FoCC

Friends of Canadian Corridor Incorporated

"Think globally act locally" - M McLuhan.

"Little creeks do matter, the eleven creeks of Canadian"

A response to the

Barwon River Ministerial Advisory Committee

Prepared by the

Friends of Canadian Corridor Incorporated

November 3rd 2019

Friends of Canadian Corridor Incorporated

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Canadian Vic, 3350

November 3rd 2019

Attention:

Ms Christine Forster,

Chair of the Ministerial Advisory Committee,

Dear Ms Forster,

Thank you for the opportunity to respond to the Barwon River Ministerial Advisory Committee discussion paper.

Please find attached the Friends of Canadian Corridor response titled “Little creeks do matter, the eleven creeks of Canadian” to the Ministerial Advisory Committee Discussion Paper (MAC). Our submission is not exhaustive or necessarily complete. The FoCC has prepared the submission in good faith to add to the store of local knowledge, observations and wishes, for the MAC to consider in the development of a comprehensive Yarrowee River and Canadian Creek plan within the larger Barwon River review.

We are very pleased to be able to be part of the process and we hope the final plan will be a timely step forward.

We look forward to further conversations about Ballarat East and the Canadian Creek.

Yours sincerely,

Jeff Rootes

Secretary

Friends of Canadian Corridor Incorporated

Contents

Summary

The eleven creeks of the Canadian Creek catchment area are small ephemeral goldfields creeks. The gold era had an enormous effect on the eleven creeks of Canadian with associated forest denuding, erosion, alluvial mining activities and sludge all impacting on the health of the creeks.

Some of those mining activities are still affecting the creeks to this day. The creeks range from extreme degradation as evident in Lal Lal Drain through to the Unnamed Creek 3 with its small sections of healthy bio diverse waterway.

The 1970's saw the first urban development schemes to affect the Unnamed Creek 4 in Mt Helen and the Canadian Creek with elements of enlightened planning, engineering and ecological creek preservation evident.

Recent developments have been more regressive for the creeks health. The systemic failure of planning protection for waterways has allowed private consultants to devise creek reducing development schemes by only applying hydrological requirements and ignoring ecological considerations. The Corangamite Catchment Management Authority which should hold the City of Ballarat planners accountable have been noticeably absent in some of these recent developments.

The best opportunity to make a meaningful difference to the creeks is to:

- Change the Ballarat Planning Scheme rules in order to protect wetlands, flood plains, creeks and the creek verges from inappropriate development. (See solutions below)
- Require the Corangamite Catchment Management Authority creek works permit process to have a full and proper ecological assessment of waterways as a planning tool and to sit at an equal level to hydrological and other reports within the planning process.
- Encourage property owners to control noxious weeds along creek banks.
- Encourage the City of Ballarat and Corangamite Catchment Management Authority Developing to develop a creek plan for each creek in order to guide long-term development and /or land use patterns for adjacent properties to the creeks. This should includes items such as a creek health index, biodiversity mapping along creeks and banks and an assessment of all the water ways with identification of biota, oxygen levels, turbidity and streamside bank health. This would serve as a reference point for all future works within the waterway.
- Work towards the goal on improving creek health with an absolute "no net creek biodiversity loss" as a starting point and include a stated measurable biodiversity net gain for the creeks over the time of the goal.

Solutions

1. Creeks should not be piped at all except for essential road and trail access, water retention basin banks and outlet channels.
2. Planning rules should require an ecological assessment of the creek including its potential for restoration to reasonable streamside health.
3. Develop a Ballarat goldfields streamside assessment index of qualities to determine scientifically the health of local creeks.
4. The aim should be for degraded creeks to be improved whilst ensuring development does not harm existing healthy creeks.
5. Stop excessive straightening or re contouring of creeks. Works should only occur if a genuine engineering reason exists and works should pass a no net biodiversity loss in the immediate vicinity.
6. Retention basins should be constructed with a dual purpose. The first purpose is to maintain or enhance biodiversity values in the local creek section and second to meet hydrological needs such as flooding and water velocity reduction.
7. The Lal Lal Drain in common with the other creeks should have a comprehensive creek plan including identification of the creek path across private land, plus a creek ecological health improvement action plan.
8. Floodplains and wetlands should be identified, mapped and protected by easement or other measures.
9. Removal of inappropriate piping to reconnect ecological corridors along piped creeks.
10. Where piping is found to be the last resort method to resolve a hydrological problem, first party offset of bio diverse assets should occur adjacent to the piping locality. Where a pipe is deemed necessary offset planting should occur on the same site near the pipe.
11. Reintroduce fines for property owners who refuse to control noxious weeds on their property.

FoCC Incorporated

The Friends of the Canadian Corridor Incorporated (FoCC) are a local neighbourhood group dedicated to the conservation of the natural environment, in particular native vegetation along the "Strategic Habitat Connection" between the Wombat Forest and the Enfield Forest including the Creswick Forest and the new Woowookarung Regional Park (formerly the Canadian Forest and plantation). The principal aims of the group are to protect neighbourhood character, maintain and promote public open space and maintain, improve and protect wildlife links, corridors and habitat in the local area.

Little creeks do matter, the eleven creeks of Canadian

a) Context and history

The recent history of Ballarat East, the Canadian Forest and the eleven creeks of the Canadian Creek catchment is one of early achievement in the 1970's to 1990's followed by later avoidance and poor planning. Until 2015 the Canadian Forest was managed by the predecessors to the Department of Environment, Land, Water and Planning with a minimal level of involvement. Maintenance consisted of occasional fuel reduction burning, some weed control and tardy rubbish removal. The City of Ballarat (COB) roads which penetrate the northern end of the Forest suffered a similar lack of priority. The plantation roads were adequately maintained by East Gippsland Plantations for their forestry purposes. In essence the forest and the plantation was well known to locals for its recreational and natural values as well for its unfortunate rubbish dumping, illegal wood removal and other nefarious activities.

