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# PROPOSED PLAN CHANGE

## WHISKEY CREEK, PALMERSTON NORTH

- Water and Wastewater Servicing Assessment
- Gas Main
- Earthworks Assessment

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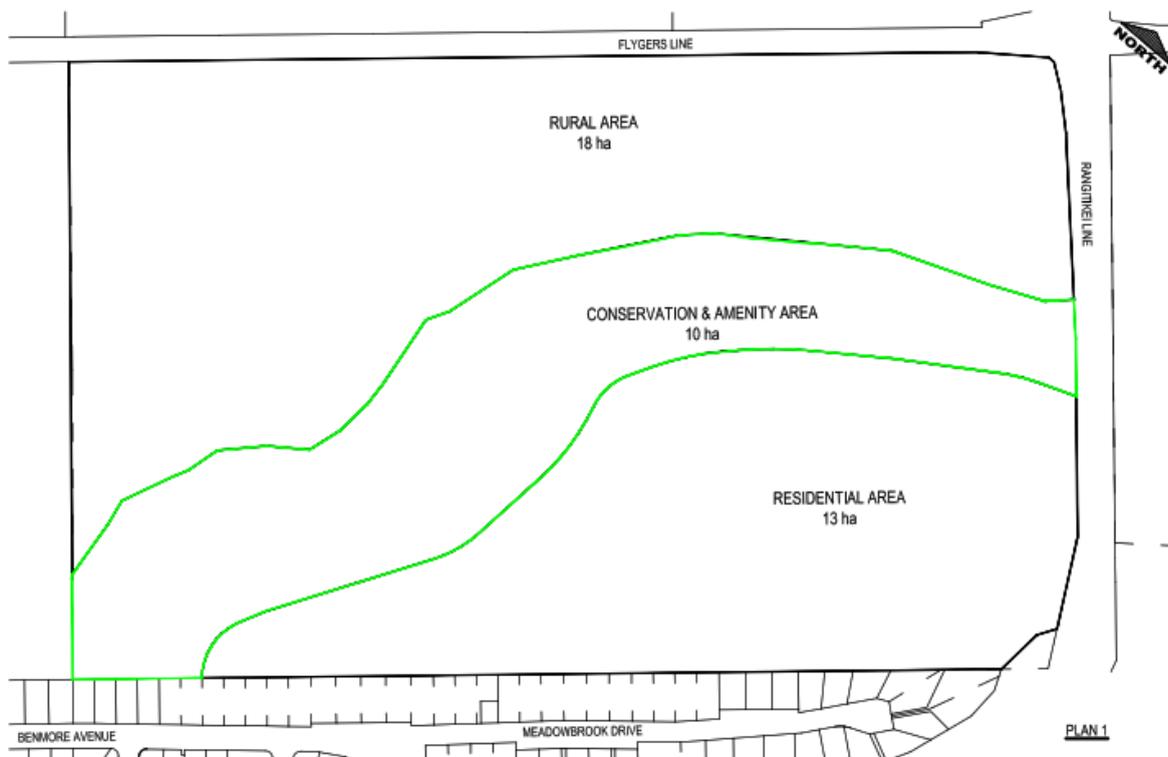
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# 1 Introduction

This report sets out the servicing requirements for the proposed Whiskey Creek Residential Area. These assessments have been carried out with the assistance of the Palmerston North City Council. We also consider the gas main that bisects the site and the proposed earthworks.

The proposed area to be rezoned Residential is approximately 13 hectares of a 40 hectare site. Some 10 hectares will be rezoned Conservation and Amenity with the remaining 18 hectares continuing to be Rural, see Plan 1.



