

Flood Risk Management

Development Control Plan 9.3/17 Edition 1



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1.0 GENERAL

1.1 What is the Plan?

This document is to be known as the "Sutherland Shire Flood Risk Management Development Control Plan" (DCP). It places controls on the development of flood liable land to reduce risk to life, property and the resultant cost.

1.2 Why is This Plan Required?

In 1984, the State Government introduced its current flood prone land policy applicable to New South Wales. The first *Floodplain Development Manual* (FDM) was published in 1986, providing guidelines for the implementation of the government's flood prone land policy and the merit approach which underpins its application.

Revised guidelines were released in 2001 and are now embodied in the *Floodplain Management Manual* (FMM). The FMM continues to support 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 FMM 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 is the least preferred option, being costly and most likely to adversely affect the natural environment. Avoidance and minimisation of flood risk are the options most likely to be acceptable and are primarily reliant on land use planning and development control for implementation.

Local Government is the primary authority responsible for both flood risk management and land use planning in New South Wales. The State Government's flood policy provides for a flexible merit based approach to be followed by local government when dealing with planning, development and building matters on flood prone land. For Council to fully carry out its responsibilities for management of flood prone land, it is necessary to prepare a local "Floodplain Risk Management Plan" (FRMP).

The FMM requires that Councils prepare *Floodplain Risk Management Studies* (FRMS) as a prelude to the formulation of a FRMP which, among other things, would control development and other activity within the floodplain. The process for preparing a FRMS and FRMP is depicted by **Figure 1**.

This Plan is consistent with the State Government's "Flood Prone Land Policy" and the FMM. This Plan is an application of the State Policy which reflects local circumstances, as identified for some floodplains, through the preparation of FRMS's and FRMP's.

1.3 To Which Applications Does the Plan Apply?

Council will take into consideration this Plan when determining development applications received in accordance with the Environmental Planning and Assessment Act, 1979.

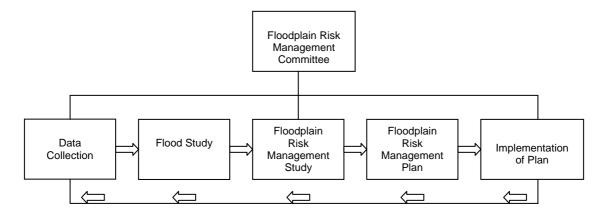


Figure 1: Floodplain Risk Management Process (FMM, 2001)

This Plan does not propose to exempt any applications from the necessity to obtain a particular approval of the Council or other government agencies, where such a requirement would otherwise exist.

1.4 Where Does the Plan Apply?

The Plan applies to all land identified below Probable Maximum Flood (PMF) level in the Sutherland Shire.

Refer to the maps attached in Schedule 4 for the properties affected in Georges River and Dents Creek (North West Arm) Floodplains.

1.5 How Does the Plan Relate to Other Legislation and Regulations?

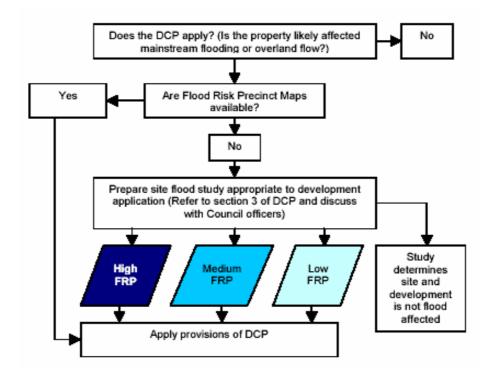
This Plan should be read in conjunction with the relevant provisions of the NSW Government Flood Prone Lands Policy and Floodplain Management Manual (FMM 2001), the Environmental Planning and Assessment Act, 1979, and Regulations thereto, applicable Environmental Planning Instruments (in particular Sutherland Local Environmental Plan (LEP) 2000 and other relevant Development Control Plans and policies adopted by Council.

1.6 How to Use this Plan

Please read this document carefully and seek assistance from Council staff as required. The following is a summary of the major steps you should address:

(a) Check the proposal is permissible in the zoning of the land by reference to any applicable Environmental Planning Instrument (eg. Sutherland Local Environment Plan 2000).

- (b) Consider any other relevant planning controls of Council (eg. controls in any other applicable DCP/LEP which governs the size and setback of development).
- (c) Determine the floodplain (eg. Georges River etc.) and flood risk precinct (low, medium or high) within which your site is situated. Enquire with Council regarding existing flood risk mapping or whether a site specific assessment may be warranted in your case (for example, if local overland flooding is a potential problem). A property may be located in more than one Precinct and the assessment must consider the controls for each Precinct where relative to where located on the site. The flow diagram below summarises this consideration process.



- (d) Determine the land use category relevant to your development proposal, by firstly confirming how it is defined by the relevant environmental planning instrument and secondly by ascertaining the land use category from Schedule 2 of this Plan.
- (e) Assess and document how the proposal will achieve the performance criteria for development and associated fencing provided by Clauses 2.4.2 and 2.5.2 of this Plan.
- (f) Check if the proposal will satisfy the prescriptive controls for different land use categories in different flood risk precincts, as specified in Schedule 3 to 4 of this Plan depending on which floodplain the site is located.

If the proposal does not comply with the prescriptive controls, determine whether the performance criteria are nonetheless achieved.

