# Guidelines for Development in Flood-prone Areas

Melbourne Water

## Acknowledgments

Melbourne Water prepared the Guidelines with the assistance of a specially appointed Reference Committee of experienced people who provided valuable comment and advice on the contents of the Guidelines. The members are listed inside the back cover of this document.

## Feedback and enquiries

Melbourne Water welcomes feedback on these Guidelines at any time.

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**Further information on development requirements can be found in:**

- Guidelines for Development in the Koo Wee Rup Flood Protection District; and
- Melbourne Water's Land Development Manual.

Copies of the Guidelines may be obtained by ringing 9235 2517 or visit our website at www.melbournewater.com.au

**Authority**
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Melbourne Water

Victoria
The Place To Be

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**Abbreviations**

**ARI** Average Recurrence Interval
**LSIO** Land Subject to Inundation Overlay
**AHD** Australian Height Datum
**OLFP** Overland Flow Path
**SBO** Special Building Overlay
**UFZ** Urban Floodway Zone
**FO** Floodway Overlay

# About Melbourne Water

## Who we are

Melbourne Water is a statutory corporation owned by the State Government. Melbourne Water manages the water supply catchments, removes and treats most of Melbourne Water's sewage, and manages waterways and major drainage systems. The retail water companies provide water and sewerage services to consumers.

Melbourne Water is the drainage authority for the Greater Melbourne area, covering the catchments of Port Phillip and Western Port and the Flood Plain Management Authority by delegation from the Minister responsible for the Water Act.

We are a significant business, managing $8.1 billion of natural and built assets. Our annual operating revenue of more than $500 million is earned from water supply, sewage treatment and drainage rates. This is used to fund our operations and infrastructure projects including water, sewage and drainage upgrades, as well as projects to improve and protect Melbourne's rivers and creeks. We are committed to decision-making based on economic, social and environmental considerations.

## What we do

Melbourne Water is responsible for the provision and maintenance of main drains and the management of stormwater overflows from its drainage system and inundation from rivers and creeks. We manage Melbourne's water resources in a way that aims to ensure that future generations enjoy one of the best urban environments in the world. This involves a major role in the total water cycle.

## Our Vision

Our vision is to work with Victorian Government and other key stakeholders to make Melbourne the world's most water-sensitive city.

# 1. Introduction

## 1.1. Purpose of the Guidelines

Good planning is the key to minimising long-term risks of damage from flooding. The principle is simple – plan and develop properties, buildings and structures so that they are safe from flooding from the outset without compromising the safety of other properties. Prevention is far cheaper than the cure.

Poor planning, leading to the location of valuable assets in often highly flood-prone situations, has resulted in enormous losses in the past. Many of the affected areas will suffer large losses again in the future. In many cases, the impossibly high costs of flood mitigation works far outweigh the benefits of better protection, and such areas are unlikely to ever be relieved of the threat of flooding.

These Guidelines have been developed to assist property owners, developers, designers and builders to:

- understand the broad principles and specific guidelines for managing property development in flood prone areas;
- identify the specific requirements that apply in areas affected by flooding; and
- minimise the time and effort involved in reaching an acceptable development proposal and gaining the necessary approvals.

These guidelines have been developed to ensure that urban development and redevelopment is compatible with any flood risk. The guidelines were prepared in consultation with a specifically appointed reference group, comprising experienced professionals from the private and public sectors.

It should be noted that this document does not necessarily cover every development scenario and for such cases outside the guidelines, consultation with Melbourne Water is strongly recommended prior to committing to the development process.

## 1.2 Best Practice Floodplain Management

Melbourne Water's guidelines are intended to be consistent with best practice principles, policies and guidelines developed by State and Federal governments.

In Victoria the 1 in 100 year Average Recurrence Interval (ARI) or 1% Annual Exceedance Probability (AEP) flood is the current flood protection standard, which is used in providing flood level advice, in delineating land affected by flooding and setting requirements for most developments. The 1% AEP event (for the particular locality being considered) has a probability of 1% chance of being equalled or exceeded in any year and will occur, on average, once in 100 years.

It should be noted that for some land uses, such as hospitals or emergency services, a higher standard may be appropriate.

## 1.3 Additional Issues

In addition to floodplain management issues, Melbourne Water may need to consider other matters as a part of our response to planning permit applications. Information could include conditions or advice relating to drainage, building over Melbourne Water assets, or waterway protection or enhancement.

These matters are outside the scope of these guidelines. However, Melbourne Water can provide details on what may be required.

# 2. Obtaining Flood Information

The key to successful development or improvement of a property is to have accurate information prior to commencing detailed planning and design. This is particularly important if there are significant flooding issues to deal with, because these can significantly influence whether or how the development or improvement can proceed. There are a number of ways to determine whether a property is affected by flooding and whether any special approvals are required.

**Planning Certificates**

A Planning Certificate sets out the planning scheme provisions, which apply to land and any planning scheme amendments that may affect that land. This will include whether the land is affected by a flooding zone or overlay control such as the Urban Floodway Zone, Land Subject to Inundation Overlay, Floodway Overlay or Special Building Overlay. These controls, which are described in more detail in Chapter 3, indicate that the use and development of the land requires special consideration the flood risk. They do not, however, provide a specific flood level for the property.

For most of the metropolitan area, planning certificates are issued by the Department of Sustainability and Environment and are available at www.land.vic.gov.au.

It should be noted that updated or recent flooding information may not be reflected in the planning scheme. For example, some municipalities are completing drainage surveys to identify land liable to flooding associated with the local drainage system. Similarly, Melbourne Water continues to floodmap areas identified for development and to refine existing flood mapping. Proponents are encouraged to seek confirmation that land, which is not covered by a flooding control is not affected by flooding by obtaining a Property Information Statement or Flood Level Certificate.

**Property Information Statements**

In the greater Melbourne area, the retail water companies supply property information statements upon application and payment of a fee. They contain information on encumbrances, rates and charges relating to metropolitan parks, Melbourne Water's drainage services and the retail companies' water and sewerage services.

Encumbrance information includes any restrictions or impediments on the property related to the asset or responsibilities of Melbourne Water or the retail water company. This includes relevant information about any known flood risks associated with the main drainage/waterway system and where available, will include a specific flood level for the property.

Property Information Statements may be included within a Vendor Statement or Section 32 Certificate for any property for sale.

A Property Information Statement can be obtained by calling:

- City West Water 131 691
- Yarra Valley Water 131 721
- South East Water 131 694

**Flood Levels Certificates**

Flood level information is also available from two service providers; Anstat and Landata. To order flood level information, visit:

- Anstat's website: www.anstat.com.au or call their helpdesk: (03) 9278 1172.
- Landata's website: www.land.vic.gov.au or call (03) 8636 2456.

**Direct Enquiry**

Where a Property Information Statement or Flood Level Certificate advises the applicant to contact Melbourne Water directly, or where the applicant wishes to discuss a particular development proposal with Melbourne Water prior to making formal application for approval, the applicant should contact the Land Development team on telephone (03) 9235 2517.

