Engineering Referral Response

Application Number:	DA2019/1190

Date:	11/06/2020
To:	Daniel Milliken
Land to be developed (Address):	Lot 1 DP 651395 , 9999 Pittwater Road BROOKVALE NSW 2100 Lot 1 DP 784268 , 9999 Pittwater Road BROOKVALE NSW 2100 Lot B DP 966128 , 9999 Pittwater Road BROOKVALE NSW 2100 Lot 6 DP 785409 , 9999 Pittwater Road BROOKVALE NSW 2100

Reasons for referral

This application seeks consent for the following:

- New Dwellings or
- Applications that require OSD where additional impervious area exceeds 50m2 or
- Alterations to existing or new driveways or
- Where proposals affect or are adjacent to Council drainage infrastructure incl. watercourses and drainage channels or
- Torrens, Stratum and Community Title Subdivisions or
- All new Commercial and Industrial and RFB Development with the exception of signage or
- Works/uses in flood affected areas

And as such, Council's development engineers are required to consider the likely impacts on drainage regimes.

Officer comments

Comments 11/6/2020
TTW have no provided updated engineering drawings detailing the provision of a upgraded 900mm diameter council stormwater line to cater for a 1 in 20 year AEP storm event . Events in excess of the 20 year event will be handled by a overland flow path structure that runs through the development site.

Additionally an inlet structure 6mx1.2m is to be provided to ensure all upstream overland flow is captured by the new 900mm RCP line in the 1 in 20 year AEP event.
Also the stormwater inlet pit in federal parade is to be upgraded to capture more upstream overland flow .
The DRAINS model for the stormwater line upgrade has been reviewed and is satisfactory.
No objections to the proposed development subject to conditions.

Comments 25/5/20

The additional information/supporting letter dated 18 may 2020 from TTW Engineers has been reviewed however the development application cannot be supported because of the following reasons:

1) As previously requested the existing 600mm stormwater drainage line which is impacted by the proposed grandstand has not been upgraded to cater for the 20-year storm event in accordance with Councils Water Management Policy .
Withstanding the fact that the existing inlet capacity of the upstream drainage pits is limited the proposed stormwater drainage line rediversion is to be **sized/designed to cater for the 20 year AEP catchment flow of 2 cumecs/second.**
Additionally upstream inlet capacity are is to be increased via the provision of larger inlet/gully pits in the adjoining council park and Federal Parade.

2) No plans have been submitted indicating pre-development and post-development flow path extents for the 1% AEP storm. The submitted cross-sections are from Drains and it is unclear how this is represented on the site plan, particularly in relation to the bio-retention, the suspended slab, the OSD and footways. Cross-sections be provided as previously requested at critical locations , including at the upstream and downstream extent of works to be able to understand if there are significant impacts from the overland stormwater flow. The HEC RAS drainage software model should be utlised to provide this level of information.

· The overland flow cross-sections provided from Drains also show that the depths are expected up to approximately 1 metre and VxD ratio are 1.8 in the post-development 1% AEP storm event which is not acceptable and unsafe for pedestrians and service vehicles.. Further detail of the proposed “grass swale” should be provided as it is unclear with how this is represented on the site plan and interacts with the overland flow path.

Comments 30/4/20

The further information that was submitted including the DRAINS model for both the proposed overland flow study and on site detention system has been reviewed and cannot be supported for the following reasons:

Proposed Council line re diversion.

The proposed stormwater re diversion does not propose any upgrade from the existing scenario. It is noted that PLM advice and in accordance with Councils Water Management Policy the existing council drainage line to be re diverted is to be upgraded to cater for the 20-year storm event.

The submitted information including DRAINS model is not sufficient. Additional information is recommended in order to determine catchment properties, including pipe flows and overland flow extents which may impact the proposed development:This information is to include:

- Catchment maps, including sub-catchments for the existing council drainage

infrastructure. The DRAINS model should be amended to accurately reflect catchment characteristics and is to include the pipe network

o The DRAINS model is to include the capacity of existing and proposed Council drainage infrastructure with appropriate blockage factors as specified in Councils Auspec one design stamdard.

o Submission of plans clearly indicating pre-development and post-development flow path extents for the 1% AEP storm.

o The supporting longitudinal and cross-sectional information at appropriate intervals, including at the upstream and downstream property boundaries of the pre and post development water surface profiles to the 1% AEP.

o Provision of any stormwater models (DRAINS, HEC-RAS) used in assessment, and relevant supporting input and output information.

o Demonstration of compliance with Council's AUSPEC 1.

