

To

AW Holdings 2021 Ltd
CC/RCP
James Kirkham

From

Woods
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W-REF: P22-194
14 February 2023
Reviewer: Brian Flood

Water Supply & Wastewater Servicing Memorandum

Auckland Surf Park, 1350 Dairy Flat Highway, Dairy Flat

1. Introduction

1.1. Purpose

AW Holdings 2021 Ltd have lodged 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.

The Ministry for Environment have subsequently issued a Request for further Information (dated 1st February 2023) requesting information on the viability of the proposed water supply and wastewater solutions, including a proposed wastewater treatment system layout, and clarification of why connection to the municipal water and wastewater systems is not included in the project scope.

This memo addresses the above points by outlining the constraints in the existing infrastructure, the proposed servicing strategy and provisions made to align with the structure plan.

1.2. Development Description

The development consists of approximately 43ha of greenfield land encompassing the properties of 1350 Dairy Flat Highway, Lot 15 DP 65979, and Pt Allot 189 SO 1118A in Dairy Flat, Auckland. The proposed development has been comprehensively master planned (see **Figure 1** below) and consists of a recreational surf park (and associated facilities including retail and food & beverage activities), short-term visitor accommodation, industrial land uses that support technology activities, and a supporting solar farm.

1.3. Development Requirements

The servicing demands for the development have been estimated based on the current Watercare Services Ltd (WSL) standards as follows:

- Water Supply = 0.27 MLD
- Wastewater = 0.43 MLD*

(* Wastewater higher than water supply due to ingress and infiltration factors)



Figure 1: Masterplan of the proposed Auckland Surf Park Community development

2. Water Supply

2.1. Current & Planned Infrastructure

There is currently no infrastructure to service the site from a municipal supply and WSL have confirmed that their current strategy aligns with the Silverdale West Dairy Flat Structure Plan to provide a trunk pipeline (Orewa 3), in an undefined timeframe, as shown in **Figure 2** below.

The closest existing water supply infrastructure to the proposed development is the Orewa 1 and 2 pipelines located on East Coast Road. These pipelines have been confirmed by WSL as at capacity for summer peak flows and WSL have indicated that it is feasible but they are not able to commit to a specific off-peak filling supply flow rates from these pipelines due to uncertainty of development timing and other developments within the downstream catchment.

