

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

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.

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.

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.

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.

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.
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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 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 uncontrolled or illegal landfilling, 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 4.15(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 (Resilience and Hazards) 2021* 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 (Resilience and Hazards) 2021 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, SafeWork NSW, Australian and New Zealand Environment and Conservation Council (ANZECC 2022), National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)(NEPM ASC), National Environmental Management Plan on PFAS, Australian Standard ISO 185:04 2022 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 s10.7 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 ensure investigations to determine the current status of the site are undertaken by a suitably qualified environmental consultant.

Note: All reporting pertaining to contaminated land must be prepared and/or reviewed and signed off by a suitably qualified and experienced consultant, certified under one of the following schemes:

- EIANZ 'Certified Environmental Practitioner - Site Contamination (CEnvP - SC); or
- Soil Science Australia 'Certified Professional Soil Scientist' - Contaminated Site Assessment and Management (CPSS CSAM).

Specific guidance applicable to contaminated land reporting in NSW is presented in:

[Consultants reporting on contaminated land](#) (NSW EPA 2020) and [Preparing environmental management plans for contaminated land: Practice note](#) (NSW EPA 2022).

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. Promote sustainability-based remediation options assessments.
6. Facilitate appropriate site remediation in consideration of Sustainable Remediation practices to ensure the land is suitable for the intended use.
7. 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 is satisfied that the land is suitable for the intended use.

Note:

The EP&A Act and SEPP Resilience and Hazards 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.

The site investigation and reporting process may need to be followed as outlined in Schedule A of the National Environment Protection (Assessment of Site Contamination) Measure 2013. 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 Site Investigation
- A Detailed Site Investigation
- A Remedial Action Plan
- Remediation and Validation reporting
- Site management plan / Long-Term Environmental Management Plan
- Ongoing monitoring reporting

Sustainable Remediation Practices should be considered at each stage of the process. This is not an option to do nothing, rather “a remediation solution selected through the use of a balanced decision making process that demonstrates, in terms of environmental, economic and social indicators, that the benefit of undertaking remediation is greater than any adverse effects”. (A framework for assessing the sustainability of soil and groundwater remediation, Sustainable Remediation Forum (SuRF) Australia (2011)).

1.3 Controls where a 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 (Resilience and Hazards) 2021 may have occurred, or is known to have been carried out, or land where knowledge of previous land uses is incomplete.
 - b. Land that may have reasonably been affected by contamination from an adjoining site.
 - c. Land on which there is to be a change of use from industrial or commercial use, to a more sensitive land use such as residential accommodation, educational establishment, recreational, childcare, residential care facility or hospital.
 - d. Land that is adjacent to or downgradient 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 (Resilience and Hazards) 2021.
 - e. Land that Council has reasonable grounds to believe is contaminated based on the lands history, proximity to other contaminated land, condition or other information known to Council or as notified on a s10.7 Planning Certificate.
 - f. 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.
 - g. 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.

Note: The Preliminary Site Investigation must be prepared and/or reviewed by a suitably qualified Environmental Consultant that is certified by one of the following certification schemes:

- EIANZ 'Certified Environmental Practitioner' (Site Contamination) (CEnvP (SC)).
- Soil Science Australia 'Certified Professional Soil Scientist' Contaminated Site Assessment and Management (CPSS CSAM).

Note:

Table 1: Some activities that may cause contamination. This is based on an extract from SEPP (Resilience and Hazards) 2021 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 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.

Note: The Detailed Site Investigation must be prepared and/or reviewed by a suitably qualified Environmental Consultant that is certified by one of the following certification schemes:

- EIANZ 'Certified Environmental Practitioner' (Site Contamination) (CEnvP (SC)).
 - Soil Science Australia 'Certified Professional Soil Scientist' Contaminated Site Assessment and Management (CPSS CSAM).
3. If the contamination consists of asbestos, the Detailed Site Investigation must also be prepared in accordance with the appropriate SafeWork NSW guidelines and advice, and any other relevant guidelines.

1.5 Controls where a Remedial Action Plan is Required

1. Where the Detailed Site Investigation indicates contamination in soil or groundwater is 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 Remedial 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, including in conjunction with sustainable remediation guidelines.
3. If the contamination consists of asbestos, the Remedial Action Plan must also be prepared in accordance with the appropriate SafeWork 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 2022 (ANZECC 2022) and any other relevant guidelines.

Note: The Remedial Action Plan must be prepared and/or reviewed by a suitably qualified Environmental Consultant that is certified by one of the following certification schemes:

- EIANZ 'Certified Environmental Practitioner' (Site Contamination) (CEnvP (SC)).
- Soil Science Australia 'Certified Professional Soil Scientist' Contaminated Site Assessment and Management (CPSS CSAM).

5. Sustainable remediation options should be considered at this stage of the process in accordance with SuRF Australia 2011 Framework and AS ISO 185:04 (2022).

Sustainable remediation as defined in Australian Standard AS ISO 18504:2022, is the elimination and/or control of unacceptable risks in a safe and timely manner whilst optimising the environmental, social and economic value of the work.

