[redacted]

From: [redacted]
Sent: 07 November 2022 11:06
To: [redacted]
Subject: FW: URGENT REQUEST - DWI Responses

Importance: High

Hi [redacted]

Email regarding [redacted] training below, as discussed.

Thanks

[redacted]
CSci MIWater
Optimisation and Development Scientist
Telephone: [redacted]
Mobile: [redacted]

Anglian Water Services Limited
The Old Pump House, Heigham Water Treatment Works,
Waterworks Road, Norwich, NR2 4DD

From: Regional Quality (Water) Training <rwater@anglianwater.co.uk>
Sent: 18 October 2022 11:11
To: [redacted] <[redacted]anglianwater.co.uk>
Subject: RE: URGENT REQUEST - DWI Responses

Good morning

[redacted] is currently on leave, so I have looked on our systems:

[redacted]

I cant find any paperwork/records of this training – it might be that it wasn't covered at the time she was employed.

[redacted]

On SAP and Workday, she completed MIC EL123 on 4/4/2018. EL123 is :

This E Learning gives you an overview and introduction to Materials In Contact and Regulation 31.
Regulation 31 states that all materials and equipment that are used in the water treatment process, and come into contact with water must be approved and tested and will not affect water quality.

Please let me know if there is anything else.

Regards

[redacted]
Training and Development Co-ordinator

[redacted]
Anglian Water Services Limited
Enterprise House Witham Park Lincoln LN5 7JE

How did we do? Please use the below survey link to give us feedback, we'll be using your feedback to identify ways which we can improve our service to you;

Training and Development Team Survey

From: [redacted] <[redacted]anglianwater.co.uk>
Sent: 17 October 2022 14:48
To: Regional Quality (Water) Training <rwater@anglianwater.co.uk>
Subject: URGENT REQUEST - DWI Responses
Importance: High

Hi Training team,

I have an urgent request for information following some enquiries from the DWI. I need to get all of the training documentation related to MIC training for the following personnel:

[redacted]

Neither of these staff are with the company any longer so any MIC training documentation related to them is likely to be fairly old. I need to try and get this information within the next couple of days.

Any help you can give with this would be greatly appreciated.

Many Thanks

[redacted]
CSci MIWater
Optimisation and Development Scientist
Telephone: [redacted]
Mobile: [redacted]

Anglian Water Services Limited
The Old Pump House, Heigham Water Treatment Works,
Waterworks Road, Norwich, NR2 4DD

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Water Quality and Water Services Technical Training

Course Name	Scientist Induction MIC new module Materials in contact
Course Number	WS022
Module Number	1
Course Date	27/4/16
Location	Chatterton Tower
Trainer	[redacted]

Delegates Present:

						Trainers Use only		
Name	Employee Number or Company Name:	Job Role	Contact email address	Line Manager:	Signature:	Pass/Fail	Test Course %	Passport Signed (Y/N)

MIC Training [redacted] Charlton 26-4-16

Related Doc number: WSV-RWI-072. Water sites minimum site information Site attendance record. Template Issue date: April 06 Revision No. 001

Date	Time of arrival	Name (Print and sign)	AW Process or Organisation	Purpose of Visit	Time of departure
26/04	8.50	[redacted]	AW	MEETING	
26/4	9.00		"	meeting.	
26/4	9.15		AW	"	
26/4	9:20		AW	"	
26/4	9:20		AW	"	
"	9.15		AW.	"	
"	9:45		AW	"	
"	9:15		AW.	"	
"	10:30		AW	"	

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training
Course Number	WS083 - Module 1
Employee Name	[redacted]
Employee Number or Co. Name (as appropriate):	
Trainer Name	[redacted]
Date	06/04/18
Total marks available	40
Total achieved	39
% score	97.5
Pass or Fail Pass mark 30	Pass

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Trainers use	
Q1	What does Regulation 31 (4)(b) apply to?	1 mark for this question	
	Everything that comes into contact with potable water		Small surface area
Q2	Which 3 tests are carried out as part of BS6920 to ensure compliance with Regulation 31 (4)(b)?	3 marks for this question	
1	Odour		✓
2	Flavour		✓
3	Microbial Growth		✓
Q3	What are the start and end points, across the water supply process, that Regulation 31 applies to?	2 marks for this question	
Start	point of abstraction		✓
End	certificate of to customer boundary		✓
Q4	Name 3 consequences of not complying with Regulation 31?	3 marks for this question	
1	prosecution		✓
2	fined		✓
3	imprisoned		✓
Q5	At what stage in a project do you need to fill in an MIC form?	1 mark for this question	
	Before you purchase a product		✓
Q6	Which DWI advice sheet gives guidance on small surface area items?	1 mark for this question	
	Advice Sheet 8		✓

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Q7	Name 4 large surface area products which might appear in the DWI approved product list?	4 marks for this question	
1	Pipes		✓
2	Filter Media		✓
3	Water Tanks		✓
4	Tower Reservoir linings		✓
Q8	**What 3 approval routes would you expect for a concrete product to reline a tower?**	**3 marks for this question**	
1	Advice Sheet 7		✓
2	DWI Approval Number/List.		✓
3	Admixtures as per DWI Approved Product List		✓
Q9	**Name 5 small surface area products?**	**5 marks for this question**	
1	Valves		✓
2	Ladders		✓
3	Crockets		✓
4	Pumps		✓
5	O- Rings		✓
Q10	**Name an approved grade of Stainless steel?**	**1 mark for this question**	
	304S / 316S		✓

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Q11	How do you check approval information for a small surface area metallic item?	1 mark for this question	
	Approved Product List Annex 3		✓
Q12	What checks should you do when assessing a BS6920 certificate?	5 marks for this question	
1	BS 6920 Test Report Has it been tested at a UKAS accredited Lab?		✓
2	Does name on certificate match the product		✓
3	Date - is within 5 years		✓
4	Can you meet the preparation requirements		✓
5	Have the odour flavour & microbial growth tests passed?		✓
Q13	On what date does this WRAS number expire? 0907528	1 mark for this question	
	14/07		✓
Q14	When checking a product on the WRAS Directory what checks should you do?	4 marks for this question	
1	Check expiry date of WRAS approval.		✓
2	Check if you can meet preparation requirements 'IPU'		✓
3	Check if product matches the name on certificate.		✓
4	Check if product has a BS6920 test report		✓

Q15	What is an IFU and why are they important?	2 marks for this question	
1	~~Information For Use~~ Instruction For Use.		✓
2	To make sure the product is fit for purpose.		✓
Q16	What are the two options for standing time prior to sampling?	1 mark for this question	
1	Ensure item has stood for appropriate amount of time as per 'IFU'		
2	or up to double the greatest time up to a max of 16 hours.		✓ ✓
Q17	Who should you contact if you need advice on Regulation 31?	1 mark for this question	
	WRRichardoptimisation@anglianwater.co.uk.		✓

You have reached the end of the assessment

NOTICE UNDER REGULATION 28(4) OF THE WATER SUPPLY (WATER QUALITY) REGULATIONS 2016 (AS AMENDED)

ANGLIAN WATER: GREAT WRATTIING WATER TREATMENT WORKS

Reference: ANH-2020-00001
Version Number: 3

Water undertaker as appointed under section 6 of the Water Industry Act 1991 (as amended): Anglian Water Services Limited, with registered number 02366656 (hereinafter called 'the Company').

Assets affected:
Bury St Edmunds Supply System Pwsz (ZSS07), Great Wratting WTW (TGRW), Haverhill Pwsz (ZSS23), Kedington WTW (TKED)

1. The Drinking Water Inspectorate ('the Inspectorate') has received a regulation 28(1) report of the Water Supply (Water Quality) Regulations 2016 (as amended) ('the Regulations') from the Company dated 1 March 2020, which stated that there is or has been a significant risk of supplying water from Great Wratting Water Treatment Works (and associated assets as applicable) that could constitute a potential danger to human health or could be unwholesome.
2. Consequently, this Notice is served on the Company by the Inspectorate on behalf of the Secretary of State, under regulation 28(4) for the assets listed above, for risks associated with:

    - Individual pesticides, including Metaldehyde and the total pesticides parameter.
    - Manganese
    - Iron
    - Taste and Odour (hydrogen sulphide)

3. The Company are required to satisfy the following:

Requirements	**Date until/by which requirements must be maintained/satisfied (as appropriate)**

(a) to maintain the following measures for the period specified in each case:

i.	Regular review and update of groundwater risk assessments.	Ongoing for the duration of this Notice
ii.	Raw water metaldehyde trend graphs to be regularly updated and metaldehyde will be assessed as a hazard as part of the regulation 27 risk assessment for the supply system supplied by Great Wratting Water Treatment Works (WTW), according to a Drinking Water Safety Plan approach.	Ongoing for the duration of this Notice
iii.	Use of Kedington borehole No. 1 to provide standby support, at a reduced flowrate, until completion of the additional control measures at Kedington WTW.	Until the completion of measure (b)v.
iv.	Operational and regulatory monitoring for metaldehyde in the raw and final water at Great Wratting WTW and Kedington WTW (when this is commissioned).	Ongoing for the duration of this Notice
v.	Exceedances investigated in line with company procedures.	Ongoing for the duration of this Notice
vi.	Implement an enhanced monitoring strategy for metaldehyde, to include the monitoring of all high-risk raw water sources and associated final waters on a weekly basis, to supplement the current regulatory final water monitoring.	Ongoing for the duration of this Notice
vii.	The company will take all reasonable steps necessary must be taken to protect public health. If the metaldehyde concentration in any final water sample exceeds 10 µg/l, the maximum deviation of quality values that the Company has agreed with Public Health England, reasonable measures will be taken to protect public health in consultation with local health professionals.	Ongoing for the duration of this Notice
viii.	Report regulatory exceedances of the standards for the metaldehyde parameter to DWI, as part of current monthly exception reporting process.	Ongoing for the duration of this Notice
ix.	Continually appraise the risk of metaldehyde and total pesticides as a hazard as part of the regulation 27 Risk Assessment for the supply systems	Ongoing for the duration of this Notice

	supplied by Great Wratting WTW, according to a Drinking Water Safety Plan approach, and ensure that regulation 28 documents are regularly reviewed and updates provided as necessary.	
x.	Support any voluntary initiatives to influence metaldehyde usage in the catchments feeding Great Wratting WTW, taking a risk-based approach. In particular, engage with and provide data to the Environment Agency and other relevant stakeholders, as required and on a regular basis.	Ongoing for the duration of this Notice
xi.	Complete enhanced surveillance of waters from Kedington borehole to monitor odour risks and inform any required immediate action.	Upon issue of V3 of this Notice until completion of measure (b)iv.
xii.	Complete enhanced surveillance of waters from Kedington borehole to ensure levels of iron and manganese are within the treatment capability of Great Wratting WTW.	Upon issue of V3 of this Notice and until the completion of measure (b)v.
(b) to review, revise or make operational the following measures, by the dates specified in each case:		
i.	Complete the planning, design and procurement arrangements to provide a new low metaldehyde source for replacement/blending with the high yielding Wixoe source.	**Complete** (9 July 2018)
ii.	Complete the planning, design and procurement arrangements for uprating the treatment at Kedington WTW, as it has been identified that to ensure low metaldehyde water the new source is expected to have higher iron and manganese concentrations than the sources feeding to Great Wratting WTW currently exhibit.	**Complete** (16 October 2018)
iii.	Complete construction, installation and commissioning of the new low metaldehyde source and uprated treatment designed under measure (b)ii.	**Complete**

iv.	Complete the installation and commissioning of sodium bisulphite dosing (to mitigate the risk of hydrogen sulphide odour) to form part of the treatment process for water from Kedington borehole.	31 July 2021
v.	Following the completion of measure (b)iv. above, recommission the low metaldehyde blend (via the uprated treatment and sodium bisulphite dosing at Kedington WTW) from Kedington borehole to enable full operational use of Great Wratting WTW.	31 July 2021

(c) to audit whether the measures have been effective by the following means:

i.	Define an audit strategy to monitor the effectiveness of the above measures specified in section (a) and (b).	**Complete** (30 September 2015)
ii.	Implement, and keep under continuous review, the audit strategy defined in measure (c)i.	Following completion of measure (c)i, onwards.

(d) not to supply water for regulation 4(1) purposes from Great Wratting WTW and Kedington WTW, or not to so supply unless the specified conditions below are satisfied:

Not applicable

(e) to provide the following information in the time and manner specified below to enable monitoring of progress towards the mitigation of the risks:

i.	Provide a progress report annually by 31 January and against the following milestones:	Annually by 31 January
	a) A copy of the audit strategy specified in (c)i. above.	**Complete** (30 September 2015)
	b) A statement to confirm the installation and commissioning of the sodium bisulphite dosing to treat water from Kedington borehole as required under measure (b)iv.	31 August 2021
	c) A statement to confirm the recommissioning of the new low	31 August 2021

	metaldehyde source and uprated treatment as required under measure (b)v.	
ii.	Submit any revisions of the audit strategy produced under measure (c)ii.	30 June 2021 and within 1 month of any subsequent revisions
iii.	Submit a report in the event that any completed measure of this Notice needs to be altered in any way for any reason.	Ongoing for the duration of this Notice
iv.	Submit a satisfactory completion report accompanied by a revised regulation 28(1) report with Board level Director sign-off.	31 August 2022

4. Any product or substance used as a result of the requirements in this Notice must comply with regulation 31.

5. Under regulation 28(6) the Inspectorate, on behalf of the Secretary of State, may by notice served on the Company, revoke or vary this Notice.

6. Failure by the Company to comply with this Notice may result in enforcement proceedings under section 18 of the Water Industry Act 1991 (as amended).

Signed by authority of the Secretary of State

[redacted]

Deputy Chief Inspector

4 March 2021
Reference: ANH-2020-00001, Version 3

SAFETY DATA SHEET

QD8 (FAST CURE COMPLIANT) ENAMEL PROMATCH

Compilation date: 05/04/2017

Revision date: 29/03/2021

Revision No: 2

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: QD8 (FAST CURE COMPLIANT) ENAMEL PROMATCH

Product code: QD8-6-20477

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of substance / mixture: PC9a: Coatings and paints, thinners, paint removers.

1.3. Details of the supplier of the safety data sheet

Company name: ISF Group Limited

350 Thurmaston Boulevard

Leicester

LE4 9HS

United Kingdom

Tel: +44 (0)116 274 2222

Fax: +44 (0)116 274 3333

Email: healthandsafety@isf.co.uk

1.4. Emergency telephone number

Emergency tel: +44 (0)116 274 2222

Poison centre contact:

England & Wales : NHS 111 - dial 111

Scotland : NHS 24 - dial 111

Republic of Ireland : Beaumont Hospital, Beaumont Road, Dublin 9, ROI.

dial +353 (0) 1 809 2566

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CLP: Flam. Liq. 3: H226; Skin Irrit. 2: H315

Most important adverse effects: Flammable liquid and vapour. Causes skin irritation.

2.2. Label elements

Label elements:

Hazard statements: H226: Flammable liquid and vapour.

H315: Causes skin irritation.

Hazard pictograms: GHS02: Flame

GHS07: Exclamation mark

[cont...]

Signal words: Warning

Precautionary statements: P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241: Use explosion-proof electrical/ventilating/lighting/... equipment.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352: IF ON SKIN: Wash with plenty of water.

P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .

P321: Specific treatment (see instructions on this label)

2.3. Other hazards

Other hazards: In use, may form flammable / explosive vapour-air mixture.

PBT: This product is not identified as a PBT/vPvB substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

Hazardous ingredients:

XYLENE

EINECS	CAS	PBT / WEL	CLP Classification	Percent
215-535-7	1330-20-7	-	Flam. Liq. 3: H226; Acute Tox. 4: H332; Acute Tox. 4: H312; Skin Irrit. 2: H315	30-50%

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes. Consult a doctor.

Ingestion: Wash out mouth with water. Consult a doctor.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. Consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed

Skin contact: There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and redness. The eyes may water profusely.

Ingestion: There may be soreness and redness of the mouth and throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest. Exposure may cause coughing or wheezing.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

4.3. Indication of any immediate medical attention and special treatment needed

Immediate / special treatment: Eye bathing equipment should be available on the premises.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Alcohol resistant foam. Water spray. Carbon dioxide. Dry chemical powder. Use water spray to cool containers.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: Flammable. In combustion emits toxic fumes. Forms explosive air-vapour mixture.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details. If outside do not approach from downwind. If outside keep bystanders upwind and away from danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Turn leaking containers leak-side up to prevent the escape of liquid. Eliminate all sources of ignition.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method. Do not use equipment in clean-up procedure which may produce sparks.

6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of mists in the air. Smoking is forbidden. Use non-sparking tools.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed. Keep away from sources of ignition. Prevent the build up of electrostatic charge in the immediate area. Ensure lighting and electrical equipment are not a source of ignition.

7.3. Specific end use(s)

Specific end use(s): No data available.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

XYLENE

Workplace exposure limits: **Respirable dust:**

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
UK	220 mg/m3	441 mg/m3	-	-

DNEL/PNEC Values

DNEL / PNEC No data available.

8.2. Exposure controls

Engineering measures: Ensure there is sufficient ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid

Colour: Various

Odour: Characteristic odour

Evaporation rate: No data available.

Oxidising: No data available.

Solubility in water: No data available.

Viscosity: Viscous

Boiling point/range°C: No data available.

Melting point/range°C: No data available.

Flammability limits %: lower: No data available.

upper: No data available.

Flash point°C: 23 - 60

Part.coeff. n-octanol/water: No data available.

Autoflammability°C: No data available.

Vapour pressure: No data available.

Relative density: 1.03

pH: No data available.

VOC g/l: 390

9.2. Other information

Other information: Solid Weight : 62% +/- 2% Dependant of Colour

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid

Conditions to avoid: Heat. Hot surfaces. Sources of ignition. Flames.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes.

Section 11: Toxicological information

11.1. Information on toxicological effects

Hazardous ingredients:

XYLENE

ORL	MUS	LD50	2119	mg/kg
ORL	RAT	LD50	4300	mg/kg
SCU	RAT	LD50	1700	mg/kg

Relevant hazards for product:

Hazard	Route	Basis
Skin corrosion/irritation	DRM	Hazardous: calculated

Symptoms / routes of exposure

Skin contact: There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and redness. The eyes may water profusely.

Ingestion: There may be soreness and redness of the mouth and throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest. Exposure may cause coughing or wheezing.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: No data available.

12.2. Persistence and degradability

Persistence and degradability: Biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Readily absorbed into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity.

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal operations: Transfer to a suitable container and arrange for collection by specialised disposal company.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN1263

14.2. UN proper shipping name

Shipping name: PAINT

14.3. Transport hazard class(es)

Transport class: 3

14.4. Packing group

Packing group: II

14.5. Environmental hazards

Environmentally hazardous: No **Marine pollutant:** No

14.6. Special precautions for user

Special precautions: No special precautions.

Tunnel code: D/E

Transport category: 2

Section 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Specific regulations: Not applicable.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* indicates text in the SDS which has changed since the last revision.

Phrases used in s.2 and s.3: H226: Flammable liquid and vapour.

H312: Harmful in contact with skin.

H315: Causes skin irritation.

H332: Harmful if inhaled.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Sample results													
Sample number			20150145	20150002	20180433	20180411	20181930	20182250	20181942	20183344	20183375	20201028	20201018
Date			31/03/2020	31/03/2020	28/04/2020	28/04/2020	29/04/2020	29/04/2020	29/04/2020	30/04/2020	30/04/2020	01/05/2020	01/05/2020
Time			20:43:00	20:44:00	08:45:00	09:41:00	09:28:00	09:28:00	10:00:00	09:07:00	09:34:00	09:48:00	11:10:00
Indicator													
Method			S	S	S	S	S	S	S	S	S	S	S
Reasons			SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :
Sample Point Description			Blended Final Water	Blended Final Water	Treated Water - Unblended	Blended Final Water	Blended Final Water	Blended Final Water	Treated Water - Unblended	Blended Final Water	Treated Water - Unblended	Treated Water - Unblended	Blended Final Water
Sample point*			**W01KED CN**	**W01KED CN**	**W01KED CY**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CY**	**W01KED CN**	**W01KED CY**	**W01KED CY**	**W01KED CN**
Code	**Name**	**Units**											
00220	Taste Qualitative	_ _	1	------	1	------	------	1	1	------	1	------	------
00230	Odour Qualitative	_ _	2T	------	3T	------	------	2T	2T	------	2T	4T	------
00270	Odour - Post Panel - De-Chlorinated	_ _	MUSTY	------	------	------	------	MUSTY	------	------	------	------	------
00260	Taste - Post Panel - De-Chlorinated	_ _	------	------	------	------	------	------	------	------	------	------	------
00612	pH Clean Water	pH _	------	7.41	7.19	7.39	7.36	------	7.31	7.41	7.32	7.26	7.39
00621	Conductivity at 20C	µS/cm _	------	930	962	953	935	------	943	937	941	946	931
00681	Turbidity	NTU _	------	< 0.0090	0.16	0.09	< 0.090	------	< 0.090	< 0.090	< 0.090	< 0.090	< 0.090
00762	Temperature Field Measurement	°C _	------	10.4	11.2	10.9	10.8	------	11.1	10.8	11	11.4	10.9
00822	Dissolved Oxygen	mg/l O	------	9.27	7.69	8.93	8.22	------	7.84	8.63	8.03	8.09	8.67
01162	Total Oxidised Nitrogen	mg/l N	------	1.14	0.232	0.852	0.478	------	0.218	0.908	0.343	0.234	1.29
01621	Alkalinity Total	mg/l CACO3	------	307	331	318	326	------	378	319	317	327	315
01721	Chloride Total	mg/l CL	------	48.6	44.8	47.8	------	------	------	------	------	------	------
01806	Orthophosphate Total	mg/l P	------	1.337	1.915	1.38	1.666	------	2.075	1.459	2.019	1.97	1.181
01835	Sulphate Total	mg/l SO4	------	174	184	172	181	------	189	174	182	186	174
02075	Sodium Total	mg/l NA	------	29.5	23.7	27.6	26.9	------	25.4	28	24.2	24.5	27.7
02415	Calcium Total	mg/l CA	------	175	175	172	178	------	181	172	174	181	175
04035	Manganese Total	mg/l MN	------	0.0055	0.001	< 0.0010	< 0.0010	------	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
04215	Iron Total	mg/l FE	------	0.013	0.02	0.015	0.012	------	< 0.007	0.01	0.009	< 0.007	0.017
09111	Chlorine Free	mg/l CL2	------	0.75	0.12	0.59	0.41	------	0.54	0.53	0.46	0.53	0.42
09121	Chlorine Total	mg/l CL2	------	0.85	0.3	0.73	0.48	------	0.63	0.61	0.63	0.6	0.58
09220	Odour intensity de-chlorinated		2	------	------	------	------	2	------	------	------	------	------
9200	Taste intensity de-chlorinated		------	------	------	------	------	------	------	------	------	------	------
09320	3-day Colony Count at 22C	No/ml _	------	0	0	0	0	------	0	0	0	4	0
60131	Undiluted odour count 25C dechlorinated		1	------	0	------	------	1	0	------	0	0	------
60141	Undiluted taste count 25C dechlorinated		0	------	0	------	------	0	0	------	0	0	------
71041	Nitrate	mg/l NO3	------	5.05	< 3.763	3.77	< 3.763	------	< 3.763	4.02	< 3.763	< 3.763	5.73
71051	Nitrite	mg/l NO2	------	< 0.0090	< 0.0090	< 0.0090	< 0.0090	------	< 0.0090	< 0.0090	< 0.0090	< 0.0090	< 0.0090
72004	Nitrate/Nitrite combination	_ _	------	0.1	0.02	0.08	0.04	------	0.02	0.08	0.03	0.02	0.11
83701	Metaldehyde	µg/l _	------	0.025	------	0.019	0.01	------	------	0.017	------	------	0.017
91371	Odour Quantitative at 60C	TON _	1	------	1	------	------	1	1	------	1	1	------
91943	Coliforms Confirmed MPN IDEXX	No/100ml _	------	0	0	0	0	------	0	0	0	0	0
91953	E.Coli Confirmed MPN IDEXX	No/100ml _	------	0	0	0	0	------	0	0	0	0	0
92212	ODOUR QUANTITATIVE 25C DE-CHLORINATED	TON _	1	------	1	------	------	1	1	------	1	1	------
97822	TASTE QUANTITATIVE 25C DE-CHLORINATED	TON _	1	------	1	------	------	1	1	------	1	1	------

* The treated water (unblended) sample point at Kedington WTW was initially incorrectly labelled with a sample point code ending CY, this was corrected to CM for samples collected after the 04 May 2020

20201632	20201863	20201635	20201903	20201895	20203243	20205103	20205356	20205106	20206706	20208373	20208969	20209302	20209566	20210815
02/05/2020	02/05/2020	02/05/2020	03/05/2020	03/05/2020	04/05/2020	05/05/2020	05/05/2020	05/05/2020	06/05/2020	07/05/2020	08/05/2020	09/05/2020	10/05/2020	11/05/2020
07:53:00	08:50:00	08:55:00	08:50:00	09:39:00	10:32:00	10:03:00	10:04:00	10:05:00	10:27:00	10:26:00	09:45:00	09:37:00	09:08:00	09:28:00
S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	SS:LT: : :	MT:LT: : :	MT:LT: : :	MT:LT: : :	MT:LT: : :	MT:LT: : :	MT:LT: : :	LT:OS:SS: :
Treated Water - Unblended	Blended Final Water	Blended Final Water	Treated Water - Unblended	Blended Final Water	Treated Water - Unblended	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water	Blended Final Water
W01KED CY	**W01KED CN**	**W01KED CN**	**W01KED CY**	**W01KED CN**	**W01KED CY**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**	**W01KED CN**
------	1	------	------	------	1	------	------	------	------	------	------	------	------	1
4T	1Z	------	3T	------	4T	------	------	------	------	------	------	------	------	2T
_ _	BADEGG	------	_ _	------	------	------	BADEGG	------	------	------	------	------	------	BADEGG
------	------	------	------	------	------	------	------	------	------	------	------	------	------	UNTAST
7.13	------	7.31	7.07	7.28	7.15	7.34	------	------	------	------	------	------	------	------
948	------	932	953	932	945	943	------	------	933	------	------	------	------	------
< 0.090	------	< 0.090	< 0.090	< 0.090	< 0.090	------	------	------	------	------	------	------	------	------
11.4	------	10.9	11.4	11	11.6	10.9	------	10.9	10.9	10.9	11.2	11.2	11.3	10.9
6.92	------	8.69	6.71	9.11	7.56	9	------	------	------	------	------	------	------	------
0.219	------	0.805	0.218	0.8	0.354	0.892	------	------	------	------	------	------	------	------
314	------	315	374	310		312	------	------	------	------	------	------	------	------
------		------	------			48								
1.927	------	1.355	1.96	1.411	1.988	1.435	------	------	------	------	------	------	------	------
178	------	165	185	171	182	167	------	------	------	------	------	------	------	------
23	------	26.8	24.1	28.2	24.1	27.7	------	------	------	------	------	------	------	------
173	------	172	171	169	169	175	------	------	------	------	------	------	------	------
< 0.0010	------	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	------	------	------	------	------	------	------	------
< 0.007	------	0.009	< 0.007	0.009	< 0.007	0.007	------	------	------	------	------	------	------	------
0.5	------	0.5	0.61	0.51	0.5	0.55	------	0.55	0.62	0.53	0.57	0.5	0.5	0.49
0.78	------	0.65	0.82	0.69	0.68	0.69	------	0.69	0.72	0.68	0.71	0.71	0.66	0.58
------	2	------	------	------	------	------	2	------	------	------	------	------	------	2
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
0	------	0	------	------	------	0	------	0	1	0	0	0	0	------
0	1	------	0	------	0	------	1	------	------	------	------	------	------	2
0	0	------	0	------	0	------	0	------	------	------	------	------	------	0
< 3.763	------	< 3.763	< 3.763	< 3.763	< 3.763	3.95	------	------	------	------	------	------	------	------
< 0.0090	------	< 0.0090	< 0.0090	< 0.0090	< 0.0090	< 0.0090	------	< 0.0090	< 0.0090	< 0.0090	< 0.0090	< 0.0090	< 0.0090	------
0.02	------	0.07	0.02	0.07	0.03	0.08	------	------	------	------	------	------	------	------
------	------	0.017	------	0.017	------	0.018	------	------	------	------	------	------	------	------
1	1	------	1	------	1	------	1	------	------	------	------	------	------	1
0	------	0	0	0	0	0	------	0	0	0	0	0	0	------
0	------	0	0	0	0	0	------	0	0	0	0	0	0	------
1	1	------	1	------	1	------	1	------	------	------	------	------	------	2
1	1	------	1	------	1	------	1	------	------	------	------	------	------	2

20210811	20212745	20212629	20214171	20214260	20214177	20215580
11/05/2020	12/05/2020	12/05/2020	13/05/2020	13/05/2020	13/05/2020	14/05/2020
10:13:00	09:55:00	09:22:00	10:06:00	11:53:00	11:59:00	13:25:00
S	S	S	S	S	S	S
LT:OS:SS: :	LT:OS:SS: :	MT:LT: : :	MT:LT: : :	LT:OS:SS: :	LT:OS:SS: :	MT:LT: : :
Treated Water - Unblended	Treated Water - Unblended	Blended Final Water	Blended Final Water	Treated Water - Unblended	Treated Water - Unblended	Blended Final Water
W01KED CM	**W01KED CM**	**W01KED CN**	**W01KED CN**	**W01KED CM**	**W01KED CM**	**W01KED CN**
1	1	------	------	1	1	------
2T	2T	------	------	2T	3T	------
------	------	------	------	------	------	------
SWEET	------	------	------	------	------	------
------	------	------	------	------	7.3	------
------	------	------	------	------	------	------
------	------	------	------	------	------	------
11.4	11.3	10.7	10.9	11.5	11.7	10.8
------	------	------	------	------	8.32	------
------	------	------	------	------	------	------
------	------	------	------	------	------	------
------	------			------	------	
------	------	------	------	------	2.057	------
------	------	------	------	------	------	------
------	------	------	------	------	------	------
------	------	------	------	------	------	------
------	------	------	------	------	0.001	------
------	------	------	------	------	0.022	------
0.57	------	0.48	0.53	0.58	------	0.55
0.67	------	0.62	0.66	0.74	------	0.58
------	------	------	------	------	------	------
2	------	------	------	------	------	------
------	------	1	0	0		18
0	0	------	------	------	0	------
1	0	------	------	------	------	------
------	------	------	------	------	------	------
------	------	< 0.0090	< 0.0090	------	< 0.0090	< 0.0090
------	------	------	------	------		------
------	------	------	------	------	< 0.004	------
1	1	------	------	0	------	------
------	------	0	0	------	------	0
------	------	0	0	------	------	0
1	1	------	------	1	1	------
1	1	------	------	1	------	------

Anglian Water Services

Huntingdon Central Laboratory - Trace Organics Section

KEDINGTON WTW NOT IN SUPPLY, BLUE PARTICLES IN CT, W01NORMCP 28/05/2021@10:00 MK13606

Sample Number: 21252009

Report of Examination of DCM Extraction Profile

A portion of the blue flakes provided was dissolved in dichloromethane (DCM). This extract was then analysed by gas-chromatography / mass spectrometry (GC/MS) to produce a qualitative result. The compounds below are arranged from highest to lowest concentration.

