

Contents

1	Purpose of these Guidelines.....	3
2	Application Information	3
2.1	When is a development application required?	3
2.2	Considerations when preparing a development application.....	3
2.3	How can I get advice on my application?.....	7
2.4	What notification and consultation do I need to do?	7
2.5	What type of flood information is available?	7
3	Caravan Parks Compliance Report	8
3.1	Existing Flood Information	8
3.2	Compliance Assessment	9
3.3	Development Plans.....	9
3.4	Survey Details.....	10
3.4.1	Additional Survey Details	10
3.4.1	Fill or Excavation Details	10
3.5	Hydraulic Impact Assessment Report.....	10
3.6	Structural Engineering Certificate	11
3.7	Geotechnical Engineering Certificate.....	11
3.8	Flood Emergency Management Plan.....	11
3.9	Evacuation Capability Assessment.....	12
3.10	Community Consultation Details	12
3.11	Flood Compliance Report Checklists.....	12
	Schedule A1 – Checklists	13
	Schedule A2 - Flood Information Enquiries and Flood Certificates.....	16
	Schedule A3 – Technical Reporting Requirements	18
	Schedule A4 – Flood Proofing	23
	Schedule A5 - Policy Context – Management of Caravan Parks in Flood Prone Areas	29
	Flood Planning Concepts	31
	Caravan Park Flood Risk Precincts.....	32
	High Caravan park flood risk precinct	33
	Medium Caravan park flood risk precinct.....	33

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

Low Caravan park flood risk precinct.....	34
Evacuation Capability	34
Climate Change Implications	34
Schedule A6 - Determining Evacuation Capability.....	37

Figures

Figure 1: Steps to follow when preparing an application to Council	6
Figure 2: Procedure for obtaining a Flood Certificate from Council	17
Figure 3: Floodplain Risk Management Process - Source: 2005 NSW Floodplain Development Manual	30
Figure 4: Floodplain Aerial View – Flood planning area.....	31
Figure 5: Cross section through floodplain - hydraulic categories within flood planning area	32
Figure 6: Determining Caravan Park Flood Risk Precincts.....	33
Figure 7: Coastal Flooding Consideration in Development Assessment Process.....	35

1 Purpose of these Guidelines

The purpose of these Guidelines is to providing supporting information and to outline the process to be followed when preparing a development application for a caravan park, or for alterations and additions within a caravan park, in accordance with Chapter G10: Caravan Parks in Flood Prone Areas of Shoalhaven DCP 2014.

2 Application Information

2.1 When is a development application required?

A development application is required for:

- Development for an activity involving caravan parks, manufactured homes estates or the installation of a manufactured home, moveable dwelling or associated structure;
- New and extensions to caravan parks, camping grounds and manufactured home estates;
- Converting campsites to short-term or long-term sites; or
- Construction of buildings.

These applications fall under the EP&A Act.

A section 68 application under the LG Act is required for the following circumstances:

- Operation of a caravan park or camping ground (s.68(1) Part F-2);
- Operation of a manufactured home estate (s.68(1) Part F-3);
- Installation of a manufactured home, moveable dwelling or an associated structure on flood liable land in a manufactured home estate (s.68(1) Part A-1);
- Installation of a relocatable home, rigid annexe or associated structure on flood liable land in a caravan park or camping ground.

This means that an application must be submitted to Council and approval obtained prior to any activity, installation or works are carried out.

Note: You DO NOT need consent for the installation of tents, campervans or caravans (as per exemptions granted under clause 74 of the Local Government (Manufactured Home Estate, Caravan Park, Camping Ground and Moveable Dwellings) Regulation 2005).

2.2 Considerations when preparing a development application

To prepare your application to Council follow the steps below or alternatively follow the steps shown in **Figure 1**:

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

<p><i>Step 1:</i></p>	<p>Read Chapter G10 and these Guidelines carefully and seek assistance from Council officers as required.</p>
<p><i>Step 2:</i></p>	<p>Determine what flood information is available for your site and whether or not Council has adopted a floodplain risk management plan for the area via www.shoalhaven.nsw.gov.au</p>
<p><i>Step 3:</i></p>	<p>If flood information is available, obtain a flood certificate.</p> <p>When applying for a flood certificate, in the comments box, state that the flood certificate is for a caravan park. If the caravan park flood risk precinct is available, this will ensure it is provided.</p> <p>If no flood information is available from Council, you may be required to engage a suitably qualified engineer recognised under the National Engineers Register (NER) to undertake a flood assessment report. Refer to Schedule 3 for more information on what is required for such an assessment.</p>
<p><i>Step 4:</i></p>	<p>Identify the type of approval you are seeking:</p> <ul style="list-style-type: none"> • approval for a new caravan park, an extension or change of use to an existing caravan park; • approval for a new installation; or • approval to operate. <p>If you are applying for an installation, identify the installation/activity type (see Schedule 1 of Chapter G10):</p> <ul style="list-style-type: none"> • Long term moveable dwelling or relocatable home; • Privately owned moveable dwelling - short term; • Park owned moveable dwelling - short term; • Rigid annexe; • Minor associated structure; or • Large associated structure <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Note: For applications relating to substantive structures and buildings, such as manager’s residence, office, community building, amenity blocks or emergency refuges please refer to controls in Chapter G9: Development on Flood Prone land.</p> </div> <p>You do NOT need approval for the installation of tents, campervans or caravans.</p>
<p><i>Step 5:</i></p>	<p>Prepare / review the caravan park Flood Emergency Management Plan (See Section 3.8 of these Guidelines).</p>
<p><i>Step 6:</i></p>	<p>Determine the Caravan Park Flood Risk Precinct. A property may be located in more than one Caravan Park Flood Risk Precinct, in which case the assessment must consider controls relative to each precinct (See Schedule 5 of these Guidelines for more detail).</p>

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

<i>Step 7:</i>	Review the appropriate objectives, mandatory controls, performance criteria and acceptable solutions (See Section 5 of Chapter G10) to determine which criteria are relevant to your proposal.
<i>Step 8:</i>	Determine what type of assessment you are preparing: <ul style="list-style-type: none">• performance based assessment (standard).• merit based assessment (non-standard).
<i>Step 9:</i>	Using the appropriate performance criteria compile your Caravan Park Compliance Report (See Schedule 3 of these Guidelines). Choose the correct checklist (See Schedule 1 of these Guidelines), to ensure you have included all the required documentation.
<i>Step 10:</i>	Submit your Caravan Park Compliance Report to Council.

