

To

AW Holdings 2021 Ltd
C/C RCP
James Kirkham s 9(2)(a)

From

Woods
Alex Luna – Associate Engineer

W-REF: P22-194
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Reviewer: Ben Pain – Associate Engineer

Memorandum

Surf Park Fast Track Referral Application – Infrastructure Assessment

1. Introduction

AW Holdings 2021 Ltd propose to lodge an application for a referred project under the Covid-19 Recovery (Fast-track Consenting) Act 2020 (the "Act") to utilise the fast-track consenting process via an expert consenting panel. This application relates to the development of approximately 43ha of green fields land encompassing the properties of 1350 Dairy Flat Highway, Lot 15 DP 65979, and Pt Allot 189 SO 1118A in Dairy Flat, Auckland.

This proposal for a referred project will give effect to the purpose of the Act to promote employment and New Zealand's recovery from the economic and social impacts of Covid-19 through the enabled construction and delivery of a comprehensive development that offers employment opportunities.

To support the application for a referred project, this memo provides a high-level review of the existing and required civil infrastructure aspects of the proposal.

2. Proposed Development

The masterplan proposal consists of the following features:

- A surfing lagoon with associated services and facilities
- Farm to table restaurant
- Visitor accommodation
- Wellness centre and associated visitor accommodation cabins
- Data Centre
- Solar Farm
- Associated infrastructure

3. Civil Infrastructure Requirements

In order to support the proposed development features, the following civil infrastructure shall be required:

- Rooding
 - Connections to existing rooding networks
 - New roads within the development to service new traffic flows
- Stormwater
 - Primary network to convey AEP 10% flows from impervious areas
 - Stormwater management and treatment devices in accordance with stormwater management plan
 - Secondary flow paths to convey AEP 1% flows
- Wastewater
 - Provision for approximately 0.27 MLD
 - Internal site network
 - Delivery infrastructure – pumping station and rising main
 - Treatment either on-site or at public WWTP
- Water Supply
 - Provision for approximately 0.43 MLD
 - Internal site network for potable water and firefighting
 - On site reservoir and booster pumping system with chlorine dosing
 - Connection to public pipelines located at East Coast Highway
- Utilities
 - Power for approximately 60 MVA, staged based on data centre build out
 - Fibre for proposed development site

4. Civil Infrastructure

This report discusses the existing civil infrastructure, the development requirements, and possible options to provide the required services needed to fulfil the developments requirements. The following sections outline a summary of the findings.

4.1. Rooding

4.1.1. Current Infrastructure

The site is currently serviced by Dairy Flat Highway and Postman Road and a separate memo has been provided by the traffic engineers confirming that no major upgrades to these roads will be required to service the proposed site and placing recommendations for the development.

4.1.2. Network

Following the recommendations of traffic engineer's memo, the internal roads design and access from Dairy Flat Highway and Postman Road has been provided as part of the urban design package. This new rooding infrastructure will be provided in order to service the proposed services buildings and commercial sites.

4.2. Stormwater

A separate stormwater assessment has been prepared by the Woods 3 Waters team titled "*Surf Park Fast Track Referral Application – Preliminary Stormwater Assessment*" which provides a high-level review of the stormwater effects related to the proposal. This report includes recommendations for:

- Existing watercourses and wetlands
- Existing flood hazards
- Flood risk
- Overland and secondary flow paths including culverts
- Stormwater management and treatment requirements

In addition to this report, a primary stormwater network will be required in order to convey normal stormwater flows from pavement and roof areas to stormwater treatment and management devices. Currently the undeveloped site does not have any primary networks which would be suitable for the proposed development. The development will require the construction of cesspits, piped networks and discharge structures generally located in the road reserves or lot areas clear of the building extents.

4.3. Wastewater

4.3.1. Current Infrastructure

The site is currently not serviced by any public wastewater network with existing dwellings serviced by on site private systems.

4.3.2. Silverdale West Dairy Flat Industrial Area Structure Plan

There is proposed infrastructure provisioned for the development area as part of the proposed Auckland Council Silverdale West Dairy Flat Industrial Area Structure Plan (2020) however this is not proposed until 2048, when Stage 3 land is expected to be developed. The wastewater infrastructure included in this Structure Plan includes a new public pump station located adjacent to the site and a rising main to a gravity network located on Dairy Flat Highway to new pump stations in the Wainui area. These connect to the Army Bay Wastewater Treatment Plant.

Discussions with Watercare Services Ltd (WSL) to date outlined the requirements for WSL to provide a public connection to service the site. WSL indicated that it was their preference for the developers to lead the acceleration of this infrastructure as part of their respective projects. WSL also indicated that was not of their interest in interim solutions involving long rising mains.

4.3.3. Bulk Wastewater Servicing Options

There are two solutions for servicing of the proposed 0.43 MLD of wastewater for the site:

- Utilise the public wastewater treatment plant (WWTP)
- Construct and operate a private on-site wastewater treatment plant (WWTP)

Both these solutions will require an internal site network to be constructed along with delivery infrastructure (pump station and rising main). Temporary interim measures could also be put in place including:

- Collection and transportation of wastewater from site using road transportation.
- Temporary on-site treatment
- Temporary pump stations and rising mains to link up parts of the public network that will be abandoned when the future completed public connection is constructed.

