
DEMOLITION OF GLASSHOUSES; OUTLINE FOR HOUSING (REVISED PLANS), FORMER MERSTONE VALLEY NURSERIES, MERSTONE LANE, MERSTONE, NEWPORT, ISLE OF WIGHT. – NUTRIENT NEUTRALITY & DRAINAGE.

1. This covering report should be read in conjunction with the Nutrient Budget produced by Mayer Brown, which accompanies this submission.
2. This submission accompanies a planning application seeking to gain approval of the reserved matters within outline planning consent reference P/00657/18. This report seeks to address matters pertaining to nutrient neutrality, as outlined in condition 2, reproduced below:

Approval of the details of the means of drainage, siting, design and external appearance of the buildings, the means of access thereto and the landscaping of the site (hereinafter called "the reserved matters") shall be obtained from the Local Planning Authority in writing before any development is commenced.*

**Details of means of drainage shall confirm whether the foul drainage from the dwellings shall connect to the main sewer and if so which Waste Water Treatment Works (WWTW) will treat drainage from the development. In the event the development is to be served by a WWTW other than the Southern Water facility at Sandown and would discharge drainage into the Solent, or where an onsite foul drainage solution is required a nitrates budget will be required to demonstrate that the development will be nitrate neutral to prevent harmful impacts on the integrity of the Solent and Southampton Water Special Protection Area (SPA).*

Reason: *In order to secure a satisfactory development and be in accordance with Policies SP5 (Environment), DM2 (Design Quality for New Development), DM12 (Landscape, Seascape, Biodiversity and Geodiversity) of the Island Plan Core Strategy.*

3. As part of the consideration of the best method of dealing with foul flows at the site, our client and Mayer Brown have investigated the two main options. The condition references connection to Sandown WWTW as a preference. This approach is encouraged due to the contents of the Council's Position Statement on the matter, based around the fact that Southern Water's Sandown WWTW treats foul flows and disposes of them via a 3km outfall into The Channel. It is therefore considered that waste disposed of via this facility will not contribute to any of the environmental issues within the Solent SPA. However, the nearest public foul infrastructure (i.e. – adopted and maintained by Southern Water) forms part of a standalone system that treats foul flows from some of Merstone and discharges it into a tributary of the Easten Yar. It does not connect to Sandown WWTW.
 4. Ignoring the nutrient neutrality requirement, it is always preferential to connect foul flows to a public sewer where possible. As such, we have investigated this possibility, whilst considering relevant guidance. The nearest public foul network to the site is the WWTW at Newlands. Whilst there is a transfer station around 250 metres from the site (by road) there is no realistic possibility of connection here, due to the availability of a gravity discharge point and intervening third party land. The treatment works itself is some 834 metres from the site (again by road), further south.
 5. Using the 30-metre rule (per property – see the New Discharges: additional rules, section here - <https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-the-ground>), that the EA use to decide whether a sewer connection or STP is appropriate. If this rate is applied to connecting all eight properties proposed (240 metres), both parts of the sewer infrastructure are outside of what could be considered an acceptable connecting distance. It should also be kept in mind that other
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matters can also be considered, such as the fact that available pipe work for the transfer station is predominantly under pressure and accessed via third party land. So, third party consent would also be required, further adding to costs and complicating deliverability. The Newlands WWTW itself is not a possibility for connection as it is over three times the maximum connection distance, from the site. As such, in summary, it is not possible to connect to Sandown WWTW or any other public sewer infrastructure.