The assistance of Council staff or an experienced floodplain consultant may be required at various steps in the process to ensure that the requirements of this Plan are fully and satisfactorily addressed.

1.7 What are the Aims of the Plan?

This Plan aims to:-

- (a) Minimise the potential impact of development and other activity upon the aesthetic, recreational and ecological value of the waterway corridors.
- (b) Increase public awareness of the hazard and extent of land affected by all potential floods, including floods greater than 1% Annual Excedence Probability (AEP) flood and to ensure essential services and land uses are planned in recognition of all potential floods.
- (c) Inform the community of Council's policy for the use and development of flood prone land.
- (d) Reduce the risk to human life and damage to property caused by flooding through controlling development on land affected by potential floods.
- (e) Provide detailed controls for the assessment of applications lodged in accordance with the Environmental Planning and Assessment Act 1979 on land affected by potential floods.
- (f) Provide different guidelines, for the use and development of land subject to all potential floods in the floodplain, which reflect the probability of the flood occurring and the potential hazard within different areas.
- (g) Apply a "merit-based approach" to all development decisions which takes account of social, economic and ecological as well as flooding considerations.
- (h) Control development and other activity within each of the individual floodplains within the LGA having regard to the characteristics and level of information available for each of the floodplains, in particular the availability of FRMS's and FRMP's prepared in accordance with the FMM and its predecessor, the FDM.
- (i) Deal equitably and consistently with applications for development on land affected by potential floods, in accordance with the principles contained in the FMM, issued by the NSW Government.

1.8 Glossary

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

Adequate Warning Systems, Signage and Exits is where the following is provided:

- (a) an audible and visual alarm system which alerts occupants to the need to evacuate, sufficiently prior to likely inundation to allow for the safe evacuation of pedestrians and vehicles;
- (b) signage to identify the appropriate procedure and route to evacuate; and
- (c) exits which are located such that pedestrians evacuating any location during any flood do not have to travel through deeper water to reach a place of refuge above the 1% Annual Excedence Probability (AEP) flood away from the enclosed car parking.

Annual Excedence Probability (AEP) is the probability of risk of a flood of a given size occurring or being exceeded in any given year.

Australian Height Datum (AHD) is a common national plain of level corresponding approximately to mean sea level.

Average Recurrence Interval (ARI) means the long-term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods with a discharge as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.

Basement car parking means car parking areas generally below ground level, or above natural ground level, and enclosed by bunding, where inundation of the surrounding areas may raise water levels above the entry level to the basement, resulting in rapid inundation of the basement to depths greater than 0.8 metres. Basement car parks are areas where the means of drainage of accumulated water in the car park has an outflow discharge capacity significantly less than the potential inflow capacity.

Design floor level or ground level means the minimum floor level that applies to the development. If the development is concessional development, this level is determined based on what land use category would apply if it was not categorised as Concessional Development. The floor level standards specified for the relevant land use category (excluding Concessional Development) in the low flood risk precinct are to be applied.

Ecologically sustainable development (ESD) is using, conserving and enhancing natural resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be maintained or increased. A more detailed definition is included in the Local Government Act 1993.

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 move farm equipment, move stock, raise furniture, evacuate people and transport their possessions.

Enclosed car parking means car parking which is potentially subject to rapid inundation which consequently increases risk to human life and property (such as basement of bunded

car parking areas). The following criteria apply for the purposes of determining what is enclosed car parking:

- (a) Flooding of surrounding areas may raise water levels above the perimeter which encloses the car park (normally the entrance), resulting in rapid inundation of the car park to depths greater than 0.8m, and
- (b) Drainage of accumulated water in the car park has an outflow discharge capacity significantly less than the potential inflow capacity.

Extreme flood means an estimate of the probable maximum flood, which is the largest flood likely to ever occur.

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 FMM before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

Note: Consistent with the FMM, this DCP does not apply in the circumstances of local drainage inundation as defined in the FMM and determined by Council. Local drainage problems can generally be minimised by the adoption of urban building controls requiring a minimum difference between finished floor and ground levels.

Flood awareness is an appreciation of the likely effects of flooding and a knowledge of the relevant flood warning and evacuation procedures.

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. A list of flood compatible materials is attached in **Schedule 1**.

Flood evacuation strategy 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 SES Flood Plan, by advices received from the State Emergency Services (SES) or as determined in the assessment of individual proposals.

Flood prone land (being synonymous with *flood liable* and *floodplain*) is the area of land which is subject to inundation by the Probable Maximum Flood (PMF).

Floodplain Management Manual (FMM) refers to the document dated January 2001, published by the New South Wales Government and entitled "Floodplain Management Manual: the management of flood liable land".

Floodplain Risk Management Plan (FRMP) means a plan prepared for one or more floodplains in accordance with the requirements of the FMM or its predecessor.

Floodplain Risk Management Study (FRMS) means a study prepared for one or more floodplains in accordance with the requirements of the FMM or its predecessor.

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 "greenhouse" and 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.

Hydraulic hazard is the hazard as determined by the provisional criteria outlined in the FMM in a 1% Annual Excedence Probability (AEP) flood event.

Local overland flooding means inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.

Merit approach is an approach, the principles of which are embodied in the FMM which weighs social, economic, ecological and cultural impacts of land use options for different flood prone areas together with flood damage, hazard and behaviour implications, and environmental protection and well being of the State's rivers and floodplains.

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.

