Additional Information to Independent Planning Commission by City of Parramatta Council

SSD Development Application - Novus Build to Rent, Apartment Tower 39-43 Hassall St Parramatta

The following information has been provided to questions that have been raised by the Independent Planning Commission via letter dated 5th February 2024.

1. Provide a response to the Department of Planning, Housing and Infrastructure's independent flood review completed by GRC Hydro.

The Development Application was supported by a joint flood report from Lyall Associates December 2022 and Molino Stewart 13 January 2023 and February 2023. Lyalls did a 2D Tuflow flood model to incorporate overland flow and based on Council's adopted flood modelling from 2005.

GRC Hydro was employed by the Department to review the work of Lyall and Molino Stewart and reported on 30 March 2023 with an updated report on 2 November 2023.

This report is Council's review of that work.

GRC Hydro reviewed the modelling by Lyalls and Flood Risk Assessment and Flood Emergency Response Plan by Molino Stewart. The GRC Hydro report agreed with the modelling by Lyall and Associates and the Risk and Emergency Response assessments by Molino Stewart in almost every respect.

However, Council (and also the NSW Environment and Heritage Group 18 July 2023) disagreed with both the flood modelling by Lyall and the Flood Risk Management approach built on this by Molino Stewart.

This means there is very little in the GRC Hydro report that Council agrees with or can support.

As a result, there is a fundamental difficulty for Council in reviewing this GRC report in that Council does not accept the foundations on which it is based throughout.

Summary of Council's Overarching Concerns regarding the GRC Hydro, Lyalls, Molino Stewart reports.

Risks to life from occupation of site are understated or not acknowledged.

Underestimate of 1% AEP flood levels by Consultants- 0.4m approx. less than Council's 2005 adopted flood study.

Underestimate of 1% AEP flood hazard by Consultants – predict medium to low hazard whereas Council 2005 studies shows all of site in high hazard and Council draft 2023 study shows almost all of site is H3 and surrounds are H4.

Underestimate of PMF flood hazard by Consultants – Council draft study predicts H5, across all of site and H6 on north, east and western sides. This is modelled with no building on site, so no obstruction of flow. Impacts of obstruction of floodway by building are not yet known but likely to increase hazard to potentially H6 resulting in building destruction and significant off-site impacts.

Inadequacy of design for Shelter in Place – risk of partial or complete structural failure in severe storms up to PMF.

Inadequacy of design for Shelter in Place – proposed duration of stay inadequate (6hours) and life support services not provided for a realistic length of stay in the refuge during and post flood. (Council's DCP requires a minimum length of stay of 72 hours.)

Inadequacy of design criteria for Shelter in Place – number of people accommodated – the proposal relies on people remaining in their apartments and does not clearly address numbers of visitors and non-residents.

GRC report specific points

Flood model methodology – Molino Stewart describes 'Creek flooding' as downstream flow in Clay Cliff Creek and 'Riverine Flooding' as upstream flow in Clay Cliff Creek from Parramatta River. Council does not recognise this distinction. (GRC p4)

It is noted on GRC p 5 under the heading 'Lyall and Associates Model Update' that 'Lyall and Associates opted to develop a new model for the site "*in order to more accurately define flooding behaviour…*"'. GRC Hydro accepted this without questioning its scientific or legal validity.

The normal procedure required by Council for such developments is for Applicants to obtain a Flood Information Certificate from Council which advises of mainstream/riverine flood levels adopted by Council and which has the statutory support of having gone through the extensive process set out in the Flood Risk Management Manual. These adopted levels, flood extents (1% AEP and PMF) and Flood Hazard maps (1% only) form the basis of the flood risk assessment for the development *as a minimum*.

The 2005 adopted flood information is seen as a minimum, but does not include overland flow, which was not modelled in 2005. If considered significant, an overland flow flood study will also be required. If overland flow levels are found to be higher than the mainstream/riverine flood levels, then the higher of the levels is the basis for the Flood Planning Levels applicable to the development. 500mm freeboard is added to the higher 1% AEP flood level to produce the Flood Planning Level. This may vary around the site but provides the basis for development control, notably minimum habitable floor levels and basement driveway crests. The overland flow modelling will also produce flood extent and flood hazard mapping for the 1% AEP overland flow event which is considered alongside that for the mainstream/riverine flood information and again the more impactful of the two sets of values is used as the basis for development control and risk mitigation.

Normally Council does not require or accept changes to its adopted mainstream flood modelling.

