

BLBB CONSULTING LTD

WASTE WATER TREATMENT SPECIALISTS

Land at Hempsted Lane Gloucester

Report in relation to the submission of an outline planning application for a residential development on land at Hempsted Lane Gloucester.

This report specifically deals with the Cordon Sanitaire and it is understood that an Odour Assessment will be submitted as part of the application

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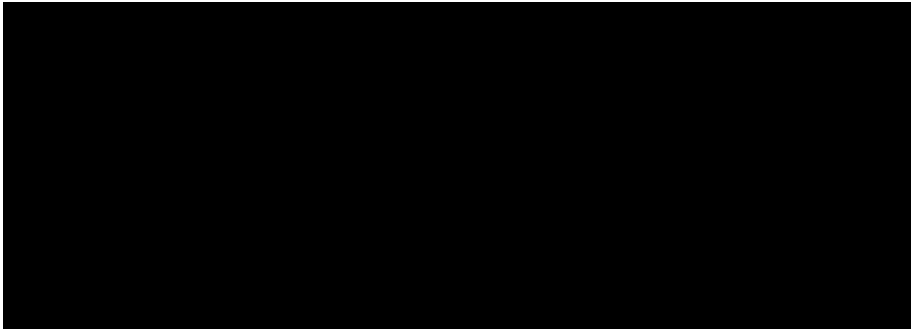
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Gladman Developments Limited

Land Off Hempsted Lane, Gloucester

Report dealing specifically with the Cordon Sanitaire in relation to Netheridge Waste Water Treatment Works. It is understood that an Odour Assessment will be submitted as part of the application

28th February 2020



This report has been prepared by BLBB Consulting Limited with all reasonable care, skill and diligence. The report is confidential to the client.

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Land at Hempsted Lane Gloucester

This report has been written in relation to the submission of an outline planning application for a residential development on land at Hempsted Lane, Gloucester.

This report specifically deals with the Cordon Sanitaire and it is understood that an Odour Assessment will be submitted as part of the application

1 Introduction

1.1 Preamble

- 1.1.1 Gladman Developments are seeking to gain outline planning permission for residential development on land at Hempsted Lane, Gloucester. The land is situated some 540 meters to the North of the Netheridge Sewage Treatment Works which is owned and operated by Severn Trent Water. The extent of built residential development proposed would sit at around 600 meters from the northern boundary of the sewage treatment works.
- 1.1.2 BLBB Consulting Ltd have been commissioned by Gladman Developments Limited to prepare a report that deals specifically with the Gloucester City Council (GCC) comments on the issue of a Cordon Sanitaire relating to the Netheridge Sewage Treatment works.
- 1.1.3 It is understood that the applicant has undertaken early engagement with the Council prior to submitting the application. As part of this engagement, the applicant met with the Council and a written response was provided. Within their written pre-application response, GCC have stated that *“it is important for the applicant to seek and consider comments from Severn Trent Water in terms of how they seek to protect their regional asset and also from the County Council (as waste Planning Authority) in terms of its policies seeking to protect existing waste management facilities and sewage treatment works capacity”*.
- 1.1.4 The GCC response includes comment from a Cordon Sanitaire Advisor as well as states the GCC position in relation to Cordon Sanitaire.

1.2 Gloucester City Council Stated position in Relation to Cordon Sanitaire

- 1.2.1 The site lies within close proximity to the Severn Trent Water Netheridge Sewage Treatment works, a facility that processes waste and where adjoining fields are used for sludge disposal. The works create smell problems within the area and for many years the land around the facility has been subject to a Cordon Sanitaire that restricts development.
- 1.2.2 The site lies within close proximity to the Severn Trent Water Netheridge Sewage Treatment works (owned and operated by Severn Trent Water Ltd). This regional level works processes domestic and trade waste delivered both by pipe and tanker and where adjoining fields are used for sludge disposal. The works create smell/odour problems within the area and for many years the land around the facility has been subject to a Cordon Sanitaire that restricts development.
- 1.2.3 Policy FRP.12 Sewage Works Cordon Sanitaire of the 2002 Plan states:
Development likely to be adversely affected by smell from Netheridge and Longford works, within the constraint areas defined on the proposals map, will not be permitted.
- 1.2.4 A recent study has informed the boundaries of the Cordon Sanitaire to support emerging Policy C6 within the City Plan. This states that “development likely to be adversely affected by smell from the Netheridge Sewage Works, within the Cordon Sanitaire defined on the policies map, will not be permitted.”
- 1.2.5 The site lies within the defined Cordon Sanitaire boundary and therefore development of the site for residential development would be contrary to the above policies. Furthermore, it would be contrary to policies which seek to provide a high-quality environment and acceptable levels of amenity for new residents including JCS policies SD4, SD10 and SD14 and City Plan policy A1.
- 1.2.6 It will be important for the applicant to seek and consider comments from Severn Trent Water in terms of how they seek to protect their regional asset and also from the County Council (as Waste Planning Authority) in terms of its policies seeking to protect existing waste management facilities and sewage treatment works capacity. The context is one of Netheridge STW increasing its capacity in future years to cater for growth in the JCS area and the increasing importance of the site in generating renewable energy from waste”.

