

SUTHERLANDSHIRE

# ENVIRONMENTAL RISK

DCP 2015 CHAPTER 40



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## a. Bush Fire

The Sutherland Shire has large areas maintained in their natural state, with National Parks and other bushland reserves comprising approximately half of the land area of the Shire. This natural legacy affords the Sutherland Shire a range of ecosystems, which support a diverse array of plants and animals, including many rare and endangered species and ecological communities. The fact that the vast areas of bushland prone to fire are located in close proximity to urban development creates management challenges for the community. This section provides detailed objectives and controls which establish what Council considers to be acceptable practices for development in areas prone to bush fire.

Bushfire Prone Land is identified on maps certified by the Rural Fire Service in accordance with section 10.3 of the Environmental Planning & Assessment Act 1979. The Bushfire Prone Land map shows all land considered to be a risk from bush fire.

Development on bush fire prone land must comply with Planning for Bush Fire Protection 2006. This section of the DCP focuses on providing guidance on achieving a balance between environmental considerations and meeting the requirements for Planning for Bush Fire Protection 2006

### 1. Asset Protection Zones

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#### Note:

An asset protection zone is an area separating buildings from a bush fire hazard and so provides a valuable area for fire fighters to control fires and reduces the potential for direct flame contact with the property.

However, it is recognised that on existing lots the introduction of an asset protection zone may be difficult. These lots can generally be classified into two groups:

- Lots which have some form of approved asset protection zone, generally comprising a part of the lot, and a perimeter road, or perimeter fire trail immediately adjoining the lot.
- Lots where the bush is located in close proximity to the house, with no asset protection zone in between.

These controls aim to also provide guidance for developments on these lots.

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#### 1.1 Objectives

1. Separate buildings from the bush fire hazard
2. Minimise the combustible material available to burn in a bush fire to provide protection to buildings, their occupants and fire fighters by:
  - a. isolating the building from direct flame attack and
  - b. reducing the level of radiant heat impacting upon the building.
3. Provide a clear control line from which to conduct bush fire suppression operations.
4. Enable access to all exterior parts of the dwelling after the passage of the fire front to identify and extinguish any spot fires which may have ignited.

## 1.2 Controls

1. An asset protection zone, except in the case of redevelopment of an existing dwelling house or alterations and additions to an existing dwelling, shall not be:
  - a. established on slopes exceeding 18°.
  - b. located within a wetland or riparian zone as defined in this Plan. as identified on the Wetlands and Riparian Zone map.
  - c. located in a Greenweb Core area as identified on the Greenweb map.
  - d. where clearing would remove threatened species and ecological communities or heritage-listed vegetation.

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### Note to Subclause 1:

On slopes exceeding 18°, the environmental consequences of ground clearing (ie erosion) are likely to be unacceptable. In addition, on these slopes the canopy fuel are more readily available to a fire, which can cancel out the advantage by the asset protection zone.

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2. The entire asset protection zone shall be established within the boundaries of the development site. However, where an existing asset protection zone immediately adjoins the development site, the existing zone may be included as part of the asset protection zone for the development, where:
  - a) The asset protection zone is a perimeter road or perimeter trail held by Council in fee simple, or
  - b) A permanent proprietary right is established to provide for ongoing maintenance of the asset protection zone not located within the development site.
3. To ensure an appropriate balance between the environment and built form, for residential subdivision or other developments where people assemble (e.g. places of public worship), the area of vegetation cleared for bush fire protection is not to exceed 50% of the development site.
4. The creation of the asset protection zone shall not result in the destruction of significant environmental features.
5. Any development in a bush fire prone land shall not reduce the effectiveness of any existing asset protection zone.
6. The asset protection zone must be located and designed to allow ongoing maintenance to be readily carried out by the responsible landowners or occupiers.

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**Note to Subclause 6:**

Ongoing maintenance of the asset protection zone is essential to maintain the desired level of protection against bush fires.

To help maintain the integrity of the asset protection zone, restrictions may be placed upon titles of affected lots. Examples of restrictions on title include:

Under the provisions of the Rural Fires Act, 1997 the ongoing maintenance of these bush fire protection measures is the responsibility of the owner and/or occupier of the property.

- a. buildings being excluded from the asset protection zone
  - b. the levels at which vegetation is to be maintained within the asset protection zone
  - c. responsibility for and the nature of maintenance of the asset protection zone.
-

## **2. Side Setbacks**

### **2.1 Objectives**

1. Provide sufficient space between the side boundaries of the site and any buildings to facilitate access to the rear of properties for bush fire suppression purposes.
2. Reduce the opportunity for house to house spread of fire following the passage of a bush fire.

### **2.2 Controls**

1. A 1.5m side setback is required for all structures, including ancillary development.
2. An open carport, constructed from non-combustible materials, can be considered on a reduced side setback, provided that access can be maintained through the carport to the rear of the property.
3. The setback area is to be maintained to the standards required for an asset protection zone.

