Civil

TaylorThomsonWhitting

Stormwater Management Report
612-624 Pittwater Road, Brookvale

for Health Infrastructure

19-10-2015

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EXECUTIVE SUMMARY

Taylor Thomson Whitting (TTW) has been commissioned by Johnstaff on behalf of Health Infrastructure, to prepare a Flood Management Report for the proposed Brookvale Community Health Centre (BCHC) development. The proposed development will consist of a multistory, mixed use building and a multilevel car park located at the intersection of William Street and Pittwater Road.

According to the 2013 Manly Lagoon Flood Study the site is affected by the 100 year Average Reoccurrence Interval (ARI) (10.7mAHD) and the PMF (12.1mAHD) design events. Ground floor of the proposed development has been set at Councils Flood Planning Level for the site of 11.2mAHD (500mm above the 100 year ARI level) which is in accordance with the NSW Floodplain Development Manual. An evacuation plan for the ground floor has been prepared which will lead occupants to the first floor (15.2mAHD) and then to William Street.

The building use is for non-essential services and no overnight patient stays are needed. As a result the lower ground floor is not required to be above the Probable Maximum Flood (PMF) level as discussed with Warringah Council (Council).

The impact of the proposed development on the existing flood regime was assessed by TTW. The proposed development was analysed using Councils Tuflow flood model. We determined that the proposed development had no significant impact on the existing flood regime during the PMF event.

The stormwater strategy for the proposed development incorporates a piped drainage network and an onsite detention tank to be consistent with Warringah Councils On-site Stormwater Detention Technical Specification, August 2012.

Stormwater quality is addressed by incorporating a gross pollutant trap (HumeCeptor) and a Humes Jellyfish which is consistent Warringah Councils Northern Beaches Stormwater Management Plan, June 1999.

From a stormwater management perspective, the site is considered to be suitable for the proposed development.

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Document Revision Register

Rev	Date	Prepared By	Approved By	Remarks
1	15.06.15	ASK	SB	Draft
2	25.06.15	ASK	SB	Final
3	19.10.15	ASK	SB	Final (Updated Cover photo and layout figures)

Prepared by:

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Engineer

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Technical Director

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1.0 INTRODUCTION

This report has been prepared on behalf of Health Infrastructure, to summarise the stormwater quantity, stormwater quality and flooding management plan for the proposed Brookvale Community Health Centre (BCHC).

This proposed BCHC is a State Significant Development under Part 4.1 of the Environmental Planning and Assessment Act 1979 and the Minister for Planning is the approval authority (rather than Warringah Council). The proposed stormwater infrastructure is consistent with Council's Development Control Plan 2011 (DCP).

2.0 EXISTING SITE

The area proposed for development, consists of three properties 612, 620 and 624 Pittwater Road (Site) and is located entirely within Warringah Local Government Area. Currently, the Site contains a dilapidated house on 620 Pittwater Road and a long semi-industrial building on 624 Pittwater Road. Total area of the Site is approximately 5,500sq.m. The current impervious area of the site is approximately 2,700sq.m. The Site falls from William Street (14.5mAHD at its highest) toward Pittwater Road (10.3mAHD) at an approximate grade of 4%. The Site is accessible from Pittwater Road (west) and William Street (south).

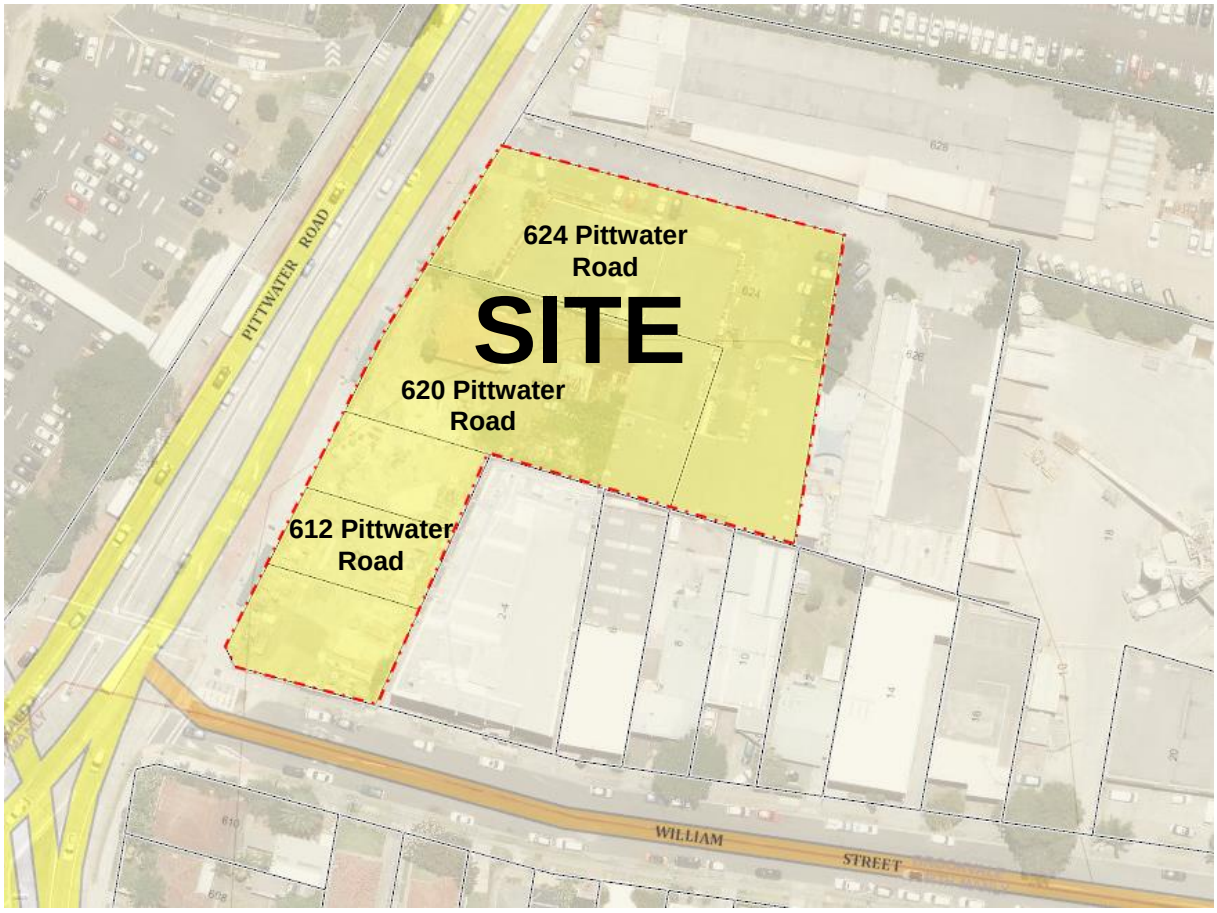


Figure 1 Existing Site (source: Six Maps)

3.0 PROPOSED DEVELOPMENT

The proposed development is a multilevel building and an adjoining multi-storey car park with provision for on-grade car parking, refer Figure 2 below. This will be a mixed-use development consisting primarily of health care services with provision for commercial use. It is estimated the site post development will be fully impervious. Vehicle accessibility will be maintained from Pittwater Road and William Street, with access to existing public transport on Pittwater Road.

Figure 2 Brookvale Community Health Centre Proposed Layout (source: MSJ)

4.0 SITE EXISTING CONDITIONS

TTW met with Council to discuss the proposed site development requirements for the proposed development, refer **Appendix D**. According to the latest flood study undertaken on the behalf of Council (Manly Lagoon Flood Study - Flood Planning Levels, 2013) the site is partially affected by 1 in 100 and the PMF flood event refer **Figure 3**.

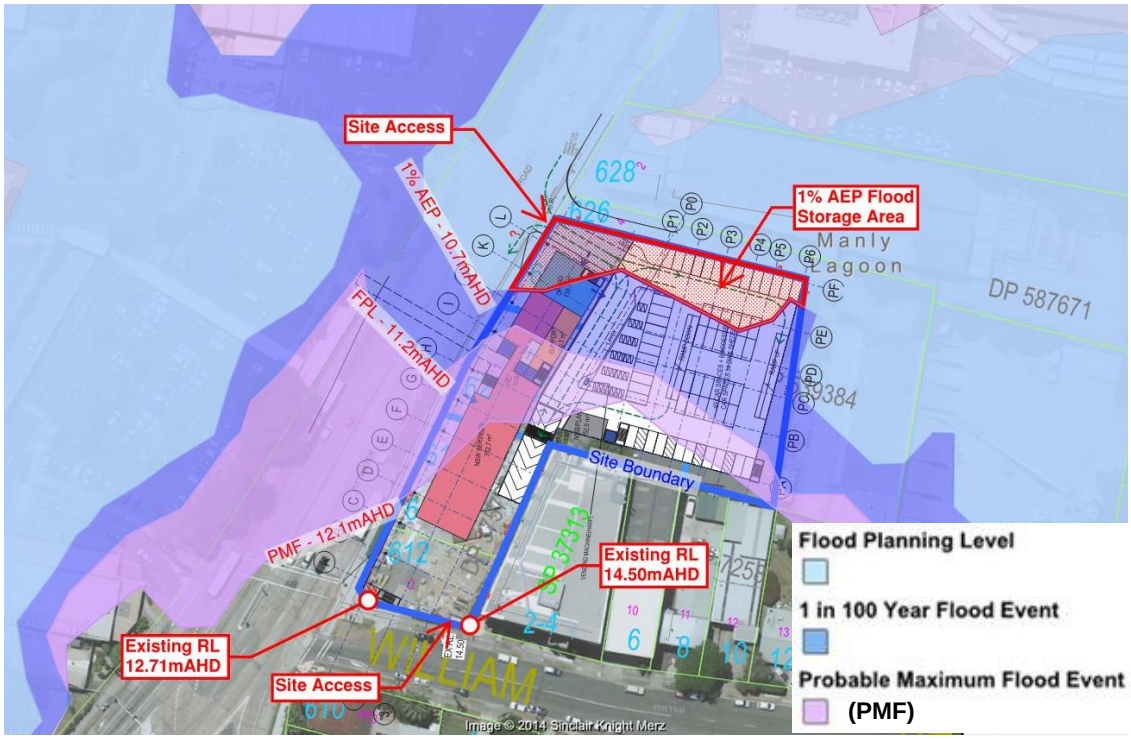


Figure 3 Flood Modelling Results for 612-624 Pittwater Road (Council Flood Map)

The site is located in a medium risk flood planning precinct as per NSW Flood Plain Management Manual. The ground floor use of the proposed development is considered to be a New Commercial & Industrial. Flood management requirements are outlined in Section E11 Flood Prone Land of Council's Development Control Plan 2011 and are summarised in **Table 1**, below.

