



Understanding planning issues along the Merri Creek

and

Policy: Development Guidelines for the Merri Creek

Adopted MCMC 20 May 2004

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MCMC

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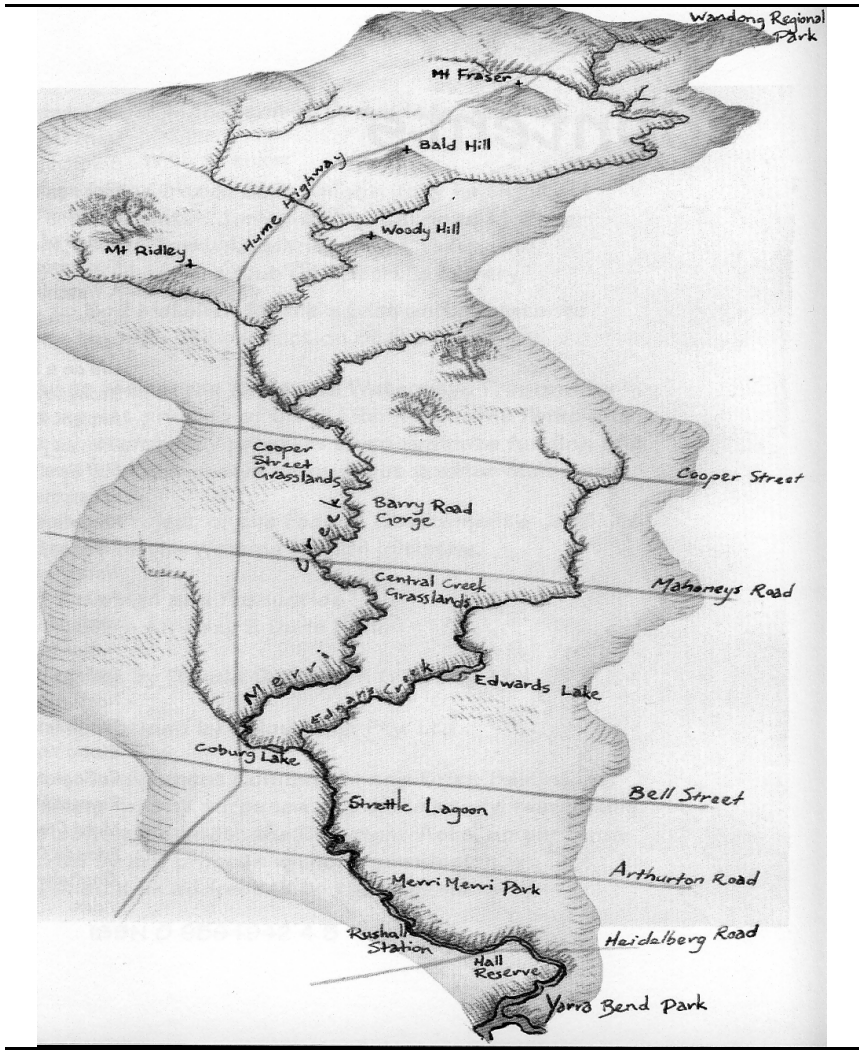
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Model Planning permit Conditions

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Merri Creek catchment

Understanding planning issues along the Merri Creek

INTRODUCTION

The Merri Creek flows from the Great Dividing Range through Melbourne's northern suburbs to the Yarra River. Its tributaries include Edgars, Merlynston, Central, Curly Sedge, Aitken and Malcolm Creeks. Guidelines have been prepared in conjunction with an Environmental Significance Overlay for the Merri Creek and parts of Central and Edgars Creeks. They aim to guide future development along the creeks and assist with the implementation of the town planning permit requirements under the Environmental Significance Overlay.

The Environmental Significance Overlay provides a statement of the environmental significance of the creek corridor and environs:

The Merri Creek is an environmental, heritage and recreation corridor that draws its significance from its role as a continuous corridor as it does from the qualities of individual reaches. All areas of the Creek are important because they contribute to the linking of areas of environmental, heritage and recreational value along the Creek.

The Merri Creek and its immediate surrounds are host to some of the most threatened ecosystems in Australia. The Creek has a unique role to play in the preservation of threatened flora and fauna and the maintenance of vegetation communities that in other places have almost been totally destroyed.

The Creek is the focus of a large number of pre and post-contact archaeological sites which as a group are highly significant. Many unknown sites are likely to exist and the areas likely to have the greatest density of these are sensitive to development.

Revegetation works and parkland development including path construction have created a linear park of outstanding quality and landscape character – one which plays an important role in the park system of the metropolitan region.

The guidelines should be used in preparing plans for subdivisions, redevelopments, new urban or other development and public works. They should also be used by local councils in assessing planning applications.

In some areas Councils may have prepared detailed controls or guidelines for private development adjacent to the creek that complement the controls in this guide, and are to be used when a permit is required under the planning scheme. However, where the permit is required under the Merri Creek Environmental Significance Overlay this set of guidelines takes precedence.

THE VISION FOR THE MERRI CREEK

The Merri Creek and Environs Strategy (1999) developed a vision for the creek that includes:

- A healthy living stream flowing through an attractive environment that provides habitat for native animals.
- A peaceful, passive open space haven that is valued by the community.
- A management regime for the Merri Creek corridor that protects the natural and cultural assets of the creek and provides lasting benefit to the community.

As general guiding principles, development along the Merri Creek and its tributaries should:

- Ensure that new development and land along the Merri or tributaries is consistent with the provisions of the Merri Creek and Environs Strategy.
- Promote the establishment of an open space corridor on both sides of the Merri Creek valley and its major tributaries.
- Protect local native vegetation and sites of natural, scientific, aesthetic, historical and archaeological, social and cultural significance along the creek and its tributaries.
- Ensure that any change in land use or development along the Merri does not degrade the ecological, recreational or aesthetic values of the creek corridor or its tributaries.
- Encourage recognition of the creek corridor as an asset in both public works and private new development and redevelopment. These developments need to complement the natural character of the waterway and its associated open space and be compatible with the informal recreation activities along the creek corridor.

