Feasibility Assessment of the Proposed Easement benefiting 83-85 Canberra St, Oxley Park, NSW 2760

Prepared By:

Ertaz H, Chowdhury
MIEAust CPEng NPER Reg No:2214897

Date: 21/08/2021
Revision: A

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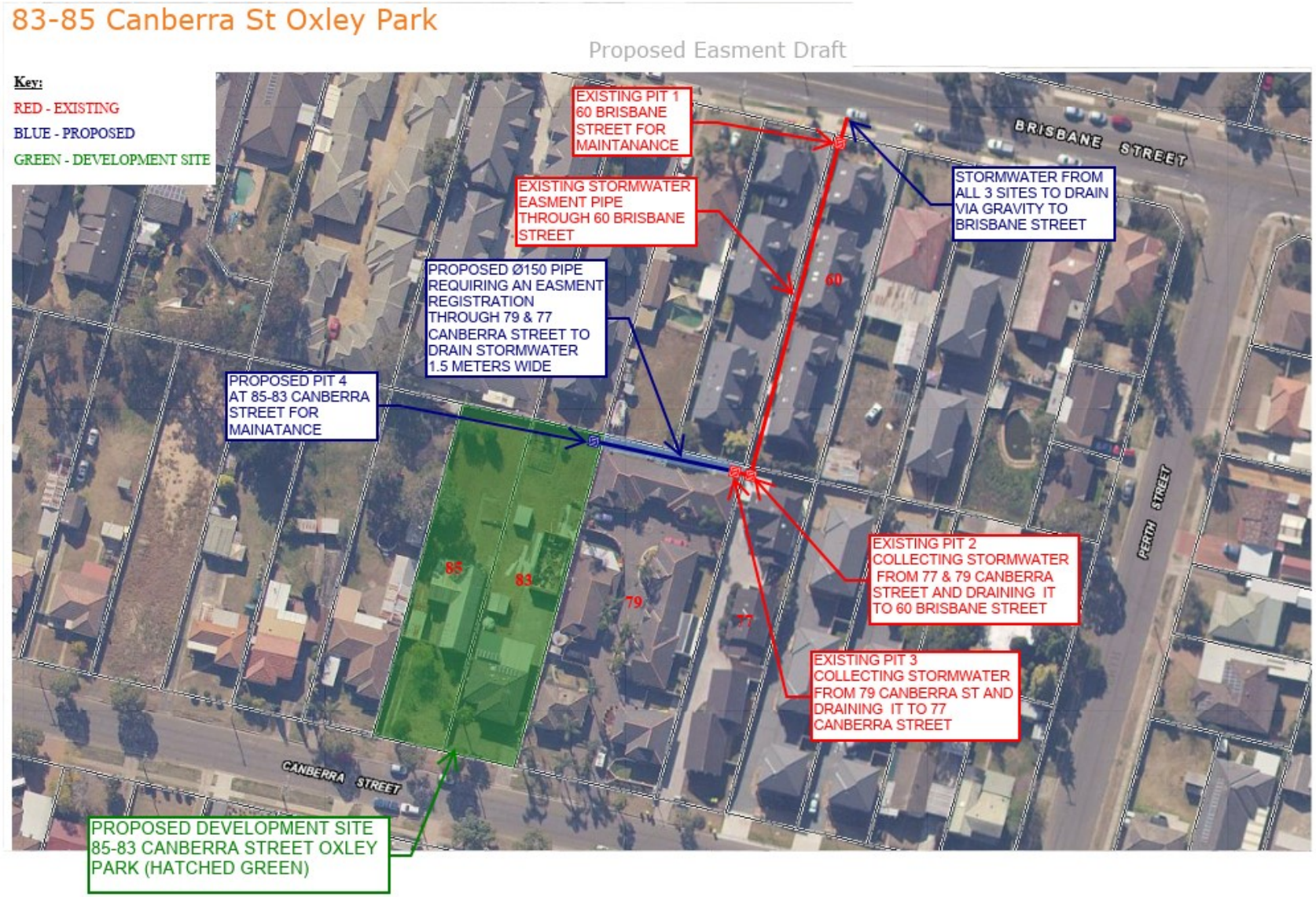
Introduction