Pre-application consultation may avoid costly redesign of proposals or the need for readvertising of applications. If the consent of Melbourne Water is received in writing within three months of the application for a permit, Council may not need to refer the application back to Melbourne Water.

For development proposals requiring direct connection to Melbourne Water's drainage system or proposals to construct near a Melbourne Water asset, advice can be sought from Melbourne Water's Asset Services Team on telephone (03) 9235 7298.

**Submitting Plans to Melbourne Water**

Development proposals submitted to Melbourne Water for comment and advice should be accompanied by plans drawn to scale which show:

- The boundaries and dimensions of the site;
- Relevant ground levels to Australian Height Datum, taken by or under the direction or supervision of a licensed Land Surveyor. The Australian Height Datum is used throughout Australia and provides a measure of height above mean sea level;
- The layout, size and use of existing and proposed buildings and works, including vehicle-parking areas;
- Floor levels of any existing and proposed buildings to Australian Height Datum; and
- Cross sectional details of any basement entry or exit ramps to Australian Height Datum, showing the apex of any ramp or floor levels of entry areas.

# 3. The Land Development Approvals Process

## 3.1 The Planning Process

Council is the responsible authority for the preparation and administration of its Planning Scheme under the Planning and Environment Act. Council's planning department receives and considers planning applications for land use, subdivision and buildings and works. The planning scheme requires certain types of permit applications to be referred to various agencies, for their comments and requirements.

Throughout the metropolitan region, Melbourne Water is a referral authority for all subdivision applications and for buildings or works on land covered by a flooding control, which is associated with the main drainage system. Where land is affected by a flooding control associated with the Council drainage system, the permit application is referred to Council's drainage department. This allows drainage authorities to comment on applications and if necessary place conditions on town planning permits.

Planning permits and referral of applications to Melbourne Water may not be required if the land is not covered by an appropriate overlay. If the land is affected by flooding, it is still recommended that the applicant seek the advice of Melbourne Water, to ensure the development is appropriately designed and to minimise the need for redesigns, which might otherwise occur if the development is referred to Melbourne Water at a subsequent stage such as subdivision.

## 3.2 Planning Controls

Within a planning scheme, every parcel of land is zoned for a category of use and may have one or more overlays that apply. The zone or overlay will specify whether a permit is required for a particular use or development, including the construction of buildings or carrying out works, or subdivision of land.

There are a number of flooding controls that may apply to land which is subject to flooding: Urban Floodway Zone, Land Subject to Inundation Overlay, Floodway Overlay and Special Building Overlay.

These controls require a planning permit for buildings and works, and the referral of permit applications to the floodplain management authority. This ensures that drainage issues are addressed at the outset of the development process and that proposals are designed accordingly. It also ensures that prospective purchases and developers are fully informed of any likely requirements for development of the site.

### The Urban Floodway Zone

The Urban Floodway Zone (UFZ) applies to land affected by flooding in urban areas where the primary function of the land is to convey active flood flows. It also applies to urban floodway areas where the potential flood risk is high due to the presence of existing development or pressures for new or more intensive development. Unlike the overlays, the UFZ controls land use as well as development, with land use being restricted to low

intensity uses such as recreation and agriculture. Development is generally not encouraged in the UFZ.

**The Floodway Overlay**

The Floodway Overlay (FO) applies to mainstream flooding in both rural and urban areas. These areas convey active flood flows or store floodwater in a similar way to the UFZ, but with a lesser flood risk. The FO is suitable for areas where there is less need for control over land use, and the focus is more on the control of development. Particular types of development are not encouraged in floodway areas, however, as this overlay is for rural as well as urban application, some buildings and works associated with low intensity uses may be permitted. Key considerations include whether the development will obstruct flood flows or increase flood risk.

**The Special Building Overlay**

The Special Building Overlay (SBO) applies to land affected by flooding from the piped system. With the redevelopment of existing urban areas and the proposed development of new areas, there is growing pressure to develop within overland flow path areas. The purpose of the SBO is to set appropriate conditions and building floor levels to address the flood risk and to ensure that flood waters are not obstructed or diverted by development.

**The Land Subject to Inundation Overlay**

The Land Subject to Inundation Overlay (LSIO) applies to mainstream flooding in both rural and urban areas. In general, areas covered by the LSIO have a lower flood risk than UFZ or FO areas. The LSIO can also be used as an interim measure to identify flood-affected areas where detailed information to define the floodway is not available.

# 4. Floodplain Management

These Guidelines cover core aspects of planning and designing for building and property development in flood-prone areas, and do not cover many broader, related issues associated with flooding and floodplain management. Further sources of information on the legislative, policy and administrative framework for flooding and floodplain management are summarised in Appendix One to assist those who require further details.

## 4.1 Types of Flooding

The most common source of flooding experienced in Melbourne is from heavy rainfall. Flooding occurs when runoff from heavy or widespread rainfall fills drains, channels, depressions and watercourses and then continues to rise, inundating adjacent areas. Flooding may be categorised as either mainstream or stormwater flooding. These Guidelines apply to both forms of flooding. .

**Mainstream Flooding**

Mainstream flooding refers to the inundation, which occurs when runoff from a catchment into streams and rivers continues to rise and overtops the waterway channel. The area affected by flooding is generally referred to as the floodplain.

**Stormwater Flooding**

Stormwater flooding refers to the inundation that occurs when runoff from the catchment exceeds the capacity of the underground or piped drainage system and passes overland. In general, areas affected by overland flows are referred to as **overland flow paths**.

In relative terms, the configuration of both overland flow paths and flood plains can vary from very wide and shallow to quite narrow and deep, and both can have single or multiple pathways depending on the detailed topographical configuration. Both can also have active flow paths, where flows are relatively fast, or fringes and backwaters, where water rises and then recedes as a flood event passes.

Floodplains and overland flow paths have an enormous primary ‘value’ as storage areas and flow routes for excess runoff or floodwaters. The cost of building engineered structures to otherwise accommodate excess runoff is excessive. This is particularly so in fully-developed urban areas where property values are very high, and the costs of altering or relocating underground services such as gas mains, water mains, sewers, power lines and telephone cables can be prohibitive.

In more natural settings, including along the verges of urban waterways, floodplains also have very important biophysical and ecological values. In rural contexts, they are often highly fertile agricultural areas.

Melbourne Water’s role in floodplain management is to protect and preserve both the hydraulic and biophysical values of floodplains and overland flow paths and ensure that gradual encroachments do not result in the eventual need for highly expensive replacement works and facilities.

## 4.2 Guiding Principles

The following principles have been applied in the development of these Guidelines:

- risk to people and property must be minimised;
- potential for adverse impacts on adjacent, upstream or downstream areas must be identified and prevented;
- any appropriate development within a flood-prone area must be designed accordingly; and
- reduced reliance on emergency service personnel when flooding events occur.