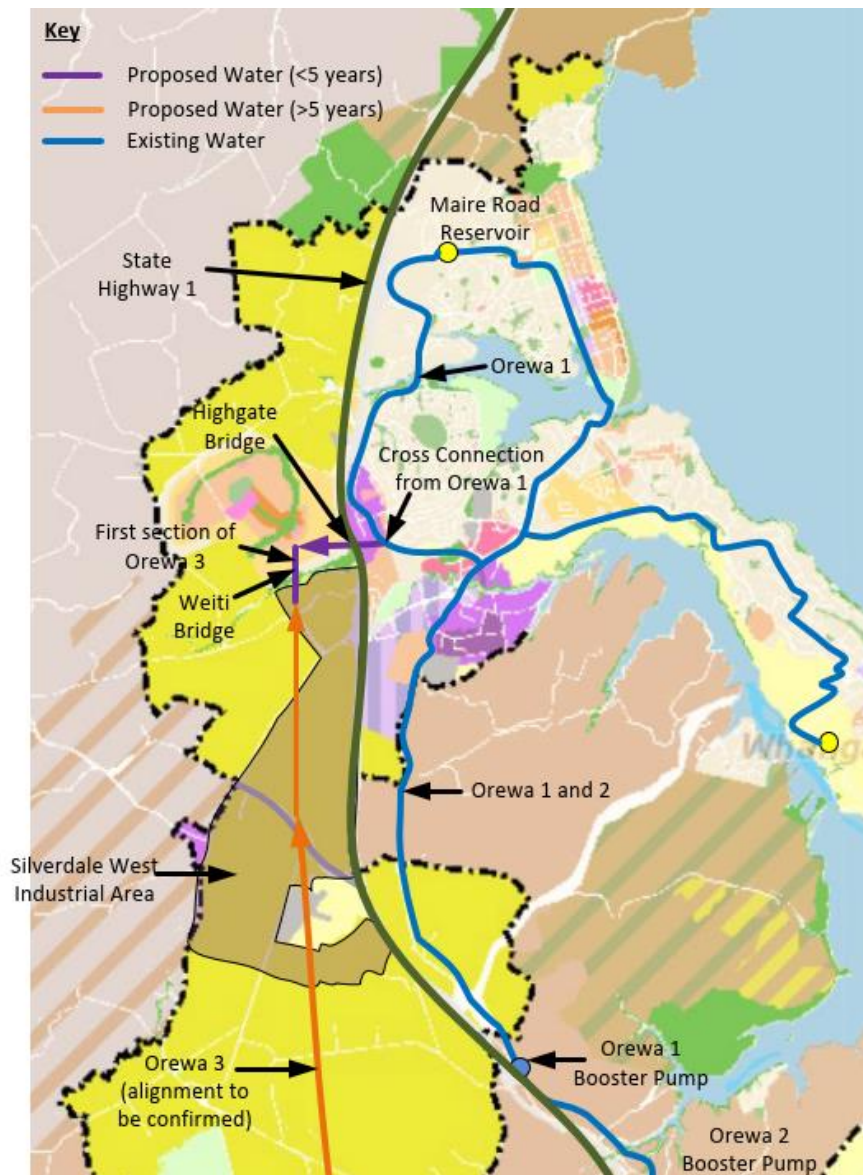


Figure 2: Water Supply Future Extension (Orewa 3), as per the Silverdale West Dairy Flat Structure Plan - 2020

2.2. Proposed Water Servicing Strategy

As there is currently no available public water connection, the development proposal is to use on site methods to provide water supply. The options for on-site supply are broadly outlined below and will be confirmed following detailed design. The site can be serviced utilising on site options including:

- Bore Supply – one or a series of bores and pumps that will draw groundwater which will then be treated to use for water supply. Initial investigations of existing bores in the surrounding area have indicated that sufficient supply is feasible for this solution. Further testing and assessments of effects will be undertaken as part of detailed design to confirm requirements.
- Rainwater Harvesting – harvesting of rainwater from roofs and hardstands then treated could be utilised for water supply by storing large volumes within reservoirs or ponds prior to treating the water. This would be subject to weather conditions and could be affected by drought.
- Recycling – reuse of treated effluent from the wastewater treatment system may be used as part of the servicing strategy if this system is selected for the servicing for wastewater.
- Delivery – delivery of water by tankers or bottled supply could be utilised as an supply measure.



Figure 3: Indicative Water Supply Layout

These solutions could be utilised in conjunction with each other or separately. Storage for supply could be installed in conjunction with existing on-site sprinkler storage reservoirs that may be proposed as part of the fire suppression systems.

Treatment will be required to bring locally sourced water to drinking water and fire suppression standards. This may include:

- Filtration – to remove sediments and other contaminants utilising cartridge (sand) filtration and membrane osmosis.
- Removal of hardness – the removal of dissolved heavy metals and other salts is likely for bore supply, but subject to on site testing. This will determine the number of treatment bays required for coagulation and flocculation systems.
- UV – Ultraviolet systems to destroy pathogens.
- Chemical dosing – to protect the water supply or to meet local standards.

Treatment and reservoir sizing will depend on the percentage of the development serviced and detailed investigation of the availability of the supply source.

2.3. Long Term Municipal Water Supply Connection Provisions

2.3.1. Partially Developed Municipal Supply / Temporary Solution

Prior to the development of the planned infrastructure as part of the Silverdale West Dairy Flat Structure Plan, a municipal supply would only be available if sufficient daily flows could be achieved by off peak filling from the Orewa 1 and 2 pipelines. This supply method will require a reservoir, booster pump set and chlorination dosing system to be installed at the development site in order to store sufficient water to allow for periods when the Orewa 1 and 2 pipelines are operating at peak (and water take from those lines cannot occur).

These reservoirs and related systems shall be sized based on allowable flow rates, supply and fire demands and could be installed in conjunction with existing on-site sprinkler storage reservoirs that may be proposed as part of the fire suppression system.

The pipeline to the development route has been initially outlined from the Wilks Road and East Coast Road intersection. This new connection would reach the site from Postman Road and is estimated to be approximately 2.7 km long to the development site. This pipeline has been estimated at approximately 300mm diameter and may be used as a balancing pipeline between Orewa 1 & 2 and Orewa 3 pipelines in the future. Any upgrades in pipe size required to provide that balancing facility that is required by WSL will be confirmed as part of a developer's agreement.

The pipeline requires a crossing of State Highway 1 motorway which could be achieved by either directional drilling under the carriageway or by attaching the pipeline to the bridge at Wilks Road. At the time of the design of this pipeline, discussions will be held with Waka Kotahi / AMA and Auckland Transport to confirm requirements or suitability.

2.3.2. Fully Developed Municipal Supply

At the time that an unfettered supply from the proposed Orewa 3 pipeline that is proposed to be installed from Albany to Milldale is available, the opportunity for a connection to the municipal supply shall be considered. A separate consent will be lodged for these aspects of the development at that time.

3. Wastewater

3.1. Current & Planned Wastewater Infrastructure

There is no current suitable infrastructure to service the development to a municipal treatment plant and WSL have confirmed that their current strategy aligns with the Silverdale West Dairy Flat Structure Plan (as shown in **Figure 4** below). The future provisions for the site location under this structure plan is either a gravity or pumped connection (private or network) to the public wastewater network which connects to a new transmission pump station located south of the site. This pump station shall connect the area to the Army Bay WWTP via gravity and pumped transmission networks.