· Any upgrade of Councils existing drainage infrastructure (the re diverted Council pipeline) which is to cater for the 20-year storm event should also include upgrades to the inlet capacity of the upstream drainage pits including within the Council reserve and Federal parade.

Previous comments
The application is not supported for the following reasons

1) **Provision of On Site Stormwater Detention and Design documentation.**
-As required by clause 3.3 a Drains model has not been submitted for Councils review. Summary information regarding the OSD design has not been presented as detailed in appendix 9.
-The minimum information as required by section 3.3 has not been provided.

2) **Proposed Council stormwater line diversion**

The proposed grandstand is located over Council stormwater infrastructure being a 600mm pipe.

Council advised in the pre lodgement notes that the stormwater drainage lines can be re diverted around the proposed grandstand development however the following information which is also required was mot submitted:

1. The applicant is to provide an overland flow study to demonstrate that the diverted and upgraded stormwater line is in accordance with councils Water Management policy PL850 and Section 6 Building over or adjacent to Council Systems and easements.

2. The hydrological and hydraulic study is to be prepared by a Civil Engineer registered on the National Engineers register (NER) . The preferred Council model is DRAINS.

3. Councils piped drainage system is to cater for all storms up in excess of the 1 in 20 year AEP up to and including the 1 in 100 year AEP. Any overland flow paths are to have safe velocity versus depth ratios in accordance with Australian rainfall and runoff.

4. Demonstration that all habitable floor levels are to have a minimum 500mm freeboard above the adjoining 100 year flow path top water levels.

5. Hydraulic and Hydrological parameters are to be in accordance with the requirements of Auspec One *D5 Stormwater Drainage Design* are to be used in the preparation of the Hydraulic design plans and report.

6. There is to be no increases to overland flows levels upstream and downstream of the development in all storm events up to and including the 1 in 100 year ARI.

7. The proposed new stormwater line is to be a reinforced concrete pipe to take the superimposed design service loads.

The proposal is therefore supported.

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

Recommended Engineering Conditions:

FEES / CHARGES / CONTRIBUTIONS

Construction, Excavation and Associated Works Bond (Drainage works)
The applicant is to lodge a bond of $ 200,000 with Council as security against any damage or failure to complete the upgrade and diversion of the Councils existing stormwater drainage line.

Details confirming payment of the bond are to be submitted to the Certifying Authority prior to the issue of the Construction Certificate.

Reason: Protection of Council's Infrastructure.

Construction, Excavation and Associated Works Bond (Maintenance for civil works)
The developer/applicant must lodge with Council a maintenance bond of $50000 for the upgrade/diversion of the Council drainage line. The maintenance bond will only be refunded upon completion of the twelve month maintenance period, if work has been completed in accordance with the approved plans and to the satisfaction of Council. The maintenance bond is to be paid prior to Council issuing written practical completion.

Reason: To ensure adequate protection of Council infrastructure.

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

On-site Stormwater Detention Details
The Applicant is to provide stormwater drainage plans detailing the provision of on-site stormwater detention in accordance with Northern Beaches Council's-former Warringah On Site Detention specification and generally in accordance with the concept drainage plans prepared by TTW, job number 191326, drawing number C05-2 Issue B, C21 Issue C. Detailed drainage plans are to be prepared by a suitably qualified Civil Engineer, who has membership to the Institution of Engineers Australia, National Professional Engineers Register (NPER) or RPENG (Civil) accreditation.

Detailed drainage plans, including engineering certification, are to be submitted to the Certifying Authority for approval prior to the issue of the Construction Certificate.

Reason: To ensure appropriate provision for the disposal of stormwater in accordance with Council policy.

Stormwater Drainage Application
The applicant is to submit a stormwater drainage application under Section 68 of the Local Government Act 1993 to Council for approval. The submission is to include four (4) copies of Civil Engineering plans for the design of the proposed rediversion and upgrade of Councils existing stormwater drainage line. The engineering plans are to be generally in accordance with the civil design approved with the Development Application and plans reference - Job number 191326 Drw C05-2, C16-C,C17-A,C21-C, C30-A, dated 29/5/20. The Engineering plan and design is also to be in accordance with Councils Water Management Policy and Council's specification for engineering works - AUS-SPEC #1.