These principles translate into requirements for buildings and other vulnerable assets to be above flood level, and to not be surrounded or isolated by deep or fast-flowing floodwaters.

Furthermore, they require that new developments do not reduce the flow or storage capacity of a floodplain or overland flow path. The requirements are set out in Section 5. The particular importance of flow and storage capacity of flood-prone areas is discussed in the following section.

## 4.3 The Core Requirements

**Five core requirements apply to property development for flood protection purposes. Achieving these requirements can involve dealing with a number of complex and often compounding issues, and these Guidelines have been written in order to assist in the process.**

These requirements support the guiding principles set out above.

### *4.3.1 Flood Flow*

**Works or structures must not affect floodwater flow capacity.**

This requirement is designed to ensure that existing flood risks are not made worse by alterations to the flow characteristics of a floodplain or overland flow path. Flow rates can be affected by changes to the cross-section, grade or alignment of an active flow path.

Generally a decrease in the available flow area will cause a restriction that increases flood levels upstream and increases the velocity past the restriction. This increase in velocity can introduce safety issues and cause erosion of the downstream waterway.

Works such as rail lines, roads, buildings, walls, fences, levee banks, and fill pads that impede flows will not be approved.

The impact of any proposal, and the modifications required to ameliorate that impact, will depend on the nature of the works and the extent to which they are in an active flow path.

In some cases, it is acceptable to re-align the flow path provided there are no impacts on other properties, and the modified flow path is not more prone to erosion and does not constitute a greater hazard in terms of safety.

Where there is uncertainty about the extent to which works may impinge on an active flow path, early discussion with the floodplain management authority is strongly recommended.

### *4.3.2 Flood Storage*

**Works or structures must not reduce floodwater storage capacity.**

This requirement is designed to prevent higher flood levels that would occur if the available storage volume is reduced (see Section 4.1). Higher flood levels would affect other properties adjacent, upstream or downstream of the proposed development, resulting in contravention of the principles.

It is not only the impact of an individual development, which is relevant but also the potential for long-term cumulative impacts arising from similar actions on other properties in the area.

Typically, storage capacity is reduced by filling to raise land above flood levels and to make it suitable for uses such as buildings, roads, car parks or sporting areas. Filling outdoor areas, sometimes in association with retaining walls, is another frequent cause.

The risk of limited filling on the very fringes of an extensive floodplain to provide several house sites will be lower than for the same filling in a small, narrow floodplain or overland flow path. Whereas the latter would be unacceptable, a floodplain management authority may approve the former subject to appropriate conditions.

A combination of cut and fill is often used to improve site usability without compromising storage capacity. In such cases, excavated areas should be planned properly with respect to long-term management, maintenance and safety. In all cases, the total volume provided by the cut area must be fully active, readily filling and emptying in the course of a flood event.

### *4.3.3 Freeboard*

Freeboard is the difference between the floor level of a building and the 100-year flood level. Under the Victorian Building Regulations 2005, floor level heights for buildings should be set a **minimum** 300 mm above the applicable flood level, or as otherwise determined by the floodplain management authority.

Requirements differ depending on whether the development is in a floodplain or an overland flow path, as discussed in more detail below.

Freeboard requirements are designed to ensure that valuable buildings and their contents and the people in them are safely above the 100-year flood level. The lower freeboard requirements for outbuildings are established on the basis that the contents and uses of such buildings are not as vulnerable to flood damage.

Appropriate freeboard should be determined following consideration of the associated risks, including:

- whether essential or valuable equipment is to be installed below the ground floor level;
- the nature and use of any basements proposed;
- the nature, value and use of any outbuildings; and
- the treatment of small extensions and garages where an existing 'principal' building is less than the required freeboard height above the 100-year flood level.

### *4.3.3.1 Freeboard in Overland Flow Paths*

**a) Building floor level should be at least 0.30m above the 100-year flood level.**

**b) Outbuilding floor level should be at least 0.15m above the 100-year flood level.**

In overland flow path areas, the minimum freeboard for main buildings is 0.3m and for outbuildings is 0.15m.

### *4.3.3.2 Freeboard in Floodplains*

**a) Building floor level should be at least 0.6m above the 100-year flood level.**

**b) Outbuilding floor level should be at least 0.3m above the 100-year flood level.**

In floodplains, higher minimum freeboards for main buildings (0.6m) and outbuildings (0.3m) are required to manage the increased risks where:

- flood levels can surge or fluctuate due to wave action or other wind effects or tidal influences; or
- floods bigger than the 100-year flood would cause significant increases in flood level; or
- the estimated 100-year flood level is based on approximations or interpolations that reduce confidence in the absolute accuracy; or
- essential services or other particularly sensitive activities or assets are to be incorporated on a site.

Use of stilts or piers to elevate floor levels above the 100-year ARI flood level is not considered appropriate because there are often significant shortcomings associated with meeting core requirements of flood flow, storage, freeboard, site safety and access safety.

### 4.3.4 Site Safety

**Development must not be allowed on properties where the depth and flow of floodwaters would create a hazard.**

This requirement is designed to ensure that people moving about on a property during a flood event are not endangered by deep or fast-flowing water. This is very important where key access areas around a dwelling or other main building are below the 100-year flood level.

Safety is defined in terms of the depth and velocity of water over the area in question as follows:

- Depth should be no more than 0.35m; and
- Velocity should be no more than 1.5m/s; and

- The product of depth (in m) and velocity of flow (in m/s) should be no more than $0.35m^2/s$.

The figures given above are only a guide. The full Floodway Safety Criteria Guidelines are documented in Appendix G of the Design Guide in Melbourne Water's Land Development Manual. The Floodway Safety Criteria Guidelines were prepared by Melbourne Water in consultation with the land development industry, and are based on work previously carried out by Monash University.

The most important on-site areas are:

- building entrance/exit points and their surrounds;
- connecting routes to outbuildings or car parking areas; and
- connecting routes to higher ground.

### 4.3.5 Access Safety

**Any development cannot be allowed in circumstances where the depth and flow of floodwater affecting access to the property is hazardous.**

This requirement is designed to ensure that people attempting to enter or leave a property during a flood event are not endangered by deep or fast-flowing water.

It applies to the normal driveways, roads and footpaths that link a property to the nearest effective refuge area, and is required to safeguard emergency response personnel and other third parties as well as property occupants or visitors.

The criteria are the same as those that apply to on-site safety and are set out in the previous section.

The need to enter or leave could relate to evacuation or entry to secure valuables or in the event of a medical or other personal emergency. An important consideration is the extent and duration of flooding that may cut off access to a property.

## 4.4 Summary

A summary of the requirements and their application in floodplains and overland flow paths is provided in Table 1.