The private land which bordered the forest and plantation is mostly remnant 1880's goldfield's era lots ranging from one hectare up to eight hectares. Almost all the private land has experienced tree clearing or cutting at different times in the period since the goldfields. For example the cleared land evident in the 1934 aerial survey (Image 1 below) is now forest in 2017 with good biodiversity values. The image below shows how vegetation cover can and has changed over time. Some land around the forest has remained clear.

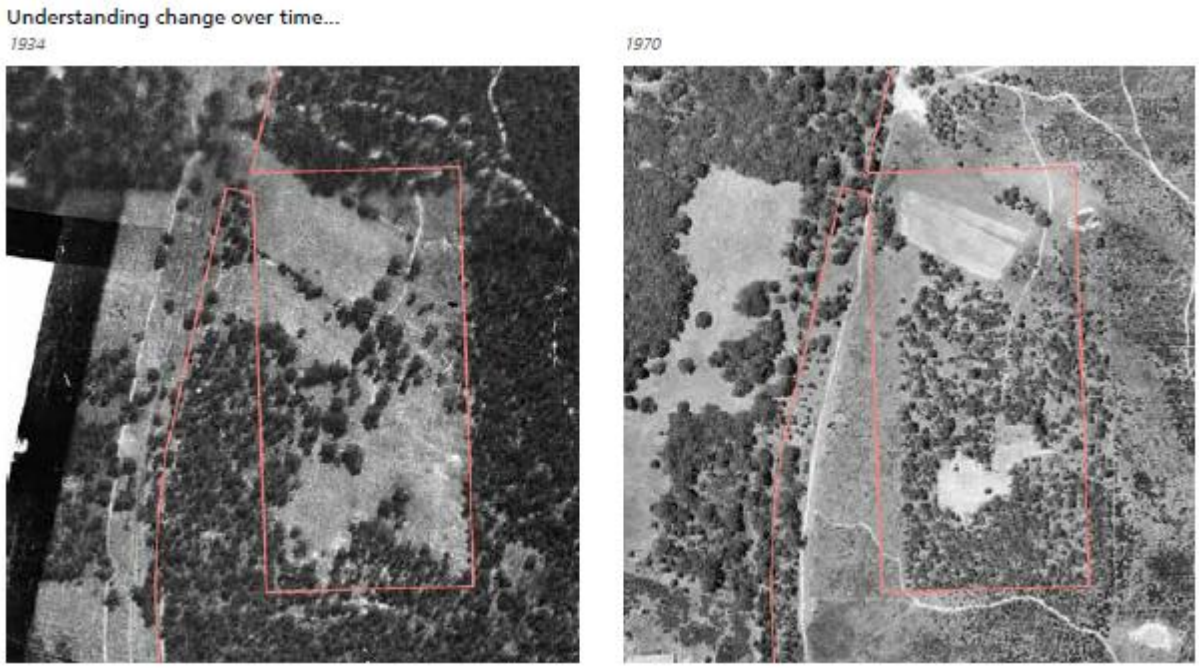

Image 1: Page 44 Woowookarung Regional Park Strategic Directions Plan 2018.

The eleven creeks of Canadian all have their headwaters along the Canadian Ridge Line which runs north/south on the east side of Ballarat. Eight of the creeks have their origins within the Woowookarung Regional Park whilst Specimen Vale Creek begins on the Warrenheip Escarpment, the Unnamed Creek 4 in Mt Helen has its origins on the ridge and the Canadian Creek has its origins in springs on the high ground at Mt Helen.

The goldfields era damaged the eleven creeks enormously with residue from alluvial diggings in the 1851 to 1855 period, the denuding of the adjacent forest cover over a longer period for mine props and steam engine firewood, erosion, mining sludge, sluicing in the 1930's, war time forest wood collection, gorse and weed coverage.

In spite of the damage in the gold era most of the creeks have reasonably healthy stream sides in the bushland sections in their upper reaches. On the flatter, mostly private land closer to the Canadian Creek many of the wetlands, ponds and floodplains have been built on or modified in the name of improving drainage. Some wetlands still exist on these flatter areas but every new development brings the possibility of more damage by drainage.

In the early 1980's and 1990's parts of the Canadian Creek were restored as part of the city wide "Linear Network of Communal Spaces" (LINCs) project. This involved large scale weed removal, community tree planting, establishment of the Canadian Creek trail and earth works. The result today is a living corridor along the creek.

The development of the Mt Helen estate on the east side of Canadian Creek containing the Unnamed Creek 4 provides an excellent example of 1980's urban creek design. The balance between hydrological drainage needs balanced with ponds and revegetation achieved a very good ecological outcome for the creek.

The communities wish for conservation of the local environment manifested in the "Ballarat Region Conservation Strategy 1991" created and written by a diverse group of Ballarat authorities, people and groups. This document is still relevant 28 years later.

The establishment of the Canadian Creek wetlands at Federation University's Technology Park Mt Helen was undertaken in the 1990's, the final work being undertaken in 2004. The wetlands are at the top of the Canadian Creek catchment and demonstrate how biodiversity outcomes and a Technology Park development can coexist.

Council amalgamation in the 1990's saw the above initiatives; LINC's and the Ballarat Conservation Strategy run their course, become sidelined and not replenished. Later versions of the Ballarat Regional Conservation Strategy were

shortened and weakened. The ecological and community expertise that resided within local government was also run down and replaced in part by private consultants. Private consultants represent the wishes of their clients and are not subject to the same scrutiny as public bodies. Today the City of Ballarat does not employ anyone in an environmental position with biodiversity or ecological training. This starkly contrasts with other nearby municipalities.

Since council amalgamation, creek works in the Canadian Creek catchment area have only occurred as a result of development plans. The Canadian Lakes on Canadian Creek, Canadian Springs on Pennyweight Gully and Sailors Gully are actually good examples of developers creek works undertaken in the late 1990's and 2000's period .

More recent developments over the past decade on Warrenheip Gully, Grasstree Creek and Pennyweight Gully have demonstrated the paucity of ecological values with piping, creek straightening, vegetation removal and large reductions or dead zones in the residual ecology of those creeks.

