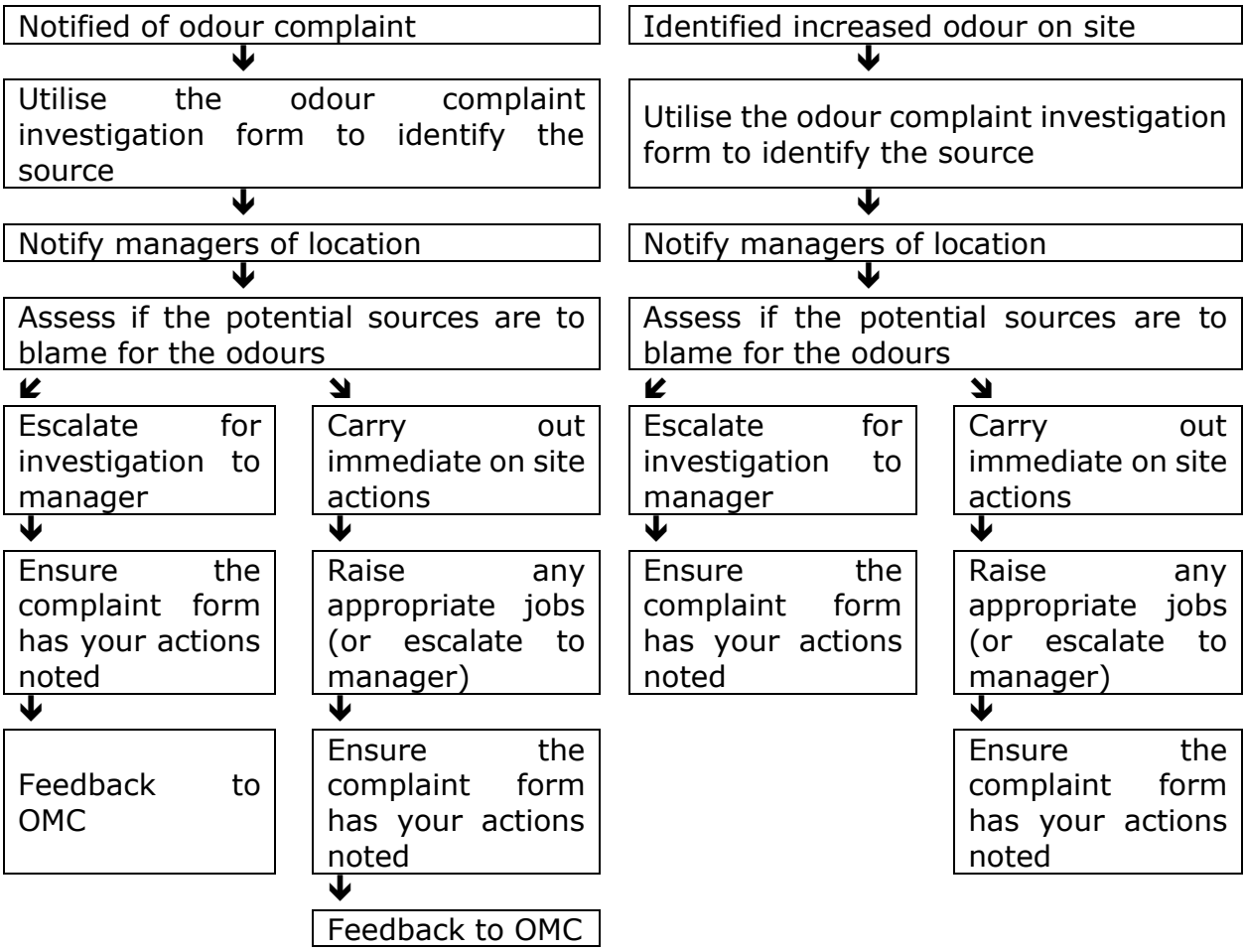
Anglian Water Services Ltd

Odour Management Plan

Site name	Anglian Water Cliff Quay
Address	Raeburn Rd South, Ipswich
Post code	IP3 0ET
Short code	CLQYST
Grid Reference	TM 17536 41922
Permit References	STC: EPR/LP3593VN CHP: EPR/CP3938HL



Introduction

This plan refers to the site mentioned on the cover sheet and is in response to the First Odour Risk Assessment (FORA) process having been completed.

Details of the FORA process can be found on SharePoint and the outcome for this site shows that an OMP is required.

This plan will be reviewed every 12 months, and will be audited as part of the wider business audit programme and has been produced in line with teh Environment Agency's H1 guidance.

Any significant changes, including process changes, plans changes or increase in complaints or odours detected will result in this plan being reviewed.

This plan will be stored on SharePoint.