Some requirements differ depending on whether the property is in an overland flow path or floodplain or in an active flow path or flood fringe area. This information may not be obvious from the planning scheme details, or the property information statements, and further advice should be sought from Melbourne Water wherever there is doubt. In some cases, such as near the junction of an urban drainage line with a waterway, properties can be affected by either or both types of flooding depending on the particular rainfall circumstances.

In the older established areas of Melbourne that were developed before the late 1970's, often without properly designed overland flow paths, access safety issues can be a significant challenge for new developments and re-developments.

In some cases, it will not be possible or practical to significantly improve already substandard margins of safety. In such circumstances, new or replacement buildings will only be approved if they achieve all the other requirements and the overall flood risk can be managed to the satisfaction of Melbourne Water.

## Table 1 Requirements for Development in Flood-prone Areas

| Requirement | Overland Flow Path | Floodplain | Comments |
|---|---|---|---|
| **Flood Flow** | Works or buildings must not affect floodwater flow capacity | | Very important for all works in flow paths |
| **Flood Storage** | Works or buildings must not reduce floodwater storage capacity | | May not be a restriction on the minor fringes of large floodplains |
| **Freeboard** | • 0.3m minimum for main buildings;<br>• 0.15m minimum for garages/ outbuilding | • 0.6m minimum for main buildings;<br>• 0.3m minimum for garages/ outbuildings | Higher freeboards are required where additional margins of safety are warranted. |
| **Site Safety** | Developments should not occur where the depth and flow of floodwater on a property will be hazardous:<br>• Depth $\leq$ 0.35m<br>• Velocity $\leq$ 1.5m/s<br>• Depth x Velocity $\leq$ 0.35m$^2$/s | | Important for building entrances and their surrounds, and other key outdoor access areas, ingress and egress routes |
| **Access Safety** | The depth and flow of floodwater affecting access to a property must not be hazardous:<br>• Depth $\leq$ 0.35m<br>• Velocity $\leq$ 1.5m/s<br>• Depth x Velocity $\leq$ 0.35m$^2$/s | | Important for connecting roads, driveways, footpaths, ingress and egress routes. |

## 4.5 Flood Plain Capacity

Works or structures on a property must not increase the depth or velocity of floodwaters affecting other properties upstream or downstream in the local drainage line or floodplain.

It is important to absolutely preserve both the storage capacity within and flow capacity along an overland flow path or floodplain. Floodplain functionality can be substantially reduced over time as a result of a series of small compromises. Previously safe properties become vulnerable to flooding, resulting in otherwise avoidable damages and expense.

As the guidelines will show, meeting this standard can be complex in some situations, often requiring detailed discussion with the floodplain management authority.

# 5. The Guidelines

**The key issues and considerations in relation to different development activities and different types of buildings and other improvements are set out in Table 2.**

However, this general advice can only cover those circumstances that are experienced most frequently. In situations where other complications exist or where the application of the Guidelines is not straightforward, consultation with Melbourne Water is strongly recommended prior to making any firm arrangements or commitments.