Sustainable remediation of contaminated lands must be taken to prevent unacceptable environmental, social, and economic impacts. The impact of each element (environment, society, economy) must be considered and balanced.

All and any approach/s to sustainable remediation of contaminated lands must be evidence based and undertaken with transparency. The safety of workers and the general public must be considered.

Sustainable remediation should be considered in the early stages of the planning process to maximise benefits.

6. Following the submission of the 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. Require the appointment of 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 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 2022 (ANZECC 2022) and any other relevant guidelines. It should also consider sustainable remediation options in accordance with SuRF Australia 2011 Framework and AS ISO 185:04 (2022).
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 2022 (ANZECC 2022) and any other relevant guidelines.

Note: The Validation Report and any Environmental Management Plans must be prepared and/or reviewed by a suitably qualified Environmental Consultant that is certified by one of the following certification schemes:

- a. EIANZ 'Certified Environmental Practitioner' (Site Contamination) (CEnvP (SC)).
- b. Soil Science Australia 'Certified Professional Soil Scientist' Contaminated Site Assessment and Management (CPSS CSAM).

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.

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

Note:

Contaminated Site Remediation is classified into two categories under State Environmental Planning Policy (Resilience and Hazards) 2021. 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 4.8 of State Environmental Planning Policy (Resilience and Hazards) 2021, is work that requires consent. Category 1 Remediation Work is advertised development for a period of 28 days pursuant to Schedule 1 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 (Resilience and Hazards) 2021. Clause 4.11 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 4.13(2)(a). Council requires the name and contact details of the contractor who is carrying out the works to be supplied.

1. In accordance with Clause 4.8(f) of SEPP (Resilience and Hazards) 2021, 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 2019, 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 SafeWork 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 2019*.
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 2019, Work Health and Safety Regulation 2017; 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 5(Resilience and Hazards) 2021*.

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).

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.
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1.11 Controls Specific to Lands that contain asbestos in or on soil

1. Sites that are contaminated with asbestos either within soils or on soils must comply with the following legislation and guidelines and any relevant guidelines and updates:
 - Section 4.15 (1c) of the Environmental Planning Assessment Act 1979 (EP&A Act)
 - The State Environmental Planning Policy Resilience and Hazards 2021
 - The Contaminated Land Management Act 1997 (CLM Act)
 - National Environment Protection (Assessment of Site Contamination) Measure (NEPM ASC), 2013
 - NSW Work Health and Safety Act (2011);
 - NSW Work Health and Safety Regulation (2011);
 - SafeWork NSW Code of Practice: *How to safely remove asbestos* (2022);
 - SafeWork NSW Code of Practice: *How to manage and control asbestos in the workplace* (2022);
 - SafeWork NSW Code of Practice: *Demolition work* (2019);
 - NSW EPA *Position statement: WA guidelines for asbestos contaminated sites* (2022);
2. Removal of asbestos containing material or asbestos contaminated soil must be undertaken by, or under the supervision of:
 - a. A SafeWork NSW Class A or B Licensed Asbestos Removal Contractor, if the asbestos containing material is classified as bonded (non-friable); or
 - b. A SafeWork NSW Class A Licensed Asbestos Removal Contractor, if the asbestos containing material is classified as friable.
3. Following removal of asbestos containing material or asbestos contaminated soil, a clearance inspection must be undertaken by a suitably qualified and experienced environmental consultant or occupational hygienist that is:

- a. A 'Competent Person' as defined in the SafeWork NSW Code of Practice: *How to safely remove asbestos* (2022), if the asbestos-containing material is classified as bonded (non-friable); or
 - b. A SafeWork NSW Licensed Asbestos Assessor, if the asbestos-containing material is classified as friable.
4. Remediation and validation of asbestos contaminated soil must be undertaken by a suitably qualified environmental consultant certified by one of the following certification schemes:
 - o EIANZ 'Certified Environmental Practitioner' (Site Contamination) (CEnvP (SC)).
 - o Soil Science Australia 'Certified Professional Soil Scientist' Contaminated Site Assessment and Management (CPSS CSAM).

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 Clauses 5.21 Flood Planning and 5.22 Special Flood Considerations of Sutherland Shire Local Environmental Plan 2015, the NSW Government Flood Prone Lands Policy and the NSW Flood Risk Management Manual 2023 (FRMM). The FRMM 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 communities and 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,
- 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 FRMM identifies the flood risk management process including guidelines on the preparation of Flood Studies and Flood Risk Management Studies and Plans (FRMSP). FRMSPs inform the flood related development controls for development within the floodplain. The flood risk management provisions of this DCP are part of Council's implementation of FRMSPs and the flood 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 of Flood Risk” or identified as potentially flood affected in Draft flood studies (yet to be adopted). 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, evacuation routes and other localised risk factors form part of the classification of risk.

At the time of preparing this DCP, the following flood risk management studies have been adopted by Council:

- Bundeena Creek Floodplain Risk Management Study and Plan
- Georges River Floodplain Risk Management Study and Plan
- Gwawley Bay Catchment Flood Study
- Kurnell Township Flood Study
- Woollooware Bay Floodplain Risk Management Study and Plan
- Woronora River Floodplain Management Study and Plan.