Total trihexyl silane*
Trimethyl pentanediol*
Isobutyl isothiocyanate*
Trimethyl hexenol
Dimethyl propanediol
Hydroxy dimethyl hydroxy dimethylpropyl ester propanoic acid
Methyl dimethyl hydroxypropionate
Total xylenes + ethylbenzene
Ethyl isopropyl oxiranecarboxylate*
Hydroxy tetramethyl pentanoic acid ethyl ester*
Ethyl butoxy silacyclopentane*
Ethoxyethoxy methyl ethyl ester butanoic acid
Octanoic acid hexyl ester*
Trimethylsilyoxy pentenone
Butyl dimethyl dioxane*
Ethoxyethoxy octane*
Butanoic acid butyl ester
Methyl dimethyl hydroxypropionate

***best fit**

Signed: _____ Date: 03/06/2021

FOR INTERNAL USE ONLY - NOT TO BE SENT DIRECT TO OUTSIDE CUSTOMERS

Concentrations are approximate and in µg/l unless otherwise stated in the report.
DCM Profile concentrations are estimated vs. 1 µg/l standard of 1-chloroundecane.
P&T Profile concentrations are estimated vs. 10 µg/l standard of toluene.

FGEN575
Issue:1
Issued:10/09/2018

FGEN575
Issue:1
Issued:10/09/2018

Anglian Water Services

Huntingdon Central Laboratory - Trace Organics Section

KEDINGTON WTW NOT IN SUPPLY, BLUE PARTICLES W01NORMCP 09/07/2021@12:20 MK13606

Sample Number: 21315828

Report of Examination of DCM Extraction Profile

A portion of the blue flakes provided was soaked in 500ml of deionized water for 24 hours. The blue flakes were filtered to remove before adding 25ml DCM. The DCM extract was then analysed by gas-chromatography / mass spectrometry (GC/MS) to produce a semi quantitative result.

Toluene	**1.92**
Hexanal	**2.28**
Total xylene and ethylbenzene	**71.92**
Methoxy propyl acetate	**11.33**
Dimethyl heptanone	**2.02**
Octanal	**0.59**
Benzyl alcohol	**0.64**
Methyl benzenemethanol	**0.75**
Acetophenone	**1.90**
Isobutyl isothiocyanate	**2.87**
Cyclodecanone*	**2.13**
Unknown compound at RT 13.805	**1.70**
Dodecanol	**0.98**
Total tributyl phosphate	**1.58**
Ethyl isopropyl oxiranecarboxylate*	**0.99**
Ethyl trimethyl dioxolane*	**2.67**
Unknown compound at RT 15.449	**1.55**
Dimethyl pyridinediyl bis-ethanone	**1.02**
Dodecanoic acid	**0.78**
Diethyl phthalate	**4.09**
Tetradecanoic acid	**0.69**
Unknown compound at RT 18.941	**1.84**
Unknown compound at RT 19.016	**2.65**
Bismethylpropyl ester benzenedicarboxylic acid	**18.10**
Dibutyl phthalate	**10.34**
Cyclic actaatomic sulfur	**0.69**
Benzyl butyl phthalate	**2.51**
Unknown compound at RT 26.252	**0.76**
Dicyclohexyl ester benzenedicarboxylic acid	**3.72**
Diisooctyl ester benzenedicarboxylic acid	**7.65**

Signed: _____ Date: 14/07/2021

FOR INTERNAL USE ONLY - NOT TO BE SENT DIRECT TO OUTSIDE CUSTOMERS

Concentrations are approximate and in µg/l unless otherwise stated in the report.
DCM Profile concentrations are estimated vs. 1 µg/l standard of 1-chloroundecane.
P&T Profile concentrations are estimated vs. 10 µg/l standard of toluene.

Kedington

2021	
Title	*Slide No*
20210527_122209 7/31	2
20210527_122214 8/31	3
20210527_122248 9/31	4
20210527_122256 10/31	5
20210527_122318 11/31	6
20210527_122327 12/31	7
20210527_122348 13/31	8
20210527_123426 14/31	9
20210527_125712 22/31	10
20210527_125714 23/31	11
20210527_125744 24/31	12
20210527_144315 29/31	13
20210528_0922734 35/43	14
20210528_095755 36/43	15
20210528_095758 37/43	16
20210528_095801 38/43	17
20210528_095804 39/43	18
20210528_095806 40/43	19
20210528_095807 41/43	20
20210603_150512 42/43	21
20210603_150519 43/43	22

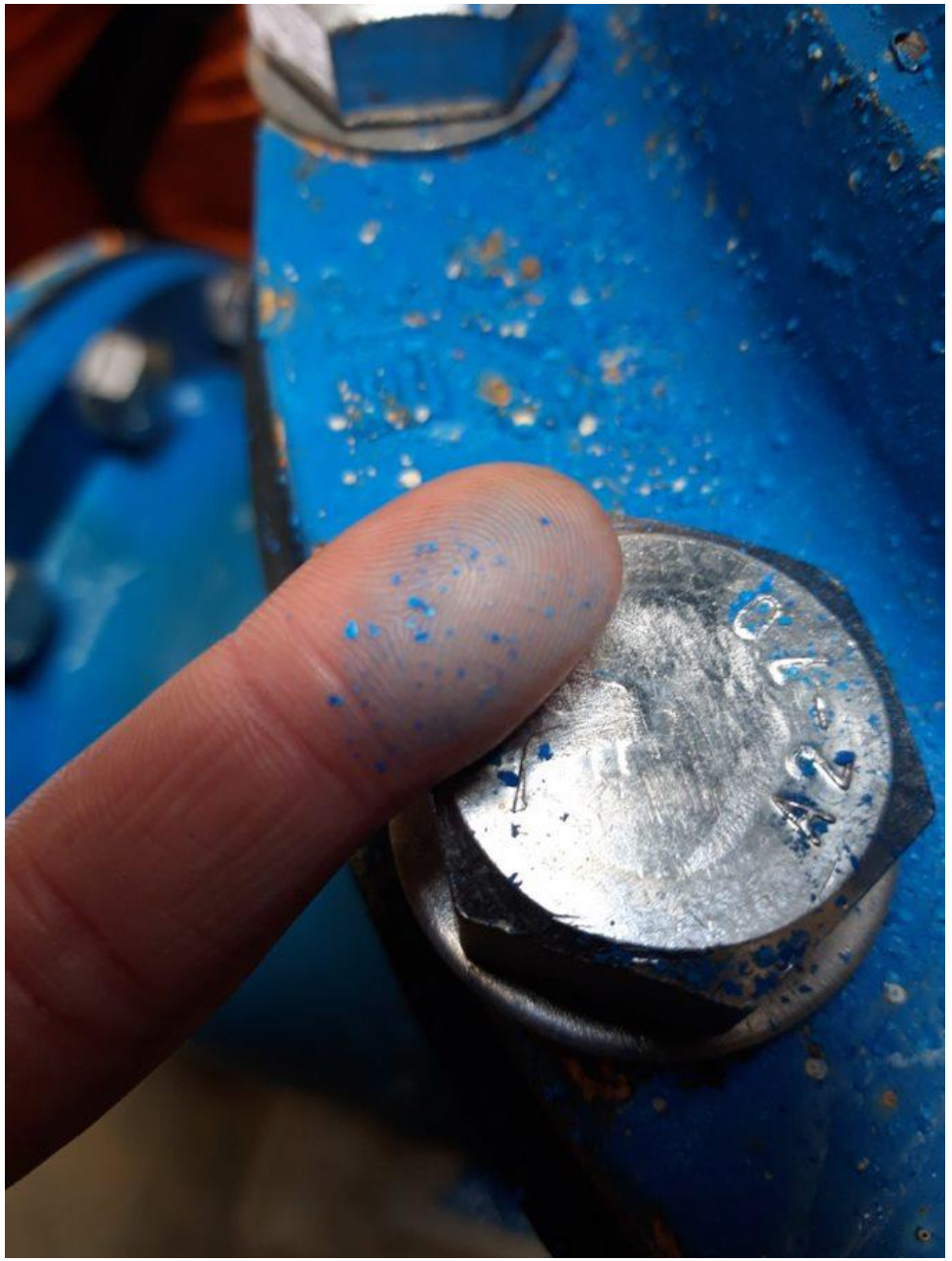
20210527_122209 7/31

20210527_122214 8/31

20210527_122248 9/31

20210527_122256 10/31

20210527_122318 11/31



20210527_122327 12/31

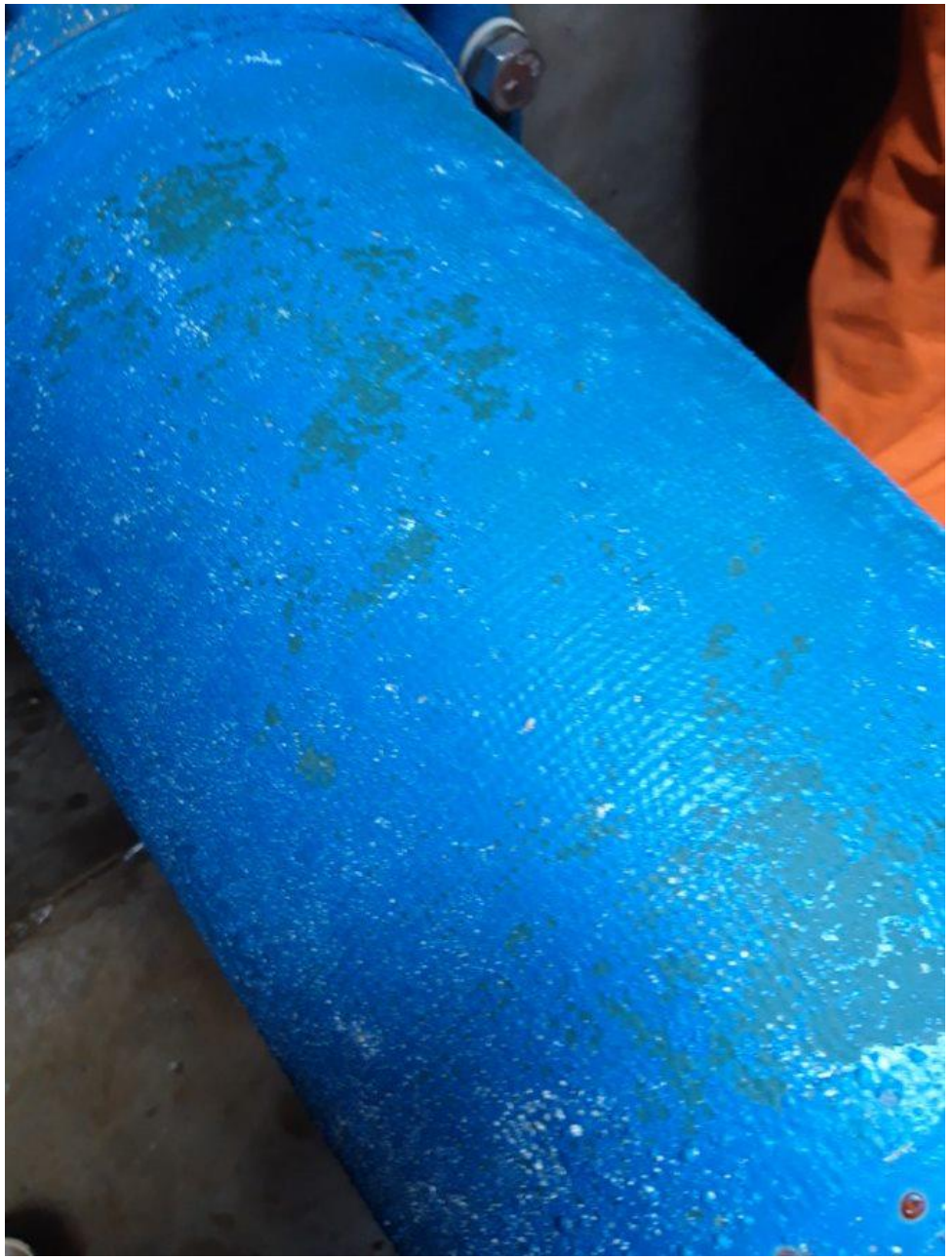
20210527_122348 13/31

20210527_123426 14/31

20210527_125712 22/31

20210527_125714 23/31

20210527_125744 24/31



20210527_144315 29/31

20210528_0922734 35/43

20210528_095755 36/43

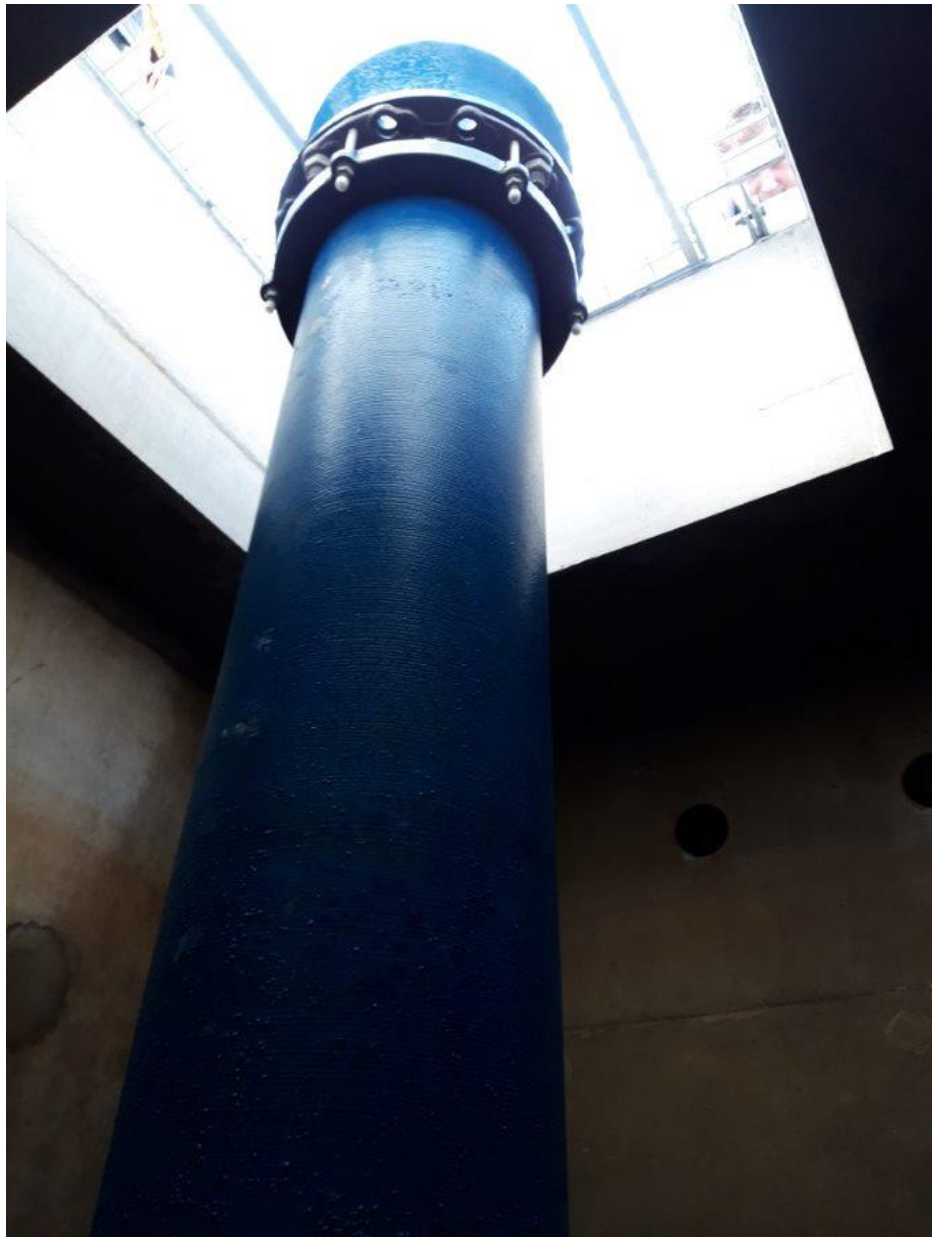
20210528_095758 37/43

20210528_095801 38/43

20210528_095804 39/43

20210528_095806 40/43

20210528_095807 41/43



20210603_150512 42/43

20210603_150519 43/43

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW**
Site Short Name:	**KEHRWW**
MTL Information:	**SAP No: 2328641. SAP Func: KEHRWW-1F-HYP-TS11-CHT001.**
Tank Name:	**CT ST1 Tnk1. (WTW side)**
Inspection Date (dd/mm/yyyy):	**17.03.2020**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Final Inspection.**
Clean Reason:	**New construction 2019 to 2020.**
Impact Plan Number:	**N/A - New Build.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank.** **This CT weirs in to BT St1 Tnk1. Ct St1 Tnk1 and BT St1 Tnk1 can be inspected together while the works runs on the other CT/BT. (Please also refer to BT St1 Tnk1 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are OOS for this inspection as this is a new build.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	202.64	Calculated from LengthXWidthXOverflow Height (Not excluding baffle walls)			
Operational volume - useable volume (m3)		Please refer to Site Operating Guide.			
Height of compartment (m)	2.82	Taken at centre of floor in lane 2.			
Width of compartment (m)	4.89				
Depth of compartment (m)	16	Length (Rear CT wall to BT dividing wall)			
Inlet height (m)	3.29	Inlet stack pipe.			
Outlet height (m)	1: WEIR to BT 2: Wash water	1:- Weir to BT St1 Tnk1 Weir is 2.36 AFL in lane 3 of CT. 2:- Filter wash water outlet in sump of lane 3.			
Overflow height (m)	IN BT.	No overflow in CT tank, Overflow located in BT. Overflow stack is 2.59 AFL.			
Overflow diameter (mm)		Please refer to BT St1 Tnk1 Report.			
Top water level - normal operation (m)		Please refer to Site Operating Guide.			
Bottom water level (m)		Please refer to Site Operating Guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI-Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	n/a	Construction day joints between pre-cast and in-situ infills. No noted expansion type joints.			

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	No	New construction.			
Tank Support structure					
Are the roof supports in satisfactory condition?	Yes	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	Yes	Low level pipe entry with internal stack pipe and bell mouth. 90 degree ducks foot bend support on concrete plinth.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet to BT is letterbox type high level weir. Filter wash water outlet pipe is located within floor sump of lane 3 (Before the outlet weir)			
Is the overflow in satisfactory condition?	n/a	Located in BT, Please refer to BT St1 Tnk1 Report.			
Are the valves in satisfactory condition?	n/a	All valve are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	Yes	X2 full height baffle walls to make 3 lanes. High level baffle wall in lane 1 next to inlet stack - forcing water under baffle into lane 1.			
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch located in lane 1.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on final construction inundation test.			

Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundant pipework or equipment connected to the tank?	No	Not aware of any - new construction.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X4 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	Yes				
Is the mesh an adequate size? (approx. 1mm or less)	Yes				
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on final construction inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	Final inundation completed and no ingress noted. Full clean completed and tank disinfected. AWS locks fitted - tank due to be filled for full MIC samples.			
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

To upload data onto the tracker press Ctrl U. Also the form must be saved to the correct HAWK folder (see instruction tab)

[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW.**
Site Short Name:	**KEHRWW**
MTL Information:	**SAP No: 2328653. SAP Func: KEHRWW-1F-HYP-TS13-BNT001**
Tank Name:	**BT St1 Tnk1 (WTW Side)**
Inspection Date (dd/mm/yyyy):	**17.03.2020**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Final Inspection**
Clean Reason:	**New Construction 2019/2020.**
Impact Plan Number:	**N/A - New Build.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. CT St1 Tnk1 and BT St1 Tnk1 can be inspected together while the works runs on the other CT/BT. (Please also refer to CT St1 Tnk1 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are OOS for this inspection as this is a new build.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	101.14	Calculated from LengthXWidthXOverflow Height			
Operational volume - useable volume (m3)		Please refer to site operating guide.			
Height of compartment (m)	2.81	Taken at centre of tank.			
Width of compartment (m)	4.9				
Depth of compartment (m)	7.97	Length (End BT wall to Ct dividing wall)			
Inlet height (m)	Weir From CT.	High level weir inlet arrangement from CT St1 Tnk1.			
Outlet height (m)	In Sump In Floor	Outlet is located in sump constructed into the floor of the BT.			
Overflow height (m)	2.59	Overflow stack, Bell mouth 2.59 AFL			
Overflow diameter (mm)	450				
Top water level - normal operation (m)		Please refer to site operating guide.			
Bottom water level (m)		Please refer to site operating guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI-Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	n/a	Construction day joints between pre-cast and in-situ infills. No noted expansion type joints.			

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	No	New construction.			
Tank Support structure					
Are the roof supports in satisfactory condition?	No	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	n/a	Concrete Weir from CT St1 Tnk1.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet is located in sump constructed into the floor of the BT.			
Is the overflow in satisfactory condition?	Yes	Internal overflow stack pipe. 90 Degree ducks foot bend supported on concrete plinth.			
Are the valves in satisfactory condition?	n/a	All valves are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	n/a				
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on final construction inundation test.			
Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				

Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundant pipework or equipment connected to the tank?	No	Not aware of any - new construction.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X3 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	Yes				
Is the mesh an adequate size? (approx. 1mm or less)	Yes				
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on final construction inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	Final inundation completed and no ingress noted. Full clean completed and tank disinfected. AWS locks fitted - tank due to be filled for full MIC samples.			
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW.**
Site Short Name:	**KEHRWW.**
MTL Information:	**SAP No: 2328647. Sap Func: KEHRWW-1F-HYP-TS12-CHT001.**
Tank Name:	**CT St1 Tnk2. (Field side)**
Inspection Date (dd/mm/yyyy):	**18.03.2020**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Final Inspection.**
Clean Reason:	**New Construction 2019/2020.**
Impact Plan Number:	**N/A - New Build.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. This CT weirs in to BT St1 Tnk2. Ct St1 Tnk2 and BT St1 Tnk2 can be inspected together while the works runs on the other CT/BT. (Please also refer to BT St1 Tnk2 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are OOS for this inspection as this is a new build.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	201.81	Calculated from LengthXWidthXOverflow Height (Not excluding baffle walls)			
Operational volume - useable volume (m3)		Please refer to Site Operating Guide.			
Height of compartment (m)	2.82	Taken at centre of floor in lane 2.			
Width of compartment (m)	4.87				
Depth of compartment (m)	16	Length (Rear CT wall to BT dividing wall)			
Inlet height (m)	3.29	Inlet stack pipe.			
Outlet height (m)	1: WEIR to BT 2: Wash water	1:- Weir to BT St1 Tnk2 Weir is 2.36 AFL in lane 3 of CT. 2:- Filter wash water outlet in sump of lane 3.			
Overflow height (m)	IN BT.	No overflow in CT tank, Overflow located in BT. Overflow stack is 2.59 AFL.			
Overflow diameter (mm)		Please refer to BT St1 Tnk1 Report.			
Top water level - normal operation (m)		Please refer to Site Operating Guide.			
Bottom water level (m)		Please refer to Site Operating Guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI-Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	n/a	Construction day joints between pre-cast and in-situ infills. No noted expansion type joints.			

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	No	New construction.			
Tank Support structure					
Are the roof supports in satisfactory condition?	Yes	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	Yes	Low level pipe entry with internal stack pipe and bell mouth. 90 degree ducks foot bend supported on concrete plinth.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet to BT is letterbox type high level weir. Filter wash water outlet pipe is located within floor sump of lane 3 (Before the outlet weir)			
Is the overflow in satisfactory condition?	n/a	Located in BT, Please refer to BT St1 Tnk2 Report.			
Are the valves in satisfactory condition?	n/a	All valve are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	Yes	X2 full height baffle walls to make 3 lanes. High level baffle wall in lane 1 next to inlet stack - forcing water under baffle into lane 1.			
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch located in lane 1.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on final construction inundation test.			
Are there any other fittings / mountings with inadequate seals / sealant?	n/a				

Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundent pipework or equipment connected to the tank?	No	Not aware of any - new construction.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X4 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	Yes				
Is the mesh an adequate size? (approx. 1mm or less)	Yes				
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on final construction inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	Final inundation completed and no ingress noted. Full clean completed and tank disinfected. AWS locks fitted - tank due to be filled for full MIC samples.			
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW.**
Site Short Name:	**KEHRWW.**
MTL Information:	**SAP No: 2328660. SAP Func: KEHRWW-1F-HYP-TS14-BNT001.**
Tank Name:	**BT St1 Tnk2. (Field side)**
Inspection Date (dd/mm/yyyy):	**18.03.2020**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Final Inspection.**
Clean Reason:	**New Construction 2019/2020.**
Impact Plan Number:	**N/A - New Build.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. CT St1 Tnk2 and BT St1 Tnk2 can be inspected together while the works runs on the other CT/BT. (Please also refer to CT St1 Tnk2 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are OOS for this inspection as this is a new build.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	101.32	Calculated from LengthXWidthXOverflow Height			
Operational volume - useable volume (m3)		Please refer to site operating guide.			
Height of compartment (m)	2.82	Taken at centre of tank.			
Width of compartment (m)	4.89				
Depth of compartment (m)	8	Length (End BT wall to CT dividing wall)			
Inlet height (m)	Weir from CT	High level weir inlet arrangement from CT St1 Tnk2.			
Outlet height (m)	In Sump In Floor	Outlet is located in sump constructed into the floor of the BT.			
Overflow height (m)	2.59	Overflow stack, Bell mouth 2.59 AFL			
Overflow diameter (mm)	450				
Top water level - normal operation (m)		Please refer to site operating guide.			
Bottom water level (m)		Please refer to site operating guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI-Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	n/a	Construction day joints between pre-cast and in-situ infills. No noted expansion type joints.			

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on final construction inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	No	New construction.			
Tank Support structure					
Are the roof supports in satisfactory condition?	No	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	n/a	Concrete Weir from CT St1 Tnk2.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet is located in sump constructed into the floor of the BT.			
Is the overflow in satisfactory condition?	Yes	Internal overflow stack pipe. 90 Degree ducks foot bend supported on concrete plinth.			
Are the valves in satisfactory condition?	n/a	All valves are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	n/a				
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on final construction inundation test.			
Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				

Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundent pipework or equipment connected to the tank?	No	Not aware of any - new construction.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X3 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	Yes				
Is the mesh an adequate size? (approx. 1mm or less)	Yes				
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on final construction inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	Final inundation completed and no ingress noted. Full clean completed and tank disinfected. AWS locks fitted - tank due to be filled for full MIC samples.			
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW**
Site Short Name:	**KEHRWW**
MTL Information:	**SAP No: 2328641. SAP Func: KEHRWW-1F-HYP-TS11-CHT001.**
Tank Name:	**CT ST1 Tnk1. (WTW side)**
Inspection Date (dd/mm/yyyy):	**28.05.2021**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Initial Inspection.**
Clean Reason:	**1 Year check after construction.**
Impact Plan Number:	**N/A - Tank not in supply**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. This CT weirs in to BT St1 Tnk1. Ct St1 Tnk1 and BT St1 Tnk1 can be inspected together while the works runs on the other CT/BT. (Please also refer to BT St1 Tnk1 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are currently OOS for @one commissioning scheme of new dosing plant.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	202.64	Calculated from LengthXWidthXOverflow Height (Not excluding baffle walls)			
Operational volume - useable volume (m3)		Please refer to Site Operating Guide.			
Height of compartment (m)	2.82	Taken at centre of floor in lane 2.			
Width of compartment (m)	4.89				
Depth of compartment (m)	16	Length (End CT wall to BT dividing wall)			
Inlet height (m)	3.29	Inlet stack pipe.			
Outlet height (m)	1: WEIR to BT 2: Wash water	1:- Weir to BT St1 Tnk1 Weir is 2.36 AFL in lane 3 of CT. 2:- Filter wash water outlet in sump of lane 3.			
Overflow height (m)	IN BT.	No overflow in CT tank, Overflow located in BT. Overflow stack is 2.59 AFL.			
Overflow diameter (mm)		Please refer to BT St1 Tnk1 Report.			
Top water level - normal operation (m)		Please refer to Site Operating Guide.			
Bottom water level (m)		Please refer to Site Operating Guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI- Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection on internal walls. Some minor evidence of salting on external walls.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	No	External roof to wall joint has blown in some areas which has damaged the aqua-line coating and exposed the water-bar. However no ingress was noted at the roof/wall joint during the initial inundation test.	Recommend further investigation and complete all external repairs before final inspection.	2	Site team informed. (@one)

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in floor?	Yes	Minor crack on floor, crack can be followed across floor in all 3 lanes however no ingress was noted from crack.	Monitor on next inspection.	3	NOTE.
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	Yes	Minor amounts of expected deposits along with blue paint flakes.	To be removed ahead of final inspection/clean.		
Tank Support structure					
Are the roof supports in satisfactory condition?	Yes	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	No	Low level pipe entry with internal stack pipe and bell mouth. 90 degree ducks foot bend supported on concrete plinth. Coating on inlet pipework showing signs of deterioration and blisters. Some small areas showing build up of rust around pipe flange.	Recommend completing further investigation to inlet pipework and complete any remedial work before final inspection.	1	Site team informed. (@one)
Is the outlet pipework in satisfactory condition?	Yes	Outlet to BT is letterbox type high level weir. Filter wash water outlet pipe is located within floor sump of lane 3 (Before the outlet weir)			
Is the overflow in satisfactory condition?	n/a	Located in BT, Please refer to BT St1 Tnk1 Report.			
Are the valves in satisfactory condition?	n/a	All valve are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	Yes	X2 full height baffle walls to make 3 lanes. High level baffle wall in lane 1 next to inlet stack - forcing water under baffle into lane 1.			
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch located in lane 1.			

Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on initial inspection.			
Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundant pipework or equipment connected to the tank?	No	Not aware of any.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X4 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	No	Some mesh has build up of rust causing larger holes to appear in mesh size.	Recommend replacing all insect mesh on all techno-covers before final inspection.	1	Site team informed. (@one)
Is the mesh an adequate size? (approx. 1mm or less)	No	As Above (line No 80)			
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on initial inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	No ingress noted on roof or hatches during initial inundation test, However Tank is to remain OOS as per line No 54,57,64 and 80.	Carry out repairs as required to current AWS standards as per line 54,57,64, and 80. Complete inspection when repairs are completed.		
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

To upload data onto the tracker press Ctrl U. Also the form must be saved to the correct HAWK folder (see instruction tab)

[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW.**
Site Short Name:	**KEHRWW**
MTL Information:	**SAP No: 2328653. SAP Func: KEHRWW-1F-HYP-TS13-BNT001**
Tank Name:	**BT St1 Tnk1 (WTW Side)**
Inspection Date (dd/mm/yyyy):	**28.05.2021**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Initial Inspection**
Clean Reason:	**1 year check after construction.**
Impact Plan Number:	**N/A - Tank not in supply.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. CT St1 Tnk1 and BT St1 Tnk1 can be inspected together while the works runs on the other CT/BT. (Please also refer to CT St1 Tnk1 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are currently OOS for @one commissioning scheme of new dosing plant.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	101.14	Calculated from LengthXWidthXOverflow Height			
Operational volume - useable volume (m3)		Please refer to site operating guide.			
Height of compartment (m)	2.81	Taken at centre of tank.			
Width of compartment (m)	4.9				
Depth of compartment (m)	7.97	Length (End BT wall to Ct dividing wall)			
Inlet height (m)	Weir From CT.	High level weir inlet arrangement from CT St1 Tnk1.			
Outlet height (m)	In Sump In Floor	Outlet is located in sump constructed into the floor of the BT.			
Overflow height (m)	2.59	Overflow stack, Bell mouth 2.59 AFL			
Overflow diameter (mm)	450				
Top water level - normal operation (m)		Please refer to site operating guide.			
Bottom water level (m)		Please refer to site operating guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI- Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection on internal walls. Some minor evidence of salting on external walls.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	No	External roof to wall joint has blown in some areas which has damaged the aqua-line coating and exposed the water-bar. However no ingress was noted at the roof/wall joint during the initial inundation test. (As per CT St1 Tnk1)	Recommend further investigation and complete all external repairs before final inspection.	2	Site team informed. (@one)

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	Yes	Minor amounts of expected deposits along with small amount blue paint flakes.	To be removed ahead of final inspection/clean.		
Tank Support structure					
Are the roof supports in satisfactory condition?	No	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	n/a	Concrete Weir from CT St1 Tnk1.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet is located in sump constructed into the floor of the BT.			
Is the overflow in satisfactory condition?	No	Internal overflow stack pipe. 90 Degree ducks foot bend supported on concrete plinth. Overflow pipework is starting to deteriorate, similar to CT inlet pipework. (Please refer to CT St1 Tnk1 report)	Recommend completing further investigation to overflow pipework and complete any remedial work before final inspection.	1	Site team informed. (@one)
Are the valves in satisfactory condition?	n/a	All valves are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	n/a				
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on initial inundation test.			

Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundant pipework or equipment connected to the tank?	No	Not aware of any.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X3 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	No	Mesh has build up of rust causing larger holes to appear in mesh size.	Recommend replacing all insect mesh on all techno-covers before final inspection.	1	Site team informed. (@one)
Is the mesh an adequate size? (approx. 1mm or less)	No	As Above (line No 80)			
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on final construction inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	No ingress noted on roof or hatches during initial inundation test, However Tank is to remain OOS as per line No 54,66 and 80.	Carry out repairs as required to current AWS standards as per line 54,66 and 80. Complete inspection when repairs are completed.		
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	East
Supply Manager Area:	Colchester
Site Name:	KEDINGTON HAVERHILL ROAD WW.
Site Short Name:	KEHRWW.
MTL Information:	SAP No: 2328647. Sap Func: KEHRWW-1F-HYP-TS12-CHT001.
Tank Name:	CT St1 Tnk2. (Field side)
Inspection Date (dd/mm/yyyy)**:**	28.05.2021
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	Initial Inspection.
Clean Reason:	1 Year check after construction.
Impact Plan Number:	N/A - Tank not in supply
Inspected By:	[redacted]
Additional Information:	Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. This CT weirs in to BT St1 Tnk2. Ct St1 Tnk2 and BT St1 Tnk2 can be inspected together while the works runs on the other CT/BT. (Please also refer to BT St1 Tnk2 inspection report)

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are currently OOS for @one commissioning scheme of new dosing plant.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	201.81	Calculated from LengthXWidthXOverflow Height (Not excluding baffle walls)			
Operational volume - useable volume (m3)		Please refer to Site Operating Guide.			
Height of compartment (m)	2.82	Taken at centre of floor in lane 2.			
Width of compartment (m)	4.87				
Depth of compartment (m)	16	Length (Rear CT wall to BT dividing wall)			
Inlet height (m)	3.29	Inlet stack pipe.			
Outlet height (m)	1: WEIR to BT 2: Wash water	1:- Weir to BT St1 Tnk2 Weir is 2.36 AFL in lane 3 of CT. 2:- Filter wash water outlet in sump of lane 3.			
Overflow height (m)	IN BT.	No overflow in CT tank, Overflow located in BT. Overflow stack is 2.59 AFL.			
Overflow diameter (mm)		Please refer to BT St1 Tnk2 Report.			
Top water level - normal operation (m)		Please refer to Site Operating Guide.			
Bottom water level (m)		Please refer to Site Operating Guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI- Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection on internal walls. Some minor evidence of salting on external walls.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	No	External roof to wall joint has blown in some areas which has damaged the aqua-line coating and exposed the water-bar. However no ingress was noted at the roof/wall joint during the initial inundation test.	Recommend further investigation and complete all external repairs before final inspection.	2	Site team informed. (@one)

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in floor?	Yes	Minor crack on floor, crack can be followed across floor in all 3 lanes however no ingress was noted from crack.	Monitor on next inspection.	3	NOTE.
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	Yes	Minor amounts of expected deposits along with blue paint flakes.	To be removed ahead of final inspection/clean.		
Tank Support structure					
Are the roof supports in satisfactory condition?	Yes	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	No	Low level pipe entry with internal stack pipe and bell mouth. 90 degree ducks foot bend supported on concrete plinth. Coating on inlet pipework showing signs of deterioration and blisters. Some small areas showing build up of rust around pipe flange.	Recommend completing further investigation to inlet pipework and complete any remedial work before final inspection.	1	Site team informed. (@one)
Is the outlet pipework in satisfactory condition?	Yes	Outlet to BT is letterbox type high level weir. Filter wash water outlet pipe is located within floor sump of lane 3 (Before the outlet weir)			
Is the overflow in satisfactory condition?	n/a	Located in BT, Please refer to BT St1 Tnk2 Report.			
Are the valves in satisfactory condition?	n/a	All valve are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	Yes	X2 full height baffle walls to make 3 lanes. High level baffle wall in lane 1 next to inlet stack - forcing water under baffle into lane 1.			

Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch located in lane 1.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on initial inspection.			
Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundent pipework or equipment connected to the tank?	No	Not aware of any.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X4 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	No	Some mesh has build up of rust causing larger holes to appear in mesh size.	Recommend replacing all insect mesh on all techno-covers before final inspection.	1	Site team informed. (@one)
Is the mesh an adequate size? (approx. 1mm or less)	No	As Above (line No 80)			
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on initial inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	No ingress noted on roof or hatches during initial inundation test, However Tank is to remain OOS as per line No 54,57,64 and 80.	Carry out repairs as required to current AWS standards as per line 54,57,64, and 80. Complete inspection when repairs are completed.		
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Water Retaining Structure Internal Inspection Form

Regional Supply Area:	**East**
Supply Manager Area:	**Colchester**
Site Name:	**KEDINGTON HAVERHILL ROAD WW.**
Site Short Name:	**KEHRWW.**
MTL Information:	**SAP No: 2328660. SAP Func: KEHRWW-1F-HYP-TS14-BNT001.**
Tank Name:	**BT St1 Tnk2. (Field side)**
Inspection Date (dd/mm/yyyy):	**28.05.2021**
Date of next inspection (dd/mm/yyyy) - if early check than normal frequency required:	
Inspection Reason:	**Initial Inspection.**
Clean Reason:	**1 year check after construction.**
Impact Plan Number:	**N/A - Tank not in supply.**
Inspected By:	[redacted]
Additional Information:	**Above ground pre-cast concrete panel construction with in-situ infills. Precast concrete roof panels with concrete roof screed. External liquid roof coating applied by CRL. Finished with Gravel. Structure is made up of 2 Contact tanks and 2 Balance tanks making 2 Streams. Tank constructed by @one alliance 2019 to 2020 as part of the new Kedington WTW scheme. Access to top of tanks is via metal stairway. Handrailing is in place around tank. CT St1 Tnk2 and BT St1 Tnk2 can be inspected together while the works runs on the other CT/BT. (Please also refer to CT St1 Tnk2 inspection report)**

To upload data onto the log press Ctrl U once form complete.

Question	Answer	Comments	Remedial Work / Action	Priority 1-3*	Action Management System Number
Tank Attributes					
What is the tanks jack head category?	N/A				
Is the tank hydraulically isolatable - can it be easily taken out of supply?	Yes	All 4 tanks are currently OOS for @one commissioning scheme of new dosing plant.			
Is there adjoining untreated water storage - above, to the side, passing through the tank?	No				
Is this an Ozone tank - if so which stage?	No				
Is the structure covered by the reservoir act (1975) - large raised reservoirs >25,000m3?	No				
Compartment Dimensions					
Storage volume - floor to overflow (m3)	101.32	Calculated from LengthXWidthXOverflow Height			
Operational volume - useable volume (m3)		Please refer to site operating guide.			
Height of compartment (m)	2.82	Taken at centre of tank.			
Width of compartment (m)	4.89				
Depth of compartment (m)	8	Length (End BT wall to CT dividing wall)			
Inlet height (m)	Weir from CT	High level weir inlet arrangement from CT St1 Tnk2.			
Outlet height (m)	In Sump In Floor	Outlet is located in sump constructed into the floor of the BT.			
Overflow height (m)	2.59	Overflow stack, Bell mouth 2.59 AFL			
Overflow diameter (mm)	450				
Top water level - normal operation (m)		Please refer to site operating guide.			
Bottom water level (m)		Please refer to site operating guide.			

Tank Structure					
What material is the tank?	Other	Pre cast concrete panels with in-situ infills (FLI- Carlow)			
What's the type of membrane?	Liquid	Full liquid Aqualine membrane completed by CRL.			
If an earth embankment what type is it?	None				
What type of roof covering is there?	Gravel	Geo-textile covered with gravel.			
What's the type of support structure?	Other	Buried.			
Tank Roof					
Are there signs of leakage / ingress through roof?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in roof?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on internal roof?	No				
Are the roof joints / seals in satisfactory condition?	Yes	Visible day joints as roof is constructed from pre cast concrete panels.			
Is there evidence of standing or pooling water?	n/a	Full inundation test in progress.			
Is the roof drainage insufficient to clear all standing water?	n/a	Full inundation test in progress.			
Tank walls					
Are there signs of leakage / ingress through walls?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in walls?	No	None noted at time of inspection on internal walls. Some minor evidence of salting on external walls.			
Is there evidence of discolouration / slime on walls?	No				
Are the wall joints / seals in satisfactory condition?	No	External roof to wall joint has blown in some areas which has damaged the aqua-line coating and exposed the water-bar. However no ingress was noted at the roof/wall joint during the initial inundation test. (As per CT St1 Tnk2)	Recommend further investigation and complete all external repairs before final inspection.	2	Site team informed. (@one)

Tank floor					
Are there signs of leakage / ingress through floor?	No	No ingress noted on initial inundation test.			
Is there evidence of cracks in floor?	No	None noted at time of inspection.			
Is there evidence of discolouration / slime on floor?	No				
Was any material found in the tank / on the floor?	Yes	Minor amounts of expected deposits along with small amount blue paint flakes.	To be removed ahead of final inspection/clean.		
Tank Support structure					
Are the roof supports in satisfactory condition?	No	Roof supported via outer walls and internal dividing/baffle walls.			
Tank Fittings / Pipework					
Are the internal fittings in satisfactory condition?	Yes				
Is the inlet pipework in satisfactory condition?	n/a	Concrete Weir from CT St1 Tnk2.			
Is the outlet pipework in satisfactory condition?	Yes	Outlet is located in sump constructed into the floor of the BT.			
Is the overflow in satisfactory condition?	No	Internal overflow stack pipe. 90 Degree ducks foot bend supported on concrete plinth. Overflow pipework is starting to deteriorate, similar to CT inlet pipework. (Please refer to CT St1 Tnk2 report)	Recommend completing further investigation to overflow pipework and complete any remedial work before final inspection.	1	Site team informed. (@one)
Are the valves in satisfactory condition?	n/a	All valves are external to the tank.			
Are the ladders in satisfactory condition?	n/a	No fixed ladder. Mobile ladder must be used for internal inspection.			
Is the metalwork in satisfactory condition?	Yes				
Are the baffled walls / curtains in satisfactory condition?	n/a				
Are the level probes in satisfactory condition?	Yes	Probes and ultrasonic level equipment in dedicated hatch.			
Are cable entry points sealed, in satisfactory condition and without evidence of ingress?	Yes	No ingress noted on initial inundation test.			

Are there any other fittings / mountings with inadequate seals / sealant?	n/a				
Are any mixers in satisfactory working order / condition?	n/a				
Are any sample pumps in satisfactory working order / condition?	n/a				
Is there any redundent pipework or equipment connected to the tank?	No	Not aware of any.			
Access points					
Are all the hatch, covers or doors in satisfactory condition and working order?	Yes	X3 techno covers techno-covers installed.			
Are the seals in place and in satisfactory condition?	Yes				
Are the insect meshes in place and in satisfactory condition?	No	Mesh has build up of rust causing larger holes to appear in mesh size.	Recommend replacing all insect mesh on all techno-covers before final inspection.	1	Site team informed. (@one)
Is the mesh an adequate size? (approx. 1mm or less)	No	As Above (line No 80)			
Is the membrane lapping around up stands in satisfactory condition?	Yes	Waterproof coating installed and no ingress noted on initial inundation test.			
Dedicated Air Vents					
Are the vents securely fixed undamaged and in good condition?	n/a	Vented through techno cover hatches.			
Are the insect meshes in place and in satisfactory condition?	n/a				
Is the mesh an adequate size? (approx. 1mm or less)	n/a				

Roof Saturation Test					
Was the roof saturation test satisfactory?	Yes	No ingress noted on roof or hatches during initial inundation test, However Tank is to remain OOS as per line No 54,66 and 80.	Carry out repairs as required to current AWS standards as per line 54,66 and 80. Complete inspection when repairs are completed.		
Other					
Are there any other issues to note? (add detail in comments box)	n/a				
Have actions been added to the Action Management System (AMS)?	n/a				

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[redacted]

Priority	Brief Rationale for Categorisation	Examples
Priority 1	Major Defect. Remedial work to be implemented before return to service or within 12 months if return to service is approved pending remedial work.	Ingress issue Significant Leak
Priority 2	Remedial work to be implemented before the next inspection.	Roof Drainage Minor Leak
Priority 3	Continue to monitor condition at next inspection.	Slippage Corrosion

Kedington Water Pipe Soak Testing	
Last Updated	24/12/2021 (further pictures added 15/07/2022 when recovered from phone)
Contributors	[redacted]

Executive Summary

To further investigate the water pipe QD8 coating issues identified at Kedington treatment works a soak test was planned. The test involved placing two flanged pipework sections in two water tanks and visually examining any changes to the surface over time. One tank contained standing water, while the other had a constant replenishment of water maintaining a baseline chlorine level. The soak test was run in total for 6 weeks. The aim was to identify any changes in the surface quality of the pipes as a result of the pipes immersion in water over time. In conclusion some minor flaking of the pipes was noticeable at the end of the soak period.

Introduction

The aim was to identify any changes in the surface quality of the pipes as a result of being immersed in water over a relevant time period. This was achieved by assessing visual changes to the pipes and water on a weekly basis over a 6 week period.

Test

Objective

Re-create two tank scenarios that would have occurred at Kedington works whilst in and out of supply and directly assess the effect on the pipe coating.

Design

Two plastic tanks (potable water approved, complying with: FSSC22000 – Food Safe) were setup at Great Wratting treatment works. The tanks had the top section removed to facilitate access. The top section was used as a lid to prevent ingress of other environmental contaminants along with a tarpaulin cover. The tanks were stored in an internal location to reduce contamination risks, reduce temperature variations and standardise lighting conditions for inspections.

Both tanks[1] were setup and filled from the Great Wratting works final water which is of a similar composition including chlorine content as Kedington works and therefore a representative comparison.

Two tanks were designated Tank A & B.

- Tank A – Ran as a trickle flow with constant water replacement. The approximate flow rate in litre / hour replacement was recorded (readings taken from a flow gauge) and was set to achieve constant chlorine level running to waste following

[1] All associated fittings were selected as suitable for use and recorded on an MIC form. Flexible hoses were used to simplify installation and a non-return valve fitted on the incoming feed supply. The tanks were modified potable water IBCs.

dechlorination. It was recommended that the flow was greater than 350ml/min as this ensured the tank water was fully replaced at least every 24 hours. Chlorine level readings were taken as part of the weekly inspection[2], levels remained consistent at ~0.55mg/l throughout the test period

- Tank B – was filled with water and then left as standing water for the duration of the test

Both tanks had a 300mm diameter pipe, fitted with two flanged ends, placed in them for testing[3]. This pipe design, diameter and style was the same as that used at Kedington works. The flanged ends were factory coated, following the instructions for use, with QD8 over the weld and up to 100mm above the flange. The pipes were sourced from the same supplier as the Kedington pipework to ensure they were prepared to a similar quality as the previously supplied pipes. The pipes were placed with one flange end down in the water tank, resting on the base of the tank[4].

The pipe was immersed to a depth of 350mm, completely covering one end of the 100mm QD8 coated section. The total length of the pipe was 500mm. This resulted in a length of 150mm being above the water line which included the second QD8 coated flanged end.

The inlet and outlet in tank A were located on opposite sides of the tank to ensure that the water was approximately mixed. Tank A's waste flow was dechlorinated and run to waste throughout the trial. Both pipes were visually inspected and photographed prior to the test setup. This test proceeded for 6 weeks.

To stop the test, both tanks were drained to waste and the pipes allowed to dry in ambient conditions. Both pipes were then examined in more detail by the team. Both pipes were bagged, labelled and transported to Grafham WTW innovation centre for safe storage.

Inspection

A weekly visual inspection of the surface of the pipe in three locations was completed by a test team member. The visual inspection checked:

1. The immersed flange end (QD8 coated region)
2. The pipe near the water surface (epoxy coated region)
3. The flange above the water line (2nd QD8 coated region)

This was achieved without removing the pipe from the water tank. In addition, the inspection asked for comment on the following at each location:

1. Colour of pipe
2. Evidence of any blistering or alterations to the surface of the pipe
3. Any change in colour of the water
4. Any debris in the water
5. Any other comments/observations

[2] The chlorine check was completed using a HACH handheld chlorine test kit and following POSWSH procedure.

[3] The top flange acted as a control (not water immersed) and assisted in the easy installation / removal of the pipe from the water tank.

[4] This avoided the requirement to suspend the pipe and simplified the test setup. One flange end had no contact with water, the other was fully immersed for the duration of the test.

Findings

A weekly visual inspection of the surface of the pipe in three locations (bottom, middle & top) was completed over the 6 weeks. Only the immersed, QD8 coated sections, of the flanged ends of pipe saw any change in condition throughout the test period (see table 1).

Immersed flange end		
Week	**Tank A**	**Tank B**
0	Good condition - no blistering or rusting	Good condition - no blistering or rusting
1	Good condition - no blistering or rusting	Good condition - no blistering or rusting
2	Good condition - no blistering or rusting	Good condition - no blistering or rusting
3	Good condition - no blistering or rusting	Good condition - no blistering or rusting
4	Moderate condition - some rusting	Good condition - no blistering or rusting
5	Moderate condition - some rusting	Good condition - no blistering or rusting
6	Moderate condition - some rusting	Moderate condition - some rusting
Immersed pipe barrel		
Week	**Tank A**	**Tank B**
0	Good condition - no blistering or rusting	Good condition - no blistering or rusting
1	Good condition - no blistering or rusting	Good condition - no blistering or rusting
2	Good condition - no blistering or rusting	Good condition - no blistering or rusting
3	Good condition - no blistering or rusting	Good condition - no blistering or rusting
4	Good condition - no blistering or rusting	Good condition - no blistering or rusting
5	Good condition - no blistering or rusting	Good condition - no blistering or rusting
6	Good condition - no blistering or rusting	Good condition - no blistering or rusting
Non-immersed flange end		
Week	**Tank A**	**Tank B**
0	Good condition - no blistering or rusting	Good condition - no blistering or rusting
1	Good condition - no blistering or rusting	Good condition - no blistering or rusting
2	Good condition - no blistering or rusting	Good condition - no blistering or rusting
3	Good condition - no blistering or rusting	Good condition - no blistering or rusting
4	Good condition - no blistering or rusting	Good condition - no blistering or rusting
5	Good condition - no blistering or rusting	Good condition - no blistering or rusting
6	Good condition - no blistering or rusting	Good condition - no blistering or rusting

Table 1: visual inspection responses for the immersed flange end & pipe barrel 100mm above the flange (QD8 coated region)

No visible change in quality of the water in Tank A was noticed during the trial. Tank B saw a film form on the top of the standing water, but this was not attributed to the pipe.

Only at the end of the test, with the tanks then drained, were very small blue flakes noticed in the bottom of the tanks. These were more noticeable in Tank B, standing water tank (see table 3).

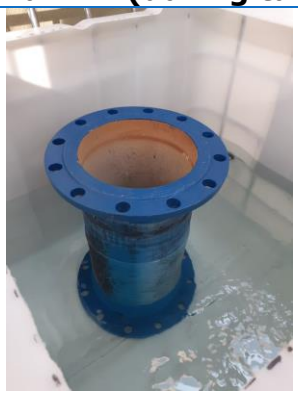
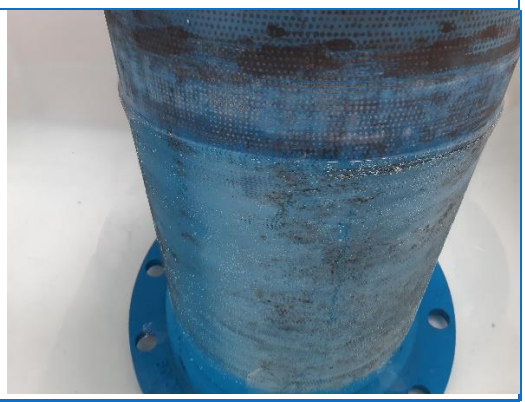
Immersed flange end (week 0)	
Tank A (before tank fill)	**Tank B (during tank fill)**
	
Figure 1 & 2 double flanged ended pipes with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors	
	
Figure 3 & 4 flanged ends with 100mm of QD8 coating up the barrel from bottom on tank floors	

Table 2: visual inspection photos for the immersed flange end (QD8 coated region) and the bottom of the tank at the start of the soak test

Immersed flange end (week 6)	
Tank A (tank drained)	**Tank B (tank drained)**
	
Figure 5 & 6 flanged ends with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors	

Figure 7 & 8 flanged ends with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors after tanks drained

Figure 9 & 10 close up of flanged ends with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors after tanks drained – some rust spots / loose coating visible

Figure 11 & 12 close up with flash of flanged ends with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors after tanks drained – some rust spots / loose coating visible

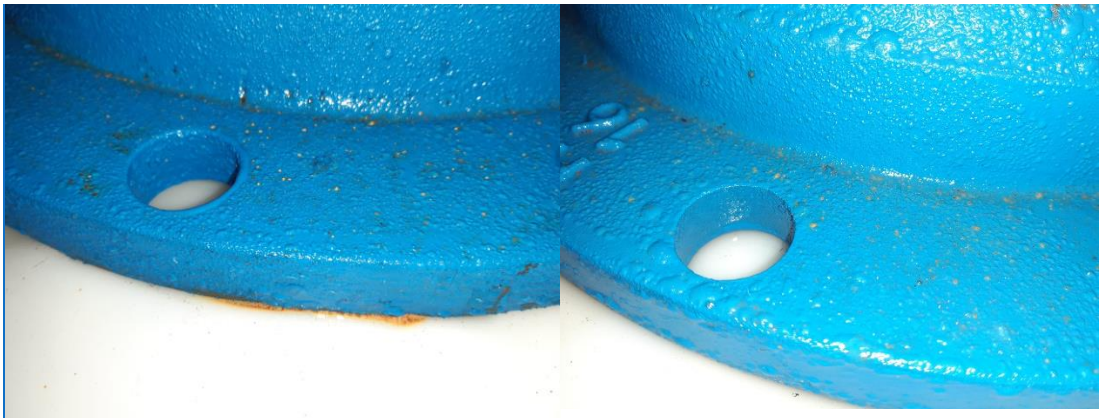


Figure 12 & 13 close up with flash of flanged ends with 100mm of QD8 coating up the barrel from bottom of pipe standing on the tank floors after tanks drained – some rust spots / loose coating visible and staining of plastic tank flooring

Table 3: visual inspection photos for the immersed flange end (QD8 coated region) and the bottom of the tank at the end of the 6-week soak test

Bottom of tank (week 6 – tank drained)	
Tank A	**Tank B**

Figure 14 & 15 tank floors looking within the pipe after tanks drained – some very small flakes of coating visible

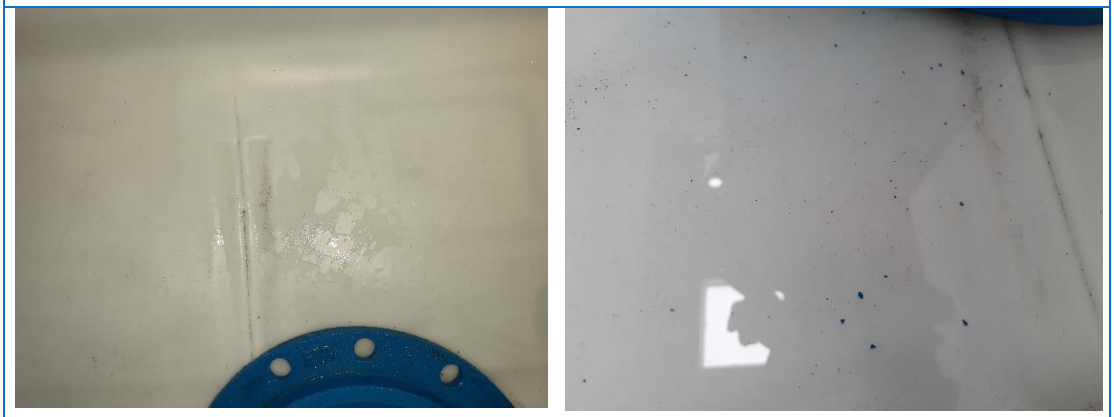


Figure 16 & 17 tank floors looking outside the pipe after tanks drained – some very small flakes of coating visible

Table 4: visual inspection photos of the bottom of the tank at the end of the 6-week soak test

Conclusions

In conclusion some minor rusting and flaking of the QD8 coating on both pipes was noticeable at the end of the soak period. The flakes were only noticeable once the tanks were drained and became visible at the bottom of the tank, particularly Tank B (standing water tank).

FLI USE
NOMINAL CODE
6085

PURCHASE ORDER

IMPORTANT

Please ensure that your Delivery Note contains our Purchase Order Number in a clear and prominent position. Thank you.

FLI Water Limited
Regent House
Wolseley Road
Kempston, Bedford
MK42 7JY

Tel: +44 (0)1234 852900
Fax: +44 (0)1234 304010
Web: www.fliwater.com
e-mail: accountsbedford@fliwater.com

Company Registration Number: 02409694
VAT Number: 212 1958 32

PURCHASE ORDER NO			
40691	- 16473	- 00	- EN

SUPPLIER
FT Ductile
6b Eastern Park Eastern Ave
Lichfield
Staffs
WS13 7SY

DELIVER TO:
FLI WATER
C/O @One Alliance
Kedington WTW
Haverhill Road
Haverhill
CB9 7TD
(If you put Blunts Corner, Haverhill in google maps that will get you to within yards of site entrance)

ORDER DATE	DATE REQUIRED
1 August 2019	19 August 2019

ENQUIRIES TO:
[redacted]

Good supplied under this order must comply with Regulation 31 of The Water Supply (Water Quality) Regulations 2000 (as Amended)	Required	Yes
Material / Goods Certificates of conformity required with this order	Required	Yes

Please supply the following items, subject to our terms and conditions [Attached]

ITEM	PART NUMBER	DESCRIPTION	UNIT COST	QUANTITY	DISCOUNT	TOTAL COST
1		**Pump Room 80-PW-030-DIW Mech Install**				-
2		80mm PN16 pipe, double flanged x 700 long	98.81	1		98.81
3		80mm PN16 pipe, double flanged x 350 long	43.11	1		43.11
4		80mm PN16 pipe, double flanged x 150 long	30.59	1		30.59
5		80mm PN16 pipe, flanged/spigot x 230 long	54.34	1		54.34
6		80mm PN16 pipe, flanged/spigot x 158 long	54.34	1		54.34
7		80mm PN16 pipe, double flanged x 150 long	30.59	1		30.59
8		80mm PN16 90 bend, flanged short radius	33.06	2		66.12
9		80mm PN16 equal tee, flanged series A	50.84	1		50.84
10		80mm PN16 flange adapter, VJ flexlock for DI	69.41	2		138.82
					Sub-total this sheet	567.56
					Sub-total continuation sheets	12,989.78
					TOTAL ORDER VALUE	**13,557.34**
					CURRENCY	0

COMMENTS

One off Supplier?
0

Authorised Initials by: _____

Authorised Signature by: [redacted] _____

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Tel: +44 (0)1234 852900
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Web: www.fliwater.com
e-mail: accountsbedford@fliwater.com

Company Registration Number: 02409694
VAT Number: 212 1958 32

PURCHASE ORDER NO			
40691	**- 16473**	**- 00**	**- EN**

ITEM	PART NUMBER	DESCRIPTION	UNIT COST	QUANTITY	DISCOUNT	TOTAL COST
11		80mm PN16 flange, blind	12.95	1		12.95
12		80mm EPDM gasket	1.06	18		19.08
13		80mm PN16 stud bolt set, M16 x 70 8 off	9.86	14		138.04
14		80mm PN16 stud bolt set, M16x 140 extra long 8 off	17.92	2		35.84
15		**Sludge Collection 100-SL-021-DIW Mech Install**				-
16		100mm PN16 Pipe double flanged x 1000 long	122.34	1		122.34
17		100mm PN16 Pipe double flanged (Spinning) STEEL x 393 long	257.64	1		257.64
18		100mm PN16 pipe flanged / spigot x 3650 long	171.72	1		171.72
19		100mm PN16 pipe flanged / spigot x 391 long	67.58	1		67.58
20		100mm PN16 90 bend, flanged, short radius	43.48	3		130.44
21		100mm PN16 equal tee, flanged, series A	62.92	1		62.92
22		100mm PN16 Bauer connector, flanged, stainless steel	79.56	1		79.56
23		100mm EPDM gasket	1.34	11		14.74
24		10mm PN16 stud bolt set, M16 8 off	9.86	11		108.46
25		Supernatant Return 80-NP-068-DIW Mech Install				-
26		80mm PN16 pipe flanged spigot x 560 long	67.54	1		67.54
27		80mm PN16 pipe doublespigot x 513 long	32.98	1		32.98
28		100mm PN16 equal tee, flanged series A	62.92	1		62.92
29		80mm PN16 equal tee, flanged series A	62.92	1		62.92
30		80mm PN16 flange adapter, VJ flexlock for DI	69.41	3		208.23
31		80mm EPDM gasket	15.46	4		61.84
32		80mm PN16 flange , blind c/w 2" bspf thread boss	1.06	1		1.06
33		80mm PN16 stud bolt set, M16 x 70 8 off	9.86	4		39.44
34		**Contact & Balance Tanks**				-
35		450mm pipe double flanged x 720 long - Blue	839.46	2		1,678.92
36		450mm pipe flanged spigot x 250 long - Blue	440.88	2		881.76
37		300mm pipe flanged spigot x 1950 long - Blue	301.59	2		603.18
38		300mm pipe double flanged x 594 long - Blue	307.37	2		614.74
39		450mm 90 bend, flanged short radius duckfoot	1,488.76	2		2,977.52

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40		300mm 90 bend, flanged short radius duckfoot	457.38	2		914.76
41		450mm flange adapter, VJ Maxidapter for DI	489.15	2		978.30
42		300mm flange adapter, VJ Maxidapter for DI	83.06	2		166.12
43		450mm bellmouth, flanged	392.49	2		784.98
44		300mm bellmouth, flanged	160.27	2		320.54
45		450mm EPDM gasket	7.86	8		62.88
46		300mm EPDM gasket	3.58	8		28.64
47		450mm stud bolt sets. M27x100mm long. 20 off	91.00	6		546.00
48		300mm stud bolt sets. M24x90mm long. 12 off	39.00	6		234.00
49		450mm stud bolt set. M27 cut to suit wall coupling. 20 off	7.86	40		314.40
50		300mm stud bolt set. M24 cut to suit wall coupling. 12 off	5.20	24		124.80

SUB TOTAL SHEETS VALUE	12,989.78
CURRENCY	0

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Company Registration Number: 02409694
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PURCHASE ORDER NO			
40691	**- 16473**	**- 00**	**- EN**

STANDARD CONDITIONS OF ORDER

1. These conditions are hereby incorporated into and form part of the contract between the Supplier (to whom this order is addressed) and the Company (FLI Water Limited) and shall prevail over any inconsistent terms and conditions contained in or referred to in the supplier's quotation, the supplier's acceptance of this order or contained in any other correspondence between the parties hereto; and insofar as these Standard Conditions are expressly amended on the face of this order and such amendment is initialed
2. The material or goods supplied shall be to the reasonable satisfaction of the Company and/or Architect, Engineer or Employer.

