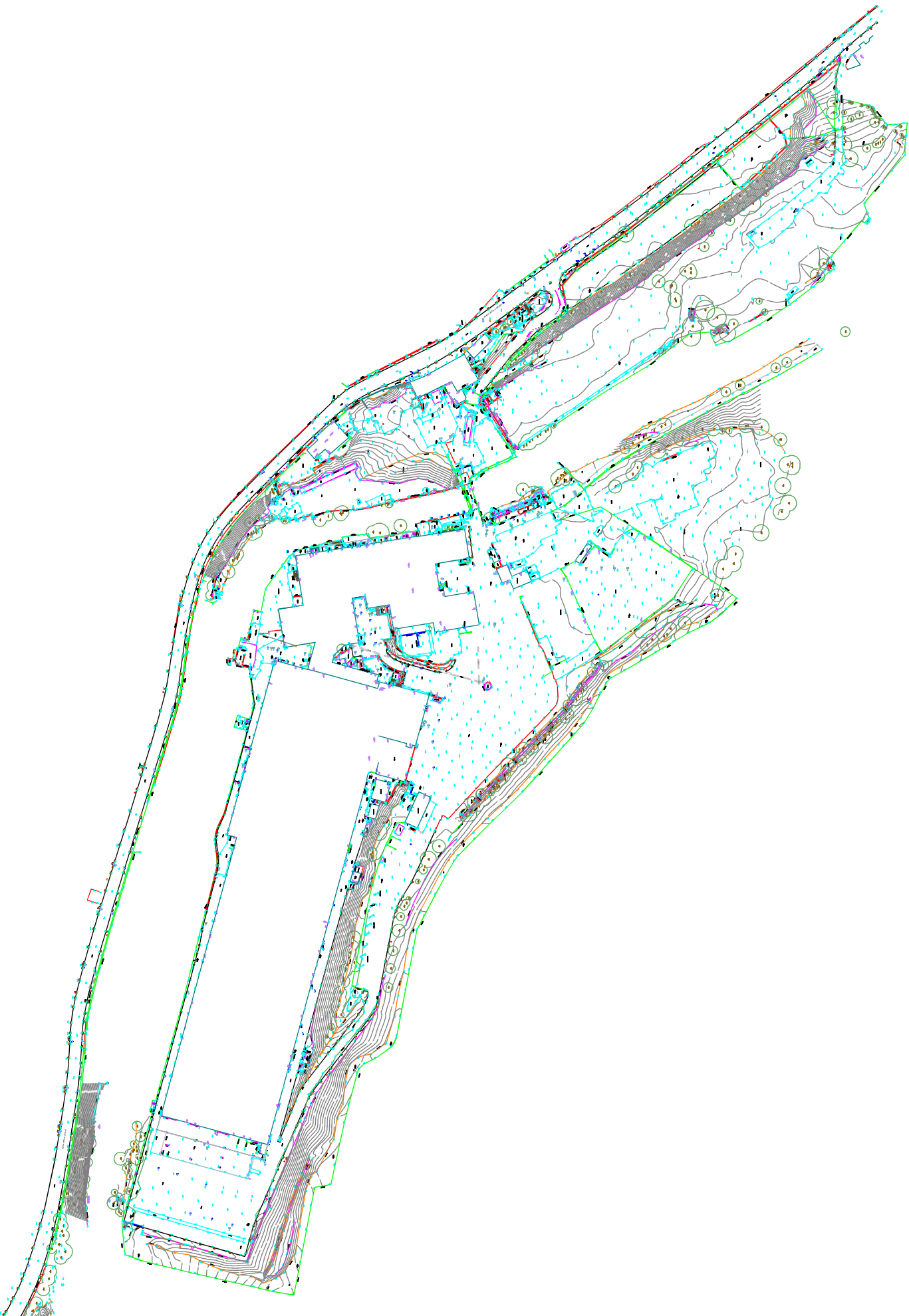
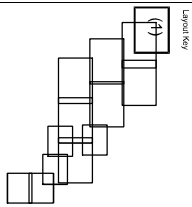




Notes
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Grid :	US National Grid.
Datum :	Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation outlined on S6
Station Listing	Using the OS GPS Network and applying OSTN02 National Grid Model to obtain local area corrections.



1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																						

Rev	Date	Drawn	Description	Checked

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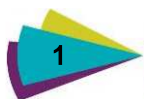
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Client

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Score	pts (out of 1000)		Status
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Technical note:

Odour Assessment Summary for Oughtibridge Mill Redevelopment

1. Introduction

Weetwood Services Ltd instructed Amec Foster Wheeler Environment and Infrastructure UK Ltd (Amec Foster Wheeler) to undertake an odour assessment to determine the potential for adverse impact from the Wharnccliffe Side Wastewater Treatment Works (WwTW) on the proposed residential development of the Oughtibridge Mill site. This is to provide a response to the Local Planning Authority and to Yorkshire Water who were consulted as part of the planning process.

1.1 Odour Assessment Criteria

The Chartered Institute of Water and Environmental Management (CIWEM) has issued a Policy Position Statement¹ outlining its position with regard to the control of odour and the likely level of impact as indicated by modelling studies. This statement is frequently used by the water industry as the basis of assigning acceptable criteria for odour impact assessments.

Within the statement, CIWEM indicates that odour impact criteria based on the predicted 98th percentiles of hourly mean odour concentrations ($C_{98, 1-hr}$) should be regarded only as indicative guidelines and should not be applied as statutory numerical standards. Based on research undertaken in the UK at the time the statement was issued, the body considered that the following framework of $C_{98, 1-hr}$ criteria were the most reliable indicators of the likelihood of complaints associated with wastewater treatment facilities:

$C_{98, 1-hr}$ 10 ouE/m³ - complaints are highly likely and odour exposure at these levels represents an actionable nuisance;

$C_{98, 1-hr}$ 5 ouE/m³, - complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance

$C_{98, 1-hr}$ <3 ouE/m³, - complaints are unlikely to occur and exposure below this level are unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature.

These impact criteria have therefore been used as the indicative guidelines for the assessment of odours from the Wharnccliffe Side WwTW on the Oughtibridge Mill redevelopment.

1.2 Summary of the odour assessment

Figure 1.1 shows the odour contour plot generated from the odour release rates detailed in Figure 1.2, in combination with the 2004 meteorological data from the Emley Moor recording station. This year has, out of the 2004-2008 dataset, been found from the sensitivity analysis undertaken in the desk study to give rise to the highest $C_{98, 1hr}$ figures in the area surrounding the site. $C_{98, 1hr}$ contours of 3.0, 5.0, 10 ouE/m³ and above are shown on the plot.

¹ Policy Position Statement – Control of Odour. CIWEM, September 2012

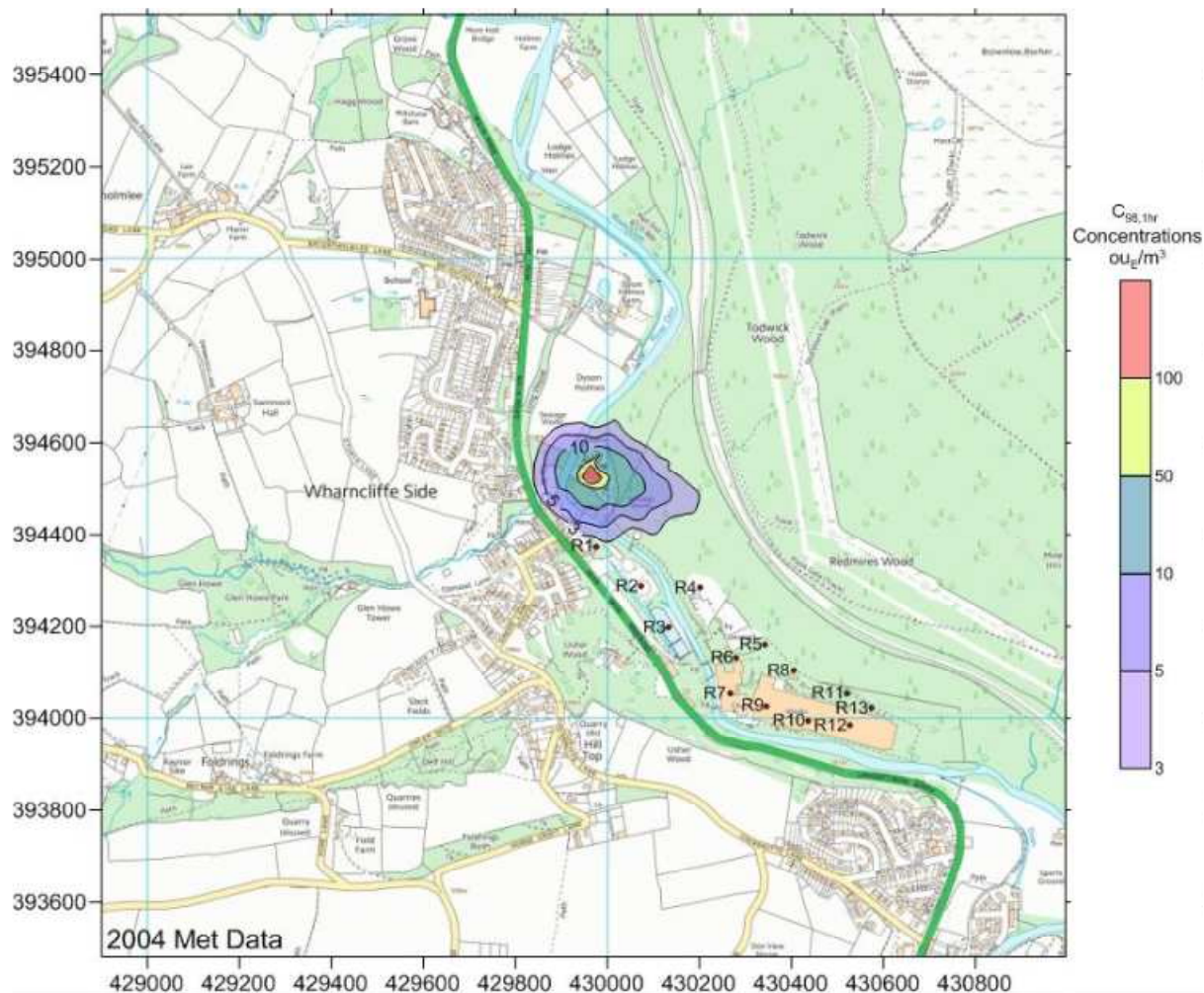
Figure 1.1 $C_{98,1hr}$ Odour Contours (ou_E/m^3) for Wharnccliffe Side WwTW

Table 1.1 presents the results in numerical format (to 2 significant figures) for each of the considered receptor positions and also expresses the predicted concentration as a percentage of the relevant assessment criteria.

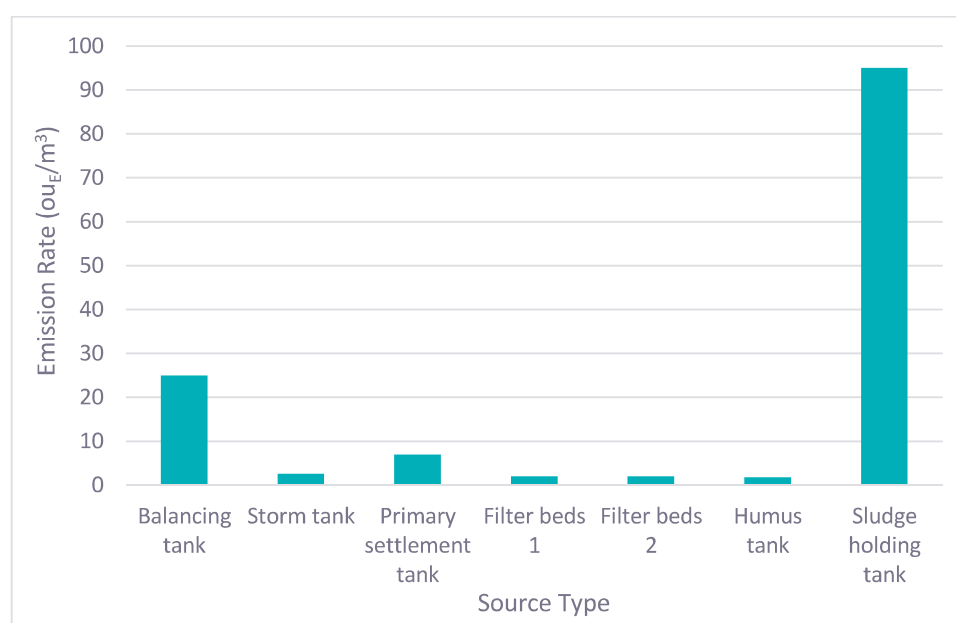
Table 1.1 Predicted Concentrations at Human Receptors (2004 Met Data)

Receptor	Odour Concentration ($C_{98,1hr}$) ($ou_E m^{-3}$)	Percentage of 5 $ou_E m^{-3}$ Threshold	Percentage of 3 $ou_E m^{-3}$ Threshold
Receptor 1	2.0	40	67
Receptor 2	1.0	20	33
Receptor 3	0.60	12	20
Receptor 4	1.0	20	34
Receptor 5	0.50	10	17
Receptor 6	0.42	8.5	14
Receptor 7	0.28	5.6	9.4
Receptor 8	0.36	7.3	12

Receptor	Odour Concentration ($C_{98,1hr}$) ($ou_E m^{-3}$)	Percentage of $5 ou_E m^{-3}$ Threshold	Percentage of $3 ou_E m^{-3}$ Threshold
Receptor 9	0.24	4.8	8.0
Receptor 10	0.22	4.4	7.4
Receptor 11	0.34	6.8	11
Receptor 12	0.24	4.7	7.8
Receptor 13	0.29	5.8	9.7

Figure 1.2 provides an overview of the odour release rates from each source at the WwTW. Odour release rates towards the higher end of the spectrum have been chosen to provide a conservative approach. These figures have been chosen from the Amec Foster Wheeler database of release rates and figures published by recognised industry bodies.

Figure 1.2 Odour release rate information - breakdown by individual source



The major contributing sources on the site are assumed to be the sludge holding tank, the balancing tank and the primary settlement tank. Based upon the modelling conducted, the results of the assessment predicts that there should be no exceedences of the $3 ou_E/m^3$ $C_{98,1hr}$ criteria at any of the residential receptors located within the proposed development. This indicates that there should no significant detriment to amenity within the area of the proposed development and that nuisance from odour is not expected.

It should be noted that these findings do not take into account abnormal operations such as spillages or unstable plant conditions. Although the modelling has been conducted using the worst year meteorological conditions for odour dispersion, the figures presented are only representative of the typical average conditions that are anticipated to occur throughout the year and there will be day-to-day variations in the odour release rates. Short term activities such as sludge tank emptying, sludge tank decanting and maintenance work may generate temporary increases in odour concentrations but, due to their infrequent nature, they will not significantly alter the $C_{98,1hr}$ predictions.

The deadline set by Weetwood Services Ltd has meant that Amec FW were unable to secure the necessary information from Yorkshire Water in time to clarify several aspects of the assessment. Therefore, several assumptions have been made about the Wharnccliffe Side WwTW, which are as follows: