Suffolk Coastal Local Plan Review Examination Hearings

Matter 3 – Area Specific Strategies – Development Allocations

Hearing Statement on Behalf of Capital Community Developments Ltd. Responding to Inspector's Questions in Respect of Emerging Policy SCLP12.62 Land West of Garden Square, Rendlesham

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Information

Date	July 2019
Site Address	Policy SCLP12.62 Land West of Garden Square
Development Description	Hearing Statement – Matter 3
Local Planning Authority	Suffolk Coastal District Council
Representer	Parker Planning Services Ltd. on behalf of Capital Community Developments Ltd.

Author: Steven Bainbridge MRTPI

Principal Planning Manager (Suffolk)

Report Revision:1

Contents

1 Introduction

1.1 This Hearing Statement has been prepared by Parker Planning Services Ltd. and follows submissions made at previous stages of this local plan's preparation.

1.2 In the absence of compelling evidence we are of the opinion that it would be **justified** to increase the quantum of development back up to the previous level of 75 dwellings as this would be an **effective** and efficient use of land making the allocation **consistent with national policy** and would better contribute to the local planning authority meeting its housing needs on a sustainable site within a sustainable settlement.

1.3 The author of this Statement has a long professional history of working on planning matters in the Rendlesham area and is therefore well placed to aid the Inspector in discussing matters related to Rendlesham at the hearing. Those planning projects include:

- 2009 planning permission for a 2mw anaerobic digestion renewable energy plant in Rendlesham.
- 2010 the East of England Royal Town Planning Institute planning award for the renewable energy plant.
- 2011 planning permission for a waste soils processing site at Bentwaters (Rendlesham).
- 2017 local plan allocation for the same 'waste' site in the Suffolk County waste local plan.
- 2013 planning permission for the Bentwaters 'masterplan' which was a decade-long project for the regularisation and reuse of most of the buildings on the former airfield and included reopening the runway to general aviation and a site-specific local plan policy followed.
- 2014 planning permission for a 4mw anaerobic digestion plant at Bentwaters replacing the earlier one.
- 2015 planning permission for a large agricultural processing facility on Bentwaters (Rendlesham).

- 2019 planning permission for an extension to the large agricultural processing facility.
- 2015 appearing at the local plan examination supporting necessary amendments to the Bentwaters site-specific policy SSP24.
- 2018/19 planning application for 75 houses in Rendlesham.
- 2013 to 2015 advised the Parish Council on the Rendlesham neighbourhood plan (a government front runner and RTPI award winner) and wrote the central policy RNPP1.
- 2013 to 2015 advised the parish council on resisting a planning application for 50 houses in the district centre and thus saving the heart of the village for the future.
- 2017 planning permission for an 18m tall film studio complex at Bentwaters in the AONB.

1.4 Members of Capital Community Development Ltd (the prospective developers of the SCLP12.62 site) have lived in Rendlesham for many years and have a successful track record of having already built out the Garden Square and Gardenia Close development adjacent to site SCLP12.62.

1.5 Our client's **Soundness** concerns relate to the reduction in the quantum of housing allocated to this site and the lack of evidence justifying that reduction by the local planning authority.

1.6 In the absence of compelling evidence we are of the opinion that it would be **justified** to increase the quantum of development back up to the previous level of 75 dwellings as this would be an **effective** and **efficient use of land** making the allocation **consistent with national policy** and would better contribute to the local planning authority meeting its housing needs on a sustainable site within a sustainable settlement.

2 General Questions Relevant to all proposed site allocations

Is each site allocation and its criteria justified and appropriate in all aspects, having regard to the likely impacts of the development and potential constraints?

2.1 The criteria of emerging policy SCLP12.62 are largely the same as the criteria within its adopted predecessor policy SSP12 (see pages 45 to 48 of exam library document F2) of which our clients were supportive. The two policies are provided side by side for ease of reference in Appendix 1 of this statement.

2.2 The criteria within policy SSP12 have been responded to in a recent planning application (ref. DC/19/1499/FUL) and provided no obstruction to the preparation and submission of that planning application.

2.3 The local planning authority have added a new criterion (i) to the emerging policy. It requires that "Evidence is required to demonstrate there is adequate provision for treatment at the Water Recycling Centre or that this can be provided".

2.4 In response to this Matter Question we point to Appendix 2 of this Statement where the 'evidence' can be found that there is adequate capacity at the WRC in question.

2.5 The evidence provided is in the form of a consultation response by Anglia Water of 9th May 2019 to the recent planning application where AW say: "The foul drainage from this development is in the catchment of Rendlesham Park Water Recycling Centre that will have available capacity for these flows" and "The sewerage system at present has available capacity for these flows via a direct connection to the Water Recycling Centre".

2.6 In terms of criterion a) of the emerging policy this is the subject of a Question by the Inspector and is dealt with in Section 3 below.

Are there any significant factors that indicate any of the sites should not be allocated? Is there a risk that site conditions, infrastructure or access requirements or constraints, might prevent development or adversely affect viability and delivery?

2.7 We are not aware of any significant factors which indicate Site SCLP12.62 should not be allocated. There are no site conditions, infrastructure or access requirements or constraints which might prevent development or adversely affect viability and delivery.

3 Answer to Question 3.85 - Would criterion a) be effective in safeguarding the operation of the Rendlesham Water Recycling Centre and provide adequate living conditions for future residents of the site?

3.1 Criterion a) of emerging policy SCLP12.62 has been carried forward from its predecessor policy SSP12 unaltered.

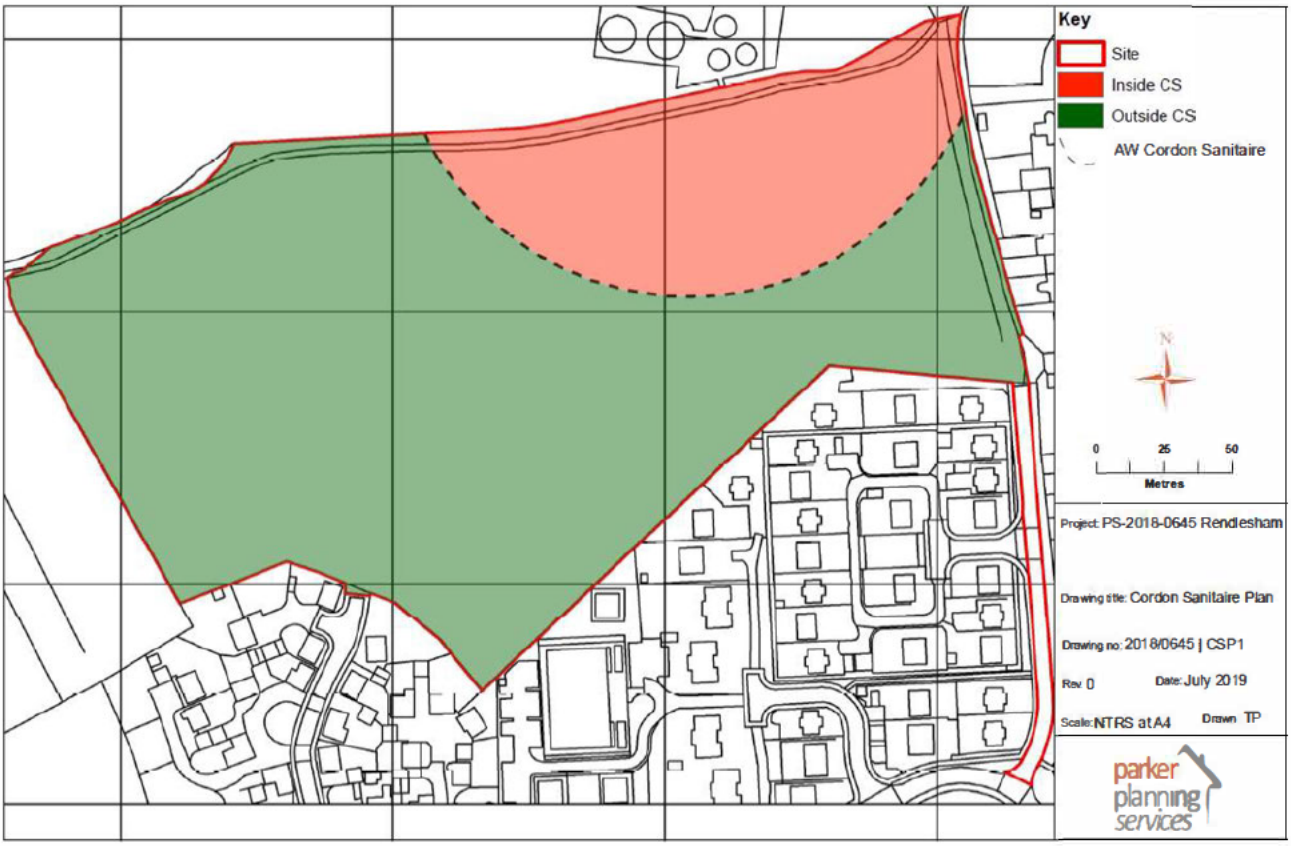
3.2 A positive consultation response from Anglia Water to a recent planning application is included in Appendix 2.

3.3 The Cordon Sanitaire which constrains part of the developable area of Site Allocation SCLP12.62 is understood by relevant parties (landowner, prospective developers, the local planning authority, parish council and consultees) and has been the subject of a supporting Odour Assessment of 24th May 2018 (see Appendix 3) provided with a recent planning application.

3.4 The Cordon Sanitaire has been taken into account as an exclusion zone in the housing layout of the recent planning application.

3.5 The images below show the Cordon Sanitaire and its relationship to the recently proposed housing layout. In their email of 15 December 2017 Anglian Water proposed a Cordon Sanitaire of a 110 m radius from the centre point of the WRC, based on their own modelling of the predicted dispersion range of malodours.

3.6 All proposed residential receptors are outside of the Cordon Sanitaire and as such the consultation response by Anglia Water was supportive. These plans are reproduced at full size in Appendix 4.



3.7 The recent planning application referred to above was refused primarily on design grounds on 8th July 2019. However, one reason for refusal relates to this Matter because it concerns odour from the nearby Water Treatment Centre.

3.8 The recent planning application refusal will soon be the subject of a Planning Appeal Inquiry and the following information is crucial for the local plan Inspector in understanding the Council's justification for this reason for refusal and how it is being dealt with.

3.9 The respective reason for refusal is reproduced in Appendix 5 for ease of reference and makes clear that the reason for refusal was because "The submitted information does not correspond with the latest layout proposal". This is a reference to the fact that the submitted Odour Assessment included an earlier layout design and the Council have therefore claimed they could not know whether the Cordon Sanitaire was affecting the new layout – this could have been answered simply within the bounds of that application had the local planning authority asked but will now have to be answered at appeal.