However in this case Lyalls – supported by Molino Stewart and subsequently endorsed by GRC Hydro – pursued their own flood modelling for both overland and mainstream flow. Council did not request this remodelling of the mainstream flow and has never accepted its validity. This flood modelling has not been subject to the extended scrutiny, public consultation, peer review and Council adoption process required by the NSW Flood Policy and the Flood Risk Management Manual and so has no statutory or technical basis.

This unrequested modelling of the mainstream (Clay Cliff Creek) flooding by Lyalls has the effect of reducing or minimising predicted flood levels, hazard conditions, impacts and affectation for the proposed development. To achieve this reduction the Lyall model appears to place much emphasis on culvert / bridge blockage (or lack of it) with blockage factors of 15% of bridge openings along Clay Cliff Creek. (GRC p 5). Council does not accept this methodology.

GRC Hydro in November 2023 stated:

"GRC has reviewed L&A's blockage assessment and it is GRC's opinion that the

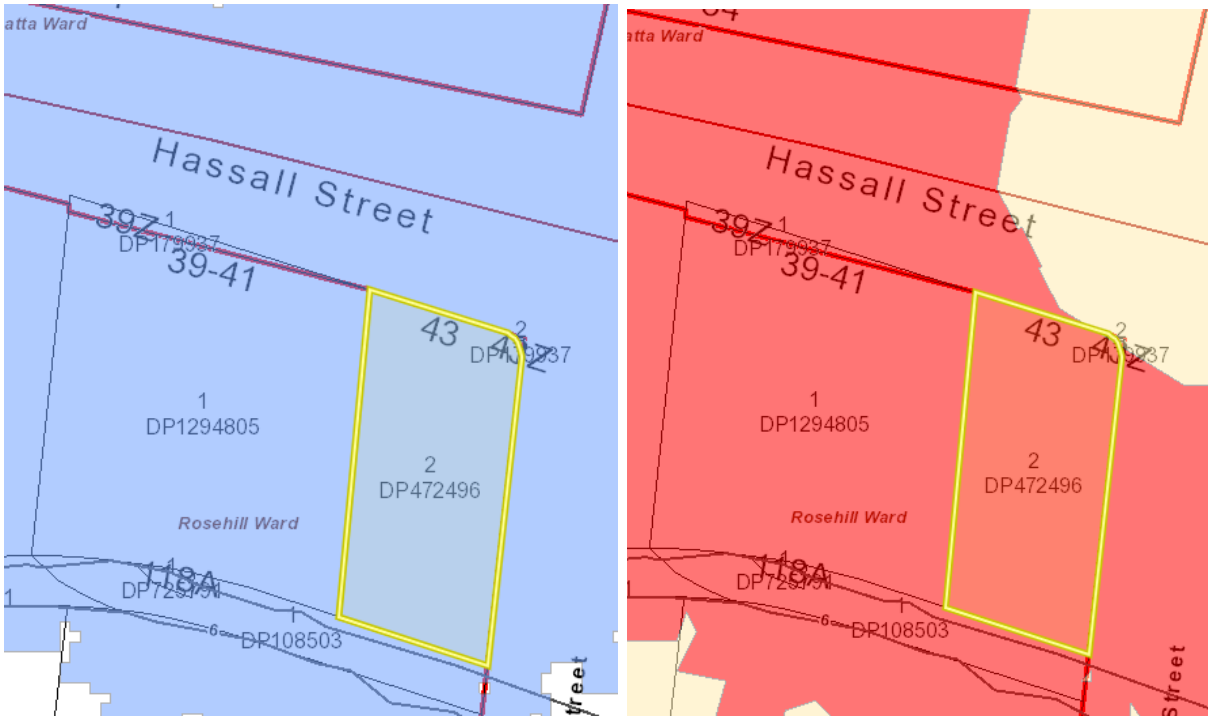
blockage could reasonably be calculated as 0% as per the ARR2019 blockage assessment methodology."

This opinion by GRC Hydro appears to be based on theory rather than practice. Council's experience is that such bridges and culverts quickly trap debris and become highly blocked during floods. It can take Council workers days to remove this debris. In any case the bulk of the flow along Clay Cliff Creek will be overland as the channel is limited to about a 1 in 5 year capacity. So whether bridges and culverts in the channel are blocked or open will make limited difference in practice in the 1 in 100 scenario we are required to consider.

