APPENDIX ONE

Report

Victoria University of Wellington - Kelburn Campus - AMB and Hub Buildings - Development Contributions Self-Assessment

Prepared for Victoria University of Wellington (Client)

By Beca Carter Hollings & Ferner Ltd (Beca)

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Revision History

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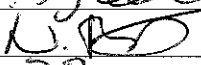
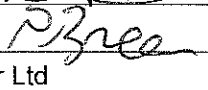
Reviewed by	Nick Baty		21/11/2012
Approved by	Patrick Breen		21/11/2012
on behalf of	Beca Carter Hollings & Ferner Ltd		

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1 Executive Summary

Beca has been engaged by Victoria University of Wellington (VUW) to carry out a self-assessment of development contributions for the Alan MacDiarmid Building (AMB) and Hub building at VUW's Kelburn Campus.

Beca has carried out a campus wide report dated the 29th of August 2012. That report reviewed the wider impact that the University's Kelburn campus has on WCC's infrastructure services and reviews what development contributions VUW should pay on a campus wide basis rather than on a building by building basis.

This report reviews the actual and anticipated impact that the new developments have on the WCC infrastructure services as they relate to the Wellington City Council's Development Contribution policy dated 1 July 2009.

The actual measured impact and hence self-assessment for AMB's Equivalent Housing Unit (EHU) is 2.5 EHU's as opposed to WCC Development Contributions Policy's assessed EHU measure of 82.4 EHU's.

The self-assessed impact for the new Hub building is 1.6 EHU's as opposed to WCC Development Contributions Policy's assessed EHU measure of 52 EHU's. We have used the same percentage ratio of usage from the AMB building to assess the anticipated actual usage for the Hub building, as this is a good representation of how the university utilises WCC's infrastructure services.

Applying the rates in the fee schedule within the WCC Development Contribution Policy non-residential development in Map Zone N – Central and Coastal, the fees payable for the two new developments at VUW are as follows:-

AMB $ 10,257.50 (plus GST)

Hub $ 6,564.80 (plus GST)

The above fee is based on city wide contributions, water supply and waste water only.

2 Introduction

Beca has been engaged by VUW to assist in collating and analysing infrastructure data to ascertain actual and predicted consumption and hence the impact on WCC's infrastructure services by the university's Kelburn campus's new buildings, namely the AMB and Hub buildings.

This report reviews the recently completed AMB building's actual usage based on meter readings and the Hub building's projected usage of WCC's infrastructure services and relates the usage back to a self-assessed EHU.

The WCC Development Contributions Policy enables non-residential applicants to apply for a self – assessment of the number of EHU's payable for a particular development under Clause 2.5.1 of the policy.

This report sets out to summarise VUW's basis for self-assessment.

For both the AMB and Hub building, the following infrastructure types were not taken into consideration for EHU assessment:-

- Stormwater – both sites were previously hard standing with stormwater connections to the WCC stormwater network.
- Traffic and roading – there is no increase in traffic and roading demand as the campus population is not increased due to the developments.
- Reserves – Reserve contributions are deemed not applicable to VUW, as the University is considered self-sufficient in this regard. There is also no additional population based demand as a consequence of the development of these building.

3 Self-Assessment Methodology

3.1 Self-Assessment Criteria

Section 2.5.5.1 of the WCC development contributions policy, states:-

"the onus is on the applicant to prove (on the balance of probabilities) that the actual increased demand is different from that assessed by applying the non-residential unit of demand in para 2.21. Actual increased demand means the demand created by the most intensive non-residential uses likely to become established in the development within 10 years from the date of application."

The WCC Development Contributions assessment guidelines in Clause 2.5.5.3 of the policy sets out the criteria for assessment guidelines as follows:-

Table 1 – WCC Development Contributions Policy Assessment Guidelines

Infrastructure Type	Usage Measure per EHU
Water supply	780 litres per day excluding storage
Wastewater	390 litres per day
Stormwater	Runoff co-efficient not exceeding 0.7
Traffic and roading	10 private vehicle trips per day
Reserves	600m2 of allotment area

We propose to use these figures as the basis of comparison between the EHU measure and actual and predicted usage figures.