A PICTORIAL HISTORY OF ACHIEVEMENT

The Merri has been undergoing a transformation for some time. Urban reaches are being revegetated with local native plants, a trail has been constructed and wildlife is returning; many people now enjoy the creek valley. If this transformation is to continue, future public and private development along the creek must be carefully planned and managed, and be complementary to the landscape character and environmental values of the creek. It is important to recognise that this transformation will have economic as well as environmental benefits. An improved creek environment will contribute to the overall quality of the area, promoting investment and development.

To ensure that restoration of the creek continues, the community needs to be involved in all stages of development and management. The following photo essay illustrates the community impetus behind the restoration works to date.



Hall Reserve, Clifton Hill in September 1982 and after path construction and revegetation works in 1996.



Moomba Park Reserve 1988 plantings and the 1996 result.



Albion Street, East Brunswick 1982 and 1999 after path construction and screen planting.



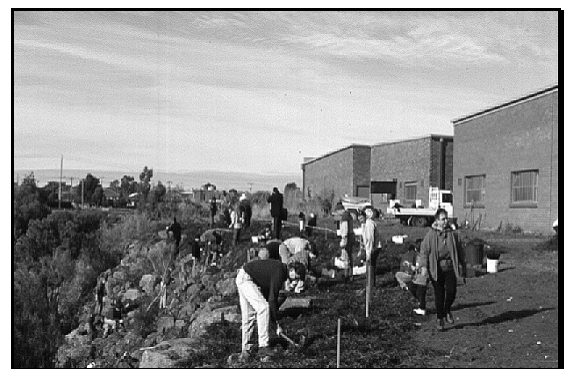
St Georges Road Bridge, North Fitzroy in 1982 and 1996 after revegetation and path work.



Kendall Street footbridge in Preston.



A graduation of open space uses with the creek margins revegetated for landscape and habitat at Ramsden Street, Clifton Hill.



Cleaning up the creek – community involvement in revegetation, Brex Crt, Reservoir.

UNDERSTANDING THE ISSUES

The issues along the creek are discussed in terms of five themes. Each of these themes contributes to the overall quality of the creek and its environs. Under each of these themes is a description of the significance of the particular theme to the Merri Creek.

Natural systems

A healthy stream

The first land sales and development in the Merri Creek catchment by Europeans began around 1837. For many years development along the creek did not take into account the quality of the stream or the needs of its ecosystem. Issues of run-off and litter polluting the creek weren't considered important. The current transformation of the creek has included weed control, revegetation and cleaning up the water – especially through litter control and preventing future degradation.

In managing the urban catchment, it is important that run-off quantity and quality are managed and that chemical spills and litter especially from shopping centres is minimised. Storm water run-off carries pollution from road surfaces, farming and grazing land as well as litter into the creek. This pollution sickens or kills the creek's plants and animals and prevents them from re-establishing the natural ecosystems of the creek. It also makes the water unsuitable for human contact.

Improving the water quality in the creek will also promote a viable population of local native flora and fauna. But a viable in-stream habitat is also determined by the structure of the stream bed, adequate food supplies and live native vegetation, both in-stream and on the banks. The future of the creek is not seen as merely a landscaped drain, but as a healthy natural stream able to support a complex natural system within the context of an often highly modified environment.

Native grasslands and other remnant vegetation

Much of Melbourne's local native vegetation has been cleared or seriously degraded, particularly the grasslands and grassy woodland that once covered the basalt plains to the north and west of Port Phillip Bay. Therefore it is important that any remnant vegetation is protected.

A number of small patches of remnant vegetation do remain along the Merri and its tributaries, in the urbanised areas downstream of Mahoneys Road. And between Mahoneys Road and Craigieburn East Road, there are some relatively large, highly significant areas of local native plant communities and fauna habitat. Seven of the remnant areas of vegetation identified along the Merri are considered to be of regional, state or national botanical significance (McMahon and Schulz, 1993). Over 280 species have been recorded along the Merri; this probably represents about 50 per cent of the Western Volcanic Plains flora.

Local native vegetation can benefit the local environment in many ways, including:

- protecting land and waterways
- providing shade and shelter
- providing habitat for native fauna
- maintaining genetic diversity
- distinguishing local landscape character
- keeping watering and maintenance costs low
- providing propagating material for further revegetation work
- providing an enjoyable landscape for informal recreation.

Many of the remnant vegetation areas along the creek consist of Western (Basalt) Plains Grassland. Western (Basalt) Plains Grassland is recognised as the most endangered vegetation

community in Victoria¹. It is listed as a threatened community on Schedule 2 of the *Flora and Fauna Guarantee Act 1988*.

Native grasslands and grassy woodlands once covered vast tracts of the Victorian lowland plains. In only 150 years over 99.5% of these grasslands have been destroyed, reducing the once extensive native vegetation to small isolated remnants.

Native grasslands are comprised of a wide range of species – up to 40 species of grasses and as many as 150 species of small perennial herbs made up the Western Basalt Plains community. In the Western Plains more than 99.9% of the original distribution has been destroyed.

Some areas of land along the creek corridor are of national or state significance: the Craigieburn Grasslands are recognised as being of national significance; the Cooper Street Grasslands and Central Creek Grasslands are recognised as being of state significance and containing some species of national significance.

The Craigieburn to Cooper Street grasslands are listed on the register of the National Estate. The listing states:

The Craigieburn to Cooper Street grasslands are some of the best remaining examples of the grasslands which covered much of the western basalt plains before European settlement. Together they represent the largest remaining area of plains grassland in Victoria, a community which is considered endangered in Victoria and contain patches of grassy wetlands, a severely depleted community. The riparian scrub growing along the Merri Creek corridor south from Craigieburn is one of the few intact examples of this vegetation type remaining on basalt in the State.²

Great difficulty has been experienced in recreating native grassland communities. While some species such as Kangaroo Grass can be successfully harvested and areas re-sown this has not proved successful for many grassland species. Even transplanting sods of grassland has proved ineffective. For the foreseeable future preservation of native grass species will require protection of the remnant grassland areas.

