Mostyn Site

Groundwater Analysis Report

June 2017

General review of current sampling operations

Following a review of the SPMP requirements for the Mostyn site the established practice of carrying out borehole sampling twice a year was determined to be suitable. The manufacturing operations at the site have not changed significantly since the borehole monitoring was started.

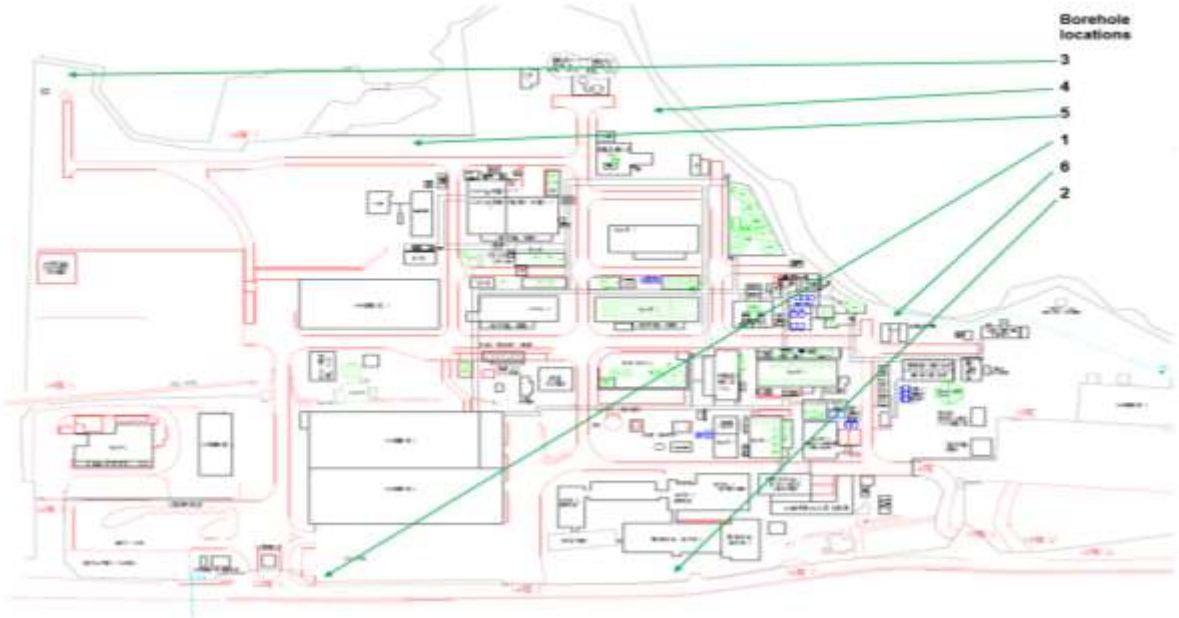
The analysis carried out (pH, Copper, TPH, Ammoniacle Nitrogen and conductivity) are still appropriate for the type of operations and will provide suitable indications of any changes should they occur.

The way in which the samples are taken was reviewed and the current method used is felt to be appropriate for the conditions (low-flow purging and sampling techniques, ASTM Standard Practice D 6771)
In general, the advantages of this low-flow purging include:

- samples which are representative of the mobile load of contaminants present (dissolved and colloid associated)
- Improved sample quality, accuracy, precision and variability through reduced disturbance to the well and formation, reduced mixing, analyte dilution, aeration and degassing
- Improved detection and resolution of contaminant distribution through sampling a smaller section of the formation.
- Improved ability to quantify total mobile contaminant load, without need for filtration
- minimal disturbance of the sampling point thereby minimizing sampling artefacts
- less operator variability, greater operator control
- reduced stress on the formation (minimal drawdown)
- less mixing of stagnant casing water with formation water
- reduced need for filtration and, therefore, less time required for sampling
- smaller purging volume which decreases waste disposal costs and sampling time