## Table 2 Applying the Guidelines in Different Circumstances

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| Greenfield subdivision (i.e. large, multi-lot or staged subdivisions in new development areas) and larger urban redevelopments (i.e. former school sites, racecourses, etc) | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | **Active Flow Areas**<br>• New buildings and/or lots located outside active flow areas.<br>**Fringe Flow Areas**<br>• Layout of large subdivisions and redevelopments can be crucial in terms of achieving cost-effective flood protection. Experienced consultants should be employed and Melbourne Water should always be consulted early in the process. A drainage scheme may exist or be in preparation, and could substantially affect the layout of the subdivision or development.<br>• Newly created lots (land previously non-urban) to have finished surface levels at least 300mm above 100-year flood level. For developments near a water course a finished surface level of 600mm above the 100-year flood level is appropriate.<br>• Consult Melbourne Water's Land Development Manual to obtain standard main drainage design conditions. Special development conditions will be provided in the 'offer of drainage conditions', supplied by Melbourne Water after receipt of 'application for conditions'. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| Smaller urban resubdivisions (i.e. two-lot subdivisions; unit developments) and smaller urban redevelopments | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | **Active Flow Areas**<br>• New buildings and/or lots located outside active flow areas.<br>**Fringe Flow Areas**<br>• In existing urban areas, access safety requirements may be difficult or impossible to meet. Consideration of the proposal will only be provided where the other four requirements are fully achieved and there will be a reduction in overall risk in terms of access safety. All such cases, proposals should be discussed with Melbourne Water prior to the lodging of any formal application.<br>• It is not desirable for flows to penetrate sub-floor areas/voids below the 100-year flood level.<br>• Consult Melbourne Water's Land Development Manual to obtain standard main drainage design conditions. Special development conditions will be provided in the 'offer of drainage conditions', supplied by Melbourne Water after receipt of 'application for conditions'. |
| Replacement dwelling | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | **Active Flow Areas Only**<br>• The ground floor building envelope to be no greater than the original.<br>**Common to Active and Fringe Flow Areas**<br>• In existing urban areas, some requirements may be difficult or impossible to meet (see Smaller urban resubdivisions). This can be progressed by siting a replacement dwelling so that:<br>- Flow depths and velocity less hazardous than at existing location.<br>- The distance between replacement dwelling and land above 100-year flood level is minimised.<br>- Access at street frontage to highest available point.<br>• Unless otherwise agreed, flow should not penetrate sub-floor areas/voids below the 100-year flood level. |
| Extension to an existing building | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | **Active Flow Areas Only**<br>• The ground floor building envelope should be no more than 20m$^2$ greater than the original, with the base foot print as at January 2000.<br>• Incremental extensions should not cumulatively exceed 20m$^2$ of the original ground floor building envelope, with the base foot print as at January 2000.<br>**Common to Active and Fringe Flow Areas**<br>• Where the existing floor level is below the 100-year flood level, it is desirable for the building to be extended vertically within the area of the existing ground floor building envelope (i.e. upstairs). Building height restrictions may apply, this may be overcome by minimising floor to ceiling height.<br>• New rooms should have floors that meet the freeboard requirement. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| | | • Floor level changes or step-ups from existing to a new floor may be positioned at appropriate locations in the new design, such as doorways between rooms.<br>• In existing urban areas, some requirements may be difficult to meet. Development may be supported if flood flow and flood storage requirements are fully achieved and there is substantial reduction in overall risk in terms of freeboard, site safety and access safety. With primary consideration given for freeboard and site safety.<br>• If raising the floor level will result in a demonstrated impractical outcome, an extension floor level no lower than the existing floor may be considered, subject to an assessment of site safety and access safety and construction using flood resistant materials.<br>• Floor level extensions substantially below the 100-year flood level should be avoided.<br>• Consider flood proofing of any existing and proposed floor areas that are below the 100-year flood level.<br>• Any non-residential building extension, marginally below the 100-year flood level may be feasible for low sensitivity uses, the proponent must contact Melbourne Water to discuss.<br>• In floodplains - site emergency management planning should be considered to help manage existing risks (consult with an accredited risk management firm).<br>• Flood-resistant materials should be used for extensions with floor levels lower than the 100-year flood level.<br>• Flow should not penetrate sub-floor areas/voids below the 100-year flood level. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| | | • Any floor level extension marginally below the 100-year flood level, must have it's area limited to 20m$^2$ of the original ground floor area, with the base foot print as at January 2000.<br>**Fringe Flow Areas Only**<br>• Any floor level extension marginally below the 100-year flood level, must have it's area limited to 50% of the existing ground level building envelope or 40m$^2$ (whichever is the lower).<br>• Incremental extensions should not cumulatively exceed 50% of the existing ground level building envelope or 40m$^2$ (whichever is the lower). |
| Commercial/Industrial redevelopment | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | **Active Flow Areas Only**<br>• The ground floor building envelope should be no more than 20m$^2$ greater than the original, with the base footprint as at January 2000.<br>**Common to Active and Fringe Flow Areas**<br>• In existing urban areas, some requirements may be difficult to meet. Developments may be supported if flood flow, flood storage and freeboard requirements are fully achieved and there is a substantial reduction in overall risk in terms of site safety and access safety. With primary consideration for site safety. This can be progressed by siting any replacement building so that:<br>- Flow depths and velocity less hazardous than at existing location.<br>- The distance between replacement building and land above the 100-year flood level is minimised.<br>- Access at street frontage to highest available point.<br>• Caretaker accommodation only to be considered where all requirements achieved.<br>• If no caretaker accommodation proposed, development approval may be dependent upon need for a Section 173 agreement to limit future introduction caretaker accommodation.<br>• Customer/disabled access issues are important with respect to safety, and building freeboard is important with respect to materials, goods and equipment stored on the site.<br>• Materials that could become pollutants in the event of inundation should be relocated outside the floodplain. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| | | • Additional freeboard may also be required for high hazard/highly sensitive premises (proponent must contact Melbourne Water to discuss).<br>• In floodplains - site emergency management planning should be considered to help manage existing risks (consult with an accredited risk management firm).<br>• Flow should not penetrate sub-floor areas/voids below the 100-year flood level. |
| Essential services | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | • Services such as hospitals, ambulance stations, police stations, fire stations, transport facilities, communications facilities, community shelters and schools need to function continuously and should be located in flood free areas.<br>• For redevelopment of existing essential services located in flood affected areas, effort must be made to explore relocation to flood free areas. If it can be demonstrated that relocation can not be achieved, any redevelopment must achieve a substantial reduction in overall risk for all requirements.<br>• A higher than normal freeboard is recommended, particularly for development more vulnerable to the consequences of flooding.<br>• Higher than normal site safety and access safety requirements are recommended. |
| Vehicle parking | Flood flow<br>Flood storage<br>Site safety<br>Access safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Flow and storage requirements will depend on what is proposed – especially whether any structural works are involved.<br>• More stringent site and access safety requirements may be required in some circumstances.<br>• Melbourne Water's Land Development Manual (Appendix G) provides more detailed information on vehicle safety considerations. |
| Basements (non-habitable floors below ground level) | Site safety plus special requirements | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Basements (e.g. car parks) with finished floor levels below the 100-year flood level may be constructed provided access points comply with site safety requirements and; |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| | | - Entry/exit routes incorporate a continuous apex that is at least:<br>  • 0.3m above 100-year flood level in overland flow path areas.<br>  • 0.6m above 100-year flood level in floodplain areas.<br>- The development's drainage system is constructed so that external flooding (both above ground and within any piped system) is unable to penetrate the basement area; and<br>- Vents, staircases, lift wells, etc. do not act as floodwater inlets to floor levels below the 100-year flood level.<br>- Signage is provided indicating potential to flood in more than a 100 year event.<br>• The use of mechanical mechanisms to prevent inundation in the event of flooding is not supported because of failure risk.<br>• A Section 173 Agreement may be required to highlight that basement areas are not to be converted to habitable floor areas. |
| Garages, garden sheds and other outbuildings | Flood flow<br>Flood storage<br>Freeboard<br>Site safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• The area between a garage and the main building must meet the site safety requirements.<br>• Flow should not penetrate sub-floor areas/voids below the 100-year flood level.<br>• Chemicals to be stored above the flood level. |
| Car ports | Site safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Open carports that have a negligible effect on flood flows or storage are required to comply only with the site safety requirements. Similar for garages, the area between a carport and the main building must also be safe.<br>• Flow should not penetrate sub-floor areas/voids below the 100-year flood level. |
| Other structures | Flood flow<br>Flood storage<br>Site safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Include pergolas, fixed barbecues, and other structures that may impede the passage of flood flows.<br>• Flow should not penetrate sub-floor areas/voids below the 100-year flood level.<br>• Flows should not be redirected onto other properties. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| Fences | Flood flow | **Active Flow Areas**<br>• Locate away from active flow areas.<br>• Other considerations as per fringe flow areas.<br>**Fringe Flow Areas**<br>• Open style fences, break-away panels or gaps under fences must be used. It is essential to avoid fencing that will trap debris – the build-up may increase flood levels, divert flows onto more valuable assets or lead to destruction of the fence.<br>• Any replacement fence design must seek to avoid debris trapping.<br>• Seek to align parallel to flow direction.<br>• Flows should not be redirected onto other properties |
| Fill pads | Flood flow<br>Flood storage<br>Site safety<br>Access safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Fill pads, like buildings and other works, can impede flood flows and reduce flood storage.<br>• May be feasible for rural or semi-rural developments.<br>• Flows should not be redirected onto other properties |
| Causeways and access paths | Flood flow<br>Flood storage<br>Site safety<br>Access safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>Construction of a causeway or access path can sometimes assist in meeting the access requirements.<br>• Proposals must ensure that flood flow and storage requirements are not compromised.<br>• Preferable for finished level to be no lower than 100-year flood level.<br>• Safety measures, such as guideposts along potentially submerged causeways, may be required.<br>• Flows should not be redirected onto other properties |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| Cut and fill | Flood storage<br>Site safety | • Preserve flood storage capacity in areas below the 100-year flood level by matching any filled area with an excavated area of equal volume, also below the 100-year flood level, freely draining, and in the immediate vicinity.<br>• Environmental impacts of cut and fill proposals need to be managed carefully, particularly in relation to the excavated areas where revegetation and future management will be important issues.<br>• Ornamental water bodies are sometimes proposed in the bottom of excavated areas, but the volume occupied by the water body when full does not count towards the flood storage requirements.<br>• Cut and fill proposals must seek to manage impacts within the developing land, otherwise agreement must be obtained from other land owners where works are proposed.<br>• Flows should not be redirected onto other properties. |
| Driveways | Site safety<br>Access safety | **Active Flow Areas**<br>• Locate away from active flow areas.<br>**Fringe Flow Areas**<br>• Driveways can be used as overland flow paths provided they meet access safety requirements. The design of such driveways should be robust, so that occasional inundation does not cause structural damage. They should also be well drained so that they are fully functional nearly all of the time.<br>• Flows should not be redirected onto other properties. |
| Landscaping | Flood flow<br>Flood storage<br>Freeboard<br>Site safety<br>Access safety | • In particular, landscaping proposals must ensure that flood storage and flow behaviour is not compromised. This is particularly relevant to works that involve land filling and/or retaining walls and similar structures. Vegetation that impedes flood flows will also be unacceptable in active flow paths.<br>• Flows should not be redirected onto other properties. |

