

INITIAL PEAK FLOW CALCULATIONS

Based on QUDM 4.00 'Catchment Hydrology'

Written by BB 31/10/08

BORNHORST + WARD
CONSULTING ENGINEERS
CIVIL AND STRUCTURAL

Job Number: **12356**
 Job Name: **SNP BOWEN HILLS**

IFD : Brisbane

Designed: **JD**
 Checked: **KR**

Please note:
 User Data to be placed in the
 Green Cells only

TOTAL RUNOFF COEFF.						
	Sub Catchment Area (Ha)		Runoff Coefficients		Calculated C10	
No.	Existing	Proposed	Existing	Proposed	Existing	Proposed
Exist: Houses	0.087	0.746	0.90	0.9		
Exist: Land	0.6784		0.70			
New Impervious						
Low Landscaping			0.01971			
	0.77	0.77			0.72	0.89

EXISTING TIME OF CONCENTRATION		
CHANNEL/PIPE SHEET FLOW	Std Inlet Time	0
	Site Slope (%)	5.5
	Flow Length (m)	40
	Horton's "n"	0.045
	Travel Time (min)	11
	Travel Length (m)	45
	Fall (m)	6.5
CHANNEL/PIPE SHEET FLOW	Travel Time (min)	1
	Multiplier	3
	Travel Time (min)	3
	Total Time (Tc)	14.0

DEVELOPED TIME OF CONCENTRATION		
CHANNEL/PIPE SHEET FLOW	Std Inlet Time	5
	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIPE SHEET FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	5.0

PEAK RUNOFF CALCULATIONS

ARI Event yr	Rainfall Intensity (mm/hr)		Coefficient of Runoff		Peak Runoff Rates (m ³ /s)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
1	77	116	0.58	0.72	0.095	0.176
2	100	149	0.61	0.76	0.130	0.241
5	128	190	0.69	0.85	0.187	0.344
10	146	215	0.72	0.89	0.224	0.409
20	169	248	0.76	0.94	0.273	0.496
50	200	292	0.83	1.00	0.354	0.622
100	224	327	0.87	1.00	0.414	0.694

PEAK FLOWS FOR FREQUENT EVENTS

ARI Event yr	% of Q1	Peak discharge (m ³ /s)	
		Existing	Proposed
1mth	25%	0.024	0.044
2mth	40%	0.038	0.070
3mth	50%	0.047	0.088
4mth	60%	0.057	0.106
6mth	75%	0.071	0.132
9mth	90%	0.085	0.158
12mth	100%	0.095	0.176

INITIAL DETENTION SIZING

Based on QUDM 5.05.1 'Flood-Routing - Initial Sizing'
Written by SC 31/10/94
updated by BB 31/10/08

Job Number: **12356**
Job Name: **SNP BOWEN HILLS**
Flows into Development site

IFD : Brisbane

Designed: **JD**
Checked: **KR**

Critical Time of Concentration tc min	10 yr ARI Runoff C _{eff} p307 ARR C _v	Total Catchment Area A ha
Existing 14.00	0.72	0.77
Post-Develop 5.00	0.89	0.77

Flood Event	Volumetric Coeff. of Runoff		Rainfall Intensity		Inflow Volume	Peak outflow capacity or desired peak outflow	Peak inflow rate by rational method	Reduction ratio	Storage Volume					Time ratio factor
									QUDM methods					
	Existing Cv	Post-D'ment Cv	Existing I	Post-Devel I	Vi	Qo	Qi	r	CULP m³	BOYD m³	CARROL m³	BASHA m³	Required Volume m³	
ARI														
Yr														
3mth	0.58	0.72	38	58	35	0.047	0.088	0.46	10	16	11	13	28	
1	0.58	0.72	77	116	70	0.095	0.176	0.46	21	33	22	27	55	
2	0.61	0.76	100	149	96	0.130	0.241	0.46	28	44	29	36	75	
5	0.69	0.85	128	190	138	0.187	0.344	0.45	40	63	41	51	106	
10	0.72	0.89	146	215	164	0.224	0.409	0.45	47	74	49	60	126	
20	0.76	0.94	169	248	198	0.273	0.496	0.45	56	89	58	73	152	
50	0.83	1.03	200	292	256	0.354	0.640	0.45	72	114	75	93	194	
100	0.87	1.07	224	327	298	0.414	0.746	0.44	84	133	87	108	226	
200	0.87	1.07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
500	0.87	1.07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	

assumes $V_i = 4 * Q_i * T_c / 3$ where Q_i is flow from rational method (QUDM 5.05.1)
and T_c is in seconds for this equation only.
ie $C_v = 1.33 * C_r$ which is conservative for SE QLD.