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

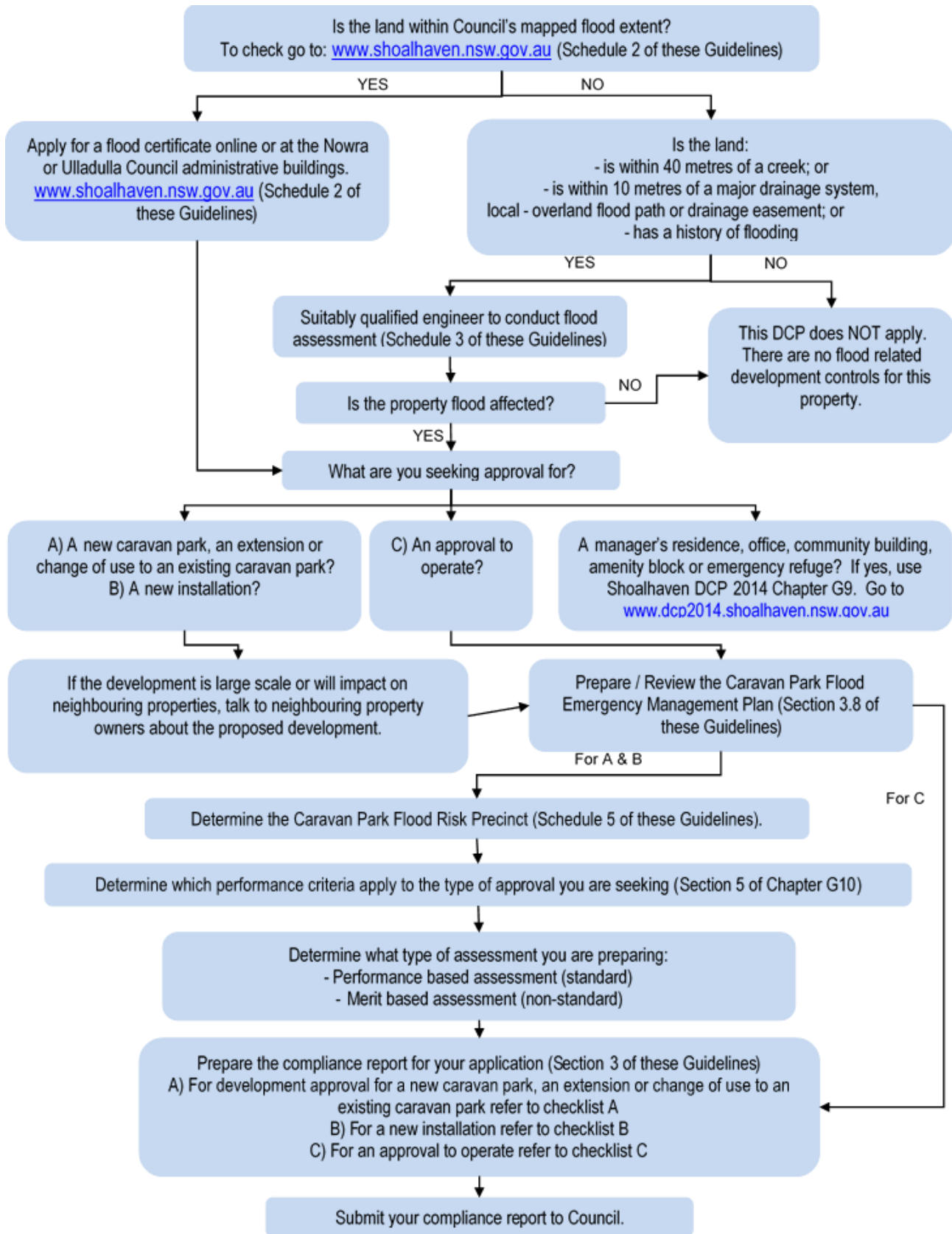


Figure 1: Steps to follow when preparing an application to Council

2.3 How can I get advice on my application?

For advice when preparing small scale applications, speak to one of Council's Development Planners. For large scale development or installation projects, it may be beneficial to arrange a meeting with Council's Development Advisory Unit. The Unit is made up of senior officers of the Council who provide a "one stop" venue for the gathering of information by prospective applicants and give advice on issues to be addressed in the application and how particular problems may be resolved.

It is the duty of the applicant to ascertain from Council whether consent for any proposed development or work is required. You can confirm this with Council's Planning, Environment and Development Services Group on telephone (02) 4429 3111.

2.4 What notification and consultation do I need to do?

Applicants are urged to consult with adjoining landowners, likely to be affected by the proposal. Consultation may allow the concerns of affected parties to be taken into account in the design process and may therefore minimise any delays in the processing of the application.

All development applications on flood prone land will be advertised publically (in accordance with Council's Community Consultation Policy for Subdivision & Development Applications).

Submissions received will be considered by Council. You may be asked by Council to address particular issues raised in the submissions.

2.5 What type of flood information is available?

The controls that apply to certain development or installations in caravan parks on flood prone land will depend on the caravan park flood risk precinct/s for a site. This can only be determined if flood information is available.

Due to the large number of water bodies in Shoalhaven, available information for different catchments varies significantly and could range from historical information to very detailed flood modelling data formulated as part of a Flood Study or Floodplain Risk Management Study and Plan.

It is therefore necessary to determine what existing flood information is available for your site. You can determine the type of information available by checking Council's website at www.shoalhaven.nsw.gov.au. See Schedule 2 Flood Information Enquiries and Flood Certificates for further information.

Note: There are a number of areas within the Shoalhaven for which flood information, specific to the proposed development or installation is not available. In areas where Council has no flood information but the land is:

- is within 40 metres of a creek; or
- is within 10 metres of a major drainage system, local overland flood path or drainage easement; or
- has a history of flooding; or
- is considered to be flood prone by Council's Floodplain Engineer.

A Flood Assessment Report is required to determine the flood affectation of the property (See Schedule 3 of these Guidelines). If Council has flood information, this can be provided to you in the form of a flood certificate (See Schedule 2 of these Guidelines).

3 Caravan Parks Compliance Report

Compliance Reports are required for:

- approval for a new caravan park, an extension or change of use to an existing caravan park;
- approval for a new installation; or
- approval to operate.

Requirements of a Compliance Report vary for each installation/activity type. For individual requirements refer to Schedule 1 of these Guidelines, checklist A, B or C.

This section details all possible requirements for inclusion in a Compliance Report.

3.1 Existing Flood Information

Flood information can be provided as either:

1. A current flood certificate

Where available, an up to date flood certificate must be submitted with your development application (refer Schedule 2 of these Guidelines for information on how to obtain this document and whether you need a basic or detailed certificate).

OR

2. A flood assessment report

A flood assessment report is needed in the following two instances:

- a) Where flood data is not available but the site:
- is within 40 meters of a creek;

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

- is within 10 meters of a major drainage system, local overland flood path or drainage easement; or
- has a history of flooding; or
- is considered to be flood prone by Council's Floodplain Engineer

OR

- b) Where flood data is available but may require interpolation, extrapolation, or refinement to greater detail.

Where a flood assessment report is required, the report must be submitted with the development application as part of the flood DCP compliance report.

A flood assessment report must be prepared by a suitably qualified and experienced engineer recognised under the National Engineers Register (NER) in this field. The full name of the person who prepared the report, relevant qualifications and registration number are to be provided on the front page of the report.

Please refer to Schedule 3 in these Guidelines for a detailed description on what information is required within such a report.

3.2 Compliance Assessment

There are two types of assessment which can be submitted:

1. "Performance based" assessment which uses the identified acceptable solutions. A performance based assessment is the most straight forward application type. This means that your compliance report demonstrates that the performance criteria are being met using acceptable solutions (Section 5 of Chapter G10) and the development control matrix (Schedule 2 of Chapter G10).

It is the responsibility of the applicant in such circumstances to demonstrate to Council that the proposal meets the mandatory controls and acceptable solutions in Section 5 of Chapter G10.

2. "Merit based" assessment which identifies other solutions to meet the objectives and performance criteria.

It is the responsibility of the applicant in such circumstances to demonstrate to Council that the proposal satisfies the objectives, mandatory controls and performance criteria in Section 5 of Chapter G10.

It is expected that all relevant objectives, performance criteria and mandatory controls will be listed, explaining how each individual criteria has been met.

3.3 Development Plans

Plans for the proposed development, indicating compliance with all relevant development controls, must be submitted. This must include a current Community Map of the caravan park.

3.4 Survey Details

All survey details are to be incorporated into the Community Map. The survey details must be prepared by a Registered Surveyor and must indicate the following:

- a) Existing ground levels at the proposed development site;
- b) The floor levels of all existing buildings or long term and permanent structures to be retained as well as proposed floor levels for all new buildings and structures;
- c) The location of any existing buildings or structures; and
- d) Where the land is only partly flood prone, provide the contour lines showing the 1% AEP flood height and flood planning level.
- e) Where multiple Caravan Park Flood Risk Precincts occur on the site (i.e. High and Medium) the boundaries of these are to be mapped.

All levels must be relative to Australian Height Datum (AHD). Levels relating to an arbitrary assumed datum are not acceptable.

3.4.1 Additional Survey Details

Council may ask for additional survey detail. All additional survey detail, as outlined below, is to be incorporated into the Community Map.

- a) Existing ground levels at 0.2 metre contour intervals across the entire property (contours are to extend across adjoining land to enable suitable consideration of the effect of the proposed development);
- b) The ceiling heights of existing structures that are retained as well as for proposed new buildings and structures;
- c) Existing and/or proposed drainage lines (including sizes and if piped or open channel) or easements and watercourses, or other means of conveying stormwater that are relevant to the flood characteristics of the site.

3.4.1 Fill or Excavation Details

A development application that includes significant land filling must be supported by the relevant documentation as required under Chapter G9: Development on Flood Prone Land.

3.5 Hydraulic Impact Assessment Report

For some development a Hydraulic Impact Assessment Report will be required (see Schedule 3 of these Guidelines). The report shall demonstrate that the development will not increase flood hazard or flood damage to other properties or adversely affect flood behaviour for a 5% AEP flood event up to the PMF scenario.

A Hydraulic Impact Assessment Report must be prepared by a suitably qualified and experienced civil engineer recognised under the National Engineers Register (NER) in this

field. The full name of the person who prepared the report, relevant qualifications and registration number are to be provided on the front page of the report.

3.6 Structural Engineering Certificate

Some development may require a Structural Engineering Certificate to ensure that the proposed structures can withstand flood forces including debris and buoyancy forces up to a specified flood scenario (see Schedule 3 of these Guidelines).

Please refer to Schedule A3 of these Guidelines to confirm the level of certification required. Schedule 3 provides suggested structural conditions for developments affected by flood waters. Consultation with the Building Code of Australia - Construction of Buildings in Flood Hazard Areas – Standard 2012 is also recommended.

3.7 Geotechnical Engineering Certificate

Flooding of developed areas has the potential to cause significantly reduced bearing capacities of building foundations and, for masonry structures, these may lead to capacity failures. As such, some proposed development may require certification of building foundations by a chartered geotechnical practitioner especially in light of changing flood behaviour due to climate change and sea level rise.