3.10 The inset images above show how the Cordon Sanitaire has remained intact and in place.

3.11 The Odour Assessment submitted with the recent planning application is going to be amended in preparation for the Planning Appeal Inquiry shortly. When that amended Odour Assessment is available, we will provide it to the local plan Inspector as it relates to this Matter directly.

3.12 However, in the meantime please note that the amended Odour Assessment will be making the following statements, as confirmed by Air Spectrum Environmental, the independent odour assessors who wrote the original report:

- The 2018 Odour Assessment referred to by the local planning authority in their reason for refusal was based on the previously accepted cordon sanitaire.
- The cordon sanitaire has remained static in modelling for this site.
- The amended report will be based on both the new layout but also a more simple and general 'in/out' principle; meaning the assessment conclusions will be transferable to any housing layout which sites houses outside of the cordon sanitaire and as such will not be specific to any particular layout drawing.

3.13 As can be seen in the local plan representations of January 2019 (Enclosure 3 of that document), when the established cordon sanitaire is applied to the site area it leaves a developable area of some 3.2 hectares.

3.14 As has been stated in previous local plan representations, at a reasonable development density of 30 dwellings per hectare, this provides developable land unaffected by the Water Recycling Centre for some 96 dwellings.

3.15 On the basis of this information and evidence we are content that criterion a) of emerging policy SCLP12.62 is effective in safeguarding the operation of the Rendlesham Water Recycling Centre and providing adequate living conditions for future residents of the site for a development of 'approximately 50' dwellings, but also 75 (as in the recent planning application) and up to about 100 on a reasonable development density of 30 dwellings per hectare.

3.16 In respect of the recommended change to criterion a) submitted by Anglia Water (Exam library document A6 page 2340) we are content with this proposed change because the Odour Assessment report (provided for the recent planning application and soon to be amended for the planning appeal inquiry) has provided the evidence necessary to satisfy Anglia Water (see Appendix 2) and to comply with this policy criterion in the future.

3.17 Notwithstanding the above, an alternative question for the Inspector could be:

Is criterion a) even necessary? Is it based on evidence?

3.18 The cordon sanitaire is based on a 2014 assessment (see Appendix 6), upon which Anglia Water based their advice (see Appendix 7). The Anglia Water advice promotes the idea of the cordon sanitaire in order to reflect the industry benchmark odour threshold of 1.5 oue/m^3.

3.19 In basic terms residential dwellings are permissible in areas below 1.5 oue/m^3 and not in areas above 1.5 oue/m^3.

3.20 The 2018 odour report which was submitted in support of the two planning applications on this site (18/2374 and 19/1499) concluded that even within the boundary of the water treatment centre itself odour levels were only 0.14 oue/m3. An order of 10 times less than the benchmark figure. In theory a house could be built within the water treatment centre itself and not experience unacceptable odour levels.

3.21 It is a fact that in 2017 that commercial waste was being drained into the sewer system from Bentwaters and interfering with the normal operation of the WTC. This was addressed and the problem ceased.

3.22 It is the firm opinion of Capital Community Developments that it is entirely probably that similar events happened prior to 2017 and could have caused the anomalous odour levels in 2014 which established the cordon sanitaire upon which criterion a) is based.

3.23 It is noteworthy that it would be counter-intuitive to claim that the odour from the WTC has reduced over time as the 'domestic pressure' on it from increased population. Therefore, it follows that the 2014 levels were probably an anomaly.

3.24 On the basis of the two most recent odour assessments, with the WTC operating normally, that there is sufficient evidence for the removal of criterion a) from the emerging policy and evidence to say it should never have been included in its predecessor SSP12.

3.25 If criterion a) and the cordon sanitaire are removed then the developable area of SCLP12.62 increases and the housing allocation should follow suit. With an unimpeded developable area of some 5ha and a reasonable housing density of 30 dwellings per hectare (5 x 30 = 150) it is necessary to consider whether even 75 dwellings is not an efficient use of an allocated site.

4 Answer to Question 3.86 - Is the figure of approximately 50 dwellings at the site justified?

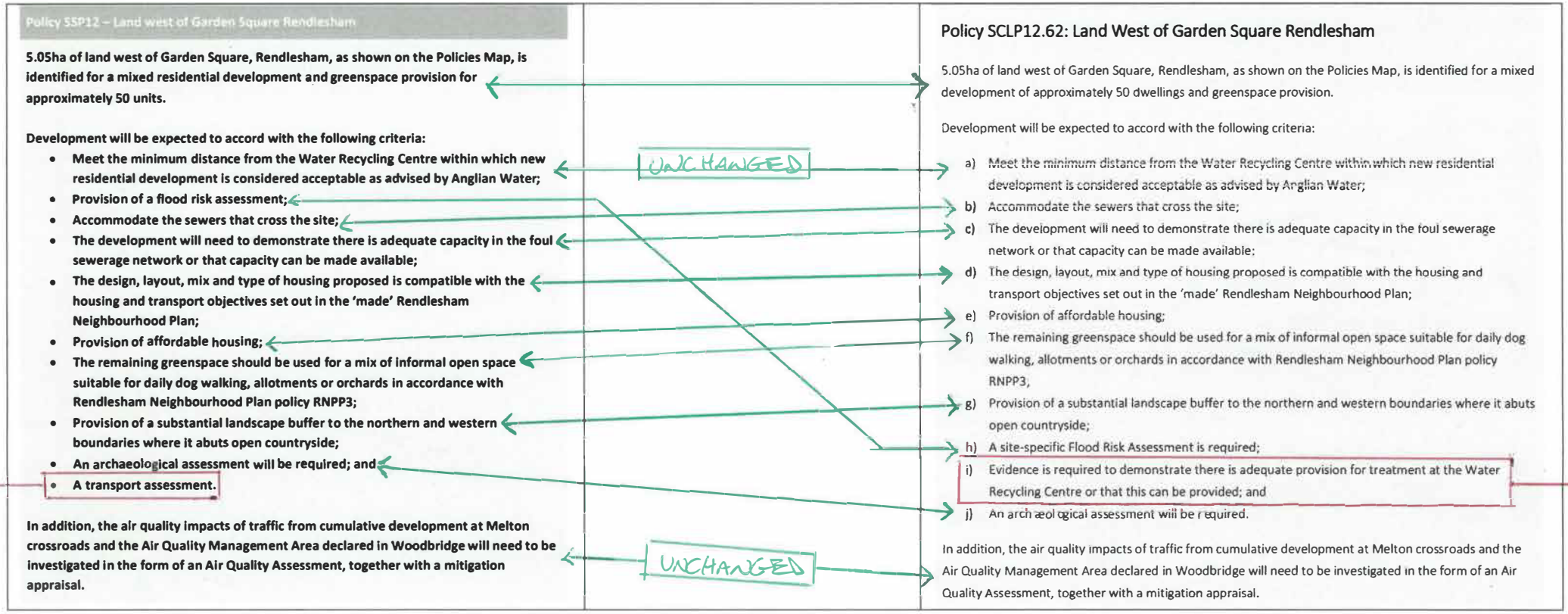
4.1 No. The figure should be **higher** to be justified, sound and consistent with national policy.

4.2 Representations made by Parker Planning on behalf of Capital Community Developments are included in Examination Library Document A6 between pages 2339 and 2371. However, within those pages the linked pdf should be reviewed because it provides the substance of the previous representations in a more readily readable format.

4.3 Our arguments remain that the principle of development is well established on this site and recent planning applications have demonstrated an appetite for development and that no significant issues of principle have been raised by statutory consultees that cannot be / or have not already been readily overcome. This is particularly important in relation to the supposed 'limiting factors' as discussed in our previous representations said to include highways (SCC Highways have not objected to a recent proposal for 75 dwellings on site SCLP12.62), education (SCC Infrastructure have not objected to a recent proposal for 75 dwellings on site SCLP12.62), the cordon sanitaire and sewers (Anglia Water has not objected to a recent proposal for 75 dwellings on site SCLP12.62).

4.4 Our previous representations (Exam Library Document A6 between pages 2339 and 2371) remain relevant; that there is no evidence-based reason for not increasing the quantum of development back up to at least the 75 figure as it was historically, and there is a compelling planning case for doing so, for the reasons we have previously set out, and to consider increasing it further on the basis of the evidence herein.

Appendix 1



THIS CRITERION HAS NOT BEEN REPEATED.

THIS CRITERION IS NEW WHEN COMPARED TO POLICY SSP12.

Appendix 2

Planning Applications – Suggested Informative Statements and Conditions Report

If you would like to discuss any of the points in this document please contact us on 03456 066087, Option 1 or email planningliaison@anglianwater.co.uk.

AW Site Reference:	731/1/0056953
Local Planning Authority:	Suffolk Coastal District
Site:	Land To The North And West Of Garden Square And Gardenia Close, Rendlesham
Proposal:	A phased development of 75 dwellings, car parking, public open space, hard and soft landscaping and associated infrastructure and access
Planning application:	DC/19/1499/FUL

Prepared by: Pre-Development Team

Date: 8 May 2019

ASSETS

Section 1 - Assets Affected

There are assets owned by Anglian Water or those subject to an adoption agreement within or close to the development boundary that may affect the layout of the site. Anglian Water would ask that the following text be included within your Notice should permission be granted.

Anglian Water has assets close to or crossing this site or there are assets subject to an adoption agreement. Therefore the site layout should take this into account and accommodate those assets within either prospectively adoptable highways or public open space. If this is not practicable then the sewers will need to be diverted at the developers cost under Section 185 of the Water Industry Act 1991. or, in the case of apparatus under an adoption agreement, liaise with the owners of the apparatus. It should be noted that the diversion works should normally be completed before development can commence.

WASTEWATER SERVICES

Section 2 - Wastewater Treatment

The foul drainage from this development is in the catchment of Rendlesham Park Water Recycling Centre that will have available capacity for these flows

Section 3 - Used Water Network

The sewerage system at present has available capacity for these flows via a direct connection to the Water Recycling Centre. If the developer wishes to connect to our sewerage network they should serve notice under Section 106 of the Water Industry Act 1991. We will then advise them of the most suitable point of connection. (1) INFORMATIVE - Notification of intention to connect to the public sewer under S106 of the Water Industry Act Approval and consent will be required by Anglian Water, under the Water Industry Act 1991. Contact Development Services Team 0345 606 6087. (2) INFORMATIVE - Notification of intention to connect to the public sewer under S106 of the Water Industry Act Approval and consent will be required by Anglian Water, under the Water Industry Act 1991. Contact Development Services Team 0345 606 6087. (3) INFORMATIVE - Protection of existing assets - A public sewer is shown on record plans within the land identified for the proposed development. It appears that development proposals will affect existing public sewers. It is recommended that the applicant contacts Anglian Water Development Services Team for further advice on this matter. Building over existing public sewers will not be permitted (without agreement) from Anglian Water. (4) INFORMATIVE - Building near to a public sewer - No building will be permitted within the statutory easement width of 3 metres from the pipeline without agreement from Anglian Water. Please contact Development Services Team on 0345 606 6087. (5) INFORMATIVE: The developer should note that the site drainage details submitted have not been approved for the purposes of adoption. If the developer wishes to have the sewers included in a sewer adoption agreement with Anglian Water (under Sections 104 of the Water Industry Act 1991), they should contact our Development Services Team on 0345 606 6087 at the earliest opportunity. Sewers intended for adoption should be designed and constructed in accordance with Sewers for Adoption guide for developers, as supplemented by Anglian Water's requirements.