The structure plan allows for 3 new pump stations and transmission gravity pipelines to be installed which will be downstream of the development site. The transmission gravity pipeline to the north of the site is currently located within private land and is anticipated to be installed as those sites are developed. This may be the main hold up in providing the municipal supply route, as this is subject to other landowners' appetite to develop their sites.

Some pipelines have been installed at Weiti Bridge to date, however WSL have confirmed these are currently not connected. The timeframe to provide a connection to the development area is indicated in the structure plan as 2048 or beyond.

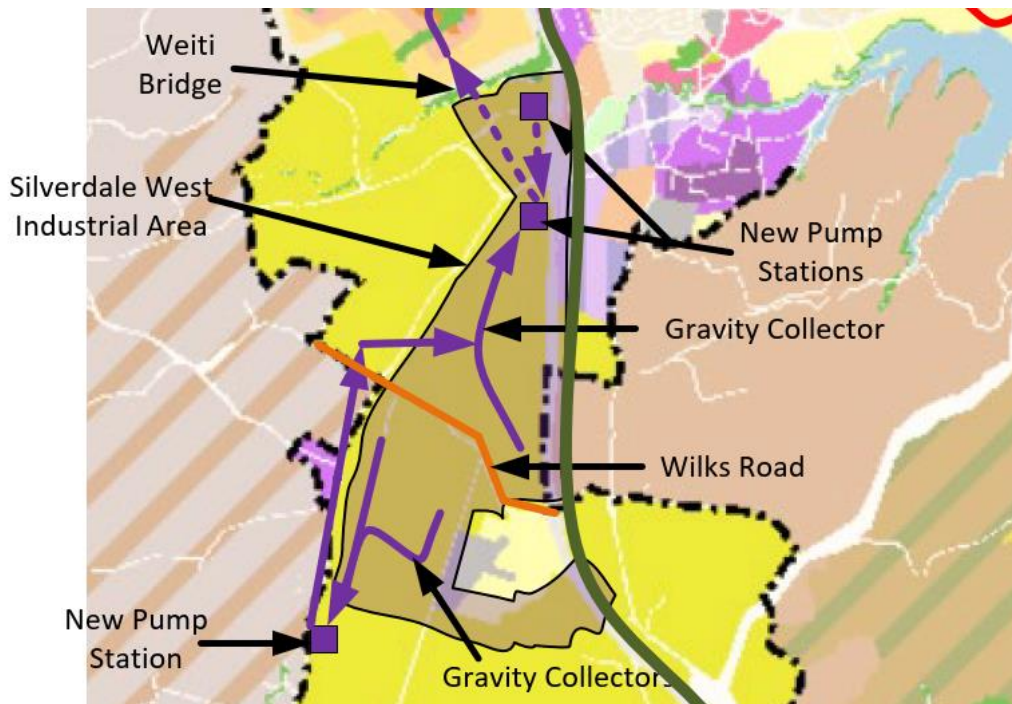


Figure 4: Wastewater Future Extension – Silverdale West Dairy Flat Structure Plan - 2020

3.2. Proposed Wastewater Servicing Strategy

The proposed servicing strategy is on-site treatment due to the distance to infrastructure currently available and uncertainty for when planned infrastructure will be in place.

There are several appropriate and viable options for on-site wastewater treatment and these largely depend on how the treated effluent is discharged (as outlined in a discharge consent) and the portion of the development that shall be serviced by this. These options include:

- Land Discharge – effluent treated to a secondary treatment standard can be discharged to a field via dripper pipelines or sprinklers which disperses treated effluent to ground. This will require a reasonable area of land within the development site to discharge to which may affect the developable area utilising this option. The dispersal field area depends on the volume of treated liquid effluent remaining following the treatment process and the infiltration rates of the soils. This could also have adverse effects on bore supply if that was being utilised for water supply in conjunction with this system if the systems were located close to each other.
- River Discharge – treated effluent to a tertiary treatment standard can be discharged to a spilling pond/scoria bed adjacent to the existing watercourse, then into that watercourse. The higher level of treatment achieved should mean that the treated effluent is cleaner than the water in the watercourse. This will allow for a smaller area for treatment systems which will not affect developable area available.
- Recycling – effluent treated to a higher than tertiary treatment standard will allow treated effluent to be used for water supply systems. This may be limited to non-potable supplies depending on system design. Overflows from this system may still require a discharge consent.

The requirements of the discharge consent applied for will determine the treatment scale and requirements. The wastewater is likely to be collected at a centralised point (determined by low point in the catchment) and utilising a pump station, pump to the treatment location.