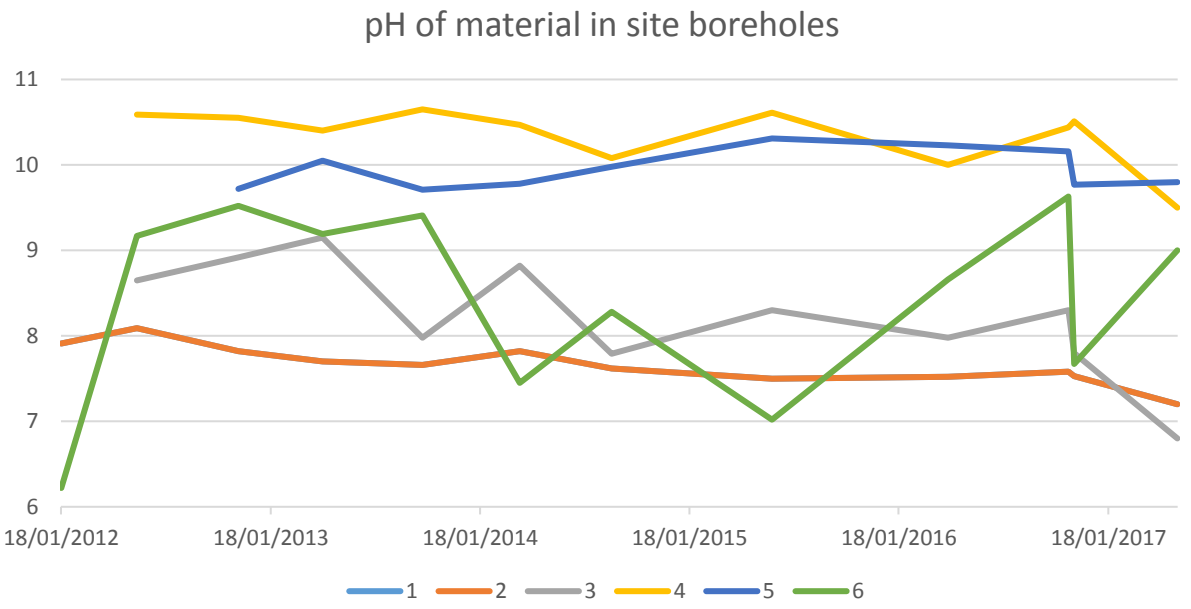
In conclusion …

The current methods employed for sampling, the type of analysis carried out, the frequency of analysis and number and location of the boreholes is thought to be appropriate for the current site activity.

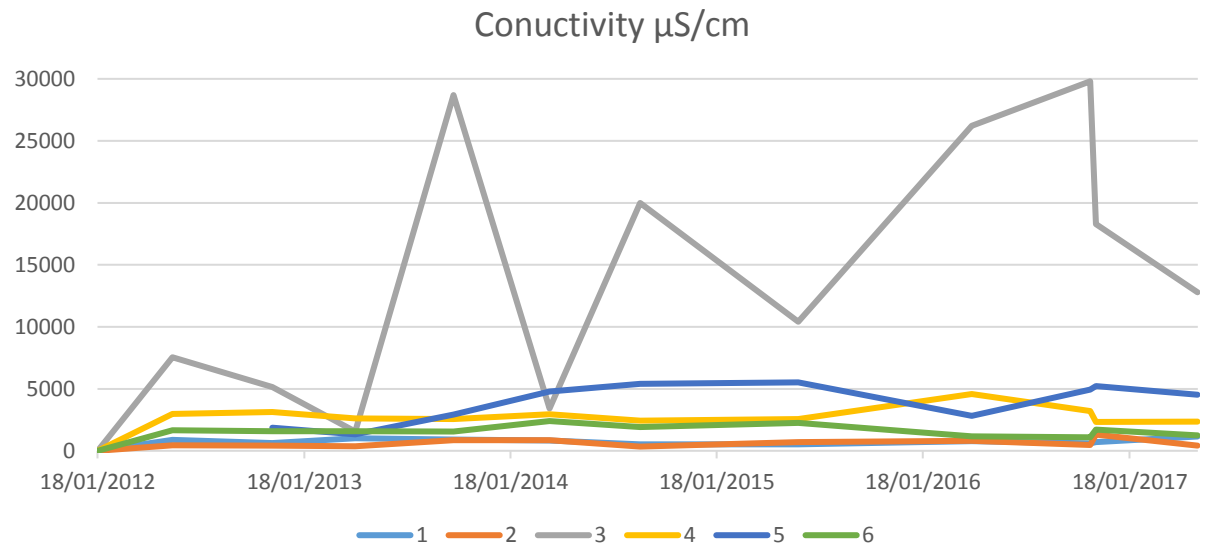


Groundwater analysis data for the past few years.