One of Council's concerns here is that GRC as an independent reviewer has responded to the fact that the Lyall – Molino Stewart approach has no statutory basis, is not peer reviewed and has not been subject to the scrutiny of Council's adopted flood study (or new draft flood study). GRC Hydro has not expressed concern that the Lyall and Associates work was based on a very short time frame for the modelling to be done, and asserted lower flood levels and hazard impacts than predicted by Council.

The flood mapping by Lyall and endorsed by GRC Hydro in Figure 6, p7, shows minor flooding by the 1% AEP across a comparatively small part of the site and a flood level in Clay Cliff Creek that is 0.4m less than the Council issued flood levels.

By contrast Council's 2005 flood maps show all of the site is inundated to high hazard level in a 1% AEP.

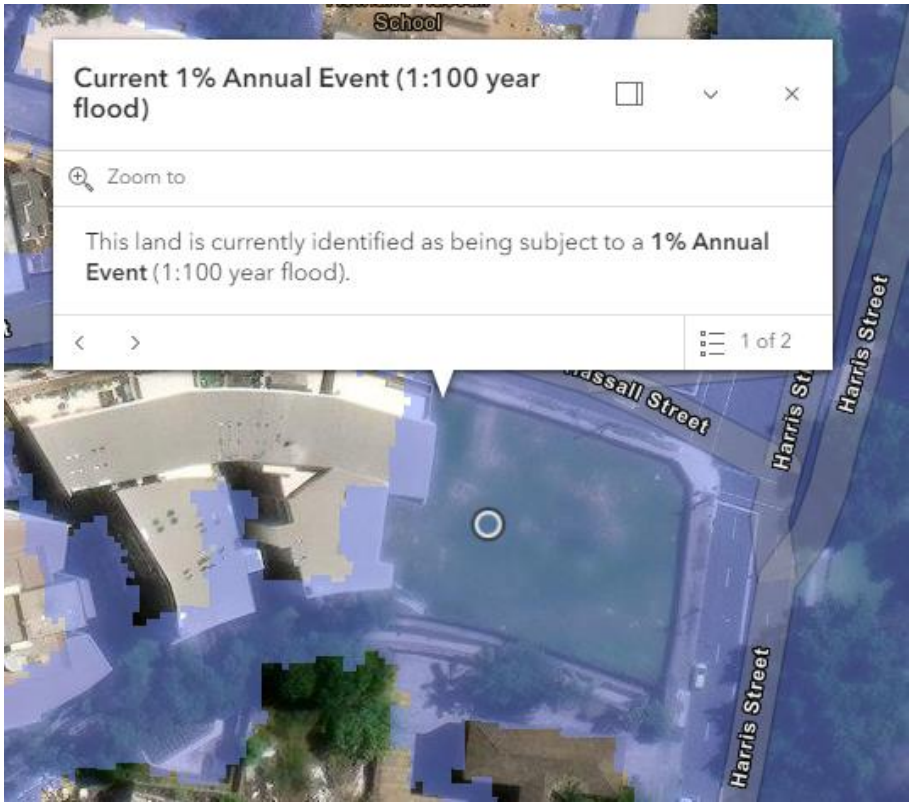


1% AEP Flood extent shown in blue **1% AEP High Hazard shown in red**

(Council Adopted Flood Study 2005)

Council's 2023 Draft Flood Study shows all of the site is inundated in a 1% AEP event and all of the site is H3 High hazard in a 1% AEP event.

The Lyall model shows only a minor part of the site is inundated in a 1% AEP flood and the corresponding hazard level was H2 low hazard. This was endorsed and not questioned by the GRC Hydro report.



1% AEP Flood Extent mapping (Council Draft Flood Study 2023)

1% AEP Hazard mapping (Council Draft Flood Study 2023)

The Lyall and Associates model is a significant underestimate against both Council Flood Studies and is not a sound basis for any assessment. GRC Hydro has endorsed this inadequate modelling despite both of the Council Flood Studies being publicly available.

GRC Hydro on page 9 note the inclusion of the various structures and barriers in the Lyall model and endorse the Lyall model's predictions as to the minimised flood impact arising from these and from the structure itself. The GRC Hydro report endorsed the Lyall model of minimal Hazard levels post development and H1 Lowest Hazard at the pedestrian entrance from Hassall Street. This contradicts both Council's models which are High Hazard (2005 model) and H3 (2023 model) in all areas of the site. The GRC Hydro report does not address this important discrepancy.

On page 12 of the November 2023 report, GRC Hydro responded to the EHG submissions including 13 October 2023.