## b. Contaminated Land Management

Contaminated land is defined as land or surface water in, on or under which any substance is present in soil or the underlying groundwater, at a concentration that exceeds normal background levels for that area that may present a risk of harm to human health or the environment. Land contamination may be the result of past or current uses. The land may have been contaminated by a land use activity on that site, as a result of improper chemical handling or disposal practices, or accidental spillages or leakages of chemicals during manufacturing or storage. Contamination of a site may also occur through migration of contaminating substances from sources such as contaminated groundwater from an adjoining site, run-off from an upstream site or from dust settling out from industrial emissions.

Section 79C(1c) of the Environmental Planning Assessment Act 1979 (EP&A Act) requires Council to consider 'the suitability of the site for the development' when assessing a development application. Therefore, when carrying out planning functions under the EP&A Act, Council must consider the possibility of land contamination and the implication it has for any proposed or permissible future uses of the land. The extent of the contamination may preclude the future development of the site for particular uses. A precautionary approach will be adopted to ensure that land contamination issues are identified and dealt with early in the planning process. The State *Environmental Planning Policy 55 – Remediation of Land* (SEPP 55) under the EP&A Act 1979 provides for consistent State-wide planning controls for remediation of land.

The *Contaminated Land Management Act 1997* (CLM Act) sets the overall legislative framework and requirements for managing and, where appropriate, remediating contaminated land. The CLM Act, State Environmental Planning Policy Number 55 and any current guidelines and Regulations issued under these acts shall be referred to and complied with during assessment and remediation of contaminated land. In addition, WorkCover NSW, Australian and New Zealand Environment and Conservation Council (ANZECC 2000), National Environment Protection Council (NEPC) and other relevant current guidelines may need to be complied with.

This section applies to all development involving works on land identified as being contaminated or potentially contaminated. Council maintains a contaminated land information register to assist in the identification of potentially contaminated land. It is the aim of Council to record all contaminated and potentially contaminated sites in the contaminated lands information register and on s149 Planning Certificates. However there may be land uses unknown to Council which may not be recorded. Therefore it is the responsibility of the owner or the purchaser to conduct investigations to determine the current status of the site.

### 1.1 Objectives

1. Enable any land contamination issues to be identified and dealt with at an early stage in the planning process in order to prevent and reduce the risk of harm to the environment and human health and also to reduce delays and costs associated with development
2. Ensure development adequately considers the potential risk arising from contaminated land.
3. Ensure that any future development employs preventative measures to eliminate the risk from existing land contamination.

4. Avoid contamination of land in the first instance by taking precautionary steps to prevent the release of substances that cause contamination of the environment.
5. Facilitate appropriate site remediation to ensure the land is suitable for the intended use.
6. Outline the requirements for contaminated and potentially contaminated sites.

## **1.2 Controls for All Contaminated or Potentially Contaminated Land**

1. All development must take precautionary steps to prevent the release of substances that cause contamination of soil, surface water, air or groundwater.
2. Proposals for the development of contaminated land or potentially contaminated land will need to determine:
  - a. The extent to which land is contaminated (including both soil and groundwater contamination) and;
  - b. Whether the land is suitable in its contaminated state (or will be suitable after remediation) for the purpose for which the development is proposed to be carried out, and;
  - c. Whether the land requires remediation to make the land suitable for the intended use prior to that development being carried out, and;
  - d. If the land has been previously investigated or remediated, development cannot be carried out until Council has considered the nature, distribution and levels of residues remaining on the land and Council has determined that the land is suitable for the intended use.

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### **Note:**

The EP&A Act and SEPP 55 – Remediation of Land requires Council to consider the suitability of land for a proposed use or development. If contamination is, or may be, present the proponent must investigate the site and provide information to Council to enable Council to make a decision that a site is suitable or can and will be made suitable prior to use of the site. This decision is based on the information provided by a proponent. Council must not grant consent for works until the land is deemed suitable for its intended purpose.

A four stage site investigation and reporting process may need to be followed as outlined in the guidelines made under the Contaminated Land Management Act 1997. A proponent may need to provide the following information to show the land is suitable for the proposed use. This may include one or more of the following:

- A Preliminary Investigation (Stage 1)
  - A Detailed Investigation (Stage 2)
  - A remedial Action Plan (Stage 3)
  - Validation, Monitoring and Remediation reporting (Stage 4)
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### **1.3 Controls where a Stage 1 – Preliminary Site Investigation is Required**