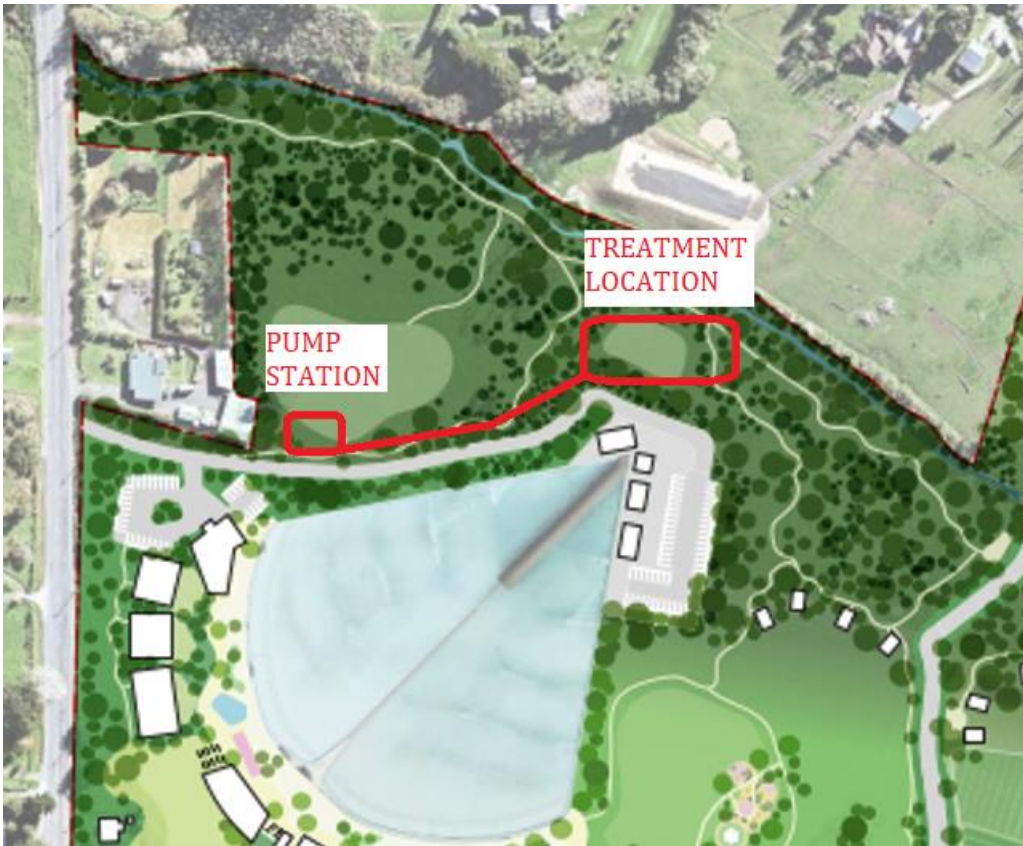


Figure 5: Indicative Wastewater Treatment Facility Layout

3.3. Municipal Wastewater Connection Provisions

3.3.1. Partially Developed Municipal Connection / Temporary Solution

Prior to the transmission pump station being constructed to the south of the site, a rising main could be installed from the subject site to either the transmission gravity pipeline or pump stations located to the north of the site, which are anticipated to be installed ahead of the new transmission pump station located to the south of the site. The rising main may need to bypass sections of the transmission gravity pipeline which may sit within private land that has not been developed.

WSL have indicated they would not support multiple or small rising main's being installed to servicing individual developments ahead of public infrastructure and would prefer if multiple developers were able to come together to build the infrastructure proposed in the structure plan. Due to the uncertainty surrounding this, a connection to a municipal wastewater system is not reasonably practicable in the timeframe for this development proposal.

3.3.2. Fully Developed Municipal Supply

When the transmission pump station located to the south of the site is constructed, the rising main can be redirected to this or the on-site pump station can be removed if a gravity connection is available in order to connect to the public network. A separate consent will be lodged for these aspects of the development at that time.

4. Conclusion

This memo demonstrates that on-site servicing for the water supply and wastewater for the proposed Auckland Surf Park Community development is the most practicable servicing strategy given the uncertainty of the timeframes for a municipal connection being available as outlined in the Silverdale West Dairy Flat Structure Plan and constraints on existing infrastructure.

The recommended servicing strategies for this development, as outlined in this memo are:

- Water Supply – On-site systems including bore, rainwater harvesting.
- Wastewater – On-site wastewater treatment and discharge consent for either land disposal, river discharge, or recycling methods.

These solutions shall be developed as part of Engineering Plan Approval and Building Consent stages of the design following further consultation with the development team, local authorities and other project stakeholders.

These proposed solutions do not preclude the ability to divert to and connect to municipal infrastructure in the future.

Yours sincerely

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Brian Flood

Director