Land Use	Requirements	Response
Floor Levels	Floor levels are to be equal to or higher than the FPL. A Flood Risk Assessment is required to assess the risk to life and flood hazard of the site and determine if floor levels should be set at PMF level.	The Floor level has been set at the FPL 11.2mAHD.
	If the land use is changing to residential, all floor levels must be raised to the FPL.	Noted, however no residential use is planned.

Land Use	Requirements	Response
	No net loss of flood storage is to occur. Compensation works may be permitted.	Effect of the proposed development has been modeled in TuFlow. No significant impact was observed. Refer section 5.1 for summary of flood impacts due to proposed development.
Building Components	All structures to have flood compatible building components up to the PMF level to withstand the hydraulic forces of the PMF at the site.	Following pre-lodgment meeting with Council, the requirement for components to withstand hydraulic forces has been revised to the FPL The structure for the proposed development is to be constructed using reinforced concrete in accordance with the structural engineers design.
	All services must be located above the PMF level.	Refer to Electrical and Mechanical reports for details.
Structural Soundness	A Flood Risk Assessment from a suitably qualified person is required to certify that any structure can withstand the forces of floodwater, debris and buoyancy up to and including the PMF level plus a suitable freeboard specific to the site.	Following pre-lodgment meeting with Council, the requirement for components to withstand hydraulic forces has been revised to the FPL The structure for the proposed development is to be constructed using reinforced concrete in accordance with the structural engineers design.
Impact of Development	A Flood Risk Assessment from a suitably qualified person is required to certify that the development will not increase flooding upstream or downstream in PMF event	The proposed development has been modeled in TuFlow. No significant flood impact was observed as a result of the proposed development. Refer section 5.2 for additional detail.
Evacuation	Reliable access for pedestrians and / or vehicles is required above the PMF level or the FPL whichever is higher.	The site can be accessed from William Street 14.5mAHD. Refer Section 5.5 for evacuation plan.
	Existing and proposed developments shall be required to produce and maintain a Flood Emergency and Evacuation Plan that demonstrates that any occupants will be able to safely shelter in place in a PMF or have reliable access for pedestrians to evacuate safely above the PMF.	Noted, refer Section 5.5 for evacuation plan.

Land Use	Requirements	Response
Management & Design	The applicant must demonstrate that area is available to store goods above the PMF level plus a suitable freeboard specific to the site.	No unrestraint storage of goods is proposed. Refer to Architects plans for locations of garbage rooms.
	There is to be no external storage of materials below the FPL which may cause pollution or be potentially hazardous during a flood. Any storage of such materials up to the PMF level is to be protected by bunds.	External storage areas have been set at or above the FPL.
Car Storage	Car park floor levels (including stand alone garages, multistory and under building open areas) to be set so that floodwaters are no more than 200mm deep in a PMF. The installation of movement devices may be required for protection against the movement of vehicles in a PMF.	Following pre-lodgment meeting with Council. The requirement for the final floor level of car parks has been revised to the 100 year event flood level. The carpark level has been set at 10.7mAHD. Refer attached pre-lodgment meeting minutes.
	The basement car park area must have a ramp set with a crest at the FPL to prevent floodwaters entering the car park. All potential water entry points are to be set at or above the FPL.	The lower carpark is set at the 100year flood level. There is no basement below 10.7mAHD.
	Carports are to have no more than 200mm depth of floodwater or 0.5m/s velocity of floodwater flowing through in a 100 year flood event. The installation of movement devices may be required for protection against the movement of vehicles.	The water depth in the lower car park is above the 10.7mAHD. The design will consider vehicle confinement to restrain vehicles to the car park during larger storm events.

Table 1 Council DCP Requirements for Vulnerable Developments in Medium Risk Flooding Precinct

5.0 FLOODING

Considering that the site is located in a medium risk (flood) planning precinct, a flood risk assessment has been prepared to address the requirements in **Table 1**.

5.1 Flood Analysis

Councils, two-dimensional TuFlow flood model was used to determine the impact of the proposed development on the existing flood regime. The Council model had been developed for the Manly Lagoon Flood Study - Flood Planning Levels in 2013. The Council model adopted a 5m cell size resolution with vertical accuracy +/- 0.15m.

TTW calibrated the model output with Council's published flood data for the PMF design event. Following this the model was revised to include the proposed development. Below is an image of the flood depth for the existing scenario, proposed scenario and a comparison between the two scenarios.

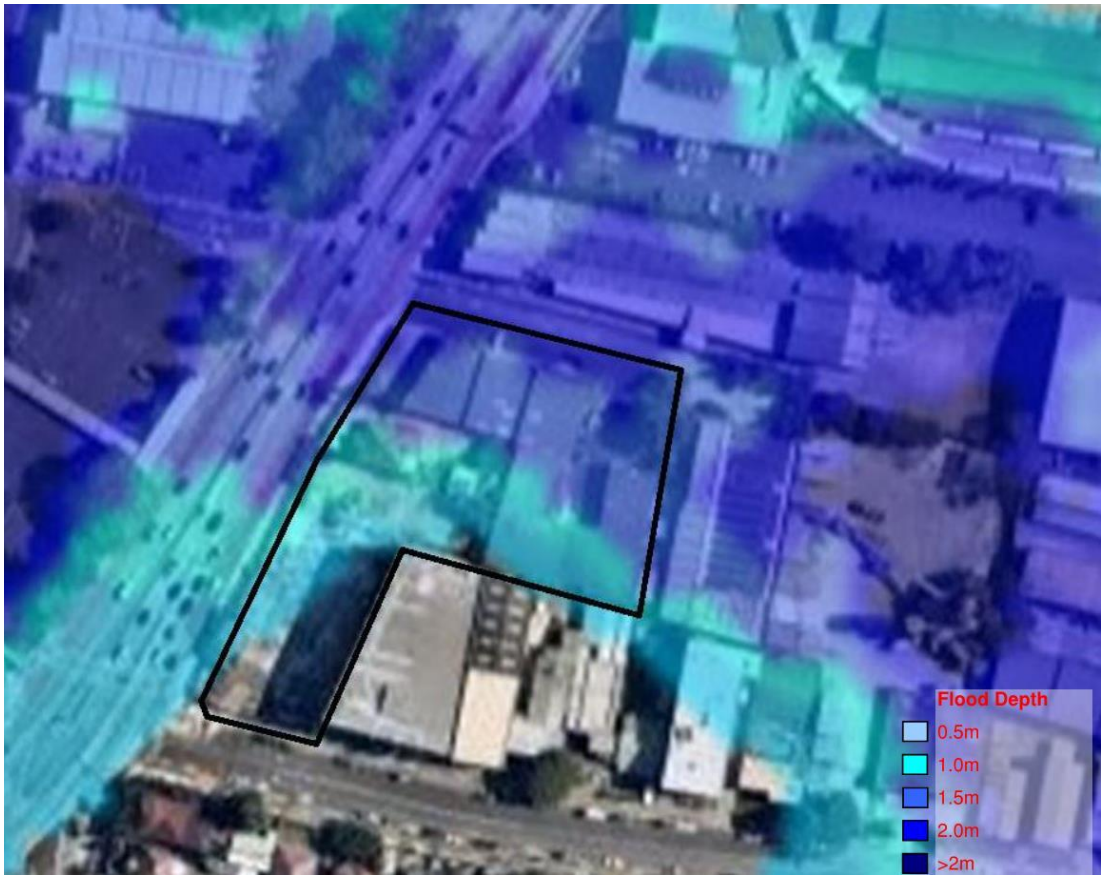


Figure 4 Existing PMF Depth Map

Figure 5 Developed Scenario PMF Depth Map

Figure 6 PMF Flood Event Development Impact Assessment

5.2 Flood Conveyance

An overland flood path during the PMF event occurs through the existing laneway leading to 626 Pittwater Road (refer Figure 7). The proposed development has negligible impact on this flood path (refer Figure 6 for development impact on existing flood regime).

Figure 7 PMF overland flood path proposed development scenario

5.3 Flood Storage

The proposed development will accommodate flood storage onsite during the PMF event. The on grade parking set at the 100year ARI level will flood during the PMF storm event as shown in Figure 5.

5.4 Habitable Floor Level

The ground floor of the building has been set at the Council Flood Planning level of 11.2mAHD. Access to the ground floor from the street will be provided via stairs and ramps.

5.5 Flood Evacuation

During the PMF event, the lower ground floor can be evacuated via the at grade footpath along the Pittwater road or the internal stairs to the ground floor lobby area (15.2mAHD) and then to William Street (south, elevation 14.5mAHD). Vehicle access to the marshalling area can be provided via William Street.