1.3 BLBB Consulting Comments

- 1.3.1 It is of some concern that there are a significant number of issues that require correction and further clarification both in the GCC stated position as detailed above, and also within the recently published Cordon Sanitaire Evidence Study Dated September 2019, Phlorum, ‘herein referred to as the “Phlorum” report. This is the Councils evidence study which they are relying on to inform their position on Cordon Sanitaire.
- 1.3.2 As recommended by GCC as part of their early engagement with Gladman, Gladman Developments is now in direct discussion with Severn Trent Water in relation to this matter. Gladman Developments also wish to continue to engage with GCC and have commissioned this report as a first step in which to layout the areas that they believe require a more detailed discussion.

2 Comments Made by the GCC Cordon Sanitaire Advisor

2.1 Discussion of Cordon Sanitaire advisor comments

- 2.1.1 The advisor states that “there would be an objection based on the fact that a recent baseline odour survey illustrated that odours from the STW could be detected up to 470m from the STW boundary”.
- 2.1.2 For clarification the site detailed in the Gladman proposal is 540m from the sewage works boundary and thus outside of the furthest point of detected odours as detailed by the GCC advisor. Further, this comment relates to paragraph 4.64 of the Councils Condon Sanitaire Evidence Study, Netheridge STW, September 2019, Phlorum which states *“Odours associated with the STW could be detected at a maximum distance of 470m at Location 10, during survey 3: this location was largely down wind of the site (to the south-east). The odour experienced at this location was experienced as a single very weak “waft”.”*
- 2.1.3 Looking carefully at location 10 on the map supplied within the report (Fig 4.6 Page 29), it is clear that this odour was indeed to the South East of the sewage works (the opposite direction to the proposed application site) and would be more accurately described as “up wind” on the basis that the prevailing wind is from the South West.
- 2.1.4 The Cordon Sanitaire advisor also comments that the proposed development is “within a contour of the Cordon Sanitaire that indicates odour is 3ouE.m-3 which is believed to be a reasonable threshold for potential nuisance for highly sensitive users, such as residential development”.
- 2.1.5 This comment is in relation to the odour contours developed within the recent Phlorum report page 33 Fig 4.7: Odour Contour (2016-2018). For clarification, it is at this level that current guidance would be that a more detailed investigation is undertaken, such as that detailed by the Institute of air quality Management (IAQM) and an assessment of the likelihood of any significant impact of the odours be determined.
- 2.1.6 BLBB has raised some significant issues in relation to the Phlorum report (which we detail in the next section) and questions the use of a Cordon Sanitaire based on a single contour which is then used to control development in the manner being adopted by GCC. Having had discussions with the authors of the Phlorum report BLBB Consulting believes that this was not the intended purpose that Phlorum would advocate for this piece of work.
- 2.1.7 Thus, although the Cordon Sanitaire advisor has concluded that the proposed development is not suitable in this area of Gloucester and that it is likely to further increase odour complaints to both the Local Authority and Severn Trent Water (STW), BBLB Consulting do not consider that the evidence produced within the Phlorum report supports this conclusion.
- 2.1.8 BLBB Consulting have concluded that the comments made by the Cordon Sanitaire Advisor are based on incomplete and outdated information and are therefore not an accurate reflection of the position that the proposed development would create.

3 GCC Statement Relating to Cordon Sanitaire

3.1 Discussion of GCC comments on Cordon Sanitaire

- 3.1.1 The response from GCC also states its concern that the proposed development sits within an area that is considered to be part of an exclusion zone due to it being within a Cordon Sanitaire. GCC appear to rely on the recent Phlorum report and specifically on a 30µE.m-3 contour depicting this as being an absolute limit within which there is a level of certainty in relation to the likelihood of there being an unacceptable risk of nuisance to residential receptors living within the 30µE.m-3 contour.
- 3.1.2 GCC give considerable weight to the odour contour and the likelihood of nuisance odours being created. BLBB Consulting have assessed in detail the Phlorum report as well as discussed directly with the author of the Phlorum report, some of the significant concerns in relation to the accuracy and limitations of such a report.
- 3.1.3 BLBB Consulting consider that Phlorum would not themselves subscribe to the notion that their report should be used to create a solid prescriptive boundary beyond which no development should be allowed. This would not be in line with latest Institute of Air Quality Management (IAQM) guidance for planners on tools for assessing odour impacts (Ref 1 Institute of Air Quality Management 2018 "Guidance on the assessment of odour for planning").
- 3.1.4 Having had direct discussion with Phlorum, it is now our understanding that the contours produced by the Phlorum report were not meant to be used to form some type of prescriptive development delineation but more to inform areas of concern where developers would be asked to demonstrate that they have undertaken enough work with suitably expert practitioners to be able to confirm the risks and likelihood of a development being subject to nuisance odours.