These recent creek works exhibit measures that meet hydrological requirements only, with no consideration of creek health or biodiversity and are a systemic planning failure. The latest works on Grasstree Creek (images 10 to 16) are a clear example of the worst outcomes yet within the Canadian Creek's catchment.

Our conclusion is that the "eleven creeks of Canadian" need strong ecological planning requirements to protect the creeks from developers and to guide the Council in their administration of the Planning Process.

b) Woowookarung Regional Park

The declaration of the Canadian Regional Park on August 9 2016 and renaming on July 19th 2017 to Woowookarung Regional Park has heralded a new beginning and custodianship of the forest and ex plantation land. The Park is now governed by the "Woowookarung Regional Park Management Plan" adopted in October 2018. The plan has a clearly identified restoration of waterways (creeks) as a goal as described in the plan extract below:

Goal 2B – Restore the waterways

Waterways are crucial to ecosystem support, providing water for animals and an expanded diversity of flora within the park. The park sits at the very top (headwaters) of the Barwon River catchment. Many of the permanent and ephemeral creeks, waterways and drainage lines within the park have been severely disturbed.

There is an opportunity to map and assess the feasibility of restoring the waterways to enhance the health of the park.

Strategies

1. *Map and assess the condition of waterways and creeks and implement appropriate restoration work.*
2. *Protect riparian zones from activities that pose a threat to the ongoing health and viability of these zones.*
3. *Develop trails and visitor facilities that allow, where feasible, people to experience and be educated about rehabilitated water courses in the park, such as elevated board walks and bridges.*
4. *Review water health and develop programs to assist in the protection of water courses throughout the park.*
5. *Work with other agencies to support integrated water catchment management.*

Image 2: Goal 2B from Page 32 Woowookarung Regional Park Strategic Directions Plan 2018.

c) The eleven creeks

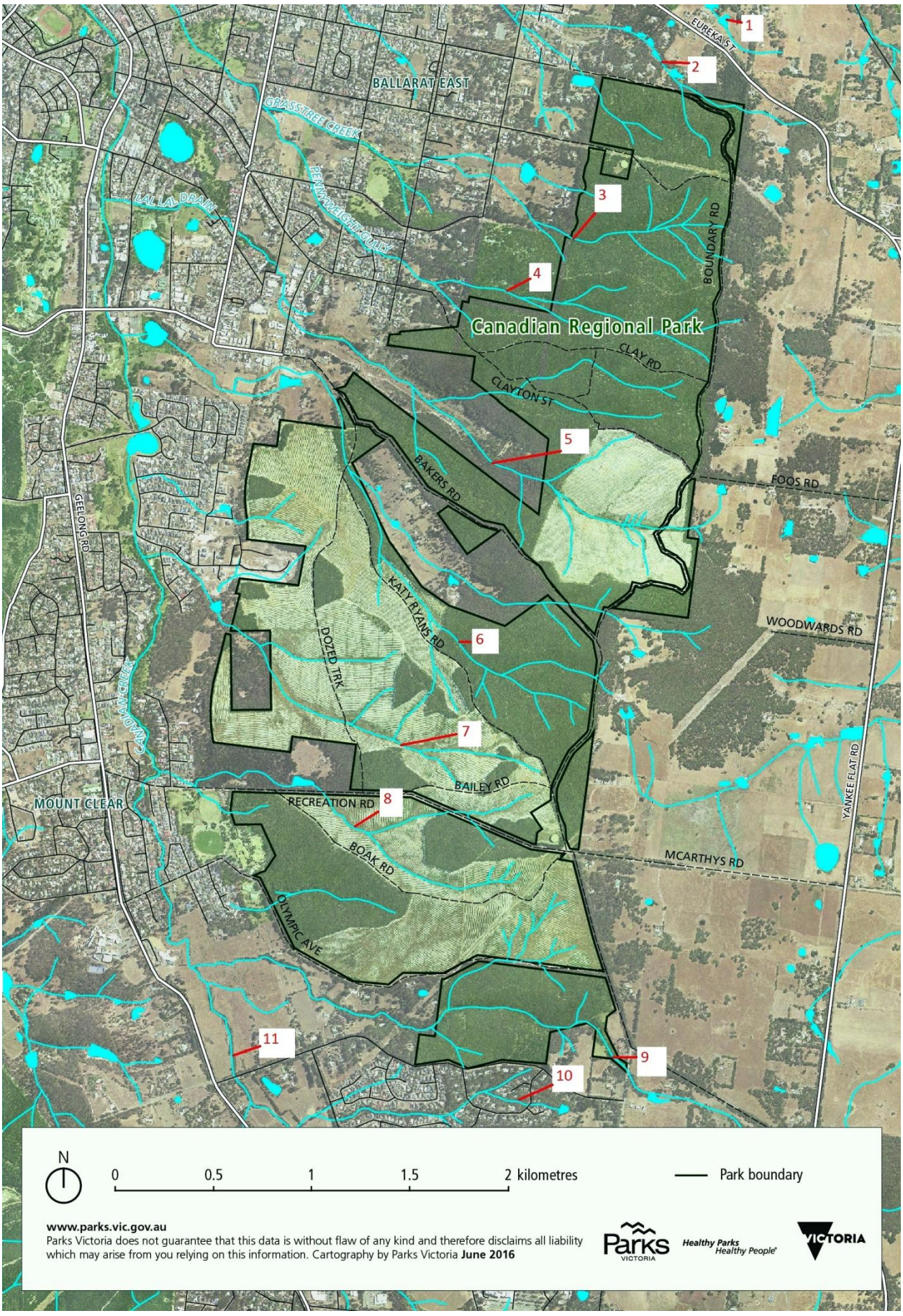

Image 3: Location of the eleven creeks. Map courtesy Parks Victoria 2016.

The “eleven creeks of Canadian” are made up of ten feeder creeks running into the collector Canadian Creek. All the ten feeder creeks are ephemeral small waterways ranging from 1.6 to 6 Kilometres long.

The Canadian Creek is 8 kilometres long and has flow for a larger part of the year however it is dry in summer.