3.8 Flood Emergency Management Plan

All caravan parks require a Flood Emergency Management Plan (FEMP) outlining the risk to the caravan park and how it is to be managed. The FEMP must demonstrate that permanent, fail-safe and maintenance free measures are incorporated in the development to ensure that the timely, orderly and safe evacuation of people is possible from the area and that it will not add significant cost and disruption to the community or the SES. You will require the services of a suitably qualified and experienced engineer recognised under the National Engineering Register (NER) to assist in completing the FEMP, in particular to prepare Part C No. 4 to Part D (inclusive) and Part G. Refer to Supporting Document 2 for the recommended template for a FEMP.

Please note, this template can be altered to suit the individual needs of a caravan park. For example, it may be preferred to move evacuation actions (i.e. when evacuation is triggered, how evacuation is conducted, who conducts evacuation) to the front of the document. The table located in Schedule 6 is also to be included in the FEMP.

The FEMP may require the installation of flood marker posts or a more sophisticated flash flood warning system. These must be in appropriately visible locations within the caravan park and are to be maintained in working order.

3.9 Evacuation Capability Assessment

Where the FEMP requires the caravan park manager to execute evacuation measures to move people, animals and vans or the like to refuge areas within or outside the caravan park, an evacuation capability assessment is required. Such an assessment will be undertaken by a suitably qualified professional and must assess whether the available warning time and resources are adequate to ensure the orderly and safe evacuation of people, animals and property from the caravan park. Where appropriate, this will include an assessment of the adequacy of quick release tie downs where used, the serviceability of draw bars and wheels, the ability to quickly detach services, as well as any impediments to evacuation posed by towable dwellings attached to non towable structures or objects.

The assessment will also address the evacuation implications of growth of the caravan park over the following years and identify constraints to the likely growth if any such constraints exist.

The Evacuation Capability Assessment needs to be signed off by the caravan park manager annually to receive approval to operate. This is to ensure that caravan park managers are aware of their responsibilities for maintaining the evacuation capability of the caravan park.

3.10 Community Consultation Details

Some development may require a report on community consultation that was undertaken as part of the pre-development investigations. The report will note all issues raised and how they were addressed.

Please note that Council may undertake further community consultation in accordance with Council's Community Consultation Policy - for Development Applications (Including Subdivision) and the Formulation of Development Guidelines and Policies.

3.11 Flood Compliance Report Checklists

Checklists A, B and C detail mandatory items to be submitted as part of the caravan park.

Compliance Report. Non-mandatory items are also listed in the checklists. Refer to Schedule 1 of these Guidelines or check with Council's Planning, Environment and Development Group on (02) 4429 3111, as to which non-mandatory items need to be provided with your application.

Schedule A1 – Checklists

Checklist A – Caravan Park Compliance Report – new, extension, or changed use of caravan park

Mandatory items to be submitted with an application for a new park or new extension or change of use to an existing caravan park include:

MANDATORY ITEMS	SUPPLIED
Current Flood Certificate and/or Flood Assessment Report which includes flood risk precinct information	
Compliance Assessment	
Development Plans (e.g. updated community map/site plan)	
Survey Plan	
Hydraulic Impact Assessment Report (for development located in medium and high caravan park flood risk precincts)	
Flood Emergency Management Plan	
Evacuation Capability Assessment	

The below items may be required to be submitted with an application for a new park or new extension or changed use of an existing caravan park (Schedule 1 of Chapter G10):

	REQUIRED?	SUPPLIED
Additional Survey Information (inserted into Survey Plan)		
Fill or Excavation Details		
Structural Engineering Certificate		
Geotechnical Engineering Certificate		
Community Consultation Details		

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

Checklist B – Caravan Park Compliance Report – new installation

Mandatory items to be submitted with an application for a new installation include:

MANDATORY ITEMS	SUPPLIED
Current Flood Certificate or Flood Assessment Report including Flood Risk Precinct Information	
Compliance Assessment	
Development Plans (e.g. updated community map/site plan)	
Survey Plan	

The below items may be required to be submitted with an application for a new installation (refer Schedule 1 of Chapter G10):

	REQUIRED?	SUPPLIED
Additional Survey Information (inserted into Survey Plan)		
Fill or Excavation Details		
Hydraulic Impact Assessment Report		
Structural Engineering Certificate		
Geotechnical Engineering Certificate		
Flood Emergency Management Plan		
Evacuation Capability Assessment		
Community Consultation Details		

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

Checklist C – Caravan Park Compliance Report – approval to operate

Where NO changes have occurred since the last approval to operate was granted, below are the mandatory items to be submitted with an application for approval to operate:

MANDATORY ITEMS – NO changes since last approval to operate	SUPPLIED
Signed statement stating: no changes to the caravan park have occurred since the last approval to operate was granted	
Signed Evacuation Capability Assessment	
Proof that actions identified in the Flood Emergency Management Plan and Evacuation Capability Assessment are implemented	

Where changes have occurred since the last approval to operate was granted, below are the mandatory items to be submitted with an application for approval to operate:

MANDATORY ITEMS – changes since last approval to operate	SUPPLIED
Current Flood Certificate or Flood Assessment Report including Caravan Park Flood Risk Precinct Information	
Flood Emergency Management Plan	
Evacuation Capability Assessment	
Survey Plan	
Current Community Plan	

The below items may be required to be submitted with an application for approval to operate (refer Schedule 1 of Chapter G10):

	REQUIRED?	SUPPLIED
Additional Survey Information		
Proof that actions identified in the Flood Emergency Management Plan and Evacuation Capability Assessment are implemented.		

Schedule A2 - Flood Information Enquiries and Flood Certificates

One component of your application is to determine whether the land proposed for development is flood prone. To do this you can:

- a) Look at Council's online mapping by:
 - i. Searching Council's website www.shoalhaven.nsw.gov.au - the zoning details of properties within the Shoalhaven can be found in the LEP maps online. Where council has flood information, this is shown on Council's online mapping. Alternatively you can look at the individual catchment maps in the flood risk section.
 - ii. Attending Council's Customer Service Counter in the Administration Building to view the mapping, or
 - iii. Contacting Council by either phone, email or in writing and request the flood information for a subject site.

OR

- b) Consult the Section 10.7 Planning Certificate

A 10.7 Planning Certificate for a parcel of land may state whether or not the land is subject to "flood related development controls".

Please note that land may still be flood prone even though the 10.7 Planning Certificate contains no reference to flooding. Historical information is not contained in certificates and further research should be undertaken if the property is in the vicinity of a watercourse or if the contours suggest a local flowpath may cross the land. While existing flood information may not exist there is the possibility that a property:

- is within 40 metres of a creek; or
- is within 10 metres of a major drainage system, local overland flood path or drainage easement; or
- has a history of flooding; or
- is considered to be flood prone by Council's Floodplain Engineer and therefore further investigations by a suitably qualified engineer would be warranted.

A 10.7 Planning Certificate can be obtained by contacting Council.

If the property is flood affected you will need to obtain a Flood Certificate from Council. An application fee applies in accordance with Council's Fees and Charges. Figure 2 details the procedure for making a flood certificate request.

The Flood Certificate is required to be submitted with your development application. Please note that there are two types of certificates available, a basic and a detailed flood certificate. You will need to specify which type you are applying for.

A basic flood certificate will contain the following information (if available):

- a. The 1% AEP flood level and the flood planning level (including the relevant sea level rise component when available) for the individual property;
- b. The hydraulic and hazard categorisation as per the NSW Floodplain Development

- Manual for the individual property; and
- c. The source of the provided data.

A detailed flood certificate will include additional information such as PMF, 5% AEP, 20% AEP flood levels (including the relevant sea level rise component when available) and flood velocity. This information is generally required by structural engineers in order to provide hydraulic impact assessment reports for a development.

