ENVELOPE ENGINEERING
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MEMO

CIVIL INFRASTRUCTURE ASSESSMENT – 29 MESSINES ROAD

TO	Metlifecare	**DATE**	16 December 2022
PROJECT NAME	29 Messines Road, Karori, Wellington	**ENVELOPE REF**	M002v2-1854-01
ATTENTION	Michelle van Kampen	**FROM**	Louis Freeland
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1.0 INTRODUCTION

This memo summarises the existing infrastructure constraints, and possible solutions for a proposed development at 29 Messines Road, Karori, Wellington. This is intended to provide an overview of the existing infrastructure surrounding the site and on the potential for these to service the proposed development to support a fast-track consent application with the Ministry for the Environment. A summary of the key infrastructure constraints at the site is shown in Table 1.

Table 1: Summary of infrastructure at 29 Messines Road.

Infrastructure	Retain / Replace	General Comment
Stormwater	Replace	• Attenuation may be required dependent on final impervious areas. • Stormwater treatment required for vehicle trafficked areas. • No mapped flood risk.
Wastewater	Replace internal private drains. Maintain connection points.	• Existing downstream network is at design capacity. • Private pump station required to mitigate peak flows. Location to be confirmed during design stages. Suitable locations are available. • Maintain and re-use existing connection to public network in northwest of site. • Re-route upstream catchment through 28 Ponsonby Road as allowed by existing easement.
Potable Water	Replace internal. Maintain connection points.	• Separate water connections for fire sprinkler and potable water supply. • Maintain existing connections where possible.
Utilities	Not Specifically Assessed	• We are aware that the site has communications, power and gas within the road reserve but have not assessed the capacity of these to support the proposed development. • We expect that these services will have sufficient capacity.

1.1 THE SITE

The site is located at 29 Messines Road, Karori, Wellington. The existing lots are described formally as Part Lot 121 DP 410, Lot 122 DP 410, Lot 123 DP 410 and Lot 124 DP 410. The combined area of these lots is approximately 12,381m^2.

The site sits approximately at the RL 200m contour and is generally flat to gently sloping with steeper banks on the east and west boundaries. A topographic survey done by Envelope is available on request. The current use of the site is an aged-care facility with several existing buildings, parking areas and other associated facilities. There is existing site vehicular access in two locations off Messines Road which forms a looped road through the site. A pedestrian access path links Messines Road and Ponsonby Road to the south of the site. Figure 1 shows the location of the site with existing infrastructure.

Figure 1: Locality Plan (WCC GIS).

1.2 PROPOSED DEVELOPMENT

The proposed development consists of four buildings providing aged care and independent living. In total, approximately 55 care units, 80 apartments and associated communal facilities will be provided with a projected 65.2 full time equivalent staff. There are several proposed parking areas including above ground carparks and basement parking areas. Access to the site will be from two locations onto Messines Road.

2.0 STORMWATER

2.1 EXISTING INFRASTRUCTURE

The site has existing piped connections to the Council stormwater system in the northwest and southeast corners of the site. Based on Council GIS information, approximately 55% of the site goes into the northwest system, 40% into the southeast system and 5% as overland flow towards the east of the site. There is no mapped flood risk to the site, which is expected due to the elevated location of the site and surrounding topography.

2.2 INFRASTRUCTURE CONSTRAINTS

We have contacted Wellington Water to ascertain existing downstream infrastructure constraints at the site. Their feedback can be summarised into the following points:

- Flooding is not predicted in the 100 year event and building floor levels can be set in accordance with normal building code requirements.
- Hydraulic neutrality is required from the development.
- There are existing public drainage and water assets that will need to be protected or relocated during construction.
- Stormwater from carparking and vehicle trafficked areas will need to be treated prior to discharge.

We note that existing impermeable area is approximately 8,200m^2 and the proposed impermeable area is 6,700m^2. Despite the decrease in impermeable area, a small amount of attenuation may be required. This would be due to an increase of impermeable area across a single catchment which would increase the flow to the Council network. Based on

the design plans (noting that they are preliminary and subject to change) it appears that the existing flow percentages could be maintained. This would be a key design consideration to minimise attenuation requirements.