1. A Preliminary Site Investigation must be undertaken for the following land:
  - a. Land on which development referred to in Table 1 (see note below) of the Managing Land Contamination – Planning Guidelines issued under State Environmental Planning Policy No.55 – Remediation of Land may have occurred, or is known to have been carried out, or land where knowledge of previous land uses is incomplete.
  - b. Land on which there is to be a change of use from industrial or commercial usage, to a more sensitive land use such as residential accommodation, educational establishment, recreational, childcare, residential care facility or hospital.
  - c. Land that is within 100m of a site that has or has previously had a contaminating activity as listed in Table 1 (see note below) of the Managing Land Contamination – Planning Guidelines issued under State Environment Planning Policy No.55 – Remediation of Land.
  - d. Land that Council has reasonable grounds to believe is contaminated based on the lands history, condition or other information known to Council or as notified on a s149 Planning Certificate.
  - e. Land that has been previously investigated and/or remediated but there is sufficient evidence to suggest that the land is not suitable for its intended use due to the nature and extent of contamination, pollution incidents or illegal dumping of wastes or if the level of remediation is not suitable for the intended use; or if the circumstances have changed or if there has been a significant time lapse since previous investigations.
  - f. Land where a planning or regulatory authority has placed conditions or restrictions on the use of the land regarding contamination and sufficient information regarding the current nature and extent of contamination of the site is not available.
  
2. The Preliminary Site Investigation must be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997 and contain a detailed appraisal of the site's history, as well as a site inspection and assessment.

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**Note:**

Table 1: Some activities that may cause contamination. This is based on an extract from SEPP 55 Managing Land Contamination – Guidelines 1998 and is a guide only. Other activities not provided below may also cause contamination. Refer to the SEPP for the current list of activities.

- acid/alkali plant and formulation
- agricultural/horticultural activities
- airports
- asbestos production and disposal
- chemicals manufacture and formulation
- defence works
- drum re-conditioning works
- dry cleaning establishments
- electrical manufacturing (transformers)
- electroplating and heat treatment premises
- engine works
- explosives industry
- gas works
- iron and steel works
- landfill sites
- metal treatment

- mining and extractive industries
  - oil production and storage
  - paint formulation and manufacture
  - pesticide manufacture and formulation
  - power stations
  - railway yards
  - scrap yards
  - service stations
  - sheep and cattle dips
  - smelting and refining
  - tanning and associated trades
  - waste storage and treatment
  - wood preservation
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#### **1.4 Controls where a Stage 2 – Detailed Site Investigation is Required**

1. Where a Preliminary Site Investigation indicates the presence of contamination or where there are gaps in information relating to the history of the site, a Stage 2 – Detailed Site Investigation is required. A Preliminary and Detailed Site Investigation may be conducted together.
2. A Detailed Site Investigation shall be prepared in accordance with guidelines made under Section 105 of the Contaminated Land Management Act 1997, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) and any other relevant guidelines.
3. If the contamination consists of asbestos, the Detailed Site Investigation must also be prepared in accordance with the appropriate WorkCover NSW guidelines and advice, and any other relevant guidelines.

#### **1.5 Controls where a Stage 3 – Site Remedial Action Plan is Required**

1. Where the Detailed Site Investigation indicates contamination in soil or groundwater above normal background levels for that area or above thresholds for health based investigation levels provided in the National Environmental Protection Measure (Assessment of Site Contamination) 1999 (amended 2013) or other appropriate guidelines, and development consent is required for site remediation work, a Site Remediation Action Plan will be required by Council.
2. The Site Remedial Action Plan must be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013), the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) and any other relevant guidelines.
3. If the contamination consists of asbestos, the Site Remedial Action Plan must also be prepared in accordance with the appropriate WorkCover NSW guidelines and advice, and any other relevant guidelines.

4. Where a Risk Assessment indicates that remediation is not required for the proposed use, a Human Health and Environmental Risk Assessment, Conceptual Site Model, Environmental Management Plan and any other information deemed necessary for the site will need to be provided to Council. These must be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013), the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) and any other relevant guidelines.
5. Following the submission of the Site Remedial Action Plan, Council may:
  - a. Require the works to be carried out and validated prior to the determination of the application in cases where the remediation of the site is uncertain or if risk to human health or the environment is significant, and/or,
  - b. Appoint a Site Auditor accredited under the NSW Site Audit Scheme to undertake a review of any or all stages of the site investigation, remediation or validation process in accordance with the *Contaminated Lands Management Act 1997*.

#### **1.6 Controls where Stage 4 - Validation and On-going Monitoring and Remediation Is Required**

1. The Validation Report is to be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000).
2. In situations where full clean-up is not feasible or on-site containment of contamination is proposed, an Environmental Management Plan for the ongoing remediation or monitoring of the site is required by Council. The Environmental Management Plan must be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997 and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) and any other relevant guidelines.
3. Where a Risk Assessment indicates that remediation is not required for the proposed use, a Human Health and Environmental Risk Assessment, Conceptual Site Model, Environmental Management Plan and any other necessary information for the site will need to be provided to Council. These must be prepared in accordance with Guidelines made under Section 105 of the Contaminated Land Management Act 1997, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013), the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC 2000) and any other relevant guidelines.

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#### **Note:**

Council may require as a condition of development consent, the creation of a positive covenant under Section 88B/E of the Conveyancing Act, 1919, on the title of the affected property. This covenant will ensure the ongoing approved Management Plan for the site is carried out in order to ensure the land is able to be used for its intended purpose.

