engineering | environmental | economics | engagement

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18 October 2024

Our ref: RL-01-1950-02

Stella Zhao
King & Wood Mallesons
Level 61, Governor Phillip Tower
1 Farrar Place
SYDNEY NSW 2000

Dear Stella,

RESPONSE TO STORMWATER CONTENTION
Land and Environment Court Proceedings 2023/00109048 – Newport Surf Life Saving Club Matter

Rhelm have been commissioned by King & Wood Mallesons (KWM) to provide expert services with regard to engineering matters for the Land and Environment Court Proceedings No. 2023/00109048. The proposed development involves alterations and additions to the Newport Surf Lifesaving Club (SLSC) as detailed in the site Architectural Plans prepared by Adriano Pupilli Architects (Rev D, dated 31 July 2024).

An Amended Statement of Facts and Contentions (SoFAC) was filed on 30 August 2024 and contains contentions regarding a lack of stormwater-related information. Contention 31 of the amended SoFAC states that:

The Amended Application provides insufficient information to demonstrate how stormwater quality requirements will be met.

On 13 September 2024 a joint civil engineering expert report (**Joint Report**) was filed with the Land and Environment Court, following my joint conference with the Second Respondent's civil engineering expert, Stephen Naughton. In relation to Contention 31 of the SoFAC, it was agreed between myself and Mr Naughton that:

20. As outlined at Paragraph 6, there is no existing Council stormwater system assets in the immediate vicinity of the proposed works. However, the concept provided at Attachment B indicates that works to connect the site to the Council drainage system could be completed. The concept shown connects to Council's existing 375 mm pipe system.

21. A Consent Condition is to be imposed that requires, prior to Construction Certificate, the submission of a stormwater management plan (demonstrating compliance with the requirements of Northern Beaches Council Stormwater Management Policy and Engineering Specifications where works are proposed to Council stormwater system) to the satisfaction of Northern Beaches Council.

This letter aims to address contention 31 and the agreement between myself and Mr Naughton by formally assessing the proposed development against the relevant clauses of Northern Beaches Council's (Council) *Water Management for Development Policy* (the **Policy**, 2021) and, using results of stormwater quality modelling undertaken using MUSIC software, demonstrate that the development will not have any adverse impact on stormwater quality compared to existing conditions.

Attached to this letter is a copy of the updated stormwater management plan that has been prepared following the modelling undertaken using MUSIC software. I confirm that this plan reflects the agreed concept provided at Attachment B of the Joint Report, referred to above.

Site Definition

The proposed works are confined to the Newport SLSC building and immediate surrounds. The approximate overall extent of the work area covers an area of approximately 1,450m^2, inclusive of proposed additional paving and landscaping around the perimeter of the building.

For the purpose of assessment against the Policy, the **Site** has been considered to be the finished works footprint rather than a consolidation of allotments in which the surf club is contained within, which extend a substantial distance beyond this footprint. There is also an external carpark catchment of approximately 1,660m^2 that is located adjacent to the Site and has been considered in the assessment. The Site area, external catchment and cadastral boundaries are show in **Figure 1**.

Given the Site area exceeds 1,000m^2, the development is considered to be subject to the stormwater pollutant reduction targets stipulated in Section 4.1 of the Policy.