Section 4 - Surface Water Disposal

The preferred method of surface water disposal would be to a sustainable drainage system (SuDS) with connection to sewer seen as the last option. Building Regulations (part H) on Drainage and Waste Disposal for England includes a surface water drainage hierarchy, with infiltration on site as the preferred disposal option, followed by discharge to watercourse and then connection to a sewer.

From the details submitted to support the planning application the proposed method of surface water management does not relate to Anglian Water operated assets. As such, we are unable to provide comments on the suitability of the surface water management. The Local Planning Authority should seek the advice of the Lead Local Flood Authority or the Internal Drainage Board. The Environment Agency should be consulted if the drainage system directly or indirectly involves the discharge of water into a watercourse. Should the proposed method of surface water management change to include interaction with Anglian Water operated assets, we would wish to be re-consulted to ensure that an effective surface water drainage strategy is prepared and implemented.

FOR THE ATTENTION OF THE APPLICANT - if Section 3 or Section 4 condition has been recommended above, please see below information:

Next steps

Desktop analysis has suggested that the proposed development will lead to an unacceptable risk of flooding downstream. We therefore highly recommend that you engage with Anglian Water at your earliest convenience to develop in consultation with us a feasible drainage strategy.

If you have not done so already, we recommend that you submit a Pre-planning enquiry with our Pre-Development team. This can be completed online at our website http://www.anglianwater.co.uk/developers/pre-development.aspx

Once submitted, we will work with you in developing a feasible mitigation solution.

If a foul or surface water condition is applied by the Local Planning Authority to the Decision Notice, we will require a copy of the following information prior to recommending discharging the condition:

Foul water:

- Feasible drainage strategy agreed with Anglian Water detailing the discharge solution including:
  - Development size
  - Proposed discharge rate (Should you require a pumped connection, please note that our minimum pumped discharge rate is 3.8l/s)
  - Connecting manhole discharge location (No connections can be made into a public rising main)
- Notification of intention to connect to the public sewer under S106 of the Water Industry Act (More information can be found on our website)
- Feasible mitigation strategy in agreement with Anglian Water (if required)

Surface water:

- Feasible drainage strategy agreed with Anglian Water detailing the discharge solution, including:
  - Development hectare size
  - Proposed discharge rate (Our minimum discharge rate is 5l/s. The applicant can verify the site's existing 1 in 1 year greenfield run off rate on the following HR Wallingford website -http://www.uksuds.com/drainage-calculation-tools/greenfield-runoff-rate-estimation . For Brownfield sites being demolished, the site should be treated as Greenfield. Where this is not practical Anglian Water would assess the roof area of the former development site and subject to capacity, permit the 1 in 1 year calculated rate)
  - Connecting manhole discharge location
- Sufficient evidence to prove that all surface water disposal routes have been explored as detailed in the surface water hierarchy, stipulated in Building Regulations Part H (Our Surface Water Policy can be found on our website)

Appendix 3

Air Spectrum Environmental Limited
Spectrum Environmental Support

Spectrum House
Checketts Lane
Checketts Lane Industrial Estate
Worcester
WR3 7JW

Lois Bladen
Dr Magdalena Sadyś
Aidan Wrynne

Odour Assessment

Capital Community Developments

Anthony Hardy

30 Gardenia Close
Rendlesham
Woodbridge
IP12 2GX

JL18766
Version 4.0

24/05/2018

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Air Spectrum Environmental Limited | Spectrum Environmental Support
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ABBREVIATIONS

ASE	Air Spectrum Environmental Limited
BS EN	British Standard European Norm
DEFRA	Department for Environment, Food & Rural Affairs
EA	Environment Agency
IPPC	Integrated Pollution Prevention and Control
NPPF	National Planning Policy Framework
SES	Spectrum Environmental Support
STW	Sewage Treatment Works
UKWIR	UK Water Industry Research
WWTW	Waste Water Treatment Works

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EXECUTIVE SUMMARY

Air Spectrum Environmental Ltd (ASE), incorporating Spectrum Environmental Support (SES) were commissioned to undertake an odour dispersion model of a proposed site development by Capital Community Developments situated near Jays Croft Road, Rendlesham, Woodbridge IP12 2TQ. Data entered within the dispersion model was based upon a previous report done for Persimmon Homes Anglia where the emission data for the Sewage Treatment Works (STW) was supplied by Anglian Water.

The results of this assessment indicate that ground level odour concentrations at the proposed residential development are well below the 1.5 ou_E/m^3 98^{th} percentile (hourly average) limit. Therefore, based on the findings within this assessment, it appears that the proposed residential development would not be subjected to odour nuisance from the STW site.

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1.0 INTRODUCTION

1.1 Background

Air Spectrum Environmental Ltd (ASE), incorporating Spectrum Environmental Support (SES) were commissioned to undertake an odour dispersion model of a proposed site development by Capital Community Developments situated near Jays Croft Road, Rendlesham, Woodbridge IP12 2TQ. Data entered within the dispersion model was based upon a previous report done for Persimmon Homes Anglia where the emission data for the Sewage Treatment Works (STW) was supplied by Anglian Water.

Capital Community Developments propose to develop the site into a residential area and have procured SES to report on the impacts of the odour release from the STW. The STW is situated to the North of the development in Rendlesham. During the planning stages, concerns have been raised about the off-site odours which may cause nuisance to new residents.

To assess the risk that off-site odours may cause a nuisance to the future residents of the development, SES has completed an odour impact assessment for the odour sources identified. ADMS 5 software was used to prepare the dispersion model to quantify the odour risk to the planned development.

Figure 1 - Planned Development

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1.2 Limitations

Air Spectrum Environmental Limited has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed.

The report may not be relied upon by any other party without the express agreement of the client. No other warranty, expressed or implied is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by ASE for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of ASE and the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the Safety, Health, Environment and Quality Management System of ASE.

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2.0 REGULATORY GUIDANCE

2.1 Odour guidance and legislation

There are currently no statutory standards or regulations in the UK for the release and subsequent impacts of odours. This is due to the complexities involved with measuring and assessing odours against compliance criteria, and the inherent subjective nature of odours.

It is recognised that odours have the potential to pose a nuisance for residents living near a source of offensive odour. In these cases, determination of whether or not an odour constitutes a statutory nuisance is usually the responsibility of the local planning authority or the Environment Agency. The Environmental Protection Act 1990 (Stationery Office, 1990) outlines that a local authority can require measures to be taken where:

"Any dust, steam, smell or other effluvia arising on an industrial, trade and business premises and being prejudicial to health or a nuisance…" or

"fumes or gases are emitted from premises so as to be prejudicial to health or cause a nuisance…"

Within the Environment Agency H4 Guidance on Odour Management there are benchmark levels of odour on the site boundary dependent on its offensiveness, ranging between C98, $_{1\ hour}$ $1.5ou_E/m^3$ and C98, $_{1\ hour}$ $6\ ou_E/m^3$. This is due to variations in an odours apparent offensiveness and a receptors sensitivity.

The benchmarks are:

- 1.5 odour units for most offensive odours
- 3 odour units for moderately offensive odours
- 6 odour units for less offensive odours.

2.2 National Planning Policy

The National Planning Policy Framework (NPPF) was published in March 2012. This sets out the Government's planning policies for England and how they are expected to be applied. In relation to conserving and enhancing the natural environment, paragraph 109 states that:

"The planning system should contribute to and enhance the natural and local environment by…… preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability."

Pollution is defined by the NPPF as:

"Anything that affects the quality of land, air, water or soils, which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions, including smoke, fumes, gases, dust, steam, odour, noise and light."

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2.3 Odour measurement

Odour exposure and impact can be measured via two methods; by specific compound measurement or; by total odour by dynamic dilution olfactometry.

Specific gas measurement is often used when an emission from a site is dominated by an individual odorous compound, such as hydrogen sulphide at a Waste Water Treatment Works (WWTW). Monitoring of the odorous compound, both at its source and receptor location, can provide a simple evaluation of the odour emission.

Total odour by dynamic dilution olfactometry determines the odour threshold for a complex mixture of chemicals. Odour threshold is a measurement of concentration for an odorous gas. The measurement is achieved by presenting a dilution range of the test gas to a panel of acuity assessed panellists. Panellists indicate when they can detect an odour or not, at each dilution range presented. The detection point is the dilution at which 50 % of the panel can detect an odour, which in turn represents an odour concentration of 1 ou_E/m^3. The test sample odour concentration is calculated by multiplying detection concentration (1 ou_E/m^3) by the dilution required to achieve detection point. Odour threshold is measured in accordance with BS EN 13725:2003[1] "Determination of odour concentration by dynamic Olfactometry". Once threshold analysis is completed it gives the point of detection of the odour and its apparent strength in ou_E/m^3.

For the purposes of this model the odour emission values were given by Anglian Water.

2.4 UK case law

The most commonly applied criterion in relation to odour assessment is the 'Newbiggin criterion'. This criterion was originally introduced into a public inquiry for a new sewage works at Newbiggin-by-the-sea in 1995, defended by Northumbrian Water Limited. It equates to an odour exposure level of 5 European odour units per cubic meter (C98, $_{1\ hour} > 5\ ou_E/m^3$). The Newbiggin criterion has been successfully applied during numerous planning and nuisance assessment studies since 1995, for sewage, waste, food and a range of other industrial and agricultural activities.

These indicative criteria aim to differentiate between odours of different offensiveness, and range from C98, $_{1\ hour} > 1.5\ ou_E/m^3$ (for highly offensive odours) to C98, $_{1\ hour} > 6\ ou_E/m^3$ (for low offensive odours). It should be noted that the sewage treatment sector does not currently fall under the IPPC regime and that these criteria are based on relatively limited data and have not undergone any robust validation in terms of their applicability to the sewage treatment sector in the UK.