5.6 Climate Change

The impacts of climate change within the Manly Lagoon catchment have been assessed in the Manly Lagoon Flood Study - Flood Planning Levels, 2013. The assessment was undertaken for events up the 100year ARI event in accordance with the flooring documents:

- NSW Sea Level Rise Policy Statement (DECCW, 2009);
- Stage One Coastal Management Reforms (September, 2012); and
- Assessment if the Science behind the NSW Government's Sea Level Rise Planning Benchmarks' (2012).

The study assessed a range of likely changes within the Lagoon, these included:

- Increase in ocean boundary water level;
- Increase in lagoon entrance berm height;
- Increase in initial Lagoon water level; and
- Increase in rainfall intensity.

The study concluded that the most *significant climate change impact for Manly Lagoon will be from the predicted* wave generated *increase in berm height....* and *that the berm height conditions only affect the lower catchment, with upstream locations along the tributary channels unaffected by berm height conditions*.

The site proposed for development is in the upstream location of the catchment. The study noted that *the upstream areas are more so impacted by increases in rainfall intensities. For increases in rainfall intensity from 10% up to 30%, peak flood level increases of between 0.2m to 0.4m are typical, depending on the nature of the channel or creek section.*

The Condamine Street Culvert is located approximately 90m from the site refer Figure 8. According to the study flood level increases of up to 0.1m were recorded at this location for the 100year ARI event with rainfall intensities increased by 30%.

Figure 8 Location of Site Relative to Condamine Street Culvert

The ground flood level of the proposed development has been set at 500mm above the estimated 100year ARI flood level at the site. According to the above, the ground level of the proposed development will have up to 400mm of freeboard during the worst case climate change scenario for the site.

6.0 STORMWATER QUANTITY

Councils On-site Stormwater Detention Technical Specification, August 2012 has been used to establish the permissible site discharge (PSD) for the site. Council requires that:

For all developments except single residential dwelling developments the PSD is to be calculated on the maximum allowable impervious fraction of 0%. That is, discharge off the site is to be restricted to the "state of nature" condition.

The post-development runoff is to be determined based on the post-development impervious area for all storm durations for the 5 year, 20 year, and 100 year ARI storm events. The OSD system(s) must be designed to restrict these flows to the calculated pre-development discharge rates. Hence the 5 year ARI post-development runoff must not exceed the 5 year ARI pre-development discharge, the 20 year ARI post-development runoff must not exceed the 20 year

ARI pre-development discharge, and the 100 year ARI post-development runoff must not exceed the 100 year ARI pre-development discharge.

A DRAINS model was used to establish the PSD (pre-development, natural state) for the site. Discharge rates are summarised in Table 2.

Design event (Year)	Site Discharge (PSD) (l/s)
5	126
20	208
100	295

Table 2 PSD Discharge Rates

Due to the topography of the site and the 100year ARI inundation of the site along the northern boundary 10.7mAHD, the On Site Detention Tank (OSD) has been placed in the southeast corner of the site. The Site has been subdivided in to catchments that can be drained to the OSD and catchments that will discharge to William Street and Pittwater Road, summarised in Table 3 and Figure 9.

Discharge Location	Catchment	Catchment Size (ha)
OSD	Catchment 1	0.15
OSD	Catchment 2	0.24
Pittwater Road	Catchment 3	0.12
William Street	Catchment 4	0.04

Table 3 Site Catchment Breakup

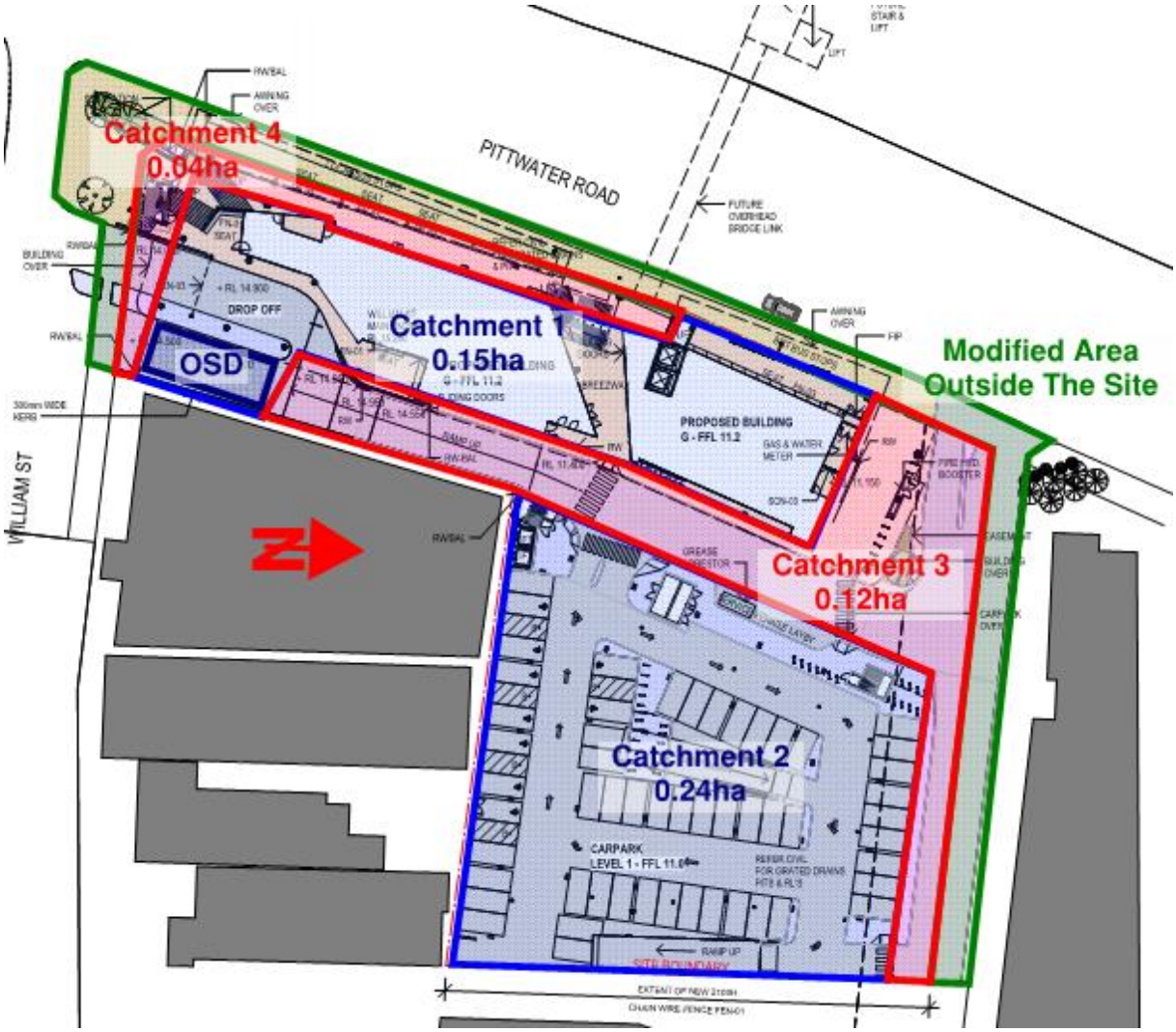


Figure 9 Site Catchment Breakup

A detention tank with 155cu.m storage and an orifice 180mm diameter has been modelled in DRAINS. The Table 4 compares the site discharge rates with the PSD values. Refer to civil sheets in appendix A for details.

	PSD (l/s)	**Developed Site Discharge (l/s)**
5-year ARI	126	**126**
20-year ARI	208	**161**
100-year ARI	295	**209**

Table 4 PSD and Developed Site Discharge Comparison

7.0 STORMWATER QUALITY

This section details the proposed water quality controls for the Site and uses a MUSIC water quality model to estimate pollutant removal efficiencies of the proposed controls. The water quality assessment will ensure that the stormwater management strategy will meet the best practice water quality objectives outlined in the Northern Beaches Stormwater Management Plan 1999, Section 5.1. Table 5.1.

Developed Urban Areas	
• Suspended solids (SS)	80% retention of the average annual load
• Total phosphorus (TP)	45% retention of the average annual load
• Total nitrogen (TN)	45% retention of the average annual load
• Litter *(includes organic material)*	Retention of litter greater than 50 mm for flows up to 25% of the 1 year ARI peak flow
• Coarse sediment	Retention of sediment coarser than 0.125 mm for flows up to 25% of the 1 year ARI peak flow
• Oil and grease *(hydrocarbons)*	In areas with concentrated hydrocarbon deposition, no visible oils for flows up to 25% of the 1 year ARI peak flow

Table 5 Required percentage reductions in post development average annual loads of pollutants

7.1 MUSIC MODEL

The stormwater quality assessment of the site was undertaken using the Model for Urban Stormwater Improvement Conceptualization (MUSIC) software program.

The model was developed using 6-minute pluvio data obtained for station 066062 Sydney Meteorological Office. The average annual rainfall at this site from 1958 to 2015 was reported to be 1300mm.

The adopted monthly potential evapo-transpiration rates for the site are shown in Table 6.

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
PET millimetres	180	135	128	85	58	43	43	58	88	127	152	163

Table 6 Monthly evapotranspiration for the Sydney region

Catchment parameters adopted for the proposed scenario MUSIC modelling are provided in Table 7 and Figure 10 below.