This response by GRC Hydro focussed on and endorsed the following features of the proposal:

1. The use of flood gates to protect the basement car park;

This is not a Council concern at this stage.

2. The use of flood gates for impact mitigation;

Council does not permit floodgates to be used on this way whereas GRC Hydro supported it.

3. The time of isolation;

Council disagreed with the time of isolation proposed by the Applicant (6 hours) and endorsed by GRC Hydro. (Counil's DCP requires 72 hours minimum.)

4. Compliance with LEP Clause 7.9 (now Clause 7.11 3(b) in the updated 2023 LEP);

which requires that the site "has an emergency access point to land above the 1% annual exceedance probability event".

GRC Hydro's response to this was as follows:

"The provision of an access/egress point has been proposed in the form of the jetty and walkway connecting the development and a parcel of Harris St that lies above the 1% AEP flood level (given the adoption of a 0% AEP blockage factor, which GRC believes is appropriate on review of the ARR 2019 Blockage Assessment for the site as provided by the Applicant)."

<u>According to Council's adopted flood levels there is not a suitable area of land above the 1% AEP level and the pathway proposed and endorsed by GRC Hydro is close to the Clay Cliff Creek channel main floodway and its very high hazard environment and so is quite unsuitable for an evacuation route. Clause 7.11 is therefore not satisfied.</u>

Also GRC Hydro was seeking to justify this by assuming 0% blockage of bridges and culverts which was not part of the Lyall model and as described above is not accepted by Council in any case.

5. Flood function and flood impact (i.e. disagreement that the Applicant's site-specific flood modelling is appropriate)

Again GRC Hydro asserts that the Lyall model *"provides a best-practice representation of flood affectation in this catchment."*
As described elsewhere in this response Council and EHG do not support this view

The fundamental issues of the unsuitability of the site for this development because of high hazard and risk are not mentioned or addressed by GRC Hydro and are left silent.

Compliance or non-compliance with relevant planning instruments.

GRC Hydro have set out in Tables 2 to 5 whether the proposed development complies with the relevant LEP and DCP instruments (as updated).

Under each item GRC Hydro states that "*The proposed development complies in this regard*".

To achieve this GRC Hydro accepts the Lyall flood model in preference to the adopted 2005 and Draft 2023 Council Flood Studies. If these studies were used the proposed development would not comply.

As well GRC Hydro adopts a 6 hour flood duration for the shelter in place design – again not meeting Council's requirements for a minimum of 72 hours which more closely reflects the real dynamics of severe storms and floods and the need to minimise risks to people.

Despite GRC's endorsements, Council has therefore found that almost all significant flooding aspects of the LEP 2023 and DCP 2023 are not satisfied by the proposed development.

Compliance or non-compliance with relevant planning instruments - Examples.

For example in LEP 5.21 3*(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,*

GRC Hydro endorses a strategy whereby safe horizontal evacuation is achieved by 'early evacuation' before the flood.
In fact the site will be heavily flooded at ground level in a 1% flash flood with very short warning times and horizontal evacuation will not be possible. The GRC Hydro endorsement of this point is misleading as it requires evacuation *before* the flood – an unrealistic and dangerous proposal here. Despite this, as reviewer GRC Hydro has not challenged this proposal but merely supported it.

Under LEP Clause 7.11 (3) p21 GRC Hydro states that *"The proposed development includes ample area that is safe for the refuge of occupants above the PMF level"* and notes that this includes 'a gym and

flexi space on Level 2' and 'residential units on the floors above'. Council does not consider this an adequate response to threat to life shelter in place requirements.

GRC Hydro endorses the proposed supply of electricity for 6 hours, without noting that this is contrary to Council's DCP 2023 - which requires at least 72 hours' maintenance of services.
GRC Hydro defends the 6 hour shelter in place duration advocated in the Molino Stewart reports which are mostly based on a 6 hour flood duration considered adequate by Molino Stewart in 2015 and repeated throughout the GRC Hydro documents. Council does not agree with the Molino Stewart analysis based on Council's experience with major storms and floods that extend over several days as a result of meteorological conditions, as well as the aftermaths of such floods and their ongoing impact on the city. As a result Council's adopted DCP 2023 requires a flood shelter and refuge duration of at least 72 hours. The development cannot achieve this. GRC Hydro does not acknowledge here that the proposal is inadequate in this regard.

