle section of reserve east of Parkwood Station, from W end of the 100-m break (37-38-16.3/141-47-49.2) to a cross-fence (37-37-56.4/141-47-33.9) at W end of the presently grazed 200-m section.

U Mostly fenced W section E of Parkwood Station from cross-fence (37-37-56.4/141-47-33.9), to Ballarook (Toolang) Rd (37-37-28.7/141-47-01.0)

V Parkwood Station Ground (37-37-28.7/141-47-01.0) on Ballarook (Toolang) Rd to bend near dams (37-37-18.0/141-46-47.6)

W West of Parkwood Station (37-37-24.4/141-46-56.5) to Baulchs Lane

Unit 10 – Baulchs Lane to Coleraine-Cavendish Rd

x Baulchs Rd to Ist stock crossing point (37-36-48.5/141-45-50.6)

y Ist stock crossing point (37-36-48.5/141-45-50.6) to 2nd stock crossing point (37-36-04.6/141-44-23.0)

z 2nd stock crossing point (37-36-04.6/141-44-23.0) to Four Mile lane (37-35-52.8/141-44-13.1)

Unit 11 – Lane off Coleraine-Cavendish Rd to Heard St

α Cross-fence adjacent to Four Mile lane (37-35-52.8/141-44-13.1), 500 m east of Cavendish Rd, to Heard St (37-35-55.7/141-42-53.5), north off the Glenelg Highway

Unit 12 – Heard St to Glenelg Highway Crossing at Coleraine

β Heard St off Glenelg Highway (37-35-55.7/141-42-53.5) to Glenelg Highway at Coleraine (37-36-03.3/141-42-10.5)

TABLE III – vascular plant survey Wannon Bridge-Nigretta Rd (1978-2007)

A list of native vascular species recorded by PR Bird (1978-1985), with additions to 2007(#), on the sandy-heath section of Hamilton-Coleraine Rail Reserve between the Wannon-Nigretta Road and the Railway Bridge on the Wannon River

