

HAVANT BOROUGH COUNCIL

Town & Country Planning Act 1990

Consultation on Planning Application

MEMORANDUM

From: Environmental Health **To:** Development Control

Our Ref: CONS/17/01949 **Your Ref:** APP/17/00575

EH Case Officer Extn: 44 6677 **Date:** 18 October 2017

DC Case Officer: Daphney Haywood

DC Case Officer Extn: 44 6513

Application Number: APP/17/00575

Site Address: Wessex, 8 New Lane, Havant, PO9 2JH

Proposed Development: Variation of Condition 22 of planning permission APP/15/01425

(Residential

development comprising 41 one and two bed apartments with associated car parking, cycle and refuse storage, following demolition of existing buildings) to vary approved plans relating to alterations to ground levels in regard to land contamination remediation (approved 25.08.17).

Request to Discharge Condition No/s 4, 5, 6, 7, 8, 9, 12, 15 and 17

(19.09.17).

Observations / Comments:

I have reviewed information submitted in support of this application, largely comprising that associated with Piling method / layout, piling / construction risk assessment, drainage & external works, and groundwater risk assessment (contamination). It is worth highlighting that there is considerable cross-over in the requirements of conditions subject to this application (probably arising from the involvement of both Environmental Health and the Environment Agency in respect of contamination risks) - as a result, it is not entirely clear which documents have been submitted pursuant to which specific conditions.

I will group conditions together where appropriate, and it may be that for clarity (the avoidance of doubt) recommendations will apply to groups of conditions.

Conditions 5 & 7 (Foul Drainage, Infiltration systems & Surface water strategy)

I have no adverse comments in respect of condition 5.

As regards condition 7, this states that "*Infiltration systems for surface water disposal shall not be used for this development...*" . Drawing 16-2730-512 P1 shows an infiltration system for roofwater drainage. Somewhat inexplicably, permeable paving is specified over a non-woven permeable geotextile (i.e. appearing to be a permeable paving solution), over 80mm thick dense base course tarmac (impermeable, or very low permeability), over a permeable sub-base used as an infiltration drainage storage volume & distribution pathway.

This drawing also states that the depth of permeable sub-base is "...dependent on Specific Site Percolation Tests", confirming that infiltration drainage is proposed.

This condition was required in order to avoid excessive mobilisation of contamination (which the applicant appears not to be intending on physically remediating). Within the context of the contamination remediation strategy put forward as it stands (not agreed - but see detailed comments on condition 9 below), the surface water scheme is contrary to c.7, and *I would therefore recommend that discharge of this condition be refused.*

Condition 9 (Contamination)

It is assumed for the purpose of this consultation that the Omnia Phase II-III Groundwater Risk Assessment (A10708/ 2.0 Draft, Aug 2017) is the relevant document submitted in support of discharging this condition.

The scope of the groundwater risk assessment is very narrow - being particularly relevant to construction risk (conditions 6, 8 & 12). The report has several relevant omissions and technical errors, and is inconsistent in its consideration of results as they relate back to the conceptual site model.

The brief for the report did not include consideration of controlled waters in the broad sense (i.e. principal and secondary aquifers, surface waters), and was explicit that consideration of human risks were outside of the scope of the report. Other construction risks (aggressive environment for concrete) were briefly considered, though I would consider the conclusions of the report in this respect to be ambiguous.

It is of concern that the report refers to substantial exceedances of tier 1 screening values (>3500% in some cases) as being 'marginal', and where concluding that 'further assessment [is] required', the authors to not engage in any form of further quantitative consideration, either in terms of modelling / risk assessment, nor in terms of consideration of the statistical population of sample results.

Whilst the conceptual site model presented is potentially possible, I note that it the most favourable interpretation to the applicant, and is not based upon a holistic consideration of all lines of evidence (e.g. does not consider visual / olfactory evidence, and considers conceptual links through results for individual contaminants without addressing results that are inconsistent with the conclusions drawn). The model presented makes assumptions that are not necessarily well supported by the available evidence, and does not consider the full range of receptors within scope of condition 9, and it is considered that alternative models fit are a better fit to the available data. It is also considered that there remain uncertainties that need to be addressed either through precautionary remediation, or through further investigation to understand the extent of the risks.

No remediation of contamination is proposed, and no consideration has been given to limiting further off-site migration of contamination from this site. The remedial scheme implicit from prior applications focuses upon pathway interruption, but this only considers future occupants of the site. As no explicit remedial strategy has been presented, issues such as protection of potable supplies to the development, and ensuring the adequacy and integrity of proposed barriers (e.g. specification, performance, and construction detailing - specifically transitioning services entering below barriers into habitable spaces, affixing timber framework over contiguous barrier systems, barrier jointing, and verification of efficacy post-installation).

