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Stanton Dahl Architects

Date
17th January 2025

Job Number
230392

Flood Review for proposed Residential Development [Rev#4]
31-37 Phillip St, RAYMOND TERRACE NSW

Dear Sir/Madam,

Please find following our review of flooding at the above site. The subject site is located on the corner of Phillip St and Windsor St, refer **Figure A** and comprises Lots 129, 130 & 151 DP 31774 with an area of approximately 1777m^2. Ground levels range from +9.7 mAHD (north corner) to +8.4 mAHD (south-east corner) based on the provided survey data. The site currently contains 3 residential dwellings. Port Stephen Council's flood information as provided is derived from the "*Overland Flow Grid Surfaces*" [Advisian, 2017]; this flood study indicates that the site is subject to shallow inundation in the 100yr ARI (1%AEP) event. We also note that Grahamstown Drain is located a short distance to the south.

Figure A: Site Location

The development as proposed consists of demolition of the existing 3 dwellings and construction of a community housing development with the western side designated as "Hume" with 7 residential units and external parking, and the eastern side designated as "LAHC" with 6 residential units. Floor levels are above the minimum recommended in this report.

FLOOD INFORMATION

Port Stephen Council's flood information as provided is derived from the "*Overland Flow Grid Surfaces*" [Advisian, 2017]; we assume that this information is based on one of Council's other flood studies undertaken for the Grahamstown Drain catchment, but no information appears to be readily available online. Flood information from the 2017 study as provided by Council indicates that:

A. The site is approximately 50% flooded in the 1%AEP flood event to shallow depths, typically less than 200mm.
B. The worst-case 1%AEP level is +8.9 mAHD.
C. The PMF level varies up to RL +9.0 mAHD maximum.
D. The recommended Flood Planning Level (FPL) is +9.2 mAHD.
E. The adaptable minimum floor is +9.2 mAHD.
F. The hazard category is Low-hazard Flood Fringe.

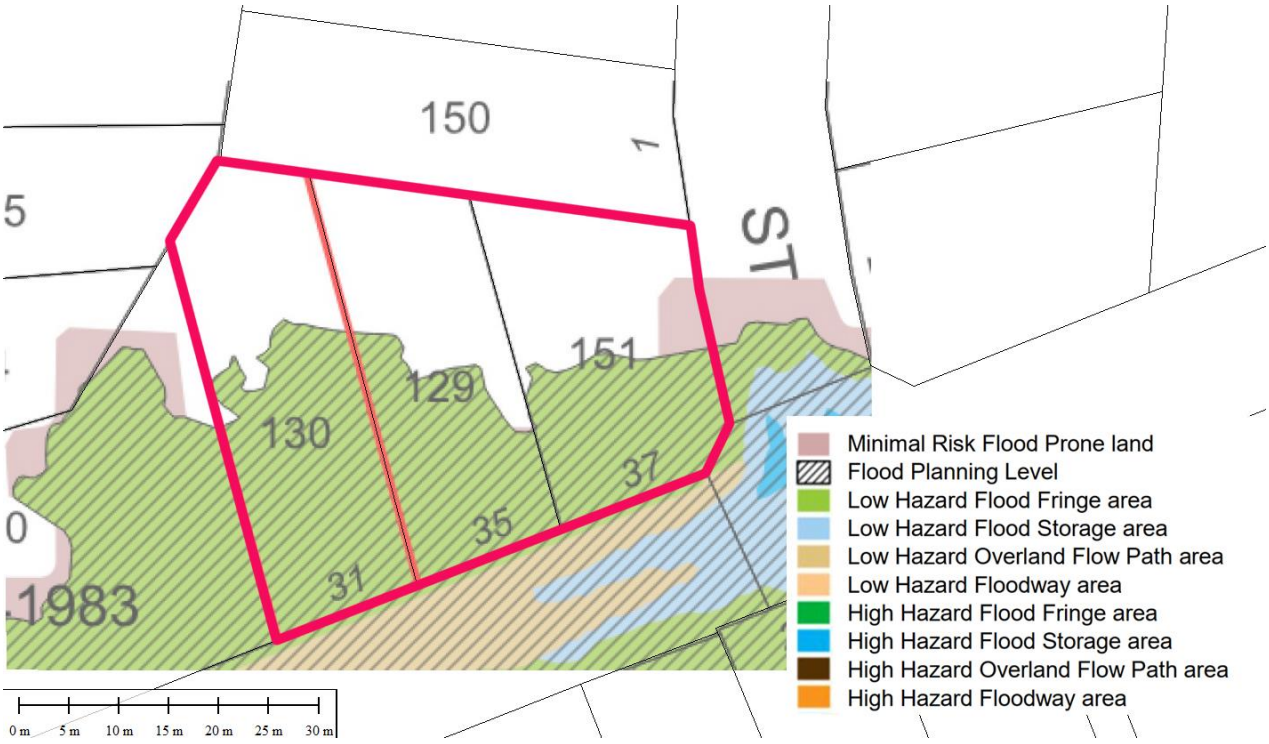

Figure B: Flood categories [extract]

