



memorandum



TO	Jo Young	FROM	Parviz Namjou
	Stevenson Aggregates Ltd	DATE	18 September 2025
RE	Drury Quarry – Sutton Block Expansion, Auckland Council Further Information Request on Groundwater		

Below is additional information in response to Earthtech's (Auckland Council's Groundwater consultant) second s67 queries dated 15 September 2025 regarding the proposed Drury Quarry – Sutton Block Expansion application.

For ease of reference, the numbered heading corresponds to the row number in the information request table (ET 2025), followed by the requested information, and PDP's response.

76: Aii - Groundwater Monitoring Bores to East of the Sutton Block Expansion

Supplementary Request for Missing Information

To provide adequate groundwater level monitoring and assessment of groundwater – surface water interaction, the reviewer requests the following (see attached Figure 1):

i. Maketu Catchment – located as listed in Schedule A of PDP (2025c).

- *MK1 Shallow*
- *MK1 Deep*
- *MK1 Target screen intervals for shallow and deep piezometers to be determined and added to Schedule A*

ii. Mangawheau Catchment – located at end of Sinclair Road adjacent to Mangawheau Stream (see attached Figure 1)

- *MG1 Shallow*
- *MG1 Deep*
- *MG1 Target screen intervals for shallow and deep piezometers to be determined and added to Schedule A*

iii. The installation of MK1 bores and MG1 bores prior to the exercise of the dewatering resource consent.

iv. The listing of new groundwater monitoring bores with sufficient depths to monitor predicted groundwater drawdown effects.

PDP Response:

MK1-Lower (Deep) and MK1-Upper (Shallow)

In response to the reviewer request, two proposed monitoring bores; MK1L (Deep) and MK1U (Shallow), are proposed to be drilled 6 months following the consent, regardless of any trigger level exceedance.

MG1-Lower (Deep) and MG1-Upper (Shallow)

The proposed ET deep bore MG1 is more than 5km from the pit. Based on the available monitoring data for the Hunua and Drury quarries, it is likely that over such a large distance, along the east-west direction intervening fault occurs, restricts the expansion of the zone of influence (and drawdowns) toward the Mangawheau catchment. Therefore, drilling and installing an additional monitoring bore in the Mangawheau at this stage is not recommended.

However, in response to the reviewers' recommendation, we have proposed set trigger levels for each quarry stage (rather than being limited to Stage 5) for the proposed MK1L and MK1U monitoring bores, which are the easternmost bores. These trigger levels are based on the conservative predicted drawdown defined in the PDP (2025) technical report and are proposed to be included as a condition of consent Schedule C (see below). If the monitoring shows drawdowns beyond trigger levels at MK1L or MK1U, further actions or investigations will be carried out. These may include:

- ✧ adding an additional suitable farm well to the monitoring network.
- ✧ drilling or deepening existing bores; or
- ✧ undertaking supplementary groundwater level and/or stream flow gauging.

The specific investigations required will depend on the drawdown status in other monitoring bores, groundwater inflow and effects on baseflow, and therefore it is not appropriate to set out the specific mitigation measures as part of the conditions. Further details of such investigations will be provided as part of the Groundwater Monitoring Plan (GMP, Conditions 28 and 29). In addition, the review process under to Section 128 (Conditions 128) is available to address any unforeseen environmental effects.

Schedule C: Trigger Levels to Drill MG1				
Quarry Stages	MK1L (Deep)		MK1U (Shallow)	
	Predicted Drawdown (m)	Trigger Level (m, RL)	Predicted Drawdown (m)	Trigger Level (m, RL)
1	SV + 2m ¹	TBC: GW RL – drawdown	SV + 2m ¹	TBC: GW RL – (SV+2)
2	23.4		SV + 2m ¹	
3	53.7		SV + 2m ¹	
4	97.6		SV + 2m ¹	
5	100		SV + 2m ¹	
Note:				
1) Trigger levels for bores with no expected drawdowns. SV shall be defined after two years of groundwater level monitoring.				

The trigger levels will be confirmed and presented in the first annual monitoring report (together with the geological logs, bore specifications, including screen intervals). For the shallow bore MK1U (and MK1L in Stage 1), the seasonal variations will be assessed after the first two years of groundwater level monitoring.

The reviewer noted that the depths of SG3L, SG3U, SG7, SG11L, SG12L, SG13, BH103, BH109, BH113-1 and 22498(SG6) are insufficient to accommodate the predicted drawdowns. We agree with the reviewer comment; however, consistent with other dewatering permits, standard conditions apply whereby if any

monitoring bores become dry or damaged, they are replaced, if required, based on the observed drawdown pattern. Considering the anisotropic nature of the aquifer and the presence of intervening faults, the predicted drawdowns may not materialise. Therefore, we do not recommend pre-emptively deepening any of the existing monitoring bores.