4 Alan MacDiarmid Building (AMB) – Self-Assessment

4.1 Building Description

The Alan MacDiarmid Building AMB, is a new laboratory and research building consisting of laboratories, write up space and ground floor teaching space.

The site where the new AMB sits was originally planned to cater for a building in the late 1970's that would have joined the Cotton and Laby buildings. The services infrastructure was installed as part of the 1970's development however; the building was not constructed at that time.

AMB did not require any new infrastructure services connections into the WCC system and it was built over existing hard stand parking. (Refer to aerial photo below)

The AMB was completed in 2010 and a review of the actual impact AMB has on the WCC services infrastructure is highlighted below:-

Table 2 – AMB – self-assessed impact on services infrastructure verus the actual usage.

Infrastructure type	WCC EHU Estimate of the Increase *Note 1*	Actual Usage using water meters *Note2*	Self-Assessment
Water Supply	64,272 litres/day	1,930 litres/day	Daily usage equates to 2.5 EHU's
Wastewater	32,136 litres/day	1,275 litres/day	Daily usage equates to 2.5 EHU's
Stormwater *Note3*	Runoff co-efficient not exceeding 0.7	Nil – most likely negative due to rainwater harvesting	Nil – most likely negative due to rainwater harvesting

Notes:-

1 New building area = 4,532 m2 which equates to 82.4 EHU's

2 Actual average recorded usage from meters connected to the Building Management System (BMS) (refer to section 6). This figure does not include the water captured by the rainwater harvesting tanks used for WC flushing and hence we have increased the ratio between incoming water supply and wastewater to 66%.

3 The existing site was previously a hard paved carpark area with minor buildings, therefore the initial runoff coefficient when this area had its infrastructure put in place in 1976-7, would have been 0.9. (Refer to aerial photo below)

Photo 1 – Aerial photo of VUW Kelburn Campus dated 2000 highlighting the location of the recently completed AMB building

4.2 Self-assessment

Table 2 highlights that AMB's actual daily usage as a percentage of the WCC Development Contribution daily EHU calculation is 3% for water consumption and 4% of the anticipated wastewater outflow.

Whilst the new building area indicates 82.4 EHU's the actual usage and hence impact on WCC infrastructures services equates to 2.5 EHU's.

The basis for the self-assessed EHU figure is the percentage of the actual recorded daily average water and hence wastewater usage versus the policy calculated usage.

The reasoning for the relatively low usage compared to a typical EHU measure is primarily due to:-

- VUW's policy to adopt sustainable design principles wherever practical, including:-
  - Low flow sanitary fittings and fixtures
  - Rainwater harvesting
- There is no increase in demand due to the population already being on campus.
- The nature and usage of the building which has been specifically designed as a research and laboratory facility.

Table 3 – AMB – self-assessed fee schedule

Infrastructure Type	Self Assessed EHU	Fee Payable per EHU Note 1	Total Fee
Water supply	2.5	$806.00	$2,015.00
Wastewater	2.5	$1,185.00	$2,962.50
City Wide fee – (Non-residential)	2.5	$2,112.00	$5,280.00
		Total	**$10,257.50**

Notes:-

1 Fees based on WCC Development Contributions Policy table 2.4.2 Map zone N – Central and Coastal

5 Hub Building – Self-Assessment

5.1 Building Description

The Hub building is due for completion early 2013, the primary purpose of this building is to create a campus hub and provide better interconnection between the surrounding buildings. The ground floor is described as a mixed use space and consists of a plaza area that provides linkage and interconnection to the surrounding buildings, with casual learning spaces and small meeting, teaching and learning rooms around the perimeter. The mezzanine floor is a partial floor area that also provides linkage and interconnection to the surrounding buildings, the space provides an area for casual learning. The upper floor is a reading room and library.