Probable maximum precipitation (PMP) is the greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends (World Meteorological Organisation, 1986). It is the primary input to the estimation of the probable maximum flood.

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

Rebuilt dwelling refers to the construction of a new dwelling on an allotment where an existing dwelling is demolished.

Reliable access during a flood means the ability for people to safely evacuate an area subject to flooding, 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.

Site Emergency Response Flood Plan (not being an SES Flood Plan) is a management plan that demonstrates the ability to safely evacuate persons and include a strategy to move goods above the flood level within the available warning time. This Plan must be consistent with any flood evacuation strategy, flood plan or similar plan adopted by Council.

Survey plan is a plan prepared by a registered surveyor which shows the information required for the assessment of an application in accordance with the provisions of this Policy.

2.0 WHAT ARE THE CRITERIA FOR DETERMINING APPLICATIONS?

2.1 General

The criteria for determining applications for proposals potentially affected by flooding are structured in recognition that different controls are applicable to different land uses and levels of potential flood inundation and hazard.

The procedure to determine what controls apply to proposed development involves:

- firstly, identifying the land use category of the development (from Schedule 2);
- secondly, determine which floodplain and which part of that floodplain the land is located within (refer to Clause 2.3 and relevant flood risk mapping); and
- then apply the controls outlined under Clause 2.4.

Clause 2.5 provides specific requirements for fencing in the floodplain, while Clause 2.6 identifies special considerations which will apply only to some development in specific circumstances.

Clauses 2.4 and 2.5 which provide controls for development and fencing in the floodplain contain objectives, performance criteria and prescriptive controls, with the following purpose:

- The objectives represent the outcomes that the Council wishes to achieve from each control.
- The performance criteria represent a means of assessing whether the desired outcomes will be achieved.
- The prescriptive controls are preferred ways of achieving the outcome. While adherence to the prescriptive controls may be important, it is paramount that the objectives and the performance criteria are clearly satisfied.

2.2 Land Use Categories

Eight major land use categories have been adopted. The specific uses, as defined by the applicable Environmental Planning Instruments, which may be included in each category, are listed in **Schedule 2.**

2.3 Flood Risk Precincts

Each of the floodplains within the local government area can be divided based on different levels of potential flood risk. The relevant Flood Risk Precincts (FRP's) for each of the floodplains are outlined below.

High Flood Risk Precinct

This has been defined as the area of land below the 1% AEP flood that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties.

Note: The high flood risk precinct is where high flood damages, potential risk to life, evacuation problems would be anticipated or development would significantly and adversely effect flood behavior. Most development should be restricted in this precinct. In this precinct, there would be a significant risk of flood damages without compliance with flood related building and planning controls.

Medium Flood Risk Precinct

This has been defined as land below the 1% AEP flood that is not subject to a high hydraulic hazard and where there are no significant evacuation difficulties.

Note: In this precinct there would still be a significant risk of flood damage, but these damages can be minimised by the application of appropriate development controls.

Low Flood Risk Precinct

This has been defined as all other land within the floodplain (ie. within the extent of the probable maximum flood) but not identified within either the High Flood Risk or the Medium Flood Risk Precinct.

Note: The Low Flood Risk Precinct is where risk of damages are low for most land uses. The Low Flood Risk Precinct is that area above the 1% AEP flood and most land uses would be permitted within this precinct.

2.4 Which Controls Apply to Proposed Developments?

The development controls apply to all land within a Flood Risk Precinct described above. The type and stringency of controls have been graded relative to the severity and frequency of potential floods, having regard to categories determined by the relevant Floodplain Risk Management Study and Plan or, if no such study or plan exists, council's interim considerations. The categories applicable to each floodplain are depicted on the planning matrices contained in the following schedules:

 Schedule 3 – All floodplains in Sutherland Shire including areas affected by local overland flooding. (Note these controls are interim only until catchment specific Flood Risk Management Plans are prepared as required by the Floodplain Management Manual)

2.4.1 Objectives

- (a) To ensure the proponents of development and the community in general are fully aware of the potential flood hazard and consequent risk associated with the use and development of land within the floodplain.
- (b) To require developments with high sensitivity to flood risk (eg. critical public utilities) be sited and designed such that they are subject to no or minimal risk from flooding and have reliable access.
- (c) Allow development with a lower sensitivity to the flood hazard to be located within the floodplain, subject to appropriate design and siting controls, provided that the potential consequences that could still arise from flooding remain acceptable having regard to the State Government's Flood Policy and the likely expectations of the community in general
- (d) To prevent any intensification of the use of High Flood Risk Precinct or floodways, and wherever appropriate and possible, allow for their conversion to natural waterway corridors.
- (e) To ensure that design and siting controls required to address the flood hazard do not result in unreasonable impacts upon the amenity or ecology of an area.
- (f) To minimise the risk to life by ensuring the provision of appropriate access from areas affected by flooding up to extreme events.
- (g) To minimise the damage to property, including motor vehicles, arising from flooding.
- (h) To ensure that proposed development does not expose existing development to increased risks associated with flooding.

2.4.2 Performance Criteria

- (a) The proposed development should not result in any increased risk to human life.
- (b) The additional economic and social costs which may arise from damage to property from flooding should not be greater than that which can reasonably be managed by the property owner and general community.
- (c) The proposal should only be permitted where effective warning time and reliable access is available for evacuation from an area potentially affected by floods to an area free of risk from flooding. Evacuation should be consistent with any relevant or flood evacuation strategy where in existence.