6. Returning to the matter of nutrient neutrality, the reason this consideration was introduced is that the water environment in the Solent region is under threat. It is also one of the most important areas for wildlife in the United Kingdom. Despite being specifically protected under several different regulations, high levels of nutrients (mainly nitrogen and phosphorous) enter this environment causing eutrophication. Eutrophication is where an excess of nutrients in a body of water causes dense plant growth and, in the worst case, the death of animal life due to a lack of oxygen.
 7. It is uncertain whether new growth will cause further deterioration in The Solent, work is ongoing to establish this. However, in the interim, Natural England have decided that the best way forward is to ensure that developments achieve nutrient neutrality. That is, that no additional nutrients reach the protected waters in the post-development scenario. To assist applicants with this aim, they have produced written guidance on the matter, in the form of several iterations. Initially, *'Advice on Achieving Nutrient Neutrality for New Development in The Solent Region, Version 5'*, published in June 2020 by Natural England, contained the pertinent advice. However, this brief statement is based upon calculations using the revised, *'Solent Nutrient Budget Calculator Version 2.3 April 2023'* and its associated guidance, *'Nutrient Neutrality – a summary guide March 2022'*.
 8. We are of course aware that the government recently proposed, through an amendment to the Levelling Up and Regeneration Bill, to end the current arrangements for ensuring nutrient neutrality of new developments. It has often been suggested that the impact of farming and other industrial activities has more of a detrimental impact on protected waters than that which arises from residential development. Nonetheless, as the House of Lords rejected the most recent proposals, this matter still needs to be addressed and considered in this instance.
 9. To ascertain what the total nitrogen load is from the existing use of the site and compare this with that arising from the proposed dwellings, we have produced a nutrient budget. As we have concluded that connection to public foul sewerage infrastructure in the locality is not possible, treatment of foul flows would be via a modern efficient package sewage treatment plant, draining to a ditch within the site. The revised guidance, referenced above, contains a step-by-step guide to a four-stage calculation for both the existing and proposed total nitrogen loading. Stage 1 calculates the wastewater Total Nitrogen load from the source. Stage 2 adjusts the nitrogen load to account for existing nitrogen from the current land use. Stage 3 adjusts the nitrogen load arising from the new development, not received by a treatment plant. Finally, Stage 4 calculates the net change in nitrogen load. The Nutrient Budget calculations for this site accompanies this brief report.
 10. The Total Nitrogen load arising from the residential development, served by the new package sewage treatment plant, is **0.0 Kg/TN/yr**.
 11. Previously, in response to the version 1 guidance from Natural England, we used the Bio Bubble (from Advanced Aeration Ltd) treatment plant in our calculations. This plant was extremely high-performing and pre-approved by Natural England, based on its percentage efficiency. However, the revised version 2 guidance (V2) changed the
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measurement of the quality of treatment to mg/l of Total Nitrogen. This meant that the manufacturer had to go back to the drawing board. They are now engaging with Natural England to re-establish this, 'pre-approved' status, based upon a determination by Wallingford Hydrosolutions Ltd, who are acting as third-party independent assessor of their plant's performance. However, their plants have always been very efficient, and this has not changed. They have undertaken their own internal testing, over several years, which reveals that their treatment of total nitrogen results in a discharge concentration of only 2.5 mg/l (see accompanying results).