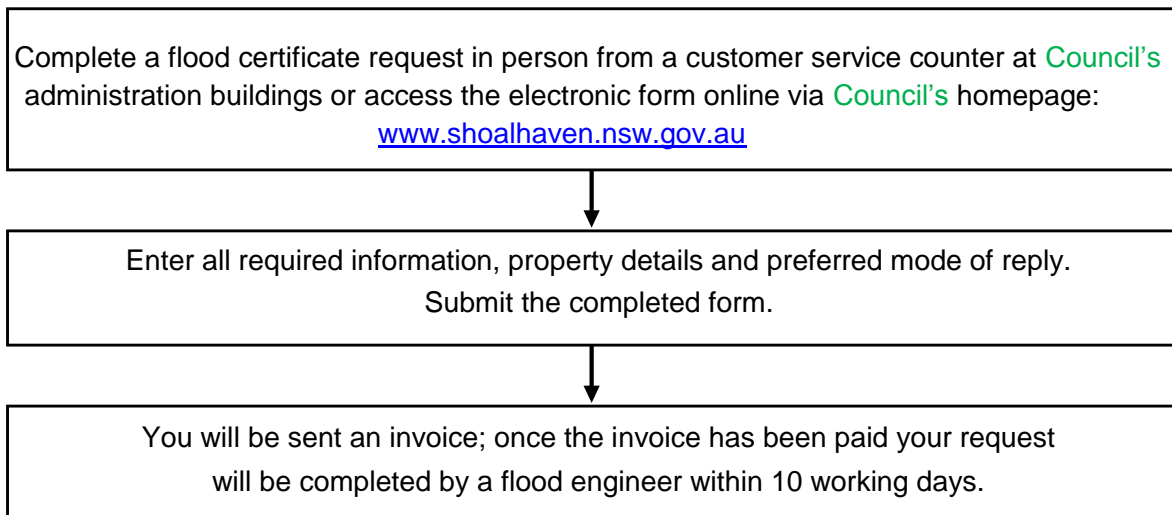


Figure 2: Procedure for obtaining a Flood Certificate from Council

Note: In order to prevent misunderstandings and in accordance with Council policy, Public Access to Council Information Policy, no verbal advice will be provided. Instead, you will be referred to Council's relevant LEP, any relevant Flood Study or Floodplain risk management plan, or you may be requested to obtain a flood certificate.

Schedule A3 – Technical Reporting Requirements

Flood Assessment Report

A Flood Assessment Report must be prepared by a suitably qualified and experienced engineer recognised under the National Engineers Register (NER) in this field. The full name of the person who prepared the report, relevant qualifications and registration number are to be provided on the front page of the report. The assessment report provides information on existing flood risk for a catchment and is to be commensurate with the NSW Floodplain Development Manual and must include the following information:

- a) A description of the creek or drainage system that is relevant to the flood characteristics of the site, whether located on, adjacent to or remote from the development site;
- b) A plan showing cross-sections through the site. As a guide, the following cross section information should be provided:
 - A minimum of 5 cross-sections, at a maximum distance of 20m apart, should be taken through the site, perpendicular to the likely flow path (i.e. the direction of the cross-section may not necessarily be in a single straight line);
 - One cross-section should be at the upstream end and one cross-section at the downstream end of the proposed development site;
 - Cross-sections should extend at least as high as the highest flood level available at the site and if possible be wide enough to cover the full width of the floodplain at that location; and
 - The cross-sections should be plotted at a suitable exaggerated scale (i.e. the vertical scale is not necessarily the same as the horizontal scale).
- c) Flood levels for the PMF, 1%, 2%, 5% and 10% AEP events for the predevelopment scenario (all assumptions, calculations and modelling output tables must be provided);
- d) Flood velocities and vectors for the 1% AEP event for the predevelopment scenario (all assumptions, calculations and modelling output tables must be provided);
- e) Provisional hazard categories based on depth and velocity as well as other obvious hazards such as evacuation difficulties as per the requirements of the 2005 NSW Floodplain Development Manual;
- f) Provisional Hydraulic categories based on depth and velocity as per the requirements of the 2005 NSW Floodplain Development Manual;
- g) Plans showing the results of (c) to (f) as well as the location of the proposed development; and
- h) Caravan Park Flood Risk Precinct/s as per Schedule 5 of these Guidelines.

Please note:

- dot point a) The modelling shall include climate change considerations as per Council's adopted sea level rise projections.
- dot point b) The modelling shall include a 50% and 100% blockage analysis of all existing drainage structures that may affect the development site.
- dot point c) Localised flow effects shall be investigated and reported on where relevant.
- dot point d) The roughness coefficients used shall allow for fully vegetated stream conditions in order to account for potential revegetation of degraded areas without impact on flood levels.
- dot point e) In areas where local sub-catchment flooding, such as flows from drains, overland flow paths or similar, interact with overall catchment flooding from waterways and lakes; or, with ocean inundation a joint probability analysis of flood behaviour shall be undertaken.

Hydraulic Impact Assessment Report

For some development a Hydraulic Impact Assessment is required as part of the Caravan Park Compliance Report, demonstrating that the development will not increase flood hazard or flood damage to other properties or adversely affect flood behaviour for a 5% AEP up to the PMF scenario. Flooding from all possible sources must be taken into account.

A Hydraulic Impact Assessment/Report must be prepared by a suitably qualified and experienced civil engineer recognised under the National Engineers Register (NER) in this field. The full name of the person who prepared the report, relevant qualifications and registration number are to be provided on the front page of the report.

This Schedule describes two methods for assessing hydraulic impacts of proposed developments. The two methods are:

- Assessment method 1 — Cross-section Analysis (No Computer Modelling);
- Assessment method 2 — Use of Existing Flood Study data or Preparation of a Site-Specific Model (Computer Modelling).

Method 1 will be sufficient for small scale development proposals. For larger developments, developments in sensitive areas, or where special circumstances exist, Council may require assessment method 2 to be used.

Both assessment methods need to be commensurate with the NSW Floodplain Development Manual. In some circumstances, Council may determine the method(s) to be used.

Assessment method 1 - Cross-section Analysis (No Computer Modelling)

In order to satisfy the requirement that the development will not increase flood hazard or potential flood damage to other properties or adversely affect flood behaviour for the full range of flood scenarios, the applicant must demonstrate that:

- i. The proposed development will not involve fill volumes that occupy more than 1% of the available 20%, 5% and 1% AEP flood volume on the development site or involve cutting or filling in floodways.

Note: it is too simplistic to assume that earthworks will have a negligible impact on the hydraulics of a waterway if the net cut and fill volumes for the PMF balance out. Hydraulic processes are complex and a simple "total fill < total cut" equation will not guarantee that the flood storage capacity of a waterway corridor are maintained. It is therefore necessary to check net cut and fill volumes within the site over a range of flood events.

- ii. The proposed development will not adversely change flow direction and velocity or create any new preferential flow paths for the PMF, 1%, 2%, 5%, and 10% AEP flood events; and
- iii. The proposed development will not change the flood conveyance at any of the cross sections up to and including the PMF.

The flood conveyance should be calculated at each cross-section for pre-development and post-development conditions. Flood conveyance should be calculated at a range of water levels, at each cross-section, including the 1% AEP and PMF. All assumptions, particularly those relating to hydraulic roughness, must be documented, especially where the development results in a change in hydraulic roughness.

In special circumstances, small size developments inside a floodway may not reduce conveyance (e.g. minor alterations or additions carried out in the 'lee' of an existing structure). In such cases, Council may require assessment using Assessment Method 1 and 2 of this Schedule to demonstrate that conveyance is not being reduced.

This method does not require computer modelling. It checks for changes in flood storage volume, flood behaviour and conveyance at critical cross sections only through the proposed development.

This approach, whilst simpler than computer modelling, assumes a thorough knowledge of flood behaviour to ensure that the cross-section locations are representative of the principal impacts of the development.

In addition to the survey details and pre development flood information, the following shall be submitted, accompanied by appropriate supporting written information:

- a) Post development flood level plots for the PMF, 1%, 2%, 5% and 10% AEP flood events at all cross sections (all assumptions, calculations and modelling output tables must be provided);

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

- b) Post development in-stream and overbank flow velocity vector plots for the 1% AEP event at all cross sections (all assumptions, calculations and modelling output tables must be provided);
- c) Calculation results for all calculations undertaken in order to demonstrate the above requirements and;
- d) Pre and post development ground surface levels — this information should be shown on each cross-section, with areas of cut and fill clearly shown.

Assessment method 2 - Use of Existing Flood Study or Preparation of Site-Specific Flood Study (Computer Modelling)

This method requires computer modelling. An existing flood study model may be used if available and suitable (e.g. it contains sufficient local detail).

For large scale developments or developments in critical locations, a flood study using a fully dynamic one or two dimensional hydraulic computer model may be required. Such a flood study would be prepared in a manner consistent with the *NSW Floodplain Development Manual*, and the current *Australian Rainfall and Runoff — A Guide to Flood Estimation* (Institution of Engineers, Australia) and relevant Council codes.

In addition to the survey details and pre development flood information, the following shall be submitted in plan form, accompanied by appropriate supporting written information:

- a) Post development water surface contours — these should be provided in metres to Australian Height Datum (m AHD).
- b) Post development flood profiles — these should be provided at a suitable vertical and horizontal scale such that any changes in flood levels are easily identified.
- c) Post development velocity vectors — these show direction and relative size of flood velocities and should be provided in metres per second (m/s).
- d) Difference plots for flood levels and velocities for the 20% and 1% AEP flood events.
- e) Post development contours of flood velocities multiplied by depth of flooding over ground level indicating provisional hydraulic categories as per the requirements of the 2005 NSW Floodplain development manual — these should be provided to one decimal place.
- f) Post development provisional hazard categories based on depth and velocity as well as obvious other hazards such as evacuation difficulties as per the requirements of the 2005 NSW Floodplain Development Manual.