Rate of Rise & Duration of Flooding

As aforementioned, no flood report appears to be readily available online, either on Council's website or the NSW SES Flood Data Portal. Based on the title of the information source "*Overland Flow Grid Surfaces*" we assume that Council has an approximate indication of flood extents and levels but no formally adopted flood study or further information that can be provided. Therefore, no exact comment can be made on the rate of rise of floodwaters or duration of flooding. We note that a full flood study would be required to determine this information, which is well beyond the scope of this flood review. It is our opinion that the size of the catchment draining into the Grahamstown Drain is relatively small; these sized catchments tend to respond quickly to rainfall, and we expect that the PMF event would have a critical duration of less than 2 hours, with floodwaters rising and falling in less than 4 hours.

Further comment can be made, should Council be able to assist and provide the relevant documentation.

FLOOD HAZARD AND RISK

NSW FDM Hazard

With respect to flood hazard, the NSW Floodplain Development Manual (2005) (now superseded by the NSW Flood Risk Management Manual (Department of Planning & Environment, 2023) provided guidelines for determining the hydraulic flood hazard. A provisional hazard can be assigned to an area using Figure L2 and the combined impact of flood velocity and flood depth. In general, an area will be (provisionally) assigned High Hazard if any of the following criteria are satisfied:

- The flood depth (D) is greater than 1.0 m.
- The flood velocity (V) is greater than 2.0 m/s.
- The combination of V and D lie in the dark blue region (mathematically this is approximately where V + 3.33D is greater than 3.33).

The site is low-hydraulic hazard in the 1%AEP event under these definitions.

ARR2019 Hazard & FRM 2023

The NSW Flood Risk Management Manual (Department of Planning & Environment, 2023) uses the ARR2019 updated Hazard curves as described in Table 6.7.3 and 6.7.4 of ARR2019 Chapter 6, with the definitions as follows:

H1: Generally safe for vehicles, people and buildings [D<0.3m, V< 2m/s, V*D < 0.3].

H2: Unsafe for small vehicles [D<0.5m, V< 2m/s, V*D < 0.6].

H3: Unsafe for vehicles. children and the elderly [D<1.2m, V< 2m/s, V*D < 0.6].

H4: Unsafe for vehicles and people [D<2.0m, V< 2m/s, V*D < 1.0].

H5: Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure [D<4.0m, V< 4m/s, V*D < 4.0].

H6: Unsafe for vehicles and people. All building types considered vulnerable to failure.

The FRMM 2023 identifies that categories H1-H4 are equivalent to the FDM 2005 “low-hazard” and H5-H5 “high hazard”. There is no velocity information available for the subject site, but based on the shallow depths we expect hazards in the 1%AEP event to be predominantly H1 with some small areas at H2.

Flood Risk

Some Council’s adopt Flood Risk Precinct categories for the purpose of assessing flood risk at a particular site. These typically relate to (but do not necessarily correlate with) the Hydraulic Hazard zones discussed above. Port Stephens Council uses the NSW Floodplain Development Manual (2005) Low & High hazards and further divides the floodplain into the following 4 categories:

Floodways are those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with obvious naturally defined channels. Floodways are the areas that, even if only partially blocked, would cause a significant redistribution of flow, or a significant increase in flood level which may in turn adversely affect other areas. They are often, but not necessarily, areas with deeper flow of areas where higher velocities occur.

Flood Storage areas are those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. If the capacity of a flood storage area is substantially reduced by, for example, the construction of levees or by landfill, flood levels in nearby areas may rise and the peak discharge downstream may be increased. Substantial reduction of the capacity of a flood storage area can also cause a significant redistribution of flood flows.

Flood Fringe is the remaining area of land affected by flooding, after floodway and flood storage areas have been defined. Development in flood fringe areas would not have any significant effect on the pattern of flood flows and/or flood levels.

Overland flow path: land inundated by local runoff on its way to a waterway, rather than overbank flow from a stream or river.

The subject site has been mapped as **Low Hazard – Flood Fringe**.

PRACTICAL CONSIDERATIONS

Floor Levels

As aforementioned, all proposed floors should be set at the flood planning level of RL +9.2 mAHD.

Currently the proposed floor levels are set as follows:

- Hume A (3 units): +9.35 mAHD
- Hume B (4 units): +9.45 mAHD
- LAHC A (4 units): +9.35 mAHD
- LAHC B (2 units): +9.45 mAHD

These are above the minimum required with respect to flood mitigation.