The design must be in accordance with the following requirements:

(a) Prepared and submitted on 4 A1 size sheets, undertaken by a consulting Civil Engineer with NER or RPENG civil qualifications. The design is also to be certified by designer in accordance wit Councils Auspec One Design Specification.
(b) Approved and stamped by Council prior to the issue any Construction Certificate for the development works.
(c) Upon completion of the works, the applicant is to provide to Council of copies of "work as executed plans". The plans are to show relevant dimensions and finished levels and are to be certified by a surveyor. Also the applicant is to provide Council in an approved format details of all public infrastructure created as part of the stormwater drainage upgrade works(Reference is made to Councils website for approved format details)
(d) All Civil Engineering works for the stormwater drainage re diversion are to be fully supervised by the consultant responsible for the design,and on completion of the works a compliance certificate is to be provided to Council certifying that the approved plans, any relevant conditions of the consent and the Stormwater Drainage section 68 Local

Government Act approval and Council's standard specification for engineering work - Auspec 1 has been complied with.
(e) A DRAINS Hydrological and Hydraulics Model is to be submitted to support the Engineering Plans .The re diverted drainage line is to be designed for a 1 in 20 year Average Recurrence Interval .The minimum size of the upgraded drainage is to be a 900mm Reinforced Concrete Pipe as specified in the approved development application drainage plans.
(f) All junction inlet pits are to be cast insitu concrete pits in accordance with Councils standard engineering details.
(g) The inlet Pit 01-a is to feature heel safe grates and is to be located within the existing pedestrian/maintenance vehicle access way in a suitable location acceptable to Council. Hydraulic calculations are to be provided demonstrating that the 6m x 1.2m inlet grate caters for the design stormwater flow up to a 1 in 100 year AEP storm event.
(h)Additionally the existing upstream stormwater pit at the sag in Federal parade is to be upgraded to feature a minimum 3m wide kerb inlet.
(i) Engineering details of the overland flow path through the development are also to be provided. The overland flow path is to have a minimum grade of 1% to convey the design flows up to the 1 in 100 year AEP storm event.
(j) The final location of the 900mm upgraded stormwater line is to minimise the impacts on the existing retained heritage trees. An arborists report is to be provided with this application to support the location of the stormwater line whilst minimising impacts on the listed heritage trees.

The drainage application form can be found on Council's website at www.northernbeaches.nsw.gov.au > Council Forms > Stormwater Drainage Application Form.ubmitted

The fee associated with the assessment and approval of the application is to be in accordance with Council's Fees and Charges. Details demonstrating that the Section 68 Drainage approval has been obtained are to be submitted to the Certifying Authority prior to the issue of the Construction Certificate.

Reason: To ensure that Councils stormwater drainage infrastructure is reconstructed in accordance with Councils Water Management policy.

Pre-commencement Dilapidation Report
The applicant must prepare and submit a pre-commencement dilapidation report providing an accurate record of the existing condition of adjoining public property and public infrastructure (including roads, gutter, footpaths, etc). A copy of the report must be provided to Council, any other owners of public infrastructure and the owners of adjoining and affected private properties.

The pre-construction / demolition dilapidation report must be submitted to Council prior to the issue of the any Construction Certificate and the commencement of any works including demolition.

Reason: Protection of Council's Infrastructure during construction.

CONDITIONS THAT MUST BE ADDRESSED PRIOR TO ANY COMMENCEMENT

Public Liability Insurance - Works on Public Land
Any person or contractor undertaking works on public land must take out Public Risk Insurance with a minimum cover of $20 million in relation to the occupation of, and approved works within Council's road reserve or public land, as approved in this consent. The Policy is to note, and provide protection for Northern Beaches Council, as an interested party and a copy of the Policy must be submitted to Council prior to commencement of the works. The Policy must be valid for the entire period that the works are being undertaken on public land.

Reason: To ensure the community is protected from the cost of any claim for damages arising from works on public land.

CONDITIONS TO BE COMPLIED WITH DURING DEMOLITION AND BUILDING WORK

Road Reserve
The applicant shall ensure the public footways and roadways adjacent to the site are maintained in a safe condition at all times during the course of the work.

Reason: Public Safety.

Progress Certification (Stormwater drainage upgrade works)
The applicant shall provide written certification by a suitably qualified engineer upon completion and/or as and when requested by the Council for the following stages of works:

(a) Silt and sediment control facilities
(b) Laying of stormwater pipes and construction of pits
(c) Clean-up of site, and of adjoining Council roadway and drainage system.
(**To be tested by a recognised N.A.T.A. approved laboratory).

Details demonstrating compliance are to be submitted to the Council prior to issue of the occupation certificate.

Reason: To ensure compliance of civil works with Council's specification for engineering works.

Civil Works Supervision
The Applicant shall ensure all council stormwater drainage upgrade works approved in the Section 68 Local Goverment Act drainage approval are supervised by an appropriately qualified and practising Civil Engineer with NER (civil) or RPENG (civil) accreditation.

Reason: To ensure compliance of civil works with Council's specification for engineering works.