1. Dictionary of Terms Used in This Chapter

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

Annual Exceedance Probability (AEP) is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, a 1% AEP flood has a 1% or 1 in 100 chance of being reached or exceeded in any given year.

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.

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 FRMSP, the relevant State government disaster plan, by advice received from the State Emergency Services (SES) or as determined in the assessment of individual proposals.

The primary strategy is horizontal evacuation of people to an area outside of the effects of flooding that has adequate facilities to maintain the safety of the community. However, due to the short warning time available and flash-flooding nature of events in the Sutherland LGA, a site-specific flood response plan and shelter-in-place refuge may be considered on merit. Safe refuge must have a minimum floor area of 2m² per occupant, adequate facilities to sustain occupants for the likely isolation time, and be part of a building certified by a suitably qualified engineer that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a PMF plus sea level rise.

Flood is a natural occurrence when water covers land that is normally dry. It may result from coastal inundation (excluding tsunamis) or catchment flooding, or a combination of both. Flooding results from relatively high stream flow that overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flow paths associated with major drainage, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

Types of catchment flooding include mainstream (also called riverine) and overland flooding:

- Mainstream flooding is a relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam.
- Overland flooding is inundation by local runoff on its way to a waterway (rather than overbank discharge from a waterway). Typically overland flooding is relatively quick to occur and subside (compared to mainstream flooding on rivers).

Coastal inundation includes flooding resulting from elevated ocean and waterway entrance conditions in estuaries and ocean seawater due to storm surge or climate change induced sea level rise. Design oceanic event levels are listed in Council's Stormwater Specification.

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.

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).

Flood Risk Management Study & Plan (FRMSP) is prepared under the NSW Government Flood prone land policy to evaluate strategies that achieve effective flood risk management outcomes.

Flood planning area (FPA) is the area extent under the flood planning level.

Flood planning level (FPL) is the combination of the flood level from the defined flood event, freeboard selected for flood risk management purposes and sea level rise in accordance with Council's Sea Level Rise Policy.

Flood Risk Management Manual (FRMM) refers to the document published 2023 by the NSW Government and entitled "Flood risk management manual - The policy and manual for the management of flood liable land".

Flood Study is a study of flood behaviour (eg extent, level, and hazard) prepared under the NSW Government Flood prone land policy. A site-specific flood study is prepared by a suitably qualified engineer for assessment of flooding at a particular site.

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.

Habitable floor area means:

- In a **residential situation**: an area used for normal domestic activities, such as a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. (Source National Construction Code 2019)
- In an **industrial or commercial situation**: an area occupied frequently or for extended periods (such as 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 result in loss of life, injury or economic loss to the community due to flooding.

Mainstream Flooding refers to the inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam. Mainstream flooding can affect large areas and is driven by widespread prolonged rainfall.

Nuisance overland flow is considered to be overland flow of stormwater runoff with depths less than 100mm or less during the major storm event.

Non-habitable floor area means spaces of a specialised nature not occupied frequently or for extended periods, including a bathroom, laundry, toilet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom and clothes drying room. (Source National Construction Code 2019)

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

Overland Flow is where water from rainfall flows across the land on its way to major drainage systems, such as creeks and rivers. Overland flow paths are low lying areas of the local topography along which surface flows are conveyed.

Probable maximum flood (PMF) is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation and coastal inundation. It is a very rare and unlikely event.

Probable maximum precipitation (PMP) is the theoretical greatest depth of precipitation that is physically possible over a particular catchment.

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

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.

Risk precinct:

- **high** is land below the 1% AEP flood level that has been identified by Council as being subject to a high hydraulic hazard, classified as hazard vulnerability of H4-H6, areas classified as floodway or where there are significant evacuation difficulties. The high flood risk precinct is where high flood damages, potential risk to life and evacuation problems are anticipated or development would significantly and adversely affect flood behaviour. Most development should be restricted in this precinct. In this precinct, there is a significant risk of flood damages without compliance with flood related building and planning controls.
- **medium** is land below the 1% AEP flood level that has been identified by Council as being not categorised as High Risk Precinct and where there are no significant evacuation difficulties. In the medium risk flood precinct there is significant risk of flood damage, but these damages can be minimised by the application of appropriate development controls.
- **low** is all other land within the floodplain, i.e. within the extent of the Probable Maximum Flood (PMF) and Flood Planning Area (FPA) that has not been identified as having High or Medium flood risk. The low flood risk precinct is where the risk of damages is low for most land uses.

Sea Level Rise: an allowance for sea level rise must be in accordance with Council's Sea Level Rise Policy taking into account the design life of the development.

Suitably Qualified Engineer is a civil engineer registered on the National Engineering Register (administered by Engineers Australia). A person eligible to be registered on the National Engineering Register (administered by Engineers Australia) with appropriate experience and competence may be considered.