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## **1.7 Controls where Council may require the Appointment of a Site Auditor**

1. Council may require the appointment of an EPA accredited Site Auditor (under the Contaminated Lands Management Act 1997) to undertake a site audit of any or all stages of the site investigation, remediation and validation process.
2. Council may request the appointment of a Site Auditor at the proponent's cost if:
  - a. Council believes that the information provided by the proponent is incorrect or incomplete.
  - b. Council wishes to verify the information provided by the proponent adheres to appropriate standards, procedure and guidelines.
  - c. Council does not have the internal resources to conduct its own technical review.
  - d. The land use is to be changed to a residential or sensitive land use (NEHF A or D).
3. If the appointment of a Site Auditor is required by Council, then Council may also specify any issues that must be included within the scope of the site audit.

## **1.8 Remediation Categories**

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### **Note:**

Contaminated Site Remediation is classified into two categories under State Environmental Planning Policy 55 – Remediation of Land. Each of these categories has different legislative and approval requirements and is outlined below:

- Category 1 Remediation Work – work needing consent
- Category 2 Remediation Work – work that does not need consent

Category 1 Remediation work, as defined by Clause 9 of State Environmental Planning Policy 55 – Remediation of Land (SEPP 55), is work that requires consent. Category 1 Remediation Work is advertised development for a period of 30 days pursuant to section 29(A), Clause 65 (5d) of the EP&A Act unless the remediation work is Designated Development or State Significant Development.

Category 2 Remediation work is work that does not need consent under SEPP 55. Clause 14 of SEPP 55 provides a description of works classified as Category 2 Remediation Works. Council is required to be notified in writing of Category 2 Remediation Works, 30 days prior to the works commencing in accordance with Clause 16(2)(a) of SEPP 55. Council requires the name and contact details of the contractor who is carrying out the works to be supplied.

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1. In accordance with Clause 9(f) of SEPP 55, Council specifies the following additional works as Category 1 remediation works:
  - a. Remediation work within 40m of an open drainage channel, creek or water body.
  - b. Remediation work involving treatment of groundwater.
  - c. Remediation work involving on-site treatment of contaminated soil e.g., soil stabilisation, land-farming, soil washing or thermal desorption.
  - d. Remediation work involving on-site capping or containment of contaminated soils.
  - e. Remediation work on a site where off site migration of contaminants has occurred.
  - f. Remediation work involving the removal of Petroleum and other Underground Storage Tanks.

## **1.9 Controls for Lands that Contain Underground Petroleum Storage Systems**

1. To ensure early detection, reporting and investigation of leaks, Underground Storage Systems (UPSS) are to be designed and installed as per industry best practice techniques. Any lands containing UPSS must comply with the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014*, *AS4897-2008: Design, installation and operation of underground petroleum storage systems*, the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)*, the appropriate WorkCover NSW guidelines and advice and any other relevant guidelines.
2. Premises such as Service Stations containing Underground Petroleum Storage System must comply with Sections 116, 120 and 142A of the *Protection of the Environment Operations Act 1997*, and with the requirements of the *Protection of the Environment Operation (Underground Petroleum Storage Systems) Regulation 2014*.
3. Decommissioning and removal of Underground Petroleum Storage Systems must be completed in accordance with the *Protection of the Environment Operation (Underground Petroleum Storage Systems) Regulation 2014*, *Work Health and Safety Regulation 2011*; *AS1940-2004/Amdt 2-2006: Storage and handling of flammable and combustible liquids*, *AS4976-2008: The removal and disposal of underground petroleum storage tanks* and *State Environmental Planning Policy 55 – Remediation of Land*.

## **1.10 Controls Specific to Lands that Store Chemicals or Dangerous Goods**

1. Premises that store flammable liquids, toxic substances or dangerous goods must comply with the relevant Australian Standard(s) (see note below).

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### **Note:**

Australian and/or New Zealand Standard that govern the storage and handling of dangerous goods. The most recent version of the Australian and/or New Zealand Standard should be referred to.

- AS 1894 – 1997; The storage and handling of non-flammable cryogenic and refrigerated liquids
- AS 1940 – 2004/Amdt 2-2006; The storage and handling of flammable and combustible liquids
- AS 2022-2003.Amdt 1:2003; Anhydrous ammonia – Storage and handling (known as the SAA Anhydrous Ammonia Code)
- AS 2507-1998; The storage and handling of agricultural and veterinary chemicals
- AS 2714 – 2008; The storage and handling of organic peroxides
- AS3780 – 2008/Amdt 1-2009; The storage and handling of corrosive substances
- AS 3846 -2005; The handling and transport of dangerous cargoes in port areas
- AS 3961-2005; The storage and handling of liquefied natural gas
- AS 4326 – 2008; The storage and handling of oxidizing agents
- AS 4332-2004/Amdt 1-2005 : The storage and handling of gases in cylinders
- AS/NZS 1596:2014; The storage and handling of LP Gas
- AS/NZS 2927:2001/Amdt 1:2001: The storage and handling of liquefied chlorine gas
- AS/NZS 3833 – 2007; The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers
- AS/NZS 4081:2001 : The storage and handling of liquid and liquefied polyfunctional isocyanates
- AS/NZS 4452 - 1997; The storage and handling of toxic substances
- AS/NZS 4681:2000/Amdt 1:2001: The storage and handling of Class 9 (miscellaneous) dangerous goods and articles.