We expect that existing assets can be retained where possible (this would likely only be a few assets) and otherwise relocated to avoid the new development. This is not expected to be a major constraint for the site. Downstream upgrades will likely not be required as long as hydraulic neutrality is achieved.

Stormwater treatment will likely be required as part of the consenting process. We expect that stormwater treatment can be easily integrated into the development using rain gardens (or other similar devices) through the design and consenting process.

It is our view that the design of stormwater infrastructure can be adequately addressed through future consents. Based on the assessments undertaken to date, it is our view that no significant adverse effects will arise as a result of the proposed stormwater servicing works and that suitable engineering solutions are available to service the proposed development.

3.0 WASTEWATER

3.1 EXISTING INFRASTRUCTURE

There is an existing 150mm public earthenware pipe running centrally through the site from south to north. The existing buildings on site are connected to this pipe by private drainage to laterals at various points across the site. There is an upstream catchment of 10 residential houses on the wastewater pipe running through the site.

3.2 INFRASTRUCTURE CONSTRAINTS

We have contacted Wellington Water to ascertain existing infrastructure constraints at the site. Their feedback can be summarised into the following points:

- There are capacity issues in the downstream wastewater network and wastewater mitigation will be required to mitigate flows and match these to the pre-development peak flows.
- The existing public wastewater main running through the site will need to be protected and maintained.
- Any laterals to be retained will need to be of good condition.

Wastewater mitigation for the increased demand can be achieved with the use of a wastewater pumping station. We would recommend that a private (as opposed to public) wastewater pumping station is installed on site to achieve peak flow mitigation. This would require in the order of 14 - 16m^3 of storage based on the current concepts proposed. Pump stations of this size would typically require approximately 50m^2 of space. The pump station would be positioned in coordination with the project architect. However, the final location would ultimately be dictated by final building levels. The size and make-up of this would be determined during detailed design.

There is an existing public wastewater main running through the site. The proposed building plans clash with this pipe. Based on our preliminary conversations with Wellington Water, we see the following options as feasible:

1. Connect the public wastewater line to the existing wastewater line located in the southeast of the site. Due to the condition of the existing pipe, this section would have to be replaced as well as the section going through 28 Ponsonby Road. We have attached property title and Memorandum of Transfer which allows the property owner to maintain and improve the wastewater pipe “without objection” from the landowner and for the pipe to be declared as a council line. Subject to agreement from Wellington Water and Wellington City Council, this would present a viable option going forward.
2. Sleeve through building. This would involve construction of a replacement line under the proposed building encased in a second larger pipe, with manholes at each end of the building. This would require the approval of Wellington Water, and this is not considered likely.
3. Pump station with access. Provide a public pump station at the southern boundary of the site with Council access to this point and pump the upstream wastewater catchment around the building, discharging this to a public gravity network. This option would require a vehicle access track along the southern boundary for access to the pump station.

We consider option one (Figure 2) to be the most feasible and this should be considered in the first instance. The existing line through 28 Ponsonby Road has not been fully CCTV inspected. However, we would expect that the line would need to be fully replaced to meet Council standards i.e. a new 150mm pipe along the same alignment. Other options are available should this option not be deemed workable.

It is our view that the design of wastewater infrastructure can be adequately addressed through future consents. Based on the assessments undertaken to date, it is our view that no significant adverse effects will arise as a result of the proposed wastewater servicing works and that suitable engineering solutions are available to service the proposed development.

