

**Gloucester City Plan (2011-2031)
STATEMENT OF COMMON GROUND**

Between

**Gloucester City Council
&
Gladman Developments Limited**

1. Introduction and background

- 1.1 This Statement of Common Ground has been prepared between Gloucester City Council (GCC) and Gladman Developments Limited (GDL) ('the parties), following the examination into Matter 5 of the Gloucester City Plan (GCP) which, amongst other things, considered the policy and evidence base regarding the proposed Cordon Sanitaire around the Netheridge Sewage Treatment Works (NSTW). It informs Policy C6 'Netheridge Cordon Sanitaire' of the submitted GCP. The NSTW works is a strategic regional/sub-regional waste processing facility for Severn Trent Water (STW), which processes permitted and non-permitted waste, for sewerage/sludge, domestic waste and trade waste.
- 1.2 At the request of the Inspector, this SoCG focusses on the main area of disagreement, which relates to any works that have been undertaken at the plant and the resulting impact this may have had on likely odour nuisance. It also provides details on the elements of NSTW that the Inspector should have sight of when visiting NSTW on 27th July 2021 and considers the issues of odour nuisance and policy wording. To inform this SoCG a meeting was held between the parties on Friday 18th June 2021 via MS Teams.
- 1.3 This Statement of Common Ground supplements and should be read alongside the Regulation 19 consultation submissions and matters statements from the parties.
- 1.4 The SoCG is structured as follows:
- Changes to the Netheridge Sewage Treatment Works since 2016
 - Inspector site visit
 - Impact of the changes to Netheridge in 2016
 - Odour complaints
 - Policy wording
- 1.5 In addition, there are three appendices; (1) Email correspondence between Gloucester City Council, Phlorum and Severn Trent Water; (2) Email correspondence between Wardell Armstrong (for Gladman Developments Limited) and Severn Trent Water; and (3) Odour complaints.

2. Changes to the Netheridge Sewage Treatment Works

Areas of agreement

- 2.1 Following discussions at the hearing session regarding works to NSTW in 2016, officers have engaged with STW who have confirmed that the following was implemented.

1. A new Primary Sludge Mechanical Thickening Plant (to replace the defunct picket fence thickeners)
2. A new Imported Sludge reception facility
3. A new Tankered Trade Waste (TTW) reception facility
4. An auto-backwash filter on the wash water main feeding the Surplus Activated Sludge Thickening Belts
5. Relocation of the asset life expired PST Scraper Bridge control panel out of an area of the site susceptible to flooding
6. Replacement of the actuated valves controlling the removal of Return Activated Sludge from FSTs No. 1-6
7. Replacement of Pathogen Kill Tanks (PKTs) No. 1 and 2
8. New pump mixers on 3 No. PKTs No. 4, 6 and 8
9. Provision of 2 new sludge dewatering centrifuges (to replace existing life expired unit)
10. Modification and extension to the sludge cake storage area (in part to enable larger volumes to be stored when necessary)

Areas of disagreement

- 2.2 GDL consider that odour control measures were also added to NSTW at this time that are not included in the above schedule. Information in this regard is provided in the email conversation between GDL and STW provided at Appendix 2 (28th April 2021).

3. Inspector Site visit

Areas of agreement

- 3.1 The parties agree that when the Inspector visits NSTW it should generally include the entire plant. The following are particularly important:
1. Major sources of odour, including:
 - a. Sludge importation area
 - b. Sludge thickening / dewatering / storage plant
 - c. Inlet works
 - d. Primary sedimentation tanks / storm tanks
 2. Odour control equipment
- 3.2 The Inspector should also have sight of Severn Trent's 'Site Odour Management Plan', if there is one.

Areas of disagreement

- 3.3 None

4. Impact of changes to Netheridge in 2016

Summary

- 4.1 The main area of disagreement between the parties is the impact that the 2016 works at NSTW has had on the generation of odour and whether this impact is significant enough to further modelling to support the robustness of the proposed Cordon Sanitaire set out in policy C6 of the GCP.

- 4.2 Gloucester City Council commissioned Phlorum to prepare an analysis to support an update to the extent of the Cordon Sanitaire around the NSTW (Submission Document HW001 'Cordon Sanitaire Evidence Study: Netheridge Sewage Treatment Works', September 2019). The study included engagement with Severn Trent Water (STW), who provided information regarding the layout and workings of the plant and suggested the use of odour emission factors from a previous odour report to inform the assessment. To inform the study, Phlorum were given a tour of the plant in June 2019 by STW and the key odour sources were identified. This is after any works were undertaken in 2016 and it is understood no additional works have been undertaken since the site visit was undertaken. STW responded to the GCP Pre-Submission consultation and confirmed support for the Phlorum evidence study.
- 4.3 GDL are of the view that the works undertaken in 2016 may have had a material impact in reducing likely odour nuisance resulting from NSTW. Specifically, GDL believe that the works will have made a difference to UK WYR emission factors used to determine the extent of the Cordon Sanitaire, known as PST and FST respectively. In preparing the evidence study, Phlorum used figures of 7.5 and 1.7 respectively. GDL consider these should be reduced and their consultants for the current planning application at 'Land at Hempsted', Wardell Armstrong, have had discussions with STW representatives that indicated this would be acceptable.

Areas of agreement

- 4.4 None

Areas of disagreement

Gloucester City Council position

- 4.5 The City Council and Phlorum are of the view that the evidence base to support the extent of the Cordon Sanitaire remains robust and appropriate for Local Plan policy and that any works undertaken since 2016 do not materially impact on the extent of the Cordon Sanitaire, which is identified as a 'zone of concern'. On this basis, development proposals would need to accord with Policy C6 of the GCP, which currently states:

'Development likely to be adversely affected by smell from Netheridge Sewage Treatment Works, within the Cordon Sanitaire defined in the policies map, will not be permitted.'

It is for the developer to then demonstrate through a planning application that the proposal would not be adversely affected by odour nuisance.

- 4.6 As mentioned above, the Phlorum study included engagement with STW, who provided information regarding the layout and workings of the plant and suggested the use of odour emission factors from a previous odour report to inform the assessment. Phlorum were given a tour of the plant in June 2019 by STW and the key odour sources identified. No additional works have been undertaken since the site visit was undertaken.
- 4.6 To address the conflict in positions, the City Council has engaged with senior colleagues at STW in order to fully understand the intentions and implications of the 2016 works. The full email is provided as Appendix 1 to this SoCG, but the main elements are replicated below:

With regards to the issues raised in respect of the odour assessments and the points raised by Wardell Armstrong, I have been in contact with the process engineer who was in communication with WA and we can further advise you as follows:-

- 1. We stand by our previous assertion that any changes made at Netheridge since the Odournet report was produced in 2009 are unlikely to have made material differences to overall odour emissions from the site.*
- 2. With specific reference to the PSTs:- Some new assets were commissioned in circa 2015/16 which resulted in changes to the primary tank (PST) desludging regime. Sludge thickening now occurs in dedicated equipment rather than within the PSTs themselves and this will reduce the potential for odour generation. **However**, We are not of the opinion that this represents a material change to the situation that pertained in 2009 when Odournet completed their survey. These new primary sludge thickening assets were built to replace a previous sludge thickening plant (a process called a Picket Fence Thickener) that was still in operation in 2009 as it was specifically referenced in the Odournet report (para 3.2.2). It seems more likely that the 2015/16 project would have resolved a short term deterioration in primary tank odour emissions rather than delivering a net improvement on the 2009 position.*
- 3. As the old picket fence thickeners were reported to still be in use in 2009, sludge thickening within the PSTs would not have been routine operational practice. Given that PST operation in 2019 (when Phlorum visited the site) was thus essentially the same as it was in 2009, it seems reasonable to us that Phlorum used the same odour emission rates as used in the Odournet report. We must also presume that Phlorum observed nothing at their 2019 site visit that would justify using a revised emission rate.*
- 4. Whilst the advice provided by our Process Engineering team to Wardell Armstrong on April 28th 2021 is indeed technically correct – the 2015/16 process changes will have made a difference to odour emissions, it failed to take into consideration that, at the time of the 2009 Odournet report, primary sludges were being thickened within a dedicated plant and not within the PSTs themselves. With the benefit of hindsight we should have confirmed that the process changes made in 2015/16 did not represent a material change to conditions that pertained in 2009 (rather than the conditions that pertained immediately before the works were implemented) prior to entering into correspondence with Wardell Armstrong.*
- 5. However, we would further note that the statement made to Wardell Armstrong by our process engineer on 5th May 2021 was “We have no objections to the new proposed values as per your table”. We did not provide a clear statement to the effect that the proposed values were correct and it is important to note that our engineer did not visit the site to directly confirm the appropriateness of the figures WA proposed. The fact that we have not objected to the use of certain figures should not and cannot be taken as definitive proof by Wardell Armstrong et al that the figures used by Phlorum are wrong, especially given that Phlorum did visit the site.*

All the above notwithstanding, in our opinion the actual odour assessment undertaken by Phlorum in 2019 should carry a lot more weight than theoretical arguments put forward by Wardell Armstrong et al over changes that have occurred at the site since 2009 and prior to 2019.

Gladman Developments Limited position

4.7 GDL position is as follows:

1. GDL consider that in light of the considerable changes at the Netheridge Waste Water Treatment Works (WWTW) since 2009, it is impossible to understand the actual position in relation to odour from the site in 2021 without any up-to-date measurements taken from the site and subsequent modelling.
2. While the email obtained by GCC from STW is acknowledged, GDL are concerned that it conflicts directly with the information provided to GDL's odour consultants, Wardell Armstrong, by experienced process engineers whose role in the organisation is to evaluate the performance of complex engineering technology. Email correspondence between Wardell Armstrong and STW's process engineers is provided as Appendix 2 to this SOCG.
3. It is difficult to understand how STW can reach the conclusion that there will not be a 'material difference' in odour generated at the WWTW as a result of the 2016 works without there being any empirical modelling data to back up that assertion.
4. With regard to the points raised relating to the picket fence thickener, it is difficult to understand why, if the picket fence thickener was in operation in 2009 and the PST's were being desludged routinely, Odournet decided at that time to use a very high odour emission rate for odours coming from the PST's. As stated in GDL's hearing statement, Odournet did not take any actual samples or do any measurements of the PST's in 2009, they merely used a very high library emissions factor.
5. Furthermore, it is difficult to understand where the assertion that the 2016 works were put in place to address a 'short term deterioration' has come from. No evidence of this is provided.
6. Moreover, it is difficult to ascertain why it is reasonable to presume that Phlorum would have found nothing on their 2019 site visit to justify using a lower emissions rate (than the very high one employed in 2009) when they themselves undertook observations in 2019 with qualified staff and found negligible odours on several occasions. If the PST's were producing high emissions of odour why did these staff not pick this up? BLBB staff visited the works on 21st October 2019 and inspected the PST's. BLBB reported on the visit and commented 'At the time of the visit the PST's appeared clean and showed no signs of rising sludge nor any sign of sludge accumulation (gas bubbles) or odour.' BLBB also took photographs of the tanks. It is difficult to reconcile the site observations with the overall conclusion that very high emission rates should continue to be used.
7. GDL are deeply concerned that STW appear to be back-tracking on their own process engineer's comments (as part of the development management process) that Wardell Armstrong's proposed emission rates were reasonable based on the works that took place at the WWTW in 2016. Wardell Armstrong liaised with STW's representatives in good faith and took their professional advice in that spirit. GDL consider that the only way to reconcile these opposing positions is for robust, objective data to be produced to properly justify the boundaries of the cordon sanitaire based on the current position, rather than relying on the conflicting judgements of STW representatives.
8. The comments made in point 5 of the STW email are highly objectionable. The discussions between Wardell Armstrong and STW are no more or less theoretical than those of Phlorum, as Phlorum's own assessment was based on library emission rates rather than verifiable measurements on site. It is difficult to understand why the conclusion is reached that Phlorum's conclusions should carry considerably more weight than those of other professional consultants, when both were reached in consultation with STW employees and were both based on library emission rates rather than empirical data. This only further strengthens GDL's concerns and strong suggestion to the Inspector that further empirical modelling should take place to properly justify the cordon sanitaire boundaries to ensure that it is soundly based.