3. (a) The Supplier shall make good by replacement or otherwise at the Company's discretion any defective materials, goods or equipment supplied. The Supplier shall also pay to the company any loss or damage it may suffer as a result of the supply of any such defective materials, goods or equipment and the necessary replacement thereof.
(b) The Supplier shall be liable to the Company for and/or will indemnify it against all loss and damage whatsoever caused to or sustained by the Company (including loss of profit by the Company) and including any liability incurred under any contract between the Company and any other person by reason of any breach by the Supplier of any term, condition or warranty of this contract and whether express or implied.

(c) i Property in the Goods shall pass to the Company as soon as they are in a deliverable state and have been appropriated to the Contract with the assent of the Company. Such assent shall be deemed to have been given as soon as the goods have been appropriated to the Contract.
(c) ii Risk in the Goods shall pass to the Company only when they have been delivered to the destination stated in the order.

(d) Acceptance of delivery of the materials, goods or equipment by the Company will not absolve the Supplier from any liability which may arise if such materials, goods or equipment are subsequently found to be defective whether or not such defective
4. The delivery of the materials or goods supplied shall be commenced and completed at such times and on such dates as given on the attached order. The delivery times or dates may be altered or amended by the Company if it so desires, provided that such alterations and/or amendments are reasonable. Such delivery times and/or dates and any alterations or amendments thereto shall be adhered to be the Supplier. Time is of the essence.
5. The signature on behalf of the Company upon any delivery order or other equipment document shall only signify acceptance of delivery of the relevant goods, materials or equipment. Such signature shall not signify acceptance of any of the Supplier's terms set out on such delivery order or document.
6. The prices on this order are firm and fixed unless otherwise indicated on the front of this order.

7. Any costs incurred by strike action affecting the Supplier will be the responsibility of the Supplier.

8. In the event of any dispute arising as to the quantity of material supplied, then the quantity will be determined by the method of measurement stated within the contract.

9. Should the Supplier fail to supply materials, goods or equipment in accordance with the terms and conditions of this order either with regard to time of delivery or quality the Company (in addition to any of its other rights) reserves the right to cancel this order in whole or in part at its sole discretion. In the event of any such cancellation the Supplier shall have no right to reimbursement in respect of any damages it may suffer as a result thereof.
10. The Supplier must comply with all statutory regulations which are to be complied with on part of any Supplier in respect of the materials, goods or equipment supplied and he is to inform the Company in writing prior to the delivery of any said goods, materials or equipment of any statutory regulations with which the Company must comply either as the storer of or the installer of any such goods, materials or equipment. Where any such goods, materials or equipment could constitute any risk to the health
11. The Supplier shall ensure that all persons delivering goods, materials or equipment to the site are in possession at all times of safety boots, a helmet and any other relevant personal protection equipment and that all such persons utilize such equipment
12. Payment Terms are 45 days from the end of the month following the of receipt of invoice.
13. The supplier / contractor must ensure they adhere to the Modern Slavery Act of 2015. Failure to comply with this law could result in the purchase order being terminated

ADDITIONAL TERMS AND CONDITIONS OF OPERATED PLANT HIRE AND LABOUR SUPPLY

1. These terms override any CPA or customer terms of trade relating to charges for operated plant and labour supply.
2. Any signature on timesheets or otherwise, obtained from Site Manager will not bind the Company to any deviation from the terms contained in this document. Site signatures are purely for recording hours and agreeing work was undertaken in a satisfactory
3. Agreed hourly rates will be applied at a standard rate between 7:00 – 19:00 on normal working days, and between 7:00 - 13:00 on a Saturday. Any time worked outside these hours may be chargeable at overtime rates, if specifically agreed.
4. Any deviation from the original rates and terms must be agreed, in writing with the Head Office. This includes any agreement to site bonuses.

Please note the requirements on the front of this order. Failure to comply with these conditions will result in the plant / operative being declined work and payments to be withheld. Also any insurance claims for damage to plant will be invalidated by the lack of

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM | **Form Number:** | **3659**

For materials to enter supply, Parts A and B must be signed and approved by Risk and Optimisation Team and final authorisation will be given by a Risk or Water Quality Scientist

Contact Name:	[redacted] (MIC) [redacted] (Project Manage) (Lead commissioning engineer) [redacted] (Assurance engineer)	**Contact Number:**	**Date:**	***HUNDON BOOSTER WITHIN THE SAME SCHEME HAS BEEN MOVED TO A SEPARATE MIC FORM - 4167*** ***Great Wratting Filter mods - flowmeter, pipework and valve install has been moved to MIC form 4190*** ***Great Wratting new Boyton pump has been moved to MIC form 4191***
Site:	Kedington WTW			
Location on site:				
Contractor:				
WAT- No. If applicable:	WAT-06742-04-CM			

USEFUL LINKS

- CONTACT THE RISK AND OPTIMISATION TEAM
- HAWK - MATERIALS IN CONTACT
- WRAS DIRECTORY
- DWI APPROVED PRODUCTS LIST
- BRITISH STANDARDS WEBSITE
- REGULATION 31 WATER FITTINGS DATABASE

PART A - Approvals

Line No.	Supplier	Manufacturer holding approval (if different from supplier)	Product name	Brief Description of material in contact with water (e.g. pump, pipe, sealant)	Large/ Small surface area	Approving body (DWI/ BS6920/ WRAS/ KIWA/ BSEN)	Approving body ref	Have rhe Instructions for use (IFU) or conditions for use been checked and can you meet all the requirements?	1 Person completing the work Sign/Date	2 Risk Scientist - Materials Approved Sign/Date	Comments and Advice
Pressure Filter Vessels (Supplier - Allied Storage Tanks)											
1	Allied Storage Tanks	Sherwin-Williams Protective and Marine Coatings	**Macropoxy P300**	Coatings based on epoxy resins	Large	DWI	56/4/253	Yes	[redacted]9-1-20	27/02/2020 [redacted]	Is it only the coating that is in contact with the water? Not the tank itself? Thats correct, only coating.
2	Allied Storage Tanks	Guarniflon SpA	**PTFE**	Gasket for VISILUME Site Glass	Small	WRAS	1605507	Yes	[redacted]9-1-20	13/01/2020 [redacted]	
4	N/a	N/a	**VISILUME SIGHT GLASS**	Glass	Small	N/a	N/a	N/a	N/a	N/a	Discussed in the Reg31 steering group and as glass is inert no approval is required. (LO)
4	Allied Storage Tanks	JP Polymer Sheetings Ltd	**EPDM (E78S) rubber gaskets**	Manway/weir gasket	Small	WRAS	1711567	Yes	[redacted]9-1-20	13/01/2020 [redacted]	
Pre Filter											
1	IFM		**Flow Switch**	Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
2	IFM		**Flow Switch Progressive Ring Fitting**	Stainless Steel 1.4571 / 316Ti	Small	DWI Advice sheet 5 Annex 3C	1.4571 (320S31/AISI 316Ti) (SS 2350)	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
3	ABB	AVK GUMMI A/S	**EIW-54'. Black coloured, injection moulded EPDM rubber material**	Ethylene Propylene Diene Monomer (EPDM)	Small	WRAS	1803514	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
4	IFM		**Pressure Transducer**	Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
5	IFM		**Pressure Transducer Mounting Adapter**	Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
6	IFM		**Pressure Transducer**	Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
7	IFM		**Pressure Transducer Mounting Adapter**	Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
Pressure Filter Vessel Internal											
1	Durapipe UK	Durapipe UK	**Durapipe PVC-U Pipe NGS**	Pipe (filter internal and lateral system)	Large	56/4/937	DWI	Yes	[redacted]9-1-20	13/02/2020 [redacted]	
2	Durapipe UK	Durapipe UK	**Durapipe RERFIX ECO solvent cement**	Solvent cement for connecting pipes	Small	1703530	WRAS	Yes	[redacted]9-1-20	13/01/2020 [redacted]	
3	BSS Industrial	BSS Industrial	**Stainless Steel**	Stainless Steel fixings for securing pipe work	Small	56/4/1017	DWI	Yes	[redacted]9-1-20	13/01/2020 [redacted]	
4	Cadar Ltd	Cadar Ltd	Filter Nozzles + saddles **ABS Filter Component** **PP Filter Component (Green)** **PP Filter Component (Ivory)**	Filter nozzles for filters	Small	BS6920	MAT/LAB 397L, MAT/LAB 398L, MAT/LAB 399L	Yes	[redacted]7-2-20	27/02/2020 [redacted]	PP Filter Component (Ivory) MAT/LAB 399L has not been tested for Growth of aquatic microorganisms but refers to PP Filter Component (Green) which has been tested.
5	Western Carbons		**16/30 sand**	16/30 sand	Large	DWI Annex 2 - 2.2 BSEN	12904:2005	Yes	[redacted]9-1-20	13/02/2020 [redacted]	
6	Western Carbons		**Gravel**	Gravel support media	Large	DWI Annex 2 - 2.2 BSEN	12904:2005	Yes	[redacted]9-1-20	13/02/2020 [redacted]	
7	Western Carbons	Prince Minerals	**Manganese Dioxide**	Mn02 filter media	Large	DWI Annex 2 - 2.2 BSEN	13752:2012	Yes	[redacted]9-1-20	13/02/2020 [redacted]	
8	Eastern Concrete		**C28/35 concrete (CEM1 cement, aggregate, potable water, admixture detailed below)**	Concrete for securing laterals inside presure filters	Large	Advice Sheet 7 Annex 1	BSEN 197-1:2011 (cement) BSEN 12620:2002 (aggregate)	Yes	[redacted]30-10-19	01/11/2019 [redacted]	
9	Eastern Concrete	BASF	**MasterGlenium123**	Concrete admixture (water reducing super-plasticizer) for use inside pressure vessels	Large	Advice Sheet 7 Annex 1 DWI Advice sheet 7 Annex 2 Section 2.4	BS EN 934-2:2009 Provided Declaration of DWI Compliance	Yes	[redacted]30-10-19	12/03/2020 [redacted]	
10	IFM	VICTREX PLC	**Victrex PEEK grades 450GL30 (beige coloured), 450FC30 (black) & 450CA30 (black). Injection moulded PEEK thermoplastic material.**	Polyether Ether Ketone (PEEK)	Small	WRAS	1606514	Yes	[redacted]26-02-20	10/03/2020 [redacted]	

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11	IFM		**Screw-in Adaptor**	Screw-in Adaptor Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
12	ABB		**Differential Pressure Transmitter Flanges**	Differential Pressure Transmitter Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 / 316L	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
Filter Package Plant Large Bore Valves (Supplied by Alliance)													
1	AVK	Wouter Witzel	**150mm, 300mm EVBS Wouter Witzel butterfly calves**	Body, disks and seats	Small	WRAS	1612049	Yes	[redacted]9-1-20	13/01/2020 [redacted]			
2	AVK	Wouter Witzel	**400mm, 600mm EVS Wouter Witzel butterfly valves**	Body, disks and seats	Small	WRAS	1612049	Yes	[redacted]28-1-20	10/02/2020 [redacted]			
3	AVK	Wouter Witzel	**80mm EVFS Wouter Witzel butterfly valve**	Body, disks and seats	Small	WRAS	1612049	Yes	[redacted]9-1-20	13/01/2020 [redacted]			
4	AVK	Aqua Gas Manufacturing Ltd	**80, 100, 150, 200,mm S21/35 gate valves**	Body, disks and seats	Small	WRAS	1512320	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
7	AVK	Mitsubishi Engineering Plastics Corp	**Acetal IUPITAL F20-EW White coloured, injection moulded acetal material**	Valve Components	Small	WRAS	1707510	Yes	[redacted]9-1-20	10/02/2020 [redacted]			
8	AVK	Polyram Ram-On Industries	**Plustek PB305G33BK37 PA material**	Injection moulded PA material	Small	WRAS	1503511	Yes	[redacted]9-1-20	10/02/2020 [redacted]			
9	AVK	Polyram Ram-On Industries	**Polypropylene (Ramofin PPH300G6BK11' & 'Ramofin PPH300G6NT')**	Injection moulded polypropylene material	Small	WRAS	1703534	Yes	[redacted]9-1-20	10/02/2020 [redacted]			
11	AVK	Xiamen Maifeng Seal Products Co Ltd	**EPDM Rubbers**	Valve Components	Small	WRAS	1508511	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
12	AVK	Xiamen Maifeng Seal Products Co Ltd	**Nitrile Rubbers**	Valve Components	Small	WRAS	1805500	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
13	AVK	AVK Gummi A/S	**EPDM**	Valve Components	Small	WRAS	1601506	Yes	[redacted]06-02-20	13/02/2020 [redacted]			
14	AVK	PPG Protective & Marine Coatings	**SigmaGuard CSF 585.**	Valve internal coating	Small	WRAS	1406524	Yes	[redacted]9-1-20	04/03/2020 [redacted]	Factory applied, light blue coloured, two component solvent free epoxy coating consisting of a base and hardener. For use with water up to 23°C. Expired. Items were ordered in March 2019		
Filter Package Plant Small Bore Valves (Supplied by FLI)													
1	Invicta Valves	RIV SPA Rubinetterie Italiane Velatta	**DERBY TYPE: RIV 4100, RIV4101, RIV4104 & RIV4107 SPHERICAL VALVES**	Valve internal (nickel plated brass bodies, chrome plated brass balls, PTFE seats, FKM and NBR 'O'-rings)	Small	WRAS	1711717	Yes	[redacted]9-1-20	24/02.2020 [redacted]	Are we using all modesl of this valve? **Yes**		
Filter Package Plant Pipework													
1	FLI Water	Freeflow Pipesystems	**Resicoat® R4-FB**	Factory applied epoxy resin coated Carbon Steel Pipework	Large	DWI	56/4/817	Yes	[redacted]9-1-20	10/02/2020 [redacted]			
2	FLI Water	Zenith Industrial Rubber Products PVT Ltd	**EPDM rubber - EP 701110 HW**	EPDM Gaskets	Small	WRAS	1701547	Yes	[redacted]9-1-20	10/02/2020 [redacted]			
3	FT Ductile	VIP Polymers Ltd	**EPDM rubber - CVE45**	EPDM Rubber seal	Small	WRAS	1610521	Yes	[redacted]9-1-20	04/03/2020 [redacted]			
4	FT Ductile	Arkema	**Rilsan polyamide powder coatings to be used in conjunction with Primgreen LAT 12035 epoxy resin primer**	Flange adapter coating	Small	WRAS	1411519	Yes	[redacted]9-1-20	10/03/2020 [redacted]	Expired. items were ordered and fabricated in early to mid 2019.		
5	FLI Water	Yorkshire Stainless Ltd	**SS304, SS316 pipe and fittings**	Sample Pipework, air pipework	Large	DWI	56/4/1368	Yes	[redacted]9-1-19	10/02/2020 [redacted]	Included air pipework in brief description column. [redacted]16-03-20		
Dirty Wash Water Tank													
1a	Hayes GFS LTD	Permastore Ltd	**TRIFUSION**	Tank walls & roofs	Large	DWI	DWI 56/4/1213	Yes	[redacted]06-02-20	10/03/2020 [redacted]			
1b	Hayes GFS LTD	Sika Ltd	**Sikaflex TS Plus**	Tank joint seal	Small (calculations done by Alliance)	BS 6920	**0906533 / BS6920 Test Report Ref M105605 and emails from Supplier and Manufacturer**	Yes	[redacted]05-03-20	18/03/2020 [redacted]	**Signed off after approval from [redacted] Risk Manager**		
2	Eastern Concrete		**GEN3 concrete (CEM1 cement, aggregate, potable water)**	Benching concrete inside DWW tanks	Large	Advice Sheet 7 Annex 1	BSEN 197-1:2011 (cement) BSEN 12620:2002 (aggregate)	Yes	[redacted]31/01/20	24/02/2020 [redacted]			
3	Eastern Concrete		**RC28/35 concrete consisting of cement C111A (CEM 1 cement with a mass fraction of 36% GGBS), aggregate, potable water**	Concrete plinths for pipework inside DWW tanks	Large	Advice Sheet 7 Annex 1	BSEN 197-1:2011 (cement) BSEN 12620:2002 (aggregate) BSEN 15167-1:2006 (GGBS)	Yes	[redacted]31/01/20	24/02/2020 [redacted]			
4	Hawker		**316 Stainless Steel Electrode**	316L Stainless Steel Electrode for level switching within Dirty Washwater Tank	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
Surge Vessel													
1	Quantum Engineering Developments Ltd	Quantum Engineering Developments Ltd	Quantum Pressure Vessels- 316L	316L stainless steel	Large	DWI	56/4/1133	Yes	[redacted]9-1-20	17/03/2020 [redacted]			
2	S M Gauge	S M Gauge	Pressure gauge stainless steel 1.4571 AISI	stainless steel 1/2" connection	Small	DWI	Advice sheet 5 Annex 3	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
3	Mars Valve	Mars Valve	Isolation valves 1.4401 316L	Level gauge isolation	Small	DWI	Advice sheet 5 Annex 3	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
4	Seagull stainless	Seagull stainless	ND25 PN16 flange	stainless steel 1.4401	Small	DWI	Advice sheet 5 Annex 4	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
5	Seagull stainless	Seagull stainless	1/2" pipe fittings	stainless steel 1.4401	Small	DWI	Advice sheet 5 Annex 5	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
6	QED Ltd	JP Polymer Sheetings Ltd	E78S EPDM Material	Rubber joints	Small	WRAS	1711567	Yes	[redacted]9-1-20	10/03/2020 [redacted]			
7	Seagull stainless	Seagull stainless	flow restictor	flow restrictor - 1.4404 stainless steel	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	10/03/2020 [redacted]			
8	BSS	BSS Industrial	Stainless steel pipework 316L tubings and fittings	316L stainless steel tubings and fittings	Small	DWI	56/4/1017	Yes	[redacted]9-1-20	04/03/2020 [redacted]			
Supernatant Tank													
1	Forbes Technology Ltd	Forbes Technology Ltd	**Cheetah range of tanks - Supernatant tank**	Tank internal	Large	DWI	56/4/1292	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
2	Hawker		**316 Stainless Steel Electrode**	316L Stainless Steel Electrode for level switching within Supernatant Tank	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
5	Mercom	ABB Ltd	**Maxxam PP Flow Meter Insert. Off-White coloured, injection moulded polypropylene flow meter insert.**	Flowmeter Polypropylene	Small	WRAS	1512533	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
Sampling Kiosk													
1	FLI	KSB	**Movitec Pump (Motive Water Pump)**	Pump	Small	WRAS	1807083	Yes	[redacted]9-1-20	13/02/2020 [redacted]			
2	FLI	Xylem Service Italia SRL (Lowara)	**Sample Pumps: model 5SV**	Pump	Small	WRAS	1601036	Yes	[redacted]20-2-20	24/02/2020 [redacted]			
3	FLI	Durapipe UK	**Durapipe PREMIUM PVC-U pipe**	PVCu Pipe	Large	DWI	56/4/1226	Yes	[redacted]16-3-20	17/03/2020 [redacted]			
4	FLI	International Plastic Systems Ltd	**Spears Grey PVC-U Fittings**	PVCu fittings	Small	WRAS	1710500	Yes	[redacted]16-3-20	17/03/2020 [redacted]			

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5	FLI	IPS Corporation	**Weld-On 725 Wet 'R' Dry Clear Solvent Cement'**	Solvent Cement	Small	WRAS	1711500	Yes	[redacted]16-3-20	17/03/2020 [redacted]			
6	FLI	Praher Kunststoffechnik	**Quarter turn PVC-U double union spherical valves with EPDM seals and PTFE Seats, 12.8809 (16mm), 12.8810 (20mm), 12.8811 (25mm), 12.8812 (32mm), 12.8813 (40mm), 12.8814 (50mm) & 12.8815 (63mm)**	spherical valves	Small	WRAS	1611069	Yes	[redacted]16-3-20	17/03/2020 [redacted]			
7	FLI	Zenith Industrial Rubber Products PVT Ltd	**EP 701110 HW EPDM Rubber**	Flange Gasket	Small	WRAS	1701547	Yes	[redacted]16-3-20	17/03/2020 [redacted]			
8	FLI	Durapipe UK	**VKR & VKD range of PVC-U isolation valves with PTFE ball seats - 25mm (25 H0 MBE 307)**	Metering ball valves	Small	WRAS	1505035	Yes	[redacted]16-3-20	17/03/2020 [redacted]			
Static Mixers													
1	Statiflo	Multiple Suppliers	**Mixer elements/injection boss/injection branches/lance support**	Stainless steel 316L (DIN 1.4404)	Small	DWI Advice sheet 5 Annex 3C	316L (DIN 1.4404)	Yes	[redacted]9-1-20	27/02/2020 [redacted]			
2	Statiflo	La.re.ter s.p.a	**Injection Lances**	PVC-U	Small	WRAS	1509516	Yes	[redacted]9-1-20	24/02/2020 [redacted]			
3	Statiflo	Northpoint Ltd	**MIXER HOUSING / FLANGE / LIFTING LUG / NAMEPLATE SUPPORT BRACKET**	Epoxy coating - RESICOAT R4-FB	Small	DWI	56/4/659	Yes	[redacted]9-1-20	24/02/2020 [redacted]			
Pre Contact Tank													
1	ABB	AVK GUMMI A/S	**EIW-54'. Black coloured, injection moulded EPDM rubber material**	Ethylene Propylene Diene Monomer (EPDM)	Small	WRAS	1803514	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
2	IFM		**TD2507**	Temperature Transmitter Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
3	IFM		**E43303**	Screw-in Adaptor Stainless Steel 1.4404 / 316L	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]26-02-20	10/03/2020 [redacted]			
Contact Tank/ Balance Tanks													
1	FLI Carlow UK Ltd	Irish Cement Limited	**Cement**	CEM I Cement	Large	DWI Advice Sheet 7 Annex 1	BSEN 197-1:2011	Yes	[redacted]23/12/19	24/02/2020 [redacted]			
2	FLI Carlow UK Ltd	Flexcrete Technologies Ltd	**Intercrete 4807 (formerly known as Tiefill)**	Tie-hole/bolt-hole filler. Grey coloured, single component, polymer modified, fibre reinforced, Portland cement based repair compound. Mix (with water) and apply as per manufacturer`s instructions. Cure for 21 days at 7°C. For use with water up to 23°C	Small	DWI	56/4/1287	Yes	[redacted]25/02/2020	04/03/2020 [redacted]	Is brief description still correct? **Yes; material cured at same time as the panels were manufactured (summer/autumn 2019)**		
3	FLI Carlow UK Ltd	Flexcrete Technologies Ltd	**Intercrete 4820 (formerly MONOLEVEL 844S)**	Class R4 waterproof screed & pore filler (for rubbing-up to produce a fair-worked finish and for minor repairs - in layers not greater than 6mm thick).	Large	DWI	56/4/1161	Yes	[redacted]23/12/19	27/02/2020 [redacted]			
4	FLI Carlow UK Ltd	Flexcrete Technologies Ltd	**Intercrete 4802 (formerly Fastfill) Repair Mortar Grey**	Class R4 rapid setting structural repair mortar for more extensive repairs - in layers up to 300mm thick.	Large	DWI	56/4/1162	Yes	[redacted]23/12/19	27/02/2020 [redacted]	This product must be cured for a minimum of 21 days at a minimum temperature of 7°C or in accordance with the cure curve provided in the manufacturers IFU. Can this be met? ***The units were cast and supplied in summer and autumn so I would expect that they never dropped below 7°C***		
5	FLI Carlow UK Ltd	OMYA UK Ltd	**Betocarb**	A finely ground calcium carbonate (limestone) powder of high purity. Aids compaction by excluding air.	Large	DWI Advice Sheet 7 Annex 1 DWI Advice sheet 7 Annex 2 Section 2.4	BS EN 934-2:2009 Declaration of DWI Compliance	Yes	[redacted]16/03/20	17/03/2020 [redacted]	DWI Advice sheet 7 Annex 2 Section 2.4 Provide Declaration of DWI Compliance **Declaration of DWI Compliance supplied by email**		
6	FLI Carlow UK Ltd	Ecocem	**GGBS**	Granulated Blastfurnace Slag (GGBS) cement replacement	Large	DWI	Advice sheet 7: Annex 1 Meets the requirements of EN15167-1:2006	Yes	[redacted]23/12/19	13/02/2020 [redacted]			
7	FLI Carlow UK Ltd	BASF	**MasterGlenium ACE 474**	An innovative super-plasticiser admixture based on newly developed polycarboxylate ether polymers (particularly for the precast industry). Used in conjunction with BASF RheoMATRIX 110 as an alternative to Sika Stabiliser 4.	Large	Advice Sheet 7 Annex 1 DWI Advice sheet 7 Annex 2 Section 2.4	BS EN 934-2:2009 Declaration of DWI Compliance	Yes	[redacted]23/12/19	28/02/2020 [redacted]	DWI Advice sheet 7 Annex 2 Section 2.4 Provide Declaration of DWI Compliance **Declaration of DWI Compliance supplied by email**		
8	FLI Carlow UK Ltd	BASF	**RheoMATRIX® 110 Now Mastermatrix SDC 100**	A viscosity modifying self-compacting admixture for fluid concretes. Used in conjunction with BASF GLENIUM ACE 474 as an alternative to Sika Stabiliser 4.	Large	Advice Sheet 7 Annex 1 DWI Advice sheet 7 Annex 2 Section 2.4	BS EN 934-2:2009 Declaration of DWI Compliance	Yes	[redacted]23/12/19	28/02/2020 [redacted]	DWI Advice sheet 7 Annex 2 Section 2.4 Provide Declaration of DWI Compliance **Declaration of DWI Compliance supplied by email**		
9	Hanson		**Cement-C111A+SR (CEM 1 cement with a mass fraction of 36% GGBS)**	In-situ poured concrete floor and sections of wall between adjacent precast units	Large	Advice Sheet 7 Annex 1	BSEN 197-1:2011 (cement) BSEN 15167-1:2006 (GGBS)	Yes	[redacted]7/08/19	24/02/2020 [redacted]			
10	Hanson		**Aggregate-Gravel Flint 20**	In-situ poured concrete floor and sections of wall between adjacent precast units	Large	Advice Sheet 7 Annex 1	BSEN 12620:2002	Yes	[redacted]7/08/19	24/02/2020 [redacted]			

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11	Hanson		**Aggregate-Sand**	In-situ poured concrete floor and sections of wall between adjacent precast units	Large	Advice Sheet 7 Annex 1	BSEN 12620:2002	Yes	[redacted]7/08/19	24/02/2020 [redacted]	
12	Hanson	Sika Ltd	**Admixture-Sika Viscoflow 1000**	Admixture (superplasticizer) for in-situ poured concrete floor and sections of wall between adjacent precast units	Large	Advice Sheet 7 Annex 1 DWI Advice sheet 7 Annex 2 Section 2.4	BS EN 934-2:2009 Declaration of DWI Compliance	Yes	[redacted]7/08/19	28/02/2020 [redacted]	DWI Advice sheet 7 Annex 2 Section 2.4 Provide Declaration of DWI Compliance **Declaration of DWI Compliance supplied**
13	Technocover		**Zinc galvanizing**	Hot dip galvanized steel access hatch security covers on roof	Small	BSEN	ISO 1461:2009	Yes	[redacted]2/01/20	13/02/2020 [redacted]	Covers are not in direct contact but condensate will form on the underside and drip back down into the potable water
14	Hawker		**316 Stainless Steel Electrode**	316L Stainless Steel Electrode for level switching within contact and balance tanks 1 and 2.	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]26-02-20	10/03/2020 [redacted]	
Post CT Instruments											
1	ABB	AVK GUMMI A/S	**EIW-54'. Black coloured, injection moulded EPDM rubber material**	Ethylene Propylene Diene Monomer (EPDM)	Small	WRAS	1803514	Yes	[redacted]26-02-20	11/03/2020 [redacted]	
2	Elster Water Metering Ltd		**H4000 range of helical rotor bulk water meters, with cast iron bodies (blue epoxy coated) and NBR rubber 'O'- rings.**	Mechnical Flowmeter	Small	WRAS	1510032	Yes	[redacted]26-02-20	11/03/2020 [redacted]	
Cross Site Pipework (potable)											
1	Saint-Gobain PAM UK		**System CL - cement mortar lined pipes without seal coat**	Ductile iron pipe , various diameters	Large	DWI	56/4/283	Yes	[redacted]23/12/19	04/03/2020 [redacted]	Review - Approval for pipes only **I've added a separate line below for DI fittings (tees, bends, etc,) which aren't cement lined**
2	Saint-Gobain PAM UK	BS Coatings	**Eurokote**	Factory applied epoxy coating (inside surfaces of DI fittings, various diameters)	Small	WRAS	1503518	Yes	[redacted]28/02/20	04/03/2020 [redacted]	
3	GPS		**GPS Excel (Blue)**	PE100 pipe	Large	DWI	56/4/850	Yes	[redacted]03/02/20	13/02/2020 [redacted]	
4	Wolseley / Viking Johnson	VIP Polymers Ltd	**Flange Adaptors (various diameters)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
		Arkema		COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
5	Wolseley / Viking Johnson	VIP Polymers Ltd	**Pipe Couplings (various diameters)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
		Arkema		COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
6	Wolseley / Viking Johnson	VIP Polymers Ltd	**Dismantling Joints (various diameters)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
		Arkema		COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]04/02/20	13/02/2020 [redacted]	
Grundfos Pump Skids											
Section 1	**High Lift Pump Skid**										
1	Grundfos	Grundfos	TP Series 300 150-660/4 (With BQQE Seal)	In-line Pump	Small	WRAS	1812901	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
2	Grundfos	Powerrun Pipe-Mech Ltd	Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	DWI 56/4/769	Yes	[redacted]9-1-20	04/03/2020 [redacted]	
3	Grundfos	Powerrun Pipe-Mech Ltd	Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	DWI 56/4/769	Yes	[redacted]9-1-20	04/03/2020 [redacted]	
4	Grundfos	Chronimo	DN400 Blind Flange - 1.4571	Blind flange	Small	DWI Advice sheet 5 Annex 3C	1.4571 (320S31/AISI 316Ti) (SS 2350)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
5	Grundfos	Weflo Valve Co Ltd	NRV	Valve	Small	WRAS	1407909	Yes	[redacted]9-1-20	04/03/2020 [redacted]	Expired. **Ordered in 2018**
6	Grundfos	Albion Valves	Butterfly valve with ductile iron bodies, stainless steel discs and EPDM seats. DN250	Valve	Small	WRAS	1803800	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
7	Grundfos	Powerrun Pipe-Mech	DN 250mm double flange -Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	[redacted]confirmed that pipe with flanges was bought from Powerrun Pipe-Mech as a whole product.
8	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 1" I/I DVGW PN16	Valve	Small	WRAS	1907332	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
9	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 2" I/I DVGW	Valve	Small	WRAS	1907332	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
10	Grundfos	N/A	GBST0330 - 2" STAINLESS STEEL HEX NIPPLE 1.4401	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4401 (316S31/AISI 316) (SS 2347)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
11	Grundfos	N/A	99599152 - Flow sensor - SA4100 1.4404	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
12	Grundfos	N/A	99468547 - IFM Flow Meter threaded Adaptor - E40258 1.4404	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
13	Grundfos	N/A	98297432 - Pressure sensor IFM PG2793 G1" Ceramic Al2O3, PTFE , 1.4435	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4435 (SS 2353)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
14	Grundfos	Powerrun Pipe-Mech	DN250 to DN150 Discharge reducer - Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
15	Grundfos	Powerrun Pipe-Mech	DN250 to DN150 Suction reducer - Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
16	Grundfos	Arkema	Rilsan polyamide powder coatings to be used in conjunction with Primgreen LAT 12035 epoxy resin primer	DN150 Dismantling Flange Adapter Coating	Small	WRAS	1411519	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
17	Grundfos	VIP Polymer	CVE45 EPDM seal	DN150 Dismantling Flange adapter seal	Small	WRAS	1612514	Yes	[redacted]9-1-20	11/03/2020 [redacted]	