The comparison of odour exposure levels generated by the works before and after completion of the proposed sludge dewatering schemes was focused on the Newbiggin criterion (C98, $_{1\ hour} = 5\ ou_E/m^3$), and the most stringent EA criterion (C98, $_{1\ hour} = 1.5\ ou_E/m^3$).

[1] BS EN 13725:2003 Air Quality Determination of Odour Concentration by Dynamic Olfactometry

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Table 1 Newbiggin criterion

Relative Offensiveness	Indicative Criteria
High	1.5 ou_E/m^3 98th percentile (hourly average)
Medium	3 ou_E/m^3 98th percentile (hourly average)
Low	6 ou_E/m^3 98th percentile (hourly average)

2.5 UK Water Industry Research

A published study by the UK Water Industry Research (UKWIR)[2] detailed the correlation between the modelled odour impact areas with receptor responses. Published in 2001 the document shows from a study of 9 wastewater treatment works, how the complaints vary:

- At C98, $_{1\ hour}$ $5ou_E/m^3$ – complaints rare; 3% registered
- Between C98, $_{1\ hour}$ $5ou_E/m^3$ and C98, $_{1\ hour}$ $10ou_E/m^3$ – increase in complaints; 38% registered
- Above C98, $_{1\ hour}$ $10ou_E/m^3$ – significant increase in complaints; 59% registered.

2.6 DEFRA compost guidance

The compost guidance in 2009 relating to good practise and odour control for composting sites (excluding those processing slaughterhouse waste) gives C98, $_{1\ hour}$ $3ou_E/m^3$ as an odour impact criteria taken from dispersion modelling.

[2] Odour Control in Wastewater Treatment – A Technical Reference Document. Ref 01/WW/13/3 – UKWIR, 2001

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3.0 IMPACT ASSESSMENT METHOD

3.1 Odour emission sources

A desktop study revealed two potential odour sources which are in close proximity to the proposed site at Rendlesham. Firstly, the Anglian Water STW to the North of the development site and secondly, the Stokes Sauces factory to the North-East. Within this study only the STW has been considered in the dispersion model. The sauce factory has been omitted because the operation is small and is deemed to have negligible effect.

The odour emission data was provided by Anglian Water and is displayed in Table 3.

Table 2 Odour Emission Data

Name	Shape	No	L (m)	W (m)	Dia (m)	Elev (m AOD)	Area (m^2)	Emission rate ($ou_E/m^2/s$)	Comments
Inlet works reception chamber	circular	1	N/A	N/A	1.5	27	1.8	50	UKWIR: typical rate to reflect pumped flow
Screenings skip	rectangular	1	3	2	N/A	27	6.0	20	AW internally derived from model library
Screen chamber	rectangular	1	10	2.5	N/A	30	25.0	20	UKWIR: low rate to reflect low risk of septicity
Balance tank	circular	1	N/A	N/A	15	30	176.6	0.8	Use UKWIR low rate for PST to reflect diffused air and no settlement
Bio-bubble reactor 1	circular	1	N/A	N/A	13	32	132.7	4	Use UKWIR typical rate for activated sludge plant
Bio-bubble reactor 2	circular	1	N/A	N/A	13	32	132.7	4	Use UKWIR typical rate for activated sludge plant
Bio-bubble desludging chambers	rectangular	2	1	1	N/A	27	2.0	140	Use UKWIR low rate for agitated raw sludge to reflect aerobic process
Sludge storage tank	circular	1	N/A	N/A	3	29	7.1	40	Use UKWIR low rate for quiescent raw sludge to reflect aerobic process
New sludge storage tank	circular	1	N/A	N/A	7.5	29	44.2	40	Use UKWIR low rate for quiescent raw sludge to reflect aerobic process
Wash water storage tank	circular	1	N/A	N/A	7.5	0.3	44.2	0.3	Use UKWIR low rate for final tank
Attenuation tank	Circular	1	N/A	N/A	7.5	0.3	44.2	0.3	Use UKWIR low rate for final tank

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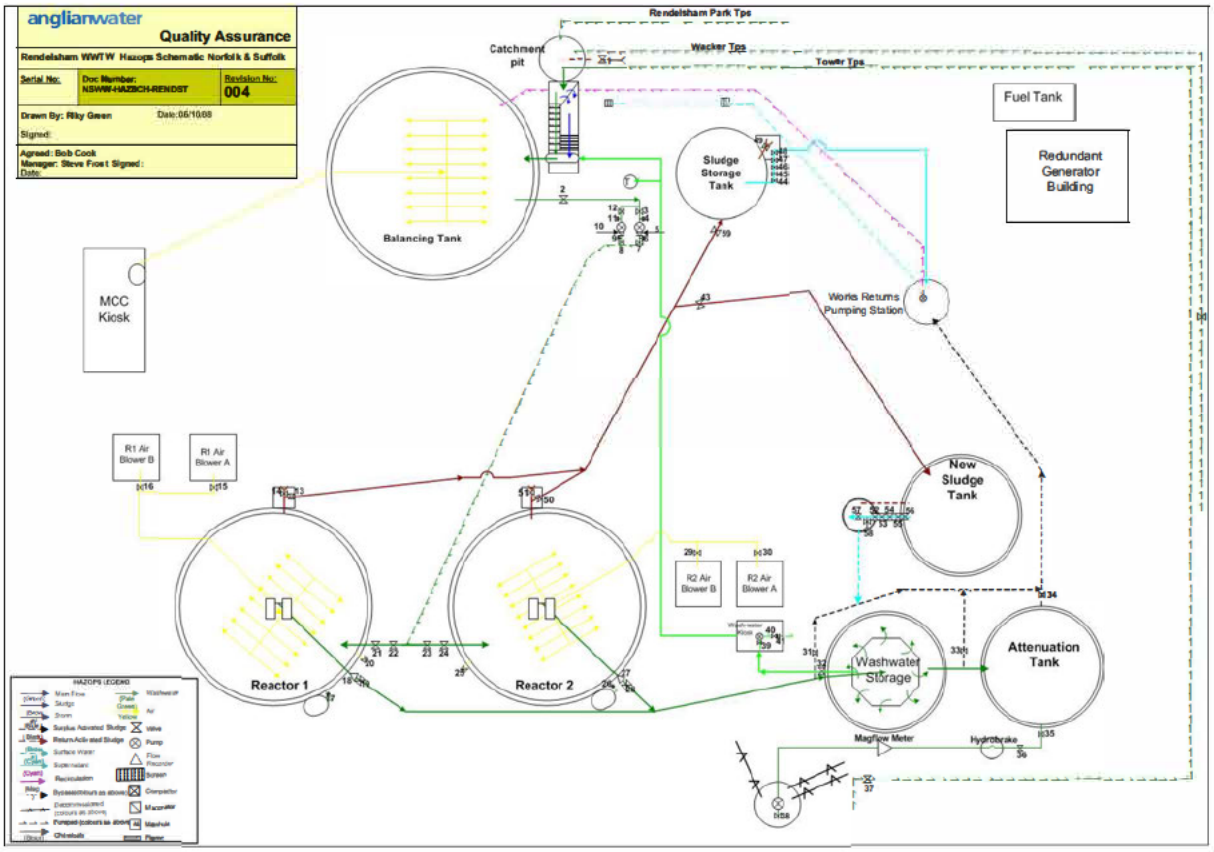

Figure 2 STW Site Schematic

3.2 Receptor locations

Within this assessment 4 receptor locations have been used to predict ground level odour concentration across the planned site. The receptor locations have been chosen to represent the far South and West boundaries, as well as a central and eastern location.

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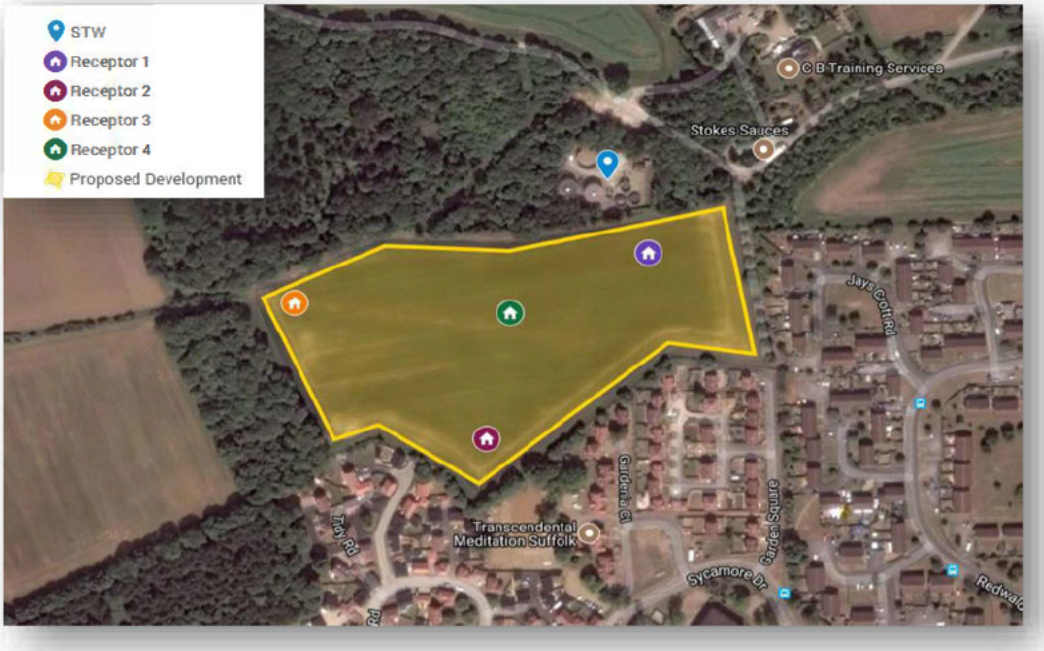

igure 3 Receptor locations

Table 3 Receptor locations

Receptor		Location	
		x	y
R1	East	633843	253859
R2	South	633738	253717
R3	West	633603	253811
R4	Centre	633751	253810

3.3 Meteorological data

The relevant meteorological data used was from Wattisham, following discussions with the data provider. The proposed site is approximately 30 km from the weather station and contained all relevant weather parameters used within the model for the 3 years' worth of data required. The years covered in this assessment are 2014-2016.