9. GDL's view in relation to the requirement for developers to comply with policy C6 is dealt with separately below under 'policy wording'.

5. Odour complaints

Gloucester City Council position

- 5.1 The City Council and Phlorum are of the view that the complaints record has been analysed correctly in line with best practice guidance.
- 5.2 The individual tools used in odour assessments each have their own inherent strengths and weaknesses and best practice guidance recommends using multiple tools to provide a weight of evidence behind any conclusion.
- 5.3 Odour complaints, for example, are primarily generated from places where people live and work and as such, it is not surprising that more complaints were generated from the southern side of the works (i.e., where people live and work). The north eastern side of the works, which primarily consists of agricultural fields until Hempsted hosts fewer people that might complain. It is the City Council and Phlorum's view that the mere fact that NSTW has the potential to generate complaints, including from less sensitive commercial uses, that similar complaints would be generated to the north east. Furthermore, as discussed in the Cordon Sanitaire Evidence Study (see para 5.7), the complaints data shows a fairly good agreement with the results of the odour dispersion modelling, which adds to the weight of evidence that there would be the potential for complaints within the proposed Cordon Sanitaire to north-east.
- 5.4 The Inspector asked for details to be provided of any complaints that have not been picked up by the study. This is because it came to light from conversations with Hempsted Residents Association that there were mixed messages in terms of where complaints should be reported. In response, officers have reviewed complaints made regarding odour to the City Council's Environmental Health since mid-2019, and a schedule is provided at Appendix 3. Officers have also contacted Hempsted Residents Association regarding recent complaints and recent examples are also provided at Appendix 3. A request has been made to STW for details of complaints made direct to the organisation, and this is currently in preparation. However, it hasn't been possible for this to be finalised in time of this submission.
- 5.5 It's also worth pointing out the 'nuisance threshold' can often be higher in established communities, in that the nuisance becomes normalised. It's 'new noses' moving into new developments that cause concern as they do not expect and are not habituated to longstanding odour sources such as Sewage Treatment Works. Hence, they will likely have a lower nuisance threshold than people in established areas of older housing stock and this can be reflected in the level of odour complaints, with lower levels in established areas.

Gladman Developments Limited position

- 5.6 GDL's view is that the Phlorum report does not properly evaluate the odour complaints received in the vicinity of the WWTW and that Phlorum have not understood that their own data shows an increasing incidence of complaints from the southern side of the works where the 2015 works increased the area of open storage where STW stores dewatered sludge cake prior to its removal for recycling to agricultural land.

5.7 GDL acknowledges the schedule of complaints compiled by the Hempsted Residents Association. However, GDL is of the view that limited weight should be given to these complaints, given the current planning application, which has generated significant objection.

6. Policy wording

Gloucester City Council position

6.1 The SoCG does not set out any amendments to the supporting text of Policy C6 as discussed at the examination. This is included within Submission Document CD010A 'Latest Schedule of Proposed Changes (9th June 2021)' under reference PM137 and states 'Add supporting text explaining how the Cordon Sanitaire policy is intended to work and consider if the policy could be made more positive/flexible.' This will be considered further by the City Council once the Inspector's Interim Note has been received and subject to consultation as part of Main Modifications in due course.

Gladman Developments Limited position

6.2 GDL consider, as set out in our hearing statements and during the examination, that the current wording of policy C6 is inflexible and does not provide the ability for developers to demonstrate the acceptability or otherwise of individual proposals through the development management process. It reads as an in-principle restriction on development within the cordon sanitaire. GDL consider that as a matter of law, the meaning of a policy cannot be altered through amendments to the supporting text, thus it is imperative that sufficient flexibility is built into the wording of the policy itself to ensure that it is sound.

6.3 Furthermore, GDL object to this process taking place through the Main Modifications process. It was our understanding that the Inspector asked for GDL and GCC to discuss revised wording prior to the issuing of her interim note. However, should the Inspector accept the Council's proposal that any revised wording be set out through main modifications, GDL will of course engage positively and proactively at that stage and through our response to the MMs consultation.

Signed on behalf of Gloucester City Council



Ian Edwards – Head of Place

Signed on behalf of Gladman Developments Limited



Christian Lee – Gladman Developments Limited

Dated - 22 July 2021

Appendix 1 - Email correspondence between Gloucester City Council, Phlorum and Severn Trent Water

Please see separate download.

From: Craig, Mark

Sent: 12 July 2021 17:11

To: Adam Gooch <David Ingleby

Cc: 'Paul Beckett' <Harley Parfitt Teale, Matthew Sugden, Peter McLean, Rebecca Digby, Ben Lopes, Bruno

Subject: RE: Netheridge Sewage Treatment Works - Odour and Cordon Sanitaire

CAUTION: This email originates from outside the organisation. Do not click links or open attachments unless you trust the sender and know the contact is safe. Contact IT if in doubt

ST Classification: OFFICIAL PERSONAL

Hi Adam, David

With regards to the issues raised in respect of the odour assessments and the points raised by Wardell Armstrong, I have been in contact with the process engineer who was in communication with WA and we can further advise you as follows:-