According to JB Withers writing in “The History of Ballarat, from the First Pastoral Settlement to the Present Time” in 1870

> “There were three permanent waterholes in those days where the squatters used to find water for their flocks in the driest times of summer. One was at the junction of the Gong Gong and the Yarrowee, or Blakeney's Creek, as it was then called, after the settler of that name there. Another was where the Yarrowee bends under the ranges by the Brown Hill hotel, and the other was near Golden Point.”

The pool near “Golden Point” was on the Canadian Creek close to the junction with Pennyweight Gully.

According to the LINCs plan of 1999 the area drained by the eleven creeks is approximately 3000 hectares. The Canadian Creek flows into the Yarrowee River near Grant St Ballarat.

Six of the creeks are named.

d) The eleven creeks vital statistics:

Map number	Creek name	Length	Channelled	Piped length	Open creek natural channel
1	Specimen Vale Creek	5.5	1.5	1.5	2.5
2	Warrenheip Gully	3.5	0.6	0.5	2.4
3	Grass Tree Creek	2.75	0.6	0.4	1.75
4	Pennyweight Gully	4.0	0.2	0.6	3.2
5	Lal Lal Drain	3.75	0.4	1.0	2.35
6	Unnamed Creek 1	3.75	0.3	0	3.45
7	Unnamed Creek 2	2.5	0	0.1	2.4
8	Unnamed Creek 3	2.0	0	.3	1.7
9	Unnamed Forest Tributary	6.0	0	0	6.0
10	Canadian Creek	8.0	1.5	0	6.5
11	Unnamed Creek 4 (Named Wattletree Creek in LINCs plan)	1.6	0	0.4	1.2
	Total kilometres	43.35	5.1	4.8	33.45

e) The piped and channelled creek sections

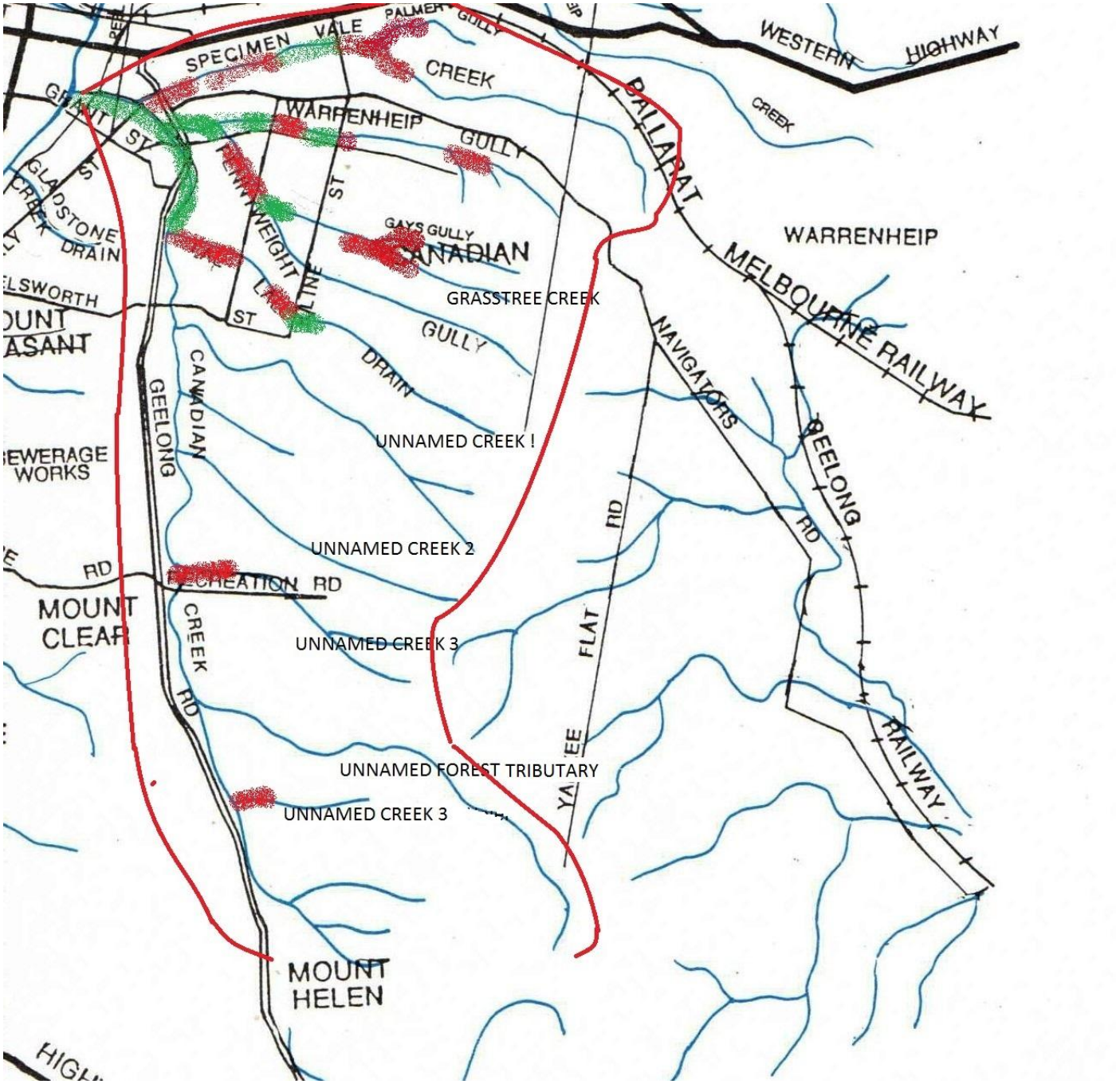

Image 4: Map of Canadian Creek Catchment "Streams and Steam Frontages Map" Ballarat Regional Conservation Strategy, Ballarat Regional Board for Planning and Development, 1991.