Without going into specific & protected detail as to my specific issues with the report, I would consider that it is insufficient to meet the requirements of condition 9, and *I would therefore recommend that discharge of this condition be refused.*

Conditions 6, 8 & 12 (CEMS, Groundworks & Construction Risk, Restriction on Piling subj. to Piling Risk Assessment & Geotechnical Assessment)

There is substantial crossover in the requirements of conditions 6, 8 & 12. Information submitted pursuant to the discharge of these conditions relates largely to piling & penetrative foundation methods, and largely relies upon the Omnia site investigation and risk assessment documents discussed previously / above.

Condition 6 requires:

- Consideration of pollution and turbidity
- Specific consideration of surface runoff
- Consideration of risks associated with site assessment (contamination / geotechnical), and with construction
- Consideration of environmental risks in general, and specifically in relation to groundwater.
- Mitigation of identified risks

I have not identified a formalised document presented as a construction environmental management statement (CEMS) or [...]plan (CEMP). It is assumed that relevant submissions are those relating to site management, and piling contract management.

It is noted that no submissions were made prior to investigative phases, and that (with reference to the conceptual site model & data presented) some of the risks which this condition is intended to prevent have to an extent been realised.

In terms of construction risks (piling), I note that the contract management appropriately identifies practical means of controlling surface runoff risks from contaminated arisings, and touches on general site risks associated with materials storage and fuelling plant (etc.).

The borehole logs and reference to BGS records address the risk of turbidity, and the lack of turbidity issues [at the public potable supply abstractions] arising from site investigation works already undertaken lends some confidence to this being a risk that can be reasonably regarded to be somewhere between negligible & acceptable.

I will not make any formal recommendation as regards the discharge of this condition, other than the notes above. My principle concerns with the site are with construction (method, as distinct from general site activity and presence of plant, materials & machinery), relating predominantly to the installation of below ground services, and foundation groundworks. These issues are largely covered by other conditions.

Condition 8 requires:

- An assessment of risks associated with the undertaking of groundworks
- Assessment of local geological succession, specifically relating to the depth of the principal aquifer unit relative to the maximum pile depth.
- A piling risk assessment (or assessment of any other deep works coincident with the principal aquifer)
- Contractors Method Statement for the undertaking of groundworks intersecting the principal aquifer
- Where necessary, a scheme of monitoring concurrent with groundworks to ensure that no unacceptable mobilisation occurs.

Groundworks could be construed in a broad sense, to include geotechnical & geo-environmental assessments. In practice, some intrusive works are necessary to support anything other than a qualitative desk based assessment, and this intention of this condition is to cover intensive construction related disturbance and long-term pathway creation - so I'm not too concerned about the lack of formal assessment prior to the undertaking of geo-environmental surveys. I note that the deeper boreholes installed in connection with the ground investigation have been completed with well response zones targeting groundwater present beneath the London Clay unit (assumed to generally represent a confining layer), being sealed into this unit, and in theory therefore representing best practice for preventing the formation of preferential migration pathways. Above this layer soils are variously contaminated, and the presence of wells is unlikely to materially alter the inherent risk associated with the site.

As regards geological succession, the deeper boreholes are informative, and return a good degree of consistency. The Omnia reports reference BGS data indicating that the Bognor Sands transition to chalk at a depth of around 63m below existing ground levels (BEGL). I had initially thought this conclusion likely to be incorrect, based upon boreholes from other sites within a 1km arc to the south of this site. Reference to published BGS borehole data from the vicinity however corroborates the Omnia assessment, indicating that the chalk unit dips steeply to the north of it's emergence from under the confining clay layer (evidenced by the Havant & Bedhampton Springs). BGS data would suggest that if anything, the Omnia depth assessment is likely to be conservative, and if anything, the interface between Bognor Sands & Chalk is likely to be deeper.

A Piling risk assessment & Contractors Method Statement has been submitted. These documents are based upon the Omnia Controlled Waters Risk Assessment, which as discussed above, relies upon assumptions & interpretations that are not necessarily fully supported by the data.

I do however agree that;

- i) the chalk is likely to be present at depths many metres below the base of a conservatively specified piled foundation solution
- ii) CFA piles are the best available technique to minimise vertical displacement of contamination, and mobilisation by agitation / disturbance
- iii) that short term aquifer turbidity risk [to the public supply] is likely to be negligible
- iv) that the London Clay unit (3-5m thick in this area) is likely to represent a low permeability layer which retards migration of groundwater and contamination

The data do not support the assumption that the London Clay unit represents a contiguous aquitard (barrier to continuity between perched groundwater and confined groundwater), though I agree that it is likely to be substantially limiting.