Building Components

The flood planning level can be considered RL +9.2 mAHD and all proposed elements below this level must be constructed of flood compatible materials.

Structural Soundness

The flood planning level can be considered RL +9.2 mAHD and a structural engineer must confirm that the proposed works as shown on the current architectural drawings must be able to withstand the forces of floodwaters up this level, including:

- Force from floodwater (flows)
- Force from debris
- Uplift forces due to buoyancy

COMPLIANCE WITH COUNCIL LEP OBJECTIVES

Port Stephen Council typically require all development to be assessed against LEP 2013 Section 5.21 'Flood Planning' and we provide comment as follows:

(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development—

(a) is compatible with the flood function and behaviour on the land, and

The subject site is Low-hazard Flood Fringe and therefore suitable for development.

(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and

The proposed new solid obstructions (the new dwellings) are located either outside the 1%AEP flood extents or similar in footprint to areas already taken up by the existing dwellings. Considered overall, we do not believe the development as proposed will have any significant impact on local flood behaviour.

(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and

The maximum onsite PMF level is +9.0 mAHD and this is below the minimum floor level of +9.2 mAHD. Therefore, onsite residents may safely evacuate via 'shelter-in-place' and remain within their dwellings until floodwaters subside or emergency personnel have advised otherwise. We therefore do not believe there will be any negative impact on the ability of site occupants to evacuate or negatively impact on existing offsite evacuation routes.

(d) incorporates appropriate measures to manage risk to life in the event of a flood, and

This report documents the required flood risk mitigation measures for the development as proposed.

(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.

We do not believe the development as proposed will causes excess erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses noting it is subject to overland flows, not riverine flooding.

(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—

(a) the impact of the development on projected changes to flood behaviour as a result of climate change,

One of the predicted impacts of climate change is an increase in short-duration rainfall intensities. Predicted values for various Representative Concentration Pathways (RCP) are available on the ARR Datahub. As far as we are aware, no climate change modelling is available for review for the 2017 Advisian flood study, and there are no readily available maps that show the correlating increase in flood levels compared to existing conditions.

Thus, exact quantification of flood level increases are not possible without flood modelling, which is well beyond the scope of this report. Based on our experience on similar sites, a 30% increase in rainfall intensity is likely to cause water levels in the 1%AEP event to increase by around 50-100mm, but this is site specific and dependant on numerous factors such as the underground pipe network, storage volumes, etc. It is our opinion that water levels in the 1%AEP event for RCP8.5 scenario (2090) are very unlikely to increase more than the applied 300mm of freeboard.

(b) the intended design and scale of buildings resulting from the development,

No comment as this does not specifically refer to flooding.

(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,

This report documents the required flood risk mitigation measures for the development as proposed; comments on evacuation are provided in the relevant section of this report.

(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

We do not foresee that future buildings will ever be required to be removed noting that the flooding mechanism in the local vicinity is typified by shallow overland flows, as opposed to coastal wave runup or riverine flooding.

COMPLIANCE WITH COUNCIL DCP OBJECTIVES

Port Stephen Council will typically require all development to be assessed against it's DCP Section B5 "Flooding", noting the subject site is Low Hazard – Flood Fringe and thus suitable for a residential development.

Floor Levels: Council typically requires that floor levels be set as follows:

Habitable rooms:	flood planning level or +9.2 mAHD
Non-habitable rooms:	adaptable minimum floor level or +9.2 mAHD
Open car-parking:	the 1%AEP level or +8.9 mAHD

We note that all habitable and non-habitable rooms will be set as noted previously, above the minimum required with respect to flood immunity. The proposed car parking spaces are generally all above RL +9.0 mAHD, but noting the shallow flows and very low hazards, we see no reason why car spaces that are slightly below this level (e.g. RL +8.8 mAHD) would result in vehicles becoming unstable or a risk during a 1%AEP flood event.

Fencing: fencing on flood prone land should be stable in events up to the current day 1%AEP flood event and not obstruct the flow of floodwater.

Electrical Fixtures: All incoming main power service equipment, including all metering equipment, and all electrical fixtures, such as power points, light fittings, switches, heating, ventilation and other service facilities must be located above the FPL or RL +9.2 mAHD.

Potentially hazardous and/or polluting material: The storage of hazardous or potentially hazardous materials, potentially polluting material or material that could be washed from site and cause harm downstream must be stored above the FPL (+9.2 mAHD). Items that may wash away during flood events (e.g. rainwater tanks, hot water tanks, gas cylinders, shipping containers) must be elevated above the 1% AEP flood event level in the year 2100 (without freeboard) or anchored to resist buoyancy and impact forces. Given that the habitable floor levels are set at the FPL, we see no reason why this objective cannot readily be achieved.