Waterway function

The creek provides natural drainage for the surrounding catchment. The provision of regional flood and drainage management by Melbourne Water requires a range of measures to be introduced along stream corridors. Examples include retarding basins such as those on Kalkallo and Merlynston Creeks, and flood levees such as at Thornbury and Northcote. It is important that stormwater flows be maintained at pre-urbanisation levels. It is also important that development does not intrude into the floodplain, reducing natural flood storage and exacerbating flooding.

Sustainable management of the stream corridor requires more than regional flood and drainage management. It is also important, especially where opportunities are available in association with greenfields developments, that the stormwater is treated to maintain rural water quality prior to discharge to the stream.

Measuring floods

The extent of flooding is measured by how likely a particular level of flooding is to occur. In this way we can speak of 1 in 100 year (or 1%) floods which are expected to occur (on average) once every 100 years. This 1% level is used for determining whether land is considered flood prone. Suburban drainage systems operated by local government are usually designed to cope with a 1 in 10 or 1 in 5 year storm without having the drains completely full. In some cases

¹ see Stuwe (1986), and Frood, D. & Calder, M. (1987)

² Register of the National Estate Database Place Report. Database number 100591. File number 2/14/054/0017. Printed by Annabel Wheeler on 28 November 1996

during intense rainfall events it is usual for the storm water to flow overland along valleys following much the same course as the drain, or along roadways. Protection of these natural valley lines must be provided for in urban development and are sometimes the basis of Special Building Overlays in planning schemes.

Open space, recreation and access

In order to develop a continuous corridor for recreation and conservation along the lower and middle sections of the Merri Creek valley, open space is being established along the creek corridor. At present in the areas south of Barry Road this corridor is established on one or both sides of the creek. However, north of Barry Road the creek frontage is generally owned privately.

It is also important to establish points at which pedestrians and cyclists can access this corridor. In the areas south of Mahoneys Road there are plenty of points at which people can access the creek. Major roads running east-west provide access to large open spaces and parking is available at local sports grounds. Many local streets run parallel to the creek or end close to it; the creek could be easily accessed from these points. Unfortunately, this potential is lost when allotments run continuously along the street and look away from the creek. Experience shows that where houses back onto the creek it is not unusual to experience problems with people just throwing rubbish and weeds over the back fence claiming some of the creek side park as their own! Back fences make for an ugly parkland edge and the perception of safety for parkland users is improved when houses face the park.

Local streets that edge the creek parklands need to be designed with allotments on the opposite side of the street to the creek; this will allow easy access to the creek from these streets, make the creekside park easier to maintain and increase the perception of safety along the creek.

Similarly, management vehicles need to have access to the creek parklands, while trail bikes and other private vehicles have to be discouraged.

In some areas where access to the creek is more than 400 metres away (five minutes walk), it may be necessary to acquire properties to create new access points.

It is important to encourage the use of public transport by visitors to the creek parklands, and to ensure that access points are close to public transport stops.

Landscape character

Subdividing land can create more variety and intensity of development. However, providing services such as roads, bridges, sewers and drains can seriously disturb the landscape of the site³.

Any buildings adjoining the parklands have an impact on the natural environment of the Merri Creek parklands. The visual impact of buildings can be made worse if bright colours, reflective surfaces or garish signs are used. The bulk and visual impact of buildings as well as the impact of overshadowing of the parklands needs to be considered.

Solid, high fences or walls can close in the parklands, particularly where there is only a narrow area of open space between the creek and the buildings.

³ For guidelines on residential subdivision design refer to Clause 56 of Planning Schemes.

Heritage

Sites of geological, geomorphological, botanical, zoological, Aboriginal and historic significance have been identified along the Merri Creek valley. These sites typically cluster along waterways, because of the natural processes displayed near waterways; waterways have always attracted people for recreation and ritual.

Areas of high archaeological sensitivity may include:

- the creek bank, the flood plain, river terraces and the high ground inside meanders
- the plain immediately above the creek valley escarpment for 150 metres inland
- any other place where an archaeological site has already been discovered.



Typical locations of Aboriginal heritage sites

Heritage sites can be damaged or destroyed by any of the following:

- construction of dams, fences, buildings, roads and trails
- ploughing and cultivating of soil
- extractive industries – for example, soil extraction
- inappropriate planting of trees
- filling or excavation of land
- weed control by cultivation or physical removal
- modification of the creek's bed or banks.

Protected by legislation

Some sites of cultural significance are protected by legislation. For example, under the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, all places and objects significant to Aboriginal people are protected. Where these places or objects may be damaged or destroyed, written consent is required from the relevant Aboriginal community⁴.

Similarly, all archaeological relics and sites are protected under the *Archaeological and Aboriginal Relics Preservation Act 1972*. This Act is administered by the State Minister responsible for Aboriginal Affairs; a separate permit may be required under this Act⁵.

The planning scheme may provide specific protection for some sites by way of a Heritage Overlay control, and the *Heritage Act 1995* and the *Flora and Fauna Guarantee Act 1988* may provide additional protection for other significant sites.

⁴ In this case the relevant community is the Wurundjeri through the Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc.

⁵ The Heritage Branch of Aboriginal Affairs Victoria can give advice on what permission is needed.

REFERENCES

Eight major studies have assessed the biological and cultural importance of sites and features along the creek. This material is on file at the Merri Creek Management Committee and should also be held by all the councils abutting the creek. A number of other publications also provide useful information.

The Merri Creek Management Committee has a Geographic Information System (GIS) database which records the sites from a number of these studies.

Austrroads 1993 *Guide to Traffic Engineering Practice Part 14: Bicycles* Austrroads Publication No. AP-11.14/93.

This publication sets out detailed standards for bicycle path design. It is available from the VicRoads bookshop.

Beardsell, C 1997 *Sites of Faunal and Habitat Significance in North East Melbourne*. Report prepared for North East Regional Organisation of Councils (NEROC) Nillumbik Shire Council: Environment and Land Use Strategies.

This comprehensive study of sites of faunal significance identifies five nationally significant sites in the region including Bald Hill and Craigieburn Grasslands in the City of Whittlesea. It also identifies five state significant sites along the creek in Whittlesea namely Cooper Street Grasslands, Craigieburn to Donnybrook, O'Hernes Road Wetlands, Edgars Creek Headlands and Summerhill Road.

