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The Planning Inspectorate
National Infrastructure Planning
Temple Quay House
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PINS Reference: EN020022

Portsmouth Water Ltd Registration Identification Number: 20023142

Date: 13 February 2020

Dear Sir or Madam,

RELEVANT REPRESENTATION BY PORTSMOUTH WATER LTD ON THE APPLICATION FOR DEVELOPMENT CONSENT ORDER FOR THE AQUIND INTERCONNECTOR BY AQUIND LIMITED

1.0 INTRODUCTION

1.1. Portsmouth Water has been supplying water to Portsmouth and the surrounding area with drinking water since 1857. Our customers include a domestic population exceeding 698,000, important industries, large defence establishments and commercial businesses.

1.2. Our area of supply extends through South East Hampshire and West Sussex from the River Meon in the west to the River Arun in the east. All our public water sources are reliant on the Chalk aquifer of the South Downs with approximately 85% of our water being directly sourced from boreholes or springs with 15% derived from the River Itchen, which itself, is groundwater fed.

1.3. Please find enclosed our Relevant Representation for the AQUIND Interconnector Project, our comments and recommendations cover land contamination and groundwater protection to safeguard Portsmouth Water's assets and the public water supply.

1.4. Comments have been made on the following documents and are presented in line with their nomenclature for ease of reference:

- EN020022-000586-6.1.18 ES - Vol 1 - Chapter 18 Ground Conditions;
- EN020022-000587-6.1.19 ES - Vol 1 - Chapter 19 Groundwater;
- EN020022-000959-6.9 Onshore Outline Construction Environmental Management Plan; and
- EN020022-000813-6.3.3.6 ES - Vol 3 - Appendix 3.6 Surface Water Drainage and Aquifer Contamination Mitigation Strategy;

1.5. It has been noted that there are reports referred to in the Application documents that are not present on the Portal[1] at the time of writing, these include:

- All the WSP Ltd/Geotechnics Ltd Ground Investigation Reports; and
- The Piling Works Risk Assessment.

[1] https://infrastructure.planninginspectorate.gov.uk/projects/south-east/aquind-interconnector/?ipcsection=docs

1.6. Whilst a summary of the ground investigation work is provided in Chapter 19 of the Environmental Statement it is essential that Portsmouth Water review the original documents once available.

2.0 CHAPTER 18 GROUND CONDITIONS

2.1. Portsmouth Water consider insufficient weight/importance is assigned to the potential for solution features in this Chapter and their role in the risk assessment. The definition of Secondary Undifferentiated Aquifers needs revising and following that, the potential risks in areas where Secondary Undifferentiated Aquifers overlie Principal Aquifers be redefined.

The following detailed comments have been made in relation to Chapter 18 Ground Conditions:

2.2. Section 18.1.2.2 - The extent of the assessment zone for Controlled Waters receptors has been reduced to 500m since the Preliminary Environmental Information Report (PEIR) on the basis that contamination migration beyond 500 m from the edge of the Order Limits is likely to be negligible. Whilst this may be true of surface water features it is considered that contamination in groundwater could easily impact receptors beyond 500m due to the nature of the underlying Chalk Principal Aquifer.

2.3. Section 18.3.1.1 – It is suggested that consideration of solution features is undertaken in Section 18.6, Predicted Impacts and 18.9 Residual Effects. Solution features only appear in Table 18.5 as part of the Geology Mineral Safeguarding Areas (MSAs) and should also be present as a rationale for the High score in the Controlled Water Section. They have been assessed as receptors and must also be investigated as pathways due to their ability to rapidly transmit groundwater and pollutants through the catchment.

2.4. There is no Receptor Assessment proposed for Secondary Undifferentiated Aquifers. Where Secondary Undifferentiated Aquifers overlie Principal Aquifer they should have an assessment of High unless site specific assessment has been undertaken and the material is known to be unproductive in its nature.

2.5. Table 18.2 - This table should assess the sensitivity of the Water Supply receptor in the Controlled Water Section or Human Health.

2.6. Section 18.5.3.5 - Cable ducts, utility trenches should also be included as potential pathways. Solution features must be considered as well as vertical migration of impacted groundwater.