Both these options are viable solutions and will require further engagement with the local authorities and project stakeholders in order to confirm the preferred outcome.

4.3.4. On-Site Treatment

Private on-site wastewater treatment could be undertaken as a permanent or interim measures for servicing the site. There are several different systems which could be utilised including:

- Land disposal of primary or secondary treatment systems via dripline or spraying dispersal of treated effluent to ground (as per Auckland Council GD06 standards)
- Package treatment plant systems including membrane bioreactor systems (MBR), moving bed biofilm reactor (MBBR), membrane aerated biofilm reactor (MABR) or other similar systems
- Package treatment solutions including water recycling/reclamation to blend the WWTP structure to the site and to reuse the sewage effluents.

These solutions can be modular and can be constructed and expanded according to the development needs. There is a lot of new technology in the wastewater treatment sector which can be applied to provide very good quality of discharge and sludge reduction. Systems including recycling can provide additional green benefits to the development should these be adapted.

Private on-site treatment will require a discharge consent if adopted.

4.3.5. Internal Network

There are three potential network solutions available for the site including: gravity, vacuum, and low-pressure sewer. If a private network is utilised with a private treatment facility, then low pressure sewer may be the preferred solution. If a public network is utilised, then a gravity system shall be preferred.

4.4. Water Supply

4.4.1. Current Infrastructure

The site is currently not serviced by a public water network. Existing dwellings utilise tank systems.

4.4.2. Silverdale West Dairy Flat Industrial Area Structure Plan

The water supply infrastructure included in this Structure Plan includes a new pipeline from the south called "Orewa 3" and to connect to the existing next at Weiti Bridge in the Milldale Development area.

Discussions with Watercare Services Ltd (WSL) to date have outlined the requirements for WSL to provide a public connection to service the site. WSL indicated that a future connection between the proposed Orewa 3 pipeline and the existing Orewa 1 and 2 pipelines would be required. This creates an opportunity for this connection to be installed by the developer to provide a public water connection. WSL noted that the Orewa 1 and 2 pipelines were at capacity for their summer peak flows, however a nominal provision to the site into a reservoir would allow the site to be serviced by these pipelines.

4.4.3. Proposed Bulk Water Supply Servicing

The preferred water supply servicing solution for proposed 0.27 MLD for the site is:

- Provide a pipeline from Orewa 1 and 2 pipelines located at East Coast Road via Wilks Road
- Provide a reservoir/s fed by the lower flow rate allowed by WSL with sufficient storage to offset peak demands.
- Provide a booster pumping system and chlorination dosing plant to pump into the on-site network.

There may be interim measures put in place or in combination with on-site supplies. It is likely that separate fire tanks will be required for firefighting purposes as part of private firefighting systems.

The 0.27 MLD for water supply is less than the wastewater 0.43 MLD as this includes for infiltration into the wastewater network.

4.4.4. Interim or On-Site Options

Should there be a need for additional water for the wave pool or irrigation or as an interim alternative to the public water connection, then an on-site solution could be used. These include:

- Bore water supply - In the Groundwater Supply Desktop Feasibility Assessment prepared by Tonkin+Taylor (T+T) for the development, is suggested that groundwater intake could be viable. Calculations have been provided in their report supporting this option. It is noted that before this is confirmed as the preferred solution, exhaustive tests shall be undertaken to confirm that the volumes and quality meet the relevant standards. Auckland Council (AC) should be contacted with respect to this to confirm if a new water allocation assessment is required to support an application for consent to take and use of groundwater.
- Water reclamation - from wastewater plant, stormwater, lagoon treatment, in order to minimise the water drawn from the supply systems.
- Rainwater harvesting – from roof areas within the proposed development and treated to required standards.

4.4.5. Network

The on-site network will consist of pipelines within streets for potable and firefighting supplies. Depending on the source utilised, this may be separate or combined pipelines.

4.5. Power (Vector)

Initial discussions have been held with Vector who have indicated that currently 8 MVA can be supplied to site.

The proposed development may require up to 60 MVA, therefore additional infrastructure is required. Discussion have been held with Vector to confirmation of their capacity to provide the project's demands and how this capacity can be delivered.

Alternative solutions have been investigated for renewable on-site solutions to provide power to the site as listed below.

- Solar Panels – Proposed as part of the development

Further discussions and engagement are required with the design team and Vector during the detailed design stage.

4.6. Telecom (Chorus)

Chorus have been contacted and their network checked for the type of services provided in the area. The following types of connection are available.

- ADSL/VDSL: Network already present at the Dairy Flat Highway frontage

Fibre is not currently installed; however this can be provided as part of the developments costs and includes extension of the fibre network to the development.

5. Summary

The site can be serviced for civil infrastructure with a number of different options being available for each element. These are summarised below:

- Roading – Connection to Dairy Flat Highway and Postman Roads with interconnecting new road networks within the site area
- Stormwater – primary network sized for 10% AEP and secondary flow paths for 1% AEP
- Wastewater – primary network discharging to either a public connection or a private treatment system
- Water Supply – potable and fire mains connected to public network supply from Orewa 1 and 2 pipelines
- Utilities – Power under discussion/design with Vector and extension of the fibre networks for communications.

Yours sincerely



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