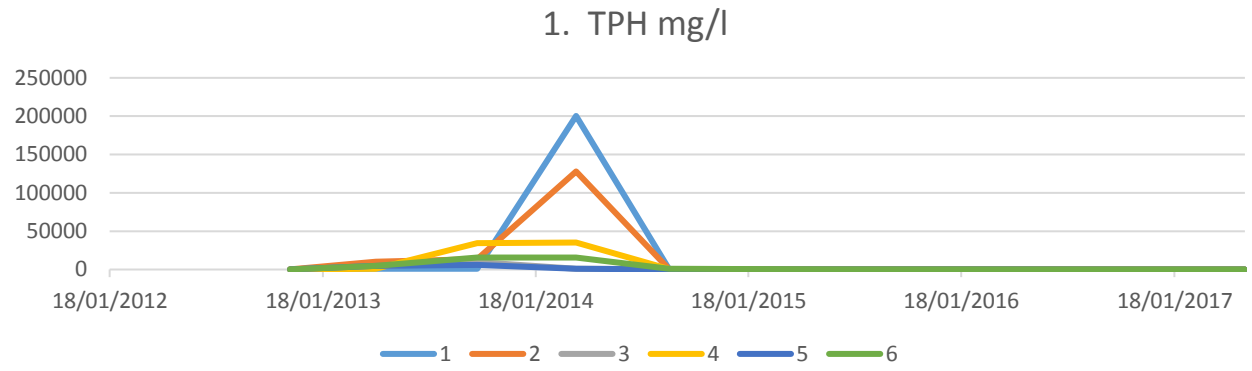
From all six boreholes the pH analysis has remained fairly consistent

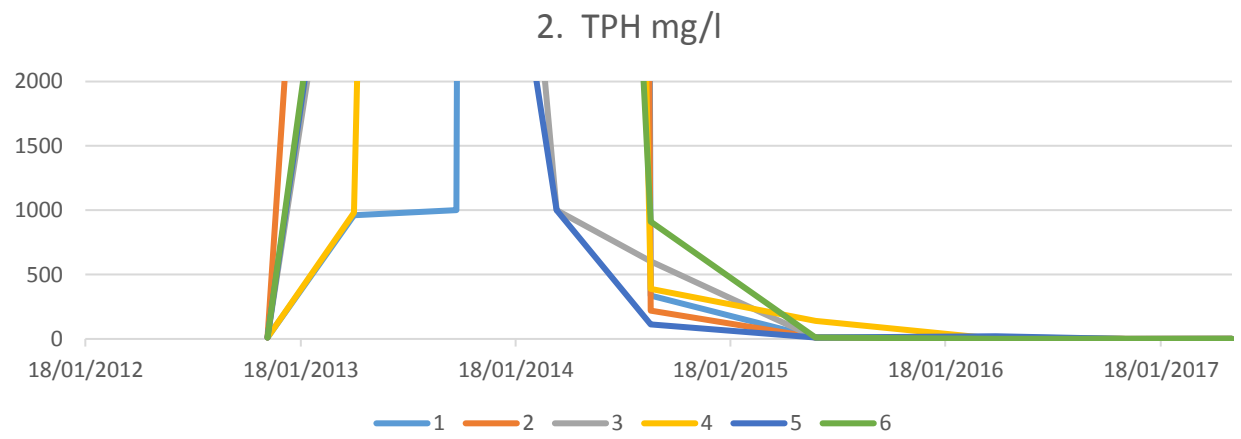


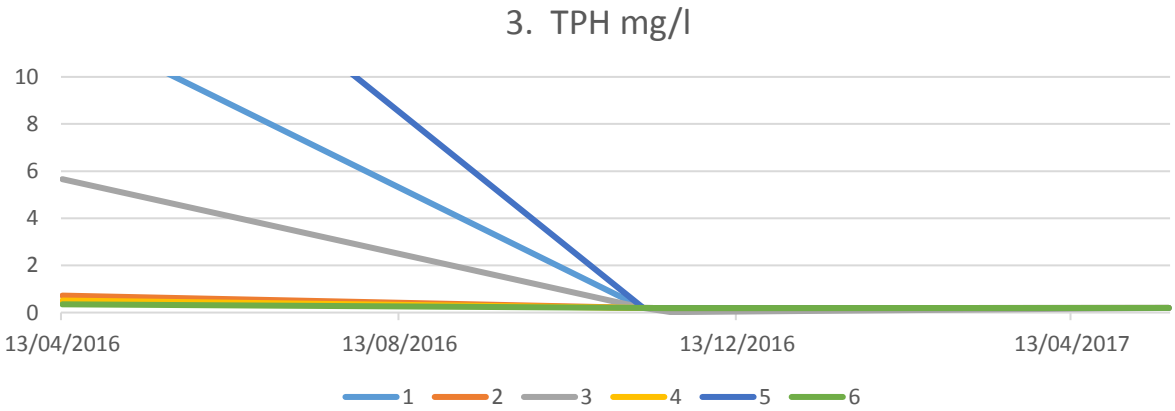
The conductivity of the ground water has also been quite consistent. The only anomaly has been with borehole 3. This borehole is furthest away from any manufacturing activity and, given that the groundwater flow is in the North East direction the activity has not been fully explained. Discussions are on-going with our consultants regarding this issue.