2.7. Section 18.5.4.7 – Historical pits are mentioned in this section. These must be considered in the risk assessment as potential pathways for contaminants if there is the possibility that they are former/existing solution features that were then worked.

2.8. Section 18.5.4.10 - Portsmouth Water and the Environment Agency are aware of a pollution incident that occurred in 2012 at the Lovedean Substation site that resulted in groundwater monitoring. Historic spills and incidents must form part of this section and be assessed as potential sources.

2.9. Table 18.5 - Secondary Undifferentiated Aquifers overlying Principal Aquifer requires assessment as does the inclusion of solution features.

2.10. Section 18.7.3.4 - The Controlled Waters (Groundwater and Surface Water) must include information on solution features. They are key in the catchment dynamics and form an intrinsic high-risk pathway for contamination.

It is not understood how a "direct permanent long-term adverse effect on Controlled Waters" can be Moderate in Source Protection Zone 1 for two sources and an area known to have solution features and we request the assessment is updated to reflect this.

2.11. Section 18.7.3.6 - The definition of a Secondary Undifferentiated Aquifer presented throughout this document is incorrect:

***"Secondary Undifferentiated** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type." http://apps.environment-agency.gov.uk/wiyby/117020.aspx*

Secondary Undifferentiated aquifers must be assessed on their own merit using site specific data and cannot be ubiquitously described as being *"composed of low permeability material and any potential effect is likely to be highly constrained both spatially and vertically (with depth). Therefore, contamination is likely to be localised due to a lack of permeability and relative size of the aquifers."*

2.12. Section 18.9.2.1 Bullet 3 - In addition to unexpected land contamination a watching brief must also be implemented to identify any evidence of solution features during excavation. Bullet 7 Portsmouth Water request that details of any chemical surfactants proposed must be reviewed prior to use on site and included in the CEMP document for Onshore Works.

2.13. Table 18.8 - Spills associated with construction works should be classified as Major prior to the mitigation outlined in Section 1 of the report.

3. CHAPTER 19 GROUNDWATER

3.1. Portsmouth Water consider the assessment of risk, with regards to a temporary loss of an abstraction, to be Major, particularly during periods of abstraction restrictions and would welcome revision of the risk assessment to reflect this.

3.2. There is an absence of solution feature data throughout the report and a misinterpretation of "Karsts" as features. It is recommended the solution feature information is revisited in this report to ensure that this key risk is appropriately understood and presented in the text.

3.3. The interpretation of the Hydrogeological Map for Hampshire & Isle of Wight2 is incorrect and this section, along with the Conceptual Site Model (CSM) that does not discuss solution features must be revised. The CSM has to represent the regional understanding as a whole and with these inaccuracies and the exclusion of solution features, anticipated groundwater levels and water quality the CSM is not considered to represent the catchment adequately.

The following detailed comments have been made in relation to Chapter 19 Groundwater:

3.4. Table 19.1 - The vertical interconnectivity between Superficial Deposits and underlying sand units has not been considered and warrants some discussion due to their potential linkages with more sensitive aquifer units north of the syncline.

3.5. It is understood that during the Horizontal Directional Drilling *"All proposed trenching and HDD ground materials will be inert so no groundwater quality impacts anticipated."* however, spills and incidents could still occur, therefore these risks must be managed by mitigation measures presented in the Construction Environmental Management Plan (CEMP).

[2] http://www.largeimages.bgs.ac.uk/iip/mapsportal.html?id=1003979

3.6. Page 10 *"Embedded mitigation measures for the proposed Converter Station attenuation pond includes for the capture of on-site hydrocarbons and passive remediation for any contamination release (not anticipated)."* Details of the *passive remediation* anticipated should be presented in this document.

3.7. Section 19.3.4.2 - It would be useful to have an overview of what the decommissioning options are, despite current uncertainty, to understand the potential risks.

3.8. 19.4.1.3, Bullet 5 - It is understood that the potential impacts of "replacement" are seen to replicate those of construction but how is "maintenance" reflected in the risk assessment? What are the types of maintenance envisaged during the lifetime?