4 Institute of Air Quality Management

4.1 IAQM Guidance

4.1.1 The IAQM guidance is the only UK odour guidance containing methods for estimating the significance of potential odour effect. The IAQM guidance endorses the use of multiple assessment tools for odour, stating that, *“best practice is to use a multi-tool approach where practicable”*.

4.1.2 Below is an extract from the IAQM guidance which in section 4 “using odour assessment tools” states:

“Best practice is to use a multi-tool approach where practicable. This is consistent with the former Defra Code of Practice on Odour Nuisance from Sewage Treatment Works”

“For assessing site suitability of proposed development land (e.g. residential) around an existing odour source Where there is an existing odour source, the odour effect would normally be assessed using predictive methods (which may be qualitative or modelling) to complement observational methods. Ideally, where we could make many measurements spatially and temporally, empirical observations alone would suffice and would likely be preferred to a prediction; however, that is rarely practicable within the constraints of a planning application timetable and budget. The compromise is to use predictive methods (e.g. modelling) to improve the spatial and temporal coverage of limited empirical observations. Nevertheless, in most circumstances at least some observations (such as complaints analysis and sniff tests) can usually be accommodated even with the most time-constrained application timetable”.

- 4.1.3 Whilst it is acknowledged that Phlorum appear to have undertaken a significant amount of work in terms of reviewing previous odour complaints and carrying out odour surveys which is consistent with current IAQM guidance and best practice, they have not used this information to inform their final recommendation.
- 4.1.4 BLBB Consulting is aware that the applicant has engaged with Environmental Scientists at Wardell Armstrong who have followed IAQM guidance and undertaken a detailed odour survey that has quantified the risk of nuisance odours. It is understood that the Odour Assessment has been submitted as part of this application. BLBB believe that it is the evidence from this type of assessment that that GCC should be using to determine the likelihood of the proposed development being at risk from nuisance odours.
- 4.1.5 BLBB have identified some very significant issues and concerns relating to the recent Phlorum report which have previously been reported in a response to the consultation process for the Pre-Submission Gloucester City Plan 2011-2031 (APPENDIX 1 BLBB Consulting response to Policy C6 Cordon Sanitaire as detailed in the Pre-Submission Gloucester City Plan 2011-2031).
- 4.1.6 BLBB have commented directly on Policy C6 because we believe that the Policy statement is based on a recommendation in the Cordon Sanitaire Evidence Study which contains some significant misunderstandings in relation to the purpose of the Phlorum work together with certain inaccuracies and incompleteness of the information detailed within the report.
- 4.1.7 For completeness below, we provide comments and conclusions on what BLBB believe are the significant issues to consider before attempting to delineate a Cordon Sanitaire boundary for the Netheridge STW.

5 Comments Relating to Delineation of a Cordon Sanitaire in Relation to the Cordon Sanitaire Evidence Study, Netheridge STW, September 2019, Phlorum.

5.1 Preamble

5.1.1 Phlorum was commissioned by GCC to undertake an odour assessment with respect to the Netheridge Sewage Treatment works which is owned and operated by Severn Trent Water.

5.1.2 The City Council are preparing a new district level plan and had indicated that their plan would identify an exclusion zone for development, a 'Cordon Sanitaire' around the Netheridge STW.

5.1.3 The purpose of the assessment was to inform the proposed extent of the Cordon Sanitaire and Phlorum indicated that they would use a number of assessment tools to complete the work, including:

- A review of odour complaints
- Odour Surveys
- A detailed odour dispersion modelling assessment
- A review of a previous dispersion modelling assessment