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18	Grundfos	Frenzelit	Novapress Universal Gasket Material.	Gasket	Small	WRAS	1503526	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
19	Grundfos	Rich. Klinger Dichtungstechnik GmbH & Co. KG	KLINGERSIL C-4324	Gasket	Small	WRAS	1706523	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
Section 2	**Backwash Pump Skid**										
1	Grundfos	Grundfos	99697693-TP Series 300 200/130/4 (With BQQE Seal)	In-line Pump	Small	WRAS	1812901	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
2	Grundfos	Powerrun Pipe-Mech	DN300 suction manifold-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
3	Grundfos	Powerrun Pipe-Mech	DN300 discharge manifold-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
4	Grundfos	Chronimo	DN300 Blind Flange - 1.4571	Blind flange	Small	DWI Advice sheet 5 Annex 3C	1..4571	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
5	Grundfos	Weflo Valve	DN 250 NRV	Valve internal	Small	WRAS	1407909	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
6	Grundfos	Albion Valves (UK) Limited	DN250 butterfly valve	Valve internal	Small	WRAS	1803800	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
7	Grundfos	Powerrun Pipe-Mech	DN 250mm double flange-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	[redacted]confirmed that pipe with flanges was bought from Powerrun Pipe-Mech as a whole product.
8	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 1" I/I DVGW PN16	Valve	Small	WRAS	1407329	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
9	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 2" I/I DVGW	Valve	Small	WRAS	1407329	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
10	Grundfos	N/A	GBST0330 - 2" STAINLESS STEEL HEX NIPPLE 1.4401	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4401 (316S31/AISI 316) (SS 2347)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
11	Grundfos	N/A	Flow sensor - SA4100 1.4404	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
12	Grundfos	N/A	IFM Flow Meter threaded Adaptor - E40258 1.4404	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
13	Grundfos	N/A	Pressure sensor IFM PG2793 G1" Ceramic Al2O3, PTFE , 1.4435	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4435 (SS 2353)	Yes	[redacted]9-1-20	02/03/2020 [redacted]	
14	Grundfos	Powerrun Pipe-Mech	DN250 to DN200 Discharge reducer-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
15	Grundfos	Powerrun Pipe-Mech	DN250 to DN200 Suction reducer-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
16	Grundfos	Arkema	Rilsan polyamide powder coatings to be used in conjunction with Primgreen LAT 12035 epoxy resin primer	DN150 Dismantling Flange Adapter Coating	Small	WRAS	1411519	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
17	Grundfos	VIP Polymer	CVE45 EPDM seal	DN150 Dismantling Flange adapter seal	Small	WRAS	1612514	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
18	Grundfos	Frenzelit GmbH	Novapress Universal Gasket Material.	Gasket	Small	WRAS	1503526	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
Section 3	**Supernatant Pump Skid**										
1	Grundfos	Grundfos	WU-PS-0-X-2-CRI 15-1 Supernatant	Pump	Small	WRAS	1709018	Yes	[redacted]9-1-20	10/02/2020 [redacted]	
2	Grundfos	Powerrun Pipe-Mech	DN80 suction manifold--Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
3	Grundfos	Powerrun Pipe-Mech	DN80 discharge manifold--Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
4	Grundfos	Chronimo	DN80 Blind Flange - 1.4571	Blind flange	Small	DWI Advice sheet 5 Annex 3C	1.4571 (320S31/AISI 316Ti) (SS 2350)	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
5	Grundfos	Grundfos Pumpenfabrik GmbH	Non-return valve GNVP DN50	Valve internal	Small	WRAS	1710375	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
6	Grundfos	Powerrun Pipe-Mech	DN50 Suction pipe---Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
7	Grundfos	Powerrun Pipe-Mech	DN50 Discharge pipe---Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
8	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 1" I/I DVGW PN16	Valve	Small	WRAS	1407329	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
9	Grundfos	GIACOMINI S.P.A.	Ball valve type R250WX 2" I/I DVGW	Valve	Small	WRAS	1407329	Yes	[redacted]9-1-20	11/03/2020 [redacted]	**Expired. Ordered in 2018**
10	Grundfos	N/A	1" STAINLESS STEEL HEX NIPPLE - 1.4401	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4401 (316S31/AISI 316) (SS 2347)	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
11	Grundfos	N/A	Flow sensor - SA4100 1.4404	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
12	Grundfos	N/A	IFM Flow Meter threaded Adaptor - E40258 1.4404	Fitting	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
13	Grundfos	N/A	Pressure sensor IFM PG2793 G1" Ceramic Al2O3, PTFE , 1.4435	Sensor	Small	DWI Advice sheet 5 Annex 3C	1.4435 (SS 2353)	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
14	Grundfos	Powerrun Pipe-Mech	DN50 Doubleflange-Powerrun fabricated stainless steel pipework	Pipe	Large	DWI	56/4/769	Yes	[redacted]9-1-20	11/03/2020 [redacted]	[redacted]confirmed that pipe with flanges was bought from Powerrun Pipe-Mech as a whole product.
15	Grundfos	Arkema	Rilsan polyamide powder coatings to be used in conjunction with Primgreen LAT 12035 epoxy resin primer	DN50 dismantling flange adapter coating	Small	WRAS	1411519	Yes	[redacted]9-1-20	17/03/2020 [redacted]	**Expired. Ordered in 2018**
16	Grundfos	VIP Polymers Ltd	CVE45 EPDM	DN50 dismantling flange seal	Small	WRAS	1612514	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
17	Grundfos	Donit Tesnit	Tesnit BA-U. Blue coloured fibre/NBR	Pipe Gasket	Small	WRAS	1509513	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
18	Grundfos	Donit Tesnit	Tesnit BA-U. Blue coloured fibre/NBR	Pipe Gasket	Small	WRAS	1509513	Yes	[redacted]9-1-20	11/03/2020 [redacted]	
Site Pipework - Raw water main IPs (mains tapping and up to 2x NRV valves on the raw water main)											
1	AVK GUMMI A/S	Aqua-Gas Manufacturing Ltd	**400mm S21/50 gate valves**	Body, disks and seats	Small	WRAS	1806705	Yes	[redacted]27-1-20	31/01/2020 [redacted]	
2	AVK GUMMI A/S	AVK GUMMI A/S	**EPDM rubber**	EPDM in S29/91 Hydrant	Small	WRAS	1807505	Yes	[redacted]28-1-20	30/01/2020 [redacted]	
3	AVK GUMMI A/S	AKZO Nobel Powder Coatings GMBH	**Resicoat R4-ES HJF14R**	Coating on S29/91 Hydrant	Small	WRAS	1701509	Yes	[redacted]03.2.20	03/01/2020 [redacted]	

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4	AVK GUMMI A/S	AVK GUMMI A/S	**Black coloured, injection moulded TPU material.**	Disc in S29/91 Hydrant	Small	WRAS	1603529	Yes	[redacted]31-1-20	03/01/2020 [redacted]		
5	Wolseley	AKZO Nobel Powder Coatings GMBH	**Resicoat R4-FB HGC07R red/brown**	WAGA Flange adapter internal coatings, paintings & linings	Small	WRAS	1701509	Yes	[redacted]30-1-20	03/01/2020 [redacted]		
6	Wolseley	Compounds AG	**EPDM Rubber**	WAGA FA EPDM Seals	Small	WRAS	1611530	Yes	[redacted]28-1-20	30/01/2020 [redacted]		
7	Wolseley	Zenith Industrial Rubber Products Pvt Ltd	**EPDM rubber**	WAGA FA EPDM Gaskets	Small	WRAS	1701547	Yes	[redacted]28-1-20	30/01/2020 [redacted]		
8	George Green	Northpoint Ltd	**Resicoat® R4-FB**	FBE coated Carbon Steel Pipework	Large	DWI	56/4/659	Yes	[redacted]28-1-20	30/01/2020 [redacted]		
9	Vulcan Fasteners	Zenith Industrial Rubber Products PVT Ltd	**EPDM rubber**	EPDM Gaskets	Small	WRAS	1701547	Yes	[redacted]28-1-20	30/01/2020 [redacted]		
10	FT Ductile	Viking Johnson - VIP Polymers Ltd	**VIP Polymer**	EPDM rubber	Small	WRAS	1610521	Yes	[redacted]28-1-20	30/01/2020 [redacted]		
11	Wolseley / Viking Johnson	Arkema	**Rilsan polyamide powder coatings to be used in conjunction with Primgreen LAT 12035 epoxy resin primer.**	Wall Couplings	Small	WRAS	1910523	Yes	[redacted]31-1-20	03/02/2020 [redacted]		
12	AVK	Wouter Witzel	**400mm, 600mm EVS Wouter Witzel Valves**	Body, disks and seats	Small	WRAS	1612049	Yes	[redacted]30-1-20	30/01/2020 [redacted]		
13	FLI	Weflo Valve Co Ltd	**DN400 Non Return Valve**	Body, disks and seats	Small	WRAS	1908809	Yes	[redacted]30-1-20	30/01/2020 [redacted]		
14	FLI	Eastland Compounding	**EPDM rubber**	400/80 dia Flange Pipe EPDM Gaskets	Small	WRAS	1511505	Yes	[redacted]30-1-20	03/02/2020 [redacted]		
15	Saint-Gobain		**System CL - cement mortar lined pipes without seal coat**	Ductile iron pipe and fittings, various diameters - 400 diameter pipe spools, Equal Tee, Reducing T 400/80/400, 90/45/22.5deg flanged elbows	Large	DWI	56/4/283	Yes	[redacted]23/12/19	03/02/2020 [redacted]		
16	Wolseley / Viking Johnson	VIP Polymers Ltd	**Flange Adaptors (400mm)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
		Arkema		400 dia item: COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
17	Wolseley / Viking Johnson	VIP Polymers Ltd	**Pipe Couplings (400mm)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
		Arkema		400 dia item: COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
18	Wolseley / Viking Johnson	VIP Polymers Ltd	**Dismantling Joints (400mm)**	EPDM rubber sealing ring	Small	WRAS	1607507	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
		Arkema		400 dia item: COATING: Rilsan Nylon 11 polyamide powder coating used in conjunction with Primgreen LAT 12035 epoxy resin primer	Small	WRAS	1910523	Yes	[redacted]03/02/20	04/02/2020 [redacted]		
Site Pipework - Other Mechanical Items												
1	George Green	Valspar Powder Coating	**Epoxy Powder Coatings**	Coating for flange adapters/couplings	Small	WRAS	1707572	Yes	[redacted]12-02-20	13/02/2020 [redacted]		
2	Dobsons Gaskets	Dexine Rubber Technology Ltd	**EPDM gaskets**	EPDM rubber	Small	WRAS	1911536	Yes	[redacted]12-02-20	13/02/2020 [redacted]		
3	AVK	AVK GUMMI A/S	**flange adapter seal**	EPDM rubber	Small	WRAS	1607500	Yes	[redacted]12-02-20	13/02/2020 [redacted]	received further info and updated the product description (on 20.2.20, from valve internal components to flange adapter seal) after your sign off. [redacted]20.2.20	
4	FLI	Superior Seals Ltd	**Bibtap o-ring**	Nitrile rubber	Small	WRAS	1908508	Yes	[redacted]20-2-20	28/02/2020 [redacted]		
5	FLI	Elastotech SRL	**Bibtap washer**	Nitrile rubber	Small	WRAS	1805551	Yes	[redacted]20-2-20	28/02/2020 [redacted]		
6	FLI		**Bibtap body**	Copper alloy body	Small	BSEN	BS EN 12164:2016 grade CW614W	Yes	[redacted]20-2-20	28/02/2020 [redacted]		
7	FLI		**Bibtap spindle**	Gun metal spindle	Small	BSEN	BS EN 1982:2017 grade CC491K	Yes	[redacted]20-2-20	28/02/2020 [redacted]		
8	FLI	International Plastic Systems Ltd	**Grey coloured, injection moulded PVC-U fittings**	U-PVC fittings	Small	WRAS	1710500	Yes	[redacted]20-2-20	28/02/2020 [redacted]		
9	FLI	Durapipe UK	**Durapipe premium U-PVC pipes**	U-PVC	Large	DWI	56/4/1226	Yes	[redacted]20-2-20	24/02/2020 [redacted]		
10	FLI	ARI Flow Control Accessaries	**D-040 range (AVK series 701/40 double orifice air release valves)**	Valve internal components	Small	WRAS	1909095	Yes	[redacted]20-2-20	24/02/2020 [redacted]		
Hypochlorite Dosing Kiosk (WES Package Plant)												
1	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
2	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U fitting**	Polyvinylchloride (PVC-U)	Small	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
3	B&D Plastics (Midlands) Ltd	Georg Fischer Piping Systems (Switzerland) Ltd Tecnogomma International SpA	**Type 546 valve**	PVC-U body, EPDM seals & O rings	Small	WRAS	Valve:1810060, EPDM Seals: 1711538	Yes	[redacted]04-02-20	24/02/2020 [redacted]		
4	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
5	B&D Plastics (Midlands) Ltd	Tecnogomma International SpA	**TIMO-70 EPDM 'O'-rings & gaskets**	GF PRV type 582 EPDM seals/0 rings & gaskets	Small	WRAS	1711538	Yes	[redacted]04-02-20	17/03/2020 [redacted]		
6	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
7a	IFM	VICTREX PLC	**Victrex PEEK grade 450GL30 Injection moulded PEEK thermoplastic materials**	Flow transmitter SM9100 component	Small	WRAS	1606514	Yes	[redacted]04-02-20	11/03/2020 [redacted]		
7b	IFM	Superior Seals Ltd	**EP10/7/7 BLK 'O' rings and gaskets. Injection moulded, EPDM 'O' rings and gaskets.**	Flow transmitter SM9100 O rings and Gaskets	Small	WRAS	1606503	Yes	[redacted]10-03-20	11/03/2020 [redacted]		
7c	IFM	Freudenberg Sealing Technologies GmbH & Co. KG	**60 EPDM 334 black 60 ShA (shore hardness 60) EPDM**	Flow transmitter SM9100 component	Small	WRAS	1504504	yes	[redacted]10-03-20	11/03/2020 [redacted]		
7d	IFM	HECKER WERKE GMBH & CO	**Centellen WS 3820'. Green coloured fibre/NBR gasket materia**	Flow transmitter SM9100 component	Small	WRAS	1705538	Yes	[redacted]10-03-20	11/03/2020 [redacted]		
7e	IFM	Carl Bechem GmbH	**Berusoft 30'. White coloured lubricant.**	Flow transmitter SM9100 component	Small	WRAS	1707508	Yes	[redacted]10-03-20	11/03/2020 [redacted]		

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8	Advanced Water Company Ltd	Reliance Worldwide Corp.	**Floguard double check valve**	DZR brass, EPDM seals, acetyl copolymer check cartridge, SS spring	Small	WRAS	1502301	Yes	[redacted]04-02-20	13/02/2020 [redacted]	Please confirm seal is inlcuded.. Yes, seals are part of the valve	
9	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U fitting**	Polyvinylchloride (PVC-U)	Small	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
10	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
11	Advanced Water Company Ltd	Reliance Worldwide Corp.	**Flowguard double check valve**	DZR brass, EPDM seals, acetyl copolymer check cartridge, SS spring	Small	WRAS	1502301	Yes	[redacted]04-02-20	13/02/2020 [redacted]	Please confirm seal is inlcuded. Yes, seals are part of the valve	
12	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U fitting**	Polyvinylchloride (PVC-U)	Small	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
13	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
14	Advanced Water Company Ltd	Reliance Worldwide Corp.	**Flowguard double check valve**	DZR brass, EPDM seals, acetyl copolymer check cartridge, SS spring	Small	WRAS	1502301	Yes	[redacted]04-02-20	13/02/2020 [redacted]	Please confirm seal is inlcuded. Yes, seals are part of the valve	
15	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U Pipe**	Polyvinylchloride (PVC-U) pipe	Large	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
16	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U fitting**	Polyvinylchloride (PVC-U)	Small	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
17	Advanced Water Company Ltd	Reliance Worldwide Corp.	**Flowguard double check valve**	DZR brass, EPDM seals, acetyl copolymer check cartridge, SS spring	Small	WRAS	1502301	Yes	[redacted]04-02-20	13/02/2020 [redacted]	Please confirm seal is inlcuded. Yes, seals are part of the valve	
18	B&D Plastics (Midlands) Ltd	Georg Fischer Sales	**GF PVC-U fitting**	Polyvinylchloride (PVC-U)	Small	DWI	56/4/1235	Yes	[redacted]04-02-20	10/02/2020 [redacted]		
Hundon PS (NPS Package Plant) - MOVED TO MIC FORM 4167												
1	Grundfos Ltd	N/A	CR155-3-2-A-F-A-V-HQQV	Ductile cast iron pump with stainless steel wetted parts	Small	WRAS	1704067	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
2	Viking Johnson	Arkema	Rilsan polyamide powder coating to be used in conjunction with Primgreen LAT 12035 epoxy resin primer	Dismantling Joint coated with Rilsan polyamide powder coating	Small	WRAS	1910523	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
3	Viking Johnson	VIP Polymers Ltd.	EPDM Gasket on the Viking Johnson dismantling joint	Dismantling Joint - EPDM Gasket	Small	WRAS	1607507	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
4	Leengate	RIV Rubinetterie Italiane Velatta SPA	Ball Valves - 1"	Brass (nickel plated) valve body with PTFE seats	Small	WRAS	1610065	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
5	Leengate	Valtec Ind.co.Ltd	Ball Valves - 1"	Stainless Steel Body, PTFE Seat	Small	WRAS	1712043	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
6	Leengate	Valtec Ind.co.Ltd	Ball Valves - 1 1/4"	Stainless Steel Body, PTFE Seat	Small	WRAS	1712043	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
7	Pacific Valves	Tiajin City Binhaixinqu Tangu Yuzhuang Rubber Factory	Gate Valve - 6"	EPDM Valve Seat	Small	WRAS	1503528	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
8	Pacific Valves	Qingdao Jindapeng Powder Technology Co. Ltd		Epoxy coating - factory applied	Small	WRAS	1603543	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
9	Leengate	Leengate Valves Ltd & Brandoni Qian'an Valves Co. Ltd.	Butterfly Valve - 8"	Ductile Iron body, Stainless Steel	Small	WRAS	1712083	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
10	Leengate	Weflo Valve Co. Ltd	Non-return valve - 8"	Epoxy coated cast iron body, St St plates and springs, EPDM seat	Small	WRAS	1908809	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
11	NPS Ltd.	Amari Metals ltd.	Pump station fabricated stainless steel pipework	Pipework	Large	DWI	56/4/738	Yes	[redacted]18/03/2020	19/03/2020 [redacted]		
12	Whitby and Chandler	Nova Siria Srl.	EPDM Gaskets	Black coloured extruded EPDM gasket	Small	WRAS	1811574	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
13	IFM	IFM	Flow Transmitter	stainless steel (1.4404 / 316L)	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]11-03-20	12/03/2020 [redacted]		
14	IFM	IFM	Pressure Transducer	stainless steel (1.4404 / 316L)	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]11-03-20	12/03/2020 [redacted]		
15	IFM	IFM	Pressure Sensor	stainless steel (1.4404 / 316L)	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]11-03-20	12/03/2020 [redacted]		
16	NPS Ltd.	Bruce Douglas Marketing Ltd.	Thread Seal	PTFE Tape	Small	WRAS	1804504	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
17	AVK	A.R.I Flow Control Accessories	Air release valve	Reinforced PA body and PP float with EPDM seals	Small	WRAS	1909095	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
18	Charlatte Reservoirs	N/A	Hydrochoc Butyl Bladder Surge Vessel	Steel vessel with internal epoxy paint with butyl rubber bladder	Large	DWI	56/4/1016	Yes	[redacted]09/03/2020	11/03/2020 [redacted]		
19	Mercom	ABB Ltd	Maxxam PP Flow Meter Insert. Off-White coloured, injection moulded polypropylene flow meter insert.	Flowmeter Polypropylene	Small	WRAS	1512533	Yes	[redacted]11-03-20	12/03/2020 [redacted]		
20	Krohne	N/A	OPTIBAR DP 7060	Differential Pressure Transmitter Stainless Steel (1.4404/316L)	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]12/03/2020	17/03/2020 [redacted]		
21	Charlatte S.A. France	N/A	Vessel Level Assembly Isolation Valve	Stainless Steel (1.4404/316L)	Small	DWI Advice sheet 5 Annex 3C	1.4404 (316S11/AISI 316L) (SS 2348)	Yes	[redacted]18/03/2020	19/03/2020 [redacted]		
22	Charlatte S.A. France	Donit Tesnit d.o.o	Vessel Level Assembly Gasket	Tesnit Ba-U blue fibre/NBR material	Small	WRAS	1509513	Yes	[redacted]18/03/2020	19/03/2020 [redacted]		
Connection into the res outlet main at Boyton Hall IP (Under Pressure Tee)												
1	Underpressure Pipeline Solutions	Eastland Compounding	**Ethylene Propylene Diene Monomer (EPDM) - material only**	Rubber: cellular elastomeric mat	Small	WRAS	1511505 expiry 30/11/2020	Yes	[redacted] 12/03/20	12/03/2020 [redacted]		
2	Underpressure Pipeline Solutions	Jotun Powder Coatings UAE LLC	**Jotaguard VA 5001**	Factory applied coating for saddle used to clamp around pipework	Small	WRAS	1601528 expiry 31/01/2021	Yes factory applied: Cure for 5 minutes@245°C.	[redacted] 12/03/20	12/03/2020 [redacted]		
Boyton Sampling Kiosk at Boyton Reservoir												
1	Swan Pipelines	Compounds AG	Sunaflex T 9635 black coloured, compression moulded EPDM material	Universal pipe saddlle strap rubber	Small	WRAS	1801520	Yes	[redacted]11-05-2020	15/05/2020 [redacted]		
2	Swan Pipelines	AKZO Nobel Powder Coatings GMBH	"Resicoat" R4 Blue, R4-ES HJF10R factory applied epoxy powder coating	Universal pipe saddlle strap epoxy coating	Small	WRAS	1701509	Yes	[redacted]11-05-2020	15/05/2020 [redacted]		
3	FLI	Talis UK	Water Meter Manifolds with plastic body - MB201-0303A	Water Meter Manifold	Small	WRAS	1512056	Yes	[redacted]11-05-2020	15/05/2020 [redacted]		
4	FLI	GPS	GPS N Blue PE80 Pipe	Polyethelene Pipe	Large	DWI	56/4/651	Yes	[redacted]11-05-2020	15/05/2020 [redacted]		
5	FLI	Talis UK	25mm Stop Cock BS-5433, E2993	Brass Stop Valve	Small	WRAS	1708706	Yes	[redacted]11-05-2020	15/05/2020 [redacted]		

NOTE: Some products and materials may not require a full set of MIC samples, depending on what they are and where they are being installed.
Please contact the Risk and Optimisation Team (WQRiskandOptimisatio@anglianwater.co.uk) if you wish to discuss reduced sampling. Part A must be complete before the Risk Team can reduce sampling requirements.

PART B - Sampling requirements

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM

Form Number: 3659

PART A LINE NUMBERS WHICH SAMPLES REPRESENT	Source being used to sample	Analysis	Bottles required	Comparison required?	Likely contact time whilst in operation?	Agreed standing time for samples	Scientist / Engineer agreement (sign and date)	Risk Scientist Approval (sign and date)
LINES	Raw Water (Borehole)	Full MIC without taste	1*Bacti, 2*500ml Chem, 2*Purge and trap vials, 1*Winchester	YES		16 HOURS		

PART C - Sample results

Part C completed by:
Please provide the following contact names:
Risk Scientist:
Supply Manager:
Senior Technician or deputy:

To Self Assess Sample results
Ensure Parts A and B above are completed fully
Click this button and locate the QDW / PACE 711 report with the MIC
Samples on it. Open that report and then identify which samples
are associated with this form.

Assess Samples

DETERMINAND CODES		next row	339	09111	09121	9194	9195	09340	09320	00220	00230			00612	00721	00681	00621	01621, 01624	02875	04215	75161	75171						
Part A line numbers which samples represent	Sample Number	Sample Date and Time	Sample Type	Location	Free Chlorine	Total Chlorine	Coliforms	E Coli	COLONY COUNTS 2 day	COLONY COUNTS 3 day	Qualitative Taste*	Qualitative Odour	Quantative Taste*	Quantative Odour	pH	Colour (Hazen)	Turbidity (NTU)	Conductivity (us/cm)	Alkalinity (mg/l CaCO3)	Aluminium (mg/l Al)	Iron (mg/l Fe)	TRACE ORGANICS Water Profile	TRACE ORGANICS Purge & Trap	TRACE ORGANICS MK FORM NO.	Sample Completed?	Verdict	Comment	1 Person completing the work Sign/Date	2 Risk or WQ Scientist or authorised delegate signature and date Sign/Date
Site Pipework - Raw water main IP (mains tapping and up to 2x NRV valves on raw water main)																												
RAW WATER main section - Main tappings	20054444 (bacti) 20054470 (chem)	04/02/2020	Full MIC without taste	0674204CM KEDINGTON BH N0.1 **Comparison sample US**	N/a	N/a	0	0	0	0	N/a	5U	**1?**	3	7.16	0.7	1.29	925	324	Sampled on 7/2/2020	N/a	Sampled on 7/2/2020	Sampled on 7/2/2020	N/a	**YES**	**N/a**	Clarity N		
	20054445 (bacti) 20054471 (chem)	04/02/2020	Full MIC without taste	0674204CM KEDINGTON W.O NO.5 **DS**	N/a	N/a	0	0	0	0	N/a	3U	**1?**	4	7.15	0.5	**5.07**	927	329	Sampled on 7/2/2020	N/a	Sampled on 7/2/2020	Sampled on 7/2/2020	N/a	**YES**	**PASS**	Clarity AV		Passed bacti and chem 21/02/2020 [redacted]
	20060441 (Aluminium) 20062123 (organics)	07/02/2020	Aluminium Organics	WAT-06742-04-CM KED BH NO.1 4/5 D/S	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	< 0.0140	N/a	**1**	0	12285	**YES**	**N/a**			
	20060440 (Aluminium) 20062124 (organics)	07/02/2020	Aluminium Organics	WAT-06742-04-CM KED WO NO.5 **D/S**	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	< 0.0140	N/a	**1**	0	12285	**YES**	**PASS**			Al &and P&T passed 21/02/2020 [redacted]
	20076960 (Organics)	18/02/2020	DCM	KEDINGTON WO NO.5 D/S MK12285 WAT 0674204CM	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	0	N/a	12285	**YES**	**PASS**	Upstream DCM sample collected from BH which contained Total cyclo octasulphur 1.20ug/l		Passed DCM 21/02/2020 [redacted]
RAW WATER main section - Up to 2x NRVs FILTER INLET	20060254 (bacti) 20060438 (chem) 20062122 (organics)	07/02/2020	Full MIC without taste	WAT-063742-04-CM HUNDON MAINS HYDRANT **US**	Not done	Not done	0	0	0	0	1	2T	1	1	7.51	N/a	0.17	937	301	< 0.0140	0.015	0	0	12285	**YES**	**N/a**	Clarity N **Raw water main was blanked off so flushed with Hundon water.** Due to an analytical quality control issue the quantitative 60oC odour results were originally accepted in error. Our Quality Manager has deemed these results as acceptable, but please be aware they are for indicative purposes only.		
	20060253 (bacti) 20060439 (chem) 20062124 (organics)	07/02/2020	Full MIC without taste	WAT-063742-04-CM KEDINGTON FILTER INLET COMMON **DS**	Not done	Not done	0	0	0	0	N/a	2T	N/a	1 - 60C 2 - 25C	7.55	N/a	0.14	936	296	< 0.0140	0.012	**1**	0	12285	**YES**	**FAIL**	Clarity N All 3 in the panel - BADEGG odour after de-chlorinated Main has also been flushed with raw water. Due to an analytical quality control issue the quantitative 60oC odour results were originally accepted in error. Our Quality Manager has deemed these results as acceptable, but please be aware they are for		Signed off chem and P&T 6/3/2020 [redacted]
	20076962 (Organics)	18/02/2020	DCM	KEDINGTON FILTER INLET PIPEWORK D/S MK12285 WAT0674204CM	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	**1**	N/a	12285	**YES**	**FAIL**	Resample DCM., bacti and qual & quant odour		
	20091217 (Chem) 20091010 (Bacti)	27/02/2020	Resample DCM., bacti and qual & quant odour	WAT-06742 KEDINGTON WTW INLET TO FILTER	Not done	Not done	0	0	0	0	N/a	3U	N/a	60C - 2	N/a	N/a	N/a	N/a	N/a	N/a	N/a	0	N/a	12285	**YES**	**PASS**	Clarity N Mild bad egg odour **But upstream water is this this time Kedington**		Signed off bacti, odour and CDM 6/3/2020 [redacted]