3.9. Table 19.2 - Should this read "Pollution of potable source **or** abstraction?" This section should also reflect the groundwater in the source's catchment – i.e. SPZ 1, 2 and 3. "Major loss of an aquifer" must also consider major loss of the unit, i.e. unsaturated zone and saturated zone as well as yield and level. Table 19.2 – A temporary loss of water supply should be considered a Major magnitude of impact, not Moderate as stated.

3.10. Table 19.3 - A Secondary A Aquifer overlying a Principal Aquifer should be included as a High Sensitivity as outlined in the Ground Conditions Report. Portsmouth Water would wish to see the inclusion of Secondary Undifferentiated aquifers, unless demonstrated using site-specific data to the contrary, in the Medium Sensitivity.

3.11. Section 19.4.2.8 - Portsmouth Water have concerns over the Minor Effect definition of "barely noticeable." What defines barely noticeable? Would a trigger of UK Drinking Water Standards be noticeable?

3.12. Section 19.4.3.5 - Please provide details of all drilling fluids proposed prior to commencement.

3.13. Section 19.5.1.1 - There is no reference to a solution feature database or similar? There are products available, known to Portsmouth Water, that provide information on the Karstic nature and land-forms present within this catchment. Without this information significant pathways and linkages are missing and the assessment weakened.

3.14. Section 19.5.2.7 - The paragraph correctly states that Section 1 is in a Source Protection Zone 1 (SPZ1) for our Lovedean Source but omits it is also in the SPZ1 for the Havant and Bedhampton (H&B) Springs. It is acknowledged that the report does refer to the SPZs for the H&B Springs elsewhere but this must be addressed in this section.

3.15. Section 19.5.2.8 - Karsts are not features and this is misleading. A karst landscape is where drainage is underground through dissolutionally enlarged cavities. These features include caves, dolines, stream sinks, solution pipes, dry valleys and large springs. *BGS Reference as shown in document.*

3.16. Section 19.5.2.11 - Section 2 is not in the Lovedean SPZ, as described, and sits within the H&B Springs SPZ.

3.17. Section 19.5.4 - The interpretation of the Hydrogeological Map presented in this section is incorrect. The groundwater contours are the potentiometric surface of the Chalk aquifer and are spaced at 10m intervals. The Palaeogene *water levels* discussed i.e. 50m intervals are the topographical base of the deposit and are not relevant to the description of groundwater.

3.18. Section 19.5.4.11 - Groundwater lows occur at the end of the Summer months and highs at the end of Winter months not *in* those months as discussed.

3.19. Section 19.5.4.16 - Is there any hydrogeological explanation for the 40m fluctuation in groundwater levels over the monitoring period?

3.20. Section 19.5.5.2 - The Lovedean Public Supply Borehole may provide water quality data for Section 1 and is likely to be representative as the proposed convertor station falls within its SPZ1. This information should be requested from Portsmouth Water and the details incorporated in the assessment.

3.21. Section 19.5.6 - The Conceptual Site Model (CSM) does not discuss solution features and therefore does not represent the regional understanding as a whole. With the exclusion of these features, anticipated groundwater levels and water quality the CSM is not considered complete.

3.22. Section 19.5.6.3 - The piezometric surface should be described as potentiometric surface when discussing confined areas of the catchment.

3.23. Section 19.6.1.2 - Specific details of the grouting procedure will need to be provided in a method statement including an estimate of density, viscosity, types and volumes anticipated. A management strategy of what to do in the event that more grout is being lost to the formation than calculated will be required.

3.24. Section 19.6.1.3 - Portsmouth Water are not the drain operators.

3.25. Section 19.6.1.10 - Based on the investigative work to date what is the definition of "high permeability ground" and where are these areas located. Loss of drilling fluids is a concern to Portsmouth Water, with regards to water quality, therefore site specific data and assessment should be presented in this section. Additionally (Section 19.6.1.15), Portsmouth Water request that details of polymers/drilling fluids are supplied as under section 68 of the Water Industry Act 1991, water suppliers have a statutory duty to supply wholesome water[3].

3.26. Section 19.6.3.2 - Site runoff is one cause of pollution and, in particular, turbidity however there are also significant risks of turbidity in groundwater posed by piling and drilling in the Chalk – these also need consideration.