Catchment Type (Land Use)	Catchment Total Area (ha)	Fraction Impervious (%)	Fraction Pervious (%)
Roof	0.14	100	0
Road	0.37	100	0
Untreated Discharge	0.04	100	0

Table 7 Developed Model MUSIC Catchment Parameters

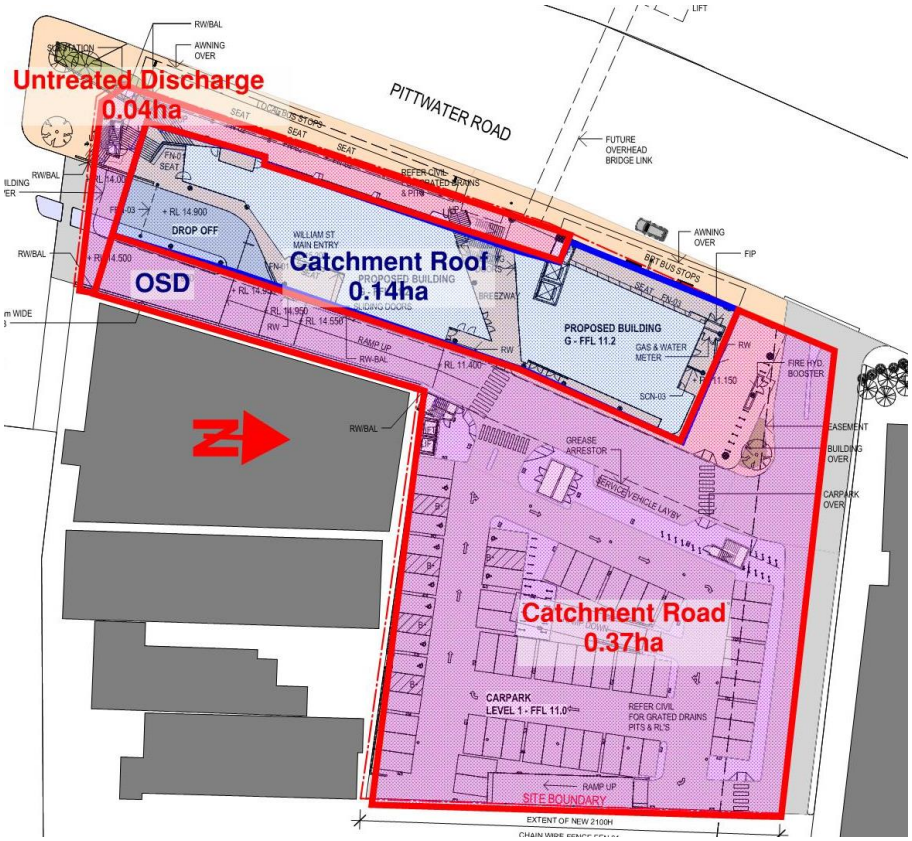


Figure 10 Catchment Breakup For Music Modeling

The pollutant concentrations adopted for the developed scenario modelling are shown in Table 8 and Table 9 below. The event mean concentrations were derived from Draft Music Modelling Guidelines For New South Wales.

Concentration (mg/L-log$_{10}$)						
	TSS		TP		TN	
	mean	std. dev	mean	std. dev	mean	std. dev
Land use/zoning						
Residential	1.20	0.17	-0.85	0.19	0.11	0.12
Commercial	1.20	0.17	-0.85	0.19	0.11	0.12
Industrial	1.20	0.17	-0.85	0.19	0.11	0.12
Rural residential	1.15	0.17	-1.22	0.19	-0.05	0.12
Agricultural	1.30	0.13	-1.05	0.13	0.04	0.13
Forest	0.78	0.13	-1.52	0.13	-0.52	0.13
Surface type						
Roofs	n/a	n/a	n/a	n/a	n/a	n/a
Sealed roads (if contains a pervious fraction e.g. verge)	1.20	0.17	-0.85	0.19	0.11	0.12
Unsealed roads[1]	1.20	0.17	-0.85	0.19	0.11	0.12
Eroding gullies[1]	1.20	0.17	-0.85	0.19	0.11	0.12

Table 8 Base Flow Concentration Parameters for NSW

Concentration (mg/L-log$_{10}$)						
	TSS		TP		TN	
	mean	std. dev	mean	std. dev	mean	std. dev
Land use/zoning						
Residential	2.15	0.32	-0.60	0.25	0.30	0.19
Commercial	2.15	0.32	-0.60	0.25	0.30	0.19
Industrial	2.15	0.32	-0.60	0.25	0.30	0.19
Rural residential	1.95	0.32	-0.66	0.25	0.30	0.19
Agricultural	2.15	0.31	-0.22	0.30	0.48	0.26
Forest	1.60	0.20	-1.10	0.22	-0.05	0.24
Surface type						
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19
Sealed roads	2.43	0.32	-0.30	0.25	0.34	0.19
Unsealed roads[1]	3.00	0.32	-0.30	0.25	0.34	0.19
Eroding gullies[1]	3.00	0.32	-0.30	0.25	0.34	0.19

Table 9 Storm Flow Concentration Parameters for NSW

A treatment train philosophy approach to stormwater quality management was implemented to modelled system consists of a Humes Gross Pollutant trap and Jelly Fish combination.

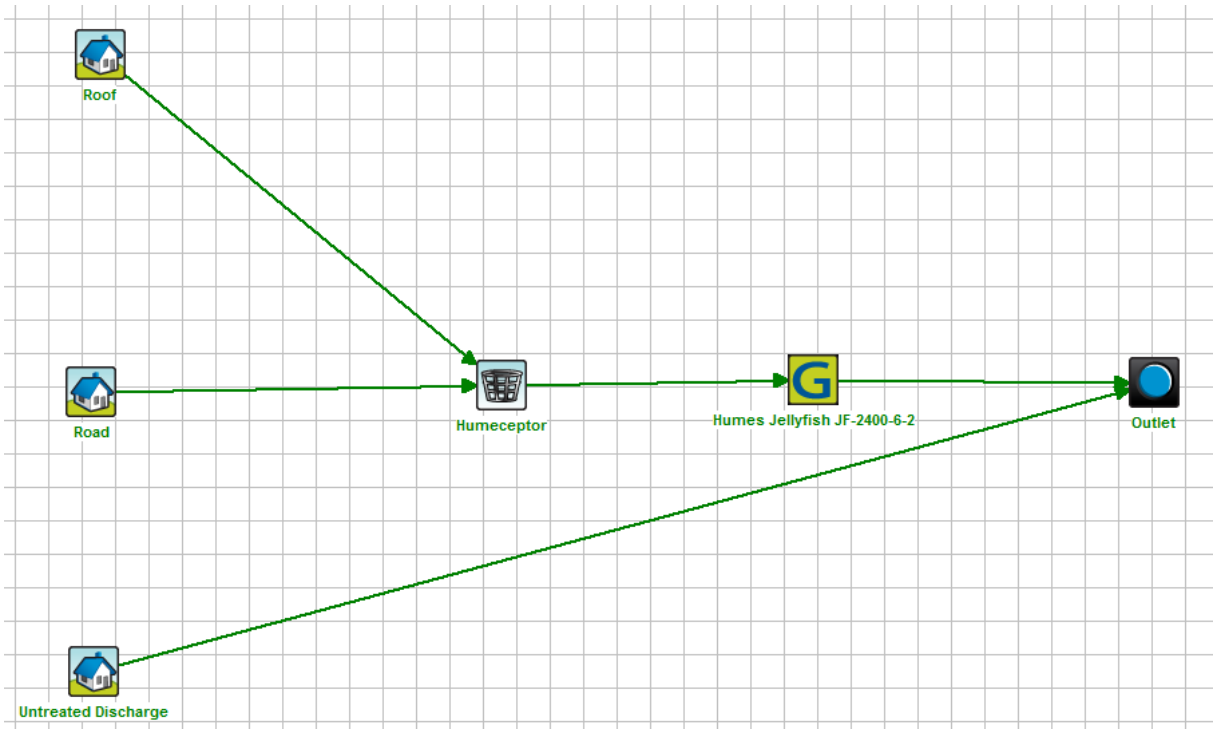


Figure 11 MUSIC Developed Scenario Screen Shot

The developed scenario MUSIC model and the expected average annual pollutant exports from the site following implementation of the stormwater management strategy are shown in Table 10 below.

	Total Suspended Solids (%)	Total Phosphorus (%)	Total Nitrogen (%)	Gross Pollutants (%)
Council Reduction requirements	80	45	45	25
Site	**86.6**	**69.8**	**52.1**	**89.4**

Table 10 Impact of Stormwater Management Strategy on Water Quality

The assessment undertaken in MUSIC indicates that the water quality controls incorporated into the proposed stormwater management strategy are likely to achieve the water quality objectives outlined. Table 10 shows that the proposed stormwater management strategy reduces the suspended solids and total phosphorus export rate to meet Councils requirements.

The latest Technical Clarification by Green Building Council of Australia in regards to stormwater states:

"The following is interim guidance for the modelling of Free Oils and Total Petroleum Hydrocarbons in demonstrating compliance with the pollution reduction targets in Emi-5 Stormwater:

The latest version of the MUSIC software (v5) allows for the modelling of alternate constituents (beyond TN,TP,TSS and gross pollutants). Following feedback from the software developers, it is advised that Total Suspended Solids (TSS) is used as a surrogate for Total Petroleum Hydrocarbons, but not for Free Oils. The requirement for modelling of Free Oils is temporarily withdrawn until a version of the software is released that allows modelling of Free Oils

Based on the available advice and analysis, the proposed water quality treatment system will to meet Councils requirement for oil and grease capture.