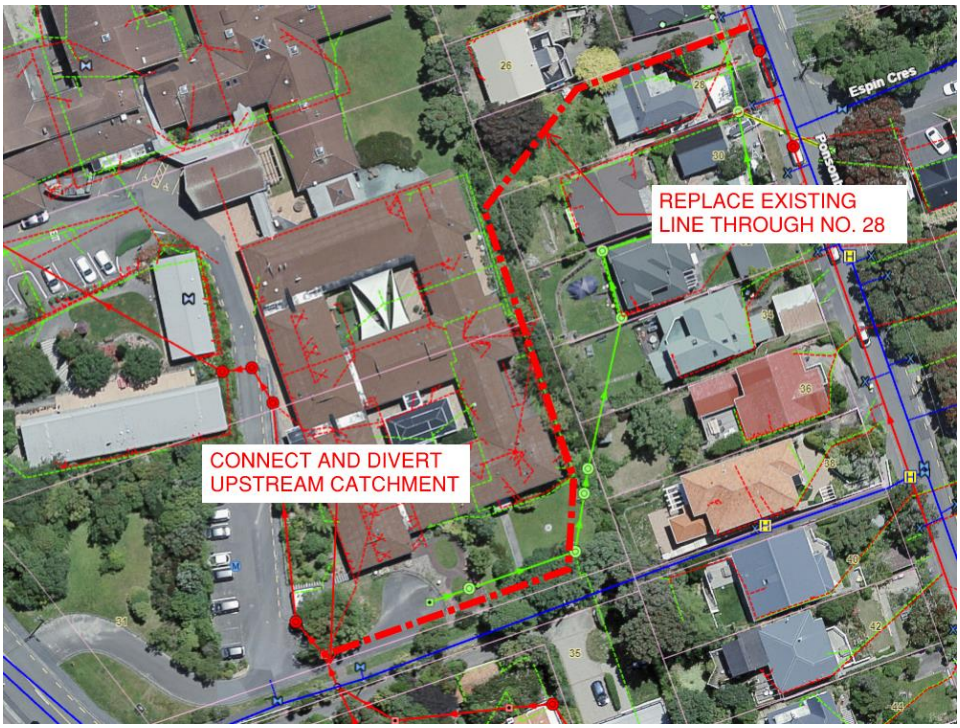

Figure 2: Wastewater option one.

4.0 WATER SUPPLY

4.1 EXISTING INFRASTRUCTURE

There are four existing connections mapped for water supply at the site (Figure 3). These are mapped as coming off the existing public 150mm and 200mm lines located on Messines Road and a public 100mm line running along the southern boundary. The 100mm and 150mm lines are serviced from the Croydon Reservoir, with the 200mm line serviced by the Karori East reservoir. Internal reticulation within the site is unknown. The Karori East Reservoir is located at a small elevation difference above the site (10-20m) and the Croydon Reservoir has a more substantial elevation difference (50-60m). The site is mapped within the Croydon pressure zone.

4.2 INFRASTRUCTURE CONSTRAINTS

We have contacted Wellington Water to ascertain existing infrastructure constraints at the site. Their feedback can be summarised into the following points:

- The existing modelled pressure for the development is 15-20m head, which is below the minimum acceptable head.
- The Karori East pressure zone has several areas where there is lower pressure which will be exacerbated by future demand.
- There are upgrades planned to the network which will ease pressure loss.
- Further detailed modelling is recommended for water servicing as part of the consenting process to be undertaken by the client.

After further communications, Wellington Water has confirmed that the site is serviced by both the Croydon and Karori East reservoirs. Based on the expected pressure of the Karori East pressure zone, we expect that this pipe supplies water for fire with potable water supplied by the Croydon reservoir.

We recommend that water for firefighting and potable water is supplied by the Croydon pipe. This would mean that the potable water would have sufficient head (subject to engineering design).

We recommend that pressure testing is undertaken during the next stage of design to ascertain the actual pressure and flow in the two pipelines servicing the site.

It is our view that the design of potable water infrastructure can be adequately addressed through future consents and that suitable engineering solutions are available to service the proposed development.

Figure 3: Existing water connection points.

5.0 UTILITIES

Existing power, gas and telecommunications infrastructure is located on Messines Road and it is expected that this can be extended or upgraded to accommodate the development. However, we have not contacted the Network Utility Operators to ascertain the capacity of the existing network.

It is our view that the design of utilities infrastructure can be adequately addressed through future consents and that suitable solutions are available to service the proposed development.

6.0 CONCLUSION

This memo summarises the existing infrastructure constraints, and possible solutions for a proposed development at 29 Messines Road, Karori, Wellington. This is intended to provide an overview of the existing infrastructure surrounding the site and on the potential for these to service the proposed development to support a fast-track consent application with the Ministry for the Environment.

It is our view that the design of stormwater, wastewater, potable water and utilities infrastructure can be adequately addressed through future consents and that no significant adverse effects will arise as a result of the proposed civil infrastructure servicing works and that suitable engineering solutions are available to service the proposed development.

Yours sincerely
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