

19 December 2024
5QS Ref: 245016



G. & L. Aitken
11 Loch Street,
FRESHWATER NSW 2096

Re: Proposed Residential Development
Address: 11 Loch Street, Freshwater

1 Introduction

5QS Consulting Engineers [5QS] has prepared the DA stage civil design for proposed residential development of 11 Loch Street, Freshwater. The design was undertaken in accordance with the Northern Beaches Council Development Control Plan [DCP] & “Water Management for Development Policy” [stormwater policy].

The purpose of this report is to demonstrate how the proposed development will comply with the planning requirements of the stormwater policy; specifically, to demonstrate how stormwater disposed of from the site.

For the purposes of preparing the design 5QS were supplied with the following project information:

- i. Architectural drawings by FBC Architects, project reference 2409, dated 16 December 2024;
- ii. Survey drawings by Bee & Lethbridge Pty Ltd, project number 23321, dated 9 September 2024; and
- iii. Geotechnical assessment report by Ascent Geo, project number AG 24413, dated 4 December 2024.

Details of the proposed stormwater management system, which address how stormwater will be collected, managed, and disposed of are detailed on civil drawings by 5QS, project reference 245016, dated 18 December 2024.

2 Site Description

For the purposes of this report the front of the site facing Loch Street was assumed to face west.

The site is bordered by residential properties to the north, east and south.

Existing ground levels fall from the west to the east with a change in elevation of approximately 9.4m over 50m length (existing ground levels approx. RL45.0 at western boundary and RL 35.6 at eastern boundary).

Proposed development of the site comprises the construction of multi storey dwelling located at the front of the site, and swimming pool and associated hardstand/landscaping features at the rear of the site. Details of the proposed development are shown on the architectural drawings listed in Section 1.

3 Disposal of Stormwater

3.1 General

The site is located on the low (eastern) side of Loch Street, therefore, disposal of stormwater via a gravity system to the (Loch) street trunk drainage system is not feasible.

Potential methods of disposal were investigated in accordance with section 5.5 of the stormwater policy and are detailed in the following sections.

3.2 Inter-allotment Drainage Easement

The feasibility of obtaining an inter-allotment drainage easement was investigated by undertaking a desktop study of the site and surrounding area.

A potential drainage easement through the neighbouring downstream property, 4 Ellen Street, was identified, refer Figure 1. Stormwater would be conveyed through a gravity system to the trunk drainage system within Ellen Street.

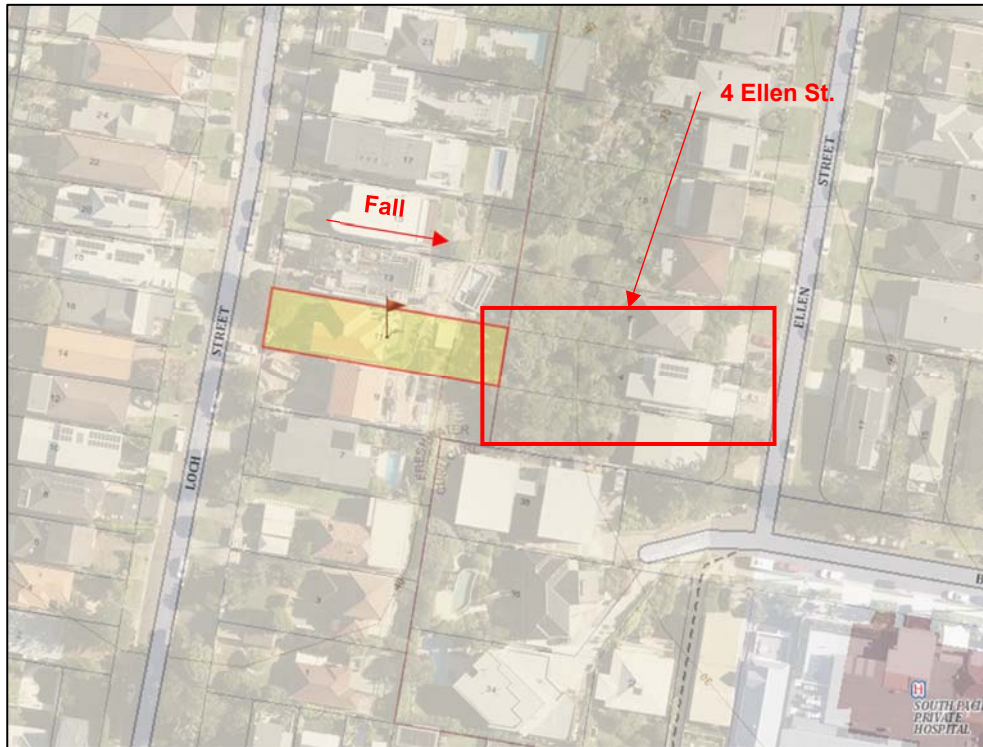


Figure 1 – Aerial view of subject site and neighbouring (downstream) property, 4 Ellen Street, Freshwater.

An approach was made too and subsequently declined by the property owner of 4 Ellen Street, refer letter from 5QS dated 21 November 2024 (attachment 1) and response from property owner (attachment 2).

3.3 On-site Stormwater Absorption

In accordance with the results outlined in the geotechnical report by Ascent Geo; the subsurface profile on the site generally comprised a mix of sandy filling and sandy topsoils overlying shallow bedrock.

The DCP logs indicated the depth to rock is approximately 0.5m to 0.7m below existing ground level. On-site absorption was assessed to be unsuitable due to the shallow depth to rock and anticipated low permeability of the subsurface strata.

3.4 Level Spreader

The proposed method of stormwater disposal is via a level spreader outlet at the rear of the property, as detailed on the civil drawings and outlined in section 3.5.