"The refuge facilities have been designed for a refuge stay of 6 hours. The development has a 24-hour back-up power supply in addition to 6-hour back-up supply of water and wastewater services… 6 hours of back-up services is sufficient to shelter site occupants during a flood.
The building design and back-up systems enable residents to safely remain in their rooms during a flood."
In Council's view 6 hours is nowhere near adequate. The proposal does not include back up of power, water supply, sewerage and other essential utilities for a period of 72 hours or longer for the refuge and all apartments.

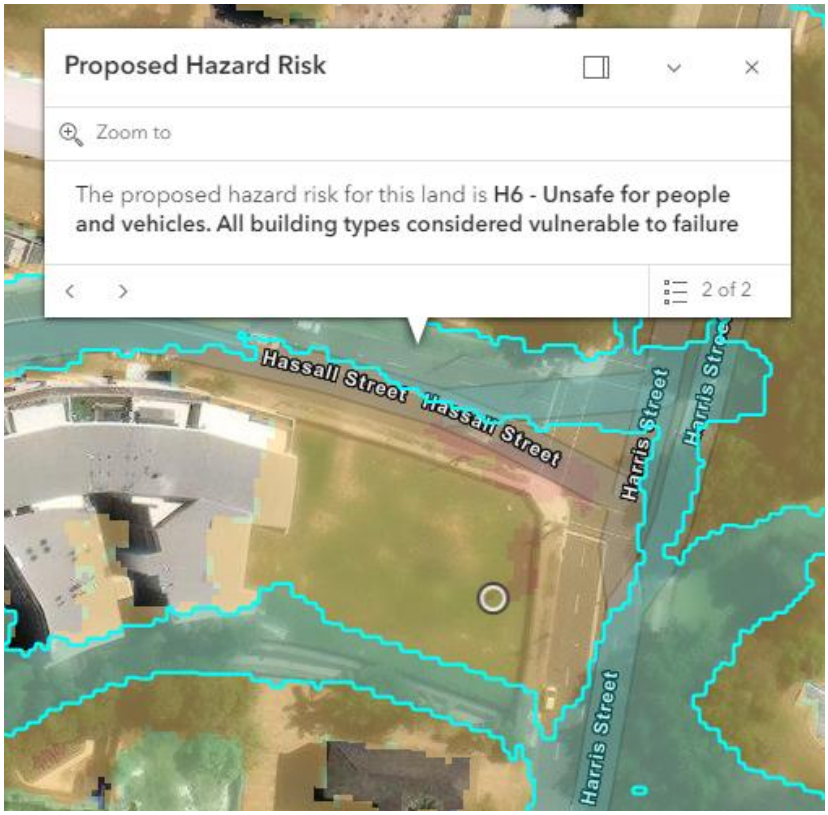
Under 3 a (ii) (p 23) GRC Hydro again endorses the capacity of the proposed SIP which relies mainly on people remaining in their apartments . This is not adequate for a SIP.

Under LEP 7.11 3 (b) the development must have "an emergency access point to land above the 1% annual exceedance probability event".
As noted above GRC Hydro (p 23) has tried to defend the proposal's compliance with this requirement by asserting that the Lyall model assumptions of 15% blockage of culverts and bridges is incorrect (too conservative) and a blockage factor of 0% can be used. GRC Hydro states that if this change is made to the Lyall model "*under this scenario, the proposed development would have an emergency access point and is considered compliant*". From above it is proposed that this emergency access is along the bank of Clay Cliff creek to Harris Street in the direct pathway of the floodway. Clearly the proposal does not satisfy this clause and it is unacceptable that GRC Hydro would seek to change the modelling parameters to justify the proposal.

Under LEP 7.11 3 (c) the development must be "able to withstand the forces of floodwaters, debris and buoyancy resulting from a probable maximum flood event".
GRC Hydro has defended the proposal by stating that an Engineer's report will be obtained to certify this and so the proposal complies with the LEP.
This is not adequate in that information publicly available since November 2023 shows clearly that the entire suite is subject to extreme hazard Conditions **H5 - Unsafe for people and vehicles. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure**
The surrounding streets and Clay Cliff Creek are predicted to be the most severe Hazard level of H6. This is without modelling the effect of the proposed building itself, which would likely increase hazard conditions around its edge to **H6 - Unsafe for people and vehicles. All building types considered vulnerable to failure**.