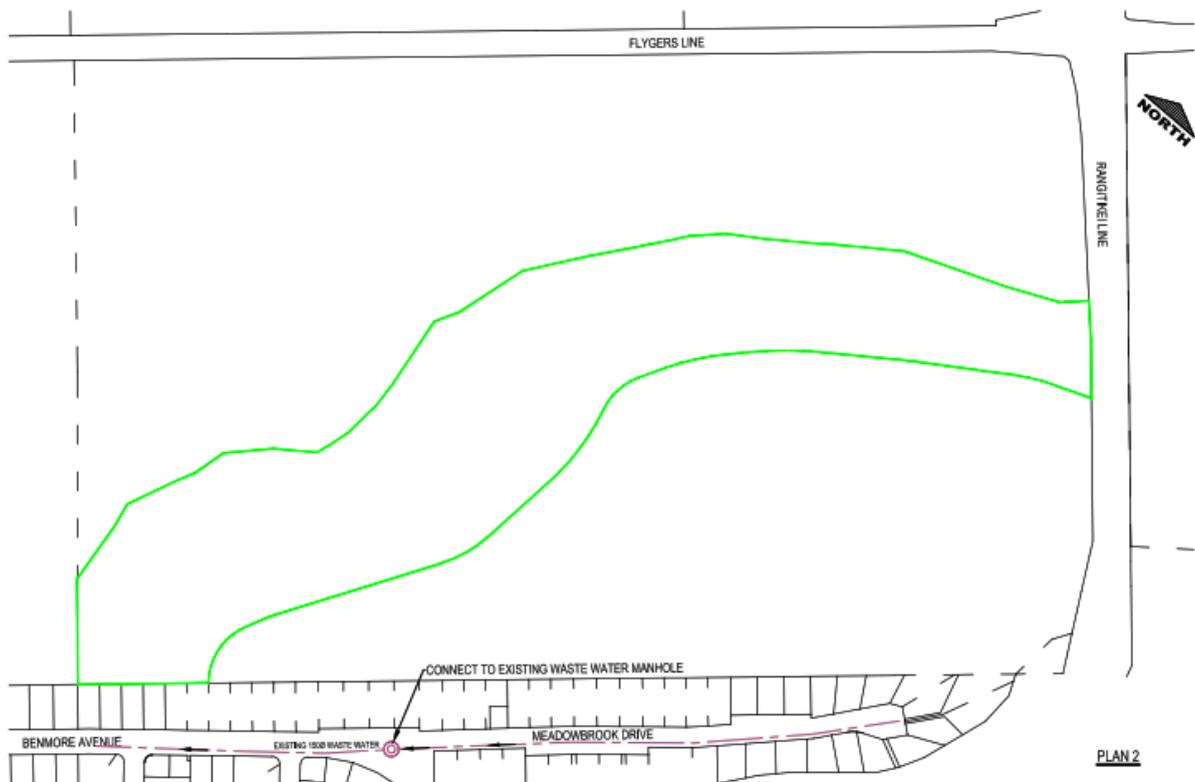
**Plan 1**



## 2 Wastewater Services Assessment

The existing wastewater network in the area is shown on Plan 2. Presently a 150mm  $\varnothing$  main, installed in the 1970's, is located within Benmore Avenue. This sewer main flows to the south west and eventually discharges into the Wastewater Treatment Plant in Totara Road, some 5km away.

The depth of the wastewater system adjacent the proposed roundabout, is in the order of 2 metres deep.



**Plan 2**

Two servicing options were considered to service the estimated 160 lots proposed within the residential land. These being a gravity drainage system and a pressure system.

A typical gravity system includes a 100mm  $\varnothing$  rigid lateral pipe to each property. These laterals connect to a 150mm  $\varnothing$  rigid main pipe within the roadway. These pipes are graded to fall towards the connection point of the existing system. If the connection point is too high a lifting pump chamber is required to discharge the sewage into the existing system.



A pressure system requires each lot to have installed a small pump chamber which is fitted with a grinder pump. Sewage is pumped into a 50mm ø flexible pipe within the street which in turn discharges into the connection point. No lifting pump is required, as the system relies on pressure.

Due to the proposed ground levels of the land in question, it was calculated that there wasn't sufficient elevation for a gravity system to drain the site without the need for a pump lifting station. It was also considered that any gravity system could increase the peak flow effects on the down stream network, due to the users discharging sewage at peak times.

The pressure sewer system would be able to service the entire development without the need for a lifting station. The individual pump systems are able to be time coordinated so that the discharge from the site can be timed to occur outside peak flow hours, which would not cause any downstream capacity issues. Pressure sewer systems are also less susceptible to the effects of water infiltration, liquefaction and ground movement.

