

COMPANY NAME	Beachlands South Limited Partnership
ATTENTION	John Dobrowolski
SUBJECT	Outline of Hydrogeological Assessment for Covid Fasttrack

1. INTRODUCTION

Beachland South Ltd Partnership (BSLP) is proposing a mixed use, residential and commercial Project at Beachlands, Auckland, called the Live Zoned Beachlands South Project (the Project). BSLP is submitting a referral application for this project to be listed on Schedule 2A for the Fast Track Approvals Bill seeking a fast-track application under the COVID-19 Recovery (Fast-track Consenting) Act 2020.

The Project incorporates rainwater capture and water use features consistent with modern urban design. However, a secure water supply will also be required. BSLP is proposing to address this requirement using four existing bores to abstract groundwater for supply purposes. BSLP is prepared to install additional bores if necessary to meet the Project water demand.

2. METHODOLOGY FOR THE GROUNDWATER ASSESSMENT

A field-testing program has been conducted across the Beachlands area to assess individual bore capacity, local aquifer conditions, and assess the potential groundwater resources available. A series of pumping tests were performed on bores as part of the field-testing. These pumping tests were assessed to determine bore yields (i.e., capacity to supply water for the Project) and long-term production capacity. The analysis also supplied information to support the construction of a three-dimensional geological model and a three-dimensional numerical groundwater model. These models were developed in 2023 to help assess available groundwater resources for the Project in relation to PC88.

3. CONTEXT

The projected water demand for the Project is between 1,209 m³/day and 1,352 m³/day, which equates to between 441,285 m³/year and 493,480 m³/year.

There are three existing bores owned by BSLP (BH1, BH620 and BH712). These bores have been investigated regarding their capacity to supply water to the Project (Table 1).

An existing bore known as the Pine Harbour Living Limited (PHLL) bore, which is not owned by BSLP, has an existing resource consent to take groundwater up to a maximum of 474,500 m³/year (average of 1,300 m³/day). WGA understands that BSLP has an existing agreement with the owner of the PHLL Bore to supply up to 765 m³/day to the Project.

Bore BH1 (the Formosa Bore) is owned by BSLP and has an existing resource consent to take groundwater up to a maximum of 42,000 m³/year (an average of 115 m³/day). This consented volume is intended to supply water required for the Project, including an ongoing supply to the Formosa Golf Club.

Two further existing bores (BH620 and BH712) have been investigated with regards to their capacity to supply water for the Project.

Two additional bores (PB1 & PB2) have been proposed for installation by BSLP, if required, to meet the Project needs. BSLP is also prepared to install further bores if necessary. The distribution of takes between these various sources is to be optimised following field testing and during the detailed design of the water supply system for the Project.

Table 1: Water Sources Required for the Project

SUPPLY COMPONENTS ⁽¹⁾		PROPOSED VOLUME	
		m ³ /day	m ³ /year
Existing Consented Takes	PHLL (Commercial agreement)	765	279,225
	BH1 (Formosa Bore – Permit 40351)	115	42,000
New Consents	BH620, BH712, and Proposed Bores	472	172,255
Total		1,352	493,480

Note: 1) The distribution of takes between these various sources will be optimised during the detailed water supply system design for the Project.

4. PLAN CHANGE 88

Borefield infrastructure and individual bore yields were assessed as part of field testing and documented in the evidence provided for PC88. The Project water requirement supplied by bores owned by BSLP is 587 m³/day, that is (115 m³/day and 472 m³/day). The existing borefield capacity is summarised in Table 2. The existing borefield has sufficient physical bore capacity (up to 836 m³/day) to meet the potable water requirements for the Project.

Table 2: Projected Maximum Pumping Rate of Borefield.

BORE	MAXIMUM RECOMMENDED DEPTH TO WATER (m)	MAXIMUM RECOMMENDED DRAWDOWN (m)	MAXIMUM RECOMMENDED FLOW (m ³ /day)
BH620	89.5	32.5	242
BH1	93	62	550 ⁽¹⁾
BH712	73	22	44

Note: 1) Restrictions apply to this recommendation.

If numerical modelling and other analyses indicate additional bores may be required to meet Project demand, additional bores may be installed following assessments of potential adverse effects. Any additional bores will be designed and constructed to minimise potential adverse effects.

5. GROUNDWATER RESOURCE ASSESSMENT

A numerical groundwater model has been constructed to simulate the groundwater system under and surrounding the Project area. The aquifers under the Project area are not considered to be directly connected to surface freshwater bodies. The AUP(OP) sets a general volume of available groundwater at 65% of annual recharge, with 35% to remain in the aquifer to maintain freshwater outflow at the coast and to recharge other connected aquifers.

The model results indicate natural off-shore groundwater discharges are approximately 3,360 m³/day (1,226,341 m³/year). Existing groundwater demand within the catchment area was assessed at 2,048 m³/day (747,371 m³/year). This existing demand equates to 60.9% of the total offshore discharge.

The additional water required to meet the Project requirements of 472 m³/day (172,255 m³/year). This volume would increase the total demand to 2,519 m³/day (919,626 m³/year), equating to 75% of total offshore discharge or aquifer throughflow.

Under the AUP-OP Policy E2.3 (7 and 11) the above allocable limit of 65% recharge can be increased if specific criteria are met. Previous work accepted by Auckland Council showed these criteria were met in the Project catchment. An allocable limit of up to 77% of groundwater off-shore discharges was authorised by the Council.

The updated assessment presented in support of the PC88 application incorporated an allocable limit for the Project catchment at 77% of off-shore discharges. The total demand calculated at 75% of offshore discharges is within the allocable limit.

Auckland Council has accepted that the new calculated demand is within the allocable annual groundwater in their findings in response to the PC88 application.

In summary, the modelling work documented in this report indicates there is sufficient groundwater available to meet Project requirements. Additional criteria assessments will need to be conducted to support the process of obtaining resource consents to take the additional groundwater.

6. CONCLUSION

Potable water supplies for the Project are to be sourced from a series of existing and planned bores. The water requirements for the Project are up to 1,352 m³/day or 493,480 m³/year. Existing water supplies to meet these requirements, in part, are:

1. The PHLL Bore, which has an existing resource consent to take a maximum of 474,500m³/year (average of 1,300m³/day). Of that volume, an agreement is in place with the bore owners to supply up to 765 m³/day to the Project.
2. BH1 (Formosa Bore), which has an existing resource consent to take 42,000 m³/year (an average of 115 m³/day) and is owned by BSLP.

The remaining 472 m³/day or 172,255 m³/year required to meet the Project water requirements will come from two existing bores (BH620 and BH712) and any new bores installed by BSLP. Based on work completed to date, the projected collective pumping capacity of BH1, BH620, BH712 and the new proposed bores will be sufficient to meet the Project water supply demands.

Based on WGA's experience and the information which has been received and known to date, WGA can see no reason why the Project could not proceed under a fast-track application process.

7. QUALIFICATIONS AND EXPERIENCE

7.1 William Dench – Senior Hydrogeologist, Groundwater Modeller

William is a Hydrogeologist (BSc in Geology and Environmental Science, and Master of Water Resource Management) with more than 6 years' experience in hydrogeology, groundwater modelling, water quality assessment and environmental effects mitigation. He specialises in the building of 3D numerical models to assess potential impacts to groundwater resources, including groundwater modelling for Auckland Council for setting allocation limits. William provides specialist hydrogeological support for assessments including major civil infrastructure projects. William has carried out the initial groundwater modelling for PC 88.


7.2 Brett Sinclair – Senior Principal Hydrogeologist, Technical Lead

Brett is a Principal Hydrogeologist (BSc, MSc Geology) with more than 30 years' experience in hydrogeology, geology, water management, water quality assessment and environmental effects mitigation. He specialises in the evaluation, utilisation, management, and protection of groundwater resources and groundwater-dependent surface water resources. Brett provides specialist hydrogeological support for geotechnical assessments including major civil infrastructure projects. He has undertaken numerous peer reviews of applications for site dewatering and infrastructure construction projects on behalf of regulatory authorities.

7.3 Clare Houlbrooke – Principal Hydrogeologist, Project Reviewer

Clare is a Principal Hydrogeologist (BSc, MSc (Hons) Earth Sciences) with more than 20 years' experience in hydrological resource investigations. Clare's focus is sustainable management of groundwater resources and connected surface water systems. Clare has worked in two regional councils as a Groundwater Scientist over a 9-year period and as a consultant has continued to support regional councils with the review of groundwater related resource consent applications. She has prepared and presented evidence in regional council resource consent hearings and in Environment Court as an expert witness.

Yours Sincerely



William Dench
Senior Hydrogeologist
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