Council stormwater drainage line upgrade works

(a) The upgrade and re diversion of councils existing 600mm stormwater drainage is to be constructed in accordance with the Section 68 Drainage Approval required by the Local Government Act 1993 . The upgraded stormwater drainage line is to be a minimum 900mm RCP pipe and is to include all approved drainage inlet pits. The works are also to include the upgrade/reconstruction of the existing sag pit in federal Parade to feature a minimum 3 m wide kerb inlet.
(b) The drainage works are also to include to provision of an overland flow path as approved. The overland flow path is to feature appropriate signage indicating its use.
(c) Council is to inspect the all pipework prior to back filling and all stormwater inlet pit formwork prior to pouring of concrete to ensure the works are in accordance with Section 68 approval .
Details demonstrating compliance are to be submitted to the Principal Certifying Authority/Council.

Reason: To ensure adequate provision of Council stormwater infrastructure.

Notification of Inspections (Stormwater infrastructure works to be handed over to Council)
Council's Development Engineer is to be given 48 hours notice when the works reach the following stages:
(a) Installation of Silt and Sediment control devices
(b) Prior to backfilling of pipelines

(c) Prior to pouring of all stormwater gully and inlet pits

NOTE: Any inspections carried out by Council do not imply Council approval or acceptance of the work, and do not relieve the developer/applicant from the requirement to provide an engineer's certification.

Reason: To ensure new Council infrastructure is constructed in accordance with Auspec 1 Council's design specification and engineering standards.

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

Stormwater Drainage Upgrade Works -Councils drainage line
The stormwater drainage upgrade works to Councils existing drainage line are to be certified as compliant with the Section 68 Local Government Act Drainage approval and Councils Auspec 1 design specification and policies by a suitably qualified engineer with NER or RPENG Civil accreditation.

Additionally "work as executed plans" in Councils approved format are to accompany the certification prepared by a certified practicing surveyor.

Compliance certification provided by the engineer needs to state the works are generally in accordance with the approved plans . The Compliance certificate is be submitted to the Principal Certifying Authority /Council prior to the issue of any Occupation Certificate.

Reason: To ensure appropriate provision for the disposal of stormwater arising from the development.

Positive Covenant and Restriction as to User for On-site Stormwater Disposal Structures
The Applicant shall lodge the Legal Documents Authorisation Application with the original completed request forms (NSW Land Registry standard forms 13PC and/or 13RPA) to Council and a copy of the Works-as-Executed plan (details overdrawn on a copy of the approved drainage plan), hydraulic engineers' certification.

The Applicant shall create on the Title a restriction on the use of land and a positive covenant in respect to the ongoing maintenance and restriction of the on-site stormwater disposal structures within this development consent. The terms of the positive covenant and restriction are to be prepared to Council's standard requirements at the applicant's expense and endorsed by Northern Beaches Council's delegate prior to lodgement with the NSW Land Registry Services. Northern Beaches Council shall be nominated as the party to release, vary or modify such covenant.
A copy of the certificate of title demonstrating the creation of the positive covenant and restriction for on-site storm water detention as to user is to be submitted.

Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to the issue of final Occupation Certificate.

Reason: To ensure the on-site stormwater disposal system is maintained to an appropriate operational standard.

Post-Construction Dilapidation Report (Major Development)
The applicant must bear the cost of all restoration works to Council's road, footpath and drainage assets damaged during the course of this development.

A Post Construction Dilapidation Report after the completion of all building works is to demonstrate that there is no damage to Council infrastructure prior to the refund of any security deposits.

Reason: To ensure security against possible damage to Council property.

Positive covenant and restriction as to user - Overland Flowpath.

The Applicant shall create on the Title a restriction on the use of land and a positive covenant in respect to the ongoing maintenance and restriction of the stormwater overland flow path structures within this development consent. The terms of the positive covenant and restriction are to be prepared to Council's standard requirements at the applicant's expense and endorsed by Northern Beaches Council's delegate prior to lodgement with the NSW Land Registry Services. Northern Beaches Council shall be nominated as the party to release, vary or modify such covenant.
A copy of the certificate of title demonstrating the creation of the positive covenant and restriction for the overland flow path structure is to be submitted.

The Applicant shall lodge the Legal Documents Authorisation Application with the original completed request forms (NSW Land Registry standard forms 13PC and/or 13RPA) to Council and a copy of the Works-as-Executed plan (details overdrawn on a copy of the approved drainage plan), hydraulic engineers' certification.

Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to the issue of final Occupation Certificate.

Reason: To ensure adequate management of the stormwater overland flow path .