## C. Flood Risk Management

This chapter provides Council's requirements for development on flood liable land within Sutherland Shire. It should be read in conjunction with Clause 6.5 of Sutherland Shire Local Environmental Plan 2015, the NSW Government Flood Prone Lands Policy and the NSW Floodplain Development Manual 2005 (FDM). The FDM provides guidelines for the implementation of the NSW Government's Flood Prone Land Policy. The primary objective of the policy is:

*"to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods, utilising ecologically positive methods wherever possible."*

To achieve this objective the FDM acknowledges a broad risk management hierarchy of:

- avoidance of flood risk;
- minimisation of flood risk using appropriate planning controls; and
- flood risk mitigation.

Flood risk mitigation, being costly and likely to adversely affect the natural environment, is the least preferred option to allow development of flood prone land to occur. Avoidance and minimisation of flood risk based on land use planning and development controls are the preferred options.

The FDM identifies the floodplain risk management (FRM) process which includes guidelines on the preparation of flood studies (FS) and floodplain risk management studies and plans (FRMSP). FRMSPs inform the flood related development controls for development within the floodplain. The FRM provisions of this DCP are part of Council's implementation of FRMSPs and the floodplain risk management process.

Sutherland Shire Council is continually improving its understanding of local flooding issues through the preparation of detailed flood studies in defined catchments. As a result varying levels of detail are known of the exact nature of flood risks. Where existing knowledge is incomplete, areas are mapped as being "Initial Assessment Potential Flood Risk". Elsewhere the degree of flood risk for a lot of land is identified as High, Medium or Low as shown on the Flood Risk Management map. Consideration of hydraulic hazard and evacuation routes and other localised risk factors form part of the classification of risk.

At the time of preparing this DCP, a number of flood studies have been adopted by Council however corresponding flood management plans have not yet been completed. These are studies are:

- Bundeena Creek Flood Study
- Gwawley Bay Catchment Flood Study
- Kurnell Township Flood Study
- Woollooware Bay Catchment Flood Study

The areas covered by these studies are shown on the flood risk management maps.

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**Note:**

Flood Notation on some Section 149 Certificates contain information about development controls that apply to land at particular locations including but not limited to Bundeena Creek, Woronora River, Georges River, Oyster Creek, Dents Creek, Ewey Creek and land at Kurnell, Taren Point and north of Sturt Road, Cronulla.

Additional information on various development controls is available on Council File number 02/00082 for flood levels on various individual properties some along Georges River, North West Arm, Ewey Creek Oyster Creek.

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## 1. How to Use This Chapter

1. Check Council's flood risk management maps to determine if the subject site is flood affected, potentially flood affected or if there is an adopted flood study for the locality. If the site is mapped as 'potentially flood affected' refer to Clause 5.2 to see how Council will assess your application in relation to possible impacts on the proposed development in relation to flooding. Council may require you to undertake a flood study to determine the likely level of flood inundation. If there is an adopted flood study contact Council for information regarding flood levels and the implications for your proposed development (see note below).
2. Determine the land use category into which your proposed development falls for the purpose of determining relevant flood controls (see Clause 3 - *Land Use Categories*)
3. Refer to the relevant Table in Clause 5.3, Clause 5.4 or Clause 5.5 that applies to your site (Low, Medium or High Flood Risk) to determine the relevant flood controls (as numbered) that will apply to each planning consideration associated with the proposed development e.g. 'floor level', 'building components and method'. In some circumstances, even though a land use may be permitted in a zone flooding the constraints of a site may preclude Council from granting consent to a development having regard to flood related risks and the type of development proposed.
4. Refer to Clause 5.6 Planning Controls to determine the controls applicable to your proposed development.

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**Note:**

If you have any enquiries in relation to flooding contact Council's Stormwater Management Branch on 9710 0857.

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## 2. Dictionary of Terms Used in This Chapter

*For the purpose of this chapter of the DCP, the following definitions have been adopted:*

**Effective warning time** is the time available after receiving advice of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to raise furniture, evacuate people and transport their possessions.

**Flood** is a relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage as defined by the FDM before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

**Flood compatible building components** means a combination of measures incorporated in the design and/or construction and alteration of individual buildings or structures subject to flooding, and the use of flood compatible materials for the reduction or elimination of flood damage.