	Boundary of Canadian Creek catchment
	Piped sections of creek
	Channelled sections of Creek

1. Specimen Vale Creek

Specimen Vale Creek begins on the Warrenheip escarpment. It runs through private and public land including Pryor Park and the Mt Xavier Golf Club before crossing Fussell St and Charlesworth St. It is piped beneath most of Helmsley Court Estate. Closer to Ballarat Central it is channelled and then piped to its junction with Canadian Creek

Image 5: Specimen Vale Creek looking west at Fussell St. October 2019.

Image 6: Specimen Vale Creek looking east from Charlesworth St. This degraded but still ecologically alive section of the creek is effectively the downstream end of the open creek. From this point there are 3 kilometres of piping, an ornamental lake and channelling to the junction with Canadian Creek. October 2019.

Image 7: Specimen Vale Creek on the northern boundary of Helmsley Park Village. Twenty years ago this was an open drain still able to be restored. October 2019.

Image 8: In the City of Ballarat Open Space Strategy 2008, Page 152 “Future opportunities for Open Space for Ballarat” a trail extension was identified along this part of Specimen Vale Creek. What chance now?

2 Warrenheip Gully

Warrenheip Gully begins in the north end of Woowookarung Regional Park. It runs across several private properties before leaving bushland at Long St. A 2011 development saw the creek piped for approximately 300 meters. Houses were built adjacent to the pipe and a road on top. The plan relies upon excess overflow to run down the roadway.

Image 9: Map of Warrenheip Gully showing piped sections in red and open sections in blue. Google October 2019

Image10: Flood map above (red square shows location of Fussell St development). The flood map was produced after the 2011 floods in Ballarat East indicated significant risk. The flooding events of 1990 and of 2011 suggest that another heavy rain event will see housing adjacent to the creek damaged by water ingress.

Image 11: Looking south from Eureka St. Long St on the left. March 2019.

The image above shows where Warrenheip Gully crosses Long St on the left and the gorse covered creek area as it was in 2018. This year, 2019 a developer submitted a plan PLP2019/236 for subdivision with plans for the creek to be piped through to the existing next subdivision on Fussell St. The plan proposed a court bowl road on top of the pipe with excess flood flow running down the street into the next estate. This proposal has been withdrawn.

That application completely missed the possibility of creek restoration as a part of good urban development.

Solutions:

1. Creeks should not be piped at all except for essential road and trail access and water retention basin banks and outlet channels.
2. Planning rules should require an ecological assessment of the creek including its potential for restoration to reasonable streamside health.
3. A Ballarat or Goldfields streamside assessment index of qualities would assist in determining the urban impacts on the local creeks.
4. The aim should be for degraded creeks to be improved whilst ensuring development does not harm existing healthy creeks

3. Grass Tree Creek

Grass Tree creek was named in 2012 after local residents petitioned the City of Ballarat to name the creek after two inappropriate developments were built on the creek damaging the ecology of the creek.

The creek starts deep in Woowookarung Regional Park and passes through an eroded Gays Gully within the forest and then open cleared land before crossing Fussell St. The creek is relatively healthy east of Fussell St

Fussell St

The property at 432 Fussell St was developed over a period of 2012 to 2019.

Originally the property contained a dam and was a meandering creek with frogs, critters and ponds. The property was formally a fruit orchard on the elevated parts and an effective wetland on its lower parts.

Image 12: Grasstree Creek flowing across 432 Fussell St. View west from Fussell St. October 2011.

In 2015 a plan to pipe the creek under the court bowl road was rejected. An amended plan was proposed with road either side of the creek with the creek to be left open.

Image 13: The twin road with piped creek under the median strip. The biodiversity in the strip is a single species. How did this happen? October 2019.

Image 14: The outlet to the retention basin at the end of 432 Fussell St, October 2019.

The flood overflow from this retention basin runs between the two fences in the centre of the image to Cherry Court. There are several trees planted around the basin, no aquatic plants in place nor any evidence of the creation of a biodiverse environment. The development is in a Koala Overlay ES05 zone and the street trees that have been planted are non indigenous to the area. This retention basin suggests that ecological design has not been applied.

Local community members over the years have sent numerous letters to and sought explanations from the City of Ballarat planners without effect. They petitioned the City of Ballarat in 2012 to rename the creek. This was to raise the profile of the creek. This section of Grasstree Creek is now compromised and basically devoid of any biodiversity. The contrast between the single species and road of Image 13 when compared to Image 12 floodplain is clear. The old remnant indigenous trees are also now gone forever.

Cherry Court

Cherry Court was first conceived as a development in the 1980's and after some initial earthworks was abandoned due to flooding issues.

Image 15: Unconstructed Cherry Court showing the flooding prior to works resuming October 2011.

The Cherry Court roadway was built on top of Grasstree Creek in 2012. Local residents provided information about the potential for flooding including the image above showing a 2011 flood after a minor rain event.

The two houses shown below, at the east end of Cherry Court have the Grasstree Creek running between them. There is a pipe underground to carry normal creek flows. Any overland flow literally comes through the gap between the houses. This development was approved in 2011 and it beggars belief. The next big rain event in Ballarat may create a scene combining the flow in Image 15 above, through the houses in Image 16 below. Associated with this development was a commitment by the City of Ballarat to complete side drainage work in the adjacent Scentbark Lane. To date no action has been undertaken. Cherry Court is now flooding event waiting to happen.