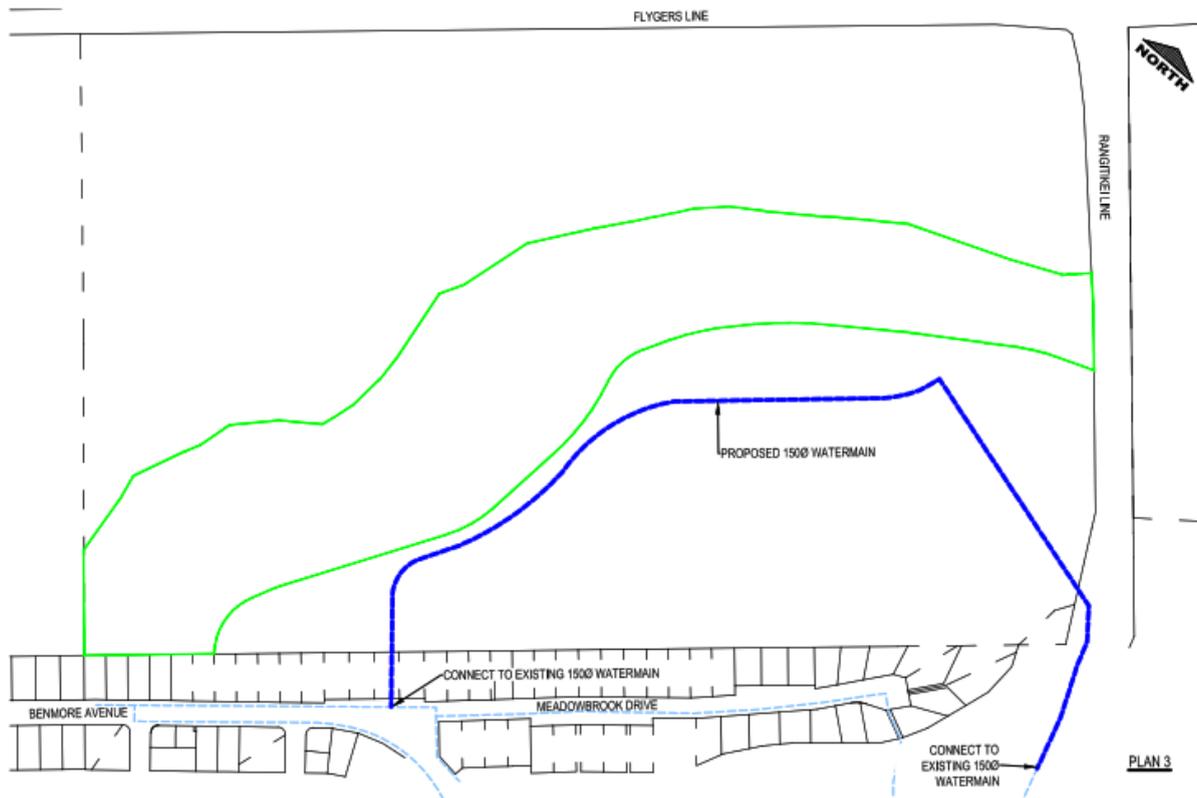
Discussions have been held with Council over the proposed sewage disposal options, with Council agreeing that the pressure system is their preferred option.

We expect that the cost to install the pressure sewer system would be met by the developer. The works would be completed to Council's present Land Development Standards.



### 3 Water Supply Services Assessment

The present water supply system in this sector of Palmerston North is shown on Plan 3. Separate 150mm  $\varnothing$  water mains exist in Benmore Avenue, directly opposite our development, and at the northern end of Rangitikei Line, respectively.



**Plan 3**

It is proposed to extend the watermain at the northern end of Rangitikei Line by 150m to the eastern corner of our site. This extended watermain will be looped through the development to Benmore Avenue by a new 150mm  $\varnothing$  main.

Previous discussions held with Council have advised that it is envisaged that the above proposal will provide a compliant water supply system for the development.

It is noted that the present Council’s level of service for residential water supply is a minimum service pressure of 350kPa and a minimum peak flow capacity of 25L/s for fire-fighting purposes.