Carr et al 1992 *Environmental weed invasion in Victoria* DNRE

Ellender, I 1997 *The Aboriginal Heritage of the Merri Merri Creek: Including the Archaeological Survey for Aboriginal Sites from Craigieburn Road to Hernes Swamp*. Merri Creek Management Committee.

This project was carried out with funding from the Merri Creek Management Committee and funding from the National Estate Grants Program. The report is more than simply an archaeological survey and sets of maps identifying sites – it also provides important historic and cultural information based on a number of historic sources which puts the Merri Merri Creek into its correct historic context.

EPA 1991 *Construction Techniques for Sediment Pollution Control*, Publication No. 275, available from the EPA, Herald and Weekly Times Tower, Southbank 3006.

Frood, D. & Calder, M. 1987 *Nature Conservation in Victoria*. Study Report Vols 1 and 2. Victorian National Parks Association.

Frood, D 1992 *Vegetation of the native grasslands of the Merri Creek Valley, Outer Melbourne Area, Ecological Survey Report No 42*. Department of Conservation and Environment – Victoria. Melbourne. ISBN 0 7306 2747 0.

The primary objective of this study was to gather additional data at Craigieburn, Cooper St and Bald Hill grasslands, and to assess their long term viability and significance.

This study provides a wealth of detailed assessment and maps the subcommunities at the three sites.

It concludes with a strong call for better resources and management of these sites to prevent the loss of the Plains Grassland ecosystem.

Hall, R 1989 *Merri Creek Parklands Aboriginal and Historical Heritage Survey Report* prepared for the Merri Creek Bicentennial Committee, project management by the Board of Works.

The report provides a description and interpretation of the archaeology of the Merri Creek. It provides an inventory of prehistoric and historic sites found along the creek, an assessment of the significance of the sites and a number of recommendations for improved management of the creek.

Johnston C and E Ellender, 1993a 'Cultural Heritage Report for Merri Creek Concept Plan Strategic and Statutory Planning Project.' Prepared by Chris Johnston of Context Pty Ltd and Isabel Ellender Consultant Archaeologist for Melbourne Water and Merri Creek Management Committee.

Johnston C and E Ellender, 1993b 'Cultural Heritage Volume 2: Database for Merri Creek Concept Plan Strategic and Statutory Planning Project.' Prepared by Chris Johnston of Context Pty Ltd and Isabel Ellender Consultant Archaeologist for Melbourne Water and Merri Creek Management Committee.

This report and database provide a comprehensive listing of places identified as being of heritage value along the creek. The report and database include sites of both European and Aboriginal cultural heritage.

The report draws on a number of earlier heritage studies conducted by Councils along the creek. In preparing the report consultations were undertaken with representatives of the Wurundjeri.

McMahon, A and M Schultz 1993 *Merri Creek Concept Plan Flora and Fauna*. A report prepared for the Merri Creek Management Committee and Melbourne Water Ecological Horticulture Pty Ltd ACN 006 757 142

This report provides an overview of the flora and fauna of the Merri Creek Concept Plan Study Area. The report relies on earlier studies for some data and includes supplementary flora and fauna survey work.

Nine local native vegetation communities are described

- Plains Grassland
- Danthonia Grassland
- Stony Knoll Grassland
- Escarpment Shrubland
- Floodplain Grassland
- Riparian Scrub
- Drainage-line Complex
- Box Woodland
- Grassy Wetland

Seven of these nine communities were identified as being seriously depleted in a state or national context, and range from regional to national significance depending on the size of the remnant, its species composition and degree of disturbance.

Eleven sites of botanical significance were identified.

Merri Creek and Environs Steering Committee 1999 *Merri Creek and Environs Strategy*.

Provides an overview of the important issues along the Merri Creek and sets out an agreed vision, objectives and actions for the creek.

Merri Creek Management Committee 1994 *Plants of the Merri Merri MCMC*

The guide provides detailed information on locally native plants for use in landscaping and revegetation works.

Schultz M and A Webster 1991 *Sites of Biological Significance in the Merri Corridor – A Preliminary Investigation*. Department of Conservation and Environment, Melbourne Region. ISBN 0 7306 2645.

This report identified and described sites of biological significance within and fringing the Merri Corridor. The report was not a comprehensive statement of the area's flora and fauna values but rather a summary based on preliminary investigations.

A total of two national, seven state, six regional and ten local sites of biological significance were identified. Sites were assessed against a range of criteria based on established practices (Frood and Calder 1987, Cheal et al in preparation and DCE 1990).

A site was considered of National significance if the biological attributes of the particular site contributed substantially to the total number of examples of that attribute at a national level. For example Bald Hill was rated as being of national significance partly because it is one of only a few sites nationally that contain the threatened sub-species the Southern Lined Earless Dragon *Tympanocryptis lineata pinguicolla*.

Each site of significance is discussed in detail and the sites are mapped at 1:2500. Areas are based on known faunal attributes, as no detailed biological study was commissioned for the area.

Stuwe 1986 *An assessment of the Conservation Status of Native Grasslands on the Western Plains, and Sites of Significance*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 48. Department Conservation, Forests & Lands, Victoria,

Wheeler A. 1996 Register of the National Estate Database Place Report. Database number 100591. File number 2/14/054/0017. Printed by Annabel Wheeler on 28 November 1996

Rosengren 1993 *The Merri Creek – sites of geomorphic and geomorphological significance* LaTrobe University, Bendigo

Policy: Development Guidelines for the Merri Creek

The Merri Creek and Environs Strategy (1999) developed a vision for the creek which includes:

- A healthy living stream flowing through an attractive environment that provides habitat for native animals.
- A peaceful, passive open space haven that is valued by the community.
- A management regime for the Merri Creek corridor that protects the natural and cultural assets of the creek and provides lasting benefit to the community.

Clause 14 of the State Planning Policy Framework identifies the Merri Creek as possessing values that need to be protected. An Environmental Significance Overlay applies to land adjacent to the creek. This overlay sets out a number of objectives to be achieved.