APPENDIX C

ADDITIONAL INFORMATION

Kris Rensch

From: David Morrow [David.Morrow@urbanutilities.com.au]
Sent: Monday, 7 January 2013 4:06 PM
To: DevelopmentEnquiries; Kris Rensch
Cc: Brianna Fyffe (Brianna.Fyffe@ulda.qld.gov.au)
Subject: Completed RE: QUU ref 119/80/979/238/12 , ULDA Hurworth Street Development Enquiry 24 Markwell Street, Bowen Hills L5 SP213464

Kris

I refer to your email dated 13th November 2012 requesting advice on the water supply and sewerage infrastructure required to service the proposed development at 24 Markwell St, Bowen Hills.

The development has been assessed as commercial (18,300m²)

Sewerage

An assessment of the sewerage network servicing the site has been completed including computer hydraulic modelling of the network under peak wet weather flow conditions. The assessment indicates the existing infrastructure, based on current loadings, has the capacity to service the proposed development in accordance with QUU's design standards.

Water

An assessment of the water supply available at the site has been completed including computer modelling of the network under peak demand and fire flow conditions. The assessment indicates the existing infrastructure does not have the capacity to supply water to the proposed development during fire flow conditions in accordance with QUU design standards.

To remedy this situation will require the developer to replace the existing 80mm dia water main in Hurworth St with a new 150mm dia. pipe from the existing 150mm water main in Campbell St to the furthest service connection point for the development.

While there has been no reports of capacity issues in Hurworth St, previous problems with turbidification of unlined cast iron 80mm dia. water mains in Jeays St suggest it would be wise for the developer to undertake a pressure/flow test in the street to confirm what the actual pressure/flows are. This flow/pressure testing would be inline with requirements of the BCA and relevant Australian Standards to undertake infield testing as well as obtaining modelling data from the water authority.

The developer should also ensure off-main testing of the internal fire fighting system is incorporated into the hydraulic design to ensure the surrounding water customers are not affected by pressure fluctuations in the network.

Regards

David Morrow
Senior Engineer
Development Assessment & Land Use Planning

T 07 3178 2200

E DevelopmentEnquiries@urbanutilities.com.au
www.urbanutilities.com.au

From: DevelopmentEnquiries

Sent: Monday, 7 January 2013 10:21 AM

To: David Morrow

Subject: FW: QUU ref 119/80/979/238/12 , ULDA Hurworth Street Development Enquiry 24 Markwell Street, Bowen Hills L5 SP213464

Hi David

I have only sent this for your information. Kelly sent an email out to our customers, just to give them an update on things and this was one of the responses.

Kind regards

Cherie

From: Kris Rensch [<mailto:K.Rensch@bornhorstward.com.au>]

Sent: Monday, 7 January 2013 8:22 AM

To: DevelopmentEnquiries

Subject: RE: QUU ref 119/80/979/238/12 , ULDA Hurworth Street Development Enquiry 24 Markwell Street, Bowen Hills L5 SP213464

Hi,

Thanks for the email.

We only require information about the sewer and water capacities.

The information about the vent pole is no longer required as this is being dealt with separately.

Thanks,

Kris Rensch | Civil Engineer | Bornhorst + Ward Consulting Engineers

Level 4, 67 Astor Terrace, Spring Hill, Qld 4000, Australia

E. K.Rensch@bornhorstward.com.au | **P.** (07) 3013 4699 | **D.** (07) 3013 4645

From: DevelopmentEnquiries [<mailto:DevelopmentEnquiries@urbanutilities.com.au>]

Sent: Thursday, 3 January 2013 9:52 AM

To: Kris Rensch

Subject: QUU ref 119/80/979/238/12 , ULDA Hurworth Street Development Enquiry 24 Markwell Street, Bowen Hills L5 SP213464

Dear Kris,

Due to the large inundation of request's being received by the Development Assessment and Land Use Planning team has meant that our response to your enquiry is taking longer than expected.

