



Appendix D Infrastructural Report

1. INTRODUCTION

JNG Engineers Ltd. was engaged by Cameron Dargaville to investigate the capacity of existing services for proposed plan change from Residential 7B to Mixed Use Zone at 5 Carlton Gore Road, Grafton.

2. SITE DESCRIPTION

The site is located at 5 Carlton Gore Road as shown on fig 1 in the appendix.

The subject site is on the southern side of Carlton Gore Road. The site is slope gently to the east and has an area of approximately 1743m². The site has an existing 3 storey office building and carparking area over the site.

3. SANITARY SEWER

There is an existing sewer manhole NL0790 located at the top of Carlton Gore Road. The 450ø pipe runs down to manhole NL0792.

The maximum wastewater discharge (peak wet weather flow, PWWF) for the proposed future development on the site based on residential apartment or commercial usage is 1.35 L/s or 0.41 l/s respectively. The total PWWF for this catchment including future development at this site is 5.19 l/s.

The ex. 450ø pipe between manholes NL0790 to NL0792 has a gradient of 4% and a capacity of 570 L/s which is well above the PWWF of the catchment.

The 450ø connects to more existing 450ø public sewer lines between NL0790 to NL0792, NL0792 to NK3141, refer fig 1.

The maximum wastewater PWWF from the whole catchment along Carlton Gore Road and the subject property is 6.52 L/s. The 450ø pipes have gradients of 8.7% and 11% with capacities of 850 L/s and 900 L/s respectively. These flow rates are well above the PWWF of the catchment.

4. STORMWATER

According to the Auckland City Council GIS plan, there is a stormwater pipe network situated on Carlton Gore Road outside the property. Refer fig 3. Site survey were carried out by R G Ogilvie & Associates to determine the size and invert of the pipes as shown in figure 3.

The stormwater flow rate was calculated using the rational formula assuming Maximum Probable Development (MPD) for the catchment with an average runoff coefficient of 0.9 for mixed use zone and 0.65 for residential zone.

The 10% AEP (10 years storm) runoff from the site and the upstream catchment are as follows:

Manholes	Pipe size mm	Qexisting l/sec	Catchment m ²	Flow Q l/sec	Status
NL0789 - NL0788	225	140	5010	131	ok
NL0788 – NL0787	225	150	7165	187	Upgrade to 300mm pipe
NL0787 – NL0786	300	320	10378	271	ok
NL0786 – NL785	450	1000	12476	326	Ok

From the calculation, the existing pipes have sufficient capacity except the stormwater pipe between manholes NL0788 – NL0787 need to be upgraded to 300mm diameter.

5. WATER SUPPLY

There is a 150Ø water main located at the corner of Carlton Gore Road and Arotau Place which is serving.

Assuming that the water consumption per person is 200 L/day, the total water consumption from the property is 60m³/day or 0.3 L/s.

The pressure during peak flows is approximately 300 kPa and the flow rate from the hydrant at the corner of Carlton Gore Road and Arotau Place is 36.6 L/s (refer to Comprehensive Flow Test by AAS North Shore). Therefore there is adequate pressure and supply in the public mains to supply directly to the proposed development.

6. FIRE DEMANDS

The NZFS fire risk classification for the proposed site zone changes is Class W5 (refer Risk Assessment Report from NZFS), which means that a flow of 50 L/s is required from within a maximum radius of 135m and an additional 50 L/s from within 270m of the site.

A comprehensive fire flow test was carried out by AAS North Shore confirmed that the fire hydrant next to the development has adequate flow and pressure for the risk calculation.

7. CONCLUSION

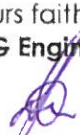
Our investigations and supporting calculations show that the existing sewer and water supply system has sufficient capacity to support the proposed development. The existing stormwater reticulation also have sufficient capacity to support the proposed zone change except the pipe between manhole NL0788 –NL0787 need to be upgraded to 300mm diameter. The fire demands have also been met.

We trust the above meets your present requirements. If there are any further queries, please do not hesitate to contact us.

APPENDIX

- PLANS (GIS Plan , Site Plan)
- SANITARY SEWER DISCHARGE CALCULATION
- STORMWATER DISCHARGE CALCULATION
- WATER SUPPLY CALCULATION
- COMPREHENSIVE FLOW TEST

Yours faithfully
JNG Engineers Ltd


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