Review of Odour Assessment Update

Hill Farm, Hempsted (20/00315/OUT)

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August 2022

On behalf of Gloucester City Council

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Contents

Introduction

1.1 I, Paul Beckett, have reviewed the 'Odour Assessment Update' report (dated 1st August 2022) from the Appellant's consultant, Wardell Armstrong (WA). I also attended a without prejudice meeting, via Microsoft Teams, with Paul Threlfall and Malcolm Walton from WA, who produced the report, to discuss the methodology and various assumptions included in their odour dispersion models. An email from Severn Trent Water (STW), stating STW's position on the odour issues relating to the Appellant's proposed development, was received on 10th August 2022.

1.2 I understand that the purpose of WA's update assessment was to respond to comments raised by Phlorum in Phlorum's review (dated 17th March 2022) of WA's previous odour assessment (dated July 2021). The general conclusion of the review was that the assessments carried out as part of the Appellant's planning application were not sufficiently robust to show compliance with Policy C6 of the Gloucester City Plan.

1.3 A summary of the issues raised in Phlorum's review of the Appellant's previous odour assessment are as follows:

1. The assessment did not sufficiently consider the impact the proposed development would have on the ability of Netheridge Sewage Treatment Works (NSTW) to operate in the future;
2. There were contradictions in the advice given by STW to WA and to Phlorum / Gloucester City Council (GCC) with regard to reasonable assumptions about the odour emission rates from primary and final settlement tanks (PSTs and FSTs) at NSTW that were used in WA's dispersion models;
3. There was a lack of robust assessment of odorous emissions from sludge processing operations at NSTW;
4. There was insufficient consideration of results from sniff-test monitoring on land adjacent to NSTW;
5. There was insufficient consideration of odour complaint records

1.4 I discuss under the headings below how each of these issues have been addressed in WA's update assessment.

Issue 1: Impact on NSTW

1.5 Locating odour sensitive uses within the cordon sanitaire could raise risks that they might be adversely affected by any increases in odour emissions from NSTW resulting from its future expansion. This issue is covered by Core Policy WCS11 'Safeguarding Site for Waste Management' of Gloucester County Council's Waste Core Strategy 2012. STW is best placed to comment on NSTW's future expansion and they have commented on this issue in their recent email, where they state the following.

"One further concern we do have is that the latest report does not appear to consider future expansion of the works in too much detail i.e. what happens when the works needs to expand to accommodate growth in the City. This issue is covered in the report by a simple statement that we (STW) would simply have to install appropriate odour control to new assets in any event. Whilst this is a fair and sensible statement, we do have some concern that future works could potentially impact the odour contours, but this is perhaps something your advisors may want to consider. We can't provide any details, or possible arrangements, as our planning hasn't progressed beyond identifying the requirement so far. Obviously we cannot expect developers to plan for/assess every possible scenario at the works, but the final decision on this application does need to recognise that the current odour assessment is essentially a snapshot in time, and is probably based on an assumption that odour issues will only reduce as technology and treatment processes improve. The cordon sanitaire is designed to protect residents and our ability to run the Netheridge works for the city, and so development proposed within it does of course have a high bar to get over to be justified".

1.6 I believe the above shows that in order to reasonably deal with the uncertainty around exposure of new sensitive uses to future odour emissions from NSTW's potential future expansion, WA's assessment should have erred on the side of adopting worst case assumptions. I think this particularly applies to WA's use of lower emissions from PSTs that were collected from monitoring on 18th July 2022. WA consider that these emissions were elevated outliers due to the unprecedentedly hot weather on that day – WA assess these elevated emissions as an "extreme worst-case" situation as part of a "sensitivity analysis" in their update report.

1.7 While I appreciate that the hot temperatures probably did cause emissions to be elevated, I do not think it robust to apparently discount these data as outliers. Putting to one side that such weather will only increase in frequency and severity in future due to climate change, emissions from PSTs and FST are variable for many other reasons and I do not think it sufficient to simply rely on the reason for lower emissions collected later on, on 27th July, being the hot weather, and not some other parameter (e.g. related to the concentration of odorous waste in the tanks on those two different dates).

1.8 I also note that STW has commented on the recent monitoring data used by WA in their update assessment as follows:

"We are of the view that the latest odour assessment seems to be robust, and has benefitted from sampling during particularly hot weather this summer".

1.9 This suggests that STW appreciate that the particularly hot weather has caused the monitoring data used by WA in their models to be robust, precisely because they were likely to be elevated.

1.10 Considering the above, and appreciating the uncertainty in future expansion of NSTW and weather patterns related to climate change, I believe that the odour contours that show most impact on the appeal site (i.e. those presented in WA's "sensitivity analysis") should be used to constrain the Appellant's outline plan for odour sensitive uses.