7.2 CONSTRUCTION WATER QUALITY – EROSION AND SEDIMENT CONTROL PLAN

During the construction phase of the project, an erosion and sediment control plan will be implemented to prevent sediment laden stormwater from entering the council drainage network and Bells Creek. Stormwater controls on site will be detailed in an erosion and sediment control plan, generally in accordance with the "Blue Book" - Managing Urban Stormwater: Soils and Construction (Landcom NSW). The plan will vary based on construction staging and methodology, but will typically include:

- upstream clean water diversion;
- silt fences;
- sedimentation basin;
- dust control; and
- vehicle wash down.

The erosion and sediment control plan includes an inspection and maintenance schedule. The erosion and sediment control plan mitigates against sediment laden stormwater entering the council drainage system and the downstream environment.

8.0 CONCLUSION

For the proposed Brookvale Community Health Centre development at 612 - 624 Pittwater Road, TTW conclude the following:

- The proposed development will not have a significant impact on the flood risk and flood storage during the PMF flood event;
- During a PMF flood the ground floor of the building can be evacuated via the internal stairs to the higher floors and via the footpath along Pittwater Road. Safe egress from the buildings higher floors to William Street can be achieved;
- Vehicle access to William Street is achievable in the PMF event;
- The proposed stormwater management strategy incoperates a piped drainage network and an onsite detention tank which is consistent with Warringah Councils On-site Stormwater Detention Technical Specification, August 2012;
- Stormwater quality treatment incorporating a GPT (HumeCeptor) and a Humes Jellyfish is consistent with the requirements of Warringah Councils Northern Beaches Stormwater Management Plan;
- A sediment and erosion control plan has been developed to manage runoff quality during construction in accordance with Landcom NSW, Managing Urban Stormwater: Soils and Construction.

From a stormwater management perspective, the site is considered to be suitable for the proposed development.

APPENDIX A

STORMWATER CONCEPT PLAN

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C01

BROOKVALE COMMUNITY HEALTH CENTRE

GENERAL NOTES

1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Contract administrator
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
3. Make smooth connection with all existing works.
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
6. For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
JPW	GROUND LEVEL PLAN	CD-AR-JPW-1001-1	3	12.06.15
AAM	LEVES AND CONTOURS	2464A-100-FS-A	A	31.03.15

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : PM559 RL.11.83
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : LOCAL
Survey prepared by : BEE & LETHBRIDGE
Setout Points :

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.
Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

BOUNDARY AND EASEMENT NOTE

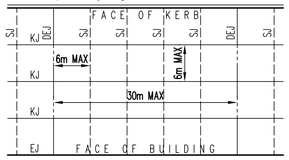
The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : GEOLYSE

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.
Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

JOINTING NOTES

Vehicular Pavement Jointing

1. All vehicular pavements to be jointed as shown on drawings.
2. Keyed construction joints should generally be located at a maximum of 6m centres.
3. Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
4. Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
5. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
6. Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
2. Weakened plane joints are to be located at a max 1.5 x width of the pavement.
3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
4. All pedestrian footpath jointings as follows (uno).

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
2. Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
5. In the replacement of kerbs –
   Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
   Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
   Existing kerbs are to be completely removed where new kerbs are shown.

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished.
2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

TENDER NOTES

1. These drawings are preliminary drawings issued for tender as an indication of the extent of works only. They are not a complete construction set of drawings.
2. To determine the full extent of work, these drawings shall be read in conjunction with the architectural drawings and other contract documents.
   Allow for all items shown on architectural and other drawings as not all items are shown on the structural/civil works drawings.
3. Should any ambiguity, error, omissions, discrepancy, inconsistency or other fault exist or seem to exist in the documents, immediately notify in writing to the Superintendendent.
4. Rates shown on the drawings are for the final structure/civil works in place and do not allow for any wastage, rolling margins, over supply or fabrication requirements. etc.

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External :B2
Internal :A2

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	AS 1379 f'c MPa at 28 days	Specified Slump	Nominal Aggs Size
KERBS, FOOTPATHS	S25	80	20
PAVEMENTS	S32 at 90 days	80	20

1. Use Type 'GP' cement, unless otherwise specified.
2. All concrete shall be subject to project assessment and testing to AS 1379.
3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
6. No holes or chases shall be made in the slab without the approval of the Engineer.
7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
8. Slurry used to lubricate concrete pump lines is not to be used in any structural members.
9. All slabs cast on ground require sand blinding with a Concrete Underlay

FORMWORK

1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with
   (A) Local authority requirements,
   (B) EPA – Pollution control manual for urban stormwater,
   (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control plan shall be implemented and adopted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

SITEWORKS LEGEND

- F22.20 — Finished surface level
- F22.00 — Finished contour
- K&G — Kerb and gutter
- KO — Kerb only
- FK — Flush kerb
- DD — Dish drain
- MK — Mountable kerb
- MIK — Mountable integral kerb
- MIK+TE — Mountable integral kerb with thickened edge
- IK+TE — Integral kerb with thickened edge
- TE — Thickened edge
- IK — Integral kerb
- IK+ED — Integral kerb with edge downturn
- K&T — Kerb and toe
- IL10.00 / 600 ø 'Z' / 1.25% / Q=345 L/s / IL9.65 — Stormwater pit, flow direction and line with; Invert level upstream; Pipe size and class; Pipe grade; Flow (Litres per second); Invert level downstream
- GD — Grated drain
- IR — Intermediate riser with subsoil drainage line (100 dia)
- FP — Flushing point with subsoil drainage line (100 dia)
- DP — Down pipe
- RP — Rodding point
- Concrete encased stormwater line
- Stormwater line with pipe taper and flow direction
- Taper kerb to zero height over 500 mm
- Wheelstop
- RW# — Blockwork retaining wall
- RW# — Brickwork retaining wall
- DEJ — Dowelled expansion joint
- SJ — Sawn joint
- KJ — Keyed construction joint
- WPJ — Weakened plane joint
- EJ — Expansion joint
- TKJ — Tied keyed joint
- Grass catch drain
- Overland flow path
- Guard Rail

PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets – **C11**
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Surface inlet pit	600 x 900 Class D galvanised mild steel grate hinged to frame	5,14
		900 x 900 Class D galvanised mild steel grate hinged to frame	2,6
		600 x 900 Class C galvanised mild steel grate hinged to frame	3,4,7,8
	Junction pit	600 x 900 Class D cast iron cover with concrete infill	1,9
B	Detention Tank	900 x 900 Class D galvanised mild steel grate hinged to frame	10,11,12,13
C	Humes jellyfish JF-1200-1-1	900 x 900 Class D galvanised mild steel grate hinged to frame	1A
D	Humes Ceptor STC 3	900 x 900 Class D galvanised mild steel grate hinged to frame	1B

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria :
(A) Average recurrence interval –
1:100 years for roof drainage to first external pit
1:20 years for paved and landscaped areas
(B) Rainfall intensities –
Time of concentration: 6 minutes
1:100 years = 237.6 mm/hr
1:20 years = 183.5 mm/hr
(C) Runoff coefficients –
Roof areas: C100 = 1.0
Roads and paved areas: C20 = 0.75
Landscaped areas: C20 = 0.48

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
3. Pipes up to 300 dia shall be sewer grade uPVC with solvent welded joints.
4. Equivalent strength VCP or FRP pipes may be used subject to approval.
5. Precast pits may be used external to the building subject to approval by Engineer
6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
7. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
8. Grates and covers shall conform with AS 3996–2006, and AS 1428.1 for access requirements.
9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
10. Care is to be taken with levels of stormwater lines. Grades shown are not to be reduced without approval.
11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
12. Subsoil drains to be slotted flexible uPVC U.N.O.
13. Adopt invert levels for pipe installation (grades shown are only nominal).

SITEWORKS NOTES

1. All basecourse material to comply with RTA specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.
2. All trench backfill material shall be compacted to the same density as the adjacent material.
3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

PAVEMENT LEGEND

NOTES
1. Asphaltic concrete shall conform to AS2150 and the specification
2. Pavement based on assumed CBR of 3%

P1 — 170mm Thickness concrete (f'c=32MPa) with SL92 fabric (40 top cover) on 100mm Compacted thickness fine crushed rock (DGB 20)

P2 — 40mm Pavers 300x600 to Architects details on 25mm Thick mortar bedding on 120mm Thickness concrete (f'c=32MPa) with SL82 fabric (40 top cover) on 75mm Compacted thickness fine crushed rock (DGB20) 5% CBR

P3 — 160mm Thickness concrete (f'c=32MPa) with SL82 fabric (40 top cover) on 50mm Sand

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions.
Refer to geotechnical report by (Enviro West) for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practises as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by (Enviro West) for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshall to supervise vehicle movements where necessary.