**Flood compatible materials** include those materials used in building which are resistant to damage when inundated.

**Evacuation** means the proposed strategy for the evacuation of areas within effective warning time during periods of flood as specified within any policy of Council, the FRMP, the relevant State government disaster plan, by advices received from the State Emergency Services (SES) or as determined in the assessment of individual proposals.

**Floodplain** (being synonymous with **flood liable** and **flood prone land**) is the area of land which is subject to inundation by the probable maximum flood (PMF)

**Floodplain Development Manual (FDM)** refers to the document published by the New South Wales Government and entitled "Floodplain Management Manual: the management of flood liable land April 2005".

**Freeboard** is a factor of safety expressed as the height above the design flood level. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action, localised hydraulic behaviour and impacts that are specific event related, such as levee and embankment settlement, and other effects such as climate change.

**Habitable floor area means:**

- In a **residential situation**: a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom;
- In an **industrial or commercial situation**: an area used for offices or to store valuable possessions susceptible to flood damage in the event of a flood.

**Hazard** is a source of potential harm or a situation with a potential to cause loss. In relation to this plan, the hazard is flooding which has the potential to cause harm or loss to the community.

**Non-habitable floor area** means spaces of a specialised nature not occupied frequently or for extended periods, including bathrooms, toilets, walk-in wardrobes, corridors, lobbies, photographic darkrooms and clothes drying rooms

**Outbuilding** means a building which is ancillary to a principal residential building and includes sheds, garages, car ports and similar buildings.

**Probable maximum flood (PMF)** is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation.

**Probability** is a statistical measure of the expected chance of flooding (see ARI).

**Reliable access** during a flood means the ability for people to safely evacuate an area subject to imminent flooding within effective warning time, having regard to the depth and velocity of flood waters, the suitability of the evacuation route, and without a need to travel through areas where water depths increase.

**Risk** means the chance of something happening that will have an impact. It is measured in terms of consequences and probability (likelihood). In the context of this plan, it is the likelihood of consequences arising from the interaction of floods, communities and the environment.

**Suitably Qualified Engineer** is a civil engineer who is included in the National Professional Engineers Register, administered by the Institution of Engineers Australia.

### 3. Land Use Categories

For the purposes of determining the appropriate flood related controls for development the following land use categories apply to the listed developments:

#### **Essential Community Facilities**

Community facility which may provide an important contribution to the notification or evacuation of the community during flood events

Hospitals, and  
Residential care facility

#### **Sensitive Uses and Facilities**

Heavy industrial storage establishment  
Hostels  
Group Homes  
Seniors housing  
Educational establishments  
Child care centre  
Health services facility

#### **Subdivision**

Subdivision of land which involves the creation of new allotments with potential for further development.

**Residential**

Boarding houses  
Camping or caravan park site  
Health consulting rooms  
Home businesses  
Home industries  
Home occupation  
Hotel or motel accommodation  
Residential accommodation (excluding seniors housing and residential care facilities)  
Serviced apartments, and  
Additions or alterations to existing dwellings greater than 40m<sup>2</sup> to the habitable floor area which existed at the date of commencement of this Plan; and  
Garages or Outbuildings with a minimum floor area of 40m<sup>2</sup>.

**Commercial or Industrial**

Backpackers' accommodation  
Commercial premises, including  
- Office Premises  
- Retail Premises  
- Bulky goods salesrooms or showrooms;  
Eco-tourist facilities  
Community facility (unless included in Essential Community Facilities group)  
Entertainment facility  
Freight transport facility  
Function Centre  
Hotel and motel accommodation  
Industries  
Information and education facilities  
Passenger transport facility  
Place of public worship  
Registered clubs  
Restricted premises  
Service station  
Sex services premises  
Vehicle body repair workshop  
Vehicle repair station  
Veterinary hospital  
Warehouse or distribution centre  
Waste or resource management facilities

**Tourist Related Development**

Camp or caravan site - short term sites only

**Recreation or Non-urban Uses**

Agriculture  
Aquaculture  
Animal boarding or training establishments  
Extractive industry  
Recreation facility (indoor)  
Recreation facility (outdoor)  
Recreation facility (major)

Recreation areas and minor ancillary structures (eg. toilet blocks or kiosks); and  
Water recreation structure

## **Concessional Development**

*In the case of residential development:*

- (a) An internal or external alteration to an existing dwelling, which does not change the floor area and/or footprint of the existing dwelling;
- (b) An addition to an existing dwelling of not more than 10% or 30m<sup>2</sup> (whichever is the lesser) of the floor area which existed at the date of 15 November 2006;
- (c) The construction of an outbuilding with a maximum floor area of 20m<sup>2</sup>.

*In the case of other development:*

- (a) An addition to existing premises of not more than 10% of the floor area which existed at the date of 15 November 2006;
- (b) A change of use which does not increase flood risk having regard to property damage and personal safety;
- (c) Subdivision which does not involve the creation of new allotments with potential for further development.