Australiawide Consulting services (ACS) has been engaged by Pioneer Project Group to prepare a feasibility assessment for the proposed easement benefiting 83-85 Canberra Street Oxley Park. The subject site (83-85 Canberra Street) falls to the rear and AN easement route hAS been considered in order to drain the proposed development of the subject site. The objectives of this assessment report is to determine the maximum permissible site discharge, assess the existing pipe capacity of the easement drainage system via 'DRAINS' software as well as provide recommendation in terms of pipe upgrade or reduction of permissible site discharge etc. 60 Brisbane Street, Oxley Park already contains an existing easement benefiting 77 Canberra Street and 79 Canberra Street. The proposed easement layout is essentially an extension of the easement drainage system burdening 79 Canberra street to benefit 83-85 Canberra street. Image on the next page represent the proposed easement route benefiting 83-85 Canberra Street and burdening 79 Canberra Street as well as 60 Brisbane Street, Oxley Park.



Study Methodology

- Maximum Permissible Site Discharges (PSD) of all the existing sites currently burdened by 60 Brisbane Street were calculated.
- Pipe capacity of the existing pipe within the easement of 60 Brisbane Street was determined.
- Being governed by the existing easement pipe capacity; maximum Site Discharge (PSD) from the proposed development at 83-85 Oxley park was calculated to ensure existing pipe can remain adequate to cater for the additional flow.
- A 'Drains' model was prepared to as per the drainage network and PSDs from respective sites were introduced as base flow with the pits.
- A Hydraulic Grade Line (HGL) Longitudinal section from 'DRAINS' software was produced and examined to ensure no upwelling occurs from any of the pits.
- Conclusion & Recommendations were compiled on the basis of above mentioned findings.

Maximum Permissible Site Discharges of Associated Sites already benefited by the Easement

According to Penrith City Council's Stormwater Drainage Specification for Building Developments, the permissible site discharge for Multi unit development is **120 L/s/ha**. Therefore,

Flow generated from 77 Canberra Street:

Site Area: 1097 m^2

PSD: (1097/10000) x 120 = **13.16 L/s**

Flow generated from 77 Canberra Street:

Site Area: 2195 m^2

PSD: (2195/10000) x 120 = **26.34 L/s**

Total Flow in easement pipe from already benefited Lots:

(13.16 L/s + 26.34 L/s) = **39.5L/s**

Capacity of Existing Pipe Located within the Easement of 60 Brisbane Street

The Stormwater plans of 79 Canberra Street (prepared by K.D. Hansford P/L Consulting Engineers dated 04/08/1999 drawing number: 2681) presented in appendix -1 suggests that the existing easement pipe within 60 Brisbane Street is 300mm in diameter with 0.7% grade.

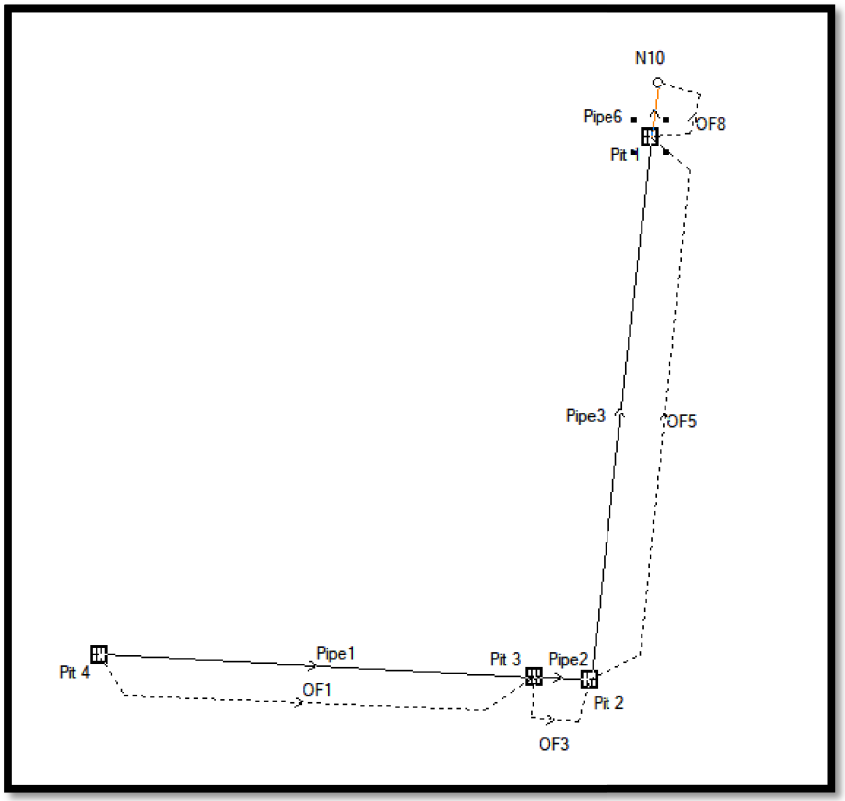
Existing Easement Pipe Capacity:

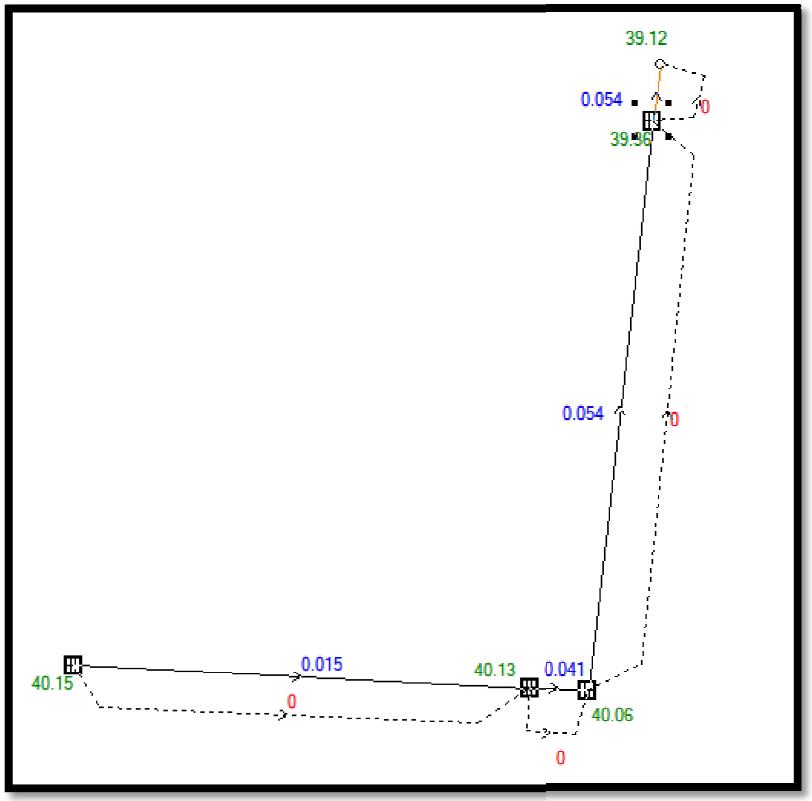
Inputs				Results		
Pipe diameter, d_0	225	mm	X	Flow, Q (See notes)	54.2637	l/s
Manning roughness, n	0.009		X	Velocity, v	1.3648	m/s
Pressure slope (possibly ? equal to pipe slope), S_0	0.7	% rise/run	X	Velocity head, h_v	0.0950	m H2O
Percent of (or ratio to) full depth (100% or 1 if flowing full)	1	fraction	X	Flow area	0.0398	m^2
				Wetted perimeter	0.7069	m
				Hydraulic radius	0.0563	m
				Top width, T	0.0000	m
				Froude number, F	0.00	
				Shear stress (tractive force), tau	3.8611	N/m^2

Therefore, Site discharge (PSD) from the proposed development at 83-85 Canberra St is to be restricted to: (54.26L/s – 39.5L/s) = **14.76 L/s**