Impact / Fill Assessment: Council may or will require an assessment of flood impacts for sites within Floodway or Flood Storage areas. The subject site is entirely Flood Fringe and therefore no assessment is required. We note that the proposed new solid obstructions (the new dwellings) are located either outside the 1%AEP flood extents or similar in footprint to areas already taken up by the existing dwellings. Considered overall, we do not believe the development as proposed will have any significant impact on local flood behaviour.

Emergency onsite flood refuge: the maximum onsite PMF level is +9.0 mAHD and this is below the minimum floor level of +9.2 mAHD. Therefore, onsite residents may safely evacuate via 'shelter-in-place' and remain within their dwellings until floodwaters subside or emergency personnel have advised otherwise.

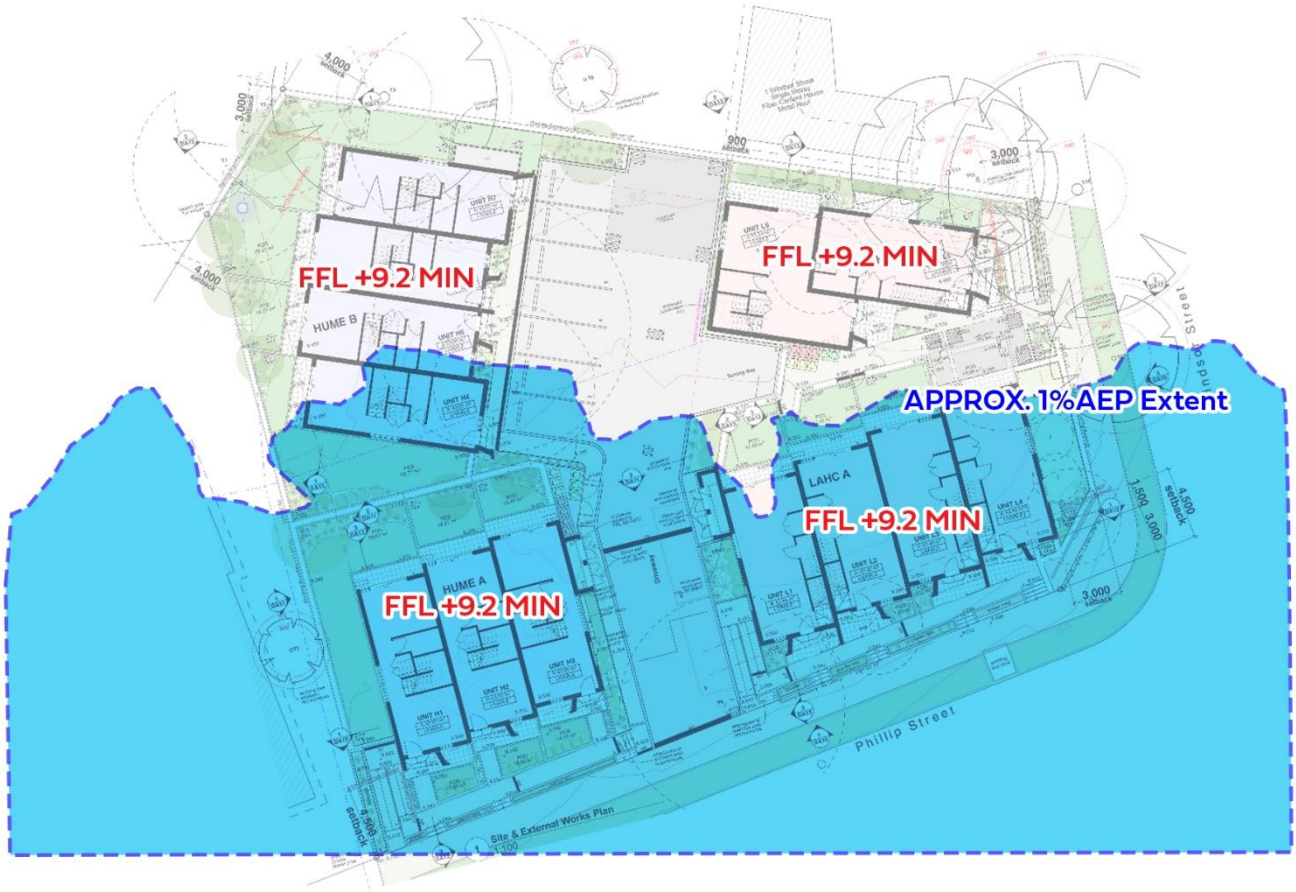

Figure C: Flood Mitigation Measures

COMMENT ON DEPARTMENT OF PLANNING FLASH FLOODING GUIDELINE

The NSW Government Department of Planning, Housing and Infrastructure has recently released the document "Shelter-in-place guideline for flash flooding". We provide comment against the relevant items as follows.