The level spreader outlet was designed to mimic natural overland flow from the property. The design approach was consistent with the guidelines set out in Appendix 4 of the stormwater policy.

3.5 Proposed Method of Stormwater Disposal

The proposed method of stormwater disposal is detailed on DA stage civil drawings by 5QS, 245016/C1-C6, dated 18 December. The proposed method of disposal is generally summarised as:

- i) Most of the roof catchment (145m²) is conveyed to a 5000L rainwater tank located at the front of the site. The tank overflow pipe is proposed to discharge to the Loch street kerb & gutter via a charged pipe system with an available head of approximately 1.0m (overflow RL 47.0 MIN, outlet RL 46.0 NOM.). The charged pipe outlet was proposed as a means to reduce the volume of runoff and flowrate entering the onsite detention [OSD] system and hence volume of runoff being conveyed through the level spreader system at the rear of the site;
- ii) The remaining roof catchment (70m²) is conveyed to a 2000L underground rainwater tank located within the landscaped area adjacent to the rear of the dwelling. The tank overflow pipe is conveyed to the OSD tank on the western side of the proposed pool;
- iii) Hardstand areas (driveway/impervious decks/paths) are conveyed to the OSD tank via a gravity system on the northern side of the property;
- iv) The OSD tank outlet pipe is conveyed to a level spreader outlet located at the rear (eastern side) of the property. The OSD tank has been designed to control the discharge from the site to 14.7L/s for storm events up to the 1% average exceedance probability [AEP] event, in accordance with the permissible site discharge calculated in accordance with the stormwater policy;
- v) The level spreader was designed to limit the velocity and driving head to 0.35 m/s & 0.012m respectively.

If you have any further questions please contact the undersigned.

For and on behalf of
5QS Consulting Engineers



Justin Frost
MIE Aust, NER (Civil/Structural)
Professional Engineer

Attachments:

- 1) Letter from 5QS to (5 Ellen Street) property owner, dated 21 Nov 2024
- 2) Email response from (5 Ellen Street) property owner to 5QS, detailing their position on a potential easement.

21 November 2024
5QS Ref: 245016



Dear property owner,

Re: Proposed Residential Redevelopment
Address: 11 Loch Street, Freshwater

We refer to the above property. Mr George & Mrs Laura Aitken [The Applicants] are planning the proposed residential redevelopment of 11 Loch Street, Freshwater [the site], comprising the demolition of the existing dwelling and construction of a new single dwelling.

5QS Consulting Engineers [5QS] has been engaged to design the stormwater management system, addressing how stormwater will be collected, managed and discharged from the site.

We note Northern Beaches Council's [NBC] preferred method of stormwater disposal from the site be via a gravity stormwater drainage system to the street trunk drainage system.

Disposal of stormwater via a gravity system will mitigate against potential nuisance overland flow entering downstream properties during heavy rain events and help maintain groundwater flows to a natural state.

The site falls from front to rear, which restricts the disposal of stormwater to Loch Street via a gravity system.

The Applicants are seeking to investigate the possibility of obtaining a drainage easement through a downstream property to assist with the disposal of stormwater generated on the site to the street trunk drainage system located within Ellen Street via a gravity system, which would comprise a stormwater pipe system from the site, connected to the stormwater drainage infrastructure within Ellen Street.

This would require you to grant the Applicants a drainage easement through your property, with all legal and survey costs for the creation of the easement being borne by the Applicants, and subject to an agreement between both parties.

Could you please indicate your position regarding this matter via return email to j.frost@5qs.com.au so that we can advise council accordingly.

If you have any further questions please contact the undersigned on 02 4952 1666 or j.frost@5qs.com.au

For and on behalf of
5QS Consulting Engineers



Justin Frost
MIE Aust, NER (Civil/Structural)
Professional Engineer

From: lilant <lilant@bigpond.net.au>
Sent: Tuesday, 10 December 2024 5:04 PM
To: Justin Frost <j.frost@5qs.com.au>
Subject: RE: 11 Loch Street, Freshwater

You don't often get email from lilant@bigpond.net.au. [Learn why this is important](#)

Confirm no easement for 11 Loch Street through 4 Ellen Street.
Anthony Richards

Sent from my Galaxy

----- Original message -----

From: Justin Frost <j.frost@5qs.com.au>
Date: 10/12/24 16:59 (GMT+10:00)
To: lilant@bigpond.net.au
Subject: RE: 11 Loch Street, Freshwater

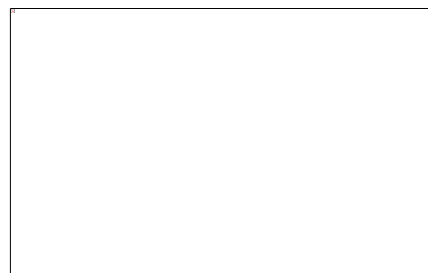
Hi Anthony,

Thank you for your response.

I note the property in question is number 11 Loch Street, can you please confirm your position is the same.

Regards,

Justin Frost
Professional Engineer
M: 0431 603 802
E: j.frost@5QS.com.au
W: 5QS.com.au



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From: lilant@bigpond.net.au <lilant@bigpond.net.au>

Sent: Tuesday, 10 December 2024 3:07 PM

To: Justin Frost <j.frost@5qs.com.au>

Subject: 9 Loch Street, Freshwater

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Dear Mr Frost,

We have considered your letter requesting a drainage easement through our property to facilitate stormwater drainage from the above property.

As we perceive only reduced amenity for ourselves as a result, we decline the request.

Regards,

Anthony Richards

4 Ellen Street, Curl Curl.