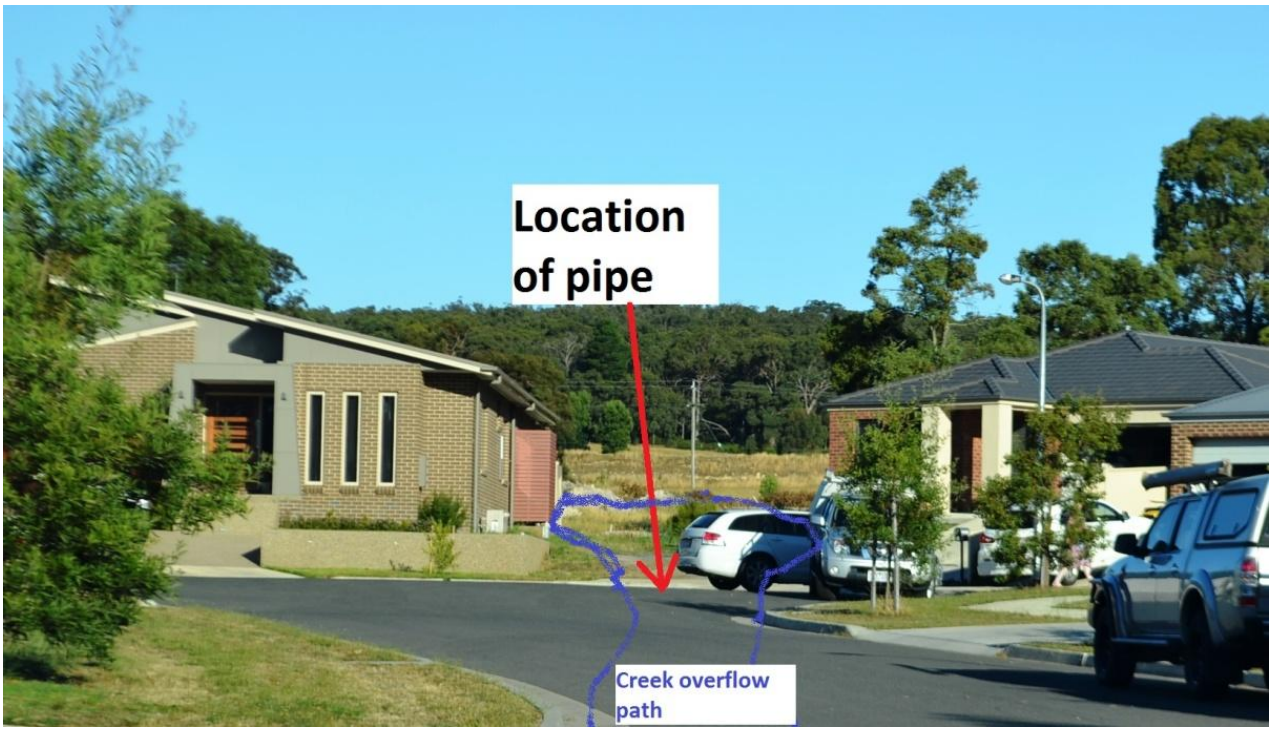

Image 16: Cherry Court and Grasstree Creek overland flow and pipe location 2017.

Grasstree Creek in Sparrow Ground

Grasstree Creek runs through Sparrow Ground in a deep gully between Richards St and Kline St. Local residents have restored the eroded creek banks and adjacent park land with indigenous tree and shrub plantings. The creek is relatively healthy in this area.

Image 17: The Friends of Sparrow Ground are an active group involved in tree planting, weed removal and rubbish collecting. Clean Up Australia Day, March 2017.

Image 18: Grasstree Creek trail with community planted vegetation near Kline St, Sparrow Ground October 2019.

Grasstree Creek between Kline St and Joseph St

Grasstree Creek west of Kline St flows through the Canadian Springs Linear Reserve and across private land. The Image 19 below shows the creek flowing strongly in October 2011. Whilst the creek was fringed with gorse and other weed species the actual creek contained ponds and had ecological values that could have been enhanced

Image 19: Grasstree Creek looking west from Rodier St. October 2011.

A 2010 development permit allowed the lots to be placed almost to the edge of the creeks gully as can be observed in image 20.

Image 20: Looking west at presently constructed creek (drain) from the same location as Image 20

Image 21: Looking east at erosion in recently constructed creek (drain)

The Images 20 and 21 above show the creek after the development of the estate in 2017. Contrast the creek in image 19 whilst carrying a minor flood. All biodiversity was destroyed in construction. The permit required the developer to submit a landscape plan. The images above suggest that it did not happen.

Grasstree Creek and Pennyweight Gully junction retention basin on Joseph St

The retention basin is adjacent to Joseph St and is devoid of any biodiversity except weeds.

Image22: Looking east along Grasstree Creek (or is it a drain) from Joseph St October 2019

Image23: Looking south east across the Grasstree Creek and Pennyweight Gully junction retention basin. Note trees, shrubs or any biodiverse treatment at all. Prior to the development the creek and wetlands were home to pelicans, ducks, many other birds, frogs and a great number of critters. October 2019.

Pennyweight Gully retention basin adjacent to Grasstree Creek and Pennyweight Gully retention basin

On the other side of the roadway to the Grasstree Creek and Pennyweight Gully junction retention basin there is a second retention basin built on Pennyweight Gully.

Image 24: Pennyweight Gully retention basin proves that biodiverse outcomes are possible, October 2019.

Grasstree Creek has significant flows in flood times

Image 25: Flooding on Joseph St October 2011. The water logged area on the left hand side of Joseph St is now the location of the two Grasstree Creek and Pennyweight Gully retention basins.

Grasstree Creek is an example of what happens when biodiversity values of a creek are ignored and developers are able to turn a wetland and a flood plain into house lots with only hydrological considerations being applied.

Additional solutions

Grasstree Creek ecological values have been reduced or destroyed by each subsequent development application. In addition to the solutions identified on page 15 the following solutions are reached

5. Stop excessive straightening or re contouring of creeks. Works should only occur if a genuine engineering reason exists and should pass a no net biodiversity loss in the immediate vicinity.

6. Require retention basins to be constructed with a dual purpose. The first purpose is to maintain or enhance biodiversity values in the local creek section and second to meet hydrological needs such as flooding and water velocity reduction.

4. Pennyweight Creek

Pennyweight Creek rises in the northern part of Woowookarung Regional Park near Boundary Road.

Image 26: Pennyweight Gully upper reach bushland. October 2019.

The upper reach of Pennyweight Gully was not mined and the creek bed is a grassy flat bed with small ponds and significant biodiversity which is probably illustrative of the nature of most of local creeks prior to gold era. The area was fuel reduction burnt in March 2019.