As with the wastewater system, the cost to extend the 150mm  $\varnothing$  water main to the site along with the connecting loop 150mm  $\varnothing$  water main to Benmore Avenue will be covered by the developers.

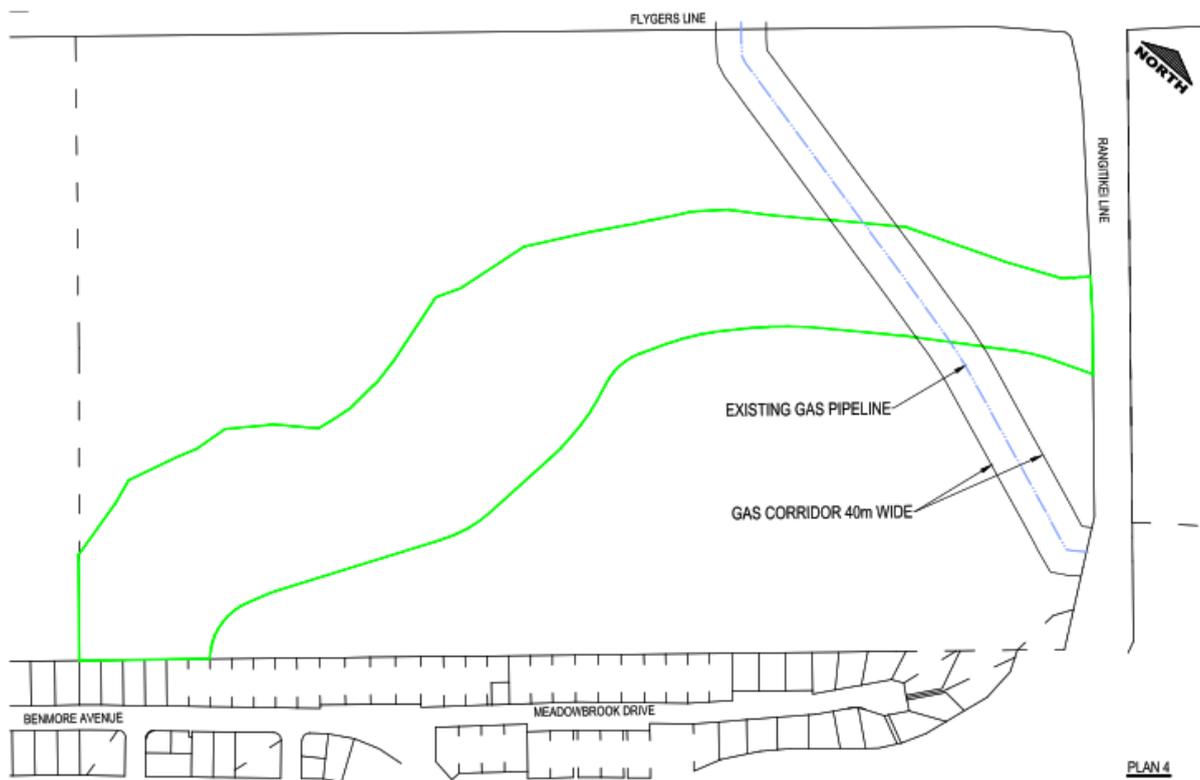


## 4 Gas Main

As shown on Plan 4, a major gas line traverses through the site in the northern quadrant. First Gas (being the controlling authority) have confirmed their requirements with respect to this development, being that the main be contained within the berm area of the roading corridor, or any other public areas where possible, and that a 20-metre safe separation distance is provided either side of the main to any new residential housing.

The position and depth of the gas main has been located on site, with the proposed development layout reflecting this.

It is acknowledged that any development within the vicinity of the gas main will require specific consideration from First Gas.



**Plan 4**



## 5 Earthworks Assessment

Presently 7ha of the site is considered free from inundation, see Plan 5. To increase the area available for residential development earthworks are proposed on the eastern side of Whiskey Creek. The extent, volume and depth of those earthworks are also shown on Plan 5. As shown, the area of earthworks is approximately 10 hectares in size, with 23,000m<sup>3</sup> of material cut from beside Whiskey Creek. This material is to be used to raise the fill area to be above the flood level.