2. Objectives

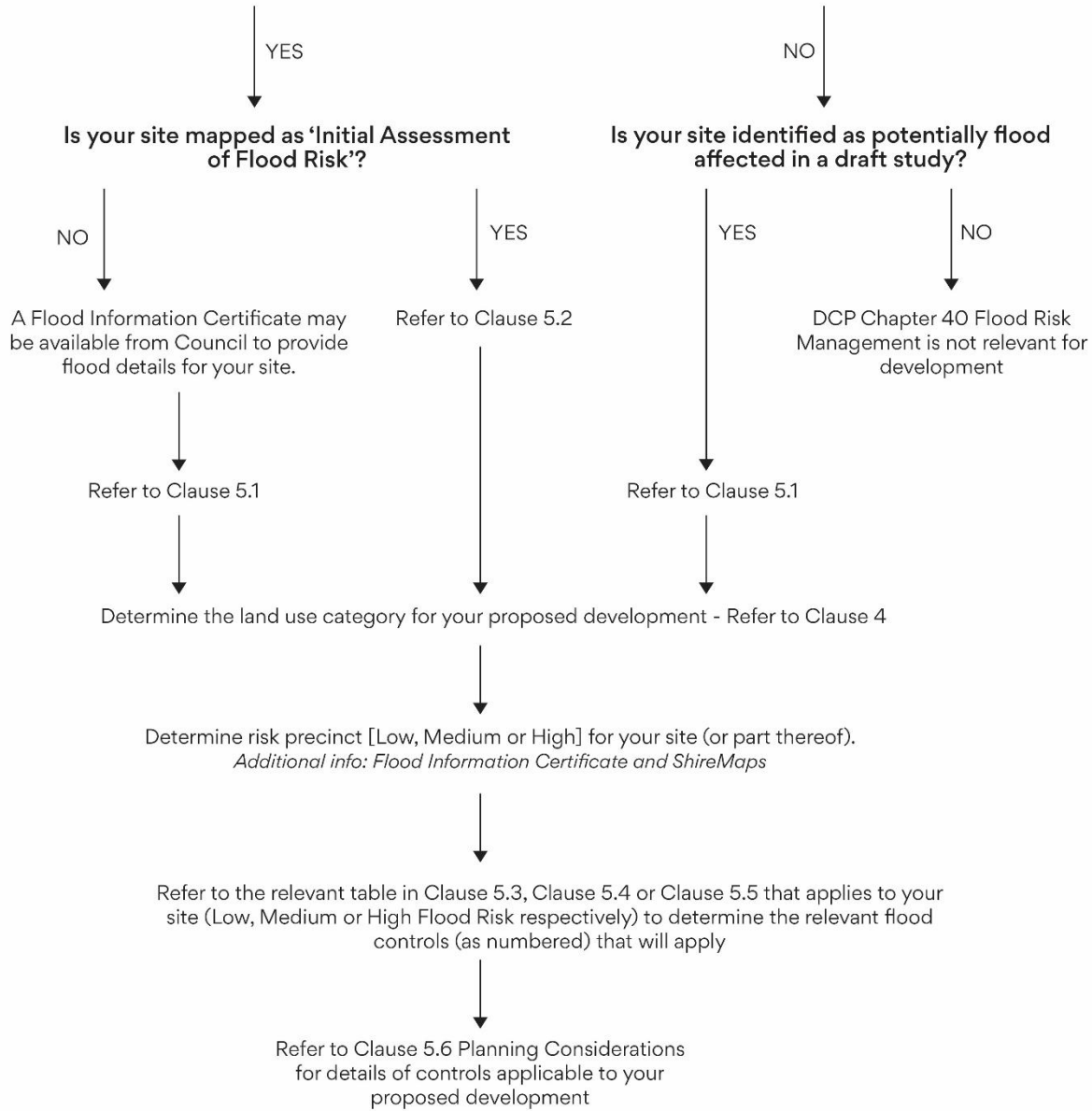
1. Reduce risk to human life and minimise damage to property caused by flooding.
2. Ensure that development is sited to minimise potential risk from flooding.
3. Ensure safe occupation and efficient evacuation of people in the event of a flood.
4. Ensure that proposed development does not increase the flood inundation of other properties and minimises loss of flood storage.
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.
11. Ensure that the proposed development addresses projected changes to flood behaviour as a result of climate change.

Note:

If you have any enquiries in relation to flooding contact Council's Asset Management and Waterways Branch on 9710 0333 or email stormwaterandwaterways@ssc.nsw.gov.au.

3. How to Use This Chapter – Flowchart

Is your site identified as flood affected, potentially flood affected, or affected by coastal inundation / sea level rise? Check [Flood risk management | Sutherland Shire Council](#) (about Section 10.7 certificate; Flood Information Certificate; ShireMaps; and Flood Studies).



Note 1: Flood notations on some section 10.7 Certificates contain information about applicable development controls

Note 2: In some circumstances, even though a land use may be permitted in a zone, the flood 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. 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
Additions or alterations to existing dwellings that are not categorised as “Concessional Development”
Garages or Outbuildings with a minimum floor area of 20m²

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:
 - i. 10% or up to 20m² (whichever is the lesser) of the floor area which existed at the date of 15 November 2006 in a high risk precinct; or
 - ii. 10% (up to 30m²) of the floor area which existed at the date of 15 November 2006 in a medium risk precinct.
- (c) Council may consider alterations and additions greater than 30m² on the ground floor where the development clearly demonstrates an overall reduction in flood risk to occupants of the dwelling (eg. a first-floor addition provides new refuge above the PMF).
- (d) The construction of an outbuilding with a maximum floor area of 20m².