The creek runs through 'Canadian Springs" which is an exemplar of what good planning on an ephemeral goldfields creek. There is good evidence of planned biodiversity in the vegetation and the creek.

Image 27: Walking track and short piped section in narrow section of water reserve. Image October 2019.

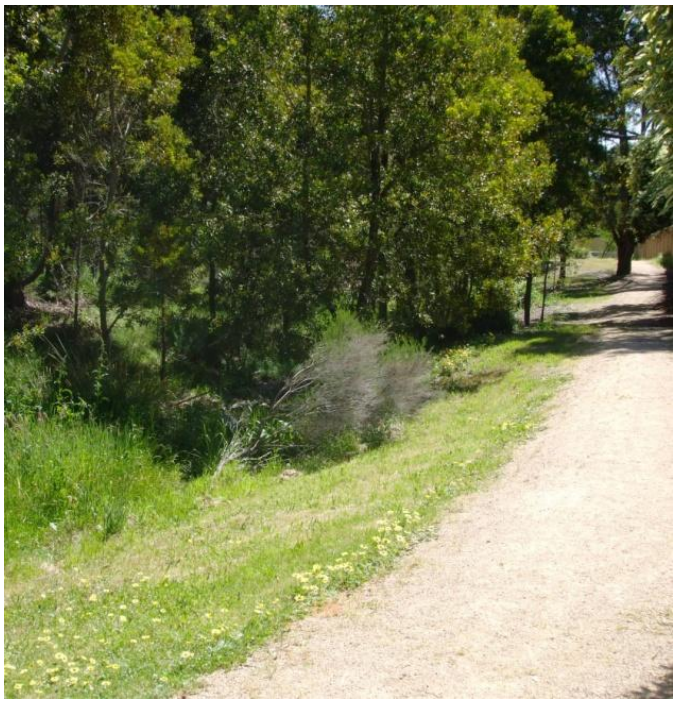

Image 28: Open creek with seventeen year old plantings and walking track. Image October 2019.

Image 29: Retention pond. Image March 2010.

Image 30: Retention pond outlet and vegetation. Image March 2010.

Downstream from "Canadian Springs" Pennyweight Gully flows across grassland and ponds to a current construction site before joining Grasstree Creek at the two Joseph St retention basins illustrated in images 23 and 24.

5. Lal Lal Drain

Lal Lal drain is arguably Ballarat's most degraded creek. Its upper reaches were deforested as part of the plantation hand back to Government in 2012. It has significant gorse infestation along its banks, gully erosion, possible lead

contamination from the old Commonwealth Rifle Range, industrial fill dumping on the creek edges, piping, channelling, and creek diversion earthworks with piping of the final section to the junction with Canadian Creek.

Currently the creeks upper reach in Woowookarung Regional Park is being rehabilitated by the Corangamite Catchment Management Authority (CCMA). The upper reaches of the creek was filled with earth and logging residue in 2012 as a result of the removal of the surrounding Blue Gum plantation and tree stumps by the then lessee East Gippsland Plantations Pty Ltd, prior to hand back of the land to the State Government.

Image 31: The ex plantation land ready to hand back to government with the Lal Lal Drain (centre). March 2013.

Image 32: Lal Lal Drain in gorse infested light forest adjacent to the "Rifle Range" main abutment. March 2019.

Lal Lal Drain downstream of the abutment area passes through the western end of the “Rifle Range” to Kline St and onto Butt St.

Image 33: Lal Lal Drain, gorse and illegal earth works at the western end of Rifle Range (Kline St). March 2018.

The creek is piped along Butt St before entering a channel on private land as shown on Image 35 below! The private land was formally the Canadian Railway Station and the original path of the creek through the station is unknown.

Image 34: The shallow drain looking westwards from Butt St. October 2019.

Property owners in the old Canadian Railway Station site have made diversions and landfills to the creek.

Image 35: Land fill to the right and dumping of trees and other rubbish. Lal Lal Drain at Rodier St. March 2018.

Image 36: Lal Lal Drain, earthworks on the left side and diversion channel centre, east of Rodier St. March 2018.

Lal Lal Drain west of Joseph St is diverted into pipes through to the junction with Canadian Creek.

Additional solution

7. The Lal Lal Drain in common with the other creeks should have a comprehensive creek plan including identification of the creek path across private land, plus a creek ecological health improvement action plan.

6. Unnamed Creek 1 (adjacent to Katy Ryans Rd)

The Unnamed Creek 1 begins in the Woowookarung Regional Park and runs through private and public land adjacent to Katy Ryans Rd.

Image 37: The Unnamed Creek 1, east of the Dozed Rd and Katy Ryans Rd intersection. October 2019.

West of the Dozed Rd and Katy Ryans Rd intersection, the creek passes through a section of Valley Grassy Forest EVC 47 which is quite rare in this region. The creek is in quite good condition though parts are heavily eroded as a result of alluvial diggings. The Unnamed Creek 1 enters private land west of the intersection.

Image 38: Gorse infested creek at entrance to private property west of the intersection. October 2019.

Image 39: Floodplain,wetlands on Unnamed Creek 1. Earthworks on the fence line and and heaped earth mounds (right side). October 2019.

Additional Solution

8. Floodplains and wetlands should be identified, mapped and protected by easement or other measures.

7. Unnamed Creek 2 (Amphitheatre)

This creek rises in Woowookarung Regional Park below a locality known as the Amphitheatre and runs through ex plantation land. The creek suffered logging damage in the plantation removal.

Image 40: Shows the native regrowth, weeds and a small pond in the creek bed. The potential for restoration of this waterway is very good. Image Page 33 Woowookarung Regional Park Strategic Directions Plan 2018.

The Unnamed Creek 2 runs through private property bushland before becoming a stream side park in Sailors Gully. This creek has one of Ballarats best examples of urban creek works.

Image41: Retention pond in Sailors Gully. April 2019.

8. Unnamed Creek 3

This creek rises in Woowookarung Regional Park and runs parallel to Boak Rd through ex plantation land before crossing Recreation Rd and entering private forested property. It is probably the least damaged creek in the area.