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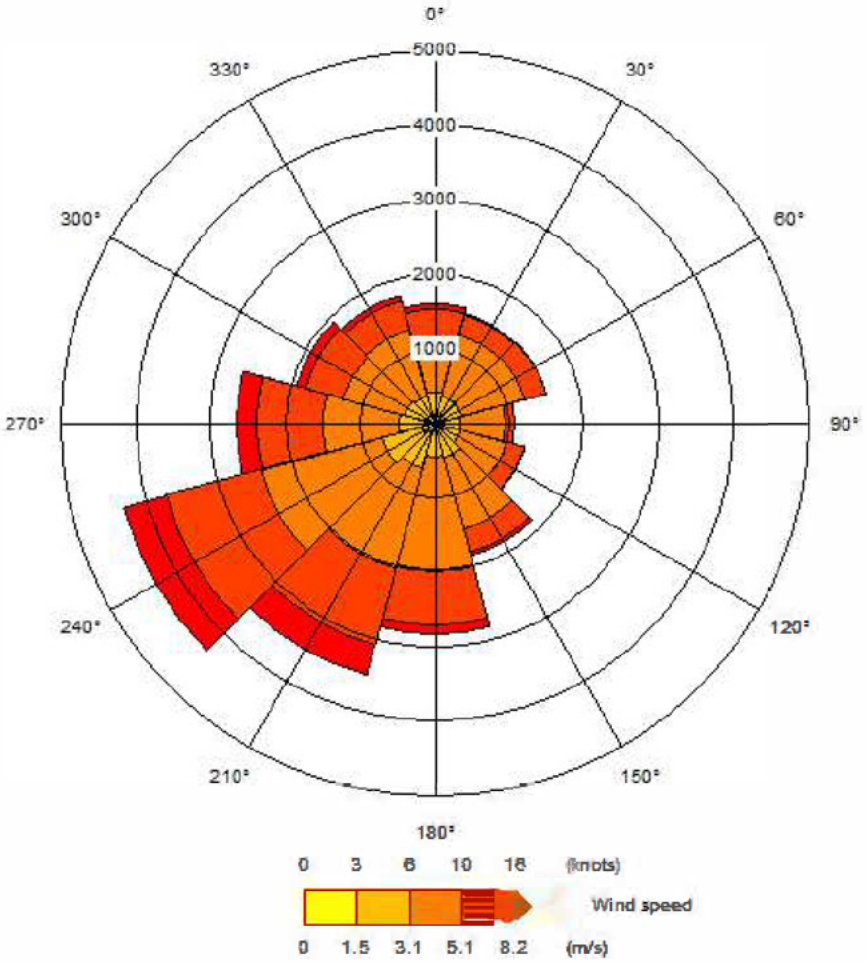

Figure 4 Windrose data for Wattisham 2014-2016

3.4 Dispersion model inputs

The dispersion model was run using the input parameters which are detailed in Table 4.

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Table 4 Model input parameters

	Parameter	Source Type	Central Location		Emission Velocity	Flow Rate	Total Emission Rate
			x	y	m/s	m^3/s	OU_E/s
Source	Inlet works Reception Chamber	Point	633806	253927	0.1	0.177	150
	Screenings Skip	Line	633823 633827	253922 253922	0.1	0.079	20
	Screen Chamber	Line	633806 633804	253925 253916	0.1	0.079	60
	Balance Tank	Area	633796 633803 633793 633788	253930 253920 253918 253925	0.1	17.671	2.4
	Bio-bubble reactor 1	Point	633783	253899	0	0	12
	Bio-bubble reactor 2	Point	633801	253897	0	0	12
	Bio-bubble desludging chambers	Point	633779 633791	253911 253907	0.1	0.079	420 420
	Sludge Storage Tank	Point	633813	253919	0.1	0.707	120
	New Sludge Storage Tank	Point	633822	253904	0.1	4.418	120
	Wash water Storage Tank	Point	633819	253892	0.1	4.418	1.2
	Attenuation Tank	Point	633829	253895	0.1	4.418	1.2

All input locations are based on estimates made using satellite images and cannot be verified as being accurate. All sources have been modelled to emit 24 hours a day to ensure worst case scenario is predicted.

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3.5 Dispersion model scenarios

To characterise the impact of the odour emissions from the STW, a single scenario was modelled:

- Scenario 1 – All sources considered. No near field buildings included (including proposed buildings) and odour emission rates as defined in Table 4.

3.6 Modelling software

The site information was input into ADMS to determine the relationship between the STW and the proposed development land. Emission data and meteorological data was then fed into the model to enable prediction of the level of exposure to odours at locations surrounding the site under the normal operational regime for the facility. The results of the modelling are presented in the form of contours (or isopleths - lines connecting points with equal frequency of occurrence) for a 1-hour average limit concentration of x ou_E/m^3 as a 98% (percentile) (C98, $_{1\ hour}$ = X ou_E/m^3) which defines the area where odour nuisance may occur.

ADMS[3] is a state-of-the-science dispersion modelling system that simulates essential atmospheric physical processes and provides refined concentration estimates over a wide range of meteorological conditions and modelling scenarios. It is based on atmospheric boundary layer turbulence structure and scaling concepts, including treatment of multiple ground-level and elevated point, area and volume sources. It handles flat or complex, rural or urban terrain and includes algorithms for building effects and plume penetration of inversions aloft. It uses Gaussian dispersion for stable atmospheric conditions (*i.e.*, low turbulence) and non-Gaussian dispersion for unstable conditions (high turbulence).

ADMS includes two data pre-processors for streamlining data input. A meteorological pre-processor, computes boundary layer and other necessary parameters for use with ADMS and uses standard hourly sequential data supplied from the UK Met Office. There is also a terrain pre-processor option that simplifies the computation of receptor elevations and effective height scales for numerous types of digital data formats, including OS Landform Panorama digital terrain maps. The model is considered appropriate by the UK Environment Agency for assessments of the nature described in this report

[3] Software used: ADMS 5.1 model version: 5.1.2.0.

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3.7 Odour impact assessment criteria

The objective of this assessment was to establish whether the odour emissions resulting from the STW at Rendlesham would result in predicted odour nuisance at the proposed residential development.

Taking into consideration the guidance discussed we assume that sensitive receptors would be able to detect odour resulting from the STW at between 1.5 - 3 ou_E/m^3, and odours above 3 ou_E/m^3 98th percentile would cause nuisance.

3.8 Odour modelling uncertainties

Uncertainty in dispersion modelling predictions can be associated with a variety of factors, such as:

- **measurement error** – error in input data, including emission estimates, operational procedures, land use characteristics and meteorology which can be detected and corrected;
- **systematic error** – unnoticed error which may occur during the sampling (data collection);
- **model uncertainty** – model limitations and assumptions based on which it was computed;
- **inherent randomness** – knowledge of starting conditions does not result in certainty related to the final modelling outcome;
- **natural variation** – change in time and place in natural systems;
- **subjective judgement** – data interpretation, especially when data is scarce.

Potential uncertainties in the model results were minimised as far as practicable and worst-case inputs used to provide an accurate assessment. This included the following:

- choice of model - ADMS-5 is a commonly used atmospheric dispersion model and results have been verified through a number of studies to ensure predictions are as accurate as possible; in the UK odour assessments are almost exclusively undertaken using the ADMS or AERMOD models;
- meteorological data - modelling was undertaken using meteorological data set from an observation site within 30 km of the facility to take account of local conditions; a few years of data minimise the risk of inclusion of abnormal weather conditions;
- plant operating conditions - SES have attempted to model information in the worst-case scenario, where all considered odour sources emit constantly;
- emission rates - emission rates were derived from monitoring undertaken at similar facilities. As such, they are considered to be representative of potential releases during normal operation;
- sensitive receptor locations - a Cartesian grid was included in the model to provide suitable data for contour plotting. Receptor points were also included at sensitive locations to provide additional consideration of these areas; and,

- variability - all model inputs are as accurate as possible and worst-case conditions were considered as necessary to ensure a robust assessment of potential pollutant concentrations.

Results were considered in the context of the relevant odour benchmark level and IAQM criteria. It is considered that the use of the stated measures to reduce uncertainty and the use of worst-case assumptions when necessary has resulted in model accuracy of an acceptable level.

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4.0 CONTOUR MAPS

Within this section the contour maps are detailed separately. The colour graded key represents ground level odour concentrations (C98, $_{1\text{-hour}}$ x ou_E/m^3) at the specific point with odour concentrations increasing as the colour turns yellow to red.

4.1 Scenario 1

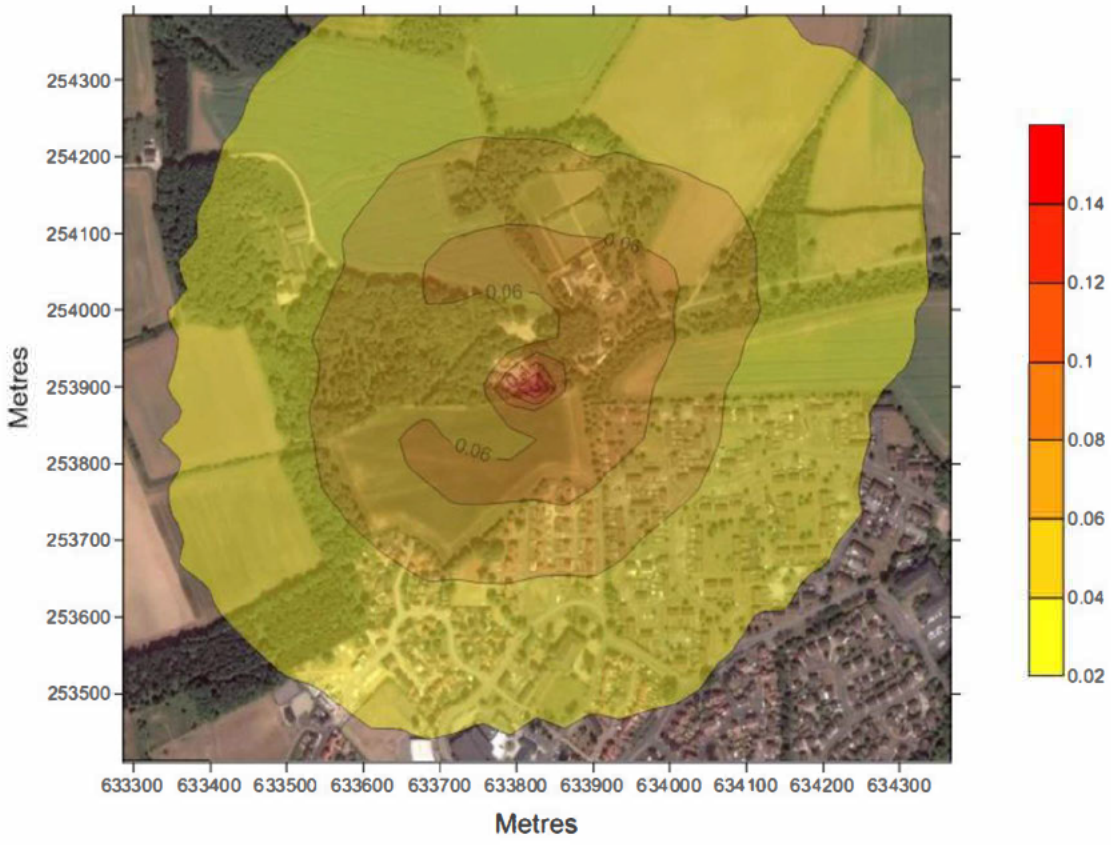

Figure 5 Ground Level Odour Concentrations - Scenario 1

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5.0 ASSESSMENT OF IMPACTS

Based on the findings within this assessment, it appears that the proposed residential development would not be subjected to odour nuisance from the STW site.

