Value in Engineering and Management

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1 December 2011

Hansen Yuncken Pty Ltd **Attention:** Mr Nader Zreik Level 6 15 Bourke Road MASCOT NSW 1460

Dear Sir

Re: Greystanes Southern Employment Land Super-lot C Stormwater Management

This report summarises the stormwater management for Super-lot C of the Southern Employment Land in Greystanes in relation to the proposed adjustments to the approved master plan layout.

Background

Dexus Property Group is proposing to develop Super-lot C of the Southern Employment Land (SEL) Industrial Estate, Greystanes. The proposed development involves a number of large single level steel framed warehouse buildings with ancillary offices and provision for truck parking and unloading (via on grade and recessed docks), and for car parking.

The current Precinct C development differs from the original layout approved by the NSW Department of Planning under the provisions of the original Part 3A approval process. The main differences in the current development are larger building envelopes with few buildings and the removal of the Bellevue Circuit continuation (along the eastern perimeter of the super-lot).

Proposed Development

Super-lot C comprises an area of 12.15Ha and is bounded by Reconciliation Road to the west, Basalt Road to the north, estate drainage swales to the east and to the south. Falls over the site are gradual from west to east at grades in the order of 1%.

The proposed development comprises a number of large single level steel framed buildings and ancillary offices. It is proposed to construct Buildings 8 & 9 in the short term (refer to separate application) with construction of buildings 10, 11 and 12 as part of future developments.

The proposed development sites have provision for truck parking and unloading via on grade and recessed docks, car parking is provided and complete access around the warehouse structures has been catered for fire trucks.



Estate Stormwater Drainage & Water Quality System

Extensive infrastructure was constructed as part of the SEL Estate works. This included a comprehensive stormwater management system which includes an in-ground piped network, open drainage channels, estate water quality basin and stormwater detention basin.

Stormwater from each super-lot will be conveyed, via in-ground piped drainage (which traverses roadway alignments or within sites) to open drainage channels located at the perimeter of the estate. These drainage channels convey stormwater flows, up to and including the Q100 ARI event, in a southerly direction around the perimeter of the estate to the estate-wide water quality bio-retention basin and Widemere Detention Basin.

Provision for on-site detention (OSD) has been provided on an estate level by the 'Widemere Detention Basin'. This results in the runoff from all lots within the estate being attenuated to less than the pre-development flows. In addition the Widemere Detention basin ensures that downstream flooding in Prospect Creek is limited to less than 10mm which results in the developed flows being attenuated to a level much lower than the pre-developed flow.

Provision for water quality has also been provided at an estate level. This comes in the form of an end of line bioretention basin. Table 1 shows the results of the MUSIC analysis over the whole of the estate performed by GHD Consulting Engineers. Super-lot C, with a catchment of 12.15Ha, comprises approximately 10% of the 120Ha estate catchment. The reduction rate is expressed as a percentage and compares the postdevelopment pollutant loads without treatment versus post-development loads with treatment.

	Source	Residual Load	% Reduction	% Target Reduction
Total Suspended Solids (kg/yr)	193,000	25,800	86.6	85
Total Phosphorus (kg/yr)	394	99	74.8	65
Total Nitrogen (kg/yr)	2760	1430	48.1	45
Gross Pollutants (kg/yr)	24200	1180	95.1	90

Table 1.Estate MUSIC analysis results

The estate model results indicate that, through the use of the various stormwater treatment measures in the treatment train, pollutant load reductions for Total Suspended Solids, Total Phosphorous, Total Nitrogen and Gross Pollutants will meet current best practice reduction rates on an overall estate catchment, and hence individual lot/precinct, basis. In addition to the above individual development sites require that site stormwater is pretreated via gross pollutant trap (GPT) on site prior to discharge into the estate drainage system. An end of line pollution control device will be fitted at each discharge point (treating both hardstand and roofwater) to retain coarse sediments and floating hydrocarbons and it is expected that slightly higher removal rates will be seen for all of the pollutants nominated in Table 1.

The above nominated OSD and water quality systems are based on an impervious site coverage of 86%, hence it is a requirement for all developments to contain a minimum of 14% landscaped or other pervious surfaces.

Proposed Stormwater Drainage System

Stormwater management within the proposed Super-lot C development will remain generally in accordance with the approved estate stormwater management strategy.

Stormwater will be conveyed via in-ground piped drainage system to the open drainage channels located on the eastern side of the precinct. Indicative discharge points have been indicated on drawing Co10529.08-MP02 where by the stormwater catchments allowed for by GHD for the estate system have been adopted.

The provision of estate level OSD (Widemere Basin) results in no OSD being required for individual sites within the Estate. As such no OSD is proposed for building developments within Super-lot C.

Stormwater quality for the super-lot will be achieved via the estate level bio-retention basin however, individual development sites require site stormwater to be pre-treated via a GPT on site prior to discharge into the estate drainage system. An end of line pollution control device will be fitted at each discharge point to retain coarse sediments and floating hydrocarbons.

Impervious site coverage over the precinct will be maintained at a level less than or equal to 86% via provision of a minimum of 14% landscaped surfaces. The majority of landscaped surfaces will be provided along the Basalt Road and Reconciliation Drive frontages. As such individual development sites which do not contain large amounts of street frontage may be slightly lower than the required pervious coverage. As however the overall precinct will provide the required pervious coverage, it is considered that, in terms of stormwater management requirements, this objective has been met.

Conclusion

This Stormwater Management Report has been prepared to support the application for a proposed industrial development which involves an adjustment to the Super-lot C Master Plan layout in the Dexus Estate in the Greystanes Southern Employment Lands.

Stormwater management within the proposed Super-lot C development will remain generally in accordance with the approved estate stormwater management strategy. Stormwater will be conveyed via in-ground piped drainage system to the open drainage channels located on the eastern side of the precinct and impervious surfaces will remain at or below 86% over the precinct. Pre-treatment of stormwater will be performed on site prior to final treatment in the estate bio-retention basin and stormwater attenuation will also be performed in the estate OSD (Widemere) Basin.

It is recommended that the management strategies mentioned in this report be incorporated into the future detailed design. Detailed design may result in changes to the concept however design criteria will be followed.

Yours faithfully

COSTIN ROE CONSULTING PTY LTD

MARK WILSON Senior Design Engineer

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DRAWING LIST

DRAWING NO. CO10529.08-MP01

C010529.08-MP02 C010529.08-MP03

C010529.08-MP04 DRAWING TITLE

DRAWING LIST & GENERAL NOTES

SUPERLOT C SITE MASTERPLAN INDICATIVE STORMWATER LAYOUT PLAN - BUILDING 8 & 9 INDICATIVE FINISHED LEVELS PLAN - BUILDING 8 & 9

GENERAL NOTES

- 9 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- 63 ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.

G4

UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETERS.

65 ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.



SITE N.T.S TION PL

SUPERLOT C

BASALT ROAD, GREYSTANES ESTATE

GREYSATNES, NSW

DESIGNED DRAWN DATE CHECKED SIZE SCALE
M.W M.C 10.11.11 CHECKED B1 AS SHOWN

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DRAWING LIST , NOTES AND GENERAL

Co10529.08-MP01

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