CIVIL DRAWING LIST

FileName: C01.dwg - USER: ronaldp - Plot File Created: Oct 16, 2015 - 5:11pm

Rev	Description	Eng	Draft	Date
P1	PRELIMINARY	SK	RP	16.10.15

Architect: McConnel Smith & Johnson ARCHITECTS
Client: NSW Government Health Infrastructure — level 8, 77 Pacific Highway, North Sydney NSW 2060
Contractor:
Project Manager: JOHNSTAFF — level 8, 16 O'Connell Street, Sydney NSW 2000, T +612 8256 0500, F +612 8256 0501, ABN 79 137 728 977
TaylorThomsonWhitting — Consulting Engineers, 48 Chandos Street St.Leonards NSW 2065, T: +61 2 9439 7288 F: +61 2 9439 3146 ttwsyd@ttw.com.au, Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 578 377

Project: BROOKVALE COMMUNITY HEALTH CENTRE, 612-624 PITTWATER ROAD, BROOKVALE NSW 2100
Sheet Subject: NOTES & LEGENDS SHEET

Scale : A1	Drawn	Authorised
NO SCALE	JW	SB

Job No	Drawing No	Revision
121211K	C01	P1

Plot File Created: Oct 16, 2015 - 5:11pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C01

PITTWATER ROAD

WILLIAM STREET

OVERLAND FLOW PATH

SUBSTATION

LOW GROUND FLOOR FFL 11.70

SUSPENDED STRUCTURE REFER TO STRUCTURAL DRAWINGS

LOW GROUND FLOOR FFL 11.20

GROUND FLOOR FFL 15.20

PROPOSED OVERHEAD BRIDGE LINK

PROPOSED BUILDING

SUBSOIL PIPE

DETENTION TANK

RWS REFER TO STRUCTURAL DRAWINGS

REFER TO STRUCTURAL DRAWINGS

KERB CONTINUES UP THE RAMP TO ARCHITECTS PLANS

RAMP DOWN

SITE BOUNDARY

IL.13.50 ø225 1.0% Q= l/s IL.12.40

IL.12.80 ø375 10.0% Q= l/s IL.10.35

IL.10.32 ø375 4.0% Q= l/s IL.9.85

IL.9.83 ø225 0.5% Q= l/s IL.9.75

IL.10.00 ø225 0.5% Q= l/s IL.9.86

IL.9.40 ø225 0.5% P3 l/s IL.9.28

IL.9.33 ø375 1.0% Q= l/s IL.9.28

IL.9.70 ø375 1.0% Q= l/s IL.9.36

IL.9.54 ø225 0.5% Q= l/s IL.9.47

IL.9.05 ø375 1.0% Q= l/s IL.8.91

IL.9.05 ø375 1.0% Q= l/s IL.8.91

IL.9.70 ø225 0.5% Q= l/s IL.9.59

Rev	Description	Eng	Draft	Date
P2	PRELIMINARY	SK	PM	16.10.15
P1	PRELIMINARY	SK	PM	08.09.15

Architect
MSJ McConnel Smith & Johnson ARCHITECTS

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Project
BROOKVALE
COMMUNITY HEALTH CENTRE
612-624 PITTWATER ROAD
BROOKVALE NSW 2100

Sheet Subject
STORMWATER PLAN

Scale : A1 1:200 | Drawn PM | Authorised SB

Job No 121211K | Drawing No C04 | Revision P2

Plot File Created: Oct 16, 2015 - 5:12pm

FileName: C04.dwg - USER: ronesp - Plot File Created: Oct. 16, 2015 - 5:12pm

APPENDIX B

SOIL AND EROSION CONTROL PLAN

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C01

EROSION AND SEDIMENT CONTROL NOTES

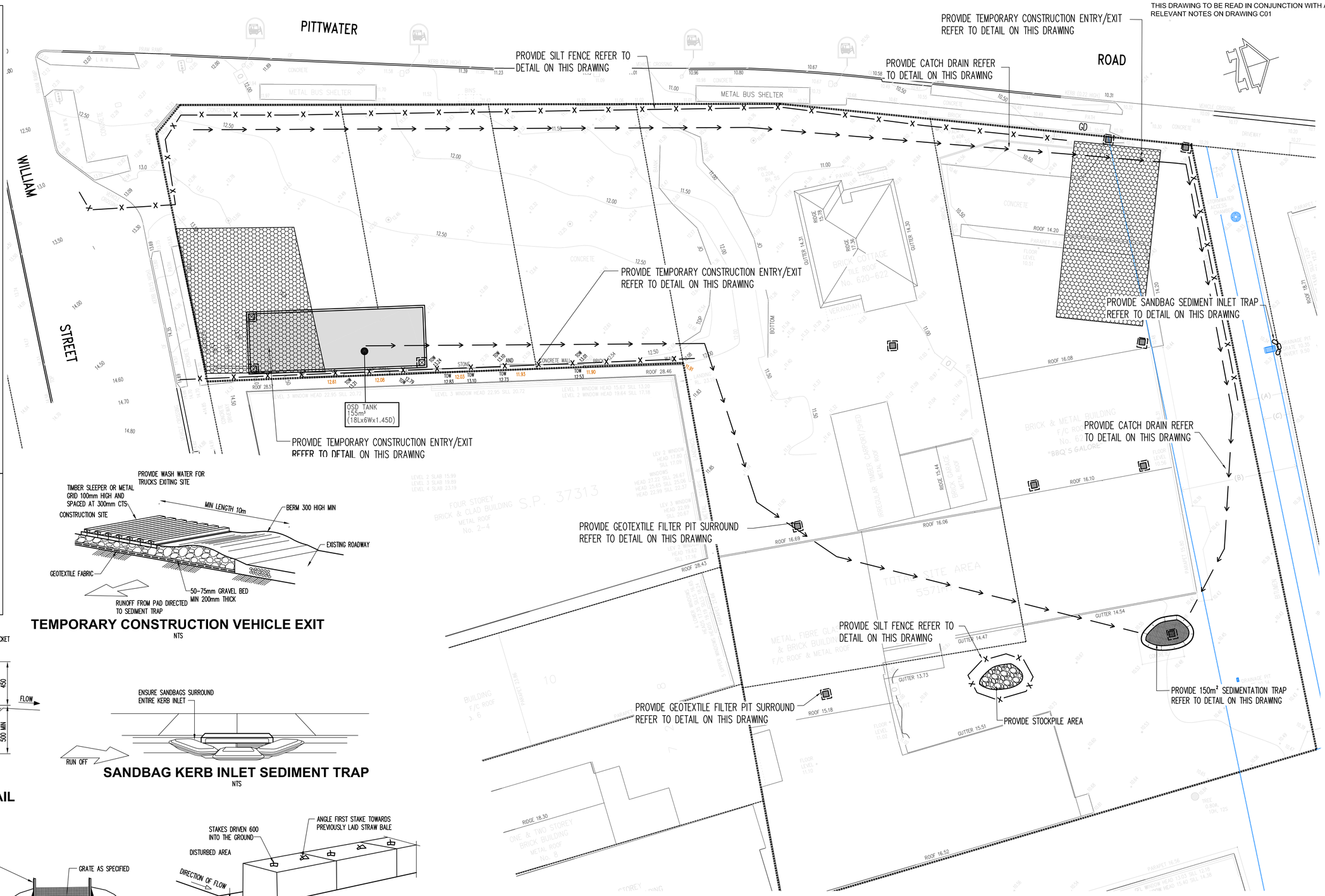
1. All work shall be generally carried out in accordance with
   (A) Local authority requirements,
   (B) EPA – Pollution control manual for urban stormwater,
   (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. Erosion and sediment control **drawings and notes are** provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control **plan** shall be implemented and adopted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

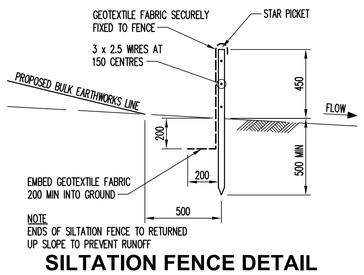
EROSION AND SEDIMENT CONTROL LEGEND

- Siltation fence
- Stormwater pit with Geotextile filter surround
- Hay bale barriers
- Sandbag sediment trap
- Catch drain
- Overland flow path



TEMPORARY CONSTRUCTION VEHICLE EXIT

NTS

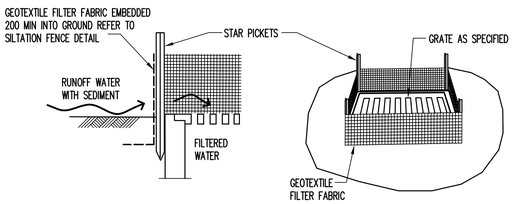


SILTATION FENCE DETAIL

SCALE 1: 20

SANDBAG KERB INLET SEDIMENT TRAP

NTS



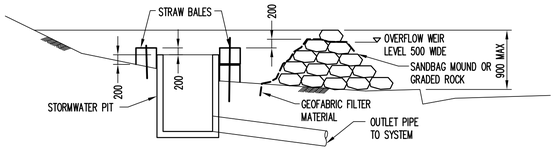
GEOTEXTILE FILTER PIT SURROUND

NTS

HAY BALE SEDIMENT FILTER

NTS

NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD



SEDIMENTATION TRAP

NTS

TYPICAL SECTION THROUGH CATCH DRAIN

SCALE 1: 20

FileName: C02.dwg – USER: rosesp – Plot File Created: Oct 16, 2015 - 5:10pm

Rev	Description	Eng	Draft	Date
P6	AFC	SK	DWK	27.11.14
P5	CONSTRUCTION CERTIFICATE	SK	JW	04.11.14
P4	DESIGN DEVELOPMENT	SK	WW	15.08.14
P3	DESIGN DEVELOPMENT	SK	WW	07.08.14
P2	DESIGN 95%	SK	WW	14.07.14
P1	ISSUE FOR COORDINATION	SK	WW	19.06.14
P7	AFC	SK	RP	16.10.15

Architect: McConnel Smith & Johnson ARCHITECTS

Client: NSW Health Infrastructure, level 8, 77 Pacific Highway, North Sydney NSW 2060

Contractor

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Project: BROOKVALE COMMUNITY HEALTH CENTRE, 612-624 PITTWATER ROAD, BROOKVALE NSW 2100

Sheet Subject: EROSION AND SEDIMENT CONTROL PLAN

Scale : A1	Drawn	Authorised
1:250	DWK	SB

Job No	Drawing No	Revision
121211K	C02	P7

Plot File Created: Oct 16, 2015 - 5:10pm

APPENDIX C

SEARS

	areas and/or potentially archaeologically significant areas in accordance with the guidelines in the NSW Heritage Manual. **9. Aboriginal Heritage** Where relevant, the EIS shall address Aboriginal Heritage in accordance with the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005 and Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010. **10. Noise and Vibration** Identify and provide a quantitative assessment of the main noise and vibration generating sources during construction and operation. Outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land. → *Relevant Policies and Guidelines:* • *NSW Industrial Noise Policy (EPA)* • *Interim Construction Noise Guideline (DECC)* • *Assessing Vibration: A Technical Guideline 2006* **11. Contamination** Demonstrate that the site is suitable for the proposed use in accordance with SEPP 55. → *Relevant Policies and Guidelines:* • *Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP)* **12. Utilities** • Preparation of an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure. • Preparation of an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water, and water sensitive urban design. **13. Contributions** Address Council's Section 94 Contribution Plan and/or details of any Voluntary Planning Agreement. **14. Drainage** Detail drainage associated with the proposal, including stormwater and drainage infrastructure. **15. Flooding** Assess any potential flooding impacts associated with the development and consideration of any relevant provisions of the NSW Floodplain Development Manual (2005), including the potential effects of climate change, sea level rise and increase in rainfall intensity. **16. Waste** Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.
Plans and Documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents.