| Type of Development Activity | Necessary Requirements – As per Section 5 | Additional Considerations and Comments |
|---|---|---|
| Plumbing & septic systems | Special requirements | • All plumbing and septic works to be to the standard of the relevant authority for areas subject to flooding. |
| Electrical installations | Special requirements | • All electrical installations to be to the standard of the relevant authority for areas subject to flooding. |
| Rural areas | Special considerations | **Active Flow Areas**<br>• Locate buildings away from active flow areas.<br>**Common to Active and Fringe Flow Areas**<br>Agricultural activity, including the farming of fertile soils in floodplains, is central to the ongoing economic viability of rural townships and is a viable use of flood-prone land. Melbourne Water encourages ongoing farming of rural floodplain areas provided:<br>- No drainage or flood mitigation works are undertaken without approval from Melbourne Water;<br>- It is used for farming purposes only;<br>- flood inundation is generally not more than three days at a time; and<br>- any associated development (e.g. dwellings, sheds) is on land not liable to flooding or is appropriately set back from the active floodway (i.e. in the fringe or very shallow areas).<br>Also refer to other sections in this table for guidelines for remaining development activities.<br>• Rural floodplains provide valuable opportunities to preserve the natural functioning of floodplains. |
| Koo Wee Rup Floodplain | Special considerations | • The Guidelines for Development Within the Koo Wee Rup Flood Protection District have been prepared to assist in meeting the standards in the broad floodplain areas surrounding Koo Wee Rup and extending to the north and east. |

# 6. Submitting a Proposal

**A proposal should include sufficient information to accurately describe the intended development and the works proposed. This may include site plans, cross-sections and other data, with survey levels to the Australian Height Datum (AHD), as well as other descriptive information.**

In cases where substantial earthworks or other alterations are proposed in the vicinity of a watercourse or main drain, a Construction Site Management Plan will be required. A plan template may be downloaded by registered users from Melbourne Water's Land Development Manual website (http://www.ldm.melbournewater.com.au).

Alternatively, the Urban Stormwater Best Practice Guidelines (EPA, 1999) provides guidance for the preparation of a Site Management Plan. Your local council may also be able to assist.

The proposal should also indicate the treatment proposed for any other requirements in relation to Melbourne Water's water or sewerage assets, if any exist.

Such requirements will include the need to protect the structural integrity of any existing Melbourne Water assets on, or abutting, the property.

A sound proposal will outline not only what is proposed but also demonstrate how the standards will be achieved, having regard to both on-site and off-site considerations (such as upstream and downstream flood behaviour).

# 7. Conclusions

**In flood-prone areas, the combination of standards to be achieved and the particular circumstances surrounding a development proposal can give rise to a range of requirements that must be met before approval will be granted.**

This document provides readers with the core requirements that apply to most types of development, and should assist proponents to develop high-quality proposals for smaller subdivisions, building or other works in flood-prone areas.

Large subdivisions will incorporate both flood-prone and flood-free properties, and will involve detailed layout and design of the drainage systems and other infrastructure. They will require attention to a much wider range of issues than those covered in these Guidelines.

Early discussion with Melbourne Water is recommended wherever application of the requirements is not straightforward, or where the circumstances include factors that are not covered in these Guidelines.

# 8. Glossary

**Active flow path:** Areas of an overland flow path or floodplain where a significant proportion of the flow occurs. Usually aligned with naturally or artificially defined channels and carrying relatively deep and/or high velocity flows.

**Average Recurrence Interval (ARI):** A statistical estimate of the average period in years between the occurrence of a flood of a given size or larger. The ARI of a flood event gives no indication of when a flood of that size will occur next.

**Development:** Defined in the *Planning and Environment Act, 1987* as including the following activities:

a) the construction or exterior alteration or exterior decoration of a building;
b) the demolition or removal of a building or works;
c) the construction or carrying out of works;
d) the subdivision or consolidation of land, including buildings or airspace;
e) the placing or relocation of a building or works on land; and
f) the construction or putting up for display of signs or hoardings.

**Existing development:** Development in existence on a property at the time an application for a permit, in respect to that property, is made.

**Flood level:** The maximum level that would be reached by floodwaters during a particular event.

- **100-year flood level** The maximum level that would be reached by floodwaters during a 100-year event.
- **100-year event** A large flooding event that has a probability of occurrence of 1 in 100 in any given year. Over a very long time period, such events would, on average, occur once per 100 years of record. This is the same as the 100-year flood, referred to in the Planning and Environment Act and the Victoria Planning Provisions.

**Flood risk:** Relationship between Flood Level and Indicative Floor Level and frequency of flooding, divided into categories based on comparison of floor level to the 100-, 50- or 20-year ARI flood level. The Flood Risk category has been determined for a large number of properties and may be obtained from Melbourne Water.

**Flood fringe area:** An area of an overland flow path or floodplain where inundation is shallow and which does not accommodate a significant proportion of flow capacity or storage capacity.

**Outbuilding:** A non-habitable building being a private garage, carport, shed, or the appartenances to a building used for domestic purposes.

**Overland flow path (OLFP):** Land affected by surface flows that occur when the underground drainage system cannot accept any more stormwater. The overland flow path could:

- Comprise a natural drainage surcharge path, a constructed floodway associated with an underground drainage system or a roadway above or along an underground drainage system to carry flows that exceed the underground drain capacity
- Have no flood warning time.

**Runoff:** The component of rainfall that runs off into the drainage/waterway network. (Rainfall = Runoff + Evaporation + Infiltration). Also known as rainfall excess.

**Rural development:** Development which occurs within Melbourne Water's area of responsibility in rural areas including considerable tracts of rural and farming land.

**Safe access:** Means by which entry or exit may be gained to or from a building to adjoining land or roadways above flood level. Safe access should be consistent with site safety requirements. (see 4.3.4)

**Safety risk:** May be a function of Velocity or Depth, or both. Safety risk information is available from Melbourne Water for properties within the drainage survey areas.

**Urban greenfield development:** These are areas not previously subdivided or intensively developed for housing or industrial purposes in urban areas.

**Works:** Under the *Planning and Environment Act, 1987*, these include any change to the natural or existing condition or topography of land, including the removal, destruction or lopping of trees and the removal of vegetation or topsoil.