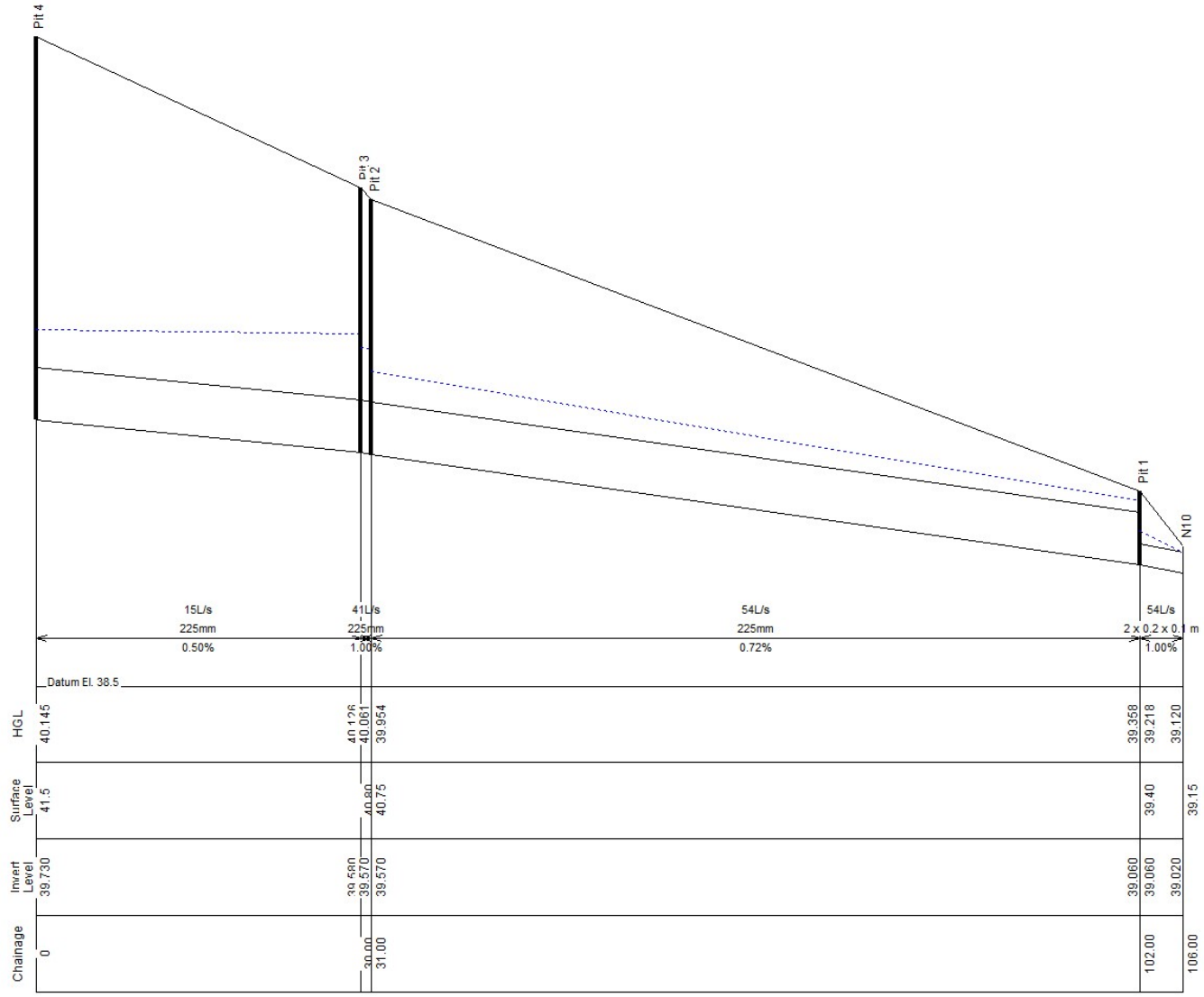
Drains Model Schematics & Result of Proposed Easement Route (Incorporating PSD of the proposed development)

A 'Drains' model was prepared to as per the drainage network and PSDs were introduced as base flow with the pits and its was established the pipe capacity is adequate and no upwelling occurs from any pits. Refer to image below for Drains model Schematics & Results:





Hydraulic Grade Line (HGL) of Easement Drainage System (Incorporating PSD of the proposed development