5.2 Review of Complaints

- 5.2.1 BLBB have looked carefully at the complaint's history detailed in the Phlorum report. We note that in 2018 there were 6 reports of odour nuisance relating to the works all of which were reported from residents living to the south (mostly Quedgeley area) of the works. There were no reports of odour nuisance from residents living in the Hempsted residential area situated to the NE of the works. Further, when looking at all the complaints reported over the past 10 years (where addresses have been supplied) there were a total of 28 individual complaints with only 5 from residents living to the NE of the works the other 23 complaints came from residents living to the south or SE of the works. There have been no complaints of odours from residents in the NE (the direction of the proposed development) since 2014.
- 5.2.2 As the Phlorum report states at para 2.22 *“Coupled with the difficulties and uncertainties surrounding the monitoring and modelling of odour emissions, the review of odour complaints from users close to, and particularly downwind of, an established odour source, such as a STW, can often provide the most compelling evidence as to the reasonableness of any offensive odours emitted from it.”* It is unfortunate that Phlorum do not then proceed to undertake a complete assessment in line with IAQM guidance which recommends taking account of complaint history and the use of observational tools to assess nuisance from odour.
- 5.2.3 BLBB's view is that the recent complaint history is important information that requires careful consideration and further underlines our concerns over the robustness of the recent Phlorum report which has also failed to take account of the recent developments at the sewage works. BLBB visited the Sewage Treatment works on 21st October 2019 to make an up to date assessment of the current situation in relation to odour and Cordon sanitaire arrangements for the site.
- 5.2.4 BLBB personnel accompanied by the Severn Trent operations site staff reviewed the entire site and a separate report was prepared for Gladman Developments (this report can be made available on request to Gladman Developments). The report conclusion stated:
- “The works visit has confirmed that considerable changes have taken place at the works since the previous Odournet survey took place in 2009. Changes have taken place with the operation of the PST's and the sludge route. This is significant because sludge is a key source of odour on a WWTW that is likely to lead to nuisance and complaint from nearby receptors.”*
- 5.2.5 The sewage works has undergone significant changes associated with sludge treatment and sludge cake storage which are processes predominantly situated on the South and Western side of the works and are in close proximity to the significant residential population situated on the south side of the works.
- 5.2.6 It is BBLB Consulting's understanding that Phlorum were not fully aware of the timing of the process changes at the works (2016) and as such, they have used odour emission data from a 2009 study that is now likely to be creating an unreliable prediction of the emissions from the works. The consequence of this is to over-estimate the odour impact on sites to the North of the works and importantly, to underestimate the impact of odour on the residential population on the southern and eastern side of the works. This view is supported by both the recent odour surveys undertaken by Phlorum as well as the latest complaint history.

5.3 Phlorum Report Conclusions

- 5.3.1 Section 5 of the Phlorum report “Discussion and Conclusions” lists several items in relation to the assessment undertaken. However, instead of making recommendations aligned with the IAQM guidance the report simply makes a single recommendation which was that the new Cordon Sanitaire follow a similar pattern to the 3ouE/m-3 contour shown in Figure 4.7 of the report. We believe that there is now confusion between the authors of the report (Phlorum) and GCC over how such a recommendation should be used to control development where there is a risk from odour nuisance.
- 5.3.2 The position now appears to be that GCC have adopted a new Cordon Sanitaire boundary that if interpreted incorrectly, will not only restrict the development in areas not likely to suffer from the adverse impact from odour nuisance but worse still, will continue to allow development in areas where there is obviously a growing level of complaint and a significant risk of exposure of increasing numbers of residents suffering disturbance from nuisance levels of odour.

- 5.3.3 There does not appear to have been any detailed discussion with Severn Trent Water Limited (STWL) about what are, very high levels of odour being generated at their works and what actions STWL intends to, or are taking to control odour in the day to day operation of their processes. If this discussion had taken place, it is likely that STW would have challenged the conclusions of the Phlorum report more robustly and no doubt would have great concerns about using input emissions data from 2009.
- 5.3.4 Phlorum do state that STWL were consulted throughout the assessment and a tour of the works was undertaken however, there appears to have been a lack of realisation that significant changes had been made at the works (most recently in 2016) when a capital scheme was undertaken on the sludge treatment processes at the works. This included a new trade effluent reception system, a new imported sludge reception facility, new primary sludge thickeners, refurbishment of the digester feed tank, refurbishment of the 4 pathogen kill tanks, together with replacement of the sludge centrifuges and extension of a sludge cake pad. Such changes to the works operation if properly understood by Phlorum would have alerted them to the inappropriate use of data of odour emissions from a 2009 assessment.
- 5.3.5 The Phlorum report does not address the issues of odour complaints fully. The report states at paragraph 4.75 that *“the contour fits the complaints record particularly well in Hempsted where all 4 residential complaints fit within the 1.5 Odour unit threshold for potential nuisance advocated in the EA H4 Guidance”*. Whilst we do not disagree with the statement made within the report, the report fails to give enough weight to the fact that to the South there have been 5 additional complaints that all fall outside the 1.5 Odour unit contour. As Phlorum themselves suggest either the odour contour is not an accurate representation of the actual odour nuisance caused by the works and, as we believe that the data being used is not representative of the current situation on odour emissions from the works.
- 5.3.6 At paragraph 4.77, Phlorum conclude that *“As complaints can provide the most compelling evidence as to the reasonableness of any offensive odours, this suggests that the model might be under predicting odour concentrations to the south and south-east. It should be noted that there are four residential complaints just outside (within 200m) of the 1.5 Odour units’ contour.”*
- 5.3.7 Thus, Phlorum have correctly concluded in the body of their report that the model is not reliable at predicting a representative odour contour, but they then ignore this fact when making conclusions and recommend a Cordon Sanitaire that is likely to be extending to far to the North of the works and not far enough on the South side of the works.