- (d) Development should not detrimentally increase the potential flood effects on other development or properties either individually or in combination with the cumulative impact of development that is likely to occur in the same floodplain.
- (e) Motor vehicles are able to be relocated, undamaged, to an area with substantially less risk from flooding, within effective warning time.
- (f) Procedures would be in place, if necessary, (such as warning systems, signage or evacuation drills) so that people are aware of the need to evacuate and relocated motor vehicles during a flood and are capable of identifying the appropriate evacuation route.
- (g) Development should not result in significant impacts upon the amenity of an area by way of unacceptable overshadowing of adjoining properties, privacy impacts (eg. by unsympathetic house-raising) or by being incompatible with the streetscape or character of the locality.
- (h) Proposed development must be consistent with ESD principles.
- (i) Development should not prejudice the economic viability of any Voluntary Acquisition Scheme.

2.4.3 Prescriptive Controls

Schedule 3 outlines the controls relevant to the floodplains in the Sutherland Shire area.

2.5 Are There Special Requirements for Fencing?

2.5.1 Objectives

- (a) To ensure that fencing does not result in the undesirable obstruction of the free flow of floodwaters.
- (b) To ensure that fencing does not become unsafe during floods and potentially become moving debris which threatens the integrity of structures or the safety of people.

2.5.2 Performance Criteria

- (a) Fencing is to be constructed in a manner which does not affect the flow of floods so as to detrimentally increase flood affect on surrounding land.
- (b) Ability to be certified by a suitably qualified engineer, that the proposed fencing is adequately constructed so as to withstand the forces of floodwaters, or collapse in a controlled manner to prevent the undesirable impediment of flood waters.

2.5.3 Prescriptive Controls

2.5.3.1 Fencing within a floodway or High FRP will not be permissible except for security/ permeable/ open type/safety fences of a type approved by Council.

- 2.5.3.2 Council will require a Development Application for all new solid (non-porous) and continuous fences in the High and Medium FRP's unless otherwise stated by exempt and complying development provisions which may be incorporated into Council's Environmental Planning Instruments from time to time.
- 2.5.3.3 An applicant will need to demonstrate that the fence would create no impediment to the flow of floodwaters. Appropriate fences must satisfy the following:-
 - (a) An open collapsible hinged fence structure or pool type fence;
 - (b) Other than a brick or other masonry type fence (which will generally not be permitted); or
 - (c) A fence type and siting criteria as prescribed by Council.
- 2.5.3.4 Other forms of fencing will be considered by Council on merit.

2.6 Special Considerations

When assessing proposals for development or other activity within the area to which this Policy applies, Council will take into consideration the following specific matters.

- (a) The proposal does not have a significant direct or cumulative detrimental impact on:
 - i) water quality;
 - ii) native bushland vegetation;
 - iii) riparian vegetation;
 - iv) estuaries, wetlands, lakes or other water bodies;
 - v) aquatic and terrestrial ecosystems;
 - vi) indigenous flora and fauna; or
 - vii) fluvial geomorphology.
- (b) Development pursued to mitigate the potential impact of flooding (eg. house raising) must be undertaken in a manner which minimises the impact upon the amenity and character of the locality.
- (c) The design of car parking (covered or uncovered) and associated driveways should not result in unacceptable environmental or amenity impacts. These unacceptable impacts would include elevated driveways and parking structures which are visually intrusive and overshadowing of adjoining residential properties which exceeds Council's normal standards.
- (d) The proposal must not constrain the orderly and efficient utilisation of the waterways for multiple purposes.
- (e) The proposal must not adversely impact upon the recreational, ecological, aesthetic or utilitarian use of the waterway corridors, and where possible, should provide for their enhancement, in accordance with ESD principles.
- (f) Proposals for house raising must provide appropriate documentation including a report from a suitably qualified engineer to demonstrate the raised structure will not

be at risk of failure from the forces of floodwaters and the provision of details such as landscaping and architectural enhancements which ensure that the resultant structure will not result in significant adverse impacts upon the amenity and character of an area.

- (g) Notwithstanding any other provision where a property is identified within a Voluntary Acquisition Scheme area, Council will only consent to further development for 'concessional' development and 'recreation or non-urban'; provided:
 - (i) the development is for only minor works such as small awnings over existing floor balconies or in-ground swimming pools; and
 - (ii) the development will be permitted provided that the capital investment intended for the property is not greater than the minimum required to provide an acceptable proposal.

Note: Council will not permit any type of development which would be inconsistent with the objective of discouraging further development in areas of high risk and with Council's commitment to the Voluntary Acquisition Scheme.