2. Probable Maximum Flood Hazard mapping

PMF Hazard map from Councils Draft Flood Study 2023(H5)



PMF Hazard map from Councils Draft Flood Study 2023 (H6)

PMF Hazard map from Councils Draft Flood Study 2023 (H6)

DCP Controls

On p 24 GRC Hydro refers to the DCP matrix/table 5.1.1.2

CRC Hydro states that the development site is 'Medium risk area' which is defined by them as "Medium and low hazard area in the 1% AEP".

However Council's adopted Flood map shows that the whole site is inundated with High Hazard floodwaters, not medium or low hazard. GRC's statement is therefore misleading.

Council's 2023 Draft flood study also shows H3 level (High) Hazard in the 1% AEP flood **H3 - Unsafe for vehicles, children and the elderly.**

1% AEP Flood Hazard Map from Council's Draft Flood Study 2023

This means that the proposed development falls in the high flood risk category **for which residential commercial and industrial development is unsuitable**. The assertions made by GRC Hydro are not correct.

From DCP 2023:

Table 5.1.1.2 – Floodplain Matrix Planning and Development Controls

Flood Risk Precincts (FRPs)	Planning Consideration	Floor Level	Building Components	Structural Soundness	Flood Affectation	Car Parking & Driveway Access	Evacuation	Management & Design
High Flood Risk	Sensitive Uses & Facilities	X	X	X	X	X	X	X
	Critical Uses & Facilities	X	X	X	X	X	X	X
	Residential*	X	X	X	X	X	X	X
	Commercial & Industrial	X	X	X	X	X	X	X
	Open Space & Non-Urban	1	1	1	1	2, 4, 6, 7	1, 4	2, 3, 4
	Subdivision	X	X	X	X	X	X	X
	Filling	X	X	X	X	X	X	X
	Concessional Development	4	1	1	1	1, 5	3, 4, 6	2, 3, 4

Duration of Shelter in Place

GRC Hydro does identify on p 32, just before the Conclusion, that the proposed development does not provide shelter in place for the 72 hour period required in the DCP. The proposal is for only a 6 hour refuge from flooding within the apartments. As such GRC Hydro acknowledges that this is not compliant but this does not matter.

GRC goes on to defend the proposal by reasserting the prediction of a 6 hour flood duration.

"Given that a riverine PMF would only isolate the site for a maximum of 6 hours, the provision of back-up services for 6 hours is believed to be sufficient to shelter site occupants during a flood." GRC p 32

This is incorrect based on Council's real experience with major floods and would result in a substandard and unsafe development.

Conclusion
Given the many points raised above the GRC Hydro Conclusion does not appear to be relevant.

3. Planning Proposal and LEP amendment that facilitated the current FSR

On the 14th October 2022 a planning proposal was made that brought in holistic uplift to the Parramatta CBD, including this site. The uplift was supported by a variety documents including a Flood Risk Management Plan prepared for Council by Molino Stewart. This document is attached and the full suite of documents can be found at Parramatta LEP 2011 - Parramatta CBD Planning Proposal 2017 (11,900 dwellings) | Department of Planning Housing and Infrastructure (nsw.gov.au). In summary, the report articulated that development on certain flood affected land could be acceptable as long as certain controls were included to guide development. These controls are found in Clause 7.11 of the current LEP (previously Clause 7.9). The clause is copied below, with particular reference to Clause 7.11 3(b).

7.11 Floodplain risk management

(1) The objective of this clause is to enable occupants of buildings in certain areas subject to floodplain risks—

(a) to shelter in a building above the probable maximum flood level, or

(b) to evacuate safely to land above the probable maximum flood level.

(2) This clause applies to land identified as "Floodplain Risk Management Area" on the Floodplain Risk Management Map.

(3) Development consent must not be granted to the erection of a building on the land unless the consent authority is satisfied the building—

(a) contains an area that is—

(i) located above the probable maximum flood level, and

(ii) connected to an emergency electricity and water supply, and

(iii) of sufficient size to provide refuge for all occupants of the building, including residents, workers and visitors, and

(b) has an emergency access point to land above the 1% annual exceedance probability event, and

(c) is able to withstand the forces of floodwaters, debris and buoyancy resulting from a probable maximum flood event.

(4) Subclause (3)(a) does not apply if—

(a) there is pedestrian access located between the building and land above the probable maximum flood level, and

(b) the pedestrian access is located above the probable maximum flood level.

(5) In this clause—

annual exceedance probability has the same meaning as in the Flood Risk Management Manual.

Flood Risk Management Manual—see clause 5.21(5).

probable maximum flood has the same meaning as in the Flood Risk Management Manual.