5.4 Phlorum Odour Surveys (sniff tests)

- 5.4.1 BLBB believe that the Phlorum report has missed the significant point relating to the current operation of the works in relation to the sludge treatment and storage which is now mostly taking place on the south and western side of the works. As such, it is not surprising that the level of complaint is far higher from the southern side of the works. This is further supported when we consider the results of the Odour (sniff) Survey undertaken by Phlorum where in paragraph 4.69 they state that *“the strongest odours emanating from the STW (5 on the VDI odour Intensity scale) were detected at the Fishing Lake roughly 120m to the south-East of the STW boundary and at the end of Rea Lane, within 50 m of the western boundary of the site. The odours detected at these locations were at times considered to be very strong with reference to the VDI intensity scale”*.
- 5.4.2 Paragraph 4.70 states *“During the third survey and 470m to the South-East of the STW a weak odour associated with the STW could be detected. “This is the furthest that ANY odour associated with STW could be detected.”* BLBB believe it is no surprise that odours could be detected on the southern and western side of the works as this is where all the sludge treatment and storage activities now take place.
- 5.4.3 Further to this, when we look again at the complaints data in the Phlorum report, it is evident that since 2016 there have been no odour complaints reported on the north side of the works. In 2018, there are 6 reported complaints, and all of these are from residents on the south side of the works. This seems to indicate that odour from the works is far stronger on the southern side and would suggest a requirement for a Cordon Sanitaire that extends less far on the northern side of the works but further on the southern side.
- 5.4.4 Phlorum state in paragraph 4.4 that *“2012 and 2018 were the worst years for odour complaints made against the STW”*. However, in 2012 only 2 of the 10 complaints came from the north (Hempsted) area all the others were from the southern side of the works. In 2018 there were no complaints documented from the northern side of the works, all 6 were from the southern side.
- BLBB believe this is all strong evidence to suggest that the recommended Cordon Sanitaire contour is not reflective of the current situation on odour generation from the sewage treatment works and does not accurately represent the risk of exposure to current and future residential receptors.

5.5 Phlorum Recommendation

- 5.5.1 The Phlorum recommendation appears to be based solely on the use of the odour modelling data which as stated above makes use of an out of date set of data from 2009. The latest IAQM guidance advocates the use of several odour assessment tools and a 'weight of evidence' approach. So, where there is an existing odour source, empirical observations will normally be possible of what is happening on the ground. The IAQM report states that "*Considerable weight*" should normally be given to the observational findings of community-based tools and sensory assessments (such as sniff tests). These may be supported by the findings of any dispersion modelling if these add tangible value to the study.' It appears that the Phlorum report does not attach considerable weight to the sniff tests but instead, appears to ignore them.

6 Gloucester City Plan 2011-2031

6.1 Use of adjacent Fields for Sludge Disposal

6.1.1 Further misunderstanding has also been reported within the latest Gloucester City Plan 2011-2031 which discusses Cordon Sanitaire Development at Policy C6. In paragraph 3.3.31 it states

“The fields adjoining Netheridge are used for sludge disposal that, in addition to the works itself, create unavoidable smell problems within the area.”

6.1.2 This is not the case and BLBB have confirmed through direct communication with landowners who have farmed this land since before 1971 that no sludge has been applied to the fields adjacent to the works since before 2003. For further clarification BLBB have also confirmed that the land referred to is now part of a conservation area and as such would not be made available for sludge disposal.

6.1.3 Further to this BLBB have also confirmed that the sludge at Netheridge is now fully digested before being dewatered to create a sludge cake which after a period of on-site storage is removed from the site by road haulage to secure, remote fields where sludge cake can be spread without causing nuisance. This activity is undertaken in line with the Environment Agency controls relating to sludge management.

6.1.4 BLBB are concerned that GCC has given weight (in concluding the level of risk from odour) to practices that have not been in existence at the site for many years, and appear to have developed a new policy which has taken part of its 2002 position and part of the recommendation of the Phlorum study, to determine a Cordon Sanitaire boundary which is neither accurate or reflective of current best practice guidelines on how to deal with the difficult issue of odour in planning.

7 Meeting with Severn Trent Water

7.1 Details of Meeting with Severn Trent Water

7.1.1 As suggested by GCC, Gladman Developments have now engaged with Severn Trent Water to discuss odour related issues in relation to the proposed development. Gladman, together with representatives from BLBB met with development and engineering staff at the Severn Trent Water Coventry HQ on 13th February 2020. A detailed overview of the current position was explained, and specific items were discussed at the meeting. These are listed below:

7.2 Discussion Areas with Severn Trent Water

7.2.1 BLBB agreed to send STW a copy of Wardell Armstrong report and the Phlorum report.

7.2.2 We discussed the land situated to the north of the works and the Gloucester City Council (GCC) comments that it was used for sludge disposal and STW agreed with us that digested sludge is dewatered at the site to form a low odour sludge cake. This is removed from site and recycled on to fields well away from the works. The land to the north is now part of a conservation area and in a flood zone and sludge disposal would not be appropriate for this land.

7.2.3 We discussed the size and shape of the Cordon Sanitaire that GCC has recently adopted and the general conclusion was that this appears to extend too far to the north and may not be extending far enough south to protect the ongoing and long-term activities required at the works.