No.	Botanical name	Common name	RA	No.	Botanical name	Common name	RA
1	*Acacia melanoxylon*	Blackwood	r	51	*Lepidosperma congestum*	Clustered sword-sedge	#
2	*Acacia paradoxa*	Hedge wattle	c	52	*Lepidosperma longitudinale*	Pithy sword-sedge	p
3	*Acacia verticillata*	Prickly moses	c	53	*Leptocarpus brownii*	Course twine-rush	vc
4	*Acaena echinata*	Sheep's burr	vc	54	*Leptospermum continentale*	Prickly tea-tree	c
5	*Acaena novae-zelandiae*	Bidgee-widgee	p	55	*Leptospermum lanigerum*	Woolly tea-tree	#
6	*Acrotriche serrulata*	Honey pots	r	56	*Leptospermum myrsinoides*	Heath tea-tree	vc
7	*Agrostis avenacea*	Common blown-grass	c	57	*Leptospermum obovatum*	River tea-tree	#
8	*Allocasuarina paludosa*	Scrub she-oak	r	58	*Leucopogon virgatus*	Bearded heath	c
9	*Allocasuarina verticillata*	Drooping she-oak	r	59	*Lomandra filiformis*	Wattle mat-lily	#
10	*Amyema pendulum*	Drooping mistletoe	vr	60	*Lomandra multiflorus*	Mat-lily	#
11	*Arthropodium strictum*	Chocolate lily	c	61	*Lomandra glauca/collina*	Pale mat-lily	r
12	*Astroloma humifusum*	Cranberry heath	c	62	*Microlaena stipoides*	Weeping grass	#
13	*Austrodanthonia geniculata*	Kneed wallaby-grass	c	63	*Microtis unifolia*	Common onion-orchid	p
14	*Austrodanthonia setacea*	Bristly wallaby-grass	c	64	*Neurachne alopecuroidea*	Fox-tail mulga grass	c
15	*Austrostipa hemipogon*	Spear grass	c	65	*Oxalis perennans*	Grassland wood-sorrel	p
16	*Brachyloma ciliatum*	Fringed brachyloma	r	66	*Pelagonium rodneyanum*	Magenta stork's-bill	#r
17	*Brunonia australis*	Blue pincushion	r	67	*Pentapogon quadrifidus*	Five-awned spear-grass	#
18	*Burchardia umbellata*	Milkmaids	r	68	*Pimelea humilus*	Common rice-flower	c
19	*Bursaria spinosa*	Sweet bursaria	#vr	69	*Platylobium obtusangulum*	Flat-pea	c
20	*Calytrix tetragona*	Fringed myrtle	r	70	*Poa labillardiera*	White tussock	#
21	*Chaemaescilla corymbosa*	Blue stars	vc	71	*Poa sieberana*	Small tussock	#
22	*Chorizandra enodis*	Black bristle-rush	p	72	*Pratia pedunculata*	Matted pratia	p
23	*Chrysocephalum apiculatum*	Common everlasting	c	73	*Pteridium esculentum*	Austral bracken	c
24	*Convolvulus remotus*	Bindweed	#	74	*Ptilotus macrocephalus*	Feather-heads	#r
25	*Cotula australis*	Common cotula	p	75	*Rumex brownii*	Slender dock	#
26	*Crassula sieberana*	Sieber's crassula	#	76	*Schoenoplectus nodosus*	Knobby club-rush	#
27	*Cyperus tenellus*	Tiny flat-sedge	#	77	*Senecio pinnatifolius*	Variable groundsel	#r
28	*Cyrtostylis reniformis*	Gnat orchid	p	78	*Senecio quadridentalis*	Cotton fireweed	#
29	*Dianella (tasmanica?)*	Flax-lily	#	79	*Senecio squarosus*	Leafy fireweed	#
30	*Dillwynia hispida*	Red parrot-pea	r	80	*Stylidium graminifolium*	Grass trigger-plant	r
31	*Diuris lanceolata*	Golden moths	r	81	*Thelymitra aristata*	Great sun-orchid	p
32	*Diuris sulphurea*	Tiger orchid	r	82	*Thelymitra pauciflora*	Slender sun-orchid	r
33	*Drosera peltata ssp.*	Tall sundew	vc	83	*Themeda triandra*	Kangaroo grass	vc
34	*Drosera whittakeri*	Scented sundew	r	84	*Trocoryne elatior*	Yellow grass-lily	#
35	*Elymus scaber*	Common wheat-grass	#	85	*Triglochin striatum*	Streaked arrow-grass	#
36	*Eucalyptus camaldulensis*	River red gum	p	86	*Triglochin procerum*	Water ribbons	p
37	*Eucalyptus viminalis*	Manna gum	p	87	*Triodia scariosa*	Porcupine grass	vr
38	*Gonocarpus tetragynus*	Rasp-wort	#	88	*Viola sieberiana*	Tiny violet	vr
39	*Goodenia geniculata*	Bent goodenia	#c	89	*Wahlenbergia multicaulis*	Tadgell's bluebell	vr
40	*Goodenia humilus*	Swamp goodenia	c	90	*Wurmbea dioica*	Early nancy	r
41	*Helichrysum scorpioides*	Button everlasting	r	91	*Xanthorrhoea minor*	Small grass-tree	vr
42	*Hibbertia riparia*	Erect guinea-flower	r				
43	*Hydrocotyle foveolata*	Yellow pennywort	vc				
44	*Hypericum gramineum*	Small St Johns wort	#				
45	*Hypoxis glabella*	Yellow star	vc				
46	*Juncus amabilis*	Rush	#				
47	*Juncus bufonius*	Toad rush	p				
48	*Juncus pallidus*	Pale rush	vc				
49	*Juncus pauciflorus*	Loose-flower rush	p				
50	*Kennedia prostrata*	Running postman	r				

RA – approximate relative abundance when surveyed:

- vc very common (1000s)
- c common (100s)
- r rare (10s)
- vr very rare (<10)
- p present

TABLE IV – A.C. Beauglehole vascular plant survey, 1996

Indigenous native plants listed by AC Beauglehole on 27 Oct 1996 for parts of the Hamilton-Coleraine Railway Reserve within 5 km of the Wannon (S Reed's Rd to Wannon and Wannon to Glenelg Highway towards Coleraine)