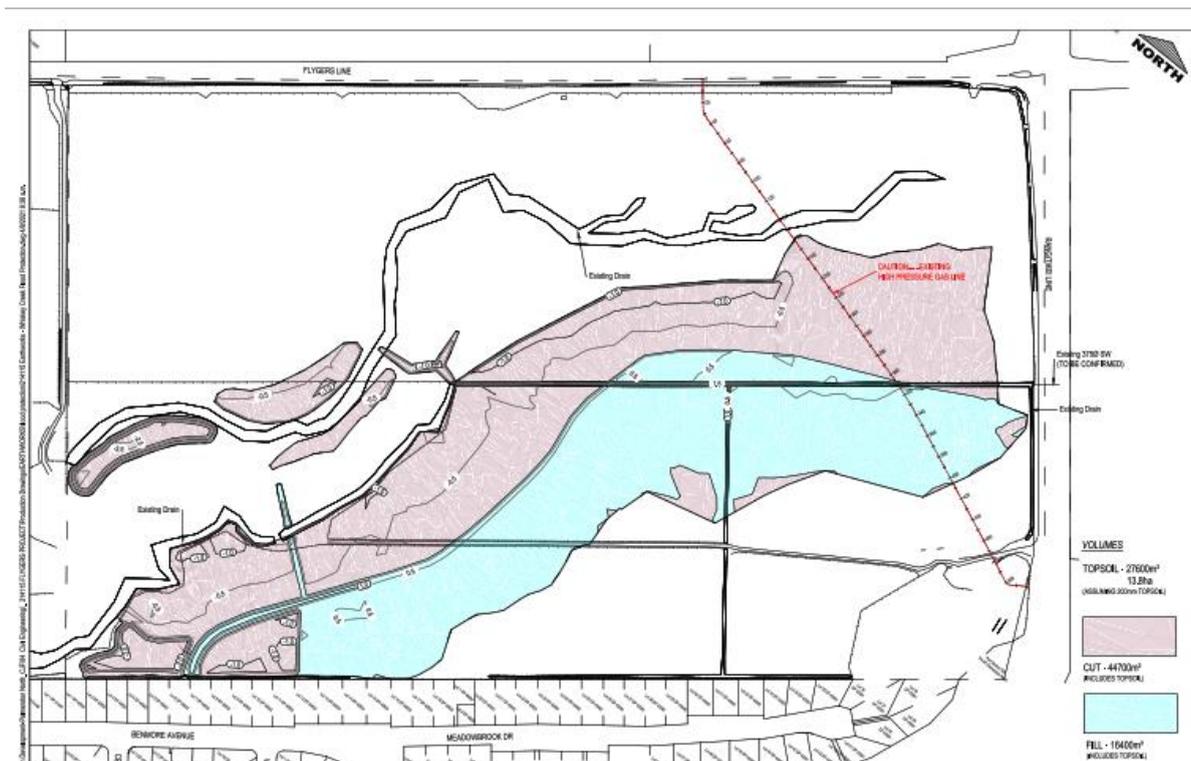
Filling will occur directly behind 1 and 3 Meadowbrook Drive and 113, 115, 117, 119, 121, 123 and 125 Benmore Avenue. Any fill placed will be at a level to ensure no damming effects to any overland flow from these properties.