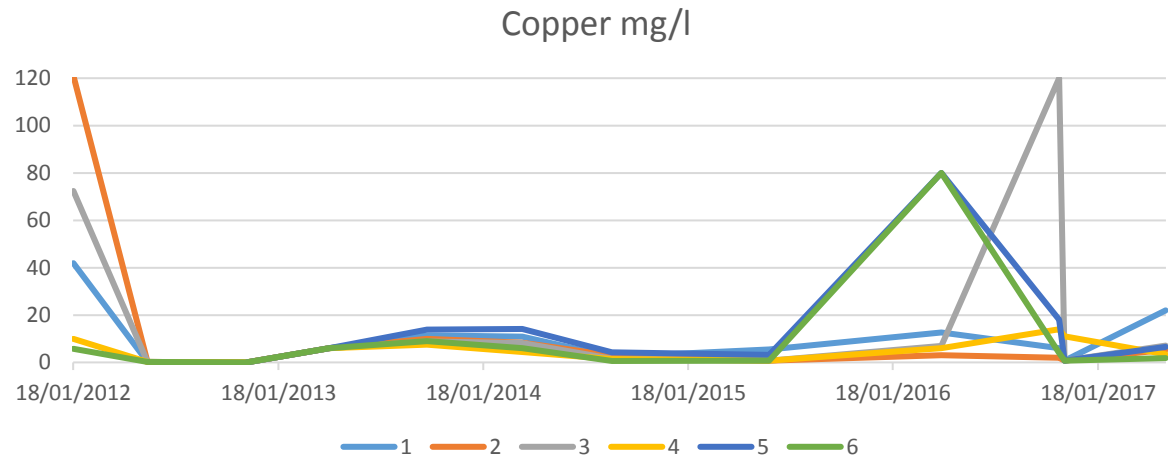
The interesting analysis that did cause some concern for a while were the TPH figures. As can be seen from the three graphs below the level of TPH has crossed the site and has now all but disappeared. The reason for the hydrocarbon levels was a loss of containment from a damaged fuel tank on a haulier's vehicle in 1998. The tractor unit damaged the fuel tank on the weighbridge and then drove off site and parked on the road outside, approximately 250 litres of diesel was lost from the tank. Analysis of material from boreholes 1, 2, 5 and 6 identified 'aged diesel'. Analysis over the past couple of years has shown the TPH levels to be consistently low.



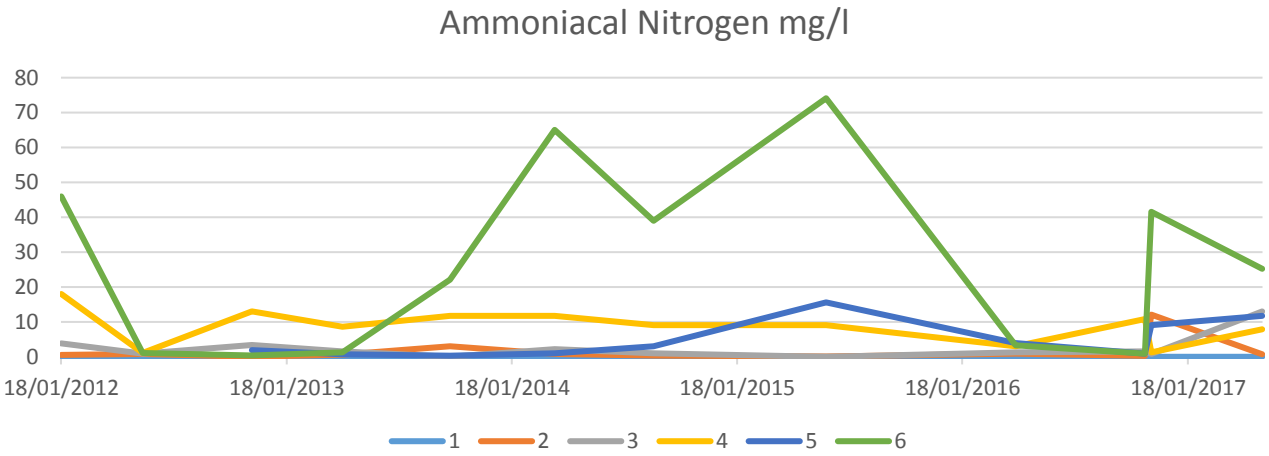




The levels of copper in the groundwater have varied recently peaking during the 2016 sampling period but have fallen back to expected levels this year. There was a possibility that changes in pH had caused mobilisation within the ground makeup but the pH levels in the groundwater do not appear to support this theory.



Levels of ammoniacal nitrogen are relatively consistent, apart from the material in borehole six.
Discussions are continuing with our consultants about the causes for this.



From the last round of sampling the levels of semi volatile organic compounds in each of the boreholes was less than 0.05 mg/l.