3.27. Table 19.7 - Secondary Aquifers overlying Principal have not been reported in this table as outlined in the Ground Conditions Report, this should be updated.

3.28. Any impacts on groundwater quality will be, dependent on the nature of the impact, long term, possibly permanent, direct and the mitigation measures outlined in 19.6.1 and 19.8 do not cover all the potential sources/pathways of pollution/contamination and therefore do not cover off all the potential risks.

4. OUTLINE ONSHORE CEMP DOCUMENT

4.1. Whilst it is understood that the Onshore CEMP is an outline document it does not mention any Source Protection Zones, abstractions or solution features. These are all key to communicating the potential risks to groundwater and must appear in the text of the document.

[3] http://www.dwi.gov.uk/stakeholders/guidance-and-codes-of-practice/wswq/03-wholesomeness.pdf

4.2. The Final Detailed CEMP documents need to prescribe the behaviours/standards anticipated on site and not outline the "assumptions."

The following detailed comments have been made in relation to the Outline Onshore CEMP:

4.3. Section 1.1.1.6 - Portsmouth Water would wish to be consulted on subsidiary plans when complete.

4.4. Table 2.1 - This section should include the Source Protection Zones for the Lovedean supply and H&B Springs.

4.5. Table 2.1 The Noise & Vibration section should also incorporate the Piling Method Statement and consideration of turbidity being caused during drilling and earthworks, particularly at the Lovedean Public Water Supply.

4.6. Section 4.2.1.2 - *"Specific training needs will be developed for individuals to reflect the work to be carried out on the Proposed Development and the significant risks and opportunities identified."* The specific training must include reference to the Principal aquifer, Public Water Supplies and the Source Protection Zones and what they mean.

4.7. Section 4.6.2 Plate 1 - Portsmouth Water would wish to be informed of any spillages at the Convertor Station site.

4.8. Section 15.5.1.1, Bullet 4 & 5 - Portsmouth Water request that all decisions to remediate, validate works are carried out under the management of an Environmental Professional.

4.9. Section 5.5.1.1, Bullet 10 - We disagree that the "*aquifer is not at risk from these operations*" as the Chalk does not have to be penetrated for pollution risks to occur.

4.10. Section 5.6.1.1 - Protection of groundwater and surface water bodies is required during the phases outlined.

4.11. Section 5.6.1.6 - Portsmouth Water require further details of the proposed attenuation ponds. How are they constructed and operated - how will surface water during construction get conveyed into them and what are their lining details?

4.12. Section 5.14.3 – The site compound section must outline the strategy for storage and bunding of potentially hazardous materials. Currently there are insufficient details.

4.13. Section 6.2.5 - The Groundwater section in Location Specific Construction Environmental Control Measures does not refer to the sensitivity of the underlying aquifer, SPZs or solution features. Managing works to account for these features is key to protecting groundwater.

4.14. Section 6.3.5.9 - It is essential Portsmouth Water have the opportunity to review the Temporary Site Water Management Plan. It is not permissible for surface water to runoff unchecked within the catchment.

5. SURFACE WATER DRAINAGE AND AQUIFER CONTAMINATION MITIGATION STRATEGY

5.1. The report states that *"it only outlines the strategy proposed by WSP to mitigate contamination of the aquifer during the operational life of the Converter Station. The information contained is for information purposes only. It is the responsibility of the appointed contractor(s) to develop the design and verify all information presented within this report as part of the design development process."* Therefore, in line with our previous consultations, Portsmouth Water would appreciate being

consulted on the final Surface Water Drainage & Aquifer Contamination Mitigation Strategy designs when available.

5.2. Care must be taken when siting the SUDs features and soakaway crates to ensure solution features are not present or nearby.

6. Summary

6.1. Portsmouth Water have reviewed the reports available on the portal though as stated there are a number of documents that are not available. We wish to be reconsulted on these documents in due course.

6.2. In addition to the missing reports, we note that documents relating to the cut & fill operations and development of the interconnector station have not been included. Again, we wish to be reconsulted on these documents in due course.

6.3. Our comments above have identified a number of significant issues that need to be amended or reconsidered in light of the risks to groundwater quality. We will be happy to work with the developer and consultants to resolves these issues.

Yours sincerely

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