# 9. Appendix One - Floodplain Management Information

## Legislation

An overview of the key pieces of legislation that underpin regulations and controls on land development and building activities in Victoria are given below.

### *Land Use and Development Planning*

- The *Planning and Environment Act, 1987* sets out the framework for planning the use, development and protection of land in Victoria. In particular, this Act covers the basic system under which it is necessary to obtain a planning permit to make specified changes in relation to the use or development of a property. Section 173 of the Act provides for agreements outlining conditions of land use or development to be entered into with council and referral authorities (such as Melbourne Water) and registered on the title to land.
- The *Municipal Planning Scheme* for each municipality contains important information on the overall directions for development and the detailed planning controls and requirements in the municipality. Individual planning schemes can vary in the local requirements for subdivision or development in relation to the same state-wide zonings or overlay controls, but are drawn from the Victorian Planning Provisions.

### *Subdivision*

- The *Subdivision Act, 1988* sets out the procedure for the subdivision and consolidation of land, including buildings and airspace, and for the creation, variation or removal of easements or restrictions, and the regulations for the management of and dealings with common property and the constitution and operation of bodies corporate. Section 21G(b) provides for referral authorities such as Melbourne Water to enter into agreements in relation to work required to subdivide land. Such agreements can be registered on title.

### *Building*

- *The Building Act*, 1993 specifies the system under which building activities are regulated and identifies the links with the Planning and Environment Act.
- The *Building Regulations, 2006* sets out further detailed requirements in relation to specific building issues and Section 6.2 refers specifically to flooding considerations and how they should be addressed. In particular, the regulations require that any building proposal on a property that is subject to one of the flood-related controls in a planning scheme be subject to the requirements of the responsible floodplain management authority.

### *Floodplain Management*

- The *Water Act, 1989* replaced the *Drainage of Land Act, 1975* (among other things). Division 4 of Part 10 sets out the powers and responsibilities of floodplain management authorities. Melbourne Water operates under this legislation for floodplain management purposes, as do Catchment Management Authorities, who are the floodplain management authorities for the nine non-metropolitan regions of Victoria. Section 158 of the Water Act applies to the inclusion of relevant 'encumbrance' information in Property Information Statements obtainable from retail water companies in the Melbourne area. Section 268 and related sections cover Melbourne Water's powers to require the proponents of development to contribute towards the cost of providing works to ensure that adequate drainage and flood protection standards are achieved.
- The Local Government Act, 1989 identifies certain drainage responsibilities of Councils. However, the provisions are very brief, and most Council involvement in local drainage and flood protection issues relies on principles set out elsewhere, especially in the Planning and Environment Act, 1987.

## Policy and Principles

There are numerous useful sources of discussion on policies, principles and technical procedures in relation to managing floodplains and development in flood-prone areas.

- *Victoria Flood Management Strategy* (DNRE, 1998) provides an overview of flood management in Victoria, including administrative arrangements and disaster management arrangements.
- *Floodplain Management in Australia – Best Practice Principles and Guidelines* (SCARM, 2000) provides a broad discussion of flooding and floodplain planning and the principles for effective management of floodplains and flood emergencies at the national level.
- *Land Development Manual* (Melbourne Water, 2007) provides details of processes and procedures to be followed by land developers and their technical consultants in relation to drainage and flood protection requirements in the Melbourne area. This manual is available on the Melbourne Water web site (http://www.melbournewater.com.au) with full access available by subscription only (details are explained on the site).
- *Operating Charter for Waterways and Drainage* (Melbourne Water, 2006) sets out Melbourne Water's operating area, functions, responsibilities, objectives and service commitments in relation to its waterways, floodplain and regional drainage responsibilities, and sets out the overall strategy for reducing the number of properties affected by flooding.

## Planning Controls

In Victoria, the principle and first means of indicating that the use and development of land liable to flooding requires special consideration of flood risk is via the application of a zoning or one of three overlay controls within a municipal planning scheme. The zoning and the overlay controls are listed below. They are defined in the *Victoria Planning Provisions* and are discussed in greater detail in the Practice Notes referred to earlier.

### *Urban Floodway Zone and Floodway Overlay Control*

The purpose of the Urban Floodway Zone and Floodway Overlay is to *'identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.'*

### *Land Subject to Inundation Overlay Control*

The purpose of the Land Subject to Inundation Overlay is to *'identify land in a flood storage or flood fringe area affected by the 1 in 100 year flood or any other area determined by the floodplain management authority.'*

### *Special Building Overlay Control*

The purpose of the Special Building Overlay is to *'identify land in urban areas liable to inundation by surcharge flows from the urban drainage system or overland flow as designated by the floodplain management authority.'*

## Additional Guidelines

- *Applying the Flood Provisions in Planning Schemes – A Guide for Councils* is a Victoria Planning Provision Practice Note prepared by the Department of Infrastructure and is available on their web site (www.doi.vic.gov.au). It provides 'guidance about applying the flood provisions in planning schemes including the preparation of policy, identifying land affected by flooding, preparing a local floodplain development plan and the application and operation of the flood provisions, including the preparation of schedules'.
- *Applying for a Planning Permit under the Flood Provisions – A Guide for Councils, Referral Authorities and Applicants* is also a Victoria Planning Provision Practice Note prepared by the Department of Infrastructure, and is also available on their web site www.dse.vic.gov.au

  It provides 'guidance about making an application for a planning permit where flooding is a consideration and explains how an application will be assessed' by the council responsible.
- *Guidelines For Development Within the Koo Wee Rup Flood Protection District* (Melbourne Water, 2002) sets out the special requirements for building and property development in the Koo Wee Rup floodplain, which covers a very large area from Pakenham to the Drouin foothills and south to Western Port.

## Accountabilities

### *Department of Sustainability & Environment (DSE)*

The Department of Infrastructure is the planning authority for a range of Commonwealth and other lands, and assumes the planning role of councils in relation to these lands.

### *Municipalities*

- Municipal councils administer planning schemes and their associated controls, permits and building approvals, and the first port of call for anyone interested in a particular property should always be the Local Council Planning Scheme, which will set out the zonings and any overlay controls applying to the property.
- Municipalities also manage local street and property drainage in the Melbourne area, and are responsible for ensuring adequate drainage and flood safety for all properties 'upstream' of the main drainage network managed by Melbourne Water.
- Hence, the management of minor drainage infrastructure that collects stormwater runoff in the top 60Ha of a catchment is the responsibility of the local council and will be subject to local municipal requirements for flood protection.
- Municipalities refer planning and development applications to other organisations if they are identified in the planning scheme as Referral Authorities for the particular type of proposal.