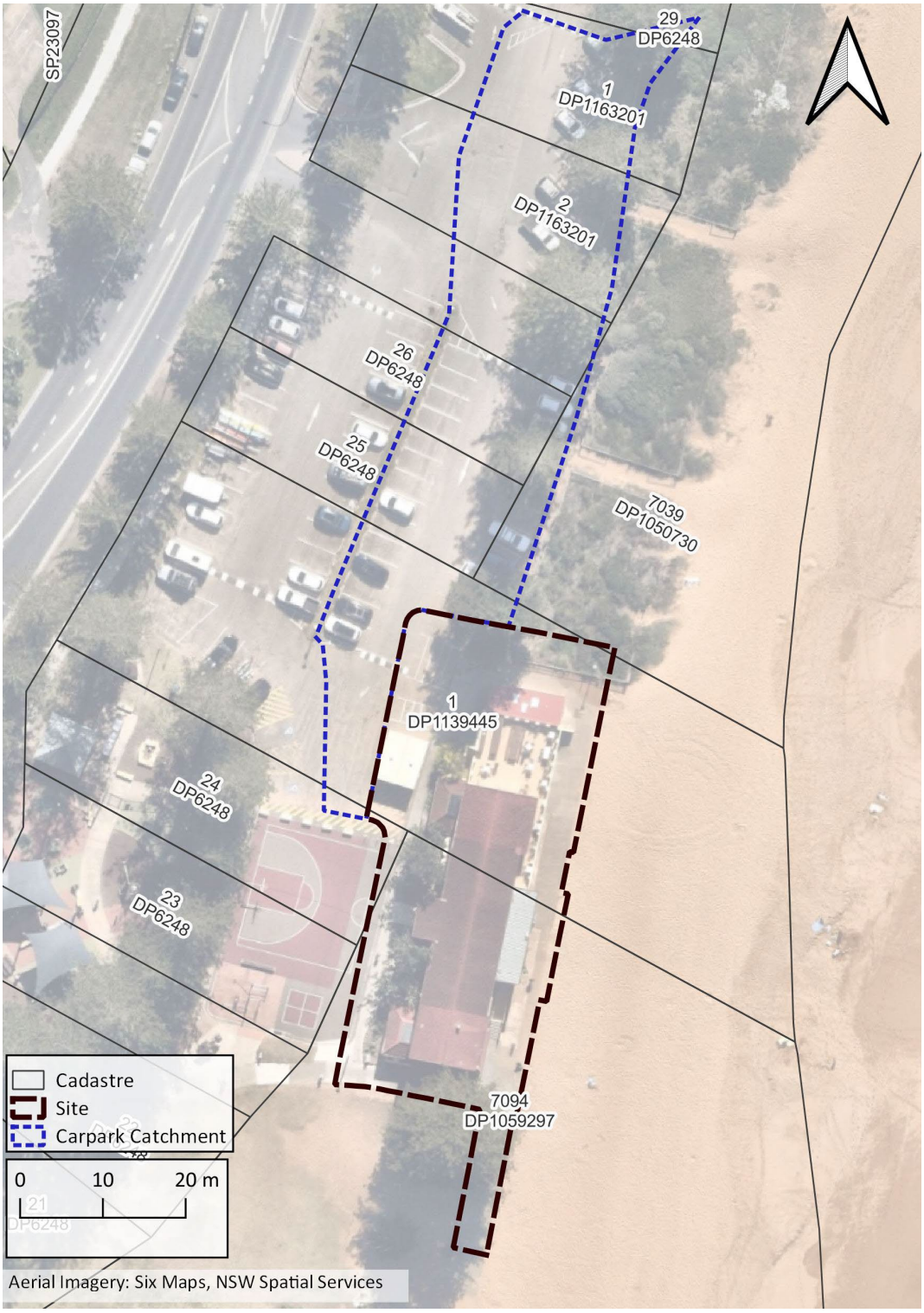

Figure 1 – Site Extent

Increase in Impervious Area

The site Architectural Plans (Rev E, 2024) were used to calculate the increase in impervious area associated with the development.

Under clause B5.5 of the Pittwater 21 Development Control Plan all development creating an additional hard (impervious) roof area of greater than 50 m^2 must provide a rainwater tank for non-potable use connected to external taps for the purpose of landscape watering and car washing and a functional water reuse system including, water supply for toilet flushing and other uses as permissible under the current Code of Practice for Plumbing and Drainage.

However, the development does not create an additional impervious area of roof, as the proposed extension roof area covers an area that is already impervious.

Under clause B5.15 of the Pittwater 21 Development Control Plan there are a range of objectives for stormwater. These include:

- Improve the quality of water discharged to our natural areas to protect and improve the ecological and recreational condition of our beaches, waterways, riparian areas and bushland;
- Minimise the risk to public health and safety;
- Reduce the risk to life and property from any flooding and groundwater damage;
- Integrate Water Sensitive Urban Design measures in new developments to address stormwater and floodplain management issues, maximise liveability and reduce the impacts of climate change.
- Mimic natural stormwater flows by minimising impervious areas, reusing rainwater and stormwater and providing treatment measures that replicate the natural water cycle
- Reduce the consumption of potable water by encouraging water efficiency, the reuse of water and use of alternative water sources
- Protect Council's stormwater drainage assets during development works and to ensure Council's drainage rights are not compromised by development activities.