7.2.4 We discussed the latest IAQM guidance for assessing the impact of odour from works. This involves a multi-tool approach with complaints history, sniff tests and predictive dispersion modelling all playing a part. STW confirmed that they were supportive of this approach.

7.2.5 We discussed our concerns about the old and out of date emissions data that Phlorum had used in preparing their recent report for the GCC and there was general agreement that this was not likely to be identifying a set of odour contours that were representative of the current situation at the works. STW agreed that changes had been made to the works since 2009 and significantly the decommissioning of picket fence thickeners and the upgrade of the sludge treatment plant in 2016.

7.2.6 We explained that Gladman Developments had commissioned their own odour impact assessment for the site that they wish to develop. This work has been undertaken by Wardell Armstrong and STW agreed to review this report and comment. If they agree with the Wardell findings, they will inform us or if they consider that some changes to the approach are required they will inform us of what changes they would like us to make to align the assessment with their requirements.

7.2.7 STW agreed to review the Phlorum report and consider what are the preferred next steps with this document.

8 CONCLUSIONS

8.1 Conclusions

- 8.1.1 BLBB believe that there is a conflict in the Phlorum report between the recommendation to retain a similar size and shape of Cordon Sanitaire when the sniff tests together with the complaint history clearly indicate a higher incidence of odour being identified on the south side of the works.
- 8.1.2 All of the 2018 complaints are on the south side of the works and there are 5 complaints that fall outside of the modelled 1.5 Odour unit contour on the south side of the works. This is all clear evidence that the model outputs are not representative of the prevailing situation at the works. The Phlorum report is not using the latest IAQM guidance to make best use of their own observational findings in the conclusions reported within their report.
- 8.1.3 There appears to have been a lack of realisation by Phlorum that significant changes had been made at the STW works (most recently in 2016) when a significant investment was made to the sludge treatment processes at the STW. Such changes to the works operation if properly understood by Phlorum would have alerted them to the inaccuracy of using data on odour emissions from a 2009 assessment
- 8.1.4 BLBB are of the opinion that if the Phlorum study had fully followed the IAQM guidance as stated in paragraph 2.6 of their report and if they had better understood the impact of the 2016 changes made at the sewage works that they would not have made the recommendation on Cordon Sanitaire size and shape.
- 8.1.5 We believe that GCC have an incorrect understanding on the likelihood of sludge being disposed of on land adjacent to the sewage works which has informed their view on the weight that should be given to the risk of nuisance odours from the sewage works as documented in Policy C6 Gloucester City Plan 2011-2031.
- 8.1.6 We are concerned that GCC are using the Cordon Sanitaire boundary from the Phlorum report in a far more prescriptive way than was intended and as such are not using the latest IAQM guidance to determine the risk of odour nuisance at the proposed development site.
- 8.1.7 The Wardell Armstrong assessment recently commissioned by Gladman Developments has followed the IAQM guidance and concluded that the risk of odour impact on the southernmost boundary of the proposed Gladman development site is “medium” and as distance northwards from the boundary in to the site increases the risk falls to “low”. The overall potential for odour impact from the Netheridge STW at the proposed development site is “not significant” based on an assessment in accordance with IAQM guidance.

Reference 1 IAQM Guidance on the assessment of odour for planning, Institute of Air Quality Management, London 2018

Appendix 1 BLBB Consulting Response to C6 Cordon Sanitaire as detailed in the Pre-Submission Gloucester City Plan 2011-2031

APPENDIX 1

Response for Gladman Developments Limited prepared by BLBB Consulting to Policy C6 Cordon Sanitaire as detailed in the Pre-Submission Gloucester City Plan 2011 - 2031 Regulation 19 of the Town and Country Planning (Local Planning) (England) Regulations 2012

September 2019

Policy C6:
Cordon sanitaire Development likely to be adversely affected by smell from Netheridge Sewage Works, within the Cordon Sanitaire defined on the policies map, will not be permitted.

3.3.31 “Severn Trent Water PLC (Severn Trent) is responsible for sewerage and sewage disposal. They operate Netheridge Sewage Treatment Works (NSTW) south of Hempsted, a facility that processes a significant amount of waste from Gloucester City and beyond. The fields adjoining Netheridge are used for sludge disposal that, in addition to the works itself, create unavoidable smell problems within the area. In order to reasonably prevent development that would be adversely affected by smell, a cordon sanitaire area is shown on the proposals map within which development will not be permitted.”

Notes relating to 3.3.31 Above:

We believe that the comments made above stating that “the fields adjoining Netheridge are used for sludge disposal” are out of date and relate to an approach that may have been in operation many years ago. We believe that Severn Trent Water no longer uses the adjacent fields for sludge disposal and certainly not for liquid sludge disposal as it may have done in the past. The processes used on site currently include a dewatering facility where liquid digested sludge is processed to create a sludge cake that is stored on concrete storage pads prior to it being removed for recycling on to third party farmland well away from the works.