3.0 WHAT INFORMATION IS REQUIRED WITH AN APPLICATION TO ADDRESS THIS PLAN?

- 3.1 Applications must include information which addresses <u>all</u> relevant controls listed above, and the following matters as applicable.
- 3.2 Applications for Concessional Development (see Schedule 2) to an existing dwelling on Flood Prone Land shall be accompanied by documentation from a registered surveyor confirming existing floor levels.
- 3.3 Development applications affected by this plan shall be accompanied by a survey plan showing:-
 - (a) The position of the existing building/s or proposed building/s;
 - (b) The existing ground levels to Australian Height Datum around the perimeter of the building and contours of the site; and
 - (c) The existing or proposed floor levels to Australian Height Datum.
- 3.4 Applications for earthworks, filling of land and subdivision shall be accompanied by a survey plan (with a contour interval of 0.25m) showing relative levels to Australian Height Datum.
- 3.5 For large scale developments, or developments in critical situations, particularly where an existing catchment based flood study is not available, a flood study using a fully dynamic one or two dimensional computer model may be required. For smaller developments the existing flood study may be used if available and suitable (eg it contains sufficient local detail), or otherwise a flood study prepared in a manner

consistent with the "Australian Rainfall and Runoff" publication, Council's Stormwater Management Provisions and the Floodplain Management Manual, will be required. From this study, the following information shall be submitted in plan form:

- a) Area of inundation
- b) Water surface contours;
- c) Velocity and depth product contours;
- d) Delineation of flood risk precincts relevant to individual floodplains; and
- e) Show both existing and proposed flood profiles for the full range of events for total development including all structures and works (such as revegetation/enhancements).

This information is required for the pre-developed and post-developed scenarios.

- 3.6 Where the controls for a particular development proposal require an assessment of structural soundness during potential floods, the following impacts must be addressed:
 - (a) Hydrostatic pressure;
 - (b) Hydrodynamic pressure;
 - (c) Impact of debris; and
 - (d) Buoyancy forces.

Foundations need to be included in the structural analysis.

SCHEDULE 1

FLOOD COMPATIBLE MATERIALS

BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL	BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL
Flooring and Sub-floor Structure	 Concrete slab-on-ground monolith construction Suspension reinforced concrete slab. 	Doors	 Solid panel with water proof adhesives Flush door with marine ply filled with closed cell foam Painted metal construction Aluminum or Galvanised steel frame
Floor Covering	 Clay tiles Concrete, precast or in situ Concrete tiles Epoxy, formed-inplace Mastic flooring, formed-in-place Rubber sheets or tiles with chemicalset adhesives Silicone floors formed-in-place Vinyl sheets or tiles with chemical-set adhesive Ceramic tiles, fixed with mortar or chemical-set adhesive Asphalt tiles, fixed with water resistant adhesive 	Wall and Ceiling Linings	 Fibro-cement board Brick, face or glazed Clay tile glazed in waterproof mortar Concrete Concrete block Steel with waterproof applications Stone, natural solid or veneer, waterproof grout Glass blocks Glass Plastic sheeting or wall with waterproof adhesive

Wall Structure	Solid brickwork, blockwork, reinforced, concrete or mass concrete	Insulation Windows	 Foam (closed cell types) Aluminum frame with stainless steel rollers or similar corrosion and water resistant material.
Roofing Structure (for Situations Where the Relevant Flood Level is Above the Ceiling)	 Reinforced concrete construction Galvanised metal construction 	Nails, Bolts, Hinges and Fittings	 Brass, nylon or stainless steel Removable pin hinges Hot dipped Galvanised steer wire nails or similar

Electrical and Mechanical Equipment

For dwellings constructed on land to which this Policy applies, the electrical and mechanical materials, equipment and installation should conform to the following requirements.

Heating and Air Conditioning Systems

Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the house above the relevant flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.

Main power supply -

Subject to the approval of the relevant authority the incoming main commercial power service equipment, including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the dwelling from the main power supply.

Fuel -

Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.

Wiring -

All wiring, power outlets, switches, etc., should, to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conduits located below the relevant designated flood level should be so installed that they will be self-draining if subjected to flooding.

Installation -

The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to an elevation of 600 millimetres above the relevant flood level.

Equipment -	Ducting -
All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.
Reconnection -	
Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.	

SCHEDULE 2

LAND USE CATEGORIES

Critical Uses and	Sensitive Uses and	Subdivision	Residential
Facilities	Facilities		
Community facility	Assisted	Subdivision of land	Backpackers
which may provide an	accommodation;	which involves the	accommodation; Boarding
important contribution	Communications	creation of new	houses; Camp or caravan
to the notification or	facility; Hazardous or	allotments, with	park– long-term sites only
evacuation of the	offensive industry or	potential for further	(1); Cluster housing; Dual
community during	storage establishment;	development.	occupancy housing;
flood events; Hospitals;	Housing for older		Dwelling; Dwelling house;
Nuclear activities;	persons or persons		Group homes; Home
Nuclear facility; and	with a disability;		activity; Residential flats;
Nursing Homes.	Institutions;		Residential medical
	Educational		practice; Townhouses;
	establishments; Liquid		Public utility undertakings
	fuel depot; Public		or utility installations
	utility undertakings or		(other than critical
	utility installations		utilities); and villa houses.
	(including generating		
	works) which are		
	essential to evacuation		
	during periods of		
	flood or if affected		
	would unreasonably		
	affect the ability of the		
	community to return		
	to normal activities		
	after flood events;		
	Telecommunication		
	facilities; and Waste		
	disposal.		

(1) As defined by the Local Government (Caravan Park and Camping Grounds) Transitional Regulation 1993.

