

Minutes of Microsoft Teams meeting with Affinity Water

30 November 2020, 16:30-17:30

Attendees

Ilias Karapanos (IK) from Affinity Water (AW)

Roberts Sage (RS), Consultant to Affinity Water

Adrian Reed (AR) from Tier Consult

Hannah Fraser (HF) from H Fraser Consulting Ltd

Minutes by Emilie Roberts (H Fraser Consulting Ltd)

Minutes

Aim of meeting

The purpose of the meeting was for AW to assess whether the new site monitoring boreholes within the Chalk would be representative for use as sentinel boreholes during piling, citing the following concerns:

1. Have boreholes been adequately developed? Is any turbidity associated with drilling being removed?
2. Will sampling provide a representative sample?

Development technique

AR confirmed that an MP1 pump was used for borehole development, as detailed in the method statement. As per EA guidance, development continued until hydrochemistry and turbidity (visual) stabilised. At least 2 well volumes generally removed. Significant drawdown was not encountered. Furthermore, the boreholes were subsequently pumped during permeability testing, in effect developing the boreholes twice, as detailed in the pending SI factual report.

Low flow sampling technique

There was debate as to a suitable sampling technique.

IK requested that at least one well volume (preferably 3) be purged prior to sampling as he does not want potentially unrepresentative stagnant water to be sampled. Sampling using an MP1 pump (with Waterra pump for volatiles and turbidity), would give him more confidence in using the Chalk boreholes as sentinel boreholes.

HF/AR responded that airlifting for development causes aeration, oxidation of Mn and increased turbidity. Pumping with an MP1 pump could cause higher velocities than natural groundwater flow velocities and induce turbidity. Low flow sampling was instead recommended: since the boreholes have already been developed it is representative, plus it will not artificially increase turbidity.

Recent sampling has been undertaken using low flow sampling. A second round of sampling (and installation of telemetric sondes) will be done this week. IK requested that this be conducted using an MP1 pump. AR provided further details of the volumes of water removed during development and permeability testing, and it was agreed that the results of the next sampling round would be reviewed to compare the variability in the two datasets.

RS stated that the method statement looks reasonable, but AW need to be confident that any turbidity event is picked up prior to it reaching a PWS.

Site geology and piling technique

HF described how below the superficial deposits, the Chalk exists as unstructured putty to greater than 12 m, which grades into true structured Chalk below c.17-18 m. The screens of the new piezometers (3 deep boreholes) are in structureless Chalk or weak Chalk, towards the base. This weathered Chalk is more like a

porous medium, and the weak Chalk is well fractured so also more like a primary porosity aquifer than the deeper fully structured Chalk.

The proposed piling depth is 10 m (shallower than the 12-15 metres initially proposed), thereby leaving 7 to 8 m below the base of the piling before encountering the structured Chalk. The pre-cast driven piles are not end loaded (they derive their strength from side wall friction) and no grouting is used.

RS welcomed shallower piling and requested a piling methodology. HF responded that an outline piling methodology is in the preliminary draft DQRA. A full piling method statement will be issued in due course.

Signal tests:

AW requested that signal tests be undertaken in order to assess whether the site is in the [REDACTED] PWS capture zones, and whether the monitoring boreholes pick up the signal tests. Signal tests are possible but will take time and close liaison to arrange.

HF responded that based on the DQRA it is not clear when or whether the site is in the capture zones of these PWSs (although it might be within the zone of influence). Furthermore, the site groundwater flow direction is to the south and there is an upward hydraulic gradient from Chalk to superficial sediments. Signal tests would be instructive, although there is concern around timescales.

Communications between the developer and AW

AW have not yet reviewed the (draft preliminary) DQRA. IK stated that AW is development neutral but cannot compromise the PWS, therefore the site hydrogeology must be understood and any risks understood and mitigated against.

It was agreed that moving forwards, better communications between the developer and AW are required.

ACTION: AR to create a forum to agree the pace and direction of future discussions

ACTION : AR to issue DQRA to AW

ACTION : AR to schedule detailed talks between the developer and AW in response to the DQRA

Mitigation measures

HF raised the possibility of pumping to waste during piling to mitigate against the risk of PWS turbidity events. IK responded that this is not liked as supply would need to be found elsewhere. Use of a scavenger borehole on site, with onsite discharge to the aquifer, is a preferred alternative.