Our understanding is that liquid sludge has not and would not be disposed of onto the adjoining land as described above. Stringent controls and limits are imposed by the Environment Agency. Our understanding is that STW complies fully with these requirements. Recycling sludge back to land is highly regulated and the adjoining land could not be used for sludge recycling on a regular basis.

The Cordon Sanitaire proposed appears to be disproportionately large for a works like Netheridge. Most water companies use a risk-based methodology based on works size and complexity. However, the maximum expected size is up to around 500 meters from the works boundary. The area being described by this cordon sanitaire is up to 1000 meters from the works boundary and is unusually large. We believe that the data being used to calculate the Cordon Sanitaire boundary is based on a very old data set from 2008 and does not represent the current position at the works.

We are surprised that the LPA are simply prepared to accept what appears to be a very high level of odour emissions from the Netheridge. More discussion is required with STW to establish why the level of odour produced at the works is much greater than current best practice guidelines would deem acceptable for a works of this size and complexity. It seems odd that the LPA appear to accept that the works will create “unavoidable smell problems” but have not discussed what Odour Management Plans are in place at the works to minimise the

odour and level of nuisance created by the works and thus minimise the amount of land required to be included within the Cordon Sanitaire.

3.3.32 “To support this policy, an assessment of odour nuisance arising from NSTW has been undertaken and has informed the boundary on the policies map. The study is informed by a review of odour complains, odour surveys, a detailed dispersion model assessment and a review of a previous model assessment. Severn Trent were engaged in the review process in order to understand currently and future operations, including plans for any proposed future infrastructure improvements to accommodate additional waste and/or to reduce the impact of odour on the surrounding area. It categorises likely odour nuisance on the basis of odour contours from the sewage works.”

We have some significant concerns about the report that has been produced for the LPA by Phlorum. Most notably the use of a data set from 2008. The data being used is not representative of the current situation at Netheridge and there have been significant changes in the process plant used at the works since 2008, which means that the odour levels currently produced at the works are likely to be very different to the situation prevailing in 2008.

The Phlorum report in paragraph 4.78 states that there have been no major changes to the works in the past 10 years and concludes that the reports and their results should be comparable. We understand that a major improvement scheme took place in 2016 which refurbished the sludge handling and storage equipment. Since 2008 the operation of the primary sedimentation tanks desludging has been improved considerably and these tanks are regularly desludged and fresh thin sludge is thickened using mechanical sludge thickening equipment. Liquid digested sludge is now dewatered using centrifuges and is stored on concrete sludge storage pads. Since the changes that have taken place involve the PST’s and the sludge route it is inevitable that the nature and level of odours produced at the works will be significantly different than those produced in 2008 when the previous data set was produced.

3.3.33 “The extent of the cordon sanitaire has been drawn on the basis the area most likely to be affected by odour nuisance, within the 3 – 5 odour contour area. This boundary does not represent the absolute limit of the area where smells can be detected but is drawn so as not unreasonably to constrain development in the existing built-up area.”

The way the boundary is drawn does indeed constrain a large area of land due to the very large distance that the Cordon Sanitaire runs to the north of the works. The data used indicates a very high concentration of odour at the boundary of the works and we believe that there should be further discussion with STW at this stage to better understand why such a high emission rate is coming from the works.

We are concerned that the odour emissions if the data is actually found to be reliable are out of step with currently accepted best practice target levels and cannot understand why the LPA is not challenging STW on why they are apparently producing such high odour levels from their activities at the works.

The Phlorum report does not address the issues of odour fully. The report states at paragraph 4.75 that “the contour fits the complaints record particularly well in Hempsted where all 4 residential complaints fit within the 1.5 Odour unit threshold for potential nuisance advocated in the EA H4 Guidance”. This is a true statement but misses the point

that to the south there are 5 complaints that all fall outside the 1.5 Odour unit contour and are not addressed by Phlorum. This suggests that either the odour contour is not an accurate representation of the actual odour nuisance caused by the works or as we believe that the data set being used is not representative of the current situation.

At paragraph 4.77 Phlorum conclude that “As complaints can provide the most compelling evidence as to the reasonableness of any offensive odours, this suggests that the model might be under predicting odour concentrations to the south and south-east. It should be noted that there are four residential complaints just outside (within 200m) of the 1.5 Odour units’ contour.”

However even though Phlorum have correctly concluded that the model is not reliable at predicting a representative odour contour they ignore this fact when making conclusions and recommend a Cordon Sanitaire that is possibly too large to the north of the works and too small on the south side of the works.