12. Whilst Advanced Aeration Ltd.'s plants (specifically the Bio Bubble) operate at a proven discharge concentration of 2.5 mg/l, this has not been ratified by Natural England. So, as NE insist on all calculations being as conservative as possible, we have allowed a further factor of safety and used a rate of 5.5 mg/l. This stance would appear to be acceptable to Natural England, based on the attached copy of their comment on a planning submission using the same parameters (Test Valley Borough Council – 5th para, 2nd page).
 13. We feel the calculation we have supplied is robust and clear. However, some further insight may be useful. Stage 1 is self-explanatory, using the standard loadings for occupation of residential dwellings. However, we are proposing the use of the relatively new Bio Bubble package sewage treatment plant, which is explained and justified above, using a 5.5 mg/l treatment rate.
 14. In Stage 2, it should be noted that we have used, 'Horticulture' as the existing use of the site. This reflects the previous use of the site as a busy nursery, with all the associated fertiliser and nutrient inputs. This is the most recent and current planning use of the site, meaning that, without a requirement for a further planning application, the site could be brought back in to use.
 15. For Stage 3, the proposed land use for the site is, 'Residential Urban Land', as the site will become dwellings or maintained garden area, associated with the residential use. As no specific large areas of open space are being created, we have taken a precautionary approach that the whole development site is a new urban area.
 16. Stage 4 reveals that the total nitrogen load for the new residential dwellings will be 0.0 kg/TN/yr. This null figure is due to the existing use of the site and the proven efficiency of Advanced Aeration's, 'Bio Bubble' package sewage treatment plant. This calculation clearly shows a substantial reduction in the level of Total Nitrogen arising from the site. As such, this proposal results in a net reduction in Total Nitrogen input to The Solent.
 17. A detailed drainage design, for planning purposes, is shown on drawing no. 27215-05 and related drawings, which accompanies this written statement.
 18. With the Nutrient Budget, drawing, treatment plant details, manufacturer's certification, example planning consultation and this report, we consider that Natural England and the Isle of Wight Council should be satisfied that nutrient issues have been appropriately considered. No mitigation measures or purchase of nutrient credits is required, as the proposal, using an extremely conservative calculation process and treatment capability, reduces the total nitrogen arising from the site, in its developed state, to **0.0 Kg/TN/yr**.
 19. The foul drainage layout drawing referenced above provides details of the layout and position of the proposed package sewage treatment plant. The calculations provided by Advanced Aeration ensure that this unit is appropriately designed and sized, as well as having the Total Nitrogen treatment level outlined above. The treated effluent arising
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from the plant will drain to the existing ditch in the southwestern corner of the site. A Bespoke Permit will be required for this discharge. This is administered by the Environment Agency and is a separate process. It will be sourced post approval of the condition compliance application and prior to occupation of the approved dwellings.

20. In terms of surface water drainage, it is proposed to take advantage of the inherent permeability in the sub soil beneath the site to dispose of all such flow via infiltration. Condition 4 specifically deals with these matters with five points, A to E, outlined and addressed below:

a. Whilst we cannot see a specific justification as to why this information is required, this section requests details of the position of the existing soakaways and calculations to quantify current run off. Calculating existing run off is somewhat meaningless, as it is usually used to establish a peak flow to a given point, but we have produced existing and proposed contributing area drawings, which, using a standard run off rate of 50mm/sec (See Building Regulations, Approved Doc H), gives the following simplified flow rate calculations for impermeable areas:

Total roof areas of existing buildings	= 7345.0 m ²
External hard standing areas	= N/A permeable
Total impermeable area	= 7345.0 m ²
Design Rainfall	= 50 mm/hour
	= 50 / 3600 mm/s
	= 0.0139
Existing surface water flow rate, Qse	= 7345.0 x 0.0139
Existing SW peak flow rate, Qse	= 102.1 l/s

Total roof areas of proposed buildings*	= 1613.0 m ²
External hard standing areas	= N/A permeable
Total impermeable area	= 1613.0 m ²
Design Rainfall	= 50 mm/hour
	= 50 / 3600 mm/s
	= 0.0139
Proposed surface water flow rate, Qse	= 1613.0 x 0.0139
Proposed SW peak flow rate, Qse	= 22.42 l/s

*This area does include some small areas of patios, for completeness and a robust assessment.

We have excluded all external hard surfaced areas from both calculations as they are all permeable in both scenarios, aping a greenfield situation. However, if we were to have include them, they too would have resulted in a reduction in the new development scenario (also see point b). The work required to locate and uncover any of these pits would be substantial and initial investigations suggest that, because the underlying sub soil is so permeable, formal soakaways may not even exist.

b. The calculations for this element are included above, in terms of proposed houses and roadways. The detailed design of the soakaways and associated piped network are included on the aforementioned drawing, together with details of the sizing calculations, which have been used and accepted at others sites across the Island.

c. As shown on the accompanying drawings, the construction of the site access road, on the approach to Merstone Lane, has been changed from impermeable surfacing to permeable – significantly improving the situation regarding surface water run off reaching the public highway.

21. Our work also includes access, turning, parking and visibility design drawings, pursuant to condition 5, 6, 7, 9 & 10. We see no need for any further specific justification in this regard, as they were based on the principles established by previously submitted drawings, approved in the outline planning process.
22. We consider that the details supplied should allow the Local Planning Authority to discharge conditions 2 (part), 4, 5, 6, 7, 9 & 10.



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