### *Melbourne Water*

- Is responsible for regional drainage, floodplain management, waterway management and stormwater quality coordination and management across the area defined as the metropolis and set out in the *Operating Charter for Waterways and Drainage*;
- Owns and manages 'main drains' and manages waterways, generally downstream from the point where drainage catchments reach 60Ha. Main drains and waterways receive runoff both directly as overland flow, and via municipal and private stormwater drains.
- Is a Referral Authority for all subdivision proposals and for all development proposals in areas designated as land subject to inundation in a planning scheme;
- Is responsible for ensuring that appropriate drainage and flood protection standards are achieved in the course of new property development and in the redevelopment of existing properties;
- Consistent with the above, is responsible for requiring that developers undertake works to achieve the standards or for collecting financial contributions from them to pay for their share of works undertaken in respect of a number of properties.
- Has a program of investigating the flows that occur along urban waterways and main drainage lines, and identifying the extent and location of the associated floodplains and overland flow paths. These areas are designated in municipal planning schemes as land subject to inundation using one of the categories set out in the *Victoria Planning Provisions*.
- Has an obligation to ensure that any encumbrance information known in relation to a property is included as a detail in the *Property Information Statements* that are issued on application to the retail water companies in the metropolitan area.
- Collects rainfall and streamflow information, and provides the Bureau of Meteorology with information to enable the issue of appropriate flood warnings for major waterways such as the Yarra, Maribyrnong, and Bunyip Rivers and Dandenong Creek.

# 11. Melbourne Water Charter

Melbourne Water is owned by the Victorian Government. We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage waterways and major drainage systems throughout the Port Phillip and Westernport Region.

Our drinking water is highly regarded by the community. It comes from protected mountain ash forest catchments high up in the Yarra Ranges east of Melbourne. We are committed to conserving this vital resource, and to protecting and improving our waterways, bays and the marine environment. We recognise our important role in planning for future generations.

Our vision is to show leadership in water cycle management, through effective sustainable and forward-looking management of the community resources we oversee. We are a progressive organisation that applies technology and innovation to achieve environmentally sustainable outcomes.

The business objectives established to realise our vision are to:

- provide excellent customer service
- operate as a successful commercial business
- manage Melbourne's water resources and the environment in a sustainable manner
- maintain the trust and respect of the community.

We also appreciate that achievements occur through the contribution of our people and through our values. We are people who:

- recognise that we achieve more by working with others
- work with openness, transparency and accountability
- behave with integrity
- attain excellence through creativity and innovation
- celebrate our achievements and learn from our experiences.

At Melbourne Water, we understand that engaging our stakeholders is the key to achieving our vision of leadership in water cycle management.

# 12. Reference Committee

**Chairperson**:

Gordon McFarlane
Manager, Yarra Maribyrnong Catchment Planning
Planning Group

**Committee Members:**

| | |
|---|---|
| Ian Gauntlett | Manager Floodplain Management Department of Natural Resources and Environment |
| Russell Mein | Director, CRC - Catchment Hydrology |
| Paul Jerome | State Emergency Service |
| Colin McBurney | Building Control Commission |
| Shaan Jones | City of Maribyrnong |
| Neil Craigie | Development Consultant |
| Michael Ellis | General Manager Assets and Service Cardinia Shire Council |
| John Glossop | Glossop Town Planning |

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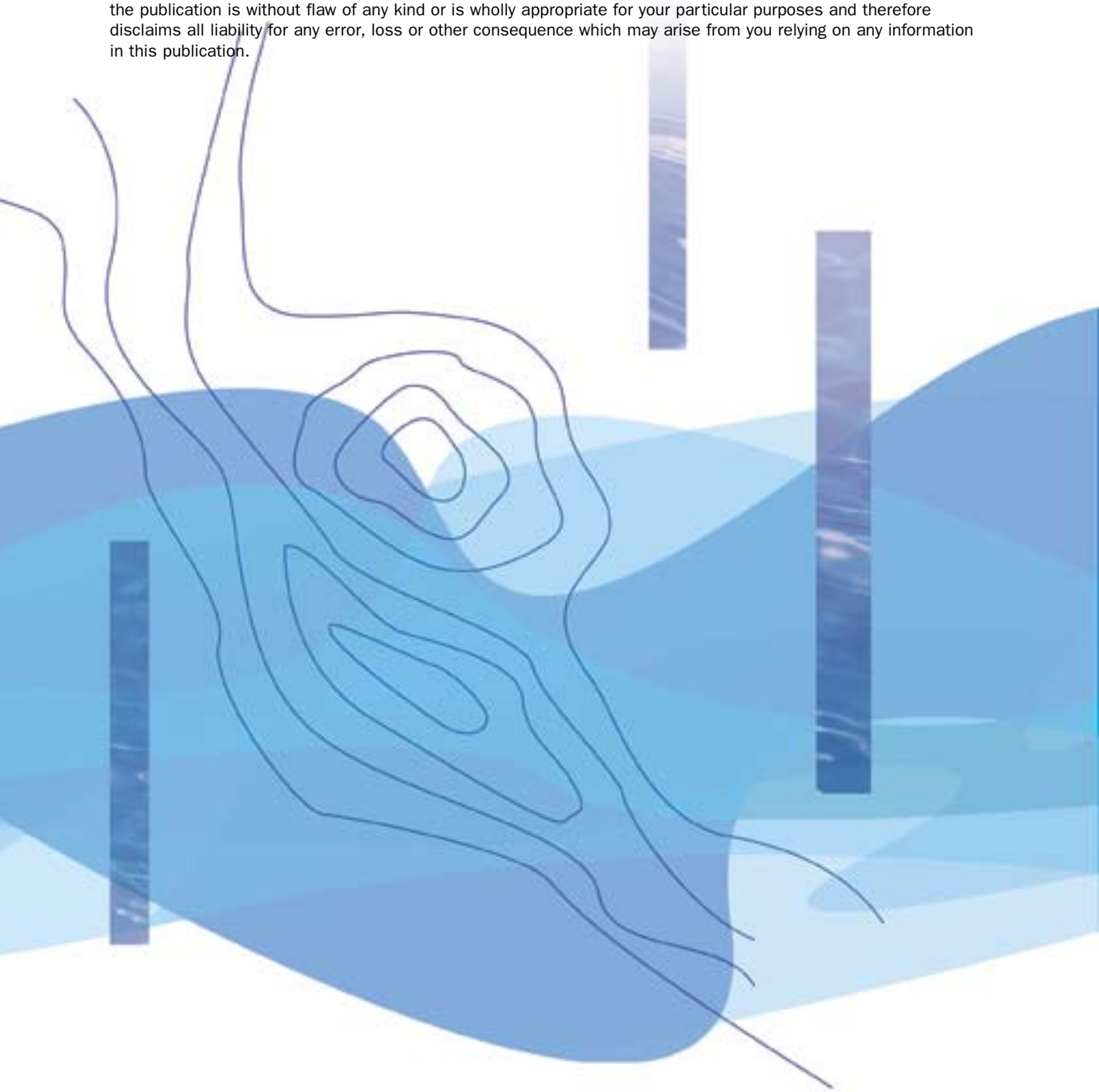

Melbourne Water

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