Image 42: The creek and valley upstream of Recreation Rd. Looking south east. October 2019.

Image 43: The Unnamed Creek 3 and gully in private land adjacent to Recreation Rd. October 2019.

Image 44: The Unnamed Creek 3 and ex railway bridge. October 2019.

Image 45: Piped section of Unnamed Creek 3 below the railway bridge. Note overflow grating and provision for overland flow. October 2019.

Image 46: The houses directly in the path of the overland flow. Where does the overland flow go? October 2019.

Image 47: The partly blocked outlet into Canadian Ck. In this increased heavy rain fall era, what flow rates was this 40 year old piping was designed for? October 2019.

9. Unnamed Forest Tributary

The Unnamed Forest Tributary is actually the longest tributary of Canadian Creek and should be by right named Canadian Creek.

The Creek rises on the slopes on the east side of Green Hill and runs through farmland to Bell Rd before entering the Gorge at the Cascades. The Gorge contains an 1860 quarry, sluicing sites and a large dam. The creek exits the Park to the west and runs through private land before joining the Canadian creek. The Corangamite Catchment Management Authority (CCMA) is undertaking restoration works in the Gorge beginning with gorse and blackberry removal. The Central Highlands Water Authority is also about to rehabilitate its pipeline easement across the gorge. Parts of the private land are devoid of native vegetation with large sections of gorse.

Image 48: “The Cascades” above the Gorge. P Darveniza Sept 2016

Image 49: The Gorge and blackberry infestation. Mar 2013.

Image 50: The Central Highlands Water easement across Unnamed Forest Creek. The access track has been badly damaged by 4WDs and was scheduled for restoration in winter 2019. J Petheran 2014.

The lower reaches of the creek near the junction with Canadian Creek need significant remedial works to remove weeds and to revegetate stream sides.

10. Unnamed Creek 3 (Wattle Tree Creek)

This unnamed creek begins on top of the ridge in Timbertop Reserve near Bells Road and runs through the Mt Helen housing estate to Canadian Creek. In the LINC'S plan it is known as Wattle Tree Creek.

Image 51: Water retention basin at top of unnamed creek at Timbertop Drive. Note distribution of trees and shrubs. October 2019.

Image 52: Creek adjacent to Oakbank drive. Note the creek meanders across the gully and contains a variety of indigenous and introduced species. October 2019.

The upper reaches of the creek are open and are good examples of enlightened 1980's integrated urban development and creek park land planning by the then Shire of Buninyong. However below Vincent Drive the creek is piped through to Canadian Creek.

Image 53: The view looking west along the pipe easement from Vincent Drive. October 2019.

The reason for this pipe is not obvious but the result is a broken bio link between Canadian Creek and the Unnamed Creek 4. Why was this done?

Note lack of Biodiversity in creek bed as well as the potential increase in velocity of water entering Canadian Creek.

Additional Solutions

9. Removal of unnecessary piping to reconnect the ecological corridors along piped creeks.
10. Where piping is found to be the last resort method to resolve a hydrological problem, first party offset of bio diverse assets should occur adjacent to the piping locality. Where a pipe is deemed necessary offset planting should occur on the same site near the pipe.

11. Canadian Creek

The Canadian Creek begins in a spring near Gear Avenue. A constructed wetland is adjacent to University Drive and Wetlands Drive and was completed in 2004. The creek occupies the gully known as One Eye Gully above Mt Clear.

Image 54: Federation University Wetlands. Completed 2004. October 2019.

From the wetlands the creek runs north through cleared farmland to Green Hill Road.

Image 55: Looking north from Greenhill Rd, Canadian Ck is on right in the gorse and weed filled banks. October 2019.

North of Greenhill Rd the creek runs through degraded pasture and gorse (image 55), to a junction with the Unnamed Forest Tributary, then through private property to Olympic Avenue. This section of creek is an obstruction to the through routing of the Ballarat to Federation University Cycle Trail. At Greenhill Road the cycle trail is diverted in a most unsatisfactory route through several road crossings and stop lights before regaining the trail at Olympic Avenue.

North of Olympic Avenue through to the crossing of Main Road at Poverty Point the creek has been restored to good condition with replanting and works in the 1980's and 1990's by the ground breaking LINC's project which included schools and the community. Various sections of the creek have been treated and the overall effect has been a steady improvement in biodiversity and habitat values.

The Canadian Lakes development in the late 1990's also created significant lakes and habitat.

Image 56: Canadian Lakes, southern lake and Canadian Creek. October 2019.

Additional Solution

11. Reintroduction of fines for property owners refusing to control noxious weeds on their property.

12. Strategic Habitat Connection.

Ballarat East's forested eastern side forms a significant part of the "Strategic Habitat Connection" between Creswick Forest and Enfield Forest. In 1991 Pat Prevett's map "the Vegetation Corridor between Creswick and the Lal Lal area" was produced for the City of Ballarat.

Image 57. Prevett's "The Vegetation Corridor between Creswick and the Lal Lal area" 1991.

The Corridor (red line) in Ballarat East in 2010. The blue gum plantations in the Woowookarung Regional Park helped create a seamless vegetated corridor from Pryor Park on Eureka St through to Mt Buninyong and beyond.

Image 58: The red line shows the location of Strategic Habitat Connection as seen from above Black Hill, looking south before the plantations were removed. November 2010.

Ballarat East has a significant interface with the Woowookarung Regional Park as can be seen in the image below. The vegetation, creeks and mixed style properties east of Kline St and south of Eureka St are prominent.

Image 59: Ballarat East, east of Kline St and south of Eureka St. Image October 2011.

References

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4. Yarrowee River Sub Catchment Master Plans, Canadian Creek and tributaries, Union Jack Creek and Hasties Creek, City of Ballarat and Linear Network of Communal Spaces, Version 4, April 2003.
5. Ballarat Open Space Strategy Volume, City of Ballarat, March 2008.
6. The Vegetation Corridor between Creswick and the Lal Lal area, City of Ballarat, Pat Prevett, Ballarat University College 1991.

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