	In addition, the EIS must include the following: • Architectural drawings (dimensioned and including RLs); • Site Survey Plan, showing existing levels, location and height of existing and adjacent structures / buildings and boundaries; • Site Analysis Plan; • Stormwater Concept Plan; • Sediment and Erosion Control Plan; • Shadow Diagrams; • View Analysis / Photomontages; • Landscape Plan (identifying any trees to be removed and trees to be retained or transplanted); • Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan; • Geotechnical and Structural Report; • Arborist Report; • Acid Sulphate Soils Management Plan (if required); and • Schedule of materials and finishes.
Consultation	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with: • Warringah Council; • Transport for NSW; and • Roads and Maritime Services. The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided
Further consultation after 2 years	If you do not lodge a development application and EIS for the development within two years of the issue date of these SEARs, you must consult further with the Secretary in relation to the preparation of the EIS.
References	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified.

APPENDIX D

MINUTES OF COUNCIL MEETING

WARRINGAH COUNCIL

Application No:	PLM2015/0046
Meeting Date:	24 April 2015
Property Address:	612 Pittwater Road BROOKVALE
Proposal:	Health Services Facility
Attendees for Council:	David Kerr – Group Manager – Development and Compliance Services Steve Findlay – Planning Assessment Manager Daniel Milliken – Planner Michael Haynes – Sustainable Urban Planning Manager Dominic Varde – Senior Property Officer Robert Barbuto – Development Engineering Manager Joseph Di Cristo – Senior Development Engineer Ben Fallowfield – Senior Environment Officer – Creeks Joe Zappavigna – Traffic and Road Safety Manager Duncan Howley – Floodplain Management Officer
Attendees for applicant:	Chris Masters – SMCC Stephen Brain – Taylor Thompson Whittny Mark Willett – MSJ Architects Kathy Lakis – MSJ Architects Ryan Thoroughgood – Health Infrastructure Simon Brender – Johnstaff Projects Paul Yannalato – Taylor Thompson Whittny

Important Note:

This pre-lodgement meeting is in relation to a proposed State Significant Development which will not result in a Development Application being lodged with Council. Rather, these notes serve as feedback on the proposal having regard to Council's planning controls, environmental and infrastructure issues.

They are intended to assist in the preparation of the State Significant Development Application which is to be lodged with the Department of Planning and Environment under State Environmental Planning Policy (State and Regional Development) 2011.

Warringah Local Environmental Plan 2011 (WLEP 2011)

Consideration of the proposal against the Warringah Local Environment Plan 2011

The fundamentals	
Definition of proposed development: (ref. WLEP 2011 Dictionary)	Health Services Facility
Zone:	B5 Business Development
Permitted with Consent or Prohibited:	The proposal states that the development is State Significant Development (SSD). It is recommended that the applicant carry out all necessary due diligence to ensure that the development (in all its components, including the public carpark and retail units) falls clearly under the relevant definition(s) within Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. This is to ensure the correct application is lodged and the correct consent authority assesses and determines that application.

Objectives of the Zone

The objectives of the B5 Business Development zone are as follows:

- *To enable a mix of business and warehouse uses, and bulky goods premises that require a large floor area, in locations that are close to, and that support the viability of, centres.*
- *To provide for the location of vehicle sales or hire premises.*
- *To create a pedestrian environment that is safe, active and interesting by incorporating street level retailing and business uses.*

Comment:

This is a very prominent and important site from a strategic and urban design point of view and requires an urban design outcome for the proposed health facility that exhibits design excellence. Designing a building to maximise floor space is unlikely to achieve an excellent built form that this prominent corner site warrants.

Therefore, Council strongly recommends a reduction in floorspace of the building to allow more scope for a better urban design outcome in terms of more substantial front setbacks and building articulation and break-up and incorporation of landscaping and pedestrian domain within the frontages of the site to more positively relate to the future Warringah Wall development on the opposite side of Pittwater Road.

Principal Development Standards:			
Standard	**Permitted**	**Proposed**	**Comment**
Height of Buildings: **Note:** Building heights under WLEP 2011 are taken from existing ground level.	11m	Approximately 21m	**Does not comply** – The proposal significantly breaches the height limit for the site, resulting in a development much larger than what was envisaged for this site and what exists to the north and south of the subject site (it is noted that the building to the east is greater than 11m, however, this building is an anomaly and is not reflective of the majority of sites within the vicinity). The minimal setback to Pittwater Road exacerbates the impacts and it is strongly recommended that the Pittwater Road setback be increased, especially to the upper levels and the portion of the building on the northern half of the site. The additional height should be supported by adequate public benefits in the form of improved acessibility (pedestrian link), public carparking and quality urban design.

Part 6 Relevant Additional Local Provisions	
Provision	**Comment**
6.1 Acid Sulfate Soils	An Acid Sulphate Soils Management Plan is recommended.
6.2 Earthworks	A geotechnical report for the proposal is recommended.
6.3 Flood Planning	Council's Floodplain Officer provided the following comments: The subject site is located within the 1 in 100 year and probable maximum flood (PMF) extents. As the proposed future use is as a health care facility, the applicant is to determine if the use is classified as vulnerable development. • The property is located within the medium risk flood planning precinct and therefore is recommended to comply with all conditions in this category in the Warringah DCP. • The floor level of the proposed health care facility must be set at or above the relevant Flood Planning Level or Probable Maximum Flood level depending on whether the applicant determines the land use as

Part 6 Relevant Additional Local Provisions	
Provision	**Comment**
	vulnerable development. • The car parking must be set at or above the relevant 1 in 100 year flood level. • The applicant must demonstrate that the development will not impact on flooding for neighbouring properties, in accordance with the LEP and DCP. • The applicant is to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to the FPL.

Warringah Development Control Plan 2011 (WDCP 2011)

Consideration of the proposal against the Warringah Development Control Plan 2011

Warringah Development Control Plan			
Part B: Built Form Controls			
Control	**Requirement**	**Proposed**	**Comment**
B5. Side Boundary Setbacks	Merit Assessment	Minimum of approximately 1.5m	The setback to William Street should be increased to allow for additional landscaping to enhance the streetscape setting of the building. The large stairwell block will require an innovative design solution to make sure it is an attractive and enhancing element of the building.
B7. Front Boundary Setbacks	Consistent with adjacent buildings	Approximately 1m to Pittwater Road	A 1.0m (minimum) setback to Pittwater Road is not consistent with other development in the vicinity and is not a desirable outcome for this prominent site, especially with this length of frontage. No. 628 Pittwater Road to the north is setback between 5m and 7m. The building on the Brookvale Bus Depot to the north of No. 628 is set back between 3m and 20m. The upper floors should be stepped back from the street to lessen the visual impact and sense of "overbearing" on the streetscape.
B9. Rear Boundary Setbacks	Merit Assessment	Various setbacks along the dogleg	The rear setbacks (eastern setbacks) could be decreased in places (particularly along the deeper

Warringah Development Control Plan			
		shaped rear boundary.	portion of the site) to help increase the setback to Pittwater Road.
Part C: Siting Factors			
Control	**Comment**		
C1. Subdivision	Question : Will the sites be amalgamated as part of this development?		
C2. Traffic, Access and Safety	Council's Traffic and Road Safety Manager provided the following comments: **Built Form and Urban Design** Built form must give consideration to the adjacent bus bay and waiting area. This to include public safety (i.e. well lit, ease of cleansing) (i.e. places easy and ergonomically effective for Council staff to clean). **Transport and Accessibility** Transport and Accessibility are included in the "Secretary's Environmental Assessment Requirements". The key issues identified under the Transport and Accessibility are considered appropriate to determine the traffic and transport impacts of the proposal and proposed improvements that may be required. The proposal includes a decked car park with 450 car spaces with about 220-250 spaces for commuters. Access to Pittwater Road and William Street. William Street is left only to Pittwater Road. **Key points:** • Access to Pittwater Road will need careful consideration in relation to the location of two major bus stops. The bus stops may need to be rationalised if access cannot be provided north and clear of the bus stops. • The proposal should also be considered in the context of the Brookvale Employment Land Study/Brookvale and Dee Why Transport Management and Accessibility Study, which was undertaken by Council for the Department of Planning and Infrastructure. • Impacts on the Rapid Bus Transport scheme along Pittwater Road proposed by Transport for NSW to be considered. Any requirements of the BRT, e.g. bus bays to be given consideration. • Consideration to be given to accommodating onsite pick up and set down areas for visitors/patients attending the centre via taxis or private vehicles. • Careful consideration of access to the site is required from Pittwater Road due to potential conflict with pedestrians, bus interactions at the major bus interchange. • The provision of pick up and drop off points in the vicinity is required. In this regard, turning movements in the road network as required in William Street. • There needs to be consideration of a pedestrian overpass in Pittwater Road		