Clause 15.01 of the State Planning Policy Framework states that planning and responsible authorities should:

- encourage the retention of vegetated buffer zones at least 30 metres wide along waterways
- encourage measures to improve water quality
- ensure that new works near waterways provide for the protection and enhancement of the environmental qualities of the waterway.

Clause 15.02 of the State Planning Policy Framework provides for the protection of flood prone land.

Clause 15.10 of the State Planning Policy Framework states that responsible authorities should ensure that the siting of new buildings and works minimises the removal or fragmentation of native vegetation.

Clause 15.10 of the State Planning Policy Framework states that responsible authorities should plan for regional open space networks and include links along waterways where possible.

These guidelines set out detailed standards to provide guidance in achieving the objectives of the State Planning Policy Framework and the Environmental Significance Overlay and the broader goals for the creek.

The guide sets out objectives for managing development along the creek under the six design themes that contribute to the overall quality of the creek and its environs:

- Site analysis and information
- Waterway corridor
- Earthworks
- Built form
- Landscape
- Water quality

The guidelines provide objectives, and standards for the design themes.

Policy

It is policy that applications are assessed against the following standards.

Proposals that do not meet these standards may still meet the objectives of this policy.

01 SITE ANALYSIS AND INFORMATION

01-1 Site analysis objective

To ensure adequate and accurate information is provided with permit applications.

Standard MC 1 Creek environment and site description

An application should be accompanied by:

- A creek environment and site description that identifies key features and characteristics of the site.
- A design response that explains how the development meets the objectives of this policy.

The creek environment and site description may use a site plan, photographs or other techniques and should accurately describe, as appropriate:

In relation to the site and the creek:

- levels and contours
- the location of the top of escarpments or banks
- setbacks to the Merri path
- existing paths, retaining walls and pits
- existing landscaping
- distance in each direction to nearest public access
- details of existing local native vegetation including the condition of the vegetation and whether it has habitat values
- views to the site
- existing land use pattern.

In relation to the design response:

- height of the proposal
- extent of earthworks
- proposed landscaping
- views of the proposal when viewed looking into the parkland
- views of the proposal from the Merri path
- details of external finishes.

Standard MC 2 Aboriginal heritage

A survey by a qualified archaeologist should be carried out for Aboriginal places, sites and objects where the area has been identified as having high or medium archaeological sensitivity.

Old native trees with trunk or branch scars should be inspected by a person qualified to identify an Aboriginal scar.

The exact locations of sites should not be made public except where the site is a declared heritage place. Landowners may be advised of locations for specific reasons (such as to improve protection) or where permission has been granted by the Wurundjeri Tribe Land Compensation and Cultural Heritage Council (WTLCCHC).

Applications should be referred to Aboriginal Affairs Victoria where there is a possibility that places of Aboriginal heritage will be disturbed.

Standard MC 3 Rural uses

Applications for buildings and works in rural areas should prepare a Land Management Plan that addresses issues relating to the creek including:

- restrictions to stock grazing along the creek
- fencing off native vegetation
- revegetation works
- weed control
- bushfire hazard reduction
- dam construction
- farming practices which might cause erosion or siltation

02 WATERWAY CORRIDOR

02-1 Linear park objective

To provide a linear open space link, including the provision of a shared pedestrian and cycle path.

Standard MC 4 Continuous open space

Subdivision and development should create a continuous strip of public open space along both sides of the creek that includes all land within:

- the flood prone area (1 in 100 years)
- 30 metres of the bank of the creek
- 12 metres of the top of any escarpment where no path is intended
- 22 metres of the top of any escarpment where a path is intended

The open space strip next to the creek should be transferred at no cost to public ownership as part of any development application along the creek.

02-2 Subdivision objective

To ensure new subdivision creates a positive interface with the open space along the creek.

Standard MC 5 Subdivision

Allotments layout should encourage development to face open space along waterways.

Roads should run parallel to the creek to provide continuous frontage to public open space along the creek. Roads adjacent to the creek should be designed to carry less than 300 vehicles a day.

Land for stormwater treatment ponds and retarding basins should be identified in the preparation of outline development plans or drainage schemes for land subject to rezoning from non-urban to urban.

02-3 Access objective

To provide for access from surrounding areas to the creek and open space.

Standard MC 6 Access to open space

Access to the creek parklands should be provided at least every 400 metres.

Access should be wide enough to encourage people to use it, and not cause conflict between residents and other users.

Access for people with disabilities should be promoted.

Development should provide access for management vehicles along both sides of the creek.

Standard MC 7 Access to development

The creek side parkland or path should not be used for vehicular access to development.

Access ways and roads should not be constructed within the drip line of trees to be retained.

Standard MC 8 Shared pathway

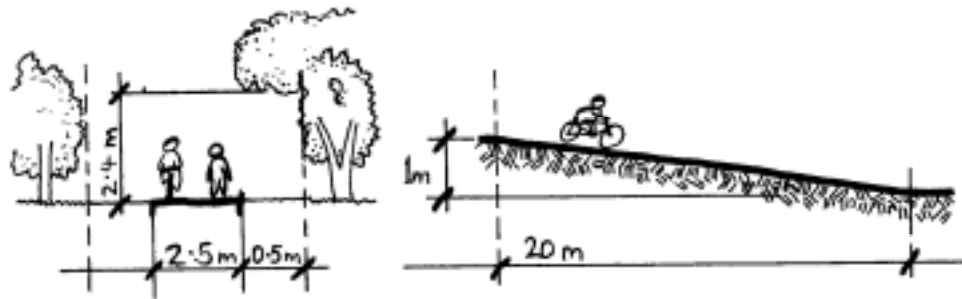
Development should allow for the provision of a creek side path in the reaches where the path does not currently exist. The path is intended for one side of the creek only.

A safe shared path should be provided along one side of the creek for its complete length in urban areas. The path should:

- have a variety of entry points at regular intervals
- be designed for bicycles and pedestrians to shared pathway standards with a design speed for bicycles of less than 30 km per hour
- meet Melbourne Water's path criteria (especially in relation to flooding).