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.

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. Where peak overland flow depths on a site are less than 100mm, flood controls of DCP Chapter 40 are not relevant. Refer to DCP Chapter 38 and Council's Stormwater Management Environmental Specification for controls of nuisance overland flow.
3. Catchment-wide flood models, established per the NSW Government Flood Risk Management process, are required for a site-specific flood study.
4. Contact Council's Asset Management and Waterways Branch on 9710 0333 or email stormwaterandwaterways@ssc.nsw.gov.au to advise availability of a flood model for a particular site.
5. 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.
6. The use of floodgates, barriers and walls is not supported to floodproof a development.

5.2 Controls for Development on Land Mapped 'Initial Assessment of Flood Risk'

1. Where land is mapped as "Initial Assessment of 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
 - 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 a suitably qualified engineer in accordance with the methodology set out in Council's DA Lodgement requirements. The level of risk is to be determined in accordance with the NSW State Government Flood Risk Management 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 sea level rise plus 500mm freeboard (or per freeboard stated in specific catchment flood studies and FRMSP that are adopted by Council)), 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

Low Flood Risk is all land that could potentially be inundated (i.e. within the extent of the Probable Maximum Flood and within the Flood Planning Area) 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 1% AEP flood and most land uses would be permitted within this precinct.

	Low Flood Risk							
	Community Essential Facilities	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
<div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 5px;"> <div style="width: 20px; height: 15px; background-color: #003366; margin-right: 5px;"></div> Unsuitable land </div> <div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 5px;"> <div style="width: 20px; height: 15px; background-color: #ADD8E6; margin-right: 5px;"></div> Not relevant </div>								
Floor Level		3,7		2,4,6,7	2,4,6,7	2,4,6,7	1	5
Building Components and Method		2		1	1	1	1	1
Structural Soundness		2		1	1	1	1	1
Flood Impacts		3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5	3,4,5
Car Parking and Driveway Access		1,2,3,4		1,2,3,4	1,2,3,4	1,2,3,4	2,3,4	2,3,4
Evacuation		1,2,4,5,7	6	2,3,7 or 4,5,7	1,2,4,5,7	1,2,4,5,7	1,4,5,7	7
Management and Design		3,4	1		2,4	2,4	2,4	2,4

5.4 Development on Land mapped as Medium Flood Risk

Medium Flood Risk is the area below the 1% AEP 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.

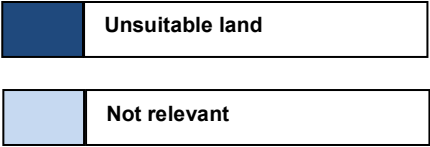
	Medium Flood Risk							
	Essential Community Facilities	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
<div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 5px;"> <div style="width: 20px; height: 15px; background-color: #1a3d4d; margin-right: 5px;"></div> Unsuitable land </div> <div style="display: flex; align-items: center; border: 1px solid black; margin-bottom: 5px;"> <div style="width: 20px; height: 15px; background-color: #a0c0e0; margin-right: 5px;"></div> Not relevant </div>								
Floor Level				2,4,6,7	2,4,6,7	2,4,6,7	1	5
Building Components and Method				1	1	1	1	1
Structural Soundness				1	1	1	1	1
Flood Impacts			1,2,3,4,5	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5	3,4,5
Car Parking and Driveway Access				1,2,3,4	1,2,3,4	1,2,3,4	2,3,4	2,3,4
Evacuation			6	2,3,7 or 4,5,7	1,2,4,5,7	1,2,4,5,7	1,4,5,6,7	7
Management and Design			1,5,6	5,6,7	2,4,5,6,7	2,4,5,6,7	2,4,5,6,7	2,4,5,6

5.5 Development on Land mapped as High Flood Risk

High flood risk is defined as an area of land below the 1% AEP flood level that is:

- Subject to a high hydraulic hazard,
- classified as hazard vulnerability of H4-H6 (determined through NSW Government Flood Risk Management Guideline FB03),
- classified as floodway, or
- areas 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							
	Community	Sensitive uses and facilities	Subdivision	Residential	Commercial and industrial	Tourist related development	Recreation and non-urban	Concessional Development
								
Floor Level							1	5
Building Components and Method							1	1
Structural Soundness							1	1
Flood Impacts							1,3,4,5	3,4,5
Car Parking and Driveway Access							2,3,4	2,3,4
Evacuation							1,4,5,7	2,3 or 4,5,7
Management and Design							2,4,5,6	2,4,5,6

5.6 Planning Considerations

Floor Level

Note: Floor level is to be set based on the highest flood level measured around the building perimeter (or adjacent to the upslope edge) and minimum floor level can vary with varying flood levels across the property.