Table 5 details the ground level odour concentrations for the scenario that has been run in ADMS. Where odour levels fall above C98, $_{1\ hour}$ = $3ou_E/m^3$ the table cell is highlighted in pink, indicating the likely chance of odour nuisance at that receptor.

Table 5 Receptor ground level odour concentrations

Receptor Name	Ground Level Concentration (C98, $_{1\ hour}$ x ou_E/m^3) Scenario 1
R1	0.0083
R2	0.0040
R3	0.0037
R4	0.0053

SES, based on the findings within this assessment, would suggest that any development of Rendlesham is likely to not lead to odour complaints from the residents. However, the odour emission measurements which were supplied by Anglian Water may be greater or less than what has been modelled.

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APPENDIX

BS EN 13725:2003 Air Quality – Determination of Odour Concentration by Dynamic Olfactometry

Odour Control in Wastewater Treatment – A Technical Reference Document. Ref 01/WW/13/3 – UKWIR, 2001

Software used: ADMS 5.1 model version: 5.1.2.0.

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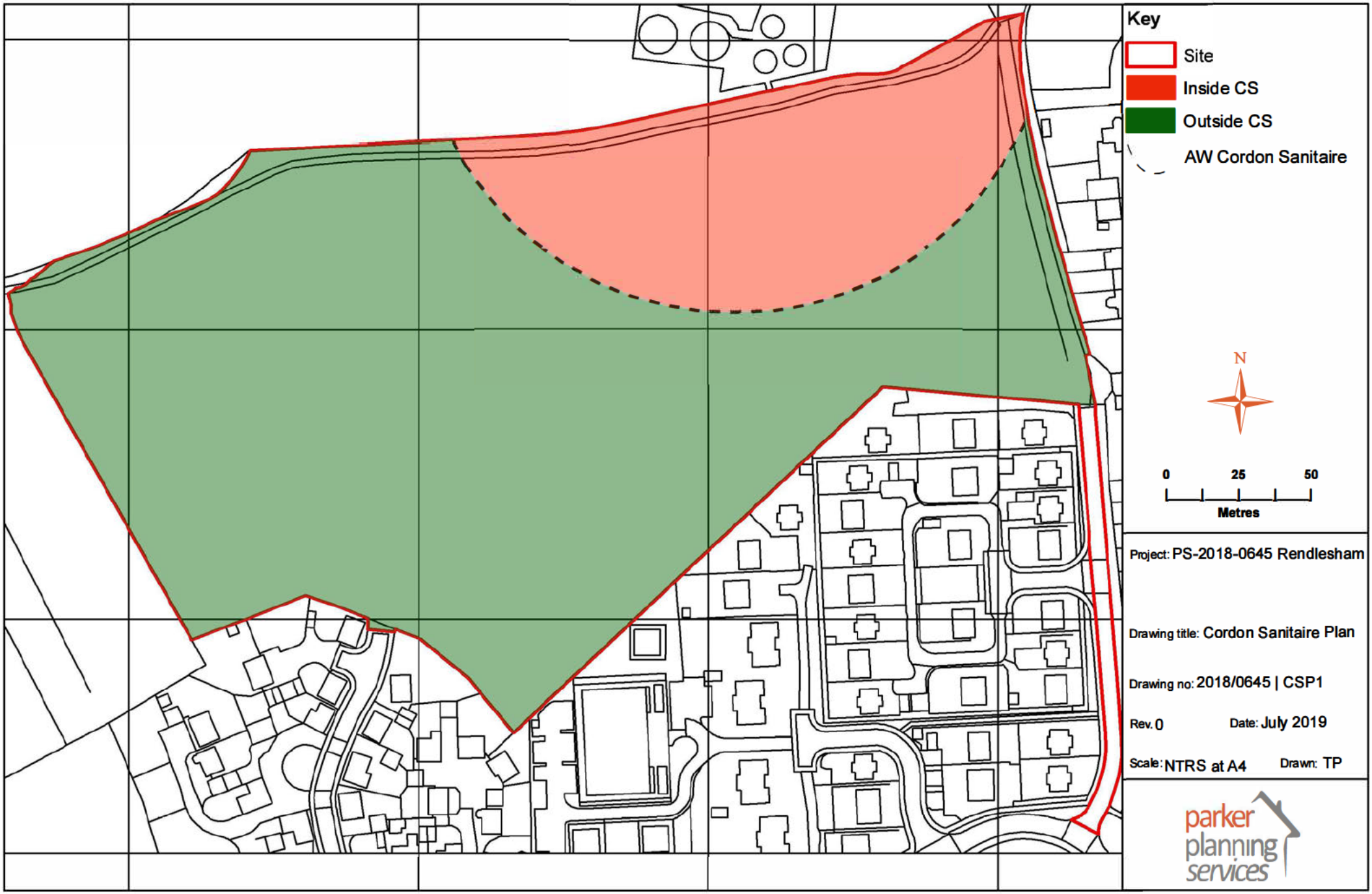
Appendix 4


Key
Site
Inside CS
Outside CS
AW Cordon Sanitaire
N
0
25
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Metres
Project: PS-2018-0645 Rendlesham
Drawing title: Cordon Sanitaire Plan
Drawing no: 2018/0645 | CSP1
Rev. 0
Date: July 2019
Scale: NTRS at A4
Drawn: TP
parker planning services

Key

Site

AW Cordon Sanitaire

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Metres

Project: PS-2018-0645 Rendlesham

Drawing title: Cordon Sanitaire Plan

Drawing no: 2018/0645 | CSP1

Rev. 0 Date: July 2019

Scale: NTRS at A4 Drawn: TP

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Appendix 5

4. To the north east of the site is an Anglian Water Treatment Works, therefore there is a Cordon Sanitaire covering part of the north east of the site. The application provides insufficient assessment information regarding the potential impacts of odour from the sewage plant and the effect that may have on the proposed layout and open spaces. The submitted information does not correspond with the latest layout proposal. It is therefore not possible to determine that there will be no effects on residents which would adversely affect their amenity and the effectiveness of the current extent of cordon sanitaire around the sewage treatment plant. On that basis, in the absence of adequate assessment of effects the proposal may result in adverse impacts on residential amenity contrary to policies DM21and DM23 of the East Suffolk Council - Suffolk Coastal District - Core Strategy and Policy SSP12 of the East Suffolk Council - Suffolk Coastal District - Site Allocations and Area Specific Policies, and the NPPF.

Appendix 6

Air Spectrum Environmental Ltd

Odour Dispersion Modelling Assessment

Produced for:

Persimmon Homes Anglia

Air Spectrum Environmental Limited
General Notes:

Prepared by : Peter Badham

Prepared for : Persimmon Homes Anglia

Site address : Rendlesham STW IP12 2TN

Report Date : 26th February 2014
Issue Date : 27th February 2014

Job number : JA14824

Issue No: 1.0

Issued by: P Badham

[redacted]

EXECUTIVE SUMMARY

Air Spectrum Environmental Limited was commissioned by Persimmon Homes Anglia to produce an odour dispersion model based upon assumed odour emissions from a Sewage Treatment Works (STW) located to the North of Rendlesham, Suffolk; and report on the impact which any odour release will have on the proposed development site located to the South of the STW.

The air quality impacts in terms of odour concentrations; resulting from the operation of the STW under normal operating conditions have been assessed using an advanced dispersion model software package (ADMS 5). All predicted ground level concentrations of odour were modelled in the near field environment.

The air quality impacts in terms of odour concentrations; resulting from the operation of the STW under normal operating conditions have been assessed using an advanced dispersion model software package (ADMS 5). All predicted ground level concentrations of odour were modelled in the near field environment.

All locations within a 2km by 2km area were covered by the model assessment, and it was found that the level of odour concentrations were highest within the boundary of the STW, with little odour visible in the proposed development area, any visible footprint contained within the report are below the threshold of detection 1 OU_E/m^3.

Model Scenario	Highest odour level (OU_E/m^3)	Lowest odour level (OU_E/m^3)
Standard model (3 year met data) 98th Percentile	4.5	0.5

The odour impact upon the proposed development and local amenity is considered to be below the recognised threshold of detection.

Contents

INTRODUCTION

Scope

Air Spectrum Environmental Limited was commissioned by Persimmon Homes Anglia to produce an odour dispersion model based upon assumed odour emissions from a Sewage Treatment Works (STW) located to the North of Rendlesham, Suffolk; and report on the impact which any odour release will have on the proposed development site located to the South of the STW.

The modelling assessment takes into account, and includes a discussion of, the following key parameters/elements:

- Site Parameters
- Assessment criteria
- Emission parameters
- Modelling domain
- Meteorology

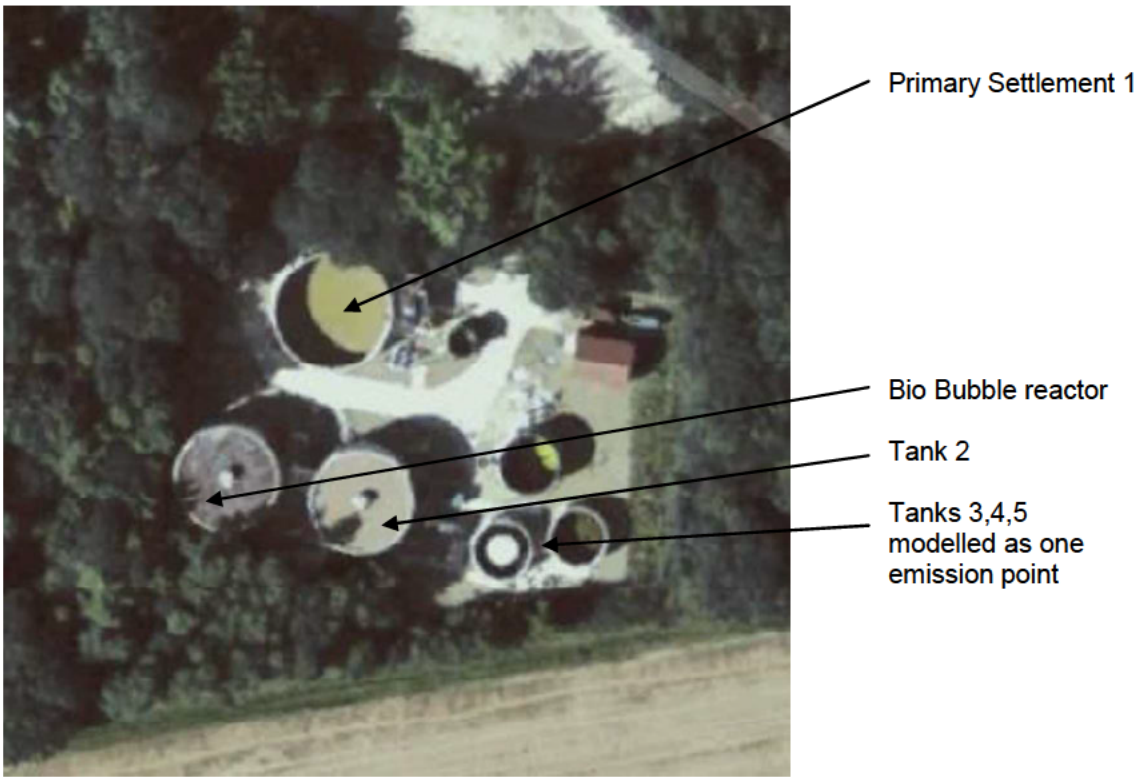
Site Description

The Sewage Treatment Works (STW) is located to the North of Rendlesham (E: 633798, N: 253923). The STW is of reasonable size consisting of primary and secondary filters, inlet works and settlement tanks. For the purposes of this dispersion model, historic data collected from other UK STW was used.