The data similarly do not support an assumption that the 2nd'ry aquifer represented by the Bognor Sand is discontinuous with groundwater present within the principal chalk aquifer. Given the depth of the Bognor sand, and the low solubility of the LNAPL contamination identified, the volume of the secondary aquifer may serve to functionally separate these contaminants from the abstracted principal unit (i.e. the SPZ1c). I suspect that calculations undertaken accounting for dilution would render the risks to the potable supply in respect of soluble metals, arsenic & cyanides to be within acceptable limits.

The conceptual interpretation presented in terms of elevated contaminants within the Bognor Sand 2nd'ry aquifer unit are a tacit confirmation of the degree of contaminant mobilisation that could be expected from piling works, and sample results are suggestive that much of the mobilised contamination would be in the form of contaminants sorbed onto suspended solids.

It must be recognised that the number of piles proposed, and their diameter, will result in a proportionally greater effect. This is likely to be the case whether the presented interpretation is correct (elevated contaminants as a direct result of investigative activity), or whether an alternative interpretation is more applicable (degree of extant continuity between perched water bodies and Bognor Sand).

The risk assessment does not specifically quantify the anticipated impact from piling, or attempt to assess whether this is likely to be acceptable (or not). The conclusions rely upon the CFA methodology representing a dependable seal through the available thickness of London Clay, and the London Clay representing a functional aquitard

CFA piling has been agreed previously on contaminated sites close to the SPZ1, and is not unacceptable in principle. Whether piling is acceptable in the absence of any concentration reduction of contaminants above the low-permeability layer is a separate question.

Specifically regarding the piling risk assessment, it is also worth noting that it touches upon the extremely high acidity of perched groundwater within WS108. I agree that this is likely a product of the sulphate concentration, and secondary formation of a sulphuric acid. I also agree that this appears to be limited to the vicinity of WS108, but the data do not support an assumption that these conditions are likely to be highly localised. BH101 (adjacent WS108,) is argued to be sampling a separate groundwater body, and the well response zone has been designed to exclude perched water. WS109A was dry, and WS110 returned a lower than average pH (albeit close to neutral), potentially indicative of a fringe influence from the source. As WS108 stands relatively isolated amongst the available groundwater pH/dissolved sulphur results, the area impacted could extend to as much as 1000 sq.m The scope of proposed mitigation (seek specialist piling contractor to *"ensure that a suitable design of pile, methodology of installation and concrete classification is adopted"*), is not clear, either in terms of the technical feasibility of a concrete to withstand such conditions, or assuming that it is feasible, the extent to which it will be deployed, the quality control provisions required to demonstrate it's efficacy, or the margin of safety implicit with the beam/pile design to accommodate a pile failure due to degradation in it's upper section (i.e. where available skin friction will be low, especially considering the nature of the made soils).

In this regard, it is not clear that the piling risk assessment fully considers the risks against which condition 8 is intended to mitigate.

Condition 12:

- Restricts use of piled foundations except by express consent of the LPA, dependent upon;
- Submission of a Piling Risk Assessment,
- Confirmation of the maximum required piling depth
- Geotechnical information supporting the pile design
- Piling method statement identifying risk mitigation measures.

There is substantial overlap with condition 8. It is considered that the applicant has made an adequate case for the requirement for piled foundations. It is also considered that;

- the design parameters are well established such that there is confidence in the maximum required depth,
- sufficient geotechnical information has been gathered to fully understand the conceptual implication of the proposed pile depth
- the piling method statement is sufficiently clear, and construction techniques to limit installation risks have mostly been adequately stated.

The consent of the LPA is essentially dependent upon acceptance of the submitted risk assessment. As outlined above, I consider it to remain an open question as to whether the proposals represent an acceptable risk in the absence of any concentration reduction works above the London Clay, and some details relating to contamination risks to the foundations (and ultimately the building) would benefit from some clarification.

I am not confident that the applicant has presented a sufficiently robust risk assessment to support the use of piles at this site without either i) a conservative and quantitative risk assessment (e.g. assuming breach of aquitard), or ii) works to reduce concentrations of contaminants above the assumed aquitard.

There are many elements of the above conditions that I do regard as having been satisfied by the submitted information, however all conditions are dependent upon our acceptance of a risk assessment which is ultimately dependent upon our acceptance of the contamination assessment & remedial proposals (not formally submitted as a comprehensive remedial scheme). While this principal element remains outstanding, it is difficult to see how it would be justifiable to discharge any of the construction risk assessment conditions (conditions 6, 8 or 12).

This is not to say that there is an objection in principle to piling - only that the acceptance of this engineering solution is a dependency of the contamination assessment.

Considering all of the above, I'm afraid that *I cannot reasonably support discharge of condition 6, 8 or 12 at this time.*

Mr. Jonathan Driver
Environmental Control Officer