The site of the Hub building was the Quad which was primarily a glazed outdoor area.

The new Hub building did not require any new infrastructure services connections into the WCC system.

The actual impact the Hub building has on the WCC services infrastructure is minimal as there are only 5 No. new toilets and hand wash basins installed, the stormwater catchment area has not changed.

Table 4 – Hub - self-assessed impact on services infrastructure verus the predicted usage.

Infrastructure type	WCC EHU Estimate of the Increase *Note 1*	Projected Usage based on NZS 3500 and Self-Assessed usage based on AMB *Note 2&3*	Self-Assessment *Note 3*
Water Supply	40,560 litres per day	Projected = 4500 litres/day Self-assessed = 1,117 litres/day	Self-assessed daily usage equates to 1.6 EHU's
Wastewater	20,280 litres per day	Projected =2250 litres/day Self-assessed = 608 litres/day	Self-assessed daily usage equates to 1.6 EHU's
Stormwater *Note4*	Runoff co-efficient not exceeding 0.7	Nil – no change to catchment area	Nil – no change to catchment area

Notes:-

1 New building area = 2,850 m2 which equates to 52 EHU's.

2 Projected usage based on five. WHB's and WC's using AS/NZS 3500 and 10 minute usage interval over a 12 hour period, in reality it is considered that the actual daily usage will be significantly less.

3 Taking into consideration the actual water usage the university's AMB uses versus the predicted and self-assessed usage, the Hub's actual daily usage will be less than the AMB building, however from a conservative self-assessment perspective, we have used the same percentage ratio of WCC EHU estimate v actual usage for AMB i.e. 3% and applied this percentage to the Hub self-assessment.

4 The existing site was previously a covered courtyard area; there would be no increase in stormwater catchment.

Photo 2 – Aerial photo of VUW Kelburn Campus dated 2000 highlighting the location of the Hub building construction site.

5.2 Self-assessment

Table 2 highlights that based on NZS3500, the predicted Hub usage as a percentage of the WCC Development Contribution daily EHU calculation is 11% for water consumption and 11% of the anticipated wastewater outflow.

Taking into consideration the actual water usage the university's AMB uses versus the predicted usage based on NZS 3500 and self-assessed usage, the Hub's actual daily usage will be considerably less than the AMB building. However from a conservative self-assessment perspective, we have used the same percentage ratio of WCC EHU estimate v actual usage for AMB i.e. 3% and applied this percentage to the Hub self-assessment

Whilst the new building area indicates 52 EHU's, the self-assessed usage and hence impact on WCC infrastructures services equate to 1.6 EHU's for water and 1.6 EHU's for waste-water.

The reasoning for the relatively low usage compared to a typical EHU measure is:-

- There are only 5 No toilets and wash hand basins installed within the new building over a daily period it is unlikely that the usage for the university will be at 10 minute intervals over a 12 hour period.
- The specific nature of the building, which is primarily to interconnect and bring the surrounding buildings together.

- The population at the campus is static; therefore this development will have no impact on the WCC infrastructure services.

Table 5 – Hub – self-assessed fee schedule

Infrastructure Type	Self Assessed EHU	Fee Payable per EHU Note 1	Total Fee
Water supply	1.6	$806.00	$1,289.60
Wastewater	1.6	$1,185.00	$1,896.00
City Wide fee – (Non-residential)	1.6	$2,112.00	$3,379.20
		Total	**$6,564.80**

Notes:-

1 Fees based on WCC Development Contributions Policy table 2.4.2 Map zone N – Central and Coastal

6 Method of Actual Measurement

The water usage is measured at the water connection into the AMB building. The meter is a pulse meter that sends a signal to the Building Management System (BMS), the meter has an accuracy of within 5 %.