Commercial or	Tourist Related	Recreation or	Concessional Development
Industrial		Non-urban Uses	
Arts and craft centre; Brothels; Bulky goods retailing; Bus depot; Business premises; Car parking; Child care centre; Convenience store; Food shop; Hotel; Industry; Junk yard; Liquid fuel depot; Medical facility; Motel; Motor showroom; Nightclub; Offensive industry; Passenger transport terminal; Place of assembly; Place of public worship; Plant	Tourist Related Development Caravan park - short term sites (1) only	Recreation or Non-urban Uses Agriculture; Animal establishment; Aquaculture; Extractive industry; Marina; Recreation areas and minor ancillary structures (eg. toilet blocks or kiosks); Swimming enclosure; Tennis court (private); and Watercraft facility.	(a) In the case of residential development: (i) An addition or alteration to an existing dwelling of not more than 10% or 30m² (whichever is the lesser) of the habitable floor area which existed at the date of commencement of this Plan; (ii) The construction of an outbuilding with a maximum floor area of 20m²; or (b) In the case of other development: (i) an addition to existing premises of not more than
terminal; Place of assembly; Place of			development:
club; Repair centre; Restaurant; Road transport terminal; Service station; Sex			existed at the date of commencement of this DCP; (ii) A change of use which
shop; Shop; Tourist information centre; Vehicle and mechanical repair			does not increase flood risk having regard to property damage and personal safety; or
premises; Veterinary hospital; Warehouse; Waste recycling and management centre.			(iii) Subdivision which does not involve the creation of new allotments with potential for further
management centre.			development.

⁽¹⁾ As defined by the Local Government (Caravan Park and Camping Grounds) Transitional Regulation 1993.

All Floodplains in the Sutherland Shire Area Including Areas Affected by Local Overland Flooding Schedule – 3

	Flood Risk Precincts (FRPs)																							
	LOW FLOOD RISK							MEDIUM FLOOD RISK							HIGH FLOOD RISK									
Planning Consideration	Critical Uses & Facilities	Sensitive Uses & Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Non- Urban	Concessional Development	Critical Uses & Facilities	Sensitive Uses & Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Non- Urban	Concessional Development	Critical Uses & Facilities	Sensitive Uses & Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Non- Urban	Concessional Development
Floor Level		3		2,4	2,4	2,4	1	5				2,4,	2,4, 6	2,4, 6	1	5,6							1	5,6
Building Components & Method		2		1	1	1	1	1				1	1	1	1	1							1	1
Structural Soundness		3		2	2	2	2	2				1	1	1	1	1							1	1
Flood Effects		2	2	2	2	2	2	2			1	2	2	2	2	2							1	1
Car Parking And		1,3,		1,3,	1,3,	1,3,	2,4,	6,7,				1,3,	1,3,	1,3,	2,4,	6,7,							2,4,	6,7,
Driveway Access		5,6,		5,6,	5,6,	5,6,	6,7,	8				5,6,	5,6,	5,6,	6,7,	8							6,7,	8
Evecuation		7,8	6	7,8	7,8	7,8	8	2.2			6	7,8	7,8	7,8	8	2.2							8	2.2
Evacuation		2,3, 4,5	6	2,3, 4	1,2 3,4	2,3, 4	3,4, 5	2,3,			6	2,3, 4	1,2, 3,4	2,3, 4	3,4, 5	2,3, 4							3,4, 5	2,3, 4
Management And Design		4,5	1	4	3,5	3,5	2,3, 5	2,3, 5			1	+	3,5	3,5	2,3, 5	2,3, 5							2,3, 5	2,3,

Not Relevant Unsuitable Land Use

GENERAL NOTES

- The relevant environmental planning instruments (generally the Local Environmental Plan) identify development permissible with consent in various zones in the LGA. Notwithstanding, constraints specific to individual sites may preclude Council granting consent for certain forms of development on all or part of a site. This above matrix identifies where flood risks are likely to determine where certain development types will be considered "potentially unsuitable" due to flood related risks.
- Filling of the site, where acceptable to Council, may change the FRP considered to determine the controls applied in the circumstances of individual applications.
- Refer to Section 2.6 of the DCP for Special considerations such as for house raising proposals and development of properties identified for voluntary acquisition.
- Refer to Section 2.5 of the DCP for planning considerations for proposals involving only the erection of a fence. Any fencing that forms part of a proposed development is subject to the relevant flood effects and Structural Soundness planning considerations of the applicable land use category.
- Terms used are defined in the glossary of this plan and Schedule 2 specifies development types included in each land use category. These development types are generally as defined within Environmental Planning Instruments applying to the LGA.

FLOOR LEVELS

- All floor levels to be no lower than the 5% AEP flood unless justified by site specific assessment subject to Council approval.
- Habitable floor levels to be no lower than the 1% AEP flood level plus 500mm freeboard.
- Habitable floor levels to be no lower than the PMF level. Non-habitable floor levels to be no lower than the PMF level unless justified by a site specific assessment subject to Council approval.
- Non-habitable floor levels to be no lower than the 5% AEP flood unless justified by site specific assessment subject to Council approval.
- Floor levels to be equal to or greater than the design floor level. 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 is to be as high as practical, and, when undertaking alterations or additions no lower than the existing
- A restriction is to be placed on the title of the land, pursuant to Section 88B of the Conveyancing Act, where the lowest habitable floor area is elevated more than 1.5m above finished ground level, confirming that the undercroft area is not to be enclosed.

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

STRUCTURAL SOUNDNESS

- Engineer's report required to certify that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a 1% AEP flood plus 500mm freeboard.
- Applicant to demonstrate that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a 1% AEP flood plus 500mm freeboard. An engineer's report may be required.
- Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including a PMF. An engineers report may be required.