[1] does shelter-in-place align with existing emergency management strategies for the area, as determined through the flood risk management process and by the NSW SES.

As far as we are aware, the most up-to-date SES document of relevance is the Port Stephens Flood Emergency Subplan (December 2022) which primarily covers mainstream Hunter River flooding, rather than flash flooding from the small Grahamstown Drain catchment. We cannot provide further comment since we do not believe the SES Subplan was prepared in consideration of the type of flooding at the subject site.

[2] has evacuation off-site (the primary emergency management strategy) been investigated and determined to be unachievable

The site is partially flood free in the PMF, so offsite evacuation is not required. We contend that it is safer for residents to remain onsite on a lot (in their dwellings) that contains flood free areas in the PMF event rather than traverse some distance to another area that is flood free in the PMF, that would require travel through intense rainfall along roads that may or will be inundated. We note that the SES states that driving or wading through floodwaters of any depth is not recommended; since all roads will almost certainly contain flows in the PMF event, we assume that offsite evacuation is not recommended by the SES during a PMF event for the subject site.

[3] does the development include medical centres, emergency service and community facilities, and sensitive and hazardous land uses, some of which may not be suitable for shelter-in-place

No.

[4] shelter-in-place for greenfield development is not supported
The site is not a greenfield development.

[5] whether there is existing government developed flood warning systems that give advanced detailed forecasts of flash flooding to allow sufficient time to evacuate to the proposed refuge locations.
There is no time required to evacuate if onsite residents are to wait within their dwellings.

[6] can the community effectively be informed of the risks associated with the emergency management strategy
We assume that all residents could be informed of the evacuation strategy via signage in a suitable location in their dwellings.

[7] detailed assessment of evacuation off-site (the primary emergency management strategy) to determine that evacuation off-site is not achievable.
Refer point #2 above.

[8] the flood behaviour at the site, with consideration of climate change and assessment of the potential maximum duration of isolation up to and including the PMF to identify that:
a. flash flooding is the only flood risk present at the site, whether it be from overland flooding, local creek or riverine flooding, and
The site is subject to short duration flooding that would typically be classed as "flash flooding".

b. the flooding occurs within less than 6 hours from the commencement of causative rain and the duration of shelter-in-place due to isolation by floodwaters is less than 12 hours from the commencement of rainfall, and
As noted previously, we do not have detailed information on the rate of rise or duration of flooding, but it is our opinion that floodwaters will rise and drop rapidly in less than 4 hours for a PMF event.

c. the development is not subject to high hazard flooding (e.g. floodways, high hazard H5 or H6 areas) or surrounding roadways are not subject to high hazard flooding.
The site has been classed as Low Hazard - Flood Fringe.

[I] the floor level of the shelter-in-place part of the development be above the PMF, and
The floor level of all dwellings is above the PMF.

[II]structural soundness for conditions in a PMF event, considering flood and debris forces, be verified by a suitably qualified structural engineer, and
We assume this can be readily undertaken, since the flood planning level (FPL) is above the PMF level.

[III] area and access to the area does not rely on access to electricity, is self-directing, and have clearly marked internal access for all people on site, including consideration of access for potential occupants and/or visitors.
The onsite refuges are the individual dwellings and as such, do not required electricity for access. There will be more than adequate room in each dwelling for residents and guests, far in excess of the typically mandated 2sqm per person.

CONCLUSIONS

We therefore conclude that:

- The subject site is approximately 50% flooded during the 1%AEP event to shallow depths.
- The subject site has been classified as Low Hazard – Flood Fringe.
- The proposed development attracts minimum floor levels controls and these should be set as recommended in this report.
- The development as proposed achieves the requirements of Council's LPE 2013 Section 5.21 provided the recommendations of this report are adhered to.
- The development as proposed achieves the requirements of Council's DCP Section B5 "Flooding" provided the recommendations of this report are adhered to.