1. All Floor Levels to be equal to or greater than the 5% AEP flood level plus sea level rise.
2. Habitable floor levels to be equal to or greater than the 1% AEP flood level plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise.
3. Habitable floor levels shall be no lower than the PMF level plus sea level rise or the 1% AEP flood levels plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise, whichever is higher.
4. Non-habitable floor levels to be equal to or greater than the 1% AEP flood level plus sea level rise.
5. The floor level shall be as high as practical and when undertaking alterations or additions, no lower than the existing floor level.
6. Finished floor level is to be a minimum 200mm above adjacent natural ground level.
7. Garages shall have a minimum finished floor level no lower than the 1% AEP flood plus sea level rise.

Building Components and Method

1. All structures are to have flood compatible building materials, including flood compatible electrical components (e.g. power outlets, lift motors), below the 1% AEP flood level plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise.
2. All structures to have flood compatible building materials, including flood compatible electrical components (e.g. power outlets, lift motors), below the PMF level plus sea level rise.

Structural Soundness

1. A report by a suitably qualified engineer shall be provided to certify that the structure can withstand the forces of floodwater, scour, debris and buoyancy up to and including a 1% AEP flood level plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise.
2. A report by a suitably qualified engineer shall be provided to certify that the structure can withstand the forces of floodwater, scour, debris and buoyancy up to and including a PMF plus sea level rise.

Flood Impacts

1. A Flood Impact and Risk Assessment report prepared by a suitably qualified engineer 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, velocities, extent, hazard category, evacuation, and frequency of inundation caused by alterations to the flood conveyance
 - The cumulative impact of multiple potential developments in the floodplain.
2. Peak flood level increases on adjoining private property must be less than 20mm in a 1% AEP event. New development must not increase the frequency of over-floor flooding nor increase hazard vulnerability classification (ie., H1-H6) on adjoining property.
3. Development must not cause additional lots to be impacted by the 1% AEP or PMF event.
4. Flood impacts up to the PMF will be assessed on merit considering changes to flood hazard vulnerability classification, additional flood affected property and floors, and impact to evacuation routes and onsite refuges.
5. 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.

Car Parking and Driveway Access

1. The minimum surface level of open car parking spaces or carports shall be no lower than 100mm below the 1% AEP flood plus sea level rise, or the level of the crest of the road at the location where the site has access to the road.
2. 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.
3. Restraints or vehicle barriers shall be provided to prevent floating vehicles leaving a site during a 1% AEP flood plus sea level rise. 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.
4. The crest of the driveway providing access between the road and basement garages (and any opening to a basement carpark) shall be a minimum of 1% AEP flood level plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise or PMF plus sea level rise (whichever is higher).

Evacuation

1. Reliable access for pedestrians or vehicles shall be provided during a 1% AEP flood plus sea level rise.
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 plus sea level rise. On-site refuge (shelter-in-place) will be assessed on merit if external evacuation is not feasible and must provide minimum 2m² per occupant.

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. Applicant shall demonstrate that evacuation in accordance with the requirements of the DCP is available for potential development flowing from the subdivision proposal.
7. A Flood Emergency Response Plan prepared by a suitably qualified engineer may be required depending on the flood risk and proposed development to demonstrate evacuation processes and address risks in the case of a flood event. For example, if floor level requirements are not met or if significant hazard exists for evacuation.

Management and Design

1. Applicant shall demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this DCP.
2. An area shall be available within the building to store goods above the 1% AEP flood level plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise.
3. Applicant shall demonstrate that area is available to store goods above the PMF level plus sea level rise.
4. No storage of materials which may cause pollution or be potentially hazardous during any flood is permitted below the 1% AEP plus 500mm freeboard (or per freeboard required by Council from catchment flood studies/FRMSP) plus sea level rise.
5. Where development is proposed on land adjacent to 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.
6. Fences within the 1% AEP flood extent must not obstruct the flow of floodwaters resulting in an adverse impact to flooding. Flood compatible fencing is composed of an open collapsible hinged structure or vertical tubular/louvre with minimum 50% opening. Fencing shall be constructed to withstand the forces of floodwater and debris. Note glass pool fencing with minimum 80mm opening to the underside is permitted in low velocity flood.
7. The design and siting of a swimming pool shall not exacerbate flooding in neighbouring properties. Pools shall be built so that the top of the pool is as close to existing ground as possible. Pool coping must be maximum 200mm above adjacent natural ground level (at the downstream edge).

d. Acid Sulfate Soils

This Chapter provides Council's requirements for development on land classified as Acid Sulfate Soils. It should be read in conjunction with Clause 6.1 of the Sutherland Shire Local Environment Plan 2015 and the acid sulfate soils map, which gives an indication of the extent of acid sulfate soils in Sutherland Shire. A copy of this map can be found at [Acid sulfate soils | Sutherland Shire Council \(nsw.gov.au\)](http://www.sutherlandshire.nsw.gov.au/acid-sulfate-soils)

Acid sulfate soils is the common name given to naturally occurring soils and sediments that contain iron sulfide (pyrite). As sea levels slowly rose (between 6,000 and 10,000 years ago), substantial deposits of pyritic sediments formed in estuarine mud, where tidal seawater (containing sulfur) met and mixed with freshwater outflows (containing iron).