No.	Botanical Name	Common Name	No.	Botanical Name	Common Name
1	*Acacia longifolia*	Sallow wattle (introduced?)	60	*Juncus holoschoenus*	Joint-leaf
2	*Acacia mearnsii*	Black wattle	61	*Juncus pallidus*	Pale Rush
3	*Acacia melanoxylon*	Blackwood	62	*Juncus planifolius*	Broad-leaf Rush
4	*Acacia paradoxa*	Hedge Wattle	63	*Juncus vaginatus*	Clustered Rush
5	*Acaena echinata*	Sheep Burr	64	*Kennedia prostrata*	Running Postman
6	*Acaena novae-zelandiae*	Bidgee-widgee	65	*Lepidosperma congestum*	Clustered Sword-sedge
7	*Acrotrich serrulata*	Honey-pots	66	*Lepidosperma longitudinale*	Pithy Sword-sedge
8	*Agrostis avenacea*	Blown Grass	67	*Leptorhynchos squamatus*	Scaly Buttons
9	*Allocasuarina muelleriana*	Slaty She-oak	68	*Leptospermum continentale*	Prickly Tea-tree
10	*Allocasuarina verticillata*	Drooping Sheoak	69	*Leptospermum myrsinoides*	Heath Tea-tree
11	*Amphibromus nervosus*	Swamp Wallaby-grass	70	*Leptospermum obovatum*	River tea-tree
12	*Amyema pendula*	Drooping Mistle-toe	71	*Leucopogon virgatus*	Common Beard-heath
13	*Leptocarpus brownii*	Coarse Twine-rush	72	*Lomandra filiformis*	Wattle Mat-lily
14	*Leptocarpus tenax*	Slender Twine-rush	73	*Luzula sp.*	Woodrush
15	*Aristida ramosa*	Cane wire-grass	74	*Microlaena stipoides*	Weeping Grass
16	*Astroloma humifusum*	Cranberry Heath	75	*Microtis* parviflora	Slender Onion-orchid
17	*Austrodanthonia caespitosa*	Common Wallaby-grass	76	*Montia fontana*	Water Blinks
18	*Austrodanthonia eriantha*	Wallaby-grass	77	*Oxalis corniculata*	Yellow Wood-sorrel
19	*Austrodanthonia*	Velvet Wallaby-grass	78	*Pimelea curviflora*	Curved Rice-flower
20	*Austrodanthonia tenuior.*	Wallaby Grass	79	*Pimelea glauca*	Smooth Rice-flower
21	*Austrostipa pubinoidis*	Tall Spear-grass	80	*Pimelia humilus*	Common Rice-flower
22	*Austrostipa setacea*	Corkscrew Spearr-grass	81	*Platylobium triangulare*	Ivy Flat-pea
23	*Banksia marginata*	Silver Banksia	82	*Poa labillardiera*	White Tussock-grass
24	*Bossiaea prostrata*	Creepimg bossiaea	83	*Poa sieberiana*	Tussock-grass
25	*Brachyloma depressum*	Spreading Brachyloma	84	*Pseudognaphalium lutoealbum*	Jersey Cudweed
26	*Bulbine bulbosa*	Bulbine Lily	85	*Pteridium esculentum*	Austral bracken
27	*Burchardia umbellata*	Milkmaids	86	*Ptilotus macrocephalus*	Featherheads
28	*Caesia calliantha*	Blue Grass-lily	87	*Ptilotus sp.* (no flowers)	- tails
29	*Carex appressa*	Tall Sedge	88	*Ranunculus robertsonii*	Slender Buttercup
30	*Chaemaescilla corymbosa*	Blue Stars	89	*Rumex brownii*	Slenderr Dock
31	*Chrysocephalum apiculatum*	Common Everlasting	90	*Schoenus apogon*	Common Bog-rrush
32	*Convolvulus erubescens*	Pink Bindweed	91	*Spiranthes australis*	Austral Ladies Tresses
33	*Corybas sp.* (no flowers)	Helmet Orchid	92	*Stylidium gramminifolium*	Grass Trigger-plant
34	*Crassula sieberiana*	Sieber Crassula	93	*Thelymitra pauciflora*	Slender Sun-orchid
35	*Cyperus tenellus*	Tiny Flat-sedge	94	*Themeda triandra*	Kangaroo Grass
36	*Dianella revoluta*	Black-anther Flax-lily	95	*Thysanotus patersonii*	Twining Fringe-lily
37	*Dichondra repens*	Kidney-weed	96	*Thysanotus tuberosus*	Common Fringe-lily
38	*Dillwynia hispida*	Red Parrot-pea	97	*Triodia scariosa*	Porcupine Grass
39	*Diuris sulphurea*	Tiger Orchid	98	*Typha orientalis*	Bulrush
40	*Drosera peltata ssp. auric.*	Pale Sundew	99	*Villarsia umbricola*	Running Marsh-flower
41	*Drosera pygmaea*	Tiny Sundew	100	*Wahlenbergia multicaulis*	Bluebell
42	*Eleocharis acuta*	Common Arrow-grass	101	*Wurmbea sp.*	Early Nancy
43	*Elymus scabrum*	Common Wheat-grass	102	*Xanthorrhoea minor*	Small Grass-tree
44	*Eucalyptus camaldulensis*	River Red Gum			
45	*Eucalyptus ovata*	Swamp Gum			
46	*Eucalyptus viminalis*	Manna Gum			
47	*Exocarpos cuppessiformis*	Cherry Ballart			
48	*Gahnia radula*	Thatch Saw-sedge			
49	*Geranium* potentilloides	Cinquefoil			
50	*Gonocarpus tetragynus*	Common Raspwort			
51	*Goodenia geniculata*	Bent Goodenia			
52	*Haloragis heterophylla*	Varied Raspwort			
53	*Helichysum scorpioides*	Showy Buttons			
54	*Hibbertia stricta*	Erect Guinea-flower			
55	*Hypericum gramineum*	Small St John's Wort			
56	*Hypolaena fastigata*	Tassel Rope-rush			
57	*Hypoxis glabella*	Yellow Star			
58	*Isolepis fluitans*	Floating Club-rush			
59	*Juncus filicaulis*	Thread Rush			