All shared pathways should be designed in accordance with the *Guide to Traffic Engineering Practice Part 14: Bicycles* (Austroads) and have:

- minimum path width of 2.5 metres
- clearance from obstruction 0.5 metres each side of the path and to a height of 2.4 metres
- maximum slope of 1 in 20
- minimum inside radius of curves of 15 metres
- sightlines to allow for safe stopping from 30 km per hour.



Standards for shared pathways

03 EARTHWORKS

03-1 Landform objectives

To protect natural landforms and geological features.

To create a more natural and visually attractive landform.

Standard MC 9 Fill

Slopes facing the creek should not be filled. Areas of old inappropriate fill should be removed as part of new development.

Areas within 12 metres of the top of the bank of the creek valley should not be filled.

Earthworks should not:

- create unnatural landforms that do not blend with adjacent soil surfaces
- create a trapezoidal valley shape
- create batters greater than 1 in 3.

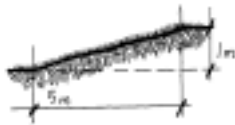
Roads or access lanes should minimise the creation of batters with steep sides.

03-2 Treatment of batters objective

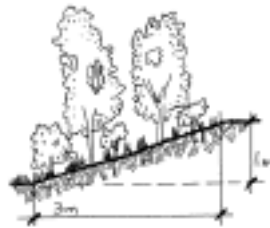
To create landform that can be easily maintained.

Standard MC 10 Treatment of batters

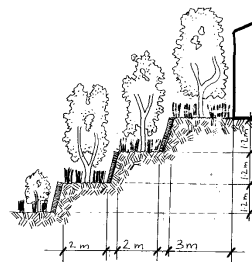
Development should ensure fill batters are less than 1 in 5 for grassed slopes, 1 in 3 for vegetated slopes, or, if no alternative is available, are benched with benches no more than 1.2 metres high and at least 2 metres wide with a top setback of 3 metres.



1 in 5 grassed slope for mowing.



1 in 3 slope for dense planting.



Benched slope – to be used only when absolutely necessary.

03-3 Illegal fill objective

To protect open space from illegal fill.

Standard MC 11 Protection of open space from illegal fill

Sites should be fenced with a permanent fence prior to the commencement of earthworks unless explicit permission has been granted to carry out earthworks on public land.

04 BUILT FORM

04-1 Building height and setback objective

To ensure that development does not undermine the sense of remoteness along the creek

Standard MC 12 Building height

Buildings should appear below tree height when viewed from the path or informal recreation areas.

All parkland should receive sunlight between 9 am and 3 pm on 22 September.

Standard MC 13 Building setback and screening

Buildings should be predominantly screened from open space areas by planting or topography.

Buildings should be setback as far as possible from the creek, and:

- at least 12 metres or further if possible from the top of any escarpment
- at least 30 metres or further if possible from the creek in urban areas
- sufficient distance to preserve open space and heritage values in rural areas, or areas undergoing development.

Landscape areas intended for screening should be at least 12 metres wide. Landscaped semi-public areas may be included within the landscape setback, but private open space areas must not.

Where existing buildings cannot be screened from the creek they should be adapted to provide a positive interface.

04-2 Building interface objective

To protect and enhance the natural and visual character of the waterway corridor.

Standard MC 14 Positive interface

Buildings should not present blank walls to the open space along the creek.

Where development will be visible from the path or informal recreation areas it should face the open space along waterways. Where development cannot face the creek, living areas or office areas should be oriented towards the creek.

Site layout should place semi-public areas such as shared open space, driveways or car parks next to the creek in preference to private open space. Connection should be provided from semi-public areas to the creek parklands.

Standard MC 15 Fences

Fences should be designed in conjunction with planting to ensure that planting is the dominant visible component when viewed from the creek parklands.

Where part of the landscape setback is provided on private land, fences on boundaries adjoining the creek should be constructed from visually permeable wire – black or dark green.

Vandal proof fences and gates should be erected to prevent vehicles other than maintenance vehicles accessing the creek parklands – these barriers should allow easy, safe access for pedestrians and cyclists.

Standard MC 16 Materials and details

The side of buildings facing the creek and visible roofs should:

- not include reflective materials, illuminated elements, bright colours or signage
- use muted blue-green greens, greys and browns where visible from the creek valley.

Electric power lines and telephone lines should be placed underground.

Lights should be baffled to avoid light spill to the creek.

05 LANDSCAPE

05-1 Landscape objective

To restore the adjoining open space to a more natural environment.

Standard MC 17 Protection of remnant vegetation

All remnant local native vegetation should be protected.

Areas of remnant vegetation should be buffered by new planting at least 5 metres wide or twice the canopy of trees.

Standard MC 18 Revegetation

The Merri Creek and its tributaries should be revegetated with local native plant species matched to the plant communities characteristic of the site, and original landscape character.

Revegetation works should emphasise the use of occasional overstorey species and a dominant grassy–sedge understorey within the floodplain reflecting the former grassy woodland character.

Revegetation works in the vicinity of bridges should minimise the use of shrubs that restrict the flow of flood waters.

Active recreation areas should be located sufficient distance from the creek to provide for a corridor of informal recreation and conservation along the creek.

At least one side of the creek should be managed with a continuous strip of conservation bushland or conservation parkland.

Standard MC 19 Landscape treatments

Landscape works should:

- specify local native plants on landscape plans (see Table A)
- not use environmental weed species (see Table B)
- reflect local native plant communities appropriate to the location and site conditions
- source the plants from nurseries that grow local native plants from locally collected seeds or cuttings.

06 WATER QUALITY

06-1 Water quality objective

To ensure the health and vitality of the natural systems of the creek.

Standard MC 20 Soil erosion

Construction must limit soil erosion and accord with Construction Techniques for Sediment Pollution Control (EPA 1991).

Areas of temporary or permanent bare soil should be minimised by mulching, grassing or matting.

Material or vehicles should not be stored on open land adjacent to the creek.

Standard MC 21 Stormwater

Stormwater management should:

- protect and enhance natural waterways
- provide mechanisms for the retention and treatment of run-off – for example, by establishing wetlands and retarding basins
- protect as far as practicable from the impacts of point of source pollution and chemical spills carried in stormwater run-off
- protect local native vegetation from changes in water level or water flow.

