Natural Environment Referral Response - Flood

Application Number:	DA2022/1649
Proposed Development:	Alterations and additions to an educational establishment
Date:	15/03/2023
To:	Adam Susko
Land to be developed (Address):	Lot 12 DP 1119562 , 10 Namona Street NORTH NARRABEEN NSW 2101 Lot 3 DP 1018621 , 6 Namona Street NORTH NARRABEEN NSW 2101

Reasons for referral

This application seeks consent for the following:

- All Development Applications on land below the 1 in100 year flood level;
- All Development Applications located on land below the Probable Maximum Flood levels.

And as such, Council's Natural Environment Unit officers are required to consider the likely impacts on drainage regimes.

Officer comments

The proposed development is for the demolition, alterations and additions at Narrabeen North Public School (NNPS) & Narrabeen Sports High School (NSHS). Works are proposed to be undertaken in multiple stages. From the Statement of Environmental Effects, the works which are the subject of this DA include:
NNPS - construction of a new Building D at NNPS.
NSHS - alterations and additions to Building A3 including demolition of an existing two storey structure to the west of the existing gymnasium; construction of a two storey extension comprising at ground floor level a new stage to the gymnasium, amenities, change rooms, storage and a first aid room; new lift access; refurbishment of rooms along the northern wall of the gymnasium and construction of a new COLA to the south of it. The extension is significantly larger in area than the structure to be demolished.

This assessment refers to the Flood Risk and Impact Assessment Report (16.09.2022) and its Addendum #1 (23.02.2023), both by BMT. The Addendum provides further detail and justification for the design of Building A at NSHS.

Flood information from the Narrabeen Lagoon Flood Study (NLFS) (2013) includes:
1% AEP flood level: 3.03m AHD
1% AEP flood level with climate change: 3.79m AHD
Probable Maximum Flood (PMF) level: 4.87mAHD

NNPS
The Building D site is affected by the Low to Medium Flood Risk Precinct and a Flood Life Hazard Category of up to H3. Floor levels for Building D are above the PMF level and the development is outside of the 1% extent.
There are no flood related objections for the construction of Building D at NNPS.

NSHS
The Building A site is affected by the Medium to High Flood Risk Precinct and a Flood Life Hazard Category of H5.

Floor levels:
Control C2 states that "All floor levels within the development shall be at or above the Probable Maximum Flood level or Flood Planning Level (FPL), whichever is higher".
Control B3.12 of the Pittwater DCP relating to consideration of climate change in determining FFLs does not apply as the proposed development does not meet the definition of 'intensification'.
The Finished Floor Levels (FFLs) in the proposed extension west of the gymnasium are not only below the PMF level of 4.87m AHD, but also below the 1% AEP level and FPL.
The Addendum to the Flood Risk and Impact Assessment Report provides justification for the low FFLs for each of the areas below the FPL.

The FFL for the stage is 3.32m AHD and the FFL for the amenities, change rooms, storage and first aid room ranges from 2.42 to 2.55m AHD.

It is considered that the **amenities, change rooms and corridors** may be permitted at the low FFLs, provided that they are constructed and furnished with flood compatible materials which would not be damaged during a flood event.

The **stage** may be permitted at a FFL of 3.32 mAHD. Figure 1.2 of the Addendum shows that there is suitable access from the gymnasium to the second storey for occupants to shelter in place above the PMF. This consideration also assumes that the stage level has been based on an optimum height above the floor level of the gymnasium for viewing of performances.

The **chair store** area may be permitted at the lower FFL as it needs to be at the same FFL as the gymnasium for access purposes. Also, chairs would probably be made from plastic and metal and so would not suffer high value flood damage.

The **P&C store** is currently located on the ground floor within the building which is being demolished. This room is for the storage of equipment used outdoors during out of school hours events, which may include BBQ equipment, bunting, folding plastic/steel tables, etc. An external entry is required because this store would be used out of school hours. Items stored in these areas would be flood resilient, designed for outdoor and all-weather use and/or would be low value items that would not suffer high value flood damage.

The **bulk store** is for the storage of bulk goods and requires easy access for deliveries. This room may sometimes contain a desk and workbench for the GA. The GA also currently has a desk within the main Administration building. It is noted in the Addendum that the Applicant intends to store the high value computing equipment in the existing GA room in Block E. Any high value items within the Bulk Store that may be damaged by floodwaters (e.g. electrical tools) would be stored above the FPL.

The **outdoor store** is for the storage of outdoor, all weather use items which would not suffer high value flood damage.

The **cleaner store room** may be permitted at the lower FFL provided that all potentially hazardous chemicals can only be stored above or are protected (in accordance with industry standards) from flood waters at the FPL

The room labelled as a **First Aid room** is only a temporary assessment room rather than an area where injured or ill students would remain for extended periods of time. Instead, a severely ill/injured child would be transferred to an existing sick bay within NSHS. Under the EFSG (school

design guidelines) direct access is required for a room such as this to the gymnasium. Additionally, as advised by SINSW, a clear line of sight is also required from the gymnasium into the first aid room due to child protection concerns. The gym itself has a FFL of only 2.42m AHD. Therefore, it is not practical to locate the first aid room above the PMF level of 4.87 mAHD. Given the justification and constraints, it is considered that this room may be permitted as per the plans. It is noted in the Addendum that the Applicant will detail the management strategy for the use of the first aid room in the Safety in Design Report for NSHS and include this in the School's Flood Emergency Response Plan.

The areas to be refurbished including the **Large Equipment Store** and **Sports Store** may retain their existing FFLs.