- 1) We stand by our previous assertion that any changes made at Netheridge since the Odournet report was produced in 2009 are unlikely to have made material differences to overall odour emissions from the site.
- 2) With specific reference to the PSTs:- Some new assets were commissioned in circa 2015/16 which resulted in changes to the primary tank (PST) desludging regime. Sludge thickening now occurs in dedicated equipment rather than within the PSTs themselves and this will reduce the potential for odour generation. **However**, We are not of the opinion that this represents a material change to the situation that pertained in 2009 when Odournet completed their survey. These new primary sludge thickening assets were built to replace a previous sludge thickening plant (a process called a Picket Fence Thickener) that was still in operation in 2009 as it was specifically referenced in the Odournet report (para 3.2.2). It seems more likely that the 2015/16 project would have resolved a short term deterioration in primary tank odour emissions rather than delivering a net improvement on the 2009 position.
- 3) As the old picket fence thickeners were reported to still be in use in 2009, sludge thickening within the PSTs would not have been routine operational practice. Given that PST operation in 2019 (when Phlorum visited the site) was thus essentially the same as it was in 2009, it seems reasonable to us that Phlorum used the same odour emission rates as used in the Odournet report. We must also presume that Phlorum observed nothing at their 2019 site visit that would justify using a revised emission rate.
- 4) Whilst the advice provided by our Process Engineering team to Wardell Armstrong on April 28th 2021 is indeed technically correct – the 2015/16 process changes will have made a difference to odour emissions, it failed to take into consideration that, at the time of the 2009 Odournet report, primary sludges were being thickened within a dedicated plant and not within the PSTs themselves. With the benefit of hindsight we should have confirmed that the process changes made in 2015/16 did not represent a material change to conditions that pertained in 2009 (rather than the conditions that pertained immediately before the works were implemented) prior to entering into correspondence with Wardell Armstrong.
- 5) However, we would further note that the statement made to Wardell Armstrong by our process engineer on 5th May 2021 was “We have no objections to the new proposed values as per your table”. We did not provide a clear statement to the effect that the proposed values were correct and it is important to note that our engineer did not visit the site to directly confirm the appropriateness of the figures WA proposed. The fact that we have not objected to the use of certain figures should not and cannot be taken as definitive

proof by Wardell Armstrong et al that the figures used by Phlorum are wrong, especially given that Phlorum did visit the site.

- 6) All the above notwithstanding, in our opinion the actual odour assessment undertaken by Phlorum in 2019 should carry a lot more weight than theoretical arguments put forward by Wardell Armstrong et al over changes that have occurred at the site since 2009 and prior to 2019.

With regards to the Planning Inspector's question regarding new assets provided at the site in 2016/17, two projects were completed at around this time the scope of which are summarised below (I'm not sure if these actually completed in 2016/17 or 15/16 – I presume that this isn't material).

- A new Primary Sludge Mechanical Thickening Plant (*this was to replace the defunct picket fence thickeners referred to above*).
- A new Imported Sludge reception facility
- A new Tankered Trade Waste (TTW) reception facility;
- An auto-backwash filter on the wash water main feeding the Surplus Activated Sludge Thickening Belts.
- Relocation of the asset life expired PST Scraper Bridge control panel out of an area of the site susceptible to flooding.
- Replacement of the actuated valves controlling the removal of Return Activated Sludge from FSTs No. 1-6.
- Replacement of Pathogen Kill Tanks (PKTs) No. 1 and 2.
- New pump mixers on 3 No. PKTs No. 4, 6 and 8.
- Provision of 2 new sludge dewatering centrifuges (*to replace existing life expired unit*)
- Modification and extension to the sludge cake storage area (*in part to enable larger volumes to be stored when necessary*)

regards

Mark Craig

Long Term Asset Strategy Lead
Asset Strategy and Performance
Severn Trent Water Ltd

Appendix 2 - Email correspondence between Wardell Armstrong (for Gladman Developments Limited) and Severn Trent Water

Please see separate download.

From: [Lopes, Bruno](#)
To: [Threlfall, Paul](#); [Digby, Ben](#)
Subject: RE: Proposed Odour Assessment methodology
Date: 05 May 2021 10:30:50
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)

ST Classification: OFFICIAL PERSONAL

Hi Paul

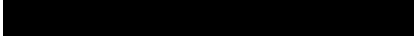


We have no objections to the new proposed values as per your table.

Best regards

Bruno

[Bruno Lopes](#)
Senior Process Engineer – Treatment Process Engineering



From: Threlfall, Paul 
Sent: 30 April 2021 09:55
To: Digby, Ben ; Lopes, Bruno 
Subject: RE: Proposed Odour Assessment methodology

Hi both,

Many thanks for your emails and confirmation of the changes at the works.

Given these changes I propose to reduce the odour emission rates for the following sources. I have listed their previous emission rate assigned as part of the Phlorum assessment for reference:

Odour Source	Phlorum emission rate (ouE/m2/s)	Proposed emission rate following changes to the works (ouE/m2/s)
PST's	7.5 (UKWIR 'high' library value)	1.9 (UKWIR 'typical' library value)
FST's	1.7 (UKWIR 'high' library value)	0.7 (UKWIR 'typical' library value)

The PST emissions will have improved given what we have previously discussed, and the FST's are also likely to be less odorous due to the upgraded treatment methods and improved operational practices at the works.

I have also amended the way the storm tanks have been modelled in the assessment. We are aware that these tanks are likely to have some level of odorous sludge left in the bottom due to insufficient drainage following a storm event. Therefore, I have modelled 3 of the 4 of these tanks as a constant emission rate to reflect this sludge (as 20% of the size of the tank) and the other tank is modelled as full of storm water for 6 months of the year. We consider these changes to still be overly robust as it not likely the storm tanks would be full constantly for 6 months as storm events do not tend to happen so frequently.

It is understood that given the improvements to the sludge treatment process, the final sludge cake that is produced will be in smaller quantities, of higher quality and less odorous than the previous sludge cake produced. This is based on information within the Phlorum report and is taken from a quote from a

'strategic asset planner at Severn Trent. This means that the odour emission rates used in the Phlorum report for this source is likely to also have reduced. However, given the difficulty in obtaining a more representative emission rate for this (there are no representative emission rates in the UKWIR guidance) we propose to keep the overly conservative emission rates from the Phlorum report in our updated model.