We appreciate your patience and will endeavour to reply to this request within the next 10 business days. If you no longer require input from our team on this matter can you please reply to that effect.

Regards,

Development Assessment and Land Use Planning
Queensland Urban Utilities

T 07 3178 2200

E developmentenquiries@urbanutilities.com.au

www.urbanutilities.com.au



From: Kris Rensch [<mailto:K.Rensch@bornhorstward.com.au>]

Sent: Tuesday, 13 November 2012 5:14 PM

To: DevelopmentEnquiries

Cc: Nick Rozis

Subject: QUU ref 119/80/979/238/12 , ULDA Hurworth Street Development Enquiry 24 Markwell Street, Bowen Hills L5 SP213464

To Whom it May Concern,

We are currently preparing a Development Application for the ULDA for a commercial project at Hurworth Street, Bowen Hills.

The site is described as follows:

Table 1: Property Descriptions

Address	Lot and Plan	Size (Ha)
24 Markwell Street, Bowen Hills	Lot 5 SP213464	0.7653Ha

The current proposal is for construction of 18300m² gross floor area of laboratories and offices for a pathology company.

Regarding the sewer connection, it is intended to connect to the existing 150mm diameter sewer in Hurworth Street.

Regarding the water connection there is an existing 100mm diameter line in Hurworth Street.

Can you please advise if this infrastructure is of sufficient capacity to service the site. The ULDA will require this information with the development application for the site.

Existing Vent Pole

There is an existing vent pole and associated building in the south eastern corner of the site, close to the existing trunk sewer line. This is contained within a volumetric easement on the property as per the attached.

Current architectural plans show new building proposed close to the easement, with new building floor extending over the easement and over the existing building adjacent the vent pole.

Can you please advise on what the QUU requirements are for construction around this infrastructure, in particular over the existing volumetric easement.

Please give me a call to discuss further.

Thanks,

Kris Rensch | Civil Engineer | Bornhorst + Ward Consulting Engineers
Level 4, 67 Astor Terrace, Spring Hill, Qld 4000, Australia
E. K.Rensch@bornhorstward.com.au | P. (07) 3013 4699 | D. (07) 3013 4645

Bornhorst+Ward ProjectId: 12356-CO

 **Please consider the environment before printing this email**

Opinions, conclusions and other information in this e-mail and any attachments that do not relate to the official business of the firm are neither given nor endorsed by Bornhorst+Ward Consulting Engineers.

Any design details are applicable to the intended project only. Subject to contract, we retain copyright of all the transmitted material and it must not be reproduced wholly or in part, or supplied to any third party without our written permission.

If you have received this electronic mail message in error, we request you immediately notify the sender and delete the message from your computer.

***** This message has passed through an insecure network. Please direct all enquiries to the message author.

***** This message has passed through an insecure network. Please direct all enquiries to the message author.

Bornhorst+Ward ProjectId: 12356-CO

CHRISTMAS PERIOD OFFICE HOURS

Please note that our office will be closed from **5pm Friday 21 December** and will reopen on **Monday 7 January 2013**.
From the team at Bornhorst + Ward we wish you and your family a very Merry Christmas and a Happy New Year!

***** This message has passed through an insecure network. Please direct all enquiries to the message author.

***** This message has passed through an insecure network. Please direct all enquiries to the message author.

31 January 2013
Ref. No. 12356 FF

Sonic Health Care Limited
C/- NPL Property Services
PO Box 761
EDGECLIFF NSW 2113

ATTENTION: MR. NICK LUCAS

Dear Nick,

**Re: Proposed Sullivan Nicolaides Pathology Development | Hurworth Street | Bowen Hills:
Design of Building Structure adjacent to Best Street Sewer Vent and Odour Scrubber.**

With reference to the attached architectural concept design image provided by Nettleton Tribe on the 31 of January 2013:

We believe that a structural solution for the area surrounding the sewer easement will be possible that does not adversely impact on the sewer equipment. This will be achieved by adopting all the following principals:

- Providing foundations that extend sufficiently deep to avoid influencing sewer infrastructure
- Providing a foundation system, likely consisting of piles and a ground beam system, which supports loads from the boundary walls while maintaining suitable tolerances to the easement boundary and with underground services
- Specifying drilling techniques that avoid potential damage from vibrations to underground services.

Development of the design will be undertaken in compliance with these principals. Documentation demonstrating compliance with these principals will be made available for review at appropriate milestone dates.