We believe that the Phlorum report has missed the point that the current operation of the works is such that the sludge treatment and storage is now mostly taking place on the south and western side of the works and as such it is not surprising that the level of complaint is far higher on the southern side of the works. This is further endorsed when we consider the results of the Odour (sniff) Survey undertaken by Phlorum where in paragraph 4.69 they state that “the strongest odours emanating from the STW (5 on the VDI odour Intensity scale) were detected at the Fishing Lake roughly 120m to the south-east of the STW boundary and at the end of Rea Lane, within 50 m of the western boundary of the site. The odours detected at these locations were at times considered to be very strong with reference to the VDI intensity scale”. Paragraph 4.70 states “During the third survey and 470m to the south-east of the STW a weak odour associated with the STW could be detected. This is the furthest that ANY odour associated with STW could be detected.” We believe it is no surprise that odours could be detected on the south and western side of the works as this is where all the sludge treatment and storage activities now take place.

Further to this when we look at the complaints data we can see that since 2016 there have been no odour complaints reported on the north side of the works. In 2018 there are 6 reported complaints, and all of these are from residents on the south side of the works. This seems to indicate that odour from the works is far stronger on the southern side and would suggest a requirement for a Cordon Sanitaire that is smaller on the northern side of the works but larger on the southern side.

Phlorum state in paragraph 4.4 that “2012 and 2018 were the worst years for odour complaints made against the STW”. However, in 2012 only 2 of the 10 complaints came from the north (Hempsted) area all the others were from the southern side of the works.

As stated above in 2018 there were no complaints documented from the northern side of the works all 6 were from the south side. We believe this is all strong evidence to suggest that the recommended Cordon Sanitaire is not reflective of the current situation of the works.

We are also concerned that although the Phlorum report refers to the Institute of air Quality management (IAQM) guidance on the assessment of odour for planning dated 2014 it does not appear to be referring to the latest version of the IAQM report dated 2018 which gives useful

guidance on the “weight of evidence approach” that should be used when using several assessment tools.

The Phlorum conclusions appear to be based solely on the use of the odour modelling data which as we have stated above makes use of an out of date set of data from 2008. The latest IAQM guidance advocates the use of several odour assessment tools and a 'weight of evidence'

approach. So, where there is an existing odour source, empirical observations will normally be possible of what is happening on the ground. The IAQM report states that “Considerable weight” should normally be given to the observational findings of community-based tools and sensory assessments (such as sniff tests). These may be supported by the findings of any dispersion modelling if these add tangible value to the study.' It seems that the Phlorum report does not attach considerable weight to the sniff tests but appears to ignore them.

We believe that there is an obvious mismatch in the Phlorum report between the recommendation to retain a similar size and shape of Cordon Sanitaire as previously in place when the sniff tests together with the complaint history clearly indicate a higher incidence of odour being identified on the south side of the works. All of the 2018 complaints are on the south side of the works and there are 5 complaints that fall outside of the modelled 1.5 Odour unit contour on the south side of the works. This is all clear evidence that the model outputs are not representative of the prevailing situation at the works and that the Phlorum report is not using the latest guidance to make best use of their own observational findings in the conclusions reported within their report.

We feel that the current Cordon Sanitaire being recommended within the Phlorum report will needlessly prevent development of certain areas to the north of the works where nuisance is less likely but will allow development of other areas to the south where nuisance is already being suffered by existing residents and if further development is allowed to proceed will provide unacceptable air quality and amenity for future residents.

This further underlines the requirement for a new data set to be produced that would then take account of the current operation and processes employed at the works.

Conclusion

1. It is very unlikely that the fields adjacent to Netheridge are used for 'sludge disposal'. As we have explained the biosolids are recycled under strict regulations and in any case is of anaerobically digested, dewatered sludge cake - not 'sludge' which implies liquid. The dewatered sludge cake after anaerobic digestion has relatively little odour.

2. The Phlorum report is a poor summary of the odour position at Netheridge. Primarily it re-uses data from the 2008 Odournet report. This report is certainly out of date as significant plant modifications have occurred since that date including new reception facilities for imported sludges with odour treatment provision. In addition, the model inputs e.g. emission rates have been selected to reflect the 'worst-case' (see para 3.27) situation.

As a general point, these odour surveys tend to be carried out by air quality experts who have no knowledge of sewage treatment and therefore pick published odour emission rates on the basis of 'worst case' rather than on what is most appropriate from a sewage treatment point of

view. With a wide range of published data for odour emission rates this can lead to a gross over-estimate of the odour footprint.

3. The Phlorum report cites the IAQM report 'Guidance on the assessment of odour for planning', 2014. It is odd that they haven't used the latest IAQM report, Bull et al., 'IAQM Guidance on the assessment of odour for planning', Institute of Air Quality Management, London, 2018.

In this report at Section 6 (Drawing Conclusions from Assessment Results) it advocates the use of several odour assessment tools and a 'weight of evidence' approach. So, where there is an existing odour source, empirical observations will normally be possible of what is happening on the ground. The IAQM report states that "Considerable weight should normally be given to the observational findings of community-based tools and sensory assessments (such as sniff tests). These may be supported by the findings of any dispersion modelling if they add tangible value to the study." It seems that the Phlorum report does not attach considerable weight to the sniff tests but appears to ignore them.

BLBB CONSULTING Limited 6th December 2019