Yours faithfully,

Andrew Wiersma
BE (Hons) MEng MIEAust CPENG (NPER)
Senior Design Engineer
NPER no. 2428975

Alistair McKerron
BE MIEAust CPENG (NPER)
Senior Project Engineer
NPER no. 2220277

FLOOD CERTIFICATE

File No: PSC2013-05401
Issue date: 8-Mar-23
Property ID: 8834

CKDS Architecture Pty Limited
23 watt Street
Newcastle NSW 2250

Certificate number: 83-2023-1192-1

Property details: 31 Phillip Street RAYMOND TERRACE LOT: 130 DP: 31774

Thank you for your recent flood enquiry regarding the above property. This certificate confirms that this property **is** located in a **flood prone** area. This **is** a "flood control lot" for the purposes of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Flood Planning Level	**9.2 metres AHD**	(This level defines the minimum floor level for habitable rooms and land that is subject to flood-related development controls (refer to Port Stephens DCP Section B5).
Highest Hazard Category	**Low Hazard Flood Fringe Area**	

Flood levels that may be useful are:

Probable maximum flood level	9.0 metres AHD	(The highest flood level that could conceivably occur at this location. If required, onsite flood refuges are built at or above this level, refer to the Port Stephens Development Control Plan B5.2)
Current day 1% AEP flood level	8.9 metres AHD	(This level is useful for insurance purposes, refer to your insurance policy and the Insurance Contracts Regulation 1985 (Cwealth).)
Adaptable minimum floor level	9.2 metres AHD	(The 1% AEP flood level plus freeboard, 50 years from now, refer to the Port Stephens Development Control Plan B5.2.)

Flooding extent on subject lot, categorised by hazard

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Flood Hazard Hydraulic Categories

- Minimal Risk Flood Prone land
- Flood Planning Level
- Low Hazard Flood Fringe area
- Low Hazard Flood Storage area
- Low Hazard Overland Flow Path area
- Low Hazard Floodway area
- High Hazard Flood Fringe area
- High Hazard Flood Storage area
- High Hazard Overland Flow Path area
- High Hazard Floodway area

Information derived from Port Stephens Council 2017, *Overland Flow GridFlow Surfaces,* Advisian, North Sydney.

PORT STEPHENS COUNCIL

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Raymond Terrace NSW 2324

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IMPORTANT INFORMATION

This Certificate is provided in good faith and in accordance with the provisions of section 733 of the Local Government Act 1993. This certificate provides an estimate of real flood characteristics. Any particular flood may be different to the conditions that were assumed to determine the information shown in this certificate.

The provided flood information has been compiled from information provided by external consultants and flood studies completed by Council in accordance with the NSW Floodplain Development Manual. The information has not been independently verified or checked beyond the agreed scope of work and Council does not accept liability in connection with unverified information.

Council acknowledges that its flood information may be incomplete and varying in accuracy, however it is the best information available to Council at the time of issue.

The information is provided to give the applicant an understanding as to the extent of flooding affecting the property as well as assist in the preparation of a Floodplain Risk Management Report. The information is subject to change if more accurate data becomes available to Council. Accordingly the information in this certificate is not warranted after the day of issue.

Council is not responsible for updating flood data when site conditions have change from the time of the original flood study and does not accept responsibility arising from any change in site conditions.

Where the relevant information is available, Council's Flood Planning Levels include the estimated impact of climate change.

Council recommends that the information contained in this Certificate be interpreted by a suitably qualified professional. It is the responsibility of the applicant to obtain survey level data (in metres AHD) for the site.

Council disclaims responsibilities to any other person other than the person nominated on the Flood Certificate arising from or in connection with the information provided.

The floor level survey for the property (if available) is based on the conditions on the date of the survey. Any changes to buildings since the survey may alter the appropriate floor level. Refer to the Port Stephens LEP 2013 Section 5.21 and Port Stephens Development Control Plan Section B5 for details on development controls on flood prone land.

For information, the insurance industry uses its own estimates of flood risk and its own definitions for flooding, which may differ when compared with Council's information and the NSW Floodplain Development Manual. You should contact your insurance company to find out if a flood certificate may influence your insurance premium.

The information provided may contain personal information as defined under the Privacy and Personal Information Protection Act 1998. The purpose of collecting this information is to enable Council to consider matters under related legislation, issue related documentation where required and other associated matters as provided by law and will be utilised by Council officers in assessing the proposal and other associated activities. The information may also be made available to other persons in accordance with the relevant Acts and regulations, such as the Government Information (Public Access) Act 2009 and will be stored in Council's record system.

DEFINITIONS

"Flood Planning Level" defines the area of land below the 1% AEP flood event in the year 2100 plus freeboard and is the area of land subject to flood-related development controls (refer to Port Stephens Development Control Plan Section B5). The Flood Planning Level defines the minimum floor level for habitable rooms.

"Freeboard" is a safety margin applied to the estimation of flood levels to compensate for uncertainties due to factors such as wave action, localised hydraulic behaviour (eg flow path blockages caused by natural and urban debris such as trees, 'wheelie' bins, cars, containers) and changes in rainfall patterns and ocean water levels as a result of the changing climate (refer Flood Manual Section 4).

"Habitable room" in a residential situation is a living or working area, such as a lounge room, dining room, rumpus room, kitchen, bedroom or workroom; in an industrial or commercial situation is an area used for offices or to store valuable possessions susceptible to flood damage (refer Flood Manual Section 4).