TABLE V – P.R. Milne vascular plant survey (1978-1984)

Native vascular flora recorded on Hamilton-Coleraine Railway Reserve, Sections 1-10, by PR Milne from 1978-1984 (data submitted to Dept. Cons. Forests & Lands in 1989 for the enquiry on Hamilton-Coleraine Disused Railway Reserve).

No.	Botanic name	Common name	1	2	3	4	5	6	7	8	9	10
1	*Acacia mearnsii*	Black wattle	vr							✔		
2	*Acacia melanoxylon*	Blackwood	vr			vr	vr	✔			✔	✔
3	*Acacia paradoxa*	Hedge wattle				vr						✔
5	*Acaena echinata*	Sheeps burr	c									
4	*Acaena novae-zelandiae*	Bidgee-widgee		✔	vr	vr			✔			
6	*Acotriche serrulata*	Honey pots							vr		✔	✔
7	*Agrostis aemula*	Blown grass	✔									
8	*Allocasuarina pusilla*	Scrub sheoak										✔
9	*Allocasuarina verticillata*	Drooping sheoak	r							✔	✔	
10	*Arthropodium milleflorum*	Pale vanilla-lily	vr									
11	*Arthropodium strictum*	Chocolate lily	r	✔	r	c		✔	vc	✔	✔	✔
12	*Asperula conferta*	Common woodruff	c		r	vr						
13	*Astroloma humifusum*	Cranberry heath							r	✔	✔	✔
14	*Austrodanthonia caespitosa*	Common wallaby-grass	✔									
15	*Austrodanthonia geniculata*	Kneed wallaby-grass	?	✔		r		✔			✔	
16	*Austrodanthonia* sp.	Wallaby-grass					✔		✔			
17	*Austrostipa* spp.	Spear grass	✔	✔	✔	r	✔	✔		✔	vc	✔
18	*Bossiaea prostrata*	Creeping bossiaea	r									
19	*Brunonia australis*	Blue pincushions						r		✔		✔
20	*Bulbine bulbosa*	Bulbine lily						c			✔	✔
21	*Burchardia umbellata*	Milkmaids	r	vr	r			✔	vc	✔	✔	✔
22	*Caesia calliantha*	Blue grass-lily	c	✔	c	vc						
23	*Calytrix tetragona*	Common fringe-myrtle										✔
72	*Carex tereticaulis*	Sedge	✔									
24	*Centrolepis aristata*	Pointed centrolepis	✔	sp		sp						
25	*Chrysocephalum apiculatum*	Common everlasting	c	r	r	r		✔	r	✔	✔	✔
26	*Convolvulus erubescens*	Common bindweed	c	✔	r	r						
27	*Cynoglossum suaveolens*	Sweet hounds-tongue	vr			✔						
28	*Dianella revoluta*	Black-anther flax-ily	✔	vr	vr				✔			
29	*Dichelachne crinita*	Plume grass	r									
30	*Dillwynia hispida*	Red parrot-pea	r					c	✔		✔	✔
31	*Diuris sulphurea*	Tiger orchid						vr			✔	✔
32	*Drosera peltata*	Pale sundew	r	✔	c	r		✔	✔	c	vc	?
33	*Eryngium ovinum*	Blue devil	c	✔	c	✔						
34	*Eucalyptus camaldulensis*	River red gum		vr	vr	c	c	c	✔	✔	✔	
35	*Eucalyptus ovata*	Swamp gum	vr		r							
36	*Eucalyptus viminalis*	Manna gum				vr	r	✔	✔		✔	✔
37	*Geranium solanderi*	Austral cranes-bill	c									
38	*Geranium* sp.	Crane's bill						✔				
39	*Gonocarpos tetragynus*	Common raspwort	c	✔	vr	✔		c	c			
40	*Goodenia geniculata*	Bent goodenia	r									
41	*Goodenia pinnatifida*	Cut-leaf goodenia	r	vr								
42	*Haloragis heterophylla*	Varied rasp-wort	c	✔	r				c			
43	*Helichrysum scorpioides*	Button everlasting						✔	r		✔	✔
45	*Hibbertia stricta*	Erect guinea-flower						c	c	✔	✔	✔
46	*Hypoxis glabella*	Yellow star										✔
47	*Juncus bufonius*	Toad rush	c									
49	*Juncus pallidus*	Pale rush	c					✔			✔	
48	*Juncus pauciflorus*	Loose-flower rush	r	✔		vr		c		✔		
50	*Kennedia prostrata*	Running postman	r	vr	vr				✔	✔		
51	*Leptorhynchos squamatus*	Scaly buttons	r	✔	c	vr		c	r		✔	
52	*Leptospermum continentale*	Prickly tea-tree										✔
53	*Leptospermum myrsinoides*	Heath tea-tree						r	✔		✔	✔
54	*Leucopogon virgatus*	Common beard-heath						✔		✔		
56	*Lobelia pedunculata*	Mat pratia										
55	*Lobelia pratioides*	Angled lobelia	✔	✔		✔						
57	*Lomandra filiformis*	Mat-lily	vr	✔	✔				?			
58	*Lomandra glauca*	Pale mat-lily	r		✔	✔						