An interpretation of the results clearly indicating the effects of the proposed development on general and local flood behaviours and potential impacts on neighbouring properties is to be provided. This interpretation should clearly inform the last section of the Caravan Park Compliance Report which seeks to provide a detailed assessment of how the proposed development will achieve the objectives and performance criteria of this Chapter.

Note:

- A range of flood sizes should be chosen for the above analyses so that the full impacts of the development can be assessed. Typically,

the flood sizes to be considered would be: a 20% AEP, 5% AEP, 1% AEP and PMF.

- For the post-development scenario, all proposed works and structures, including any revegetation and enhancements should be included in the analysis.
- All assumptions relating to hydraulic roughness should be clearly documented.
- Flood levels and velocities need to be computed not only at the site but also at an appropriate distance upstream and downstream to allow the principal impacts of the development to be determined.

Structural conditions for developments affected by flood

Where required, a structural engineer must certify that a building and/or structure will be able to withstand hydrostatic and hydrodynamic forces of flood waters including debris and buoyancy forces based on relevant depth, velocity and debris loadings for the specific site. Some guidance on this issue is provided in Appendix A of the Hawkesbury and Nepean Floodplain Management Steering committee, *Reducing Vulnerability of Buildings to Flood Damage* (2006) (www.ses.nsw.gov.au).

Schedule A4 – Flood Proofing

There are many different ways in which to reduce flood damages and flood proofing is generally recommended for any building, installation or structure on land that is considered by Council to be flood prone. Flood proofing refers to the design and construction of buildings, installations and the like with appropriate water resistant materials such that flood damage is minimised, should it be inundated. Certain types of materials are better able to withstand inundation than others, for example, plasterboard and chipboard, both materials commonly used for the internal wall linings and cupboard fittings of a house, can be badly damaged on inundation and may have to be replaced. In contrast, double brick construction can withstand inundation and may only require a hose and scrub down when the flood subsides.

Adequate flood proofing of structures and buildings in flood liable areas is an effective and equitable means of reducing flood damage. The following table provides information on flood proofing measures and flood compatible materials (being those materials used in building that are resistant to damage when inundated). The table is not an exhaustive list, however provides an indication of what is considered as suitable in flood prone areas.

Further reference can be made to the Building Code of Australia - Construction of Buildings in Flood Hazard Areas – Standard 2012.

A) Construction Methods and Materials

Construction methods and materials listed in the following table are graded into four classes according to their resistance to floodwaters:

Suitable - the materials or products which are relatively unaffected by submersion and unmitigated flood exposure and are the best available for the particular application.

Mild effects - where the most suitable materials or products are unavailable or economic considerations prohibit their use, these materials or products are considered the next best choice to minimise the damage caused by flooding.

Marked effects - as for "2nd preference" but considered to be more liable to damage under flood conditions.

Severe effects - the materials or products listed here are seriously affected by floodwaters and in general have to be replaced if submerged. They are not recommended for use in flood prone areas.

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

COMPONENT	SUITABILITY OF MATERIAL OR CONSTRUCTION METHOD			
	Suitable	Mild Effects	Marked Effects	Severe Effects
Floor & Sub-Floor Structure	<ul style="list-style-type: none"> concrete slab-on-ground monolith construction where the ground level allows the flood planning level requirements to be met <i>note: clay filling is not permitted beneath slab-on-ground construction, which could be inundated</i> suspension reinforced concrete slab 	<ul style="list-style-type: none"> timber floor (T&G boarding, marine plywood) full epoxy sealed joints 	<ul style="list-style-type: none"> timber floor (T&G boarding, marine plywood) with ends only epoxy sealed on joints and provision of side clearance for board swelling 	<ul style="list-style-type: none"> timber close to ground surrounding base timber flooring with ceilings or soffit linings timber flooring with seal on top only
Floor Coverings	<ul style="list-style-type: none"> clay tiles concrete, precast or in situ concrete tiles epoxy, formed-in-place mastic flooring, formed-in-place rubber sheets or tiles with chemical-set adhesives silicone floors formed-in-place vinyl sheets or tiles with chemical set adhesives 	<ul style="list-style-type: none"> cement / bituminous formed-in-place cement / latex formed-in-place rubber tiles, with chemical set adhesive terrazzo vinyl tile with chemical-set adhesive vinyl-asbestos tiles asphaltic adhesives loose rugs ceramic tiles with acid and alkali-resistant grout 	<ul style="list-style-type: none"> asphalt tiles with asphaltic adhesives loose fit nylon or acrylic carpet with closed cell rubber underlay 	<ul style="list-style-type: none"> carpeting, glue-down type or fixed with smooth edge on jute felts chipboard (particle board) cork linoleum PVA emulsion cements vinyl sheets or tiles coated on cork or wood backings fibre matting (sea- grass matting)

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

COMPONENT	SUITABILITY OF MATERIAL OR CONSTRUCTION METHOD			
	Suitable	Mild Effects	Marked Effects	Severe Effects
	<ul style="list-style-type: none"> ceramic tiles, fixed with mortar or chemical set adhesive asphalt tiles, fixed with water resistant adhesive 			
Wall Structure (up to FPL)	<ul style="list-style-type: none"> solid brickwork, block-work, reinforced, concrete or mass concrete 	<ul style="list-style-type: none"> two skins of brickwork or block-work with inspection openings 	<ul style="list-style-type: none"> brick or block-work veneer construction with inspection openings 	<ul style="list-style-type: none"> inaccessible cavities large window openings
Roof Structure (for situations where FPL is above the ceiling of an existing building)	<ul style="list-style-type: none"> reinforced concrete construction galvanised metal construction 	<ul style="list-style-type: none"> timber trusses with galvanised fittings 	<ul style="list-style-type: none"> traditional timber roof construction 	<ul style="list-style-type: none"> inaccessible flat roof construction ungalvanised steelwork eg. lintels, arch bars, tie rods, beams, etc. unsecured roof tiles
Doors (below FPL)	<ul style="list-style-type: none"> solid panel with water proof adhesives flush door with marine ply filled with closed cell foam painted metal construction aluminium or galvanised steel frame 	<ul style="list-style-type: none"> flush panel or single panel with marine plywood and water proof adhesive T&G lines door, framed ledged and braced painted steel timber frame fully epoxy sealed before assembly 	<ul style="list-style-type: none"> fly-wire doors standard timber frame 	<ul style="list-style-type: none"> hollow core ply with PVA adhesives and honeycomb paper core
Wall & Ceiling	<ul style="list-style-type: none"> cement board 	<ul style="list-style-type: none"> brick, common 	<ul style="list-style-type: none"> chipboard exterior grade 	<ul style="list-style-type: none"> chipboard

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

COMPONENT	SUITABILITY OF MATERIAL OR CONSTRUCTION METHOD			
	Suitable	Mild Effects	Marked Effects	Severe Effects
Linings (up to the FPL)	<ul style="list-style-type: none"> brick, face or glazed clay tile glazed in waterproof mortar concrete concrete block steel and waterproof applications stone, natural solid or veneer, waterproof ground glass blocks glass plastic sheeting or wall with waterproof adhesive 	<ul style="list-style-type: none"> plastic wall tiles metals, non ferrous rubber mouldings and trim wood, solid or exterior grade plywood fully sealed 	<ul style="list-style-type: none"> hardboard exterior grade wood, solid (boards or timber) with allowance for swelling wood, plywood exterior grade fibrous plaster board 	<ul style="list-style-type: none"> fibreboard panels mineral fibreboard paperboard plaster-board, gypsum plaster wall coverings (paper, burlap cloth types) wood, standard plywood strawboard
Insulation (up to FPL)	<ul style="list-style-type: none"> foam or closed cell types 	<ul style="list-style-type: none"> reflective insulation 	<ul style="list-style-type: none"> bat or blanket types 	<ul style="list-style-type: none"> open cell fibre types
Windows (below FPL)	<ul style="list-style-type: none"> aluminium frame with stainless steel or brass rollers or similar corrosion and water resistant material 	<ul style="list-style-type: none"> epoxy sealed timber waterproof glues with stainless steel or brass fittings galvanised or painted steel 		<ul style="list-style-type: none"> timber with PVA glues mild steel fittings
Nails, Bolts,	<ul style="list-style-type: none"> brass, nylon or stainless steel 	<ul style="list-style-type: none"> hot dipped galvanised steel wire nails 		<ul style="list-style-type: none"> mild steel

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

COMPONENT	SUITABILITY OF MATERIAL OR CONSTRUCTION METHOD			
	Suitable	Mild Effects	Marked Effects	Severe Effects
Hinges & Fittings (below FPL)	<ul style="list-style-type: none"> removable pin hinges 	<ul style="list-style-type: none"> aluminium 		

More information on reducing vulnerability of buildings from flood damage please refer to *Reducing Vulnerability of Buildings to Flood Information* prepared by the Hawkesbury-Nepean Floodplain Management Steering Committee

B) Electrical and Mechanical Equipment

For dwellings constructed on flood liable land, the electrical and mechanical materials, equipment and installation must conform to the following requirements:

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

Wiring - all wiring, power outlets, switches, etc., must, to the maximum extent possible, be located above the flood planning level. All electrical wiring installed below the flood planning level must be suitable for continuous submergence in water and must contain no fibrous components. Only submersible-type splices are to be used below the flood planning level. All conduits located below the flood planning level are to be so installed that they will be self-draining if subjected to flooding.