Flood Storage:
Control A2 states that "Development shall not be approved unless it can be demonstrated in a Flood Management Report that in all events up to the 1% AEP event there is no net loss of flood storage. Consideration may be given for exempting the volume of standard piers from flood storage calculations. If Compensatory Works are proposed to balance the loss of flood storage from the development, the Flood Management Report shall include detailed calculations to demonstrate how this is achieved".

The loss of available flood storage without any compensatory flood storage would be 178m^3, based on the difference in flood storage taken up by the proposed Building A (295m^3) and the flood storage currently taken up by the section of Building A to be demolished (117m^3).

This loss could be reduced to 54m^3 as outlined in the Addendum through compensatory flood storage. This would involve allowing flood waters to enter into the ground floor amenities (toilets and change rooms) through open style security gates, and into the Outdoor Store, P&C Store and Bulk Store through a gap under external doors. It is considered that a loss of 54m^3 is insignificant for this property of 74,710m^2 in area, being equivalent to 0.5m^3 for a typical property size of 700m^2.

Electrical:
It is noted in the Addendum that the lift motors would be located inside the shaft at the highest level served. Lift equipment would be above FPL.

The proposed development is consistent with Clause B3.11 of the Pittwater DCP and Clause 5.21 of the Pittwater LEP.

The proposal is therefore supported.

Note: Should you have any concerns with the referral comments above, please discuss these with the Responsible Officer.

Recommended Natural Environment Conditions:

CONDITIONS TO BE SATISFIED PRIOR TO THE ISSUE OF THE CONSTRUCTION CERTIFICATE

Flooding
In order to protect property and occupants from flood risk the following is required:

Flood Effects Caused by Development – A2
There is to be no filling of the land or any other reduction of the available flood storage which results in

a net loss of storage below the 1% AEP flood level of 3.03m AHD. Flood storage compensation is to be provided as outlined in the Addendum. External doors to the ground floor amenities (toilets and change rooms) are to be open style security gates, and external doors into the Outdoor Store, P&C Store and Bulk Store are to have a gap below the door which is at least 750mm high and which is permitted to contain an open style grated panel.

Building Components and Structural Soundness – B1
All new development below the Flood Planning Level of 3.53m AHD shall be designed and constructed from flood compatible materials.

Building Components and Structural Soundness – B2
All new development must be designed to ensure structural integrity up to the Probable Maximum Flood level of 4.87m AHD, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion.

Building Components and Structural Soundness – B3
Electrical equipment, power points, wiring and connections must be located above the Flood Planning Level of 3.53m AHD, protected from flood water or have residual current devices installed to cut electricity supply during flood events. The lift motors are to be located above the Flood Planning Level. Any high value items such as computers and electric tools are to be stored above the Flood Planning Level.

Floor Levels – C2
New floor levels within the development shall be set at or above the levels shown on the approved plans. As outlined in the Addendum to the Flood Risk and Impact Assessment Report, the management strategy for the use of the first aid room is to be detailed in the Safety in Design Report for NSHS and this is to be included in the School's Flood Emergency Response Plan.

Fencing – F1
Any new fencing shall be open to allow for the unimpeded movement of flood waters. It must be designed with a minimum of 50% open area from the natural ground level up to the 1% AEP flood level. Openings should be a minimum of 75mm x 75mm.

Storage of Goods – G1
Storage areas for hazardous or potentially polluting materials shall not be located below the Flood Planning Level of 3.53m AHD unless adequately protected from floodwaters in accordance with industry standards.

Details demonstrating compliance are to be submitted to the Certifier prior to the issue of the Construction Certificate.

Reason: To reduce the impact of flooding and flood liability on owners and occupiers of flood-prone property and reduce public and private losses in accordance with Council and NSW Government policy.

CONDITIONS WHICH MUST BE COMPLIED WITH PRIOR TO THE ISSUE OF THE OCCUPATION CERTIFICATE

Certification of the Structural Stability of the Building (B2)
A suitably qualified structural engineer is to certify the structural integrity of the new development up to the Probable Maximum Flood level of 4.87m AHD. The depth, velocity, debris load, wave action, buoyancy and immersion must all be considered.

Details demonstrating compliance are to be submitted to the Principal Certifier for approval.

Reason: To reduce the impact of flooding and flood liability on owners and occupiers of flood-prone property and reduce public and private losses in accordance with Council and NSW Government policy.

Certification of Services (B3)
A suitably qualified electrician or contractor is to certify that electrical equipment, power points, wiring and connections are located above the Flood Planning Level of 3.53m AHD, are protected from flood water or have residual current devices installed to cut electricity supply during flood events.

Details demonstrating compliance are to be submitted to the Principal Certifier for approval.

Reason: To reduce the impact of flooding and flood liability on owners and occupiers of flood-prone property and reduce public and private losses in accordance with Council and NSW Government policy.

ON-GOING CONDITIONS THAT MUST BE COMPLIED WITH AT ALL TIMES

Flood Management
Storage of Goods (G1)
Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level of 3.53m AHD unless adequately protected from floodwaters in accordance with industry standards.

Flood Effects Caused by Development (A2)
There shall be no filling of the land below the 1% AEP flood level of 3.05mAHD, or obstruction of flow paths through the property. This includes the blocking of areas required by DA consent to be left open.

Flood Emergency Response (E1, E2)
Appropriate access to the second storey for sheltering in place during a flood event is to be maintained at all times from all internal areas within the new development. Sufficient clean water for all potential occupants; a portable radio with spare batteries; a torch with spare batteries; and a first aid kit must be kept available at all times on the second storey.

Reason: To reduce the impact of flooding and flood liability on owners and occupiers of flood-prone property and reduce public and private losses in accordance with Council and NSW Government policy.