Litter traps should be installed at entry points to drains that serve large shopping centres, markets and other large developments known to generate litter and sediment.

Standard MC 22 Outfall drains

Outfall drain headwalls should be lined with rounded, weathered basalt rock and constructed to disguise the pipe outlet as set out in Melbourne Water specifications.

Table A: Local native plants

Trees (over 6m)			
<i>Acacia dealbata</i>	Silver Wattle	<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Acacia implexa</i>	Lightwood	<i>E. leucoxylon ssp. connata</i>	Yellow Gum
<i>A. mearnsii</i>	Black Wattle	<i>E. melliodora</i>	Yellow Box
<i>A. melanoxylon</i>	Blackwood	<i>Eucalyptus ovata</i>	Swamp Gum
<i>Allocasuarina littoralis</i>	Black Sheoak	<i>Eucalyptus viminalis</i>	Manna Gum
<i>Allocasuarina verticillata</i>	Drooping Sheoak		
Tall shrubs (2m–6m)			
<i>Acacia paradoxa</i>	Hedge Wattle	<i>Gynatrix pulchella</i>	Hemp Bush
<i>Acacia pycnantha</i>	Golden Wattle	<i>Meliccytus dentata</i>	Tree Violet
<i>Banksia marginata</i>	Silver Banksia	<i>Leptospermum lanigerum</i>	Woolly Tea Tree
<i>Bursaria spinosa</i>	Sweet Bursaria	<i>Leptospermum obovatum</i>	River Tea Tree
<i>Callistemon sieberi</i>	River Bottlebrush	<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Cassinia aculeata</i>	Common Cassinia	<i>Myoporum viscosum</i>	Sticky Boobialla
<i>Dodonaea viscosa</i>	Wedge-leaf Hop-bush	<i>Pomaderris aspera</i>	Hazel Pomaderris
Smaller shrubs (under 2m)			
<i>Acacia acinacea</i>	Gold Dust Wattle	<i>Grevillea rosmarinifolia</i>	Rosemary Grevillea
<i>Correa glabra</i>	Rock Correa	<i>Olearia ramulosa</i>	Twiggy Daisy Bush
<i>Dillwynia cinerascens</i>	Grey Parrot Pea	<i>Pultanea daphnoides</i>	Large-leaf Bush-pea
<i>Goodenia ovata</i>	Hop Goodenia	<i>Rhagodia parabolica</i>	Fragrant Saltbush
Climbers			
<i>Clematis microphylla</i>	Small-leaved Clematis	<i>Hardenbergia violacea</i>	Purple Coral Pea
Grasses & other tussock plants			
<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass	<i>Dianella revoluta</i>	Black-anther Flax-lily
<i>Austrostipa elegantissima</i>	Feather Spear-grass	<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Chloris truncata</i>	Windmill-grass	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Dichelachne crinita</i>	Long-hair Plume-grass	<i>Poa labillardieri</i>	Common Tussock-grass
<i>Dianella longifolia</i>	Pale Flax-lily	<i>Poa morrisii</i>	Velvet Tussock-grass
Small plants			
<i>Brachyscome multifida</i>	Cut Leaf Daisy	<i>Pimelea humilis</i>	Common Rice-flower
<i>Calocephalus citreus</i>	Lemon Beauty Heads	<i>Teucrium corymbosum</i>	Forest Germander
<i>Chrysocephalum semipapposum</i>	Clustered Everlasting	<i>Vittadinia gracilis</i>	Woolly New Holland Daisy
<i>Enchylaena tomentosa</i>	Ruby Saltbush	<i>Wahlenbergia communis</i>	Tufted Bluebell
Reeds & rushes for wetlands			
<i>Bolboschoenus medians</i>	Marsh Club Rush	<i>Juncus pallidus</i>	Pale Rush
<i>Carex tereticaulis</i>	Common Sedge	<i>Juncus usitatus</i>	Rush
<i>Eleocharis acuta</i>	Common Spike Rush	<i>Selleria radicans</i>	Swamp Weed
<i>Isolepis nodosa</i>	Knobby Club Rush		