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM																										Form Number:	3659			
LINES 191, 122	20113636	10/03/2020	FULL MIC WITHOUT TASTE	BOREHOLE HEADWORKS COMPARISON	N/A	N/A	0	0	0	21	N/A	5U	N/a	60C - 2 25C - 2 Badegg	7.17	0.4	5.03	934	295	<0.0140	N/a	0	0	12369	**YES**	**N/a**	**Upstream comparison sample**	[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 27, 48, 191	20113634	10/03/2020	FULL MIC WITHOUT TASTE	FILTER INLET PIPEWORK VO2007	0.61	0.82	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 4 Farmy	7.2	<0.34	0.43	937	299	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 35, 22, 122	20113632	10/03/2020	FULL MIC WITHOUT TASTE	FILTER NO 1 OUTLET V03114	0.42	0.68	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 4 Farmy	7.19	<0.34	<0.090	939	307	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 35, 22, 122	20113635	10/03/2020	FULL MIC WITHOUT TASTE	FILTER NO 2 OUTLET V03214	0.47	0.66	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 3 Farmy	7.18	<0.34	<0.090	939	310	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 35, 22, 122	20113633	10/03/2020	FULL MIC WITHOUT TASTE	FILTER NO 3 OUTLET V03314	40	0.64	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 3 Farmy	7.11	<0.34	<0.090	939	309	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 35, 22, 122	20113631	10/03/2020	FULL MIC WITHOUT TASTE	FILTER NO 4 OUTLET V03414	0.46	0.62	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 3 Farmy	7.16	<0.34	<0.090	941	312	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020	19/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 35, 22, 122	20125591	18/03/2020	FULL MIC WITHOUT TASTE	COMBINED FILTER OUTLET PIPEWORK - V05001	**?**	**?**	0	0	0	0	N/a	2T	N/a	60C -1 25C - 2 Badegg	7.08	0.4	0.09	943	404	<0.0140	N/a	0	0	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
line 104 Contact / balance tank item 1-14	20125592	18/03/2020	FULL MIC WITHOUT TASTE	CONTACT TANK/ BALANCE TANK NO 1 - V05104	**?**	**?**	0	0	0	0	N/a	2T	N/a	60C -1 25C - 2 Badegg	7.32	< 0.34	0.18	944	392	<0.0140	N/a	0	0	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINESS 100, 104	20127179	19/03/2020	FULL MIC WITHOUT TASTE	CONTACT TANK/ BALANCE TANK NO.2 V05204	**?**	**?**	0	0	0	0	N/a	2T	N/a	60C -1 25C - 2 Badegg	7.38	< 0.34	0.14	939	397	<0.0140	N/a	0	0	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 133, 122	20115768	11/03/2020	FULL MIC WITHOUT TASTE	HIGHLIFT SUCTION PIPEWORK	0.55	0.67	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 2	7.34	0.6	0.09	944	326	<0.0140	N/a	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020			
LINES 133, 122 Resamples	20127361	20/03/2020	Resample odour	WAT-06742-04-CM MK12369 FEED WATER TO HLPS COMPARISON	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	60C -1 25C - 1 But 1 person in panel picked up badegg	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 133, 122	20113684, 20113689, 20114002	10/03/2020	FULL MIC WITHOUT TASTE	HIGHLIFT PUMP NO 1	0.61	0.79	0	0	0	0	N/A	3T	N/a	60C - 1 No 25C result	7.12	<0.34	<0.090	938	317	<0.0140	<0.007	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020			
LINES 133, 122 Resamples	20127359	20/03/2020	Resample odour	WAT-06742-04-CM MK12410 HIGHLIFT PUMP NO 1	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	60C -1 25C - 2 Badegg	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 133, 122	20116061, 20115923, 20115749	10/03/2020	FULL MIC WITHOUT TASTE	HIGHLIFT PUMP NO 2	0.59	0.78	0	0	0	0	N/A	2T	N/a	60C - 1 No 25C result	7.21	<0.34	<0.090	941	366	<0.0140	<0.007	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020			
LINES 133, 122 Resamples	20127360	20/03/2020	Resample odour	WAT-06742-04-CM MK12410 HIGHLIFT PUMP NO 2	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	60C -1 25C - 1 But 1 person in panel picked up badegg	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	12369	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 153	20114003, 20113688, 20113685	10/03/2020	FULL MIC WITHOUT TASTE	BACKWASH PUMP NO. 1	0.52	0.71	0	0	0	0	N/A	2T	N/a	60C - 1 No 25C result	7.15	0.8	0.13	941	317	<0.0140	**0.054**	**1**	0	12369	**YES**	**FAIL**	Clarity=N **RESAMPLE DCM & IRON (LO)**	[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020			
Line 153 Section 2 backwash skid item 1-18 RESAMPLES	20126060 20127638 20127358	18/03/2020 20/03/2020	Resample DCM & iron Odour	BACKWASH PUMP NO. 1	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	60C -1 25C - 2 Badegg	N/a	N/a	N/a	N/a	N/a	N/a	**0.053**	**1**	N/a	12369	**YES**	**FAIL**	RESAMPLE DCM & IRON (LO)				
Line 153 Section 2 backwash skid item 1-18 RESAMPLES	20133655 20133786	25/03/2020	Resample DCM & iron	KEDDINGTON WTW BACKWASH PUMP1 MK12369 WAT06742-04-CM	0.55	0.79	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	0.008	0	N/a	12369	**YES**	**PASS**			30/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 153	20116017, 20115924, 20115754	10/03/2020	FULL MIC WITHOUT TASTE	BACKWASH PUMP NO. 2	0.58	0.77	0	0	0	0	N/A	2T	N/a	60C - 1 No 25C result	7.22	<0.34	0.12	943	342	<0.0140	<0.007	0	0	12369	**YES**	**PASS**		[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020			
LINES 153 RESAMPLES	20127357	20/03/2020	Resample odour	WAT-06742-04-CM MK12410 BACKWASH PUMP NO 2	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	60C -1 25C - 2 Badegg	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	**YES**	**PASS**			25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		
LINES 68	20115771	11/03/2020	FULL MIC WITHOUT TASTE	COLLECTION TANK	0.21	0.32	0	0	0	0	N/A	2T	N/a	60C -1 25C - 4	7.53	0.7	2.88	942	Not done	0.0198	N/a	0	**1**	12369	**YES**	**PASS**	P&T - very low levels and I agreement with Risk Manager [redacted] these levels were acceptable (LO).	[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020		
LINES 172	20115773	11/03/2020	FULL MIC WITHOUT TASTE	SUPERNATANT PUMP NO. 1	0.18	0.3	0	0	0	0	N/A	2T	N/a	60C -1 25C - 4	7.52	0.4	2.84	944	323	0.0162	N/a	0	**1**	12369	**YES**	**PASS**	P&T - very low levels and I agreement with Risk Manager [redacted] these levels were acceptable (LO).	[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020		
LINES 172	20115776	11/03/2020	FULL MIC WITHOUT TASTE	SUPERNATANT PUMP NO. 2	0.2	0.33	0	0	0	0	N/A	2T	N/a	60C -1 25C - 4	7.54	<0.34	2.58	940	323	0.0178	N/a	0	**1**	12369	**YES**	**PASS**	P&T - very low levels and I agreement with Risk Manager [redacted] these levels were acceptable (LO).	[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020		
LINES 83	20115775	10/03/2020	FULL MIC WITHOUT TASTE	SUPERNATANT RETURN LINE	0.18	0.31	0	0	0	0	N/A	2T	N/a	60C -1 25C - 4	7.53	<0.34	2.91	940	345	0.018	N/a	0	**1**	12369	**YES**	**PASS**	P&T - very low levels and I agreement with Risk Manager [redacted] these levels were acceptable (LO).	[redacted] 18/03/2020 Red text added by [redacted] on 19/03/2020	25/03/2020 [redacted] But the quant 25C odour needs to be looked at and resolved seperately (LO)		

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM

																										Form Number:	**3659**						
LINE 74	20115777	11/03/2020	FULL MIC WITHOUT TASTE	SURGE VESSEL	0.5	0.66	0	0	0	0	N/A	2T	N/a	60C - 1 25C - 1	7.18	<0.34	0.24	946	336	<0.0140	N/a	0	**1**	12369	**YES**	**PASS**	P&T - very low levels and I agreement with Risk Manager [redacted] these levels were acceptable (LO).	[redacted] 18/03/2020 Red text added by [redacted]	25/03/2020 [redacted]				
FINAL WATER	20125607 20125740 20126028	18/03/2020	FULL MIC WITH TASTE	WAT-06742-04-CM KEDINGTON WTW FINAL TAP	0.5	0.61	0	0	0	0	**?**	2T	**?**	60C - 1 **Awaiting 25C**	7.17	< 0.34	0.15	935	370	< 0.0140	< 0.007	0	0	12369	**yes**	**PASS**	Clarity N These were routes set up, no taste and quant 25C odour has been done but as 7 days of performance testing has been done and passed for T&O from the same sample tap I have signed off these results.	[redacted] 25/03/20	30/03/2020 [redacted]				

Insert more lines as required

** taste testing only to be performed on samples of potable water and after confirmation of clear bacteriological results*

PART D - Permission to go into supply

Risk Scientist to give final approval to go into supply			
Into supply date:		**Name:**	

Appendix Q26 MIC form 3659 with organics detections

The only items/lines on MIC form 3659 with organic detections that were not resampled until clear/zero are listed in Table Q26 Table 1

Sample number	Date	Sample type	Location	Purge & Trap	Compound
20115771	11/03/2020	MIC no taste	COLLECTION TANK	1	Methyl isopropyl ketone 0.15
20115773	11/03/2020	MIC no taste	SUPERNATANT PUMP NO. 1	1	Methyl isopropyl ketone 0.15
20115776	11/03/2020	MIC no taste	SUPERNATANT PUMP NO. 2	1	Methyl isopropyl ketone 0.15
20115775	10/03/2020	MIC no taste	SUPERNATANT RETURN LINE	1	Methyl isopropyl ketone 0.22
20115777	11/03/2020	MIC no taste	SURGE VESSEL	1	Methyl isopropyl ketone 0.15

Table Q26 Table 1 – organic detections from MIC form 3659

At the time the MIC procedure (revision 5 November 2019) had no TRACE ORGANICS ANALYSIS – RESULTS INTERPRETATION PROCESS GUIDANCE. The results were reviewed internally and as the concentrations were very low and more sampling would be done whilst running to waste it was decided that the levels were acceptable.

Personnel	EL123	WS083			WS022		WS062	
		Attendance Sheet	Assessment	Assignment	Attendance Sheet	Assessment	Attendance Sheet	Assessment
[redacted]		N/A	N/A	N/A			N/A	N/A
[redacted]				*	N/A	N/A		
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]		N/A	N/A	N/A			N/A	N/A
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]					N/A	N/A	N/A	N/A
[redacted]				*	N/A	N/A	N/A	N/A
[redacted]					N/A	N/A	N/A	N/A

Key:

EL123	Online Materials In Contact computer based training course
WS083	Materials In Contact Training
WS022	Water Quality Scientific Induction - Module 7 MIC
WS062	Third Party MIC & Sampling
	Paperwork Present/Completed
	Paperwork Not Found
N/A	Not applicable for this job role
*	No assignment associated with this training course at this time (this was only added ~2019)

[redacted]

Learning History 3 of 77 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	16/08/2021	Completed	16/08/2021 10:49:55	16/08/2024	Do Not Track
Materials in Contact		Digital Course	Enrolled	15/02/2018	Completed	15/02/2018 08:00:00	15/02/2021	Do Not Track
Water Quality Scientist Materials In Contact Module	V1	Course Offering	Enrolled	26/04/2016	Completed	26/04/2016 08:00:00		Attended

[redacted]

Learning History 1 of 10 items

Name	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact	Digital Course	Enrolled	05/07/2021	Completed	05/07/2021 11:05:51	05/07/2024	Do Not Track

[redacted]

Learning History 2 of 91 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date
Materials in Contact		Digital Course	Enrolled	09/05/2022	Completed	13/06/2022 18:58:05	13/06/2025
Materials in Contact		Digital Course	Enrolled	10/04/2019	Completed	07/05/2019 12:57:31	07/05/2022

[redacted]

Learning History 1 of 36 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date
Materials in Contact		Digital Course	Enrolled	22/06/2021	Completed	21/09/2021 13:07:59	21/09/2024

[redacted]

Learning History 1 of 6 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	01/08/2018	Completed	01/08/2018 08:00:00		Attended

[redacted]

Learning History 3 of 107 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V2	Course Offering	Enrolled	09/11/2021	Completed	23/09/2021 15:00:00		Attended
Materials in Contact Competency Assignment	V1	Course Offering	Enrolled	09/11/2021	Completed	23/09/2021 11:00:00		Attended
Materials in Contact		Digital Course	Enrolled	10/04/2019	Completed	25/05/2021 15:37:23	25/05/2024	Do Not Track

[redacted]

Learning History 1 of 26 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	06/04/2018	Completed	06/04/2018 08:00:00		Attended

[redacted]

Learning History 1 of 8 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	05/08/2021	Completed	05/08/2021 12:59:48	05/08/2024	Do Not Track

[redacted]

Learning History 1 of 30 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	11/04/2018	Completed	11/04/2018 08:00:00		Attended

[redacted]

Learning History 2 of 41 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Competency Assignment	V1	Course Offering	Enrolled	06/10/2021	Completed	19/08/2021 11:00:00		Attended
Materials in Contact Training Virtual	V2	Course Offering	Enrolled	08/09/2021	Completed	19/08/2021 13:00:00		Attended

[redacted]

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	10/02/2021	Completed	10/02/2021 11:57:43	10/02/2024	Do Not Track
Materials in Contact		Digital Course	Enrolled	09/04/2018	Completed	09/04/2018 08:00:00		Do Not Track
Water Quality Scientist Materials In Contact Module	V1	Course Offering	Enrolled	15/07/2016	Completed	15/07/2016 08:00:00		Attended

[redacted]

	Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
	Materials in Contact		Digital Course	Enrolled	09/09/2021	Completed	09/09/2021 07:43:36	09/09/2024	Do Not Track
	Materials in Contact Training Virtual	V1	Course Offering	Enrolled	13/01/2020	Completed	18/12/2019 16:00:00		Attended
	Materials in Contact		Digital Course	Enrolled	11/01/2018	Completed	11/01/2018 08:00:00	19/08/2021	Do Not Track

[redacted]

Learning History 3 of 73 items

	Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
	Materials in Contact		Digital Course	Enrolled	06/09/2021	Completed	06/09/2021 09:54:38	06/09/2024	Do Not Track
	Materials in Contact		Digital Course	Enrolled	14/08/2018	Completed	14/08/2018 08:00:00	14/08/2021	Do Not Track
	Water Quality Scientist Materials In Contact Module	V1	Course Offering	Enrolled	26/04/2016	Completed	26/04/2016 08:00:00		Attended

Section E.94
SEV070 Individual MIC Paperwork
Index

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Water Quality and Water Services Technical Training

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Course Name	Materials in contact
Course Number	WS083
Module Number	1
Course Date	06/04/18
Location	Thorpe Wood House
Trainer	[redacted]

Delegates Present:

Name	Employee Number or Company Name:	Contact email address	Signature:	Sampler Initials or Location for onsite assessment If applicable	Trainers Use only Pass/Fail	Test Course %	Passport Signed (Y/N)
[redacted]					Pass		No
					Pass		No
					Pass		No
					Pass		No
					Pass		No
					Pass		No
					Pass	84	No

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 - Module 1	
Employee Name		
Employee Number or Co. Name (as appropriate):		
Trainer Name	[redacted]	
Date	06/04/18	
Total marks available		40
Total achieved		36
% score		90
Pass or Fail	**Pass mark 30**	Pass

Please read all questions carefully.
For some questions there may be more than one answer required - check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment - you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Trainers use	
Q1	What does Regulation 31 (4)(b) apply to?	1 mark for this question	
	BS 6920 odour, flavour, microbial growth testing.		✓ Small surface area
Q2	Which 3 tests are carried out as part of BS6920 to ensure compliance with Regulation 31 (4)(b)?	3 marks for this question	
1	odour		✓
2	flavor		✓
3	microbrial growth.		✓
Q3	What are the start and end points, across the water supply process, that Regulation 31 applies to?	2 marks for this question	
Start	Abstraction point		✓
End	Customer boundary		✓
Q4	Name 3 consequences of not complying with Regulation 31?	3 marks for this question	
1	Prosecution		✓
2	Fine		✓
3			
Q5	At what stage in a project do you need to fill in an MIC form?	1 mark for this question	
	Before ordering items		✓
Q6	Which DWI advice sheet gives guidance on small surface area items?	1 mark for this question	
	8		✓

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Q7	Name 4 large surface area products which might appear in the DWI approved product list?	4 marks for this question	
1	Pipes	✓	✓
2	Filter media		✓
3	Hose		✓
4	Water tankers		✓
Q8	What 3 approval routes would you expect for a concrete product to reline a tower?	3 marks for this question	
1	DWI approval number		✓
2	European Standard Advice Sheet 7		✓
3	Approved product list Annex 2.4		✓
Q9	Name 5 small surface area products?	5 marks for this question	
1	Gaskets		✓
2	Joint sealants		✓
3	Orifice plates		✓
4	Sample taps		✓
5	Crack injection repair		✓
Q10	Name an approved grade of Stainless steel?	1mark for this question	
	316 S		✓

Q11	How do you check approval information for a small surface area metallic item?	1mark for this question	
	BSI Shop website		✓
Q12	**What checks should you do when assessing a BS6920 certificate?**	**5 marks for this question**	
1	BS6920 test report		✓
2	Name or certificate matches product		✓
3	Is it less than 5yrs since approval?		✓
4	Can you meet preparation requirements?		✓
5	Passes tests for odour, taste, microbial growth		✓
Q13	**On what date does this WRAS number expire? 0907528**	**1 mark for this question**	
	July 2014		✓
Q14	**When checking a product on the WRAS Directory what checks should you do?**	**4 marks for this question**	
1	Whole product		✓
2	Metal		
3	Coating		
4	Seals		

Q15	What is an IFU and why are they important?	2 marks for this question	
1	Instructions for use		✓
2	Required as part of the submission for DWI approval		✓
Q16	**What are the two options for standing time prior to sampling?**	**2 mark for this question**	
1	Should simulate the most adverse time likely to be met in operation		✓
2	Max 16 hours		✓
Q17	**Who should you contact if you need advice on Regulation 31?**	**1 mark for this question**	
	WQ Risk and Optimisation Team		✓

You have reached the end of the assessment

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Water Quality and Water Services Technical Training

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Course Name	MATERIALS IN CONTACT
Course Number	WS083
Module Number	1
Course Date	10/7/17
Location	WING WTW
Trainer	[redacted]

Delegates Present:

					Trainers Use only		
Name	**Employee Number or Company Name:**	**Contact email address**	**Signature:**	**Sampler Initials or Location for onsite assessment If applicable**	**Pass/Fail**	**Test Course %**	**Passport Signed (Y/N)**
[redacted]				2.	PASS	100	Y
					PASS	93	Y
					PASS	87	Y
					PASS	79	Y
					PASS	84	

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):	MWH.	
Trainer Name		
Date	10/07/17	
Total marks available		46
Total achieved		40
% score		87%
Pass or Fail	**Pass mark 35**	~~39.5~~ ~~40~~. PASS.

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

		Answer	Trainers use
Q1	Name 4 items which might be listed in the DWI Approved Products list	4 marks for this question	
a	PIPES	✓	
b	MEDIA	✓	4
c	WATER TANKER	✓	
d	ION EXCHANGE RESIN	✓	
Q2	When does this WRAS number expire? 0907528	1 mark for this question	
a	2009 + 5 YEARS 2014.	1/2	
Q3	What checks would you look for on a BS6920 certificate?	5 marks for this question	
a	UKAS LAB	✓	
b	DOES NAME ON CERT MATCH	✓	
c	IS IT VALID WITH 5 YEARS	✓	5
d	CAN YOU MEET THE PROD REQ.S.	✓	
e	HAVE COLOUR, FLAVOUR & BIO TESTS PASSED	✓	
Q4	What approval would you expect for a concrete product to reline a tower	3 marks for this question	
a	EU STANDARD ADVICE NOTE 7	✓	
b	APPROVED PRODUCT LIST ANNEX 2.4	✓	3
c	DWI NO.	✓	

Please turnover

		Answer	Trainers use
Q5	Would you ever accept a WRAS number for pipework and why?	3 marks for this question	
	No as it is covered by PWI or EU Sheets.	✓✓	2
Q6	How long should you leave an item standing in water before sampling?	2 marks for this question	
	Max 16 hours. or simulate most adverse time.	✓ ½	1.5
Q7	What approval information would you ask for an Admixture?	2 marks for this question	
	EU Standards Sheet 7 Approved Product List Annex 2.4.	✓✓	2
Q8	What is an IFU and why are they important	4 marks for this question	
	Instruction for use. Details correct use of material	✓✓	3
Q9	What could be the consequences of not complying with Regulation 31	3 marks for this question	
A	Legal Proceedings		
b	Jail.	✓	1
c	Fine		
Q10	What is Regulation 31 (4)(b) and how do you ensure compliance?	4 marks for this question	
	No substance or product shall be introduced for public supply unless it has passed BS6920 odour, flavour & microbiological growth test.	✓✓✓	3
Q11	Which DWI advice sheet gives guidance on surface area?	1 mark for this question	
	Sheet 8.	✓	1
Q12	Name an approved grade of Stainless steel	1mark for this question	
	316S 1.4404	✓	1
Q13	How do you check approval information for a small surface area metallic item?	1mark for this question	
	Approved grade PWI Annex 3. or BSI website.	✓	1

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		Answer	Trainers use
Q14	**Name 5 small surface area products**	5 marks for this question	
A	VALVES	✓	
B	PUMPS	✓	5
C	LADDERS	✓	
D	GASKETS	✓	
E	ORINGS	✓	
Q15	**Where does Regulation 31 apply?**	2 marks for this question	
	FROM POINT OF ABSTRACTION TO THE CURTILAGE OF THE CUSTOMERS BOUNDARY	✓✓	2
Q16	**At what stage do you need to fill in an MIC form?**	1 mark for this question	
	BEFORE ITEMS ARE PURCHASED.	✓	1
Q17	**Who should you contact if you need advice on Regulation 31?**	1 mark for this question	
	WQ RISK & OPTIMISATION TEAM	✓	1
Q18	**When checking a number on the WRAS Directory what checks should you do?**	4 marks for this question	
A	THE NUMBER IS IN DATE. (5 YEARS).		
B	THE NUMBER SHOULD MATCH THE PRODUCT.	✓	3
C	THE IFU CAN BE ACHIEVED.	✓	
D	THE NUMBER SHOULD COVER THE COMPLETE PRODUCT IF IT REFERS TO A PRODUCT AND NOT A MATERIAL.	✓	

You have reached the end of the assessment

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Course Name:	Third party DIG & Sampling Training
Module Number (If applicable)	WS062
Course Code:	WS062
Course Date:	14-7-15
Course Location:	Cranham WTW
Trainer:	[redacted]

Delegates Present:

						Trainers Use only		
Name:	Employee Number or Company Name:	Job Role	Contact email address	Line Manager:	Signature:	Pass/Fail	Test Course %	Passport Signed (Y/N)
[redacted]	MWH @ ONE	SITE CHAINMAN	[redacted]			Pass	88.9%	Y
	RBUSL	TESTER				Pass	100%	Y
	BBUSL	TESTER				Pass	100%	Y
	BBUSL	"				Pass	100%	Y

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Course Code	WS062
Course Name	WS062 Third party mic
Name	[redacted]
Training Venue	GRANTHAM
Trainer	[redacted]
Date	14/07/2015

Please tick the relevant box below.
1 being the lowest score and 10 being the highest score.

		Low 1	2	3	4	5	6	7	8	9	High 10
1.	Prior to attending the course what was your level of understanding for the procedures and practices associated with this training?									✓	
2.	What was your level of understanding for the procedures and practices associated with training now?										✓
3.	How confident enough to carry out this activity in accordance with AWS procedures?										✓
4.	How useful did you find the course materials, such as handouts and slides?								✓		
5.	Did the trainer present the material in a clear and concise manner?									✓	
6.	Was the trainer able to answer all relevant questions during the training?									✓	
7.	How useful did you find the practical aspects of the course e.g. brainstorming exercises, sampling, taste and odour?									✓	
8.	What did you enjoy most about the course?	method witnessing									
9.	What did you enjoy least about the course?	Test									
10.	Comments on the venue for the presentation (e.g. room, layout, refreshments)	Conducive place									
11.	Any other comments?	The interaction with colleagues was good									

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Course Name	Third Party MIC & Sampling
Course Number	WS062
Module Number	1
Course Date	30/8/17
Location	Grafham WTW
Trainer	[redacted]

Delegates Present:

					Trainers Use only		
Name	**Employee Number or Company Name:**	**Contact email address**	**Signature:**	**Sampler Initials or Location for onsite assessment If applicable**	**Pass/Fail**	**Test Course %**	**Passport Signed (Y/N)**
[redacted]	MWH	[redacted]		[redacted]	PASS	100%	Y
	Fos				PASS	100%	N
	IOS				PASS	100%	N
	AW				PASS	92%	Y

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Water Quality and Water Services Technical Training

Course Name	Third Party Materials In Contact Sample Training	
Course Number	WS062 Modules 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):	MWH	
Trainer Name	[redacted]	
Date	29/8/17	
Total marks available		12
Total achieved		12
% score		100 %
Pass or Fail		PASS

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Answer	Trainers use
Q1	What is the purpose of Regulation 31?	1 mark for this question	
To ensure & enforce all materials used are fit for purpose & has no healthy effect		1	
Q2	Products will come with an IFU, what does IFU stand for and why is it important.	2 mark for this question	
Instruction for use. ⇒ To follow/use correct procedure		2	
Q3	What two water quality parameters do Anglian Water measure using field test kits?	2 marks for this question	
Turbidity Chlorine (residual)		2	
Q4	Which reason code would you use if samples were taken for materials in contact?	1 marks for this question	
a	CC		
b	MI – MIC	✓ 1	
c	MF		
d	HC –		
Q5	Complete the following equations	2 marks for this question (1 mark for each part)	
Free chlorine + combined chlorine = total chlorine		1	
Free chlorine + ammonia = Chloramine		1	

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		Answer	Trainers use
Q6	Describe the ideal conditions for storing bottles.	2 marks for this question	
It should be dry, clean and room temperature place.		2	
Q7	Name one bacteria we analyse for.....	1 mark for this question	
E-Coli, Coliforms		1	
Q8	Which metal do we analyse for in an MIC suite?	1 mark for this question	
Aluminium		1	

You have reached the end of the assessment

Title: Water Supply - MIC training test paper	
Version: 001 Updated by [redacted] on 01/12/2011	
Employee Name:	[redacted]
Employee Number :	
Trainer Name: [redacted]	
Date: ~~02/12/2011~~ 14/2/18	

Section A) Test paper		**Tick all that apply**	**For Trainer use only**
Q1	**Which regulation does Materials in contact fall under ?**		
a	Regulation 26		
b	Regulation 31	✓	✓
c	Regulation 28		
d	Regulation29		
Q2	**Which of the following bottles are required for Materials in Contact sampling?**		
a	1 x 500 mL glass winchester (white top)	✓	✓
b	1 x bacti	✓	✓
c	2 x 1 Litre chemistry	✓	✓
c	2 x purge and trap vials	✓	✓
Q3	**Which types of sample bottle should you rinse before filling?**		
a	Bacti		
b	Chemi	✓	✓
c	Glass Winchester	✓	✓
d	Purge & Trap		
Q4	**What is the minimum number of purge and trap vials should you take at any one time?**		
a	1		
b	2	✓	✓
c	3		
d	4		
Q5	**What is the maximum time that should elapse between taking a bacti sample and it being 'put up' (analysed) by the lab?**		
a	Same day	✓	
b	16 hours		
c	24 hours		
d	48 hours		
	Total score for section A		8/9

Section B) Method witnessing

Method witnessing completed satisfactorily*?	For Trainer use only Yes/No
* Method witness sampling technique	
Overall score	88.9%

Explained that someday & 24hrs kind of similar understood difference.

[redacted]

[redacted]

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Water Quality and Water Services Technical Training

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Course Name	MATERIALS IN CONTACT
Course Number	WS083
Module Number	1
Course Date	10/7/17
Location	WING WTW
Trainer	[redacted]

Delegates Present:

					Trainers Use only		
Name	**Employee Number or Company Name:**	**Contact email address**	**Signature:**	**Sampler Initials or Location for onsite assessment If applicable**	**Pass/Fail**	**Test Course %**	**Passport Signed (Y/N)**
[redacted]					PASS	100	Y
					PASS	93	Y
					PASS	87	Y
					PASS	79	Y
					PASS	84	

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):	© One Alliance (Anglian)	
Trainer Name		
Date		
Total marks available		46
Total achieved		43
% score		93%
Pass or Fail	**Pass mark 35**	PASS

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

		Answer	Trainers use
Q1	Name 4 items which might be listed in the DWI Approved Products list	4 marks for this question	
a	~~Date~~ Concrete	1	
b	~~Manufacturers~~ fittings	1	
c	~~Product Name~~ Media	1	
d	~~BS Number/ EN~~ Pipe	1	
Q2	When does this WRAS number expire? 0907528	1 mark for this question	
a	~~07/2009~~ 07/2014	1	
Q3	What checks would you look for on a BS6920 certificate?	5 marks for this question	
a	~~Current DWI Approved Number~~		
b	Date (in date)	1	
c	Pass Test UKAS ~~accredited~~ Lab	1	
d	~~Manufacturers~~ Pass, odour Flavour Microbio C	1	
e	~~BS/EN Number~~ meet Regulation 31 requirements	1	
Q4	What approval would you expect for a concrete product to reline a tower	3 marks for this question	
a	European Standard App. Sheet 7	1	
b	Current DWI Approval number	1	
c			

Please turnover

		Answer	Trainers use
Q5	Would you ever accept a WRAS number for pipework and why?	3 marks for this question	
	No – Large Surface Area	III	
Q6	How long should you leave an item standing in water before sampling?	2 marks for this question	
	At least 16hrs / 30mins for pumps	II	
Q7	What approval information would you ask for an Admixture?	2 marks for this question	
	Approved product List Annex 2.4	II	
Q8	What is an IFU and why are they important	4 marks for this question	
	Instruction for use / to follow correct procedure	III	
Q9	What could be the consequences of not complying with Regulation 31	3 marks for this question	
A	Legal battle / behind Bars	I	
b	Cost	I	
c	Time	I	
Q10	What is Regulation 31 (4)(b) and how do you ensure compliance?	4 marks for this question	
	BS 6920 – Pass Odour, flavour, Microbial Growth	III	
Q11	Which DWI advice sheet gives guidance on surface area?	1 mark for this question	
	DWI Advice Sheet 8	I	
Q12	Name an approved grade of Stainless steel	1mark for this question	
	DWI Approved products Annex 3	I	
Q13	How do you check approval information for a small surface area metallic item?	1mark for this question	
	Shop BSI website / Approved Grade as per DWI Approved products Annex 3	I	

		Answer	Trainers use
Q14	Name 5 small surface area products	5 marks for this question	
A	Pumps	1	
B	Ladders	1	
C	Sample taps	1	
D	Gaskets	1	
E	Valves	1	
Q15	Where does Regulation 31 apply?	2 marks for this question	
	England & Wales	1 1	
Q16	At what stage do you need to fill in an MIC form?	1 mark for this question	
	Before purchase the produce	1	
Q17	Who should you contact if you need advice on Regulation 31?	1 mark for this question	
	Risk Scientist	1	
Q18	When checking a number on the WRAS Directory what checks should you do?	4 marks for this question	
A	BS6920 Test certificate		
B	WRAS number	1	
C	Compliance with water fittings		
D	In date	1	

2 Manufacturer 1

3 IFU 1

4.

You have reached the end of the assessment

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):		
Trainer Name		
Date	24/02/17	
Total marks available		46
Total achieved		38
% score		82.6
Pass or Fail	**Pass mark 34**	Pass

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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more on testing ; How does it Compliant & what tests to make it Compliant.

		Answer	Trainers use
Q1	What does Regulation 31 (4)(b) apply to and how do you ensure compliance?	4 marks for this question	
	Non metallic items :		
	~~Ensure Compliance~~s Has passed		
	BS6920 ✓ odour ✓, flavour ✓ & microbial ✓	4	
	growth testing.		
Q2	To what sections of the water supply process does Regulation 31 apply?	2 marks for this question	
	From the point of abstraction to the	1	
	Curtilage of the customer boundary.	1	
Q3	What could be the consequences of not complying with Regulation 31	3 marks for this question	
A	Prosecution.	1	
B	Fine.		
C	~~Go~~ License withdrawal.	1	
Q4	At what stage in a project do you need to fill in an MIC form?	1 mark for this question	
	Before purchasing an item.	1	
Q5	Which DWI advice sheet gives guidance on surface area?	1 mark for this question	
	Advice Sheet 8.	1	
Q6	Name 4 large surface area products which might appear in the DWI approved product list	4 marks for this question	
A	Concrete Tank	1	
B	Filter media	1	
C	PE Pipe	1	
D	Cement mortar lined pipe with Seal Coat.	1	

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Q7	What approval would you expect for a concrete product to reline a tower	3 marks for this question	
A	European Standard advice sheet 7	1	
B	Admixture	1	
C	Approved product list annex 2.		DWI Number
Q8	What approval information would you require for an Admixture and how would you check it?	2 marks for this question	
	- Chemical Identities & Concentration. - European Standard advice sheet 7		listed in Approved Products Being used for purpose as stated
	- Approved product list annex 2.	1	
Q9	Name 5 small surface area products	5 marks for this question	
A	Expansion joint filler board	1	
B	Taps	1	
C	Security devices	1	
D	Static mixers	1	
E	Weir plates.	1	
Q10	Name an approved grade of Stainless steel	1mark for this question	
	SS316	1	
Q11	How do you check approval information for a small surface area metallic item?	1mark for this question	
	DWI approved products Annex 3.	1	
Q12	What checks would you look for on a BS6920 certificate?	5 marks for this question	
A	Tested at an UKAS accredited lab.	1	
B	Name on the certificate matches the product.	1	
C	Date within 5 years	1	
D	Preparation requirements can be met.	1	
E	Odour, flavour, appearance & microbial growth tests passed.	1	

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Q13	**On what date does this WRAS number expire? 0907528**	**1 mark for this question**	
	~~07/2014~~ 07/2014	1	
Q14	**Would you ever accept a WRAS number for pipework and why?**	**2 marks for this question**	
	Yes ~~for~~ if it is non metallic.	1	
			Advice sheet 8 is large surface area
Q15	**When checking a product on the WRAS Directory what checks should you do?**	**4 marks for this question**	
A	WRAS approval number.	1	
B	Expiry Date.	1	
C	Supplier / marking	1	
D	Section Subtitle.		
Q16	**What is an IFU and why are they important**	**4 marks for this question**	
A	IFU : Instructions for use	1	
B	1) To follow Correct DWI		Comes with all DWI prod. Tested as per IFU
C	approved procedures.		Only approved if used as per IFU
D	2) Sampling can be followed Correctly.		
Q17	**What are the two options for standing time prior to sampling?**	**2 mark for this question**	
	1) most adverse time likely to be not in operation.		Max of 16 hrs.
	2) Double the ~~operational~~ Contact Time.	1	
Q18	**Who should you contact if you need advice on Regulation 31?**	**1 mark for this question**	
	~~Wa~~ Water Quality Risk & Optimisation Team.	1	

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You have reached the end of the assessment

1. Complete an MIC form and add the following products. If any products are unsuitable, please state why in the box below. 6 / 6 pts

Supplier, SPP Pumps Ltd
Manufacturer, Chang Horing Rubber Co. Ltd
Product name, EP02971PWRC
Description, Black coloured, compression moulded EPDM material 'O' Ring
WRAS 1906512

Supplier, SPP Pumps Ltd
Manufacturer, Flexitallic Ltd
Product name, Novus 30
Description, Orange coloured, nitrile rubber/aramid fibre gasket material
WRAS 2011511

Supplier, SPP Pumps Ltd
Manufacturer, Geberit Sales Ltd
Product name, Mapress range of stainless steel fittings and pipe 15mm
WRAS 1712520

Supplier, SPP Pumps Ltd
Manufacturer, EagleBurgmann Germany GmbH & Co. KG
Product name, E24 EPDM
Description, Black coloured, injection moulded EPDM seal
WRAS 1807525

Supplier, SPP Pumps Ltd
Product name, CC480K (Cast Grade for Zinc Free Bronze)
Description, Impeller wear ring
BS-EN 1982:2008

Supplier, SPP Pumps Ltd
Product name, EN-GJL-250 (Grey Cast Iron)
Description, Impeller wear ring
BS-EN 1561:2011

Supplier, SPP Pumps Ltd
Product name, EN-GJL-250 (Grey Cast Iron)
Description, Pump casing
BS-EN 1561:2011

Supplier, 3M United Kingdom PLC
Product name, Scotchkote 206N
Description, Factory applied, green coloured, epoxy powder coating
WRAS 1406530

Supplier, OSTP Finland Oy Ab. & OSTP Sweden AB
Product name, OT 100 - Stainless Steel Pipes and Tubes, EN ISO 1127 / EN 10217-7 TC1
WRAS 1710121

Supplier, 3M United Kingdom
Product name, 3M Scotchkote Pipe Renewal Liner 2400
DWI 56/4/1031

Supplier, Daikin Europe N.V.
Product name, Heat pump indoor unit
EGSAH06UD9W
KIWA 2001734

KB MIC Test_[redacted]xlsm (https://[redacted]...

2. Any comments relating to the suitability of the products from an MIC perspective — 3 / 4 pts

Please see comments on the MIC form

3. Date submitted — 0 / 0 pts

Auto-graded

23/08/2021

Respondent

14 Anonymous

01:42
Time to complete

1. Please tick the box below to check in to this course please select the course below

- (•) WS083

2. Name

[redacted]

3. Employee number

[redacted]

4. Email address

[redacted]@anglianwater.co.uk

5. Organisation

Anglian Water Asset Delivery, SD+CA

6. Today's Date

19/08/2021

[redacted] (20)

Time to complete: 10:09 Points: 9/10

1. Which is more important? 1 / 1 pt

Auto-graded

- [ ] The instructions for use
- [ ] The approval number e.g. WRAS no.
- [x] Both equally important ✓

2. Which instruction for use document should you use? 1 / 1 pt

Auto-graded

- ( ) The one the manufacturer gives you
- (•) The one referenced in the approval ✓

3. Under what circumstances can you seek to do an exception risk assessment? 1 / 1 pt

Auto-graded

- [ ] To use a like-for-like product that has no Regulation 31 approval
- [ ] It is more cost effective to use an alternative than the Regulation 31 approved version
- [x] No alternative product available with a relevant Regulation 31 approval ✓

4. Whose is authorised to complete Part A of the MIC form? 1 / 1 pt

People trained that have passed the MIC training

5. Where can you find information on large surface area concrete and ceramic materials, DWI advice sheet 5, 7 or 8?

1 / 1 pt
Auto-graded

- [ ] 5
- [x] 7 ✓
- [ ] 8

6. What you need to do for a small surface area product not listed on advice sheet 8?

1 / 1 pt

Do A contact risk calculation

7. Where can you find a list of product categories, that the DWI considers to be small surface area?

0 / 1 pt
Auto-graded

- ( ) DWI advice sheet 8 ✓
- ( ) DWI advice sheet 5
- ( ) DWI approved product list
- (•) WRAS website ✗

8. Why is it important to use approved materials for flushing?

1 / 1 pt

As they can contaminate the sample you are flushing

9. After chlorination how long is the standing period before sampling? There is more than one answer.

2 / 2 pts
Auto-graded

- [ ] 6 hrs
- [x] 16 hrs ✓
- [x] Double the operational residence time ✓
- [ ] Equivalent to operational residence time

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM

Form Number:

For materials to enter supply, Parts A and B must be signed and approved by Risk and Optimisation Team and final authorisation will be given by a Risk or Water Quality Scientist

Contact Name: **Contact Number:** **Date:**

Site:

Location on site:

Contractor:

WAT- No. If applicable:

USEFUL LINKS

CONTACT THE RISK AND OPTIMISATION TEAM
LIGHTHOUSE - MATERIALS IN CONTACT
WRAS DIRECTORY
KIWA DIRECTORY
DWI APPROVED PRODUCTS INFO PAGE
BRITISH STANDARDS WEBSITE

PART A - Approvals

									1	2	
Line No.	**Supplier**	**Manufacturer holding approval (if different from supplier)**	**Product name**	**Brief Description of material in contact with water (e.g. pump, pipe, sealant)**	**Large/ Small surface area**	**Approving body (DWI/ BS6920/ WRAS/ KIWA/ BSEN)**	**Approving body ref**	**Have the Instructions for use (IFU) or conditions for use been checked and can you meet all the requirements?**	**Person completing the work** Sign/Date	**Risk Scientist - Materials Approved** Sign/Date	**Comments and Advice**
1	SPP	Chang Horing Rubber Co Ltd	EPDM black coloured O ring	O ring	small	WRAS	1906512				
2	SPP	Flexitallic Ltd	Novus 30, Orange cloured nitrile rubber/aramid fiblre gasket material	gasket	small	WRAS	2011511				
3	SPP	Geberit Sales Ltd	Mapress range of ss fitings 15mm	ss fitting	small						WRAS Number stated 1712520 is for Eagle Burgmann ceramic fitting not for the part stated
4	SPP	EagleBurgmann	E24 EPM black coloured EPDM seal	Seal	Small	WRAS	1807525				
5	SPP		CC480K Cast grade for Zinc Free	Impellor wear ring	small	BSEN	1982:2008				This BS has been withdrawn
6	SPP		EN-GJL-250 gray cast iron	Impellor wear ring	small	BSEN	1561:2008				Website states the number in search but would not load
7	SPP		EN-GJL-250 gray cast iron	Pump Casing	small	BSEN	1561:2008				Website states the number in search but would not load
8	3M UK Ltd		Skotchkote 206N	epoxy powder coating	Small	WRAS					WRAS number does not exist and 206N not on Reg31 list either. Clarify with Supplier. Can only find the repair paint on WRAS
9	Ab& OSTP Sweden AB		QT 100 - Stainless steel Pipe and Tubes EN ISO 1127/ EN 10217 -TC1	tube	small	WRAS /DWI 56/4/516	1710121 / 56/4/516	R001			
10	3M UK Ltd		3M Scotchkote Pipe renewal liner 2400	Pipe liner	Large	DWI	DWI 56/4/1031	Yes			
11	Daikin Europe NV		Heat pump indoor unit EGSAH06UD9W	Heat Pump	small	KIWA	2001734				Question over compliance kit and will need items under 2004708 as it needs a cylinder and pump to work.
12											
13											

Insert more lines as necessary

Please put X in box to confirm no further materials will be added to part A of this form

NOTE: Some products and materials may not require a full set of MIC samples, depending on what they are and where they are being installed.
Please contact the Risk and Optimisation Team (WQRiskandOptimisatio@anglianwater.co.uk) if you wish to discuss reduced sampling. Part A must be complete before the Risk Team can reduce sampling requirements.

PART B - Sampling requirements

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM

Form Number:

PART A LINE NUMBERS WHICH SAMPLES REPRESENT	Source being used to sample	Analysis	Bottles required	Comparison required?	Likely contact time whilst in operation?	Agreed standing time for samples	Scientist / Engineer agreement (sign and date)	Risk Scientist Approval (sign and date)

PART C - Sample results

Part C completed by:

Please provide the following contact names:

Risk Scientist:

Supply Manager:

Senior Technician or deputy:

To Self Assess Sample results

Ensure Parts A and B above are completed fully

Click this button and locate the QDW / PACE 711 report with the MIC Samples on it. Open that report and then identify which samples are associated with this form.

Part A line numbers which samples represent	Sample Number	Sample Date and Time	Sample Type	Location	Free Chlorine	Total Chlorine	Coliforms	E Coli	COLONY COUNTS 2 day	COLONY COUNTS 3 day	Qualitative Taste*	Qualitative Odour	Quantative Taste*	Quantative Odour	pH	Colour (Hazen)	Turbidity (NTU)	Conductivity (us/cm)	Alkalinity (mg/l CaCO3)	Aluminium (mg/l Al)	Iron (mg/l Fe)	TRACE ORGANICS Water Profile	TRACE ORGANICS Purge & Trap	TRACE ORGANICS MK FORM NO.	Sample Completed?	Verdict	Comment	1 Person completing the work Sign/Date	2 Risk or WQ Scientist or authorised delegate signature and date Sign/Date

Insert more lines as required

** taste testing only to be performed on samples of potable water and after confirmation of clear bacteriological results*

PART D - Permission to go into supply

Risk Scientist to give final approval to go into supply

Into supply date: **Name:**

ANGLIAN WATER SERVICES - MATERIALS APPROVAL FORM																Form Number:		

[redacted]

Learning History 3 of 77 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	16/08/2021	Completed	16/08/2021 10:49:55	16/08/2024	Do Not Track
Materials in Contact		Digital Course	Enrolled	15/02/2018	Completed	15/02/2018 08:00:00	15/02/2021	Do Not Track
Water Quality Scientist Materials In Contact Module	V1	Course Offering	Enrolled	26/04/2016	Completed	26/04/2016 08:00:00		Attended

[redacted]

Learning History 1 of 10 items

Name	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact	Digital Course	Enrolled	05/07/2021	Completed	05/07/2021 11:05:51	05/07/2024	Do Not Track

[redacted]

Learning History 2 of 91 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date
Materials in Contact		Digital Course	Enrolled	09/05/2022	Completed	13/06/2022 18:58:05	13/06/2025
Materials in Contact		Digital Course	Enrolled	10/04/2019	Completed	07/05/2019 12:57:31	07/05/2022

[redacted]

Learning History 1 of 36 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date
Materials in Contact		Digital Course	Enrolled	22/06/2021	Completed	21/09/2021 13:07:59	21/09/2024

[redacted]

Learning History 1 of 6 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	01/08/2018	Completed	01/08/2018 08:00:00		Attended

[redacted]

Learning History 3 of 107 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V2	Course Offering	Enrolled	09/11/2021	Completed	23/09/2021 15:00:00		Attended
Materials in Contact Competency Assignment	V1	Course Offering	Enrolled	09/11/2021	Completed	23/09/2021 11:00:00		Attended
Materials in Contact		Digital Course	Enrolled	10/04/2019	Completed	25/05/2021 15:37:23	25/05/2024	Do Not Track

[redacted]

Learning History 1 of 26 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	06/04/2018	Completed	06/04/2018 08:00:00		Attended

[redacted]

Learning History 1 of 8 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	05/08/2021	Completed	05/08/2021 12:59:48	05/08/2024	Do Not Track

[redacted]

Learning History 1 of 30 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact Training Virtual	V1	Course Offering	Enrolled	11/04/2018	Completed	11/04/2018 08:00:00		Attended

[redacted]

Learning History 3 of 73 items

Name	Version	Content Type	Registration Status	Date Enrolled	Completion Status	Completion Date and Time	Expiration Date	Attendance Status
Materials in Contact		Digital Course	Enrolled	06/09/2021	Completed	06/09/2021 09:54:38	06/09/2024	Do Not Track
Materials in Contact		Digital Course	Enrolled	14/08/2018	Completed	14/08/2018 08:00:00	14/08/2021	Do Not Track
Water Quality Scientist Materials In Contact Module	V1	Course Offering	Enrolled	26/04/2016	Completed	26/04/2016 08:00:00		Attended

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Water Quality and Water Services Technical Training

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Course Name	Materials In Contact training
Course Number	~~WQ~~ WS083
Module Number	1
Course Date	1/08/18
Location	TWH
Trainer	[redacted]

Delegates Present:

Name	Employee Number or Company Name:	Contact email address	Signature:	Sampler Initials or Location for onsite assessment If applicable	Trainers Use only		
					Pass/Fail	Test Course %	Passport Signed (Y/N)
[redacted]					Pass	95%	Y
					Pass		Y

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate): [redacted]		
Trainer Name	DV.08.18	
Date	01.08.18	
Total marks available		40
Total achieved		35
% score		87.5%
Pass or Fail	**Pass mark 30**	Pass

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Trainers use	
Q1	What does Regulation 31 (4)(b) apply to?	1 mark for this question	
	Any material or substance that is in contact with water supply		
Q2	Which 3 tests are carried out as part of BS6920 to ensure compliance with Regulation 31 (4)(b)?	3 marks for this question	
1	Odour test	✓	
2	Flavour test	✓	
3	Microbial growth test	✓	
Q3	What are the start and end points, across the water supply process, that Regulation 31 applies to?	2 marks for this question	
Start	Abstraction Point	✓	
End	Customers tap	✓	
Q4	Name 3 consequences of not complying with Regulation 31?	3 marks for this question	
1	Unlimited fine for the company	✓	
2	Prosecution	✓	
3	Impact water quality which can affect customers	✓	
Q5	At what stage in a project do you need to fill in an MIC form?	1 mark for this question	
	Before you order the piece of equipment /product	✓	
Q6	Which DWI advice sheet gives guidance on small surface area items?	1 mark for this question	
	Advice Sheet 8: Products Permitted to be used under Reg 31 (4)(b)	✓	

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Q7	**Name 4 large surface area products which might appear in the DWI approved product list?**	**4 marks for this question**	
1	Pipework	✓	
2	Filter vessels	✓	
3	Reservoir	✓	
4	Contact tanks	✓	
Q8	**What 3 approval routes would you expect for a concrete product to reline a tower?**	**3 marks for this question**	
1	European Standard Advice Sheet 7	✓	
2	Approved Product list Annex 2.4	✓	
3	~~Admixture~~ Current DWI approval number	✓	
Q9	**Name 5 small surface area products?**	**5 marks for this question**	
1	Pumps	✓	
2	Instruments (in contact with water going to supply)	✓	
3	Pipe fittings	✓	
4	Values	✓	
5	O-rings	✓	
Q10	**Name an approved grade of Stainless steel?**	**1mark for this question**	
	SS316	✓	

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Q11	How do you check approval information for a small surface area metallic item?	1mark for this question	
	SWI approved Product DSI Website	✓	
Q12	**What checks should you do when assessing a BS6920 certificate?**	**5 marks for this question**	
1	UKAS credited	✓	
2	Name on certificate match the Product you wish to use	✓	
3	The date is within 5 years	✓	
4	Able to meet Preperation requirements	✓	
5	Have the relivant odour, flavour, microbial growth tests passed	✓	
Q13	**On what date does this WRAS number expire? 0907528**	**1 mark for this question**	
	July 2014	✓	
Q14	**When checking a product on the WRAS Directory what checks should you do?**	**4 marks for this question**	
1	BS6920 test certificates		
2	~~Pressure tests~~ Wras Approval number	✓	
3	~~Corrosion tests~~ Installation Requirements	✓	
4	~~Compliance with water fitting regulations~~		

Q15	What is an IFU and why are they important?	2 marks for this question	
1			
2	Required for DWI approval for any large surface area item		
Q16	What are the two options for standing time prior to sampling?	2 mark for this question	
1	Simulate the most adverse time likely to be met in operation	✓	
2	Double ~~[illegible]~~ operational contact time up to 16hours.	✓	
Q17	Who should you contact if you need advice on Regulation 31?	1 mark for this question	
	Water quality ~~Risk~~ Risk & Optimisation team WQriskandoptimisation@anglianwater.co.uk	✓	

You have reached the end of the assessment

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Water Quality and Water Services Technical Training

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Course Name	Scientist Induction MIC new module Materials in contact
Course Number	WS022
Module Number	1
Course Date	27/4/16
Location	Chatterton Tower
Trainer	[redacted]

Delegates Present:

						Trainers Use only		
Name	Employee Number or Company Name:	Job Role	Contact email address	Line Manager:	Signature:	Pass/Fail	Test Course %	Passport Signed (Y/N)

MIC Training [redacted] Charlotte 26-4-16

Related Doc number: WSV-RWI-072. Water sites minimum site information Site attendance record. Template Issue date: April 06 Revision No. 001

Date	Time of arrival	Name (Print and sign)	AW Process or Organisation	Purpose of Visit	Time of departure
26/04	8.50	[redacted]	AW	MEETING	
26/4	9.00		"	meeting.	
26/4	9.15		AW	"	
26/4	9:20		AW	"	
26/4	9:20		AW	"	
"	9.15		AW.	"	
"	9:45		AW	"	
"	9:15		AW.	"	
"	10:30		AW	"	

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Water Quality and Water Services Technical Training

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Course Name	Materials in Contact
Course Number	WS083
Module Number	1
Course Date	11/04/2018
Location	Grafham
Trainer	[redacted]

Delegates Present:

Name	Employee Number or Company Name:	Contact email address	Signature:	Sampler Initials or Location for onsite assessment If applicable	Trainers Use only		
					Pass/Fail	Test Course %	Passport Signed (Y/N)
[redacted]					Pass	90%	
					Pass	85%	
					Pass	100%	
					Pass	92.5%	
					Pass	80%	
					Pass	92.5%	
					Pass	90%	
					Pass	92.5%	
					Pass	95%	

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):		
Trainer Name	[redacted]	
Date	11.04.18	
Total marks available		40
Total achieved		38
% score		95%
Pass or Fail	**Pass mark 30**	Pass

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Trainers use	
Q1	**What does Regulation 31 (4)(b) apply to?**	**1 mark for this question**	
	It has passed BS6920 odour, flavour and microbial growth testing	1	
Q2	**Which 3 tests are carried out as part of BS6920 to ensure compliance with Regulation 31 (4)(b)?**	**3 marks for this question**	
1	odour	1	
2	flavour	1	
3	Microbial growth.	1	
Q3	**What are the start and end points, across the water supply process, that Regulation 31 applies to?**	**2 marks for this question**	
Start	Raw water / abstraction	1	
End	Curtilage of the customer's boundary.	1	
Q4	**Name 3 consequences of not complying with Regulation 31?**	**3 marks for this question**	
1	prison	1/2	
2	fines	1/2	
3	ill health for customers.	1	
Q5	**At what stage in a project do you need to fill in an MIC form?**	**1 mark for this question**	
	At the start.	1	
Q6	**Which DWI advice sheet gives guidance on small surface area items?**	**1 mark for this question**	
	8	1	

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Q7	Name 4 large surface area products which might appear in the DWI approved product list?	4 marks for this question	
1	pipes	1	
2	Media (filter)	1	
3	Tower, Reservoirs tank linings	1	
4	Concrete, cement and admixtures.	1	
Q8	**What 3 approval routes would you expect for a concrete product to reline a tower?**	**3 marks for this question**	
1	DWI approval N°	1	
2	European Standard	1	
3	Approved product list annex 2.4	1	
Q9	**Name 5 small surface area products?**	**5 marks for this question**	
1	valves.	1	
2	pumps	1	
3	ladders	1	
4	Float switches / probes.	1	
5	O rings	1	
Q10	**Name an approved grade of Stainless steel?**	**1mark for this question**	
	316	1	

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Q11	**How do you check approval information for a small surface area metallic item?**	**1mark for this question**	
	Annex 3 on DWI approved product or BSI Website	1	
Q12	**What checks should you do when assessing a BS6920 certificate?**	**5 marks for this question**	
1	UKAS accredited lab.	1	
2	Name matches the product to use	1	
3	Has valid date – within 5 years	1	
4	It has met the preparation requirements	1	
5	That the odour, flavour and microbial growth tests have passed.	1	
Q13	**On what date does this WRAS number expire? 0907528**	**1 mark for this question**	
	July 2014	1	
Q14	**When checking a product on the WRAS Directory what checks should you do?**	**4 marks for this question**	
1	Valid Number	1	
2	In date approval,	1	
3	instructions for use have been met	1	
4	The product details match, ie Supplier, and what it is being used for.	1	

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Q15	What is an IFU and why are they important?	2 marks for this question	
1	It is the instruction for use, how to apply and cure.	1	
2	If not followed, the approval may be void. and lead to sample failures.	1	
Q16	What are the two options for standing time prior to sampling?	2 mark for this question	
1	Calculate $e = \frac{st}{V}$ $sec.cm^{-1}$	1	
2	~~contact risk large of small and the~~ operational contact time up to 16 hrs or 16 hrs.	1	
Q17	Who should you contact if you need advice on Regulation 31?	1 mark for this question	
	Risk Scientist. WQRiskandOptimisation@anglianwater.co.uk.	1	

You have reached the end of the assessment

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Water Quality and Water Services Technical Training

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Course Name	Materials in Contact
Course Number	WS083
Module Number	1
Course Date	27/3/17
Location	Wing WTW
Trainer	[redacted]

Delegates Present:

Name	Employee Number or Company Name:	Contact email address	Signature:	Sampler Initials or Location for onsite assessment If applicable	Trainers Use only		
					Pass/Fail	Test Course %	Passport Signed (Y/N)
[redacted]					PASS	100	
					PASS	95	
					PASS	100	
					PASS	91	Y
					PASS	95	
					PASS	93	Y
					PASS	84	
					PASS	84	Y

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Water Quality and Water Services Technical Training

Course Name	Materials in Contact Training	
Course Number	WS083 – Module 1	
Employee Name	[redacted]	
Employee Number or Co. Name (as appropriate):	[redacted]	
Trainer Name	[redacted]	
Date	27/3/17	
Total marks available		44
Total achieved		42
% score		95
Pass or Fail	**Pass mark 33**	PASS

Please read all questions carefully.
For some questions there may be more than one answer required – check the marking scheme.
If you are unclear please ask the trainer.
This is a closed book assessment – you can not use your notes.
The pass mark for this test is 75%.

Please turnover when advised by the trainer

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		Trainers use	
Q1	What does Regulation 31 (4)(b) apply to and what tests are carried out to ensure compliance?	4 marks for this question	
	ODOUR	1	
	FLAVOUR	1	
	MICROBIAL GROWTH (BS 6920)	1	
	SMALL SURFACE CONTACT AREA	1	
Q2	Across which part of the water supply process does Regulation 31 apply?	2 marks for this question	
	EVERYTHING FROM ABSTRACTION	1	
	TO CUSTOMER BOUNDARY	1	
Q3	What could be the consequences of not complying with Regulation 31?	3 marks for this question	
A	PROSECUTION	1	
B	FINES	1	
C	REWORK + ASSOCIATED COSTS/TIME	1	
Q4	At what stage in a project do you need to fill in an MIC form?	1 mark for this question	
	BEFORE PURCHASING PARTS	1	
Q5	Which DWI advice sheet gives guidance on surface area?	1 mark for this question	
	8	1	
Q6	Name 4 large surface area products which might appear in the DWI approved product list	4 marks for this question	
A	PIPES	1	
B	TANKS	1	
C	FILTER MEDIA	1	
D	CARTRIDGE FILTERS	1	

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Q7	**What approval would you expect for a concrete product to reline a tower?**	**3 marks for this question**	
A	APPROVED PRODUCT LIST DWI APPROVAL NO' (CURRENT)	1	
B	EUROPEAN STANDARD ADVICE SHEET 7	1	
C	DWI ANNEX 2.4	1	
Q8	**What approval information would you require for an Admixture and how would you check it?**	**2 marks for this question**	
	DWI ANNEX 2.4 APPROVED PRODUCT LIST OR DWI APPROVED PRODUCT LIST	1	
	DWI No. ACCESS WEBLINK IN ANNEX TO CHECK LISTING.	1	
Q9	**Name 5 small surface area products**	**5 marks for this question**	
A	VALVES	1	
B	PUMPS	1	
C	GASKETS	1	
D	ORIFICE PLATE	1	
E	FILTER NOZZLES	1	
Q10	**Name an approved grade of Stainless steel**	**1mark for this question**	
	BRA 316S 1.4404	1	
Q11	**How do you check approval information for a small surface area metallic item?**	**1mark for this question**	
	BS EN LISTINGS ON BSI SHOP	1	
Q12	**What checks should you do when assessing a BS6920 certificate?**	**5 marks for this question**	
A	DATE - WITHIN 5 YRS	1	
B	UKAS LAB No / STAMP	1	
C	SAMPLE RESULTS COLOUR FLAVOUR MICROBIAL	1	
D	NAME MATCH PRODUCT	1	
E	CAN YOU MEET PREP REQUIREMENT	1	

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Q13	On what date does this WRAS number expire? 0907528	1 mark for this question	
	07 2014	1	
Q14	Would you ever accept a WRAS number for pipework and why?	2 marks for this question	
	FOR FITTINGS OR SMALL		No, not on
	BORE LINES WITH LOW C SCORE (<100)		advice sheet 8
Q15	When checking a product on the WRAS Directory what checks should you do?	4 marks for this question	
A	APPROVAL NO.	1	
B	DATE (VALIDITY)	1	
C	CONDITIONS OF USE	1	
D	MATERIAL / PRODUCT	1	
Q16	What is an IFU and why are they important	2 marks for this question	
A	INFORMATION FOR USE	1	
B	APPROVED IF FOLLOWING	1	
Q17	What are the two options for standing time prior to sampling?	2 mark for this question	
	DOUBLE OPERTIONAL STAND TIME	1	
	16 HOURS	1	
Q18	Who should you contact if you need advice on Regulation 31?	1 mark for this question	
	WQ RISK + OPTIMISATION TEAM	1	

10

You have reached the end of the assessment

Anglian Water Regulation 31 compliance for Noksel pipework

1. Requirement

To have the ability to undertake 'small surface area' repairs on Noksel pipework in the field as part of Anglian Water's Strategic Pipeline Alliance (SPA) drinking water main between Lincoln and Grantham.

2. Issue

2.1 Approximately six patch repairs of Noksel pipe coated with 468 Thixo Coating using Acothane DW have been undertaken.

2.2 It has been discovered that these repairs did not conform to the instructions for use (IFU) supplied by the pipe manufacturer (Noksel) however if the IFU provided by the manufacturer had been followed then the repair material specified would not have conformed to the requirement of Regulation 31.

2.3 The pipe is part of the SPA Lincoln to Grantham drinking water main project which is still under construction and does not hold or convey water at this time.

2.4 Anglian Water are seeking a resolution that will allow 'small surface area' repairs to be made, as is normal practice with pipeline construction that avoids any breach of Regulation 31 of The Water Supply (Water Quality) Regulations 2016, as amended (hereafter 'Regulation 31')

3. Background

3.1 A drinking water main between Lincoln and Grantham is currently under construction through Anglian Water's Strategic Pipeline Alliance (SPA)[1].