"Adaptable minimum floor level" is the reduced flood planning level allowed in Council's Development Control Plan where the proposed development facilitates ongoing flood adaptation (for example, where the design facilitates building raising in the future, such as a pier and beam housing design).

"Probable maximum flood level" is the flood level that arises from the largest flood that could conceivably occur at a particular location (the "PMF" or extreme design event). This level does not include any freeboard and provides an upper limit of flooding and associated consequences for the problem being investigated. It is used for emergency response planning purposes to address the safety of people and defines the floodplain and identifies "Flood Prone" land.

"AEP" (Annual Exceedance Probability) is the chance of a flood of a given or larger size occurring in any one year (for example, the 1% AEP event has a 1% chance of occurring every year; the 5% AEP event has a 5% chance of occurring every year).

"Surveyed floor level" is the surveyed level at the entrance to the residence, usually measured as part of the floodplain risk management plan undertaken for the area.

"AHD" (Australian Height Datum) a common national survey level datum, approximately corresponding to mean sea level set in the mid to late 1960s.

Hazard Categories

"High hazard" flood area is the area of flood which poses a possible danger to personal safety, where the evacuation of trucks would be difficult, where able-bodied adults would have difficulty wading to safety or where there is a potential for significant damage to buildings (refer Flood Manual Appendix L).

"Low hazard" flood area is the area of flood where, should it be necessary, a truck could evacuate people and their possessions or an able-bodied adult would have little difficulty in wading to safety (refer Flood Manual Appendix L).

Hydraulic Categories

"Floodways" are those areas where a significant volume of water flows during floods and are often aligned with obvious natural channels. They are areas that, even if only partially blocked, would cause a significant increase in flood levels and/or a significant redistribution of flood flow, which may in turn adversely affect other areas (refer Flood Manual Section 4).

"Overland flow path" is land inundated by local runoff on its way to a waterway, rather than overbank flow from a stream, river, estuary, lake or dam (refer Flood Manual Section 4).

"Flood Storage" areas are those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The loss of storage areas may increase the severity of flood impacts by reducing natural flood attenuation (refer Flood Manual Section 4).

"Flood Fringe" is the remaining land in the Flood Planning Area after the Floodway area and Flood Storage area have been defined (refer Flood Manual Section 4).

"Minimal Risk Flood Prone Land" is land on the floodplain that is above the Flood Planning Level. This means that there are no flood-related development controls that apply to residential development, but critical emergency response and recovery facilities, such as evacuation centres and vulnerable development types, such as aged care and child care facilities, may not be appropriate in this location.

FLOOD CERTIFICATE

File No: PSC2013-05401
Issue date: 8-Mar-23
Property ID: 8836

CKDS Architecture Pty Limited
23 watt Street
Newcastle NSW 2250

Certificate number: 83-2023-1193-1

Property details: 35 Phillip Street RAYMOND TERRACE LOT: 129 DP: 31774

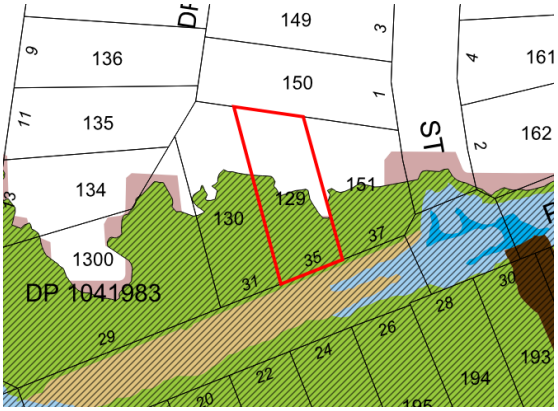
Thank you for your recent flood enquiry regarding the above property. This certificate confirms that this property **is** located in a **flood prone** area. This **is** a "flood control lot" for the purposes of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Flood Planning Level	**9.2 metres AHD**	(This level defines the minimum floor level for habitable rooms and land that is subject to flood-related development controls (refer to Port Stephens DCP Section B5).
Highest Hazard Category	**Low Hazard Flood Fringe Area**	

Flood levels that may be useful are:

Probable maximum flood level	8.9 metres AHD	(The highest flood level that could conceivably occur at this location. If required, onsite flood refuges are built at or above this level, refer to the Port Stephens Development Control Plan B5.2)
Current day 1% AEP flood level	8.9 metres AHD	(This level is useful for insurance purposes, refer to your insurance policy and the Insurance Contracts Regulation 1985 (Cwealth).)
Adaptable minimum floor level	9.2 metres AHD	(The 1% AEP flood level plus freeboard, 50 years from now, refer to the Port Stephens Development Control Plan B5.2.)

