



IGS INTEGRATED
GROUP
SERVICES



Lot 1, DP 219742 Concord West

Example Flood Emergency Management Plan

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1. FLOOD RISK MANAGEMENT PLAN

This section of the report outlines and discusses the measures to mitigate the flooding impacts on the proposed development and its users. These measures are specific to the site and complement the floodplain risk management plan prepared by Council, which addresses issues such as evacuation from the precinct during flood events.

The purpose of this plan is:

- To address existing, future and continuing flood risks on the site;
- To establish a program for the implementation of the plan; and
- To allow the stakeholders of the site to adopt this plan.

This emergency management plan is provided as an example at this stage and will be subject to further development during the DA process and subject to council conditions of consent.

1.1 Existing, future and continuing risks

As outlined earlier in the report, the site is located within a flood prone land. The site is affected by the PMF flood. The flood study carried out by SKM did not identify the flood risk level of the site. However, because the development ground floor level is above the 1% AEP floor level, the risk is considered Medium Flood Risk for the purpose of this plan.

It should be noted that the proposed development is consistent with Council's land use objectives for the subdivision.

The continuing flood risk on the site is identified as the full submergence of the basement car park during the PMF flood event. The ground floor level would also be inundated during the PMF. The first floor level is completely flood free. As such, the proposed development does not result in an unacceptable increase in risk to human life during an extreme flood event exceeding the 1% AEP.

Triggers for a likely flood emergency may come in the form of:

- The Bureau of Meteorology issuing a flood warning;
- The Bureau of Meteorology issuing a Severe Weather Warning or a Severe Thunderstorm Warning indicating a likelihood of a flash flooding;
- The State Emergency Service issuing a Flood Bulletin;
- Rising floodwaters; and
- Heavy rainfall.

These triggers do not mean that the business should cease immediately but are important for the assigned warden/deputy to:

- Keep watch on the flood levels in the surrounding areas in the vicinity of the site;
- Inform the site users of these triggers; and
- Listen to the local media for update and advice.

It is recommended that flood compatible materials are used in the basement and the ground floor levels to minimise the cost of the damage during rare flood events (i.e. PMF). The structural engineer should certify the building structure is able to withstand the shear forces of the floodwaters up to the flood level in a 100-year ARI plus 1m and up to the PMF level.

Flood warning signs, flashing probes and audible alarms are to be installed at the entry and inside the basement car park. The alarm and the flashing light will be set to activate when the water level in the basement carpark has reached a depth of 100mm. The audible alarm will be on a timer and should be set at 10 minutes at most. However, the flashing probe will continue to operate until the flood levels in the basement garage drop below 100mm.

For that purpose, depth gauges should be placed inside the basement at regular intervals (to manufacturer's recommendations) around the perimeter and also upon the exit from the basement.

Signs should also be placed next to the depth gauges informing the basement users of the risk of flooding and the depth of water at the same time.

A sign is also erected at the entry stating that disabled parking is not allowed in the basement. A disabled parking space has been provided at ground level, above the 1% AEP flood level.

The development does not increase the potential flood affectation on other properties. The flood study indicates that the flood levels will drop in the vicinity of the site when the area will be fully developed.

Perimeter fencing is to be constructed in a manner that does not affect the direction and the velocity of the floodwaters. It is recommended to install fencing that allows the flow to pass through without obstruction. A structural engineer's certificate is required to confirm that the proposed fence and footings can withstand the shear forces of floodwaters.

The additional economic and social costs, which may arise from damage to property as a result of flooding, can be fully managed by the stakeholders of the site.

During a 1% AEP flood event, evacuation via George Street to higher areas is achievable as the road would be submerged from 0.3 - 0.4m depth maximum. In larger flooding events, the first floor level provides shelter to humans free from flooding up to and including the PMF flood event. Evacuation from the development can occur after the flood levels have recessed to levels where George Street can be reused to exit the area.

A risk management policy should be adopted and implemented by the operators of the development, which increases the awareness of the stakeholders and the users of the site to the flooding issues and outlines the procedures of control and evacuation from the site in flooding events. A training induction short course should be provided to existing and new building occupants and also to visitors, informing them of the flooding situation on the site.

The NSW SES Community Flood Safe Guides should be printed and made available within the premises. The induction and training programmes should reference these guides. In particular, the body corporate / executive committee / strata agent should refer to the SES "Business Floodsafe Toolkit – Flash Flooding" publication, which provides a Floodsafe Plan that can be completed by the body corporate / executive committee / strata agent and maintained on site. The SES has also summarised the recommendations of the toolkit by providing a summary poster "Floodsafe Poster – Flash Flooding" that can be printed and placed in a prominent/key location on site.

For further details, refer to:

http://www.ses.nsw.gov.au/content/documents/pdf/floodsafe/45122/flash_flood_business_floodsafe_toolkit &

http://www.ses.nsw.gov.au/content/documents/pdf/floodsafe/45122/flash_flood_business_floodsafe_poster.

