

WAT-FORM-14: Hydrogeologist Input to Groundwater Abstraction Assessment



This form is to be used to record decisions made in relation to the acceptability of a groundwater abstraction following assessment of further information supplied e.g. test pumping data.

Site Details

Site Name	Portintruan, Islay	CAR reference	CAR/R/5004458
NGR(s)	BH5 138202 645942 BH7 138233 645900	Location Code(s)	n/a
WRU Contact	[REDACTED]	Date Assessed	20/03/2024

Technical Groundwater Abstraction Summary

Proposed Abstraction rates:			
Borehole Number	Daily	Annual	Peak
1. BH5	65m3		
2. BH7	200m3		
Combined abstraction totals	200m3	73,000	
Aquifer type	Fractured Low productivity, GWB ID 150683 (Islay)	Use (domestic/spray irrigation/ public water supply etc)	Distillery production
Other relevant details	There is one known existing groundwater abstraction, a Private Water Supply (PWS) within 850m (radius for Water Feature Survey) of the site. The PWS is serving Laphroaig View premise and used for human consumption (domestic and commercial bed and breakfast).		
Summary conceptual site model following consideration of information supplied by applicant. Include details of potential environmental impacts	The abstraction boreholes are 45m (BH5) and 63m (BH7) deep boreholes within saline intrusion applicable high risk buffer zone and installed in fractured bedrock in low productivity aquifer. Both boreholes are open hole intercepting a fractures area at approx. 30m depth. One observation BH6 is installed between the proposed abstraction boreholes and the PWS to monitor the abstraction radius of influence and the possible impact on PWS water level. Two constant rate pumping tests were carried out in BH5 and BH7 showing the two been hydraulically connected. BH6 did not show lowering of groundwater		

levels during pumping tests however the limited testing period (24hrs) may have been too short to induce any effect on BH6 from the pumping action at BH7.

Electrical conductivity (EC) measurements during BHs testing show EC well below the applicable risk thresholds. Pumping tests and calculation show the radius of influence potentially impacting on PWS but a longer testing period is required at operational conditions to assess the productivity of BH7 and the impact on the observation BH6 and the PWS.

Water Resources Unit Recommendations

WRU recommends conditioning the BH7 and BH5 abstraction authorisation to the continuous monitoring of groundwater levels in BH6 for 1 year during BH7 operational conditions (up to 200m³/d). A threshold of 1m groundwater level drawdown in BH6, not attributed to natural events (e.g. period of drought), should trig the reduction or temporary cessation of the abstraction in BH7 till the BH6 levels are recovered to natural conditions. After 1 year and upon assessment of the monitoring results the application of the condition can be revised or withdrawn.

Abstraction Licence Conditions

The groundwater level must be continuously monitored at BH6 and BH7 during the operational abstraction from BH7 (up to 200m³/d). Groundwater level data from BH6 and BH7 must be evaluated weekly to assess the hydraulic continuity between the two boreholes. To protect the PWS, a groundwater level drawdown in BH6 greater than 1m attributed to BH7 abstraction will trig a reduction or temporary cessation of abstraction from BH7 till the level in BH6 have fully recovered. After 1 year from the start of the monitoring and upon assessment of the monitoring results the application of this condition can be revised or withdrawn.