The STW has not been visited by Air Spectrum Environmental under the scope of this report and so mapping software has been used to produce location, dimensional and visual information. No detailed information was supplied by persimmon and little information was available via Anglian water.

The site has been described as shown below:

Figure 1.1 Site location overhead views



Site Operation

The emission points for this dispersion model were selected based upon experience, previous STW site surveys and odour measurement operations and were assumed to operate in a similar manner to other STW's of this size.
Emission points data as follows:

Location	Dimensions	Easting (centre)	Northing (centre)
Primary Settlement	15m Diameter	633798	253923
Bio-Bubble Reactor	12m Diameter	633785	253901
Tank 2	12m Diameter	633801	253899
Tanks 3,4 & 5	7m Diameter	633826	253899

Assessment Methodology

Assessment criteria

The odour sources associated with each operational condition were defined on the basis of historical data collected from previous site assessments on similar STW's located around the UK carried out by Air Spectrum Environmental. Emission estimates (expressed in terms of European odour units OU_E) for each source were then estimated using this historical data. All of the historical data utilised was collected using sampling and analysis techniques compliant with the British Standard for Olfactometry BSEN13725.

The historical data describing odour emissions from STW's was used as input for a mathematical atmospheric dispersion model (ADMS 5) along with sequential hourly average data from a representative meteorological station (Middle Wallop 2010), and topographical data which describe the nature and surface characteristics of the surrounding area.

Model Description

ADMS is a state-of-the-science dispersion modelling system that simulates essential atmospheric physical processes and provides refined concentration estimates over a wide range of meteorological conditions and modeling scenarios. It is based on atmospheric boundary layer turbulence structure and scaling concepts, including treatment of multiple ground-level and elevated point, area and volume sources. It handles flat or complex, rural or urban terrain and includes algorithms for building effects and plume penetration of inversions aloft. It uses Gaussian dispersion for stable atmospheric conditions (i.e., low turbulence) and non-Gaussian dispersion for unstable conditions (high turbulence).

ADMS includes two data pre-processors for streamlining data input. A meteorological pre-processor, computes boundary layer and other necessary parameters for use with ADMS and uses standard hourly sequential data supplied from the UK met office. There is also a terrain preprocessor option that simplifies the computation of receptor elevations and effective height scales for numerous types of digital data formats, including OS Landform PROFILE 10m digital terrain maps. The model is considered appropriate by the UK Environment Agency for assessments of the nature described in this report.

The dispersion model for the facility was established using plans of the site, the site plans were input into ADMS to determine the relationship between the facility and the proposed development land. Emission data and meteorological data were then fed into the model to enable the level of exposure to odours at locations surrounding the site to be predicted, under the normal operational regime for the facility. The results of the modeling were presented in the form of contours (or isopleths - lines connecting points with equal frequency of occurrence) for a 1-hour average limit concentration of *x* ou_E/m^3 as a 98%ile (percentile) (C_{98}, 1-hour = *X* ou_E/m^3) which defines the area where odour nuisance may occur.

[1] IPPC Technical guidance note, H4. EA.

Emission Sources

The following emission sources were included in the dispersion modelling assessment:

Location	Dimensions	Easting (centre)	Northing (centre)
Primary Settlement	15m Diameter	633798	253923
Bio-Bubble Reactor	12m Diameter	633785	253901
Tank 2	12m Diameter	633801	253899
Tanks 3,4 & 5	7m Diameter	633826	253899

Emission Parameters

The emission parameters for each source included in the dispersion modelling study are summarised in table 2.3.

Table 2.3 Emission parameters

Location	Dimensions	Easting (centre)	Northing (centre)	Emission OU_E/s
Primary Settlement	15m Diameter	633798	253923	252
Bio-Bubble Reactor	12m Diameter	633785	253901	465
Tank 2	12m Diameter	633801	253899	252
Tanks 3,4 & 5	7m Diameter	633826	253899	145

Modelled Scenarios

In order to characterise the impact of the odour emissions from the collective odour emissions from the STW, a single scenario was modelled as follows:

- **Scenario 1:** Full dispersion model with no near field buildings included (including proposed development buildings) and odour emissions rates as defined in table 2.3 . Annual hourly sequential meteorological data from Wattisham weather station covering 2011 to 2013.

Note: Buildings data based upon Environment Agency Guidance document AQTAQ 06 "Technical guidance on detailed modelling approach for an appropriate assessment of emissions to air"

Modelled Domain

A near field domain was incorporated in the dispersion model to predict the odour concentrations within the client's proposed site. The near field domain covers an area of 2km by 2km and had a grid resolution of 50m. Normally the modelled domain would be in the region of 1km square, but this was extended to ensure that the whole proposed development land was covered.

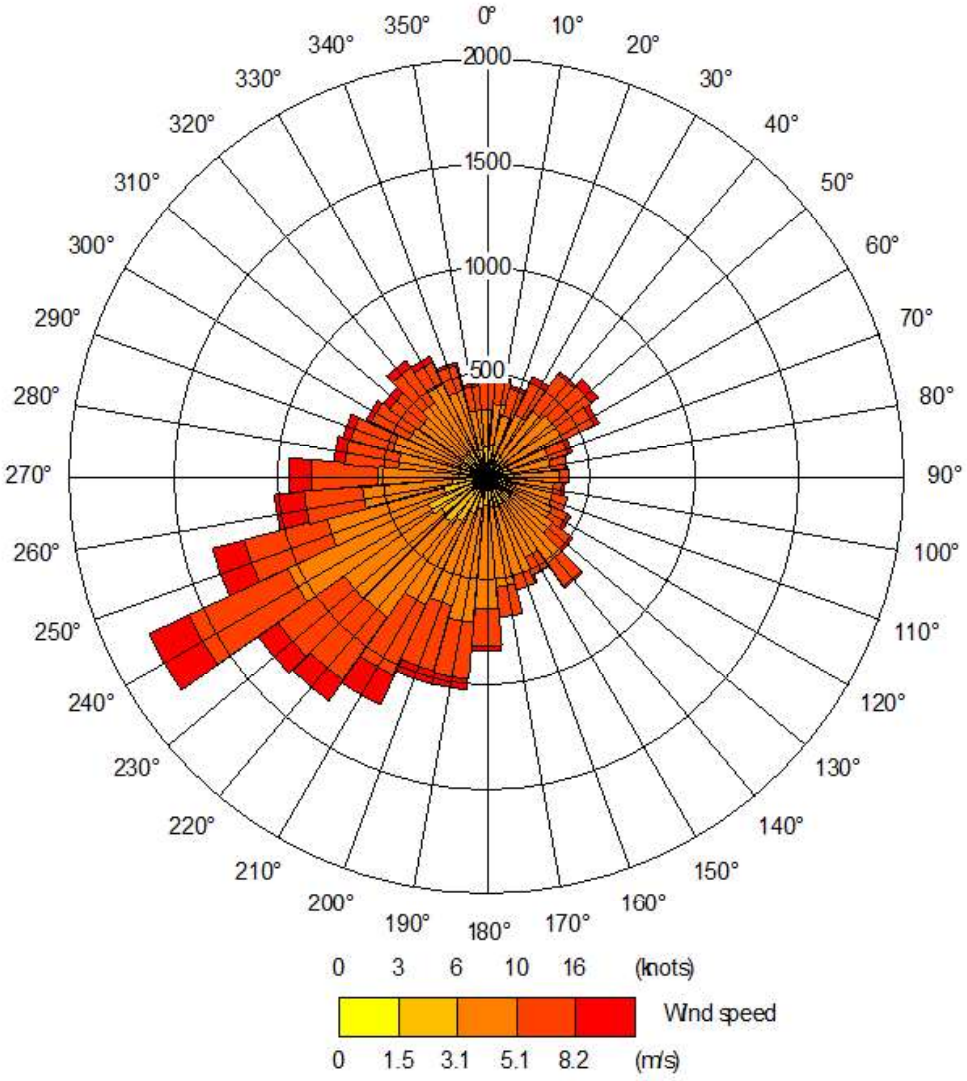
Fig 2.7a

The Red boundary lines are the proposed development, the Blue boundary defines the STW

Meteorological Data

The supplied data was extracted from the nearest Met office station located at Wattisham. The meteorological data was supplied for 3 years 2011 to 2013. The data is hourly sequential and wind rose produced from the data is shown below in figure 2.1.

Figure 2.1: Wind-rose derived from meteorological data



From the above windrose, it is evident that the prevailing wind is from a south Westerly Quadrant

Terrain

Standard Landform Panorama terrain data sets were used within ADMS to determine the localised effect on the odour emission.

Assessment of Odours

Using previous samples collected from a similar STW or comparable operation and size, the data is shown in table 3.1

Odour concentration is measured in European Odour Units, OU_E/m^3.

By definition 1 OU_E/m^3 is the threshold of odour for that specific sample.

As guidance only, 3 – 5 OU_E/m^3 will be detectable and 5 – 10 OU_E/m^3 will become annoying.

1000 odour units represent an odour 1000 times greater than the concentration at which the odour in the sample would be first detected.

Note, the odour concentration is not a linear measure for the intensity of an odour.
Thus, for one specific gas there will not be a direct relationship between OU_E/m^3 and mg/m^3 (or PPM) over a range of readings.

The laboratory analysis result does not give a definite result. The given answer is subject to an error tolerance. For a result of 1000 OU_E/m^3 and a 95% confidence level, the actual possible range is:

For duplicate samples the possible range is 571 to 1752.
For triplicate samples the possible range is 633 to 1580.

In general terms, odour impact is recognised as a symptom that develops as a result of intermittent but regular exposure to odours that are recognisable and have an offensive character. The key factors that contribute to the development of odour annoyance can be usefully summarised by the acronym FIDOL:

- **F**requency of exposure
- **I**ntensity or strength of exposure
- **D**uration of exposure
- **O**ffensiveness
- **L**ocation sensitivity

In acknowledgement of these factors, a number of odour impact criteria have been developed that enable the odour impact risk of proposed facilities to be predicted using dispersion modelling techniques. These criteria are generally defined in terms of a minimum concentration of odour (reflecting the intensity/strength element of FIDOL) that occurs for a defined minimum period of time (reflecting duration and frequency element of FIDOL) over a typical meteorological year. The concentration element of these criteria can be increased or lowered to reflect variations in the offensiveness of the odours released from a specific type of facility, and the sensitivity of nearby sensitive locations.

In the UK, odour impact criteria are generally expressed in terms of a European odour unit concentration that occurs for more than 2% of the hours of a typical meteorological year, and have been designed for application to permanent residential properties which are considered to be the most sensitive from an impact risk perspective.

The most commonly applied criterion from this perspective is the 'Newbiggin criterion'. This criterion was originally introduced into a public inquiry for a new sewage works at Newbiggin- by-the-sea in 1995, and equates to an odour exposure level of 5 European odour units per cubic meter (C_{98}, 1-hour > 5 OU_E/m^3). The Newbiggin criteria has been successfully applied during numerous planning and nuisance assessment studies since 1995 for sewage, waste, food and a range of other industrial and agricultural activities.

These indicative criteria aim to differentiate between odours of different offensiveness, and range from C_{98}, 1-hour > 1.5 OU_E/m^3 (for highly offensive odours) to C_{98}, 1-hour > 6 OU_E/m^3 (for low offensive odours). It should be noted that the sewage treatment sector does not currently fall under the IPPC regime and that these criteria are based on relatively limited data and have not undergone any robust validation in terms of their applicability to the sewage treatment sector in the UK.

The comparison of odour exposure levels generated by the works before and after completion of the proposed sludge dewatering schemes was focused on the Newbiggin criterion (C98, 1- hour = 5 PU_E/m^3), and the most stringent EA criterion (C_{98}, 1-hour = 1.5 OU_E/m^3).

Relative Offensiveness	Indicative Criteria
High	1.5 OU_E/m^3 98th Percentile (hourly average)
Medium	3 OU_E/m^3 98th Percentile (hourly average)
Low	6 OU_E/m^3 98th Percentile (hourly average)

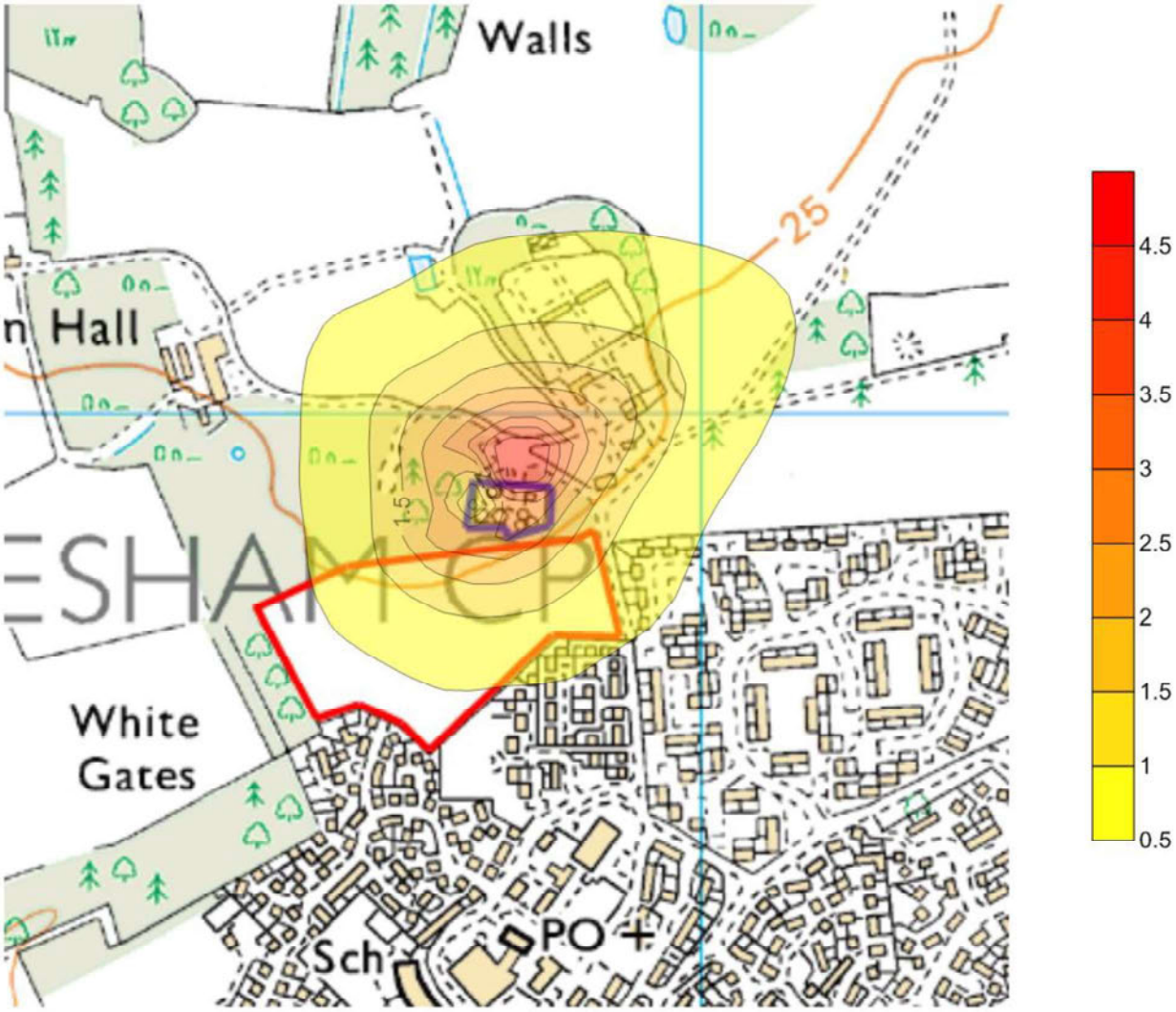
Table 3.1: Previous Historical Laboratory Results

Location	Dimensions	Easting (centre)	Northing (centre)	Emission OU_E/s
Primary Settlement	15m Diameter	633798	253923	252
Bio-Bubble Reactor	12m Diameter	633785	253901	465
Tank 2	12m Diameter	633801	253899	252
Tanks 3,4 & 5	7m Diameter	633826	253899	145

Assessment of Impacts

A Full dispersion model included previous as measured odour emissions rates from a comparable STW. Generic terrain data and annual hourly sequential meteorological data included. Based upon 98th percentile 1 hourly average.

Odour Dispersion Contour Overlay (Map View) 98th percentile



The image above is too small to comfortably display the contour labels, these labels are referenced in alternative boxes.

Odour Dispersion Contour Overlay (Aerial View) 98th percentile

The above image shows the contour overlaid on an overhead aerial photograph

Summary

The air quality impacts in terms of odour concentrations; resulting from the operation of the STW under normal operating conditions have been assessed using an advanced dispersion model software package (ADMS 5). All predicted ground level concentrations of odour were modelled in the near field environment.

All locations within a 2km by 2km area were covered by the model assessment, and it was found that the level of odour concentrations were highest within the boundary of the STW, with little odour visible in the proposed development area, any visible footprint contained within the report are below the threshold of detection 1 OU_E/m^3.

Model Scenario	Highest odour level (OU_E/m^3)	Lowest odour level (OU_E/m^3)
Standard model (3 year met data) 98th Percentile	4.5	0.5

The odour impact upon the proposed development and local amenity is considered to be below the recognised threshold of detection. However there is an increased risk of nuisance odour being detected at the Northern boundary of the proposed development.

Relative Offensiveness	Indicative Criteria
High	1.5 OU_E/m^3 98th Percentile (hourly average)
Medium	3 OU_E/m^3 98th Percentile (hourly average)
Low	6 OU_E/m^3 98th Percentile (hourly average)

Where the odour level is expected to be at 1.5 OU_E/m^3 for a high offensive odour, which is normal for an STW, a "buffer" zone of 30m from the Northern boundary and 200m in length should be considered to cope with any abnormal wind direction or operation at the STW.

The 30m x 200m buffer zone is shown as the red boxed area on the image.

GLOSSARY

1.
Integrated pollution prevention and control (IPPC) H4 Horizontal guidance for odour part 2 – Assessment and control.

A guidance document produced by the Environment Agency and other agencies. Part 2 provides details regarding odour measurement, collection of samples, methodologies etc. currently still in draft format.

3:
Dynamic olfactometry

This is also known as dynamic dilution Olfactometry and is the most commonly used form of odour measurement.
Olfactometry involves the step-wise dilution of a sample of odourous gas with odour-free air and subsequent presentation to a panel of observers in order to determine the number of dilutions for the odour to be just perceived by 50% of the panel.

4:
ADMS

Dedicated software for producing dispersion model data to produce visual indications on the level of odour perceived. Detailed terrain, meteorological and process data can be included to produce an “odour footprint” to overlay on mapping layouts.

Appendix 7

steven@parkerplanningservices.co.uk

Subject: FW: Report for enquiry 00025173 is now ready

From: Planning Liaison <planningliaison@anglianwater.co.uk>
Sent: 15 December 2017 15:40
To: Leigh Parratt <Leigh@amazi.co.uk>
Subject: RE: Report for enquiry 00025173 is now ready

Dear Leigh

Thank you for your email

This WRC was last assessed in 2014 and modelling provided a predicted dispersion range of malodours at concentration of 1.5 OUE/m3. We concluded that this could be reasonably represented by a 110m radius from the centre point of the works (NGR TM3381053911).

On the basis of this we have previously advised that for planning purposes a buffer zone of up to 70m from the southern boundary of Rendlesham WRC would be appropriate when considering sensitive land use.

Kind Regards

Sandra Olim
Pre-Development Advisor
Developer Services
Anglian Water Services Limited
Telephone Office: 03456066087-Option 1
Thorpe Wood House, Thorpe Wood, Peterborough, PE3 6WT
http://www.anglianwater.co.uk/developers/growth-and-planning-faqs.aspx