It was found that the current additions would result in an additional 82 m^2 of paved impervious area which is primarily due to additional hard stand areas proposed in the area to the north of the building to facilitate watercraft access to the beach and the minor increase in width of the promenade area. Note that this estimate of increase in impervious area is slightly greater than that quoted in the Amended SEE (Rhelm, 2024) (which stated an estimate of less than 50 m^2). Whilst a value of 83 m^2 exceeds the threshold for consideration of the need for on-site detention (OSD), no OSD is proposed for the site as the installation of an OSD system, resulting in the delay of runoff leaving the site, actually has the potential to exacerbate existing flood behaviour in the area to the south-west of the site. OSD in the lower portion of any catchment is commonly not required.

MUSIC Modelling

To demonstrate that the proposed development meets the objectives of clause B5.15, a MUSIC model of the existing and post-development site was established using the meteorological data and source node parameters recommended in Council's *WSUD and MUSIC Modelling Guidelines* (Alluvium, 2016).

The layout of the model for the pre and post development scenarios for the site and external catchment (and the area of actual works where the land use has changed) is shown in **Figure 2**.

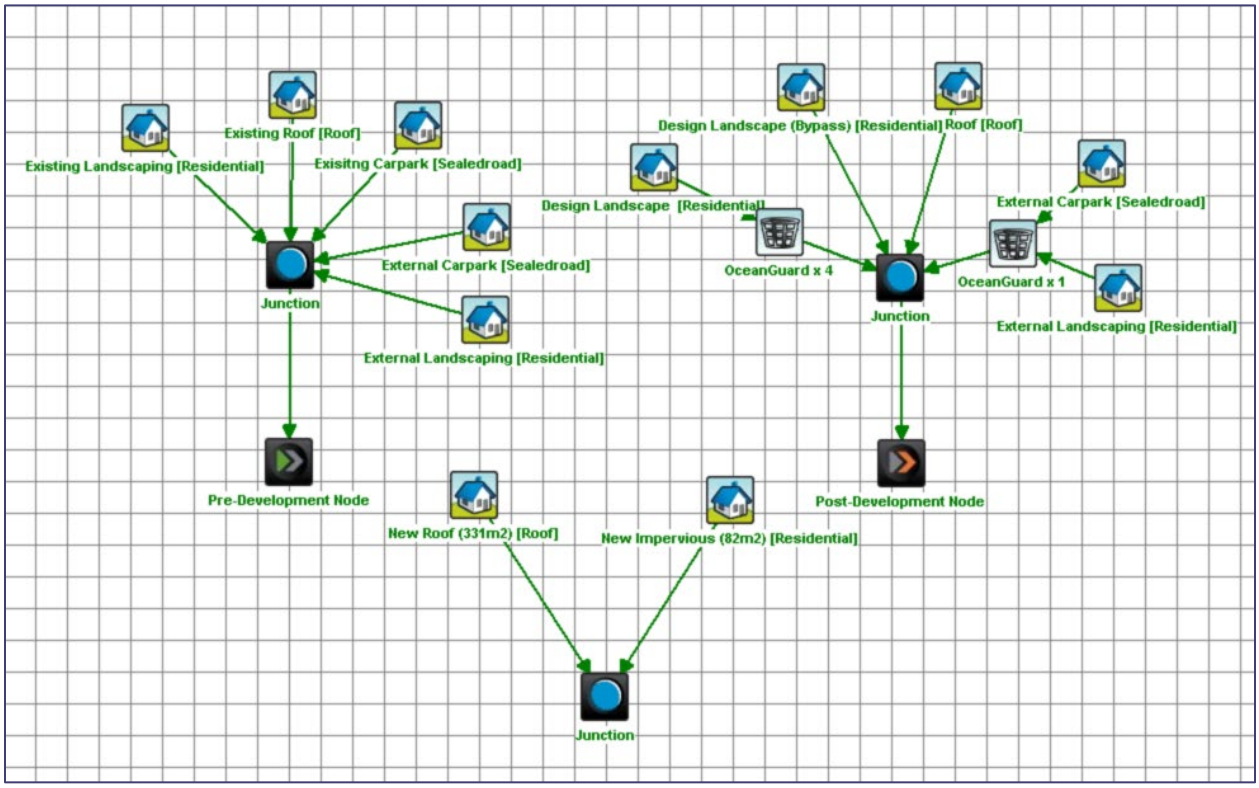

Figure 2 – MUSIC Model Layout

Under the existing arrangements, there is no formal stormwater drainage adjacent to the building. Stormwater from the site flows either overland to the pit at the southern end of the existing basketball court, or flows to the beach. Stormwater from the external catchment shown in **Figure 1** also flows to the existing pit located at the southern end of the basketball court.

For the post development scenario, a new stormwater pit and pipe drainage network is proposed for the perimeter of the building (see RHDHV Stormwater Plan PA2407-RHD-00-05-DR-ME-SW01, Revision P01, attached).

The proprietary 'Ocean Guard' litter baskets are proposed as inserts to the new stormwater pits surrounding the building and have been modelled as gross pollutant traps (GPTs) in the post-development MUSIC model. **Table 1** summarises the adopted treatment efficiency of the baskets based on the approved values for Blacktown City Council (as Northern Beaches Council does not have published information on treatment efficiencies for this product). The Oceanguard baskets as SQUIDEP certified (https://www.stormwateraustralia.com.au/sqidep-stormwater-quality-improvement-device-evaluation-protocol).

Table 1 – OceanGuard Litter Basket Treatment Performance

Pollutant	Percentage Removal
Total Suspended Solids	54
Total Phosphorous	30
Total Nitrogen	21
Gross pollutants	95

Results of the MUSIC modelling for the pre and post development scenarios as annual average pollutant loads are summarised in **Table 2**.

Table 2 – MUSIC Results

Pollutant	Existing Untreated Loads (kg/yr)	Post-Development Untreated Loads (kg/yr)	Post-Development Treated Loads (kg/yr)
Total Suspended solids (TSS)	717	712	362
Total Phosphorus (TP)	1.28	1.25	0.93
Total Nitrogen (TN)	6.53	7.2	5.75
Gross Pollutants	69.7	78.7	27.5

The results shown in **Table 2** indicate that the proposed development will result in an overall improvement in stormwater quality compared to existing conditions for all key pollutants. The improvement in water quality can be attributed to the treatment of runoff provided by the OceanGuard litter baskets, which treat both existing and proposed site areas.

Clause 4.1.2 (f) of the Policy states that:

For alterations and additions, and similar developments, the stormwater quality requirements only apply to the new works.

The outcomes of the analysis reported in **Table 2** are based on the 1,450 m^2 site area that includes both existing areas that will remain unaltered (such as the existing building roof) and new works (such as the proposed impervious areas), as well as the 1,450 m^2 external carpark catchment area.

Table 3 compares Council's reduction targets for the new works alone (in accordance with Clause 4.1.2 (f) of the Policy) with the reduction in pollutant loads associated with the proposed litter baskets, with the new works area assumed to be the 82 m^2 and conversion of existing carpark and building to 331 m^2 of additional roof area (being the new portion of the building on the north side of the existing building).

Table 3 – Pollutant Load Reductions – New Works

Pollutant	Untreated Loads – New Works (kg/yr)	Required Reduction (%)[1]	Required Reduction (kg/yr)	Achieved Reduction (kg/yr)	Meets Minimum Requirement?
Total Suspended solids (TSS)	26.2	85	22.3	350	Yes
Total Phosphorus (TP)	0.09	65	0.06	0.32	Yes
Total Nitrogen (TN)	1.06	45	0.48	1.45	Yes
Gross Pollutants	12.4	90	11.16	51.2	Yes

As shown in **Table 3**, the achieved pollutant load reduction exceeds the minimum requirement from the Policy. The proposed stormwater treatment measures are therefore considered suitable for the scale of works and achieve the objectives of the Policy and the provisions of clause B5.15 of the DCP.

[1] Per Section 4.1 of the *Water Management for Development Policy* (2021)

Should you have any questions or require further clarification, please contact either myself or Tanja Mackenzie on 02 9098 6998.

Sincerely,

Louise Collier
Director

References

Alluvium (2016) *WSUD and MUSIC Modelling Guidelines*. Prepared for Northern Beaches Council, June 2016.

Northern Beaches Council (2021) *Water Management for Development Policy*. Version 2, February 2021.