Equipment - All equipment installed below or partially below the flood planning level must be capable of disconnection by a single plug and socket assembly.

Reconnection - Should any electrical device and/or part of the wiring be flooded it must be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.

C) Heating and Air Conditioning Systems

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

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

Installation - The heating equipment and fuel storage tanks must 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 must be vented to an elevation of 0.5m above the flood planning level.

Ducting - All ductwork located below the flood planning level must 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 flood planning level, the ductwork must be protected by a closure assembly operated from above flood planning level.

Schedule A5 - Policy Context – Management of Caravan Parks in Flood Prone Areas

Chapter G10 and these Guidelines are based on best practice principles as set out in the NSW Flood Prone Land Policy and the NSW Floodplain Development Manual. The following provides a summary of the contents of these documents and shows how this Chapter sits within the overall policy framework.

NSW Flood Prone Land Policy (1984)

The primary objectives of the 1984 NSW Flood Prone Land Policy (the Policy) are 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.

At the same time, the Policy recognises the benefits flowing from the limited use, occupation and development of flood prone land.

The Policy promotes the use of a merit approach which balances social, economic, environmental, and flood risk parameters to determine whether a particular development or use of the floodplain is appropriate and sustainable.

In this way the Policy avoids the unnecessary sterilisation of flood prone land. Equally it ensures that flood prone land is not the subject of uncontrolled development inconsistent with its exposure to flooding.

The Policy requires that councils address flooding:

- Through the preparation and implementation of Floodplain Risk Management Plans;
- By reducing the impact of flooding through flood mitigation works, emergency management, development controls and the raising of houses; and
- By containing potential flood losses through ecologically sensitive planning and development controls.

NSW Floodplain Development Manual (2005)

The 2005 NSW Floodplain Development Manual (the Manual) addresses flood risk. The Manual supports the Policy in providing for the development of sustainable strategies for managing human occupation and use of the floodplain considering risk management principles.

The Manual requires that management decisions regarding occupation of the floodplain need to satisfy the social and economic needs of the community, as well as being compatible with the maintenance or enhancement of the natural ecosystems that sustain the floodplain.

The Manual states that the most effective means of achieving sound flood risk management outcomes is to formulate and implement management plans through the Floodplain Risk Management Process as shown in Figure 3 below. Due to the level of detail required; technical studies and other complexities, the process generally takes several years to be completed.

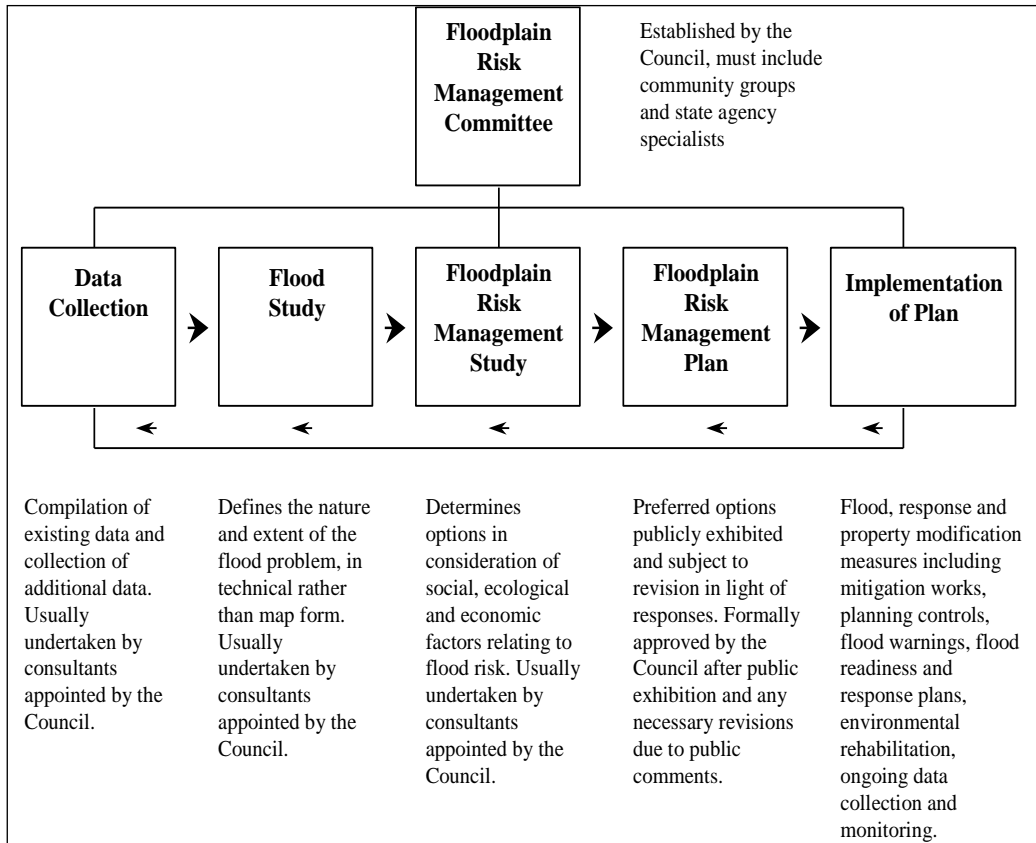


Figure 3: Floodplain Risk Management Process - Source: 2005 NSW Floodplain Development Manual

A Floodplain Risk Management Plan generally involves a mix of options as it is unusual for a single management option to manage the full range of flood risk. Determining the optimum mix of measures can require complex studies and extensive community consultation. Typical options considered are:

- Property modification measures such as development controls in new areas or voluntary purchase and house raising in developed areas;
- Response modification measures such as evacuation and associated operational logistics; and
- Flood mitigation measures such as levees or bypass channels.

As per the Policy, the Manual provides for the application of a “merit approach” for decisions on the future use of the floodplain. This “merit approach” operates at two levels:

- The strategic level; and
- The site specific level.

At the strategic level, the “merit approach” allows for consideration of social, economic, ecological, cultural and flooding issues to determine strategies for the management of continuing and future flood risk. Identified strategies are formulated into Floodplain Risk Management Plans and associated Local Floodplain Risk Management Policy, and then into Council Environmental Planning Instruments such as the Shoalhaven Local Environmental Plan (SLEP 2014).

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

At a site specific level, the “merit approach” involves consideration of the best way of assessing development allowable under the Floodplain Risk Management Plans, the Local Floodplain Risk Management Policy and Environmental Planning Instruments. These considerations include site specific issues such as minimum floor levels, building location within the site, access to the site, structural stability, and flood proofing etc., as appropriate.

Flood Planning Concepts

The flood planning area is any land identified as being flood affected in the 1% AEP flood event plus freeboard. An aerial view of the flood planning area can be seen in Figure 4. Development controls apply for development on flood prone land.