Warringah Development Control Plan	
	or potentially connectivity with Warringah Mall, the northbound BRT, the health facility building and the commuter car park. • Detailed modelling demonstrating the traffic movements to and from the site. Clearly identify any impacts on surrounding networks including how motorists will access to the site and from the south, and how motorists will exit the site to head north. • Service vehicle access to include allowances for ambulances in the event that people need to be medically transferred to and from the facility. • Council has a contract with Adshel for the existing advertising shelters that are located along the frontage of the site. The provision of facilities for public transport users is to be considered and included in the building design, including seating shelter, public toilets, end of trip facilities for cyclists (e.g. showers), secure bicycle parking. • Suitably designed front facade allowing for pedestrian movements, bus passengers, and patrons of the development that also makes provision for information and advertising to maintain Council's revenue. • Connections between parking area and bus stops to be well designed and accommodate principles of accessible public transport. • Appropriate lighting to be provided. • Safety by design principles to be applied.
C3. Parking Facilities	The plans indicate that the proposal will provide ample parking with spaces for commuter parking also. Council is supportive of more commuter parking, subject to its permissibility and status being confirmed under the SEPP (as mentioned above).
C4. Stormwater	Council's Senior Environment Officer provided the following comments: "Compliance with the stormwater quality targets as detailed in the Northern Beaches Management Plan (1999) as per clause C4 – Stormwater and C5 – Erosion and Sediment of the Warringah Development Control Plan 2011. • Stormwater quality targets are to be demonstrated through the preparation of a MUSIC Model prepared in accordance with the draft NSW Water Sensitive Urban Design Guidelines unless alternative modelling parameters are justified on the basis of local studies. Details of the modelling of those elements, parameters and assumptions used including all data files are to be provided to Council. • The submission of a Soil and Water Management Plan to be prepared in accordance with the requirements of Landcom publication Managing Urban Stormwater: Soils and Construction - Volume 1, 4th Edition (2004)" Council's Development Engineers provided the following additional Stormwater comments:

Warringah Development Control Plan	
	• On site stormwater detention will be required to be provided for the development in accordance with Councils Technical Specification for On Site Stormwater Detention. The pre development stormwater flows are to be limited to state of nature conditions. The location of any proposed on site detention tank(s) are to be in a common area allowing for easy access and maintenance. A drowned outlet from any detention tank is to be avoided. • The development is located south of a main council stormwater drainage line and as such any development needs to be carried out and comply with Councils '"Building over or adjacent to constructed Council drainage systems and easements". The location of Councils stormwater drainage line is also to be confirmed by survey as being clear of the proposed development.
C5. Erosion and Sedimentation	An erosion and sedimentation control plan should be prepared for the site for the construction period.
C9. Waste Management	A waste management plan should be prepared that addresses the demolition, construction and ongoing waste periods.

Part D: Design	
Control	**Comment**
D3. Noise	An acoustic report addressing how the design will deal with the noise created by Pittwater Road should be prepared.
D5. Orientation and Energy Efficiency	The building has been designed to minimise the impact of the western sun. The use of electronically operated sun louver's is recommended to deal with the heat load from the western sun.
D6. Access to Sunlight	The building will overshadow parts of the property to the east (to be considered in EIS).
D7. Views	The property to the east may be affected by a loss of views (to be considered in EIS).
D9. Building Bulk	The building bulk is considered to be excessive and is symptomatic of an overdevelopment of the site. In this regard, a rationalisation of floorspace should be considered. It is strongly recommended that the floorspace be reduced to encourage a better urban design outcome and a reduction in the bulk of the building is fundamental to achieving a design that responds to the context of the area, including how the building will present to Pittwater Road and how it will relate to the new Warringah Mall development on the western side of Pittwater Road. The department is recommended to carefully review the future character outcome envisaged for Westfield's site under the special provisions for that

Warringah Development Control Plan	
	site contained in the WDCP 2011.
D18. Accessibility	An Access Report addressing AS1428 and the Disability Discrimination Act should be prepared.
D20. Safety and Security	Crime Prevention Through Environmental Design (CPTED) will be critical, especially as parts of the property and building (public carpark and pedestrian link) will be open to the public 24hrs a day.
Part E: The Natural Environment	
Control	**Comment**
E11. Flood Prone Land	Please see the flooding comments above in Clause 6.3 of the WLEP 2011.
Part G: Special Area Controls	
Control	**Control**
G4. Warringah Mall	It is highly recommended that the planning controls for Warringah Mall are taken into account when designing this proposal, especially in relation to the pedestrian bridge, front setbacks, landscaping, finishes, signage etc.

Other Relevant Environmental Planning Instruments/SEPPs

You are advised that the following Environmental Planning Instruments apply to the development:

- SEPP No. 55 – Remediation of Land;
- SEPP No. 64 – Advertising and Signage (if required);
- SEPP (Infrastructure) 2007; and
- Warringah Local Environment Plan 2011.

Relevant Council Policies

You are advised of the following (but not limited to all) Council's policies available at www.warringah.nsw.gov.au:

- Applications for Development - Policy for the handling of unclear, non-conforming, insufficient and Amended applications: PDS-POL 140
- Stormwater drainage for low level properties PDS-POL 135
- Building over or adjacent to constructed Council drainage systems and easements: PAS-PL 130
- Common vehicular access to multiple properties: LAP-PL 310
- Development Applications relating to trading hours under the Liquor Act 1982: LAP-PL 610
- Vehicle access to all roadside development: LAP-PL 315
- Waste PL 850

Other Matters

Council's Senior Property Officer provided the following comments:

Other Matters

"Property Team's comments are listed below in relation to the proposed pedestrian bridge over Pittwater Road in this location as part of the proposal. Issues to be considered:

- Ownership of airspace
- Ownership and ongoing maintenance/renewal of bridge structure and associated lifts, ramps/stairs etc.
- Public access to bridge structure and associated lifts, ramps/stairs etc. (i.e. Will public access be available 24 hours a day if the pedestrian crossing on Pittwater Road is removed at this location?)
- Legal agreements/mechanisms to cover liabilities, insurances, ongoing maintenance/renewal of structures, annual occupation fees etc. for use of airspace and land associated with the bridge structure and associated lifts, ramps/stairs etc."

Documentation that would be required for a Development Application

- All information required to be submitted under Schedule 1 of the Environmental Planning and Assessment Regulation 2000;
- All information as required on the Development Application form checklist;
- Site Analysis (prepared in accordance with Schedule 8 of WLEP 2000);
- Site Survey (prepared by a registered Surveyor);
- Statement of Environmental Effects addressing:
  - Section 79C of EPA Act,
  - All relevant sections of WLEP 2011, including demonstrating consistency with the B5 Business Development zone and the compliance with the Height of Buildings Development Standard.
  - All relevant sections of WDCP 2011;
  - Other relevant Environmental Planning Instruments.
- Geo-technical report;
- Phase 2 Site Contamination Assessment;
- Access Report;
- BCA Report;
- Traffic and Parking Report;
- Flood Report;
- Dilapidation Report;
- Acid Sulphate Soils Management Plan;
- Pedestrian Management Plan;
- Construction Management Plan;
- Crime Prevention Through Environmental Design (CPTED) assessment;
- Model and photomontages of the proposed development;
- Shadow diagrams (including elevational shadow diagrams);
- View analysis;
- Landscape Plan;
- Waste Management Plan;
- Stormwater Management Plan;
- Erosion and Sedimentation Plan;
- Colour and Materials Schedule;
- Signage Plan (if required);
- Cost Summary Report.

Concluding Comments
These Minutes are in response to a pre-lodgement meeting held on 24 April 2015 to discuss a proposal for a Health Services Facility to be assessed and determined under State Environmental Planning Policy (State and Regional Development) 2011. Council is concerned that the need for floorspace for the various services has dominated the design of the proposal and has resulted in a design that raises planning and urban design concerns. This site is a “Gateway” site that is extremely prominent when viewed from Pittwater Road and Condamine Street and warrants an iconic building to suit. The quantum of foorspace has reduced the potential to generate a design that will appropriately respond to the sites unique location and provide the necessary front setbacks and associated pedestrian and landscape zones to Pittwater Road. The additional building height should be supported by adequate public benefits in the form of improved acessibility (pedestrian link), public carparking and quality urban design (built form, pedestrian areas, landscaping and public art). It is strongly recommended that the requirement for 6000sqm be reviewed with a view to rationalising and providing additional front setbacks and building stepping and articulation. Therefore, it is strongly recommended that the setback to Pittwater Road be increased, especially to the upper levels and the whole building on the northern half of the site, to provide additional articulation to the building and reduce the bulk and overbearing presence onto the public space along Pittwater Road. This will also provide a better transitionary relationship to the sites to the north (existing and future buildings) and the future Warringah Mall development to the west. The stairwell tower on the southern elevation is very visible from Condamine Street and will require an innovative design solution to ensure it is an attractive feature of the building. Discussions should be held with the RMS, Sydney Water, Sydney Buses and Westfield to integrate the design with the surrounding infrastructure and future buildings. Finally, the Deapartment should carry out all necessary due diligence to ensure that the development (in all its components, including the public carpark and retail units) falls clearly under the relevant definition(s) within Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. This is to ensure the correct application is lodged and the correct consent authority assesses and determines that application. Should you wish to discuss any aspect of this advice, please contact Daniel Milliken, Planner on 9942-2111.