Issue 2: Advice from STW

1.11 WA has said in their update report, and in their previous odour assessments, that they have undertaken "detailed and extensive discussion" with STW to agree the emissions rates. However, the sum total of their communications with STW on such issues appears to be a thread of emails that is included as Appendix A of their update report. I also understand that since these emails (the latest being from 5th May 2021), there has been no further discussion with STW about the inputs used in WA's update assessment.

1.12 I do appreciate that WA have apparently found it hard to pin down STW and to get a detailed response from appropriate technical people who might understand the implications of odour emissions and dispersion modelling of wastewater treatment processes. However, I do not find that the agreement with STW, in Appendix A of WA's update report, can be judged to be detailed or extensive consultations or that the apparent agreement of some inputs by a few engineers properly reflects the technical understanding and authority of STW. That being said, I also appreciate that STW's view of WA's update assessment is that it now seems to be robust.

Issue 3: Sludge Processing Emissions

1.13 It was a significant concern that WA's previous odour assessment had relied on assumptions about emissions from sludge handling processes at NSTW that were not sufficiently robust. This was the principal reason why Phlorum recommended that sampling of odour control units (OCUs) at NSTW was required in order to provide more robust emissions factors for dispersion modelling.

1.14 The data collected by olfactometric monitoring of these sources in July 2022 has provided data that have now allowed more robust modelling of emissions from them.

Issue 4: Sniff-test Monitoring

1.15 No further sniff-tests have been carried out by WA as part of their update assessment and they have not commented further on them. It is therefore surprising, and perhaps an oversight, that WA did not consider the results of the sniff-test monitoring that was carried out and previously reported by Phlorum. As it stands, in combination, the sniff-test results from Phlorum and WA indicate that odours that are characteristically sourced from NSTW can be detected several hundred metres from it. I appreciate that sniff-tests are a snapshot of conditions at the time and that this can cause quite wide variation in results over numerous visits due to weather conditions (notably wind speed and direction) and operational conditions at the treatment works. However, in light of the recommendations from Phlorum's previous review, this ought to have been given more thought in the update assessment. That being said, I do not think the omission of this supplemental data materially changes what has been reported.

Issue 5: Odour Complaint Records

1.16 WA has also not revisited the odour complaints records since its initial odour assessment was produced. They do not provide any further comment on complaints in their update assessment. However, in their rebuttal (dated 3rd May 2022) to Phlorum's review of their previous assessment, WA said that although they acknowledged that some complaints were received to the north-east of NSTW, in areas relatively close to the appeal site, these were fewer than those to the south. While this is true, the reason is obvious. To the north-east, there are fewer odour sensitive locations which are further from NSTW than such locations to the south, where there are residential areas much closer to the treatment works.

1.17 In any case, WA has not considered more recent complaint data. If they had, this might have indicated that offensive odours from NSTW are more frequent than WA had previously thought, and that this might then indicate a greater potential for nuisance effects at the appeal site.

Conclusions and Recommendations

1.18 Odour dispersion modelling is not an exact science, and it is for this reason that the Institute of Air Quality Management (IAQM) states in its guidance that significant weight should usually be given to observational data, such as sniff-tests and complaints records. Dispersion modelling can provide useful information on the pattern and spread of odours from a source. However, the odour concentration contour lines on maps that are generated from dispersion modelling are uncertain and will vary as inputs vary. Such variance can be seen in the various odour plots produced in WA's previous assessment and in their update assessment.

1.19 While STW has said that it considers WA's update assessment to be robust, the uncertainties around future expansion and, potentially, climate change, lead me to believe that it is not appropriate for the lower monitored emissions to be used as the basis for determining the suitability of the appeal site for residential development. Instead, I would consider it to be sufficiently robust for a composite line of 3 OU to be formed from the previous (July 2021) and update assessments to indicate the depth of a buffer zone where no dwellings should be planned. I say this as I appreciate that the uncertainties associated with odour assessments make it unreasonable for hard lines to be drawn that rely primarily on dispersion model outputs.

1.20 The observational data collected by WA and by Phlorum, combined with the current complaint records, indicate that odours from NSTW can be detected at the appeal site, which is located in the prevailing downwind direction. The model indicates that for much of the appeal site, this will be at concentrations that are below 1.5 OU, and, as such, the Mogden and Cockermouth appeal decisions, which are acknowledged within the IAQM guidance, indicate that this would be suitable for dwellings to be located there.

1.21 From my approximations, this would place a buffer of between 50m and 75m around the southern and south-eastern boundaries of the appeal site where no dwellings should be located.

1.22 On the basis of the above, it is my opinion that if this buffer zone was applied to prevent development within the 3 OU contours modelled within the "worst case" scenarios, this would likely lead to acceptable living conditions for the new residents of the remaining properties.

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