Table B: Environmental weeds

<i>Acacia baileyana</i>	Cootamundra Wattle	<i>Juncus acutus</i>	Spiny Rush
<i>Acacia decurrens</i>	Early Black Wattle	<i>Kniphofia</i> spp.	Red-hot Poker
<i>Acacia longifolia</i>	Sallow Wattle	<i>Leptospermum laevigatum</i>	Coast Tea-tree
<i>Acacia saligna</i>	Golden Wreath Wattle	<i>Ligustrum</i> spp.	Privet
<i>Acanthus mollis</i>	Bear's Breeches	<i>Lolium</i> spp. +	Rye Grass
<i>Acer</i> spp.	Maple, Box-elder	<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Agapanthus praecox</i>	Agapanthus	<i>Lycium ferocissimum</i>	Boxthorn
<i>Ailanthus altissima</i>	Tree of Heaven	<i>Myosotis sylvatica</i>	Forget-me-not
<i>Anagallis arvensis</i>	Pimpernel	<i>Myrsiphyllum asparagoides</i>	Bridal Creeper
<i>Anredera cordifolia</i>	Madeira Vine	<i>Nasella</i> spp.	Needle-grass, Serrated Tussock, Mexican Feather-grass
<i>Araujia sericifera</i>	Moth Plant	<i>Olea europaea</i>	Olive
<i>Artemisia vertoliorum</i>	Chinese Wormwood	<i>Opuntia vulgaris</i>	Drooping Prickly-pear
<i>Arundo donax</i>	Giant Reed	<i>Parietaria judacia</i>	Asthma Weed
<i>Buddleja davidii</i>	Butterfly Bush	<i>Paspalum</i> spp. +	Paspalum
<i>Calicotome spinosa</i>	Spiny Broom	<i>Passiflora mollissima</i>	Banana Passionfruit
<i>Chamaecytisus palmensis</i>	Tree Lucerne	<i>Pennisetum clandestinum</i>	Kikuyu-grass
<i>Chrysanthemoides monilifera</i>	Boneseed	<i>Pennisetum</i> spp.	Fountain-grass, Feather Top, Swamp Foxtail-grass
<i>Conium maculatum</i>	Hemlock	<i>Phoenix canariensis</i>	Canary Island Date Palm
<i>Coprosma repens</i>	Mirror Bush	<i>Phormium tenax</i>	Flax
<i>Cortaderia selloana</i>	Pampas Grass	<i>Pinus radiata</i>	Radiata Pine
<i>Cotoneaster</i> spp.	Cotoneaster	<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Crataegus monogyna</i>	Hawthorn	<i>Platanus x acerifolia</i>	Plane Tree
<i>Crocasmia x crocosmiiflora</i>	Montbretia	<i>Populus</i> spp.	Poplar
<i>Cupressus macrocarpa</i>	Monterey Cypress	<i>Prunus cerasifera</i>	Cherry Plum
<i>Cynodon</i> spp. +	Couch-grass	<i>Pyracantha angustifolia</i>	Firethorn
<i>Cytisus scoparius</i>	English Broom	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Delairea odorata</i>	Cape Ivy	<i>Rhamnus alaternus</i>	Italian Buckthorn
<i>Echium plantagineum</i>	Paterson's Curse	<i>Rubus fruticosus</i> spp. agg.	Blackberry
<i>Erica lusitanica</i>	Spanish Heath	<i>Salix</i> spp.	Willow
<i>Eucalyptus botryoides</i>	Southern Mahogany	<i>Schinus molle</i>	Pepper Tree
<i>Eucalyptus cladocalyx</i>	Sugar Gum	<i>Tecomaria capensis</i>	Cape Honeysuckle
<i>Eucalyptus maculata</i>	Spotted Gum	<i>Tradescantia albiflora</i>	Wandering Jew
<i>Festuca</i> spp. +	Fescue	<i>Trifolium</i> spp. +	Clover
<i>Ficus carica</i>	Common Fig	<i>Tropaeolum majus</i>	Nasturtium
<i>Foeniculum vulgare</i>	Fennel	<i>Ulex europaeus</i>	Gorse
<i>Fraxinus angustifolia</i>	Desert Ash	<i>Ulmus</i> spp.	Elm
<i>Galium aparine</i>	Cleavers	<i>Vinca major</i>	Blue Periwinkle
<i>Gazania linearis</i>	Gazania	<i>Vulpia</i> spp. +	Fescue
<i>Genista linifolia</i>	Flax-leaf Broom	<i>Watsonia meriana</i> cv.	Bulbil Watsonia
<i>Genista monspessulana</i>	Montpellier Broom	<i>bulbillifera</i>	
<i>Gladiolus</i> spp.	Gladiolus	<i>Zantedeschia aethiopica</i>	Arum Lily
<i>Hedera helix</i>	Ivy		
<i>Ilex aquifolium</i>	Holly		
<i>Ipomoea indica</i>	Blue Morning Glory		

+ indicates species that may be used in lawns, both turf and seed mixtures.

Model conditions for planning permits

The model conditions for planning permits prepared by the Department of Sustainability and Environment (2002) should be used as appropriate. The model conditions for sensitive areas are especially relevant.

External materials

The external material, colour and finish shown on the endorsed plans must not be altered without the written consent of the responsible authority.

Fencing prior to construction

The site must be fenced before construction starts.

Landscape development

Before the *use/occupation of development* starts or by a later date as approved by the responsible authority in writing, the landscaping works shown on the endorsed plans must be carried out to the satisfaction of the responsible authority. Site preparation works must include:

- remove environmental weeds
- remove bulk of dead material
- prepare natural soil surfaces carefully – these must be disturbed as little as possible
- remove rubble or grade back to 1 in 3 or shallower
- cover with 250 mm of good clay soil
- buy stock from nurseries specialising in local native plants grown from seeds and cuttings from nearby sites that have similar characteristics
- lay weed matting or provide some other weed control for at least two years after planting
- mulch to a depth of at least 75 mm.

Fill

No fill is to be placed on Council or drainage reserves.

Run-off control

No polluted and/or sediment laden run-off is to be discharged directly or indirectly into the Merri Creek. To this end, pollution or litter traps must be provided on site.

Environmental weeds

No environmental weeds as referred to in the Development Guidelines for the Merri Creek may be planted or allowed to invade the site.

Checklist of development issues

Information requirements

- Levels and contours
- Existing vegetation
- Materials and finishes
- Aboriginal heritage details
- Rural use – Land management plan

Waterway corridor

- Continuous strip of open space
- Lots face open space
- Roads run parallel to the creek
- Land for stormwater treatment

Access

- Access to parklands provided
- Access for management vehicles
- Path not be used for vehicular access
- Drip line of trees protected
- Space for shared path provided

Earthworks

- No fill on slopes facing creek
- No fill within 12 metres of the top of the bank
- No unnatural landforms
- No trapezoidal valley shape
- No batters greater than 1 in 3
- Site fenced prior to earthworks

Landscape

- Remnant native vegetation protected.
- Remnant vegetation buffered by new planting
- Revegetation proposed
- Revegetation does not raise flood heights
- Active recreation set back from creek
- Conservation bushland or conservation parkland along one side of creek
- Local native plants specified

Built form

- Buildings appear below tree height
- Parkland not shaded at equinox
- Buildings screened from open space
- Buildings should be setback
 - at least 12 metres from the top of any escarpment
 - at least 30 metres from the creek in urban areas
- Setbacks protect open space and heritage values in rural and developing areas
- Screening at least 12 metres wide
- Buildings have positive interface
- No blank walls to open space
- Visible development faces the creek
- Semi-public areas next to the creek
- Fences not dominant
- Fences black or dark green wire
- Vandal proof fences and gates erected
- No reflective materials, illuminated elements, bright colours or signage
- Muted colours used
- Electric power lines underground
- Lights should be baffled

Water quality

- Construction limits soil erosion
- Material or vehicles not stored on open land
- Stormwater retained and treated
- Protection provided from chemical spills
- Litter traps installed where appropriate
- Outfall drains disguised