FLOOD EFFECTS

- Engineer's report required to certify that the development will not increase flood effects elsewhere, having regard to: (i) loss of flood storage; (ii) changes in flood levels, flows and velocities caused by alterations to the flood conveyance; and (iii) the cumulative impact of multiple potential developments in the floodplain.
- The flood impact of the development to be considered to ensure that the development will not increase flood effects elsewhere, having regard to: (i) loss of flood storage; (ii) changes in flood levels, flows and velocities caused by alterations to the flood conveyance; and (iii) the cumulative impact of multiple potential developments in the floodplain. An engineer's report may be required.

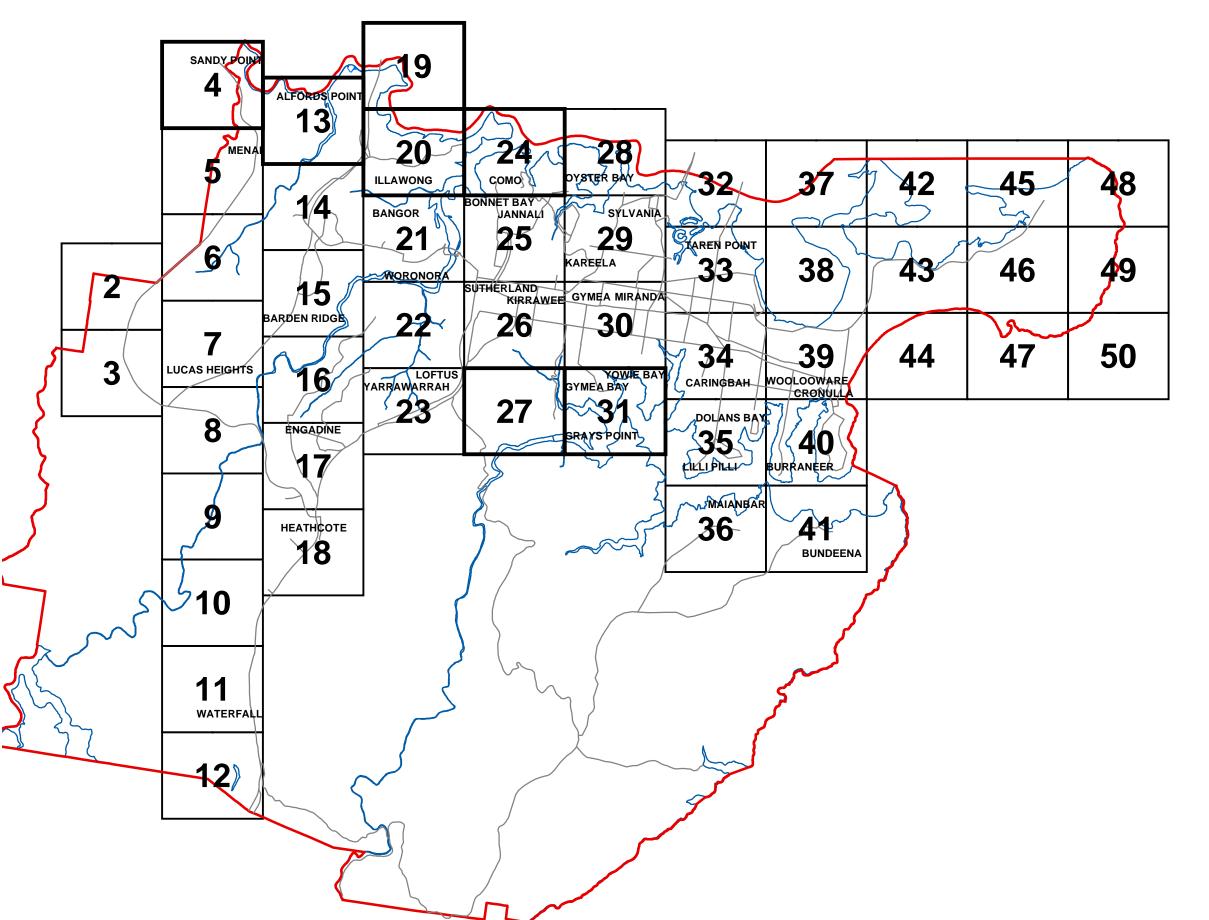
CAR PARKING AND DRIVEWAY ACCESS

- The minimum surface level of open car parking spaces or carports shall be as high as practical, but no lower than the 1% AEP flood or the level of the crest of the road at the location where the site has access. In the case of garages, the minimum surface level shall be as high as practical, but no lower than the 1% AEP flood plus 200mm freeboard.
- The minimum surface level of open car parking spaces, carports or garages, shall be as high as practical.
- Garages capable of accommodating more than 3 motor vehicles on land zoned for urban purposes, or enclosed car parking, must be protected from inundation by floods equal to or greater than the 1% AEP flood.
- The driveway providing access between the road and parking space shall be as high as practical and generally rising in the egress direction.
- 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. A lesser standard may be accepted for single detached dwelling houses where it can be demonstrated that risk to human life or property would not be compromised subject to Council approval.
- Enclosed car parking and car parking areas accommodating more than 3 vehicles (other than on Rural zoned land), with a 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.
- Restraints or vehicle barriers to be provided to prevent floating vehicles leaving a site during a 1% AEP flood
- The crest of the driveway providing access between the road and enclosed car parking shall be a minimum of 200mm above the road level.