Yours faithfully,

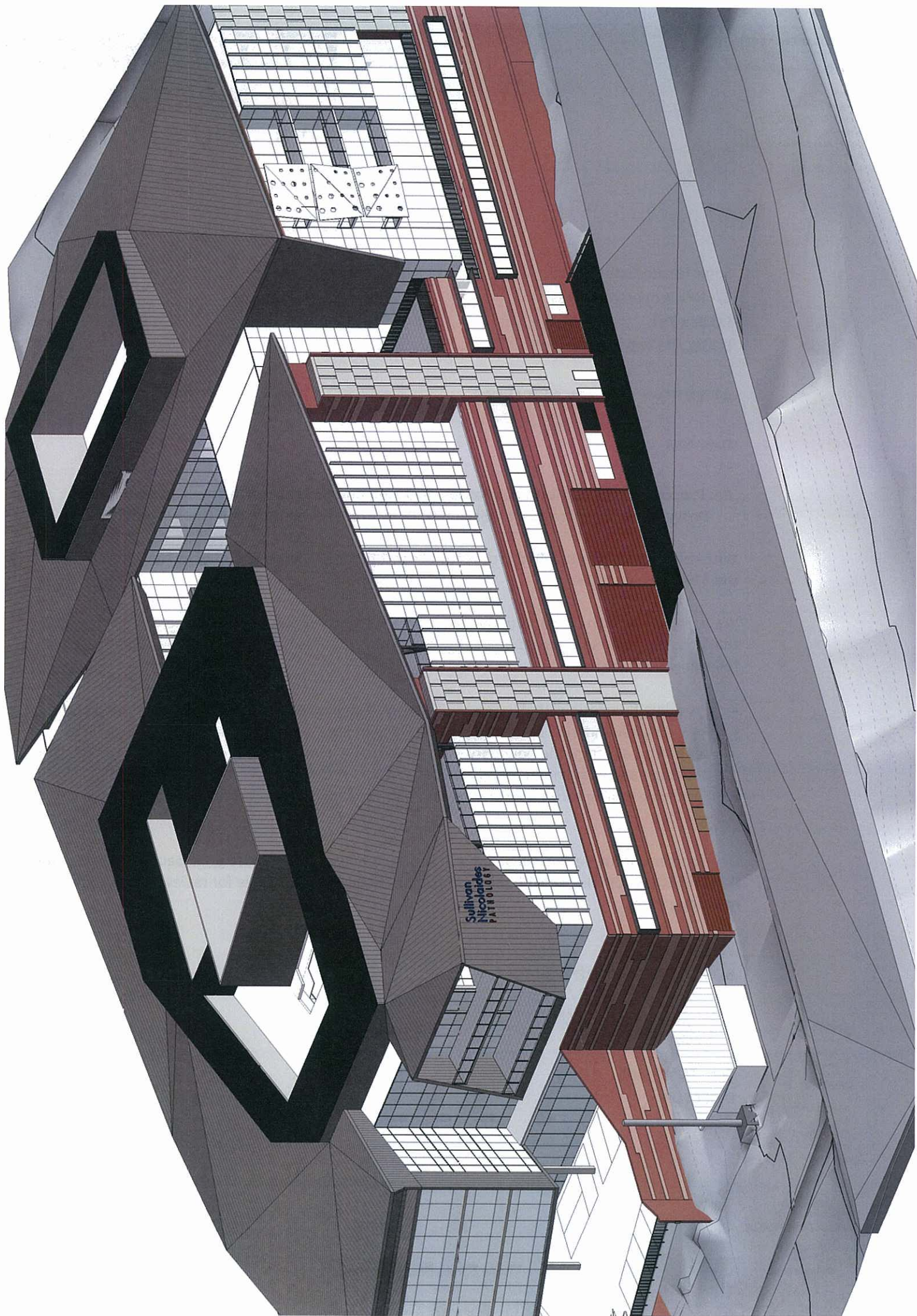
BORNHORST & WARD PTY LTD



**Per: TONY AVIS
DIRECTOR**

DIRECTORS
Tony Avis
John Harrison
Ross Kynaston
Nick Rozis
Brett Taylor

ASSOCIATES
Blair Batts
Andrew Bryant
Robert Gray
David Teakle



Sullivan
Nicolaides
PATRICK