Appendix A

Infrastructure Report

16 September 2020

Job No: 62916

Novo Group
279 Montreal Street
Christchurch 8140

ROLLLESTON SITE PLAN CHANGE

Dear Kim,

Executive Summary

A high-level review focused on identifying any fundamental constraints to the development of an industrial site in Rolleston was undertaken by Babbage.

Following the review of the Novo Group Development Plan, the Opus Water Supply Report and the MWH Waster Water Report the following was concluded;

- The proposed Rolleston site Outline Development Plan will enable a wide range of industrial developments to be built.
- Based on the reports provided by Novo, water supply and stormwater disposal do not constrain the options for industrial developments.
- There is a 10 l/s trade waste disposal allocation available for this area, which is expected to be sufficient for the majority of industrial activities within this zone. If there was some level heavy industrial development within the zone which require larger disposal volumes, there might be the requirement for onsite pre-treatment and management prior to discharging into the network.
- The power requirements of the industrial development are not expected to be outside the limits of what is typically arranged for similar types of developments. It is expected that this would be addressed with Orion at the appropriate stage of the land development design phase.

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street,
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

Background

Babbage was engaged by Novo Group to provide assistance to a plan change application for an industrial area in Rolleston. The scope of the engagement was;

- Review the preliminary Development Plan developed by Novo Group
- Assessment of potential services constraints, in particular;
    - Water Supply
    - Wastewater Discharge
    - Stormwater
    - Power

Assumptions

The following assumptions were made as part of the evaluation;

- The Opus Water Supply Report (2014) provided by Novo Group is still current and hasn't been superseded by any further site evaluations.
- The recommendations outlined in the Opus Water Supply Report (2014) will be implemented as part of the industrial site development.
- The MWH Izone Industrial Site and future Hoskyns Industrial Site Development Wastewater Report (2014) is still current and hasn't been superseded by any further evaluations.

High Level Services Assessment

Water Supply

The Opus report states that the basis of 1 L/s/ha was used to design the infrastructure for the neighbouring 188ha Izone Industrial Park. On this basis the theoretical maximum daily capacity of the water supply network is 16,243 m^3 per day at a peak flow of 676 m^3 per hour.

The new 178ha development has been estimated to require a total daily water usage in the order of 370m^3 (assumptions and calculation provided in Attachment A) which is significantly lower than the potential maximum daily volume and demonstrates that the capacity of the current water supply is not a constraint.

For a heavy industrial facility there could be the requirement for higher peak flows that the network might not be able to deliver, for example Fire Water flow rates. In such instances this can be mitigated by suitably sized water storage tanks on site which manage the peak flows to a level within the network's capability.

Wastewater Disposal

The MWH report confirms the following;

- Peak flow capacity of the downstream infrastructure is 75 l/s
- The Izone Industrial Park allocation of the 75 l/s is 53 l/s
- There is a 10 l/s allocation for the future Hoskyns Road Industrial development
- An additional 10 l/s capacity is available for a future trade waste allocation

Based on the size of the development it is expected that the wastewater volume to be disposed will be in the order of 316m^3 per day (assumptions and calculation provided in Attachment A). The current trade waste allocation for this industrial development is 10 l/s which equates to 864m^3.

Depending on the type of facilities built as part of the industrial development of the site is very unlikely to be constrained. However, if the construction of a high waste water generator was consented which put pressure on the current allocation there are a number of strategies that can be used to mitigate this. These include;

- Water recycling by onsite trade waste treatment and re-use (also reduces water take)
- Trade waste treated on site and disposed to neighbouring rural land
- Treated trade waste storage on site to enable discharge during off peak times
- Upgrade network to enable higher peak flows (via capital contribution to SDC)
- Negotiate to use a portion of the Izone allocation at off peak times for peak flows

Each of the above have been implemented on Babbage led developments. The specific solution is depended on a range of factors and would be recommended as part of a full project engineering study in preparation for a Resource Consent.

Power

The level of power supply required for such developments is often higher than the existing network can deliver. In such cases it is normal practise to work through power requirements with local authorities (in this case Orion) to enable upgrades to the distribution network to be undertaken. Generally, this stream of work is undertaken during the land development design phase.

Stormwater

The MWH report states that it is common in the Rolleston area to discharge SW to ground.

Conclusions

Following the review of the Novo Group Development Plan, the Opus Water Supply Report and the MWH Waste Water Report the following can by concluded;

- The proposed Rolleston site Outline Development Plan will enable a wide range of industrial developments to be built.
- On the basis that the industrial land is developed in accordance with the Opus recommendations, water supply to site is not a constraint.
- The existing 10 l/s trade waste disposal allocation will not likely constrain the future industrial development options. As outlined if trade waste disposal becomes a constraint there are several options to mitigate and enable the development of the site.
- It is expected that during the land development design phase the power requirements will be determined, and likely future network upgrades agreed with Orion.
- Stormwater will be able to be managed within the site.

Daniel Parker

Babbage Consultants

Attachment A: Assumptions and Calculations

Site Area	ha	178
Area vested for Roading and Reserves (25%)	ha	44.5
Area taken up by setbacks (5%)	ha	8.9
Area left available for individual sites / facilities	ha	124.6
Site coverage of each individual facility (70%)	ha	87.22
Total estimated office space (10% of site coverage)	ha	8.722
Total estimated warehouse / light industrial (90% of site coverage)	ha	78.498
Number of Office People (@ 1 person / 20m2)		4361
Number of Warehouse People (@ 1 person / 400m2)		1962
Total Number of People		**6323**
Water Usage per person per day	L	60
Waste Water generation per person per day	L	50
Total Water Usage	**m^3/day**	**379**
Total Waste Water Generated	**m^3/day**	**316**