Business Management Systems

There are various documents and processes within the business management systems for AWS that address odour and the management of complaints. The list below details some of the key processes and how they can be found on SharePoint:

- POSWASTE section 10 – Odour Control holds all the standard documents relating to managing odour (http://newhawk/Docs/PoliciesProcedures/Pages/POSWASTE-section-10.aspx)
- Where further investigation CAP process will be followed.
- Cliff Quay Potential Odour Source Spreadsheet.xlsx (http://awss11178av.globalinfra.net/livelink/llisapi.dll?func=ll&objaction=overview&objid=55297329)
- Cliff Quay Complaint investigation sampling spreadsheet.xlsx (http://awss11178av.globalinfra.net/livelink/llisapi.dll?func=ll&objaction=overview&objid=55296086)
- Customer Complaint process
- Current Odour Model can be obtained from the modelling team, contact Omid Shafibeik.

The site

The following maps show the site, odour sources, odour investigation points, weather information and sensitive/common receptors.

WRC & STC Potential Sources Sampling Log Locations

These points on the map below will be surveyed using the Jerome meter on a 2-weekly basis, records will be kept electronically on the 'Potential Sources Sampling Log' and reviewed for trends.

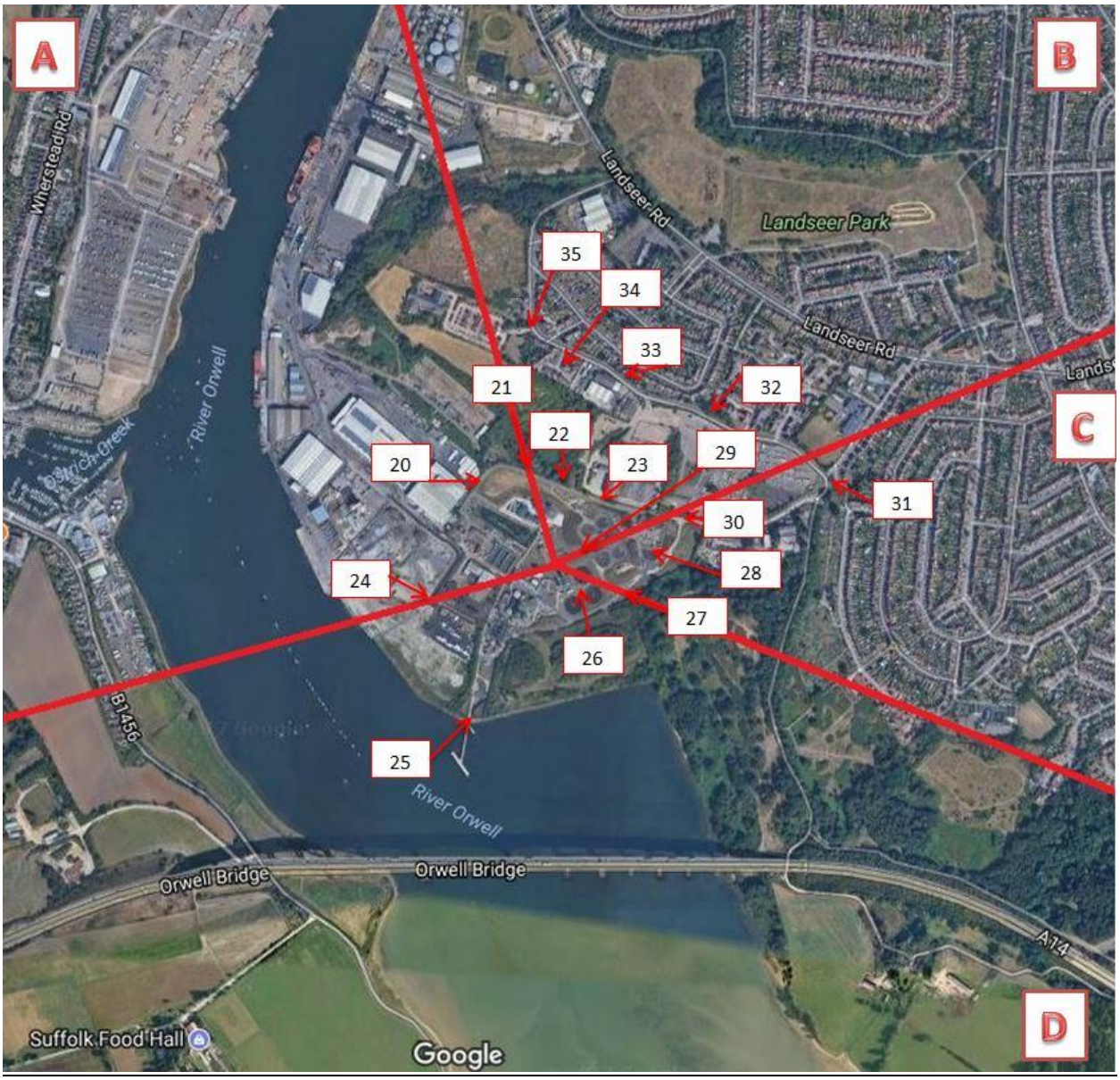
Two new points have been added to capture the temporary HSAF treatment area these have been labelled T1 & T2.