Could you please review the above and let me know if you have any comments or thoughts. I can then use this information to produce an updated model of the works.

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Digby, Ben <[REDACTED]>
Sent: 28 April 2021 14:37
To: Lopes, Bruno <[REDACTED]>; Threlfall, Paul <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

I'll also add that the Primary sludge GBTs are have odour management installed.

Ben Digby BEng (Hons) CEng MChemE

**Senior Process Design Engineer,
Asset Health and Performance**

■ [REDACTED]
■ [REDACTED]

From: Lopes, Bruno <[REDACTED]>
Sent: 28 April 2021 14:31
To: Threlfall, Paul <[REDACTED]>
Cc: Sugden, Peter <[REDACTED]>; Went, Charlotte
[REDACTED]; Wroe, Jonathon <[REDACTED]>; Lees,
Steven <[REDACTED]>; Digby, Ben <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Hi Paul

Yes we did manage to have a word with the site manager.

According to the information we got, there was indeed a change in the operational procedure for the PST desludging, which has occurred circa 2015/2016.

In a nutshell, you are correct when you previously mentioned the PSTs are no longer being used for thickening of sludge. That role is now fulfilled by a set of gravity belt thickeners which are fed raw sludge from the primaries.

It is my understanding that this change, has indeed reduced the occurrence of rising sludges in the primary tanks and associated emissions from that source.

Best regards

Bruno

[Bruno Lopes](#)

Senior Process Engineer – Treatment Process Engineering

[Redacted]

From: Threlfall, Paul <[Redacted]>
Sent: 27 April 2021 15:28
To: Lopes, Bruno <[Redacted]>
Cc: Sugden, Peter <[Redacted]>; Went, Charlotte <[Redacted]>; Wroe, Jonathon <[Redacted]>; Lees, Steven <[Redacted]>; Digby, Ben <[Redacted]>
Subject: RE: Proposed Odour Assessment methodology

Hi Bruno,

I am just emailing for a quick update on the below – did you manage to speak to the site manager?

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[Redacted]

[Redacted]



From: Threlfall, Paul
Sent: 20 April 2021 15:15
To: Lopes, Bruno <[Redacted]>
Cc: Sugden, Peter <[Redacted]>; Went, Charlotte <[Redacted]>; Wroe, Jonathon <[Redacted]>; Lees, Steven <[Redacted]>; Digby, Ben <[Redacted]>
Subject: RE: Proposed Odour Assessment methodology

Hi Bruno,

This would be very much appreciated, thank you. Please let me know when you have spoken to the site manager and hopefully we can get some further information.

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Lopes, Bruno <[REDACTED]>
Sent: 20 April 2021 13:44
To: Threlfall, Paul <[REDACTED]>
Cc: Sugden, Peter <[REDACTED]>; Went, Charlotte <[REDACTED]>; Wroe, Jonathon <[REDACTED]>; Lees, Steven <[REDACTED]>; Digby, Ben <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Hi Paul

I am not familiar with the history of the site (way before my time). The site manager will be the best person to provide detail about any upgrades/changes on site. We will try to gather any relevant information regarding this matter and get back to you.

Best regards
Bruno

Bruno Lopes
Senior Process Engineer – Treatment Process Engineering

[REDACTED]
[REDACTED]

From: Threlfall, Paul <[REDACTED]>
Sent: 12 April 2021 11:36
To: Lopes, Bruno <[REDACTED]>
Cc: Sugden, Peter <[REDACTED]>; Went, Charlotte <[REDACTED]>; Wroe, Jonathon <[REDACTED]>; Lees, Steven <[REDACTED]>; Digby, Ben <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

Hi Bruno,

Many thanks for your reply and apologies for the lateness of my response – I was out of the office the second half of last week so did not have access to my emails.

We acknowledge that ST does not hold any odour emission rates on file. However, given there have been some improvements to the works as well as changes to operational practices since the previous emission rate data was collected/ UKWIR library values were assigned to various odour sources in 2008, we believe that the odour contours produced in the previous Phlorum report (which have helped define the current Cordon Sanitaire around the works) are overly conservative and inaccurate.

Therefore, we are trying to ascertain what impact these improvements/changes in operational practices may have had on the odour emission rates from certain sources at the works. As discussed, we understand that since the 2008 odour survey, upgrades have been made to the sludge treatment and handling processes and there have been operational changes to sources such as the PST's (it is understood that sludge was previously thickened within the PST's which led to rising sludge and resulting high odour emissions, but this practice no longer takes place due to the sludge treatment/handling upgrades). Therefore, it is considered very likely that the odour of sources such as the PST's and certain aspects of the sludge handling/treatment areas will have now improved.

We are undertaking indicative odour modelling to see if the application of new reduced odour emission rates to these sources will make a discernible difference to the odour contours and predicted areas of odour impact. Therefore, it is our aim to try to agree more representative emission rates with ST – we are aware you hold no emission rate data on file, but we would like to open a dialogue to discuss the application of reduced odour emission rates - for example, the use of a 'typical' UKWIR library value instead of a previously used 'high' value given the likelihood of odour reduction at a particular source.

We would be grateful if you could advise what upgrade works have taken place across the works since 2008 (i.e. such as the refurbishment of the sludge handling/treatment areas in 2016) and we can then look at the emission rates previously applied to these to ascertain if it is realistic and representative to apply a reduced odour emission rate to these sources to more accurately reflect current odour conditions at the works.

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Lopes, Bruno <[REDACTED]>
Sent: 08 April 2021 10:36
To: Threlfall, Paul <[REDACTED]>
Cc: Sugden, Peter <[REDACTED]>; Went, Charlotte <[REDACTED]>; Wroe, Jonathon <[REDACTED]>; Lees, Steven <[REDACTED]>; Digby, Ben <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Hi Paul

I have spoken to Ben Digby about this matter and as mentioned before by Charlotte, ST does not have a

database of odour emission factors and we rely on the previous sampling data included in the Odournet report and/or UKWIR standard values.