## **4. Objectives**

1. Reduce risk to human life and minimise damage to property caused by flooding.
2. Ensure that development is sited to minimise potential risk from flooding.
3. Ensure that, in the event of a flood, adequate access to affected properties is available for emergency service personnel and that safe egress is available for residents and employees.
4. Ensure that proposed development does not increase the flood inundation of other properties.
5. Ensure that sensitive land uses are designed and sited to minimise risk from flooding and have safe and reliable access.
6. Ensure that potential environmental contamination resulting from inundation of sensitive developments is minimised by appropriate design and siting.
7. Prevent intensification of development on land that is subject to a high risk of flood.
8. Facilitate, where appropriate, conversion of floodways to natural waterway corridors.
9. Minimise potential impact of development on the ecology and the aesthetic and recreational value of waterways.
10. Ensure that land identified by Council as having a potential flood risk is subject to a full flood risk assessment before approval of new development.

## **5. Controls**

### **5.1 Controls that apply to all Development on Flood Prone or Potentially Flood Prone Land:**

1. Where a site is flood prone or potentially flood prone and a proposed development is confined to a particular part of the site which is flood free (as identified by Council's Flood Risk Management Map or a site specific flood study prepared by an appropriately qualified engineer in accordance with Council requirements), it may be considered to satisfy the objectives of this chapter. In these circumstances no flood related development controls will be imposed other than those relating to site evacuation.
2. Despite subclause 1, flood related development controls will apply if any excavation associated with a development is considered likely to increase flood inundation such that the proposed development would become vulnerable to flooding below the FPL.
3. Where development is proposed on land within a floodway, the floodway is to be retained as a natural waterway. If the floodway comprises a man-made system it is to be converted to a natural waterway wherever practical.

### **5.2 Controls for Development on Land Mapped 'Initial Assessment Potential Flood Risk'**

1. Where land is mapped as "Initial Assessment Potential Flood Risk", Council has determined that there is likely to be flood risk, however, a flood study has not yet been adopted by Council and the specified flood risk boundaries are yet to be established.
2. In the absence of a flood study Council may specify an appropriate 1% AEP Flood level and determine the level of risk. This determination will be made having regard to:
  - a. local flooding history
  - b. topography, likely flood behaviour and depth of flood waters, and
  - c. the estimated 1% AEP flood level and area of inundation as shown on the Flood Risk Management Map
3. Alternatively, Council may require an applicant to prepare a flood study. The flood study shall be undertaken by an appropriately qualified and experienced engineer in accordance with the methodology set out in Council's DA Guide submission requirements. The level of risk is to be determined in accordance with the NSW State Government Floodplain Development Manual.
4. The design and siting of development shall not exacerbate flooding on land external to the subject site.
5. The proposed development will be required to comply with the floor levels determined by the flood study and where the flood study concludes that the site has a low, medium or high flood risk, the proposal must satisfy the corresponding controls for that level of risk as specified in this plan.
6. Where a proposed residential development is sited in an area above the flood planning level (1% AEP plus 500mm freeboard), the proposal will be considered to satisfy flood risk management objectives and no flood related development controls will be imposed.

### 5.3 Development on Land mapped as Low Flood Risk

**Note:**

Low Flood Risk is all land that could potentially be inundated (i.e. within the extent of the probable maximum flood) but not identified as either a high flood risk or a medium flood risk precinct. The low flood risk precinct is that area above the 100 year flood and most land uses would be permitted within this precinct.

	Low Flood Risk							
	Essential Community Facilities	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
 Unsuitable land  Not relevant								
<b>Floor Level</b>		3		2,4	2,4	2,4	1	5
<b>Building Components &amp; Method</b>		2		1	1	1	1	1
<b>Structural Soundness</b>		2		1	1	1	1	1
<b>Flood Effects</b>		1	1	1	1	1	1	1
<b>Car Parking And Driveway Access</b>		1,2,3, 4,5,6		1,2,3, 4,5,6	1,2,3, 4,5,6	1,2,3, 4,5,6	4,5,6	4,5,6
<b>Evacuation</b>		2,4,5, 6	7	2,3 or 4,5	1,2,4, 5	2,4,5	4,5,6	2,3 or 4,5
<b>Management and design</b>		4,5	1		3,5	3,5	2,3,5	2,3,5

## 5.4 Development on Land mapped as Medium Flood Risk

**Note:**

Medium Flood Risk is the area below the 100 year flood that is not subject to a high hydraulic hazard and where there are no significant evacuation difficulties. In this precinct there would still be a significant risk of flood damage or risk to life, but these damages and risks can be minimised by the application of appropriate development controls.