Acid sulfate soils are defined as either Actual Acid Sulfate Soils, meaning the soils have already been exposed to oxygen and have a pH <4, or Potential Acid Sulfate Soils, meaning the soils have not been exposed but have the potential to generate sulfuric acid if exposed to oxygen.

Left undisturbed, acid sulfate soils do not pose any harm. However, if they are disturbed and exposed to oxygen (air) through activities such as excavation or the lowering of the water table, sulfuric acid may be produced in large quantities.

Sulfuric acid can have detrimental effects on the natural or built environment by:
corroding and weakening concrete, iron, steel and certain aluminium alloys.
dissolving certain essential elements from the soil, making it toxic and adverse to plant growth.
affecting biodiversity and ecological integrity by degrading habitat, soil and water quality, potentially resulting in the death or disease of fish and other organisms.

Acid sulfate soils are typically found in low-lying areas near the coast, such as mangrove and salt marsh areas, tidal areas, at the bottom of coastal lakes, estuaries and under sand dunes. They usually occur below 5 metres AHD¹ and beneath the water table but occasionally have been found above the water table.

Acid Sulfate Soils are grouped into five classes, depending on the risk of occurrence and the depth at which they are likely to be encountered. The classes are:

Table 1: Explanation of depth acid sulfate soils are likely to be found in each Class

Class of land	Depth at which acid sulfate soils are likely to be found.
Class 1	Acid sulfate soils are likely to be found on and below the natural ground surface.
Class 2	Acid Sulfate Soils are likely to be found below the natural ground surface.
Class 3	Acid Sulfate Soils are likely to be found beyond 1 meter below the natural ground surface.

¹ AHD – Australian Height Datum

Class 4	Acid Sulfate Soils are likely to be found beyond 2 meters below the natural ground surface.
Class 5	Areas classified as Class 5 are located within 500 meters of adjacent Class 1, 2, 3 or 4 land and typically do not contain acid sulfate soils but will need to consider impacts on adjoining classes.

Note: for the purposes of assessment, meters below the natural ground surface is taken to mean meters below the existing ground surface.

Acid Sulfate Soils Assessment and Management must be done in accordance with the Acid Sulfate Soils Manual (ASSMAC) with consideration to the National Acid Sulfate Soils Guidance documents where it is considered industry best practice.

All assessment and reporting must be undertaken, supervised and/or approved by a suitably qualified Environmental Consultant that can demonstrate experience in assessing acid sulfate soils and that is certified by one of the following certification schemes:

EIANZ 'Certified Environmental Practitioner' scheme (CEnvP).

Soil Science Australia 'Certified Professional Soil Scientist' scheme (CPSS RSP ASS).

1.1 Objectives

1. Enable any acid sulfate soils issues to be identified and appropriately assessed at an early stage in the planning process in order to prevent and reduce the risk of harm to the natural and built environment and to reduce delays and costs associated with development.
2. Ensure that any development and ongoing uses do not disturb, expose or drain acid sulfate soils and cause environmental damage.
3. Ensure appropriate management measures of acid sulfate soils during and after development are implemented.
4. Outline Council's requirements for assessing and managing acid sulfate soils.

1.2 Controls for Development on Land Mapped as Acid Sulfate Soils

1. An Acid Sulfate Soils Assessment is to be undertaken on land classified as being affected by acid sulfate soils wherever disturbance of soils occurs and meets the requirements of "Works" under clause 6.1(2) of Sutherland Shire Local Environment Plan. The following table, taken from clause 6.1(2) of SSLEP, outlines the triggers for works.

Note: Disturbance of soils is considered to include all soils below the existing ground surface for the purpose of investigation / assessment and means mechanical or manual excavation, piling (displacement or non-displacement), drilling, coring or levelling where 1 tonne or more of soil is disturbed either in one action or a cumulation of several actions.

Table 2: Triggers for Works where additional assessment is required

Class of land as shown on Acid Sulfate Soils Mapping layer	Works (ie disturbance of more than 1 tonne of soil, or works likely to impact watertable)
Class 1	Any works
Class 2	Works below the natural ground surface. Works by which the water table is likely to be lowered.
Class 3	Works beyond 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered beyond 1 metre below the natural ground surface.
Class 4	Works beyond 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered beyond 2 metres below the natural ground surface.
Class 5	Works within 500 metres of adjacent Class 1,2,3 or 4 land that are likely to lower the watertable below 1 metre Australian Height Datum on adjacent Class 1,2,3 or 4 land.

The following flowchart is a simplified explanation of when investigation and assessment of acid sulfate soil potential as well as any management responses, may be required. If there is uncertainty whether an acid sulfate soils assessment is required, discussion with Council's Environmental Science Assessment Officer shall be undertaken.