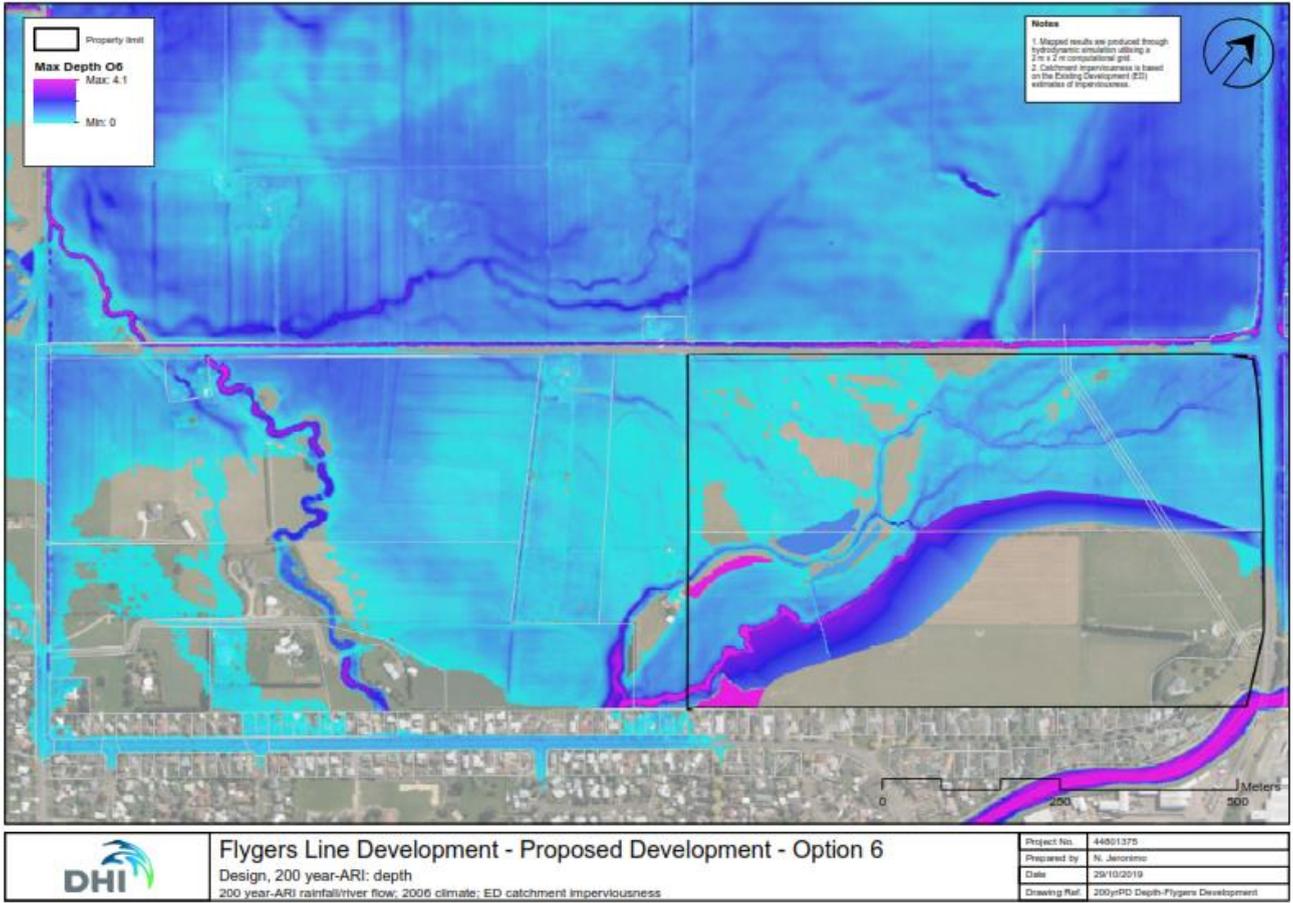
These earthworks also alter the drainage pattern for any significant flood event which passes through the block. A flood model was prepared which concluded that the flooding effects downstream due to the ground remodeling were less than minor. We refer you to the DHI Flood Assessment Report. The attached Plan 6 details the proposed extent of the flooding. As a result of the proposed earthworks, the extent of the land available for development increases to 13ha.

All earthworks will be compacted to the necessary standards to ensure these filled areas are suitable for residential developments. All relevant Erosion and Sediment Controls will be installed to mitigate any effects.

In parallel with the rezoning application, land use earthworks consents are to be submitted to both Horizons Regional Council and the Palmerston North City Council seeking approval to modify the land to the new levels.

Plan 5





Plan 6



## 6 Summary

Assessing the water and wastewater servicing for the Whiskey Creek Residential Area, we conclude that:

- Functional and compliant service systems can be provided.
- The costs to provide the systems are the responsibility of the developer and we presume no Council funding is required.
- The preferred option for wastewater servicing is a pressure sewer system.

Regarding the existing gas main and the proposed earthworks, we confirm that:

- The effects of the gas main can be mitigated by the imposition of a 20m building offset.
- No minor effects are caused by the proposed earthworks on the downstream, nor the adjacent property owners.