	Botanic name	Common name	1	2	3	4	5	6	7	8	9	10
59	*Lomandra multiflora*	Mat-lily	r									
60	*Microtis unifolia*	Common onion orchid	✔									✔
61	*Oxalis perrenans*	Wood sorrel	r		r	✔						
62	*Pelargonium rodneyanum*	Scarlet pelargonium	r			✔			r	✔	r	
63	*Pimelea curvifloras*	Curved rice-flower	c	✔	vr	r		c	✔		✔	✔
64	*Pimelea humilus*	Common rice-flower	r	✔	r	vr		c		✔	✔	✔
65	*Platylobium obtusangulum*	Flat-pea										✔
66	*Poa labillardierra*	Common tussock-grass	c	✔				✔	✔			
67	*Poa sieberana*	Tussock-grass				✔		✔		✔		
68	*Pteridium esculentum*	Austral bracken										✔
69	*Ranunculus lappaceus*	Australian buttercup	r									
70	*Ranunculus robertsonii*	Buttercup						vr		✔	✔	?
71	*Sencio quadridentatus*	Cotton fire-weed										?
73	*Shoenus apogon*	Common Bog-rush	✔									
74	*Stackhousia monogyna*	Candles	r									
75	*Stylidium graminifolium*	Grass trigger-plant						✔		vr	✔	✔
76	*Thelymitra pauciflora*	Slender sun-orchid	r								✔	✔
77	*Themida triandra*	Kangaroo grass	vc	vc	vc	vc			c	✔	✔	✔
78	*Tricoryne elatior*	Yellow grass-lily	r			✔						
79	*Triodia scariosa*	Porcupine grass									vr	✔
80	*Villarsia umbricola*	Lax marsh-flower									✔	?
81	*Vitadinia cuneata*	New Holland daisy	r									
82	*Wahlenbergia quadrifida*	Bluebell	r									
83	*Wahlenbergia stricta*	Tall bluebell	r								✔	✔
84	*Wahlenbergia tadgelli*	Bluebell										✔
85	*Wahlenbergis* sp.	Bluebell			✔	✔		✔	✔			
86	*Xanthorrhoea minor*	Small grass-tree						✔	c	✔	c	✔

Sections surveyed:

1	Unit 3	Fairburn's Rd to Pelchen's Rd and west to crossing 100 m west
2	Unit 3	West of Pelchen's Rd and 800 m towards Balkin's Rd
3	Unit 3	Last 400 m section east of Balkin's Rd
4	Unit 3	Balkin's Rd to Glenelg Highway at Chadderton's Rd
5	Unit 4	Glenelg Highway to road at Bochara Station Ground (last 500 m towards Station Ground possibly not surveyed)
6	Unit 4	Sandy Creek - 650 m east and 500 m west.
7	Unit 5	S Reed's Rd – approx. 500 m east
8	Unit 5	S Reed's Rd west approx 1 km
9	Unit 5	East of Wannon-Nigretta Rd for approx. 800 m to 8
10	Unit 5	Wannon-Nigetta Rd to Wannon Railway Bridge

Approximate relative abundance when surveyed:

vc	very common (1000s)
c	common (100s)
r	rare (10s)
vr	very rare (<10)
✔	present but abundance not estimated