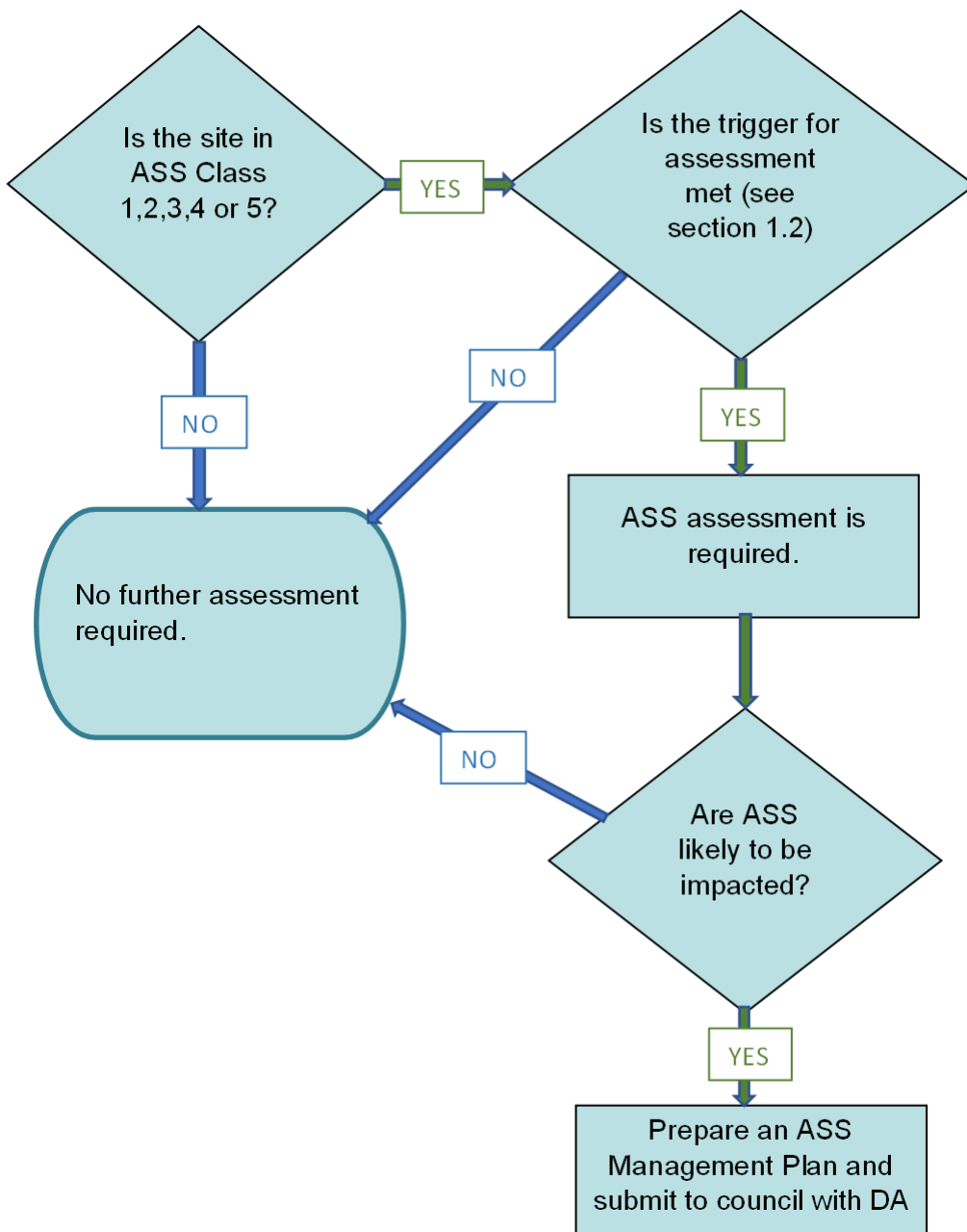


Figure 1: Simplified explanation of when investigation, assessment and management of acid sulfate soils may be required.

2. An Acid Sulfate Soils Assessment must also determine whether groundwater is likely to be intercepted and at what depth? Seasonal fluctuations and coastal influences must be taken into consideration where appropriate.
3. If Acid Sulfate Soils are present and are likely to be disturbed, an acid sulfate soils management plan prepared in accordance with the Acid Sulfate Soils Manual (ASSMAC) with consideration to the National Acid Sulfate Soils Guidance documents where it is considered industry best practice shall be prepared and submitted to Council for approval with submission of a development application.

4. Where groundwater shall be intercepted during disturbance of soils and dewatering is required, a dewatering management plan shall be prepared and submitted to Council for approval. Special consideration shall be given to reducing impact on acid sulfate soils and preventing drawdown of the groundwater table during dewatering.
5. Groundwater assessments and dewatering management plans shall be undertaken by a suitably qualified Hydrologist.
6. Where piles are to be used in acid sulfate soils areas, the following standard shall be complied with. *Australian Standard AS2159-2009 – Piling Design and Installation*. Assessment to determine status of acid sulfate soils and the potential risk from disturbance of acid sulfate soils shall be undertaken.
7. Where concrete is to be used in acid sulfate soils environments, it is advisable to consult primary research on concrete performance in sulfate-rich environments and obtain appropriate engineering advice.
8. All assessment and reporting must be undertaken, supervised and/or approved by a suitably qualified Environmental Consultant that can demonstrate experience in assessing acid sulfate soils and that is certified by one of the following certification schemes:
 - EIANZ ‘Certified Environmental Practitioner’ scheme (CEnvP).
 - Soil Science Australia ‘Certified Professional Soil Scientist’ scheme (CPSS CSAM).