EVACUATION

- Reliable access for pedestrians or vehicles required during a 1% AEP flood.
- Reliable access for pedestrians or vehicles is required from the building, commencing at a minimum level equal to the lowest habitable floor level to an area of refuge above the PMF level.
- Adequate Flood Warning Systems, Signage and Exits are available to allow safe and orderly evacuation without increased reliance upon the SES or other authorised emergency services personnel. The development is to be consistent with any relevant flood evacuation strategy, Floodplain Risk Management Plan adopted by Council or similar plan.
- The evacuation requirements of the development are to be considered. An engineers report will be required if circumstances are possible where the evacuation of persons might not be achieved within the effective
- warning time. Applicant to demonstrate that evacuation in accordance with the requirements of this DCP is available for the potential development flowing from the subdivision proposal. 6.
- MANAGEMENT AND DESIGN

- Applicant to demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this DCP.
- Site Emergency Response Flood Plan required where floor levels are below the design floor level, (except for single dwelling-houses). Applicant to demonstrate that area is available to store goods above the 1% AEP flood level plus 500mm freeboard.
- 3. Applicant to demonstrate that area is available to store goods above the PMF level.
- No storage of materials below the design floor level which may cause pollution or be potentially hazardous during any flood.

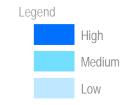


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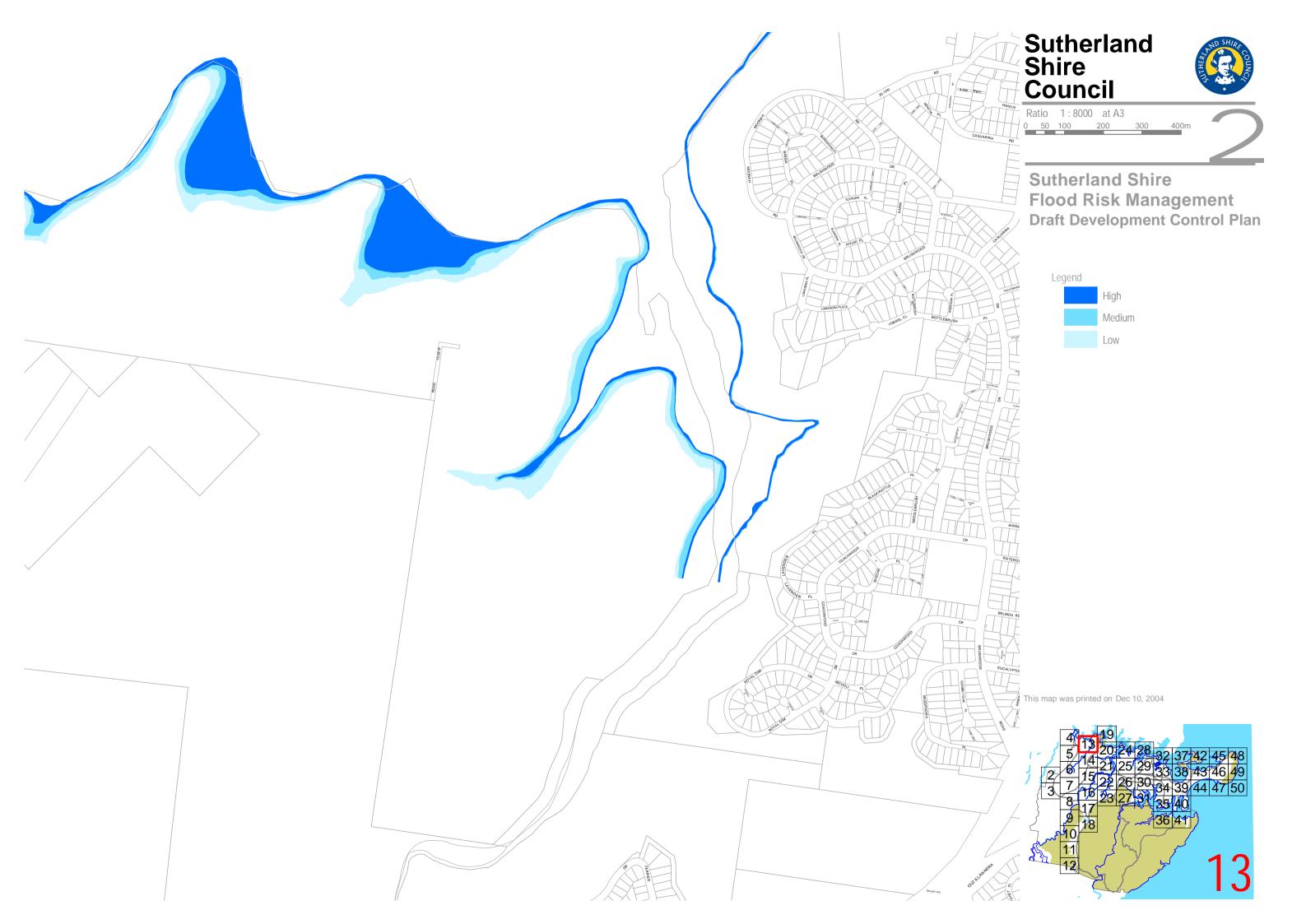
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Sutherland Shire Flood Risk Management Draft Development Control Plan



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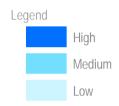


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Sutherland Shire Flood Risk Management **Draft Development Control Plan**



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