Regarding the improvements you mention in your email (PST desludging and sludge route), as far as I know, they are being planned/discussed (as part of an upcoming project) but have not been implemented yet.

Best regards
Bruno Lopes

Bruno Lopes
Senior Process Engineer – Treatment Process Engineering

[Redacted]

From: Threlfall, Paul <[Redacted]>
Sent: 06 April 2021 13:54
To: Digby, Ben <[Redacted]>
Cc: Sugden, Peter <[Redacted]>; Lopes, Bruno <[Redacted]>;
Went, Charlotte <[Redacted]>; Wroe, Jonathon
<[Redacted]>; Lees, Steven <[Redacted]>
Subject: RE: Proposed Odour Assessment methodology

Good Afternoon Ben,

I am just emailing to see if you have had time to review my email below and have any advice on the likely updated emission rates we can use in our assessment?

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)
Wardell Armstrong LLP

[Redacted]
[Redacted]



From: Threlfall, Paul
Sent: 24 March 2021 09:09
To: Went, Charlotte <[Redacted]>; Digby, Ben <[Redacted]>
Cc: Sugden, Peter <[Redacted]>; Lopes, Bruno <[Redacted]>;
Wroe, Jonathon <[Redacted]>; Lees, Steven <[Redacted]>
Subject: RE: Proposed Odour Assessment methodology

Thanks for your reply Charlotte.

It is our understanding that, since the odour sampling survey was undertaken in 2009, there have been improvements to the sludge handling and treatment methods at the sewage works which will have led to an improvement in emission rates at the associated treatment process.

For example, we are aware there have been improvements to the PST's following on from the provision on site of raw sludge thickening and the necessary change in operational practice of withdrawing a thin sludge on a frequent basis. These have been assigned a 'high' odour emission rate within the Phlorum report but now, it is considered these would now be classed as a 'low' odour source.

We are also aware that there have been improvements to the sludge route through the works and new dewatering processes are now used on site which will result in less odour during the treatment process (as many are now covered) and will help to produce a cleaner, less odorous sludge cake.

Ben – could you please give me your views on the above and perhaps we could have some discussions regarding more appropriate emission rates to use in the assessment? If no further sampling works has been undertaken since the Odournet visit in 2009, perhaps we could begin by using more appropriate library value emission rates from within the UKWIR document.

I am also concerned the storm tanks may have been modelled very conservatively which may have also had an impact on the contours predicted within the Phlorum report. It would be great if we could also discuss this as well

Looking forward to hearing from you

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[Redacted contact information]



From: Went, Charlotte <[Redacted]>
Sent: 23 March 2021 12:42
To: Threlfall, Paul <[Redacted]>; Lopes, Bruno <[Redacted]>; Wroe, Jonathon <[Redacted]>; Digby, Ben <[Redacted]>
Cc: Lees, Steven <[Redacted]>; Sugden, Peter <[Redacted]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Hi Paul

Sorry for late reply.

As far as Netheridge goes we haven't closed Hayden or changed anything regarding the digestion process at Netheridge it is still conventional mesophilic (minimum 16 days digestion and minimum of 7 days batch storage post digestion). There are discussions to look at advanced digestion at Netheridge but nothing has been decided at this current time.

With respect to odour emissions rates, I don't have any data to share or aware of any other surveys

taken. So would have to go on the previous report. I have copied in Ben Digby (senior process design who may also have a view on odours if required).

Not sure if that is very helpful or not, but feel free to call if we need to provide emissions rates and ill try and raise this further.

Thank you

Charlotte

From: Threlfall, Paul <[REDACTED]>
Sent: 23 March 2021 08:49
To: Went, Charlotte <[REDACTED]>; Lopes, Bruno <[REDACTED]>; Wroe, Jonathon <[REDACTED]>
Cc: Lees, Steven <[REDACTED]>; Sugden, Peter <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

Hi Charlotte,

I hope you are well.

Im just emailing to see if you have any update for me regarding the new odour emission rates for the upgraded parts of the Netheridge STW, as opposed to the overly conservative figures that have been used in the Phlorum report?

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)
Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Threlfall, Paul
Sent: 15 March 2021 08:45
To: Went, Charlotte <[REDACTED]>; Lopes, Bruno <[REDACTED]>; Wroe, Jonathon <[REDACTED]>
Cc: Lees, Steven <[REDACTED]>; Sugden, Peter <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

Good morning Charlotte,

Yes, the report was written in September 2019 but used odour emission rate data collected from an odour sampling exercise undertaken at the sewage works during 2009.

I have attached a copy of the report for your reference if you need it

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Went, Charlotte <[REDACTED]>
Sent: 12 March 2021 16:11
To: Threlfall, Paul <[REDACTED]>; Lopes, Bruno <[REDACTED]>; Wroe, Jonathon <[REDACTED]>
Cc: Lees, Steven <[REDACTED]>; Sugden, Peter <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Hello

Apologies for the late reply.

Do you have the date for the odour assessment report undertaken by Phlorum on behalf of Gloucester Council please?

Thank you

Charlotte

From: Threlfall, Paul <[REDACTED]>
Sent: 11 March 2021 08:41
To: Lopes, Bruno <[REDACTED]>; Went, Charlotte <[REDACTED]>; Wroe, Jonathon <[REDACTED]>
Cc: Lees, Steven <[REDACTED]>; Sugden, Peter <[REDACTED]>
Subject: RE: Proposed Odour Assessment methodology

Good Morning Bruno/Charlotte/Jonathan

I hope you are all well.