Schedule A (Update): Recommended Groundwater Monitoring Bores and Trigger Levels										
Bore Intake Zone	Bore ID	Map Reference NZTM 2000 (E/N)	Ground Level (m, RL)	Screen Interval (m, RL)	Geol.	Seasonal Variations in Shallow Bores (m)	Predicted Drawdowns (m)	Estimated Pre-Quarry Groundwater Level (m, RL)	Groundwater Level (m, RL) August 2024	Proposed Trigger Level (m, RL)
Deep greywacke bores within Hunua Greywacke Block	SG3L	1776542/5890385	157.38	0 to -5	G	-	121	64	43.95	-60
	SG3U	1776542/5890385	156.35	50-44	G	-	121	64	85.53	-60
	SG7	1777162/5892100	202.34	-3.66 to -11.66	G	-	61	64	48.1	-60
Deep greywacke bores east of Hunua Fault	SG11L	1777712/5890556	222.5	4.5 to -7.5	G	-	200	172.23	166.43	-27.77
	SG12L	1778101/5890213	277	6 to -3	G	-	206	179.46	179.59	-26.54
	SG13	1777736/5889520	249	8 to -1	G	-	145	108.95	102.85	-36.05
	MK1L ²	1778421/5889312	TBC	TBC	G	TBC	100 ³	TBC	TBC	TBC
	MG1L ²	TBC	TBC	TBC	G	TBC	TBC	TBC	TBC	TBC
	BH103	1777212/5888550	128.12	77-71	G	-	78	127.5	96.83	49.5
	BH109	1776798/5888474	81.53	50.03-47.03	G	-	72	79.91	80.33	7.91
	BH113-1	1776744/5888268	115.67	22.47-20.47	G	-	65	100	77.13	35
	22498 (SG6)	1776905/5887425	100	42-20	G	-	47	62	51.23	15
Shallow bores within Hunua Greywacke Blocks	SG1U	1775928/5891217	39.32	24-18	V	1.1	(SV+2)	38.22	38.17	35.15
	SG1L	1775928/5891217	39.17	0 to -5	V	1.98	(SV+2)	28.73	27.84	24.75
Shallow bores East of Hunua Fault	BH113-3	1776744/5888268	115.67	76-74	CM	7.25	(SV+2)	95.52	95.47	86.27
	BH104	1777227/5888410	135.97	107-101	CM	5.57	(SV+2)	123.20	122.84	115.63
	SG11U	1777709, 5890549	222.5	202.94 to 153.5	G	3.45	(SV+2)	172.92	171.87	167.47
	SG12U	1778105, 5890132	277	221 - 212	G	7.18	(SV+2)	224.39	224.01	215.21
Shallow bores west of Drury Fault	SG9	1775804/5888767	25	5 to -5	V	1.06	(SV+2)	22.65	22.66	19.59
	SG10	1775488/5888702	26.74	9.74 to -3.26	V	0.91	(SV+2)	24.15	24.15	21.24
	21134	1776144/5887966	26.7	-2 to -33	V	2.83	(SV+2)	22.11	22.29	17.28
	SG4	1775830/5897720	39.34	20 to 9	A/V	1.15	(SV+2)	37.61	37.97	34.46
	SG8	1776311/5888663	52.75	24.75 to 12.75	V	1.47	(SV+2)	39.41	39.43	35.94
	BH03-New	1776243/5888470	46.77	21.77 to 11.77	A	0.52	(SV+2)	31.72	31.92	29.20
Notes: - SV (Seasonal Variation) + 2m incorporated into trigger levels for all shallow bores. - MK1L (Deep) and MK1U (Shallow) shall be drilled 6 months after the consent. - Based on the same analytical method discussed in PDP (2025), excluding any in-well drawdown.										

References

Earthtech (2025) S67 Response Letter No. 2 for Drury Quarry, Sutton Block (Bun60449474-Ftaa-2503-1037),
15 September 2025

Pattle Delamore Partners (2025), Proposed Sutton Block Expansion Groundwater & Surface Water Effects
Assessment, Prepared for Stevenson Aggregates Limited, March 2025.

Limitations

This memorandum has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Stevenson Aggregates Ltd and others (not directly contracted by PDP for the work). PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This memorandum has been prepared by PDP on the specific instructions of Stevenson Aggregates Ltd for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

© 2025 Pattle Delamore Partners Limited

Please contact me if you require any additional information.

Prepared and approved by

Parviz Namjou

Technical Director – Water Resources