1.2 Preparation for a Flood Emergency

In preparation for a flood emergency, the following should be done:

- Ensure all building occupants and visitors are aware of the flooding situation and that isolation and confinement to Level 1 of the building is a real possibility;
- Encourage building occupants to participate in the development, implementation and review of future flood risk management plans;

- Keep an up-to-date list of emergency contact numbers in a prominent location;
- Incorporate flood awareness to the induction and training programs;
- Ensure that there are at least two capable and willing building occupants nominated as wardens and deputy at any one time, who will receive training in emergency procedures;
- Maintain a record of the individual building occupant training programmes;
- The warden and the deputy will maintain in their possession an up-to-date listing of the after hours contacts for the members of the Emergency committee;
- The night supervisor (if there is one) will receive same training as the warden and the deputy and will act in their capacity in their absence;
- Maintain a record of all building occupants on a regular basis and this should be updated when new building occupants come into the building to occupy;
- Maintain a register of all visitors and contractors within the premises at any given point in time;
- Ensure that all records are copied and backed up on a regular basis;
- Assess the capability of the Site to provide short to medium term catering for building occupants evacuated to Level 1;
- Identify those systems which can be shut down in the event of a flood emergency;
- Establish Level 1 foyer as the meeting point when a flood emergency is called during business hours; and
- Prepare a coloured notice of reasonable size that informs persons within the site of the procedures if a flooding above the 100-year ARI flood event occurs and a flood emergency is called as outlined in the following section.

1.3 Actions in the likelihood or during a Flood

The following actions should be listed on the notice to be displayed on site at key locations.

- Warden to advise persons within the site of the likelihood of a flood, heavy rainfall and/or if a flood is occurring;
- The warden will obtain the register of all people on site including building occupants, visitors and contractors;
- Evacuate the site if safe to do so when the rising floodwaters inundate the corner of George Street. The warden who is keeping watch on the flood levels should advise the site occupiers to evacuate if the floodwaters reach this level. The evacuation should be directed to flood free areas (to be identified during design development and through the DA process);
- If the flash flooding occurs much faster and it is not safe to evacuate, i.e. the flood levels are rising too quickly in George Street and site evacuation becomes dangerous, vacate and clear the basement level and elevate everyone with their personal items to Level 1. The site evacuation should not occur if the flood levels have reached the kerb level in front of the site driveway as the flood depth of 150mm or higher could destabilise the vehicles;
- Try as much as practical to seal doors and openings on ground floor to minimise the damage to property and equipment;
- Move any hazardous material (if any) into level 1 to avoid it getting washed by the floodwaters;
- Contact the emergency services on 000 and the SES on 132500 alerting them to the situation;
- Continue to monitor the local radio stations, generally the ABC, to keep updated on any flooding;
- Confirm the availability of nominated building occupants to assist the warden and the deputy with evacuating all personnel to Level 1;
- Shut down computers and all non-essential equipment;
- Maintain a watch on the flood levels in the basement and on George Street;
- Maintain contact with the emergency services;
- Do not permit anyone to leave the site by foot or vehicle;
- Keep everyone on Level 1 at all times;
- Have all personnel maintain a calm outlook;

- In the event of a medical emergency, contact the emergency services by phone 000 and advise them of the need for assisting and follow their instructions;
- Further shut down all system not required; and
- Maintain an ongoing count of persons at all times and report any missing.

1.4 After the Flood

Once the all clear has been given by the emergency services and the surrounding roads have been reopened, the following actions can occur:

- Do not enter floodwaters;
- Ensure that everyone is safe and accounted for;
- Undertake an assessment of any damage before occupying or allowing others to occupy the premises;
- Remove any debris and clean around all entrances and access points;
- Except when inundated, ensure that facilities such as computers, lights etc are functioning to enable activities to resume;
- If any electrical items have been inundated, these should be checked by an appropriately qualified electrician before use;
- Make an assessment of the facility to resume normal operations;
- Consult with the emergency services and the SES to obtain feedback of the operation of the plan;
- As soon as possible after resumption of normal business, the Emergency Group will meet to debrief and establish any areas for review and change;
- Amend the plan appropriately and issue replacement plans to building occupants and public locations; and
- Update building occupants and visitor inductions and training programmes to reflect the changes.

1.5 Emergency Contact Details

The following contact list, or similar is to be kept on site at all times.

Table 1.1 Emergency Contact List

Organisation	Telephone	Contact
State Emergency Services	132500	
Gas		
Sydney Water		
Fire Brigade	000	
Police	000	
Ambulance	000	
Electricity		

1.6 Flood Emergency Kit

For flooding emergencies, the following kit should be available and stored in the first level refuge area:

- A portable radio and torch with fresh batteries;
- Candles and water proof matches;
- Reasonable stocks of fresh water;
- A first aid kit and basic first aid knowledge; and
- Emergency contact details.

1.7 Integration with local flood and catchment plans

The operators of the site should obtain a copy of the latest local flood plan from Council. This plan may be subject to reviews on a regular basis, possibly every five (5) years.

The site's flood risk management plan should complement the local plan and is intended to give the stakeholders of the site an additional level of information on how to manage and respond to flooding within the site's boundaries.

The stakeholders should make themselves informed of the requirements and the procedures outlined in the local flood plan, which would generally be available from Council.

1.8 Program

The following program is recommended to allow the implementation of the measures outlined in this management plan.

Table 1.2 Implementation, Maintenance and review program

Measure Description	When	By Who	Maintenance/Review
Flood compatible materials	During construction	Builder/Owner	Cleaning after flooding
Flood warning system	Prior to occupation	Builder/owner	As recommended by manufacturer (Every 6 months)
Perimeter fencing	During construction	Builder	As required
Evacuation procedure	Occupation	Site Operator	Yearly
Induction course	Occupation	Site Operator	Yearly
SES contact	Occupation	Site Operator	Yearly
Flood Risk Management Plan	During design period	Consultant/Owner	Every 5 years or when more Flooding information is available