I am just emailing to see if you have had time to have a look over my initial email, forwarded to you by Peter Sugden on 4th March, with regards to the odour assessment methodology of the Netheridge STW as well as the availability of some indicative emission rates from the works following on from the fairly recent upgrade works that have taken place.

I would be very grateful if you could review the email and provide me with a response

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Threlfall, Paul

Sent: 04 March 2021 09:28

To: Sugden, Peter [REDACTED]

Cc: Lees, Steven [REDACTED]; Lopes, Bruno [REDACTED];
Wroe, Jonathon [REDACTED]; Went, Charlotte
[REDACTED]

Subject: RE: Proposed Odour Assessment methodology

Good Morning Peter/All,

Many thanks for your reply and for passing the email on to the correct people!

I will keep an eye out for any comments from Bruno, Jonathan and Charlotte as we would appreciate any input/information you may have to help with our assessment.

Many thanks

Paul

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[REDACTED]
[REDACTED]



From: Sugden, Peter [REDACTED]

Sent: 04 March 2021 08:51

To: Threlfall, Paul <[REDACTED]>

Cc: Lees, Steven [REDACTED]; Lopes, Bruno <[REDACTED]>;
Wroe, Jonathon [REDACTED]; Went, Charlotte
<[REDACTED]>

Subject: RE: Proposed Odour Assessment methodology

ST Classification: OFFICIAL PERSONAL

Paul,

Please accept my apologies for not replying earlier to your email. I have copied in Bruno Lopes of our Process Design team who may be able to comment on the proposed methodology (I do not have expertise in this area). I do not believe we have actual emissions data of the current treatment processes and arrangements on site, but I have also copied in our Bioresources process optimisation lead, Charlette Went, and Bioresources Operations Manager, Jonathon Wroe, both of whom may have emissions information on the most recent developments at Netheridge STW, which were concerned with Bioresources (sludge treatment) processes.

Regards,

Peter Sugden

Strategic Asset Planning Lead – Waste Treatment
Asset Strategy & Planning

[REDACTED]

From: Threlfall, Paul <[REDACTED]>
Sent: 03 March 2021 18:27
To: Sugden, Peter [REDACTED]
Cc: Lees, Steven [REDACTED]
Subject: Re: Proposed Odour Assessment methodology

Hi Peter,

I am just emailing to ensure you received my previous email, dated 18th February, regarding an odour assessment methodology.

I can send the email again should you wish, but could you please review the email and let me know of any comments you may have please?

Many thanks

Paul

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From: Threlfall, Paul
Sent: Thursday, February 18, 2021 2:56:20 PM
To: [REDACTED]
Cc: Lees, Steven [REDACTED]
Subject: Proposed Odour Assessment methodology

Dear Peter,

I hope you are well.

Wardell Armstrong have been instructed to undertake an odour assessment for a proposed residential development on land off Hempsted Lane, Gloucester. The Gloucester (Netheridge) Waste water Treatment Works (WwTW) is located approximately 550m to the south west of the proposed development site, which we understand is operated by Severn Trent.

With regard to potential odour issues associated with the nearby WwTW, we are aware of an existing odour assessment report of the Netheridge WwTW undertaken by Phlorum on behalf of Gloucester

Council to establish a cordon sanitaire. It is understood that the data used within this report is based on information and odour emission rates from before a number of recent upgrades took place at the WwTW. Therefore we would consider the odour contours predicted within that report to be overly robust.

Our client is keen for us to undertake some indicative odour modelling to assess if the changes/upgrades that have already taken place at the works are likely to have reduced the size of the odour contours predicted in the Phlorum report.

With this in mind, we propose to undertake a detailed odour assessment using dispersion modelling and the following methodology:

- The odour dispersion modelling will be undertaken using AERMOD (Lakes Environmental, Version 9.8) and will be carried out in accordance with Environment Agency (EA) modelling guidance and the EA Technical Guidance Note 'H4 – Odour Management' (March 2011), using 5 years of sequential hourly wind data. We propose to use NWP met data within the assessment.
- We will build a base model of the works using the odour emission rate data and information within the Phlorum report. Following this, we would want to agree more representative emission rates for those sources at the works that have recently been upgraded to ascertain if these will make a difference to the predicted odour impact from the works. Ideally, we would like to obtain this information directly from Severn Trent if the information is available. **Can you confirm if this information would be available?** If this is not possible, we would look to use library emission values from the UKWIR 'Odour control in wastewater treatment' document in the assessment, and agree more representative emission rates with Severn Trent using this data.

Please can you provide me with any comments you may have on the above odour methodology. Apologies if you are not the right person to contact regarding this – if not, I would be very grateful if you could forward my email to the appropriate person

Many thanks,

Paul Threlfall

Paul Threlfall | Senior Environmental Scientist (Air Quality & Odour)

Wardell Armstrong LLP

[Redacted contact information]



Severn Trent Plc (registered number 2366619) and Severn Trent Water Limited (registered number 2366686) (together the "Companies") are both limited companies registered in England & Wales with their registered office at Severn Trent Centre, 2 St John's Street, Coventry, CV1 2LZ This email (which includes any files attached to it) is not contractually binding on its own, is intended solely for the named recipient and may contain CONFIDENTIAL, legally privileged or trade secret information protected by law. If you have received this message in error please delete it and notify us immediately by telephoning +44 2477715000. If you are not the intended recipient you must not use, disclose, distribute, reproduce, retransmit, retain or rely on any information contained in this email. Please note the Companies reserve the right to monitor email communications in accordance with applicable law and regulations. To the

Appendix 3 – Odour complaints

Please see separate download.