Flooding extent on subject lot, categorised by hazard



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Flood Hazard Hydraulic Categories

- Minimal Risk Flood Prone land
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Information derived from Port Stephens Council 2017, *Overland Flow GridFlow Surfaces,* Advisian, North Sydney.

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The information is provided to give the applicant an understanding as to the extent of flooding affecting the property as well as assist in the preparation of a Floodplain Risk Management Report. The information is subject to change if more accurate data becomes available to Council. Accordingly the information in this certificate is not warranted after the day of issue.

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DEFINITIONS

"Flood Planning Level" defines the area of land below the 1% AEP flood event in the year 2100 plus freeboard and is the area of land subject to flood-related development controls (refer to Port Stephens Development Control Plan Section B5). The Flood Planning Level defines the minimum floor level for habitable rooms.

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"Surveyed floor level" is the surveyed level at the entrance to the residence, usually measured as part of the floodplain risk management plan undertaken for the area.

"AHD" (Australian Height Datum) a common national survey level datum, approximately corresponding to mean sea level set in the mid to late 1960s.

Hazard Categories

"High hazard" flood area is the area of flood which poses a possible danger to personal safety, where the evacuation of trucks would be difficult, where able-bodied adults would have difficulty wading to safety or where there is a potential for significant damage to buildings (refer Flood Manual Appendix L).

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FLOOD CERTIFICATE

File No: PSC2013-05401
Issue date: 8-Mar-23
Property ID: 8838

CKDS Architecture Pty Limited
23 watt Street
Newcastle NSW 2250

Certificate number: 83-2023-1194-1

Property details: 37 Phillip Street RAYMOND TERRACE LOT: 151 DP:31774

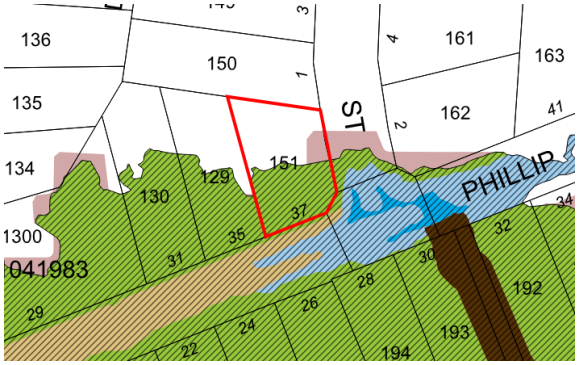
Thank you for your recent flood enquiry regarding the above property. This certificate confirms that this property **is** located in a **flood prone** area. This **is** a "flood control lot" for the purposes of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Flood Planning Level	**9.1 metres AHD**	(This level defines the minimum floor level for habitable rooms and land that is subject to flood-related development controls (refer to Port Stephens DCP Section B5).
Highest Hazard Category	**Low Hazard Flood Fringe Area**	

Flood levels that may be useful are:

Probable maximum flood level	8.9 metres AHD	(The highest flood level that could conceivably occur at this location. If required, onsite flood refuges are built at or above this level, refer to the Port Stephens Development Control Plan B5.2)
Current day 1% AEP flood level	8.8 metres AHD	(This level is useful for insurance purposes, refer to your insurance policy and the Insurance Contracts Regulation 1985 (Cwealth).)
Adaptable minimum floor level	9.1 metres AHD	(The 1% AEP flood level plus freeboard, 50 years from now, refer to the Port Stephens Development Control Plan B5.2.)

Flooding extent on subject lot, categorised by hazard



Flood Hazard Hydraulic Categories

- Minimal Risk Flood Prone land
- Flood Planning Level
- Low Hazard Flood Fringe area
- Low Hazard Flood Storage area
- Low Hazard Overland Flow Path area
- Low Hazard Floodway area
- High Hazard Flood Fringe area
- High Hazard Flood Storage area
- High Hazard Overland Flow Path area
- High Hazard Floodway area

Information derived from Port Stephens Council 2017, *Overland Flow GridFlow Surfaces,* Advisian, North Sydney.

PORT STEPHENS COUNCIL

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www.portstephens.nsw.gov.au
ABN 16 744 377 876

IMPORTANT INFORMATION

This Certificate is provided in good faith and in accordance with the provisions of section 733 of the Local Government Act 1993. This certificate provides an estimate of real flood characteristics. Any particular flood may be different to the conditions that were assumed to determine the information shown in this certificate.

The provided flood information has been compiled from information provided by external consultants and flood studies completed by Council in accordance with the NSW Floodplain Development Manual. The information has not been independently verified or checked beyond the agreed scope of work and Council does not accept liability in connection with unverified information.

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