3.2 The pipeline is being constructed from 14m sections of Noksel pipe coated with 468 Thixo Coating[2]. This is currently fully DWI approved and appears on the DWI approved products list (Annex I).

3.3 The pipeline is not conveying water (either for test or potable purposes)

3.4 Currently around 16 km of the pipeline have been laid which has six 7.5 cm^2 patches (approximate area) of Acothane DW[3] applied *in situ*.

3.5 It has come to light that the use of Acothane DW did not comply with the instructions for use (IFU) provided by the pipe manufacturer (Noksel) at the time of application.

3.6 The precise locations of all repairs made are known to facilitate any remedial work, should that prove necessary.

3.7 Acothane DW is an approved product under the requirements of Regulation 31.

3.8 The areas of the patches conform to the small surface area definition provided for in the Drinking Water Inspectorate's 'Advice Sheet 8' (version 4.9 October 2018) provided to enhance the interpretation of Regulation 31(4)(b).

[1] In 2020 a new Strategic Pipeline Alliance was set up by Anglian Water, in collaboration with construction and engineering firms Costain, Jacobs, Mott MacDonald Bentley and Farrans – part of a contract worth more than £350 million to complete one of the biggest water infrastructure projects in the UK. The ambitious plan will see up to 50km of interconnecting pipes and pumping equipment created, as well as upgrades carried out on existing infrastructure to allow water transfer across the region. The overall aim is to make the east of England resilient to drought risks by securing water supplies for future generations.

[2] The expired WRAS approval (No 1607525) is being sent as a separate attachment to this note.

[3] The IFU for Acothane DW (November 2019) is being sent as a separate attachment to this note.

3.9 A third-party representing Pipe Source UK (who supplied the batch of Noksel pipe affected) is believed to have contacted the DWI to submit a Change Application in relation to the use of Acothane DW.

3.10 It is understood that the DWI responded to Pipe Source UK stating that before the DWI could consider the application further, Anglian Water/ SPA (as due diligence) should contact the pipe manufacturer to provide confirmation that the use of Acothane DW will not have an deleterious effect on the Thixo 468 coating and should this be obtained Anglian Water/SPA would need to submit a Change Application in their own right.

3.11 The current IFU for the Noksel Steel Water Pipe coated with Thixo 468 at section 4-8-2 'repairing the internal lining' is provided at Annex II.

3.12 The IFU for Noksel Steel Water Pipe coated with 468 Thixo Coating lists Eurokote-480 FC (manufactured by BS Coatings) as the repair material.

3.13 The repair product mentioned in section 4-8-2 of the IFU is not currently compliant with Regulation 31 (it does not have a valid BS6920 test certification (that Anglian Water is aware of) and a previous WRAS approval covering the material expired on 31 July 2021).

3.14 Anglian Water is concerned that should it follow the current IFU it would result in a breach of Regulation 31 as Anglian Water would be using an unapproved product, regardless of the status of the IFU's requirements.

3.15 There are alternative repair products that comply with the requirements of Regulation 31, including Acothane DW, but as these are not provided for in Noksel's IFU.

3.16 Anglian Water is currently in the position where it has Regulation 31 approved pipework (Noksel Steel Water Pipe – Coated with Thixo 468) representing a substantial capital investment which cannot be incorporated into the capital project as there is no suitably approved repair material available to undertake routine small area repairs required during construction.

4. Possible routes to resolution

4.1 Noksel to amend the IFU to enable any suitable Regulation 31 compliant on-site repair product to be used to repair the internal coating (Thixo 468) of the Noksel Steel Water Pipe.

4.2 Enquire with BS Coatings if there are plans to seek renewed approval for Eurokote-480 FC;

4.2.1 Were BS Coatings planning to seek renewed approval this would be a long-term project as Anglian Water understand that no product is being manufactured presently and, once manufacture recommenced there is the additional time-lag while re-testing under BS6920 requirements were undertaken (also recognising that there is a significant lack of UKAS accredited laboratory capacity to access such testing and hence a significant delay is likely).

5. Current situation

5.1 Anglian Water has requested a meeting with the DWI to explore routes to resolve the issues set out in this paper and arrive at an agreed outcome. This meeting has been arranged for 28 January 2022.

5.2 Anglian Water is contacting Noksel through their global headquarters in Spain to explore the option set out in section 4.1; due to challenges with national holidays and language differences, establishing contact with the key stakeholder(s) within Noksel has proved to be time consuming.

ANNEX I

Noksel Steel Pipe Co Inc

Noksel Steel Water Pipe – Coated with Thixo 468 DWI 56/4/1192

Conditions of Approval:	Use of the product must be in accordance with the Instructions for Use: NOK-DJM-INT-0001 18/08/2020, Issue 1
Approval expiry date:	4 October 2025

ANNEX II

4-8-2 repairing the internal lining

Any defects in the internal lining, revealed when cutting the pipe should be repaired in accordance with the B S Coatings Data sheet EUROKOTE 480 FC please see the attached, and in general :-

- The surface to be repaired should be free of any traces of oil grease, humidity or other types of soiling.
- The damaged coating should be eliminated by scraping, sanding or any other appropriate method
- The surface of surrounding coating to be painted should be ground and roughened.
- The surface of the zone to be repaired and surrounding areas should be carefully dusted
- Prepare the necessary quantity for the repair of EUROKOTE-480 FC , respecting the mixing ratio.
- Mix the two components R and D until they are entirely homogeneous with stirred, taking care to scrape the edges of the container, or preferably use a mechanical mixer.
- Apply any even coat of EUROKOTE 480 FC to the required thickness with a stiff brush, a coating knife or a spatula while respecting the application conditions.
- After curing, the repaired zones should be checked for the thickness of the dry film and the absence of any abnormalities. and to ensure they meet the requirements of the initial coating.

intertek
caleb brett

Sunbury Technology Centre
Unit 'A' Shears Way
Brooklands Close
Sunbury-on-Thames
Middlesex TW16 7EE
Tel : 01932 73 2100
Fax : 01932 73 2111

BS6920 Test Report

REPORT NO. MA7843/R
DWI Ref Number – 56.4.1059 & 56.4.1192

Two-part epoxy binder overcoated with a two-part solvent free polyurethane coating

Eurokote Thixo 468 overcoated with Acothane DW (Blue)

CLIENT:	Anglian Water Hall wtw Collingham Road Newton on Trent Lincoln Lincolnshire LN1 2JL
CLIENT'S REFERENCE:	[redacted]
PHOENIX NUMBER:	UK760-0032124
DATE	**22 December 2022**

WRITTEN BY:	**REVIEWED BY:**
[redacted]	[redacted]
ANALYST	**LABORATORY SUPERVISOR**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

UKAS TESTING
0102

SUITABILITY OF NON-METALLIC PRODUCTS FOR USE IN CONTACT WITH WATER INTENDED FOR HUMAN CONSUMPTION WITH REGARD TO THEIR EFFECT ON THE QUALITY OF THE WATER (BS 6920: 2014), SITE APPLIED PRODUCTS

1. SAMPLES FOR TESTING

General composition of product		base coat: two-part epoxy binder topcoat: two-part polyurethane coating
Trade name and reference of material		base coat: Eurokote Thixo 468 topcoat: Acothane DW (Blue)
Material manufacturer		base coat: company name not provided, manufactured in Spain topcoat: Axalta Coating Systems UK LTD
Submitting organisation		Anglian Water, UK
Batch number of product		base coat:408440 topcoat: base: 161014 activator: 161491
Date of manufacture of product		base coat: information not provided topcoat: base: 2021 activator: 17 November 2021
Method of manufacture of sample		base coat: spray application topcoat: brush application
Sampling procedure		specially prepared test pieces using product taken at random
Description of sample		smooth opaque glossy coated panel with one half blue and one-half red
Surface area of test piece		base: 14627mm² topcoat: 9096mm²
Number of articles constituting a test piece		2
Surface area of one article		base: 7314mm² topcoat: 4548mm²
Dimensions of test piece:	**length/width/thickness:**	120mm/60mm/3.56mm (stainless steel plate)
Calibration mark of test containers		1 litre
Date of application		19 August 2022
Date of receipt of test samples		23 August 2022
Condition of samples on receipt		satisfactory
Method of packaging		coated panel: information not recorded topcoat: metal tins
Conditions of storage of the samples between receipt and testing		as instructed in BS6920-2.1: 2014: clause 5.2
Proposed use of the product		repair for damaged pipe lining

FACTORY APPLIED PRODUCTS – Base Coat

The samples were prepared in accordance with manufacturer's application instructions.

Samples prepared by	Noksel Espana
Name of product	Eurokote Thixo 468
Mode of Application of the product	part R and part D mixed in a 70:30 mass ratio and applied to test panel using airless spray application
Nature of test plates	stainless steel
Number of coats	1
Wet film thickness of each coat	400 micron
Application conditions	22˚C
Curing conditions	7 days at 20˚C
Date of preparation of the samples	4 April 2022

SITE APPLIED PRODUCTS – Top Coat

The samples were prepared in accordance with manufacturer's instructions to the user.

Samples prepared by	Anglian Water
Site of preparation	Intertek, Sunbury
Version of manufacturer's instruction for use	issue 8, November 2019
Name of topcoat	Acothane DW Blue
Appearance of product before application	A: blue opaque glossy viscous liquid B: amber liquid mixed: blue opaque glossy viscous liquid
Wet film thickness	~1mm
Number of coats	1
Mode of preparation and application of the product	base and activator supplied in pre-measured containers giving a 3:1 volume ratio. Each part was thoroughly mixed before being poured into a clean container and mixed again until components were homogenous. Resultant mixture was applied evenly over half of the precoated panel using a brush.
Nature of test plates	stainless steel panel with one side pre- Eurokote Thixo 468
Curing conditions	7 days at 3˚C

2. ODOUR AND FLAVOUR OF WATER

Number of tasters in the taste panel – 3

Extraction temperature – 23°C

Date tests commenced – 30 August 2022

Sample 1

Extract 1

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	nil	<1
2	nil	nil	<1
3	solvent	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	N/A	N/A
2	phenolic	N/A	N/A
3	solvent	N/A	N/A

Extract 7 (final extract)

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	nil	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	slight solvent	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

Comment - thus the samples of this product have been found NOT to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 23°C.

Sample 2

Extract 1

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	nil	<1
2	musty	nil	<1
3	sweet / solvent	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	N/A	N/A
2	chemical	N/A	N/A
3	solvent	N/A	N/A

Extract 7 (final extract)

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	nil	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

Comment - thus the samples of this product have been found NOT to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 23°C.

Sample 3

Extract 1

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	nil	<1
2	musty	nil	<1
3	solvent	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	N/A	N/A
2	chemical	N/A	N/A
3	solvent	N/A	N/A

Extract 7 (final extract)

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	nil	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	paint	1
2	nil	paper / chemical	1
3	nil	nil	<1

Comment - thus the samples of this product have been found NOT to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 23°C.

3. APPEARANCE OF WATER

Extraction temperature – 23°C

Date test commenced – 30 August 2022

Extract 1

	COLOUR (HAZEN UNITS)	TURBIDITY (FORMAZINE NEPHELOMETRIC UNITS)
Test container (product)	<2.5	0.02
Blank	<2.5	0.02
Net increase	nil	nil

Comment - thus the sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 5 when extracted at 23°C.

4. GROWTH OF AQUATIC MICROORGANISMS

Date test commenced – 30 August 2022

Mean dissolved oxygen differences –

Test container (product)	1.1mg/l
Negative reference (glass) sample	-0.2mg/l
Positive reference (wax) sample	7.1mg/l
Stainless steel test plate with one side pre-coated Eurokote Thixo 468	0.3mg/l
Mean dissolved oxygen concentration of the test control	9.3mg/l

Note - At the end of this test the test piece showed no changes in colour and appearance.

Comment - thus the sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 6.

5. THE EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH

Extracts were tested using Monkey African Green Kidney CITES (Lot 10F019)

Extraction temperature – 23°C

Date test commenced – 30 August 2022

EXTRACT	GROWTH OF CELL TISSUE (MONOLAYER)
Reagent blank	healthy, confluent
Zinc sulphate validation solution (cytotoxic)	cell death
Sample	healthy, confluent

Comment - thus the sample of this product has been found to give a non-cytotoxic response and therefore it has been found to comply with the requirements of BS 6920: Part 1: clause 7 when extracted at 23°C.

6. THE EXTRACTION OF METALS

Extraction temperature – 23°C

Date test commenced – 30 August 2022

Number of extracts – 1

All analyses carried out on duplicate samples of the product as specified below

Aluminium, Antimony, Arsenic, Boron, Cadmium, Chromium, Iron, Lead, Manganese, Mercury, Nickel, Selenium: Inductively coupled plasma – mass spectrometry (ICP-MS)

Extract 1

Metal	Expression of the results	Max. admissible concentration	Reporting Limit	Concentration Final Extract I	Concentration Final Extract II	Reagent Blank	Metal fitting blank
Aluminium	Al µg/L	200	20.0	< 20.0	< 20.0	< 20.0	< 20.0
Antimony	Sb µg/L	5	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Arsenic	As µg/L	10	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron	B µg/L	1000	100.0	< 100.0	< 100.0	<100.0	<100.0
Cadmium	Cd µg/L	5	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	Cr µg/L	50	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Iron	Fe µg/L	200	20.0	< 20.0	< 20.0	< 20.0	161.0
Lead	Pb µg/L	10	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Manganese	Mn µg/L	50	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Mercury	Hg µg/L	1	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	Ni µg/L	20	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Selenium	Se µg/L	10	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Comment - thus the samples of this product have been found to comply with the requirements of BS 6920: Part 1: clause 8 when extracted at 23°C

CONCLUSION

The samples of the products referred to in this report have been tested in accordance with the methods specified in BS 6920: Part 2: 2014 "Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water: Methods of test."

On the basis of these test results the samples of this product have been found NOT to comply with the requirements of BS 6920: 2014: Part 1: Clause 4; Odour & Flavour of Water (all 3 tests) / Site Applied Products. It is unsuitable for use with potable water.

N.B The results specified in this report relate only to the sample of the product submitted for testing. Any changes in the nature or source of ingredients and the process of manufacture or application could affect the suitability of the product for use in contact with potable water.

Materials and products intended for use by a public water supply company in the preparation or conveyance of water may need to satisfy more comprehensive toxicological requirements as set specified by the Drinking Water Inspectorate. These additional requirements are necessary to ensure legal compliance with Regulation 31 of Water Supply (Water Quality) Regulations 2000.

NOTES FOR DWI

Tests on product covered by your letter ref [redacted] dated 7 February 2022 relating to approval numbers 56/4/1059 and 56/4/1192.

From: [redacted]
To: [redacted]
Subject: FW: Regulation 31 events notified to the DWI 2021
Date: 20 November 2023 08:32:15
Attachments: Outlook-led_portra.png
Toxicological advice regarding potential risk to human health FINAL v1.0 1.pdf

---

FYI – received this from ANH on Friday last week regarding reg 31.

[redacted]– are you able to file this away appropriately? I am not sure if you are keeping records of these things in secure areas etc.

Thanks

[redacted]**BSci MIWater| Principal Inspector | Drinking Water Inspectorate**
Area 1A Nobel House, 17 Smith Square, London, SW1P 3JR
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From: [redacted]<[redacted]@anglianwater.co.uk>
Sent: 17 November 2023 13:44
To: [redacted]<[redacted]defra.gov.uk>
Cc: [redacted]<[redacted]anglianwater.co.uk>; [redacted]
<[redacted]@anglianwater.co.uk>
Subject: Regulation 31 events notified to the DWI 2021

Dear [redacted]

I hope you are well.

I am writing to you in relation to the four regulation 31 events reported to the Inspectorate in 2021 by Anglian Water. The four events involved the installation of materials that were potentially not compliant with the requirements of regulation 31 at Kedington Water Treatment Works, Diddington Reservoir, Hannington Reservoir (1A and 1B) and Pitsford Water Treatment Works Storage Tank B.

Anglian Water have taken independent, expert advice regarding the toxicological impact of the trace compounds identified during our investigations and I attach the report from Dr [redacted] for your review. Dr [redacted] has carried out hazard identification and risk assessment and has concluded the following ' *Based on the highest concentration of the chemicals measured, as a worst-case scenario, the intake of all chemicals by infants, children and adults was below the very conservative TDIs derived for this risk assessment. Moreover, the highest concentration of each chemical measured was also lower than a provision, conservative GV for the chemical, that was determined for the purposes of this risk assessment. Therefore, adverse effects to public health are highly unlikely following consumption of water containing such levels of chemicals*'.

While these events occurred despite the company having an extensive system in place to ensure that all aspects of the requirements of regulation 31 were being followed we believe that for the four specific instances being investigated there is no evidence of a breach of The Water Supply (Water Quality) Regulations 2016 (as amended) regulation 4 (Wholesomeness) and there is no evidence that Anglian Water supplied water unfit for human consumption.

In January 2022 we initiated a Materials in Contact Improvement Programme in response to the reported events and in recognition that we wanted to further improve our processes. The programme goals are to: (1) Create an improved, streamlined, business-wide process across Anglian Water and our Alliances; (2) Adopt a 'right first time' approach with less rework; (3) Improve communications and hand-overs between teams; and (4) Improve traceability of evidence of regulation 31 approval and Instructions for Use compliance.

In addition to our internal improvement activity, we are also leading wider industry engagement. We organise and chair quarterly Regulation 31 Industry Working Group meetings, bringing together representatives from other water companies, Water UK, Energy and Utility Skills, WRc and DWI to share learning from events and near misses, and to share good practice across the industry. It is through this wider industry engagement that we can be sure that we are at the forefront of the industry in terms of good practice in the area of regulation 31 compliance.

If you would like to understand more about our internal improvement programme or the industry activities we are leading please just let me know and that can be arranged.

If you have any queries please do not hesitate to contact me.

Regards

[redacted]

led_portrait_colour

Dr [redacted]
Head of Water Quality
Mobile: [redacted]

Anglian Water Services Limited
Lancaster House, Lancaster Way, Ermine Business Park, Huntingdon, Cambridgeshire, PE29 6XU

REGULATION 31 WATER SUPPLY (WATER QUALITY) REGULATIONS 2016 – TOXICOLOGICAL ADVICE REGARDING POTENTIAL RISK TO HUMAN HEALTH

AUTHOR: DR [redacted]

CLIENT: ANGLIAN WATER SERVICES LIMITED

Version: Final v1.0

Report Number: T29

Date: 16/10/202

SIGNATURE PAGE

Author: **Dr.** [redacted]

Signature:

Date: **October 2023**

CONTENTS

BACKGROUND

The Drinking Water Inspectorate (DWI) is investigating potential breaches of Regulation 31 and Section 70 at four sites across Anglian Water's drinking water assets. In May 2021 Anglian Water became aware that, as part of new water works at Kedington, a short section of pipe with a paint-based coating appeared to have been installed that may not have been in compliance with the requirements for Materials in Contact (MIC) under Regulation 31.5. Following a comprehensive programme of asset inspections, it became apparent that similar issues had arisen at three other sites. As part of the DWI investigations, it has been suggested that there may be a risk to human health from the pipes and/or coatings.

Therefore, toxicological advice is being sought regarding the potential risk to human health following exposure to water in contact with pipes and/or coatings.

SITES

Three sites, Kedington Water Treatment Works, Diddington Reservoir and Hannington (1A and 1B) were found to have materials installed which may not be in compliance with the requirements for materials in contact with drinking water

One site, Pitsford Water Treatment Works Storage Tank B may not have had Regulation 31-approved materials in contact with water, but it is suspected that a coating on the pipework may not have been applied in accordance with the Instructions for Use.

DATA AVAILABLE FROM ANGLIAN WATER

Regulatory monitoring samples, internal monitoring samples and operational samples have been taken from each site, as well as regulatory and internal monitoring samples at customer taps.

Laboratory soak tests have been carried out by Anglian Water on blue particulate matter taken from the pipework in all 4 sites, to identify the chemical make-up of the coating.

SCOPE OF WORK

A list of questions has been posed by Anglian Water.

Question a. Was water supplied to customers from either [(i) Kedington; (ii) Hannington; (iii) Diddington and (iv) Pitsford], any time during the periods in question, unfit for human consumption?

Question b. How confident are you in the assessment(s) made in the response(s) to question b?

Question c. In general, given a list of individual organic compounds and their concentrations in drinking-water are you able to determine the synergistic effects affecting short-term and/or long-term human health outcomes that may arise from these compounds at varying ranges of concentrations and exposures; please provide a detailed justification of your position in a form accessible to a non-technical audience.

All questions are addressed below.

QUESTION A

Was water supplied to customers from either [(i) Kedington; (ii) Hannington; (iii) Diddington and (iv) Pitsford], any time during the periods in question, unfit for human consumption?

To address question b, the following approach was carried out, based on a hazard assessment.

Task ai. Hazard identification

Chemicals identified in soak tests carried out with particles from each asset and Public Water Supply Zones (PWSZs) were collated. Long-term toxicological hazards associated with such chemicals were identified, including:

- Specific target organ toxicity – repeated exposure (STOT-RE)
- Reproductive and developmental toxicity
- Carcinogenicity
- Mutagenicity

Local effects were also noted including:

- Skin irritation
- Eye irritation
- Skin sensitisation

The hazards of chemicals identified in soak tests are presented in Table 5 (Annex 1).

Overall, of the 68 chemicals identified, 15 chemicals have one or more long-term hazards and 31 chemicals have one or more short-term hazards. Twenty-two chemicals were either not classified or have no data.

Nine chemicals are classified as being reproductive toxins, namely,

- benzyl butyl phthalate (CAS 85-68-7)
- bismethylpropyl ester benzenedicarboxylic acid (Diisobutyl phthalate) (CAS 84-69-5)
- dibutyl phthalate (CAS 84-74-2)
- dicyclohexyl ester benzenedicarboxylic acid (CAS 84-61-7)
- dicyclohexyl ester phthalic acid (Dicyclohexyl phthalate) (CAS 84-61-7)
- diisobutyl phthalate (CAS 84-69-5)
- diisooctyl ester benzenedicarboxylic acid (Diisooctyl phthalate) (CAS 27554-26-3)
- dioctyl phthalate (CAS 117-84-0)
- toluene (CAS 108-88-3)

Two chemicals are classified as being carcinogenic, namely,

- tributyl phosphate (CAS 126-73-8)

- triphenyl phosphate (CAS 115-86-6). Triphenyl phosphate was also classified as being mutagenic.

Five chemicals are classified for specific target organ toxicity – repeat exposure (STOT-RE), namely,

- butyl benzenesulfonamide (N-butylbenzenesulphonamide) (CAS 3622-84-2)
- diethyl phthalate (CAS 84-66-2)
- toluene (CAS 108-88-3)
- total xylenes + ethylbenzene (CAS 1330-20-7/100-41-4)
- trimethyl hexenol (3,5,5-trimethylhexan-1-ol) (CAS 3452-97-9)

Twenty-nine chemicals were classified for skin irritation, 34 chemicals for eye irritation, 13 for skin sensitisation and 11 chemicals for specific target organ toxicity – single exposure (STOT-SE). Thirteen chemicals were also classified as being acute toxins via oral, inhalation or dermal routes of exposure (Table 5; Annex 1).

Task aii Identification of chemicals in water from assets and PWSZs

To identify which chemicals from the particles were in the water from assets and PWSZs, and conversely, to rule out chemicals present that were not from the particles[1], chemicals that were identified in soak tests carried out with particles from assets and PWSZ, were cross referenced with chemicals either;

a. in water taken from assets while they were in supply (following installation of the pipes in question) or just prior to going into supply for commissioning processes etc. (spreadsheet All Assets Trace Organics Samples v2.xlsx), or

b. as measured from customer taps within these PWSZs supplied by each of the 4 assets (spreadsheet Asset PWSZs Trace Organics samples v2.xlsx).

Concentrations of chemicals from particles that were identified in assets and PWSZ and which have any long-term hazards (Table 6; Annex 1) or short-term hazards (Table 7; Annex 1) were collated.

From the 15 chemicals identified as having long-term hazards, 6 were identified in soak tests and water from assets or within PWSZs, namely:

- dibutyl phthalate
- diisobutyl phthalate
- dioctyl phthalate
- diisooctyl phthalate
- toluene
- total xylenes + ethylbenzene

[1] Whilst of possible concern, this is outside the scope of this project.

Task aiii Risk assessment

A risk assessment was carried following the normal risk assessment paradigm:

- Risk characterisation (health-based guidance values (HBGVs) were identified from authoritative bodies or tolerable daily intakes (TDIs) were derived from toxicity data)
- Exposure assessment (the highest value measured in water from assets and/or PWSZs was used as worst-case scenario and intakes for an infant, child and adult were calculated)
- Risk assessment
    - intakes for an infant, child and adult were compared with the HBGV
    - a provision water guideline value (GV) was calculated based on a 60 kg adult drinking 2 L of water per day, using a default allocation factor of 20%. The highest concentration of the chemical measured in water from assets and/or PWSZs was compared against this provision GV

The risk assessment was carried out for all chemicals that were classified as hazardous to human health following long-term exposure such as those classified for mutagenicity, carcinogenicity, reproductive and developmental toxicity and specific target organ toxicity following repeated exposure and were reported in;

a. in water taken from assets while they were in supply (following installation of the pipes in question) or just prior to going into supply for commissioning processes etc. (spreadsheet All Assets Trace Organics Samples v2.xlsx), or

b. as measured from customer taps within these PWSZs supplied by each of the 4 assets (spreadsheet Asset PWSZs Trace Organics samples v2.xlsx).

Chemicals in water taken from assets

No chemicals classified for long-term hazards were identified in water from assets whilst in supply or prior to going into supply.

Chemicals measured from customer taps within these PWSZs supplied by each of the 4 assets

Six chemicals were identified in water within PWSZs.

The HBGVs for all chemicals in PWSZ and assets that are classified as mutagens, carcinogens, reproductive or developmental toxins or specific target organ toxins following repeated exposure are described below.

Dibutyl phthalate (CAS 84-74-2)

A toxicity reference value (TRV) of 2 µg/kg bw/day was derived by French Agency for Food, Environmental and Occupational Health and Safety (ANSES, 2017). The TRV was calculated from a lowest observed effect level (LOAEL) of 2 mg/kg bw/day based on reduction of testicular sperm development and nipple retention in offspring following exposure of female rats (6-8/group) to dibutyl phthalate (0, 20, 200, 2000 or 10000 ppm equivalent to 2, 20, 200 or 1000 mg/kg bw/day) in feed from

gestation day (GD) 15 to postnatal day (PND) 21 (Lee et al, 2004 cited in ANSES, 2017). An assessment factor (AF) of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for extrapolation from LOAEL to a no observed adverse effect level (NOAEL)) was applied to the LOAEL of 2 mg/kg bw/day to give the TRV of 2 µg/kg bw/day.

However, due to the short-term exposure in the pivotal study, an additional AF of 6 has been added (in accordance with European Chemicals Agency (ECHA) guidance (ECHA, 2012)) for this risk assessment, giving a total AF of 6000 and a TDI of 0.33 µg/kg bw/day.

Based on the highest concentration of dibutyl phthalate measured (0.56 µg/l), the intake by adults, children and infant is 0.02, 0.06 and 0.09 µg/kg bw/day, respectively (Table 1). These intakes are below the TDI of 0.33 µg/kg bw/day. Moreover, the highest concentration measured is lower than the provision GV of 1.98 µg/l calculated. Therefore, adverse effects to public health are not anticipated.

Diisobutyl phthalate (CAS 84-69-5)

A TRV of 2 µg/kg bw/day was derived by ANSES (ANSES, 2017). The TRV was derived using read-across from a developmental study in which rats were exposed to dibutyl phthalate from GD15 to PND 21 and a LOAEL of 2 mg/kg bw/day was determined based on reduction of testicular sperm development and nipple retention (Lee at al., 2004 cited in ANSES 2017; see dibutyl phthalate above). An AF of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for extrapolation from LOAEL to a NOAEL) was applied to the LOAEL of 2 mg/kg bw/day to give the TRV of 2 µg/kg bw/day.

However, as with dibutyl phthalate, due to the short-term exposure in the pivotal study, an additional AF of 6 has been added for this risk assessment, giving a total AF of 6000 and a TDI of 0.33 µg/kg bw/day.

Based on the highest concentration of diisobutyl phthalate measured (0.53 µg/l), the intake of diisobutyl phthalate by adults, children and infant is 0.02, 0.05 and 0.08 µg/kg bw/day, respectively (Table 1). These intakes are below the TDI of 0.33 µg/kg bw/day. Moreover, the highest concentration measured is lower than the provision GV of 1.98 µg/l calculated. Therefore, no adverse effects to public health are anticipated.

Dioctyl phthalate (CAS 117-84-0)

An intermediate minimal risk level (MRL) of 400 µg/kg bw/day was derived by Agency for Toxic Substances and Disease Registry (ATSDR, 2011). The MRL was calculated from a NOAEL of 40.8 mg/kg bw/day based on an increase in liver enzyme activity and histopathological changes in male and female rats (10/sex/group) exposed to dioctyl phthalate (0, 5, 50, 500, or 5,000 ppm equivalent to 0, 0.4, 3.5, 36.8, 350.1 mg/kg/day in males and 0, 0.4, 4.1, 40.8, 402.9 mg/kg/day in females) for 13 weeks in the diet (Poon et al., 1995 cited in ATSDR 2011). An AF of 100 (10 for interspecies differences and 10 for intraspecies differences) was applied to the NOAEL of 40.8 mg/kg bw/day to give the MRL of 400 µg/kg bw/day.

However, due to the short-term exposure in the pivotal study and the limited database, an additional AF of 6 has been added for this risk assessment (in accordance with ECHA guidance (ECHA, 2012)) giving a total AF of 600 and a TDI of 68.00 µg/kg bw/day.

Based on the highest concentration of dibutyl phthalate measured (0.63 µg/l), the intake of dioctyl phthalate by adults, children and infant is 0.02, 0.06 and 0.10 µg/kg bw/day, respectively (Table 1). These intakes are below the TDI of 68.00 µg/kg bw/day. Moreover, the highest concentration

measured is lower than the provision GV of 408.00 µg/l calculated. Therefore, no adverse effects to public health are anticipated.

Diisooctyl phthalate (CAS 27554-26-3)

A TRV of 4 µg/kg bw/day was derived by ANSES (ANSES, 2017). The TRV was derived using read-across from a developmental study in which rats were exposed to dibutyl phthalate from GD15 to PND 21 and a LOAEL of 2 mg/kg bw/day was determined based on reduction of testicular sperm development and nipple retention (Lee at al., 2004 cited in ANSES 2017; see dibutyl phthalate above). The LOAEL was adjusted to take into account difference in toxicity between dibutyl phthalate and diisooctyl phthalate, giving a LOAEL of 4 mg/kg bw/day. An AF of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for extrapolation from LOAEL to a NOAEL) was applied to the LOAEL of 4 mg/kg bw/day to give the TRV of 4 µg/kg bw/day.

However, as with dibutyl phthalate, due to the short-term exposure in the pivotal study, an additional AF of 6 has been added for this risk assessment, giving a total AF of 6000 and a TDI of 0.67 µg/kg bw/day.

Based on the highest concentration of dibutyl phthalate measured (0.55 µg/l), the intake of diisooctyl phthalate by adults, children and infant is 0.02, 0.06 and 0.