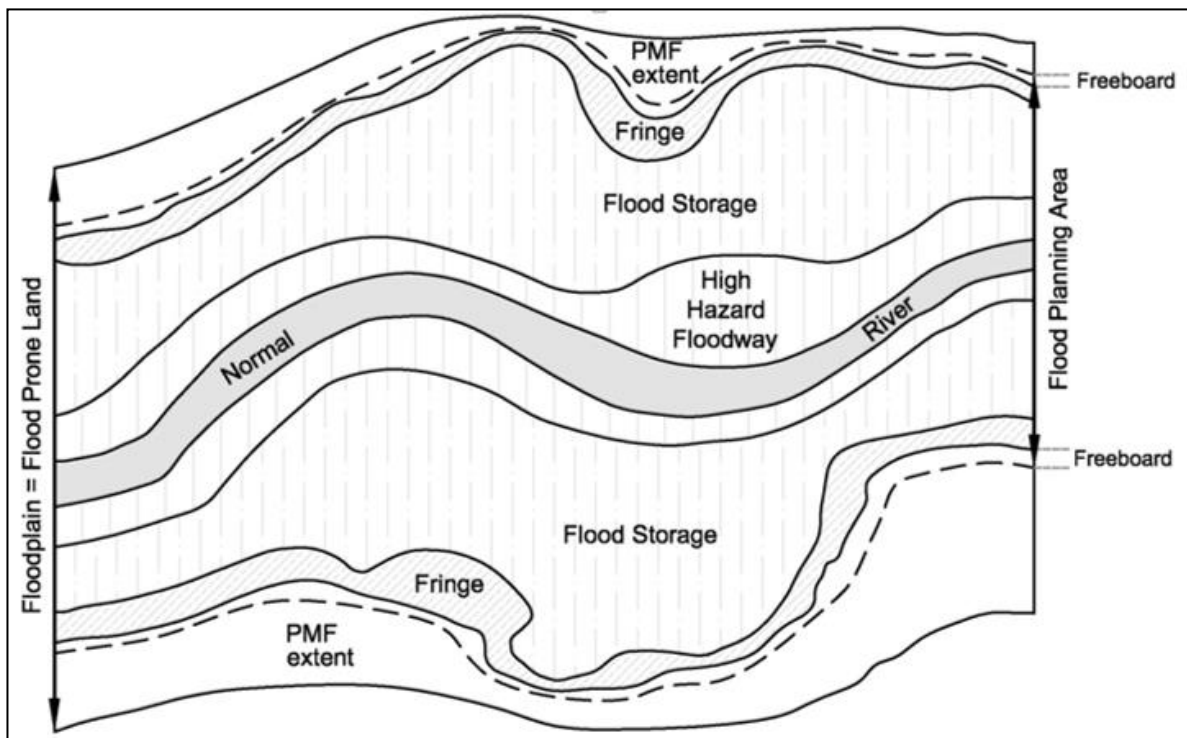


Figure 4: Floodplain Aerial View – Flood planning area

Flood planning levels are the combination of adopted design flood level plus freeboard. They determine the area of land (flood planning area) on which specific flood related development controls will be imposed. They are set during the Floodplain Risk Management process and are based on a detailed understanding of flood behaviour across the full range of floods, their probability of occurrence and the social, economic and ecological consequences associated with those floods.

Freeboard is a factor of safety applied as an additional height to identified flood levels. The purpose of a freeboard is to cater for uncertainties in the estimation of flood levels across the floodplain due to wave action, localised hydraulic behaviour such as eddies and embankment or levee settlement and some of the uncertainties associated with estimating climate change impacts. The freeboard and flood planning levels can be seen in Figure 5.

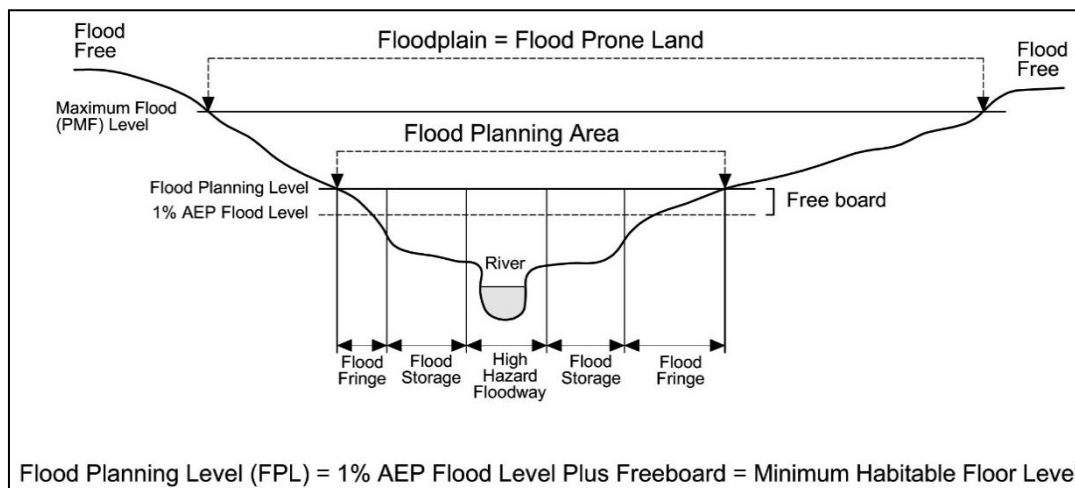


Figure 5: Cross section through floodplain - hydraulic categories within flood planning area

Different development controls apply to different land uses, levels of potential flood inundation and hazard within the flood planning area. The following hydraulic categories apply:

- Flood Fringe
- Flood Storage
- Floodway (see Figure 4)

Caravan Park Flood Risk Precincts

The floodplain can be further classified according to the potential flood risks specifically related to caravan parks. The flood risk is not determined from a single flood but from considering all floods that could possibly occur at a site (up to the PMF).

When determining the caravan park flood risk precinct, the following must be considered:

- flood behaviour, topography and access routes that influence the flood hazard on the site (such considerations include depths, velocities, time to rise, duration and other factors noted in Section L6 of The Manual);
- available public warning time for the specific locality (i.e. ignoring any local, site specific or private flood warning systems that might be available); and
- The risk to the site as if fully developed to its current approved community map.

Based on this approach, the flood affected area can be classified into three caravan park flood risk precincts: 'high', 'medium' and 'low', as discussed below. Figure 5 shows a schematic approach to determining flood risk precincts.

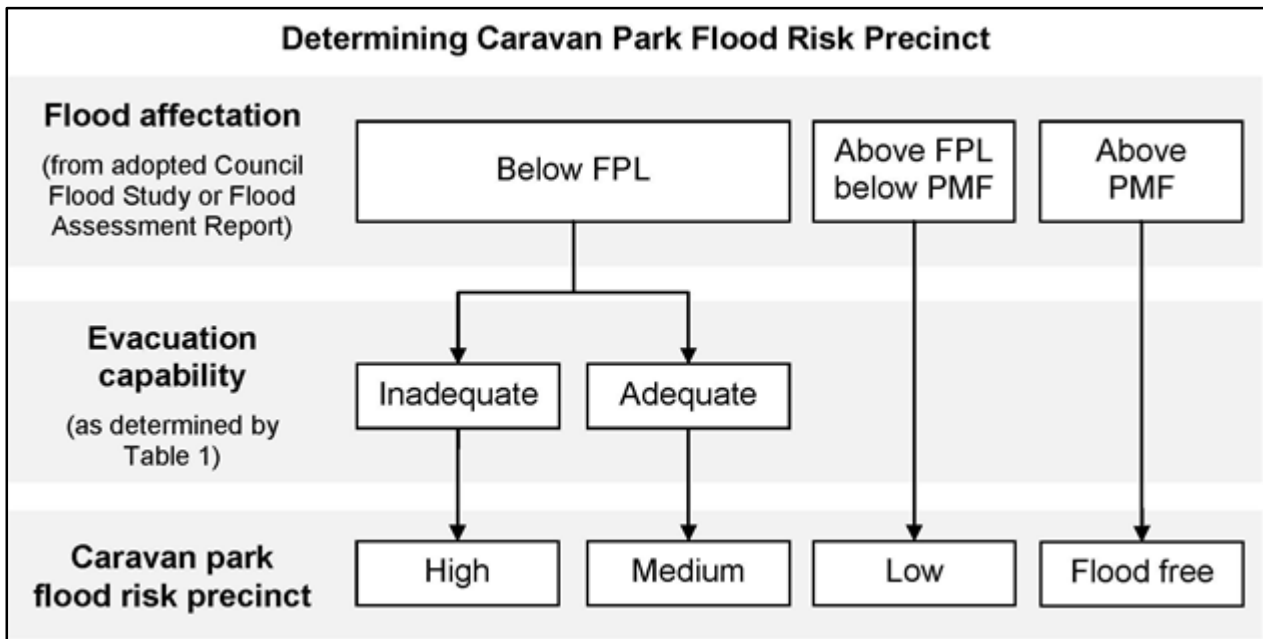


Figure 6: Determining Caravan Park Flood Risk Precincts (adapted from Caravan Park Flood Safety Study 2008)

High Caravan park flood risk precinct

The high caravan park flood risk precinct is an area where high flood damages, potential risk to life or evacuation problems would be anticipated, or where development/activities would significantly and adversely affect flood behaviour. Most development/activities are restricted in this precinct. In this precinct there would be significant damage to development without compliance to flood related building and planning controls.

This precinct is initially identified as a 'high hazard floodway' although:

- It may also include areas of 'high hazard flood storage' or 'high hazard flood fringe' if dangerous and life threatening evacuation difficulties are identified.
- Some areas of 'high hazard floodway' might not be included if sufficient time/access is available to mitigate the risks to people and property.

Medium Caravan park flood risk precinct

The medium caravan park flood risk precinct would usually comprise land in the flood planning area that was not classified within the high caravan park flood risk precinct. Note that in this precinct there may still be a significant potential for flood damage, but these damages could be minimised by the application of appropriate development controls.

This precinct initially comprises areas that have been classified by Council in previous flood studies or in a Flood Assessment Report as 'high hazard flood storage', 'high hazard flood fringe', 'low hazard floodway', 'low hazard flood storage' or 'low hazard flood fringe'. The medium caravan park flood risk precinct may also include:

- Some areas previously classified as 'high hazard floodway' might be included if sufficient time/access was available to mitigate the risks to people and property.