Netheridge Odour Complaints to Gloucester City Environmental Health Mid 2019

Reference	Date Request Received	Details of Complaint	Complainant Address
1901838/POAOIN	27/09/2019	I live in Hempsted Lane near to the BT site and the smell from either the drains or the sewage works gas been bad for a while. Have now got fed up with it and want to report it to environmental health.	Hempsted Lane (near BT site) Hempsted Gloucester
19/02219/POAOIN	25/11/2019	Odour.	Hempsted Lane Hempsted Gloucester
20/01536/POAOIN	05/08/2020	Just emailing to inform you of a bad smell coming from Severn Trent works. We live at 164 Hempsted lane and in the past hour Severn Trent smells have got worse and it is now that bad I am shutting the doors and windows on a summer night.	Hempsted Lane Hempsted Gloucester
20/01567/POAOIN	11/08/2020	Complaint re smell from Netheridge Treatment Works Sunday night.	Hempsted Lane Hempsted Gloucester
20/01964/POAOIN	25/09/2020	I wish to report the ongoing noxious smell from Netheridge Sewage works, Hempsted, Gloucester. It is regularly wafting into the gardens of Chartwell Close and High View. Today it is particularly strong, catching in the throat and nauseous. It is causing residents to stay indoors. Can you ascertain what is happening to create this noxious smell. Please keep me informed of your investigations and actions taken to resolve this ongoing intrusion into the right of residents to enjoy their homes and gardens.	Chartwell Close / High View Hempsted Gloucester
20/01965/POAOIN	25/09/2020	Upteen times the smell from the works has made going outside unpleasant. Today is another of those days of a cloying, sickly smell coming from the works. I've not bothered emailing before but realise if we don't mention it will be assumed it is not a problem.	St Swithuns Road Hempsted Gloucester
20/02410/POAOIN	20/11/2020	A smell has been reoccurring in Hempstead - an acrid smell that lingers. This relates to several cases that are outlined in the IVA. I wanted to create one case to use to go back to and write down any developments. Currently assumed to be the Netheridge Treatment Plant, also suggested its Permal, other manufacturers, recycling centre and muck spreading.	Hempstead Lane Estate Hempsted Gloucester
21/00668/POAOIN	17/03/2021	Complaint about the rotten flesh smell which is not very pleasant coming from the Netheridge Sewage Treatment Works. There is also lots of noise from activity going on. Customer is going to report to STW.	Sims Lane Quedgeley Gloucester

Netheridge Sewage Smell Survey - Hempsted Residents Association June 2021

Date	Time	Location	Comments	Recipient of comment
08/03/2021	10.45	High View	Frequently detected	Harriet Severinsen Gloucester CC
12/06/2021	various	High View	Frequently detected	
22/06/2021	various	Hempsted Lane	Frequently detected	
22/06/2021	pm	Hempsted Lane	unpleasant smells particularly evenings	
22/06/2021	various	Chartwell Close	when wind is from a Southerly direction	
22/06/2021	various	Netheridge	frequently detected. This evening particularly bad	
23/06/2021	various	Horseshoe Way	recently moved in and smell is constant	
31/5&1/6/21	various	Netheridge	frequently detected, no response to complaints	Severn Trent & GCC - no response
23/06/2021	various	Hempsted Lane	so frequent we no longer bother to complain	
23/06/2021	various	Hempsted Lane	in Spring/Summer daily, rest of year often	
23/06/2021	various	Hempsted Lane	have to close windows & bring washing in	
23/06/2021	various	Hempsted Lane	odour frequently exceeds Council Threshold	
22&23/6/21	9pm	Hempsted Lane	very unpleasant smells on consecutive nights	Severn Trent ref: 2005258255
22&23/6/21	various	Hempsted Lane	Nauseous smell on consecutive nights	
23&24/6/21	9.15pm	Hempsted Lane	Sewage smells	
23/06/2021	afternoon	Bridle Court	Had to close windows it was so bad	
23/06/2021	afternoon	High View	Foul smell at 1pm & 2.40pm	
23/06/2021	9am-4pm	Anchoridge area	detected several times	
25/09/2020	5pm-midnight	High View	Strong unpleasant odour	GCC Community Nuisance Log
26/09/2020	7am-11pm	High View	Strong unpleasant odour	GCC Community Nuisance Log
27/09/2020	7am-11pm	High View	Strong unpleasant odour	GCC Community Nuisance Log
19/11/2020	7am-11pm	High View	Strong unpleasant odour	GCC Community Nuisance Log
08/03/2021	10.00-11am	High View	Strong unpleasant odour	GCC Community Nuisance Log
22/06/2021	various	Chartwell Close	Strong unpleasant odour	Environment Agency
08/06/2021	various	High View	awful smell and very frequent	
12/06/2021	various	Hempsted Lane	Frequent horrible smell	
12/06/2021	various	Netheridge	Awful am. absolutely stinking 21.10 & 23.13	
12-26/6/21	various	Horseshoe Way	Blighted by sewage smell since moving here	
12/06/2021	various		Keeping a log of instances of awful smell	Severn Trent & GCC-No response
23/06/2021	various	Hempsted Lane	Constant nauseous smell, eyewatering stench	
27/06/2021	9pm	Hempsted Lane	Sewage smells	
24/06/2021	8pm	Court Gardens	Dreadful smell	
25/06/2021	am	Court Gardens	awful smell and frequently	
24/06/2021	9.30pm	Hempsted Lane	Sewage smells, again!	
25/06/2021	8pm	Hempsted Lane	Sewage Smells	
25/06/2021	4pm	High View	Same terrible smell!	
25/06/2021	11am	Court Gardens	Obnoxious smell	
25/06/2021	am	Ladywell Close	Powerful and unpleasant	
25/06/2021	from 10am	Hempsted Lane	Same awful smell for most of day	

25/06/2021	6.15pm	St. Swithuns Road	Smell is quite obnoxious	
25/06/2021	am	Court Gardens	disgusting diarrhoea odour	
27/06/2021	7pm	St. Swithuns Road	smell so strong we close windows which affects our sleep	
28/06/2021	various	Hempsted Lane	for 27 years suffered this nauseous smell, nothing changes!	
All complaints were emailed to HRA for the benefit of this survey. The overriding comment received was 'there is no point As a Resident of 39 years I would say the frequency and strength of the smell has increased.				