	Medium Flood Risk							
	Essential Community Facilities	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
 								
<b>Floor Level</b>				2,4,6	2,4,6	2,4,6	1	5,6
<b>Building Components &amp; Method</b>				1	1	1	1	1
<b>Structural Soundness</b>				1	1	1	1	1
<b>Flood Effects</b>			1	1	1	1	1	1
<b>Car Parking And Driveway Access</b>				1,2,3, 4,5,6	1,2,3, 4,5,6	1,2,3, 4,5,6	4,5,6	4,5,6
<b>Evacuation</b>			7	2,3 or 4,5	1,2,4, 5	2,4,5	4,5,6	2,3 or 4,5
<b>Management and design</b>			1		3,5	3,5	2,3,5	2,3,5

## 5.5 Development on Land mapped as High Flood Risk

### Note:

High flood risk is defined as an area of land below the 1% AEP flood level that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. On land with high flood risk, there is possible danger to personal safety; evacuation by trucks would be difficult; able-bodied adults would have difficulty wading to safety; and there is a potential for significant structural damage to buildings.

	High Flood Risk							
	Essential Community Facilities	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
 Unsuitable land  Not relevant								
Floor Level							1	5,6
Building Components & Method							1	1
Structural Soundness							1	1
Flood Effects							1	1
Car Parking And Driveway Access							3,4,5,6	4,5,6
Evacuation							4,5,6	2,3 or 4,5
Management and design							2,3,5	2,3,5

## 5.6 Planning Considerations

### Floor Level

1. All Floor Levels to be equal to or greater than the 5% AEP flood level
2. Habitable floor levels to be equal to or greater than the 1% AEP flood level plus 500mm freeboard.
3. Habitable floor levels shall be no lower than the PMF level or the 1% AEP flood levels plus 500mm freeboard, whichever is higher.
4. Non-habitable floor levels shall be assessed on merit having regard to the 5% AEP level as well as privacy and amenity impacts.

5. Floor levels shall be equal to or greater than the level of the 1% AEP flood level plus 500mm freeboard. Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level shall be as high as practical and when undertaking alterations or additions, no lower than the existing floor level.
6. Where a building is elevated to reduce flood hazard, the undercroft area is to remain open to permit the free flow of water under the building.

#### **Building Components & Method**

1. All structures to have flood compatible building materials below the 1% AEP flood level plus 500mm freeboard.
2. All structures to have flood compatible building components below the PMF level.

#### **Structural Soundness**

1. An engineer's report shall be provided to certify that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a 1% AEP flood level plus 500mm freeboard.
2. An engineer's report shall be provided to certify that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a PMF.

#### **Flood Effects**

1. An engineer's report shall be provided to certify that the development will not increase flood effects elsewhere, having regard to:
  - loss of flood storage
  - changes in flood levels, flows and velocities caused by alterations to the flood conveyance; and

#### **Car Parking and Driveway Access**

1. The minimum surface level of open car parking spaces or carports shall be no lower than the 1% AEP flood or the level of the crest of the road at the location where the site has access to the road.
2. Garages shall have a minimum finished floor level no lower than the 1% AEP flood plus 200mm freeboard.
3. The level of the driveway providing access between the road and parking space shall be no lower than 300mm below the 1% AEP flood or such that the depth of inundation during a 1% AEP flood is not greater than either the depth at the road or the depth at the car parking space.
4. Basement garages and car parking areas with floor level below the 5% AEP flood or more than 0.8m below the 1% AEP flood level, shall have a pump-out system, adequate warning systems, signage and exits.
5. Restraints or vehicle barriers shall be provided to prevent floating vehicles leaving a site during a 1% AEP flood. A flood depth of more than 200mm will cause serious water damage to a typical vehicle and a depth of 300mm is sufficient to cause a typical vehicle to float.

6. The crest of the driveway providing access between the road and basement garages shall be a minimum of 200mm above the level of the 1% AEP flood.

### **Evacuation**

1. Reliable access for pedestrians or vehicles shall be provided during a 1% AEP flood.
2. Reliable access for pedestrians or vehicles shall be provided from the building commencing at a minimum level equal to the lowest habitable floor level to an area of refuge above the PMF level.
3. Adequate exits shall be available to allow safe and orderly evacuation without increased reliance upon the SES or other authorised emergency services personnel.
4. Adequate flood warning systems, signage and exits shall be available to allow safe and orderly evacuation without increased reliance upon the SES or other authorised emergency services personnel.
5. The development shall be consistent with any relevant flood strategy, Floodplain Risk Management Plan adopted by Council or similar plan.
6. An engineer's report shall be provided to certify that an area of refuge is available if circumstances are possible where the evacuation of persons might not be achieved within an effective warning time
7. Applicant shall demonstrate that evacuation in accordance with the requirements of the DCP is available for potential development flowing from the subdivision proposal.

### **Management and Design**

1. Applicant shall demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accord with this DCP.
2. Site Emergency Response Flood Plan shall be prepared where floor levels are below the minimum floor level requirement.
3. An area shall be available within the dwelling to store goods above the 1% AEP flood level plus 500mm freeboard.
4. Applicant shall demonstrate that area is available to store goods above the PMF level.
5. No storage of materials which may cause pollution or be potentially hazardous during any flood is permitted below the 1% AEP plus 500mm.