- Some of these areas might be classified as high flood risk precinct if dangerous and life-threatening evacuation difficulties were anticipated.

Low Caravan park flood risk precinct

This precinct is defined as all other land within the floodplain not identified within either the high or medium caravan park flood risk precinct. This land is above the flood planning level but below the PMF.

The risk to both people and property is low within this precinct. For example, development may be above the flood planning area, but may become isolated during a flood event which is why development controls apply, such as the consideration of evacuation.

Evacuation Capability

Whether a caravan park has adequate or inadequate evacuation capability contributes to the determination of the caravan park flood risk precinct. Schedule 6 provides steps on how to assess the evacuation capability for a caravan park.

When determining the time required for evacuation the SES paper "*The Application of Timelines to Evacuation Planning* (Opper, S. 2004)" provides guidelines on the time required for different aspects of evacuation.

The below have been extracted from the paper and are to be used when determining the evacuation capability of a caravan park:

- One hour for the warning lag factor, which is the time lag between the delivery of a warning and when the occupants would be ready to depart from the scene,
- 600 vehicles/hour/lane has been allowed for traffic flow,
- 5 minutes per team (two people) per door for door knocking.

Climate Change Implications

Climate change is expected to have impacts on sea levels and rainfall intensities, both of which may influence flood behaviour at specific locations. Potential impacts are therefore considered during the floodplain risk management process and are taken into account when design flood levels for each individual catchment are determined.

Current NSW Government legislation requires climate change to be considered.

Figure 7 shows how the 1% AEP flood levels will incrementally factor in sea level rise planning benchmarks:

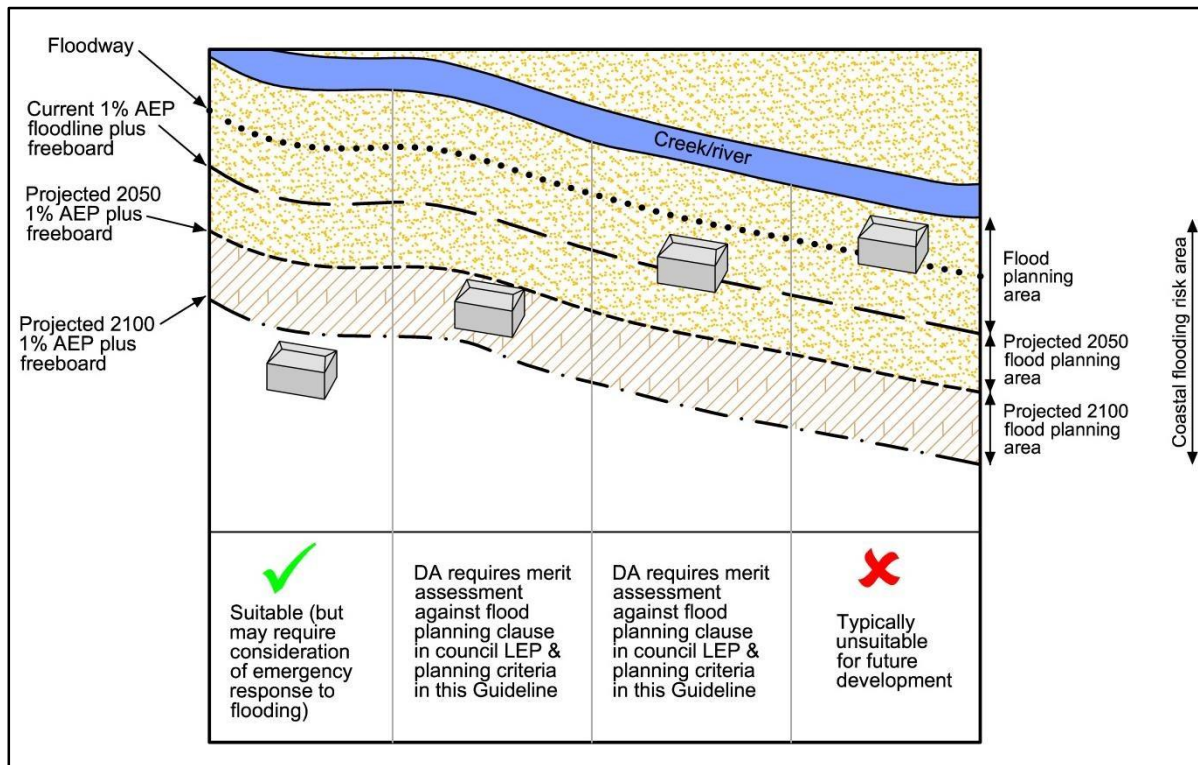


Figure 7: Coastal Flooding Consideration in Development Assessment Process
 Source: NSW Coastal Planning Guideline: Adapting to Sea Level Rise 2010

Currently no relevant planning benchmarks have been adopted by Government in relation to rainfall intensity changes. However, NSW State Government guidelines recommend doing a sensitivity analysis using nominal increases in rainfall intensities. If a Flood Assessment Report is required, the sensitivity analysis is to be done at this time.

In order to meet the above requirements, the following is to be considered.

- For new building applications for installations in caravan parks below 4m AHD, the impact of a sea level rise is to be included when determining flood levels. This can be done by adding the 2050 sea level rise component to identified flood levels or through a Flood Assessment Report which includes the sea level rise component in design flood calculations.

Or

- Demonstrate that development can be relocated or elevated to the 2050 flood levels, if directed by Council in the future to comply with future sea level rise conditions. Where 2050 flood levels are not used, the corresponding existing flood level is to be used
- For applications for a new complex or extension to an existing complex on land below 4m AHD, the impact of sea level rise is to be included in their design. This can be done by adding the 2100 sea level rise component to the identified flood levels or through a Flood Assessment Report which includes the 2100 sea level rise component in design calculations.

Note: If a flood certificate provides flood levels for existing conditions as well as conditions in the year 2050 and 2100, climate change has already been included when calculating flood levels.

If today's sea level is not used when calculating flood levels, sea level rise which has already occurred also needs to be included. From 1990 until 2014 0.05m of sea level rise has occurred (*South Coast Regional Sea Level Rise Policy and Planning Framework, 2014*).

Schedule A6 - Determining Evacuation Capability

DETERMINING EVACUATION CAPABILITY – ADEQUATE / INADEQUATE

If you answer Yes to all of the questions in Table 1, your caravan park has adequate evacuation capability.

If you answer No to any of the questions in Table 1, your caravan park has inadequate evacuation capability.

Detailed information and calculations are to be provided in the flood emergency management plan. This will be used to confirm the information provided below.

QUESTION	RESPONSE	NOTES
Q1. Is a warning system in place?	Yes/No (circle)	If a warning system is not in place one will need to be established prior to determining the evacuation capability for the caravan park.
Q2. What is the warning system?		Provide brief description (ie. Bureau of Meteorology weather warnings). Full details of the system and how it will be triggered are to be provided in flood emergency management plan (FEMP)
Q3. Warning time:	_____ hours	Provide source of information in FEMP
Q4. Number of people requiring evacuation:	_____ people	Calculate for peak season
Q5. Time/staff required to evacuate people:	_____ hours _____ staff	Use SES paper to calculate
Q6. 'Other actions' to be done during flood:		List (ie. Tie down structures, removal of structures/vans, relocation of hazardous goods)
Q7. Time/staff required to do 'other actions	_____ hours _____ staff	

Supporting Document 1 - Chapter G10: Guidelines for Caravan Parks in Flood Prone Areas

QUESTION	RESPONSE	NOTES
Q8. Are the total number of staff (Q5 plus Q7) available to conduct evacuation and 'other actions'?	Yes/No (circle)	It is likely Q4 and Q6 will need to be conducted at the same time, therefore the number of staff identified in Q5 and Q7 need to be summed.
Q9. Is an evacuation site available?	Yes/No (circle)	Contact the SES to determine whether an evacuation site is already established for your area
Q10. What is the evacuation site?		i.e. SES identified evacuation site
Q11. If required, do you have permission to use this site?	Yes/No (circle)	If yes, provide written consent in the FEMP
Q12.1. Is there flood free access available to evacuate the site?	Yes (circle) Go to Q13 OR answer Q12.2 and Q12.3	
Q12.2. How long before access is cut by flooding?	_____ hours	Provide source of information in FEMP
Q12.3. Can all people requiring evacuation be evacuated before access is cut.	Yes/No (circle)	Only circle yes if time given in Q12.2. is greater than or the same as Q5.
Q13 Can both Q4 and Q6 be done prior to flood free access being cut?	Yes/No (circle)	Only circle yes if the time to conduct Q4 and Q6 concurrently is less than Q5 or Q12.2 if flood free access is not available. Calculations and timeline to be provided in FEMP.