Joint Expert Report prepared by Louise Collier and Stephen Naughton, filed with the NSW Land and Environment Court on 13 September 2024 (Proceedings No. 2023/00109048).

DRAWING No.
PA2407-RHD-00-05-DR-ME-SW01

DO NOT SCALE

NOTE

1. ALL NEW STORMWATER PITS TO BE FITTED WITH OCEANGUARD PIT INSERT
2. ALL LEVELS ARE RELATIVE TO AUSTRALIAN HEIGHT DATUM (AHD)

NEW 450 x 450 GRATED SURFACE INLET PIT
SL = 5.8
IL = 5.25

NEW 600 X 600 mm GRATED SURFACE INLET PIT
SL = 5.45
IL = 4.75

NEW Ø225 RC PIPE AT 1% GRADE

NEW Ø225 RC PIPE AT 1% GRADE

NEW 600 X 600 mm GRATED SURFACE INLET PIT
SL = 5.5
IL = 4.75

NEW 600 X 600 mm GRATED SURFACE INLET PIT
SL = 5.2
IL = 4.45

NEW Ø375 RC PIPE AT 1% GRADE

NEW Ø375 RC PIPE AT 1% GRADE

NEW Ø375 RC PIPE AT 1% GRADE

EXISTING Ø375 SW PIPE INDICATIVE ONLY

EXISTING LINTEL - OVERLAND FLOW ENTRY POINT TO STORMWATER SYSTEM FROM BASKETBALL COURT

DIRECTION OF FLOW ACROSS NEW PAVEMENT

NEW 600 X 600 mm GRATED SURFACE INLET PIT
SL = 5.65
IL = 4.8

LOCAL REGRADING TO REMOVE SAG AND ENSURE OVERLAND FLOW DIRECTED TO BASKETBALL COURTS

EXISTING AND DEVELOPED OVERLAND FLOW PATH

NEW JUNCTION PIT CONSTRUCTED OVER EXISTING Ø375 PIPE SEALED LID CONNECTION AT APPROX. IL4.3

EMERGENCY ONLY

GEAR STORAGE COMPOUND ~317 SQM RL 6.00 FFL

GEAR STORAGE COMPOUND ~317 SQM RL 6.00 FFL

BIN STORE

PLANT 7.7 SQM

COUNCIL LIFE GUARDS ~9 SQM

FIRST AID ~9 SQM

AMENITIES FEMALE ~26 SQM

SHOP/BBQ ~12.5 SQM

FEMALE PUBLIC AMENITIES ~24 SQM

ADMIN/ STORE ~20.9 SQM

AMENITIES MALE ~24 SQM

MALE PUBLIC AMENITIES ~24 SQM

ACC. WC 7 SQM

LIFT 2.7 SQM

~49 SQM

PLANT/ COMMS 1.7 SQM

STORE

STAIR

VOID

RAMP

BINS

ACCESSIBLE PARKING

ACCESSIBLE PARKING

RL: 5.80 PV

~ RL: 5.90 TK

~ RL: 6.00 PV

~ RL: 6.10 PV

~ RL: 6.19 TK

~ RL: 6.10 EX

RL: 5.45

RL: 5.52

RL: 5.63

RL: 5.46

RL: 5.65

CH: 2600 RL: 5.49 FFL CO

CH: 3090 RL: 5.66 FFL CO

CH: 2990 RL: 5.66 FFL CO

CH: 3090 RL: 5.66 FFL TL

2 0 2 4 6 8 10m

1:100 (A1) 1:200 (A3)

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	8.10.2024	ISSUED WITH DA	SGB		

REVISIONS

CLIENT

northern beaches council

PROJECT

NEWPORT SLSC
REDEVELOPMENT - STORMWATER DESIGN

TITLE

PRELIMINARY
STORMWATER DESIGN

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Australia
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Website: www.royalhaskoningdhv.com

Royal HaskoningDHV
Enhancing Society Together

DRAWN	COORD. SYSTEM	DATUM	DATE
SGB	MGA56 GDA94	AHD	08.10.2024
SCALE	REF		
AS SHOWN	PA2407-RHD-00-DR-M2-ME-0001		

DRAWING No.	SUITABILITY	REVISION
PA2407-RHD-00-05-DR-ME-SW01	S4	P01

NOT FOR CONSTRUCTION

S4 FOR APPROVAL

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