1	East Inlet
2	West end PSTs
3	Middle PSTs
4	East end PSTs
5	Sout East inlet
6	PST Outlet (above weir)
7	South PSTs
8	Odour unit D (cake imports)
9	Import Pump Station
10	Odour control unit 5 outlet
11	(Behind) Gas Bag
12	Odour control unit 3 outlet
13	Odour control unit 7 outlet
14	Inbetween belt room and centrifuges
15	Amtreat plant
16	North edge of storm tanks
17	Main lift pump station (outside)
18	Bungalow/compost
19	HPH

T1	Road way to south PST's
T2	Near site weighbridge

AW Cliff Quay Complaint Investigations Sampling Log Locations

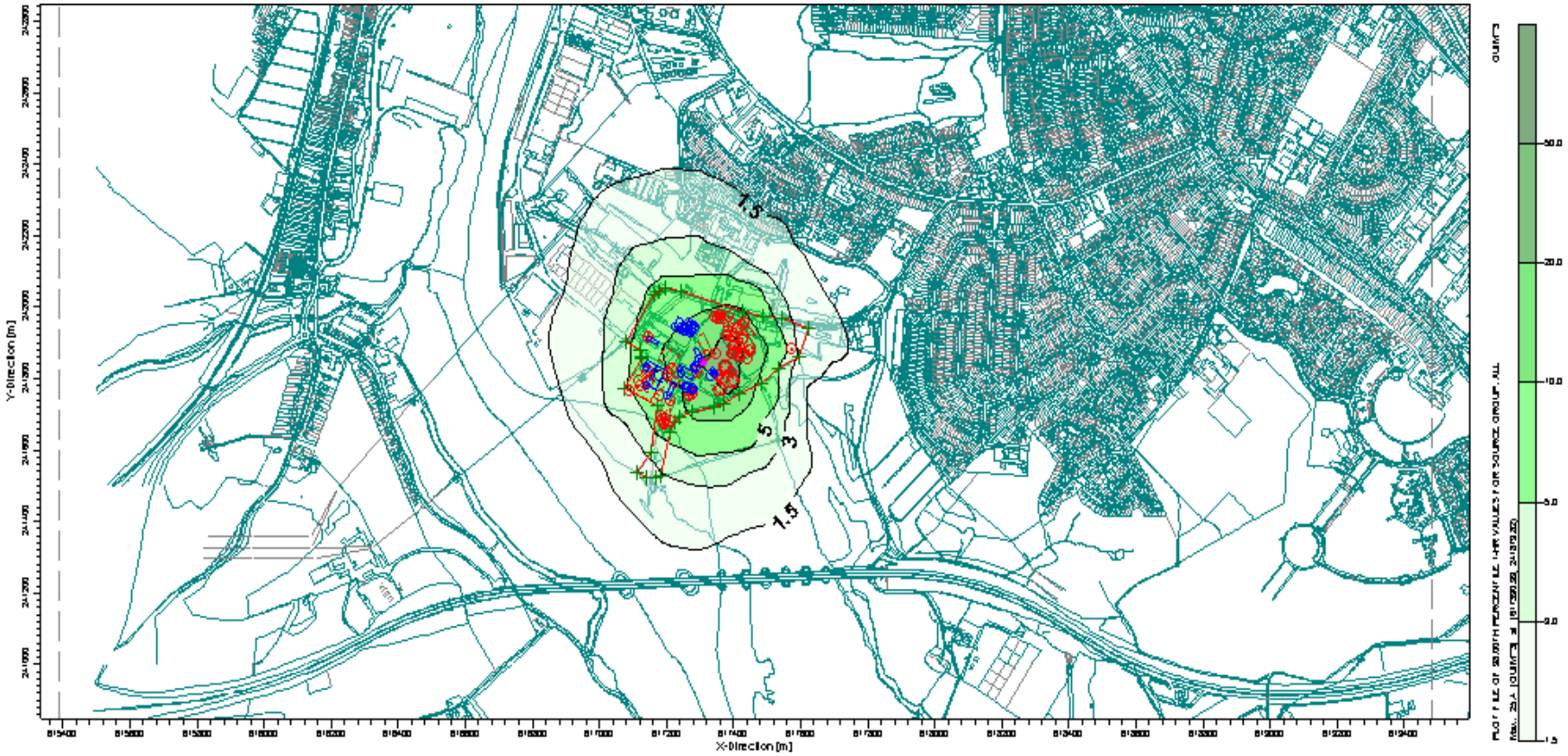
Following a complaint received, this segmented map shows initial investigation points which will be surveyed using a Jerome meter and sniff testing in conjunction with the WRC/STC.



20	North boundary
21	North boundary
22	North boundary
23	North boundary
24	South West boundary
25	By Jetty
26	Middle of final tanks
27	South East boundary
28	North boundary by PSTs
29	Between PSTs and ASP
30	Cliff Quay site entrance
31	Junction Sandy Hill Land an Raeburn Road South
32	Childers Court
33	Sandy Hill Lane by Inlet
34	Centre of Pipers Vale
35	Sandy Hill Lane by entrance to Jacksons

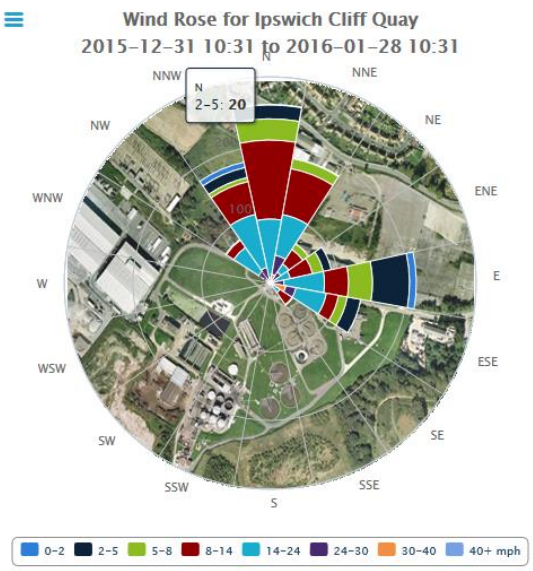
Modelling

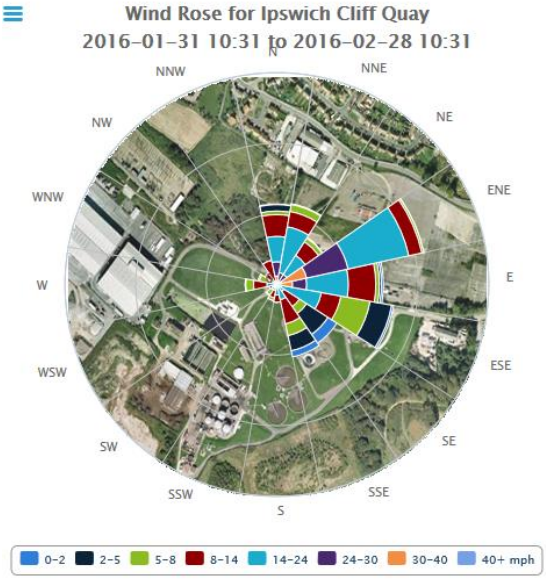
This is the model output using prevailing wind direction and current site operations (completed in 2014). This highlights the key customers likely to be impacted when odour leaves site. No significant changes to operations have taken place since the modelling was undertaken.

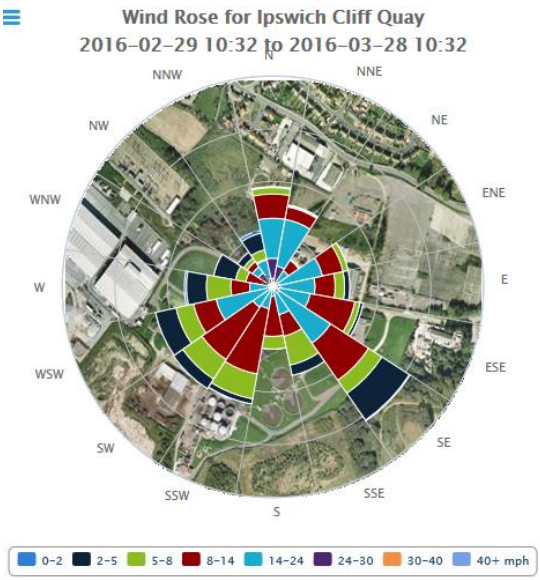


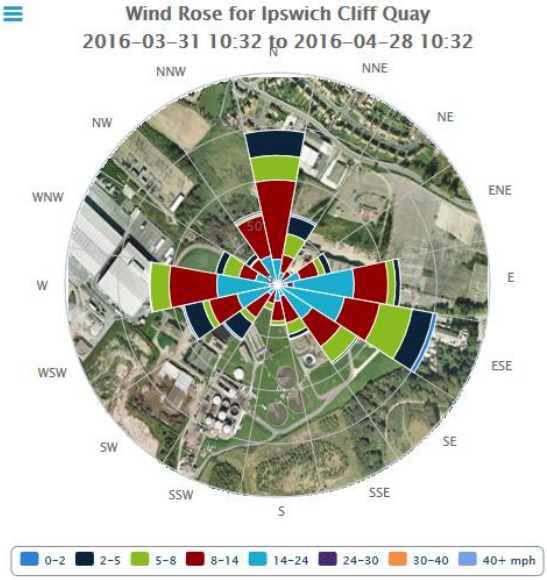
Wind Direction

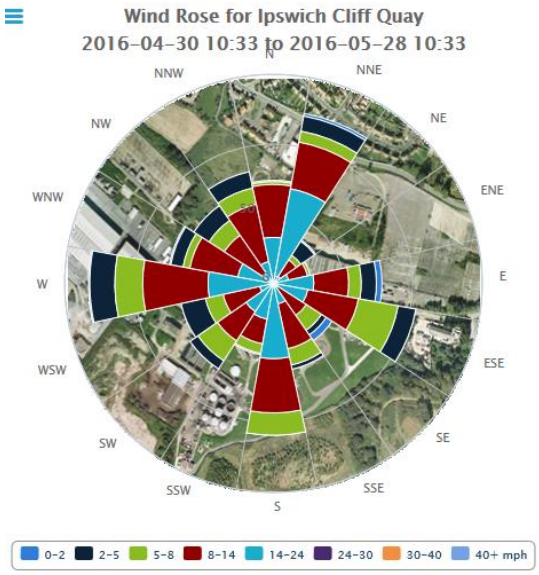
On site there is a Sky Link Pro weather station (http://www.skylink-pro.com/index.php), which provides live weather data and historic records. Below are monthly wind rose charts showing wind direction (blowing to) for 2016.

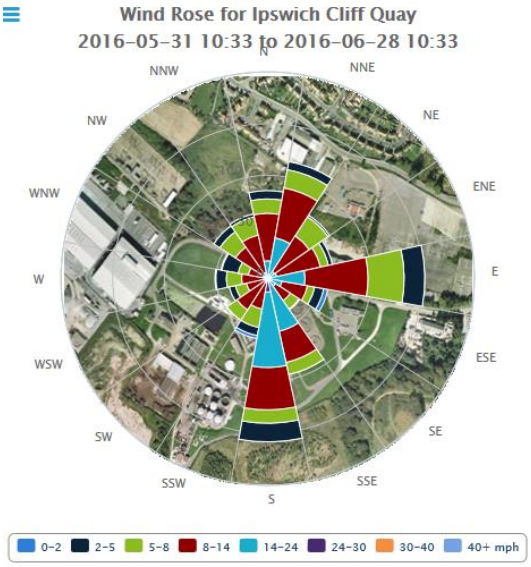


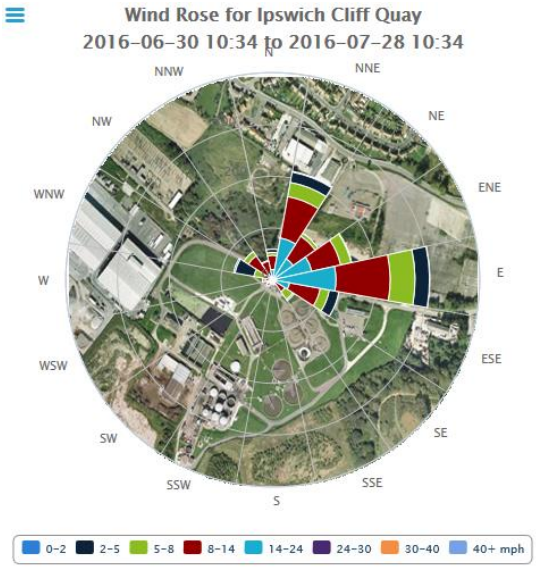


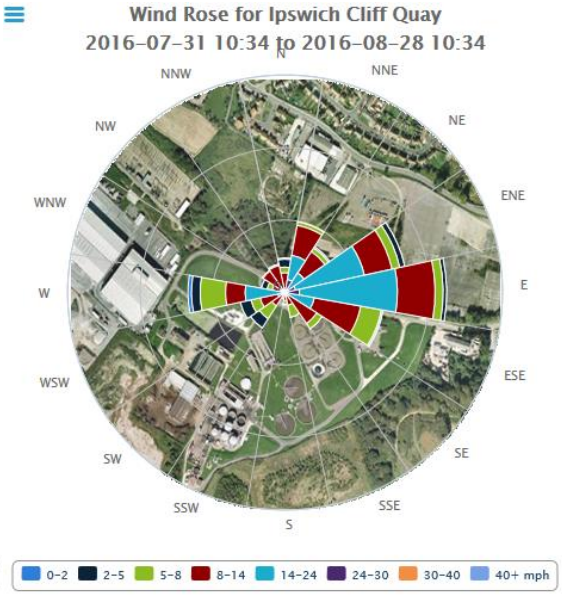


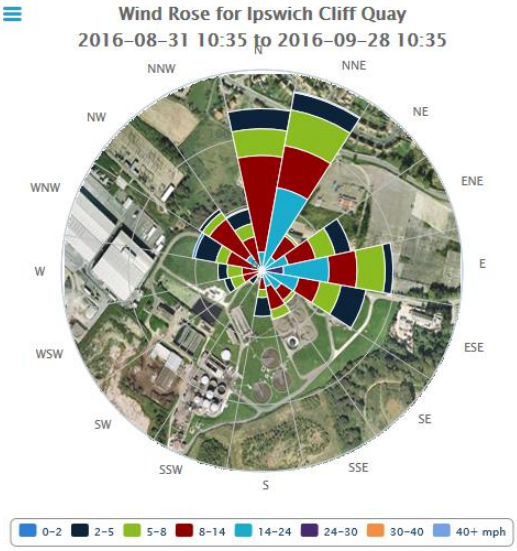


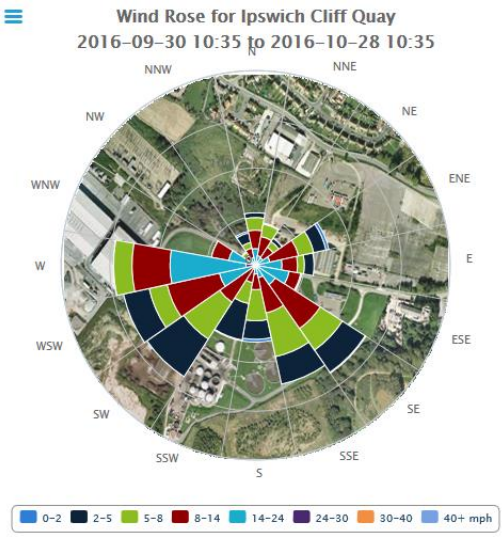

Wind Rose for Ipswich Cliff Quay
2016-04-30 10:33 to 2016-05-28 10:33
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph


Wind Rose for Ipswich Cliff Quay
2016-05-31 10:33 to 2016-06-28 10:33
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph


Wind Rose for Ipswich Cliff Quay
2016-06-30 10:34 to 2016-07-28 10:34
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph


Wind Rose for Ipswich Cliff Quay
2016-07-31 10:34 to 2016-08-28 10:34
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph


Wind Rose for Ipswich Cliff Quay
2016-08-31 10:35 to 2016-09-28 10:35
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph


Wind Rose for Ipswich Cliff Quay
2016-09-30 10:35 to 2016-10-28 10:35
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
0-2
2-5
5-8
8-14
14-24
24-30
30-40
40+ mph

Sensitive Receptors

Receptors sensitive to odour include users of the adjacent land, which may vary in their sensitivity to odour. The level of sensitivity will be defined using the Institute of Air Quality Management guidance2

- High sensitivity receptors e.g. residential dwellings, hospitals, schools/education and tourist/cultural.

– users can reasonably expect enjoyment of a high level of amenity; and

– people would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.

- Medium sensitivity receptor e.g. places of work, commercial/retail premises and playing/recreation fields.

– users would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home; or

– people wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.

- Low sensitivity receptor e.g. industrial use, farms, footpaths and roads.

– the enjoyment of amenity would not reasonably be expected; or

– there is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.

The magnitude of risk relates to:

- Frequency: How often an individual is exposed to odour

- Intensity: The individual's perception of the strength of the odour

- Duration: The overall duration that individuals are exposed to an odour over time

- Odour unpleasantness: Odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/ intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard nine-point scale it is termed the hedonic score.

- Location/Receptor sensitivity: The type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio- economic factors.

There are a number of receptors in relative close proximity to the site. The sensitive receptors 500m of the site are identified in the Bioaerosol Risk Assessment (Cliff Quay Bioaerosol Risk Assessment).

Table 1: Receptors within 500m of potential emission sources at the Site

Receptor	Nearest potential emission source to receptor	Process	Distance (m) from nearest potential emission source [(a)]	Direction of receptor from closest emission source
Sensitive receptors West of the Site (places of work, amenity areas)	PSTs	Water Recycling Centre	300	West
	Biofilters	Water Recycling Centre	N/A	
	Aeration lanes	Water Recycling Centre	200	West
	FSTs	Water Recycling Centre	300	West
	Anaerobic digesters	Sludge Treatment Centre	220	West
	Pasteurisation Tank	Sludge Treatment Centre	195	West
	Centrifuge building	Sludge Treatment Centre	260	West
	Hydrolysis Tank	Sludge Treatment Centre	**190**	West
	HPH Heating Tank	Sludge Treatment Centre	**190**	West
	Cake storage	Sludge Treatment Centre	195	North West
	Boilers	Biogas combustion	170	West
	CHPs	Biogas combustion	150	West
	Flare	Biogas combustion	**135**	West
Residential properties North of Site (residential)	PSTs	Water Recycling Centre	300	North
	Biofilters	Water Recycling Centre	N/A	
	Aeration lanes	Water Recycling Centre	350	North
	FSTs	Water Recycling Centre	400	North
	Anaerobic digesters	Sludge Treatment Centre	**260**	North
	Pasteurisation Tank	Sludge Treatment Centre	290	North
	Centrifuge building	Sludge Treatment Centre	470	North
	Hydrolysis Tank	Sludge Treatment Centre	280	North
	HPH Heating Tank	Sludge Treatment Centre	280	North

Receptor	Nearest potential emission source to receptor	Process	Distance (m) from nearest potential emission source [(a)]	Direction of receptor from closest emission source
	Cake storage	Sludge Treatment Centre	255	North
	Boilers	Biogas combustion	**270**	North
	CHPs	Biogas combustion	280	North
	Flare	Biogas combustion	345	North
Amenity area south east of the Site (North west corner of Pipers Vale LNR)	PSTs	Water Recycling Centre	250	East
	Biofilters	Water Recycling Centre	N/A	
	Aeration lanes	Water Recycling Centre	245	East
	FSTs	Water Recycling Centre	200	East
	Anaerobic digesters	Sludge Treatment Centre	270	South East
	Pasteurisation Tank	Sludge Treatment Centre	265	South East
	Centrifuge building	Sludge Treatment Centre	**220**	East
	Hydrolysis Tank	Sludge Treatment Centre	260	South East
	HPH Heating Tank	Sludge Treatment Centre	275	South East
	Cake storage	Sludge Treatment Centre	290	East
	Boilers	Biogas combustion	290	South East
	CHPs	Biogas combustion	310	South East
	Flare	Biogas combustion	**285**	South East

Note:

(a) Distance from source to receptor is rounded to the nearest 5m
Value in bold represents the nearest potential emission source for each process which is closest to a sensitive receptor

Monitoring odour on WRC & STC site

The site has a number of potential odour sources. We will undertake sampling every 2 weeks and as needed assessments, of the odour on site. This will be recorded on one of two documents:

- Potential Sources Sampling Log
- Complaints Investigation Sampling Log

The site has access to, and uses the following methods to assess the odours detected on site:

- Jerome odour meter
- SNIFF trained personnel
- Operational staff detecting differences

At Cliff Quay we have decided to use the Jerome meter unless it is unavailable.

The site has had an odour model completed for its current operational activities completed in 2014. This, along with onsite knowledge, has been used to generate the potential odour sources list referenced in the maps earlier.

Causes of odour on site

As an operational site dealing with an inherently odorous material it is to be expected that fluctuating odour levels will be detected when changes to the operational activities, or other disturbances in the process occur. This section will detail, using operational, local and scientific knowledge, areas that we feel should be checked first; together with an explanation for the management control and considerations in each case. This is not an exhaustive list and in some cases further investigation will be required.

	Potential Odour Source	**Causes to consider**	**Control steps to take immediately**
1	East Inlet	Dosing Failed Trade Effluent Discharge	Contact and notify Maintenance Manager/MST of potential dosing failure Notify Catchment Quality Scientist of potential discharge
2	West end PSTs	Carrying too much sludge in PSTs	Check operation of OCUs 1&2 Desludge

3	Middle PSTs	Carrying too much sludge in PSTs	Check operation of OCUs 1&2 Check auto desludge system is operating Desludge as soon as space is available
4	East end PSTs	Carrying too much sludge in PSTs	Check operation of OCUs 1&2 Check auto desludge system is operating Desludge as soon as space is available
5	South East inlet	Dosing Failed Trade Effluent Discharge	Contact and notify Maintenance Manager/MST of potential dosing failure Notify Catchment Quality Scientist of potential discharge
6	PST Outlet (above weir)	Carrying too much sludge in PSTs	Check operation of OCUs 1&2 Check auto desludge system is operating Desludge as soon as space is available
7	South PSTs	Carrying too much sludge in PSTs	Check operation of OCUs 1&2 Desludge as soon as space is available
8	Odour unit D (cake imports)	Failure of media or mechanical failure	Raise a request for media replacement or maintenance attendance
9	Import Pump Station	Septic Sludge	Check Covers Temporary Seal if required
10	Odour control unit 5 outlet	Failure of media or mechanical failure	Raise a request for media replacement or maintenance attendance
11	(Behind) Gas Bag	Gas escaping	Isolate gas bag and flare and contact CHP team
12	Odour control unit 3 outlet	Failure of media or mechanical failure	Raise a request for media replacement or maintenance attendance
13	Odour control unit 7 outlet	Failure of media or mechanical failure	Raise a request for media replacement or maintenance attendance
14	In between belt room and centrifuges	Failure of OCU Operation of belt causing build-up of thickened sludge	Clean up of belt room Maintenance of belt Maintenance of OCU

		Cleanliness of belt room	
15	Amtreat plant	Failure of the amtreat process	Reseed using MLSS from another site Maintenance to repair equipment
16	North edge of storm tanks	Material in storm tanks	Clean storm tanks
17	Main lift pump station (outside)	Dosing Failed Trade Effluent Discharge	Contact and notify Maintenance Manager/MST of potential dosing failure Notify Catchment Quality Scientist of potential discharge
18	Bungalow and compost	Compost Plant	Pass to compost team for investigation following their Odour Management Plan.
19	HPH	Escape of sludge Whesso's in operation	Cleaning up after breakdown/escape of sludge Investigate why Whesso is in operation and take appropriate action

WRC/STC Management decisions involved

The site is operated to maximise efficiency and to ensure compliance with various operational and regulatory thresholds.

