

Our ref: R1742B-L070317  
Your ref: WA/2017/123424/02-L01

08<sup>th</sup> March 2017

Miss Sarah Green  
by e-mail: [planning\\_TMH@environment-agency.gov.uk](mailto:planning_TMH@environment-agency.gov.uk)

Dear Sarah

**Upper Heyford – Discharge of Condition 25 (verification report) of 10/01642/OUT**

SGP have recently received comment with regards to the submission of our Dorchester Phase 1b: Area 2 Remediation Earthworks Completion Report (ref. R1742-R10-v2, February 2016) which specifically relates to the presence of LNAPL within BH-NSA-06 within the above development.

The received comments make reference to the Waterman's Remediation Strategy (September 2012); however, it should be noted that a revised Strategy was produced and issued by SGP in May 2014 to reflect the remediation contractor's obligations. The revised Strategy was approved by Cherwell District Council. However, the fundamental objectives and methods previously set out by Watermans with respect to contamination remediation remain unchanged.

Excavation of visual hydrocarbon contamination following the removal of UG-NSA-1-3 (former underground fuel tanks serving a historical boiler house and identified as the source of contamination within BH-NSA-6) was carried out in accordance with the Strategy. Residual hydrocarbon within the tank excavation was observed and removed back to solid bedrock prior to validation testing as per the Strategy requirements:

*"Where the sides and base of the excavation comprise consolidated bedrock (to be confirmed by the Environmental Consultant) visual and olfactory evidence of contamination will be removed. In such circumstances rock samples cannot be taken and consolidated rock will not be removed. A record will be made and reported of any residual visual or olfactory contamination. In the unlikely event that gross contamination remained within the bedrock an assessment of the risks posed and the practicalities of remediation would be carried out."*

It was determined that further remediation of the LNAPL was not required as the excavation of impacted consolidated bedrock is not required under the Strategy, although it is acknowledged that:

*"measurable occurrences of free phase hydrocarbon will be removed from the water table by skimming or absorbents as appropriate to a feasible extent"*.

During the site investigation works by Watermans when LNAPL within BH-NSA-06 was identified, three additional boreholes (BH-NSA-42, BH-NSA-43 and BH-NSA-44) were drilled downgradient in order to characterise any potential LNAPL plume. A drawing highlighting the location of these boreholes is appended to this letter. Watermans commented that following subsequent rounds of groundwater monitoring, LNAPL had not been detected in any of the delineation boreholes (Preliminary Ground Investigation Report, May 2012; Section 7.3.1) confirming that migration of contamination was not taking place whilst the source (UG-NSA1-3) remained in-situ.

During the removal and remediation of UG-NSA-1-3, SGP carried out a round of groundwater monitoring within BH-NSA-06 and recorded the presence of LNAPL. A sample of the LNAPL was collected and scheduled for oil fingerprint analysis which confirmed a weathered heavy fuel oil with characteristics of low mobility, low solubility and low volatility.

Sarah Green  
Environment Agency



Following completion of the remediation excavation to remove UG-NSA-1-3, the entry was left open for several days to identify whether migration of free product back into the excavation would take place, no such migration was observed and so the entry was backfilled.

The assessed information concludes that LNAPL remains in-situ undergoing natural attenuation as evident by the laboratory testing (weathered heavy oil) and that monitoring of downgradient boreholes has not identified the presence of LNAPL confirming migration is not taking place which is as expected for a heavy fuel oil with limited mobility and solubility. Removal of LNAPL from the borehole was considered unpracticable due to the limited volume present and negligible risk to off-site receptors. It was concluded that recovery of LNAPL from the bedrock in the vicinity of BH-NSA-06 would not be practicable due to the dissemination within fine rock fractures and from the evidence of mobility with respect to any migration back into the UG-NSA-1-3 excavation void.

In summary, the risk to controlled waters from residual LNAPL within or around BH-NSA-06 is considered to be negligible whilst the risk to human health is moderate due to the potential generation of volatiles during continuing degradation. The completion report makes precautionary recommendations with respect to the installation of building gas protection and water mains protection within this potentially affected area.

Yours sincerely  
for: Smith Grant LLP



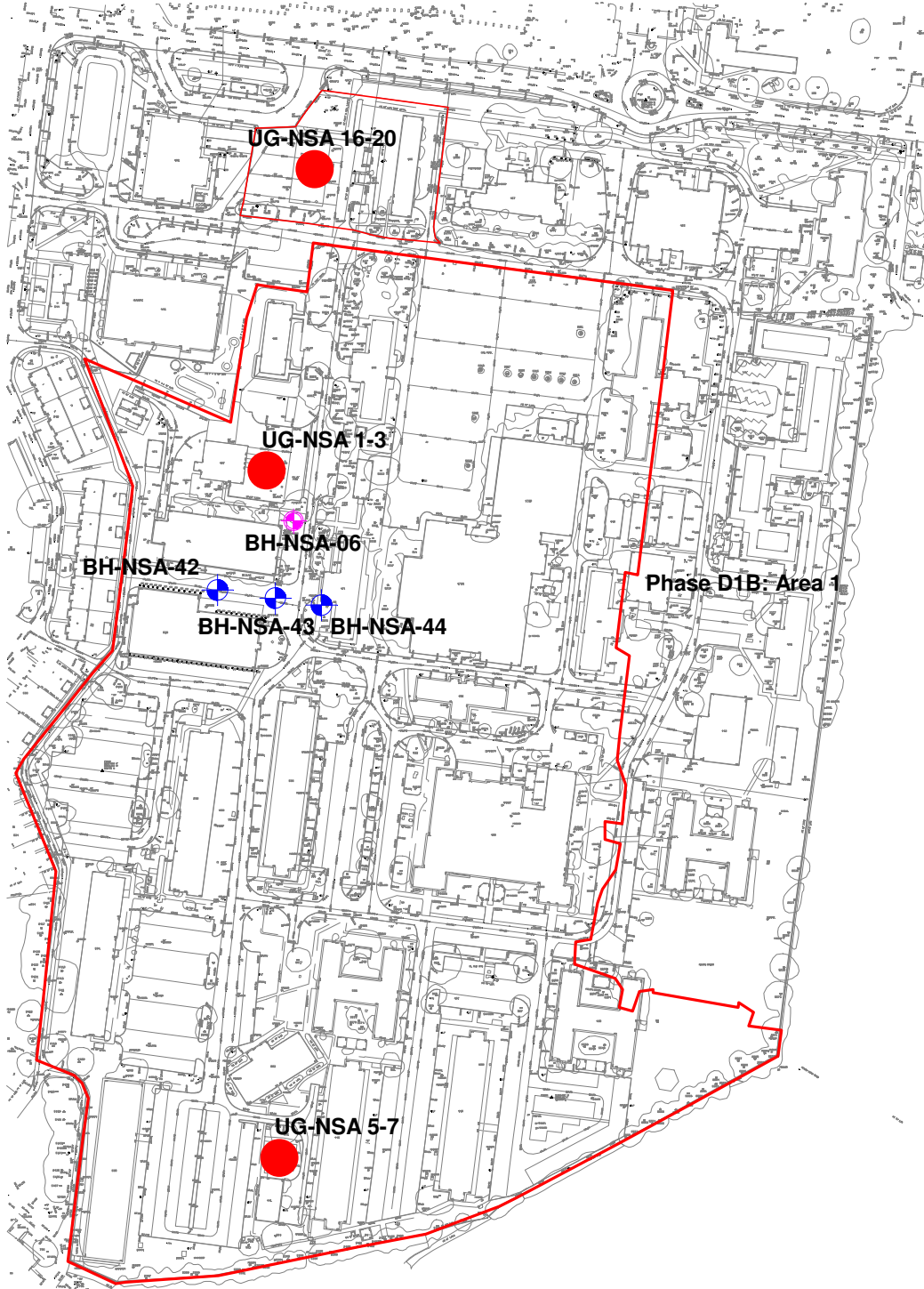
D Wayland BSc MSc MCIWEM  
Senior Consultant

Attached:  
Drawing D01

● UST

◆ BH (free product observed)

● LNAPL Downgradient Boreholes



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Project:  
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Drawing:  
LNAPL Boreholes

Drawn:  
DW

Date:  
07.03.17

Job No:  
R1742B

Checked:  
AFS

Scale:  
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Drg No:  
L070317-D01