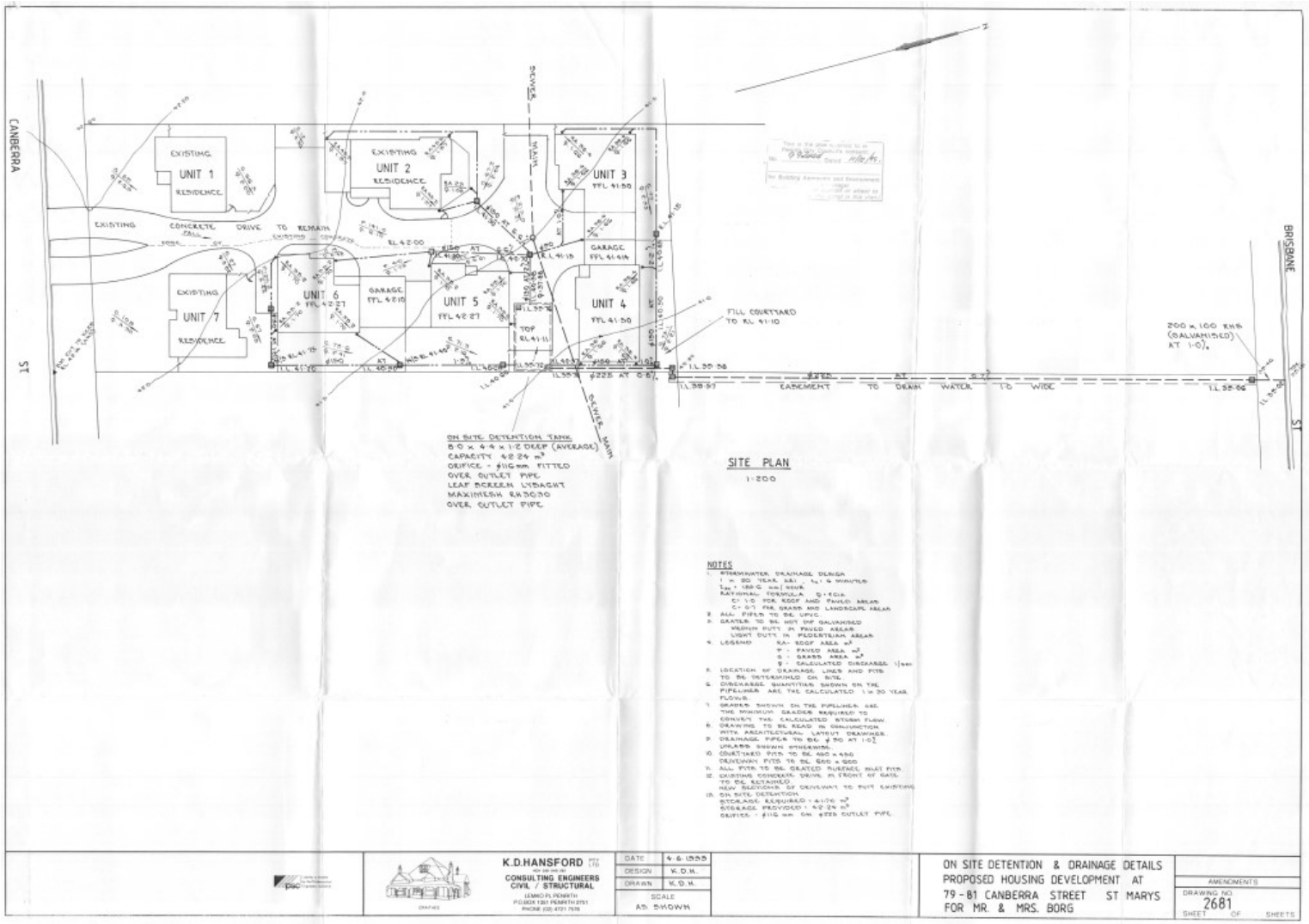


Recommendations & Conclusion

- The permissible site discharge (PSD) is to be restricted to 14.76 L/s from the proposed development at 83-85 Canberra Street, Oxley Park.
- Another 200mmx100mm RHS pipe is to be added at pit (pit 1 in easement plan on page 4) that discharges to the Brisbane Street kerb & gutter.

- We conclude that, with the abovementioned recommendations being incorporated; the proposed easement layout is a feasible and practical option for draining the proposed development at 83-85 Canberra St, Oxley Park considering there are no site constraints, no existing services or no existing Stormwater lines that need to be disturbed or altered. Additionally, the required 1.5m easement width for 225mm diameter pipe (as required by Penrith council) can also be achieved via 79 Canberra Street, Oxley Park. It is recommend that all parties burdened by the proposed easement route grant the easement and grant permission to connect to the existing easement pipe located within 60 Brisbane Street, Oxley Park.

Appendix - 1 (Stormwater plan of associated lots of the proposed easement)



Appendix - 2 (Contour Map of associated lots of the proposed easement)