Some of the operations on site may, inadvertently, cause an odour to escape, however, this is unavoidable in these circumstances. An example of this would the Whesso valves operating to relieve the pressure in the gas system to prevent health and safety problems. Our primary concern must be health and safety where our gas systems are concerned. Venting gas through Whesso valves also means we lose the value of that gas. If these valves operate it would be for as short duration as possible and the odour should be minimal although unavoidable.

When investigating odour on the site it may become clear that the odour arising is caused by an off-site asset, for instance if there is a septicity issue in the network. This can occasionally be caused by a change in the dosing operations within the network and if it was identified as a septicity issue this would be passed the relevant team within the business and would be removed from site operational control. The solution to this would be to review the dosing. There are a number of factors involved in this assessment and it is outside the site management ownership.

This section will be continually reviewed to address any longer term management changes that may impact the odour profile of the site.

WRC/STC Mitigation on site

To manage odour on site it is required that we understand the profile of the odours.

To that end a model has been carried out, extracts of which have been shared in this document. Any major operational shifts will be run through the model to ensure that the impact on odour is not unforeseen and appropriate mitigation can be included. However it is not practical to run the model for all operational changes.

To manage the day to day fluctuations in odour and operations the site has developed a fortnightly assessment of odour on site. This is the routine checks of odour at points listed as potential odour sources. It is intended that this activity will: a) give us a real data, long term profile of odours on site, b) highlight any points that deteriorate over time through the drifting upwards of odour levels recorded on the Jerome, and c) highlight any point sources that have spiked indicating potentially unidentified operational problems.

It is acknowledged that at times it is difficult for operational staff to detect odour changes, however where this occurs, or where the routine investigation highlights an issue, or a complaint is received the site personnel will use the same Jerome equipment and assess the odours off-site and at the boundary for the segment in which the odour occurs as detailed in the map earlier in this plan.

The intention of this segmented approach is to ensure that there is a recordable odour present in the area of concern and back track the source to our site. This will also involve the wind direction being considered. If the odour is close to the boundary of a segment and the wind direction indicates there is some chance of the odour crossing segments it is expected that the operative carrying out the assessment will include the second segment in their assessment.

All staff will be briefed on this new process and it will be routinely carried out and discussed.

Maintenance requirements for odour control units

Parameters and monitoring requirements in relation to the odour control system to be undertaken at the site including daily/weekly/monthly/annual checks and servicing (links to log books and check sheets to be included)

Emission Point Type	Parameter	Monitoring Frequency	Monitoring standard or method
Channelled emission to air (biofilter and scrubbing system	Ammonia	Once every 6 months or more frequent if stated in the permit.	Emissions of pollutants into the environment through any kind of duct pipe stack etc. As per design and manufacturer's specifications EN ISO 21877
	H_2S		CEN TS 13649 for sampling NIOSH 6013 for analysis
	Odour concentration		BS EN 13725
	Efficiency checks	Annual	Annual report detailing the removal efficiency of all abatement systems and planned maintenance including media health air flow distribution and emissions removal efficiency BS EN 13275
	Media moisture andgas flow temperature	Weekly	Recorded using a moisture meter and temp probe
	Gas stream flow	Continuous	As per design and manufacturer's specifications
	Surface condition	Weekly	Visual assessment
	Thatching and compaction	Weekly	Back pressure

Communications

On receiving a customer complaint we will follow our code of practice.

We will communicate planned activities with the potential to cause odours and any other identified issues on-site, to the following;

Environmental Health	Caroline Talbot	caroline.talbot@ipswich.gov.uk
	General Enquires	environmental.health@ipswich.gov.uk
Environment Agency	Sophie Tumber	sophie.tumber@environment-agency.gov.uk
	General Enquires	AN-EPR-waste-suffolk@environment-agency.gov.uk
Anglian Water Customer Service	Customer Issues	CustService@anglianwater.co.uk
Anglian Water Customer Liaison Manager	Emma Crush	eCrush@anglianwater.co.uk
Anglian Water Customer Liaison Team Leader	Victoria Skipp	vSkipp@anglianwater.co.uk

Version History

This plan will be reviewed annually with the WRC, STC and Compost teams.

Version	Updated by	Updated on	Changes made
Version 1	R Cope	November 2017	Changes to draft in line with requests by EA excluding compost
Version 2	R Cope & J Stobbart	November 2017	Inclusion of compost activity points and details in line with EA request
Version 3	R Cope & J Stobbart	March 2018	Completion of joint odour plan
Version 4	C Hickey & S Legg Review	April 2018	Review of joint plan
Version 5	C Hickey	June 2018	Amend section on Page 17 that referred to a separate plan for compost plant – no longer relevant.
Version 6	C Hickey & R Cope	July 2018	Amendments, added Permit numbers and communications list.
Version 7	R Cope & M Hinson	Mar 2019	Amend communication list
Version 8		2020	No updates
Version 9		2021	No updates
Version 10		2022	No updates
Version 11	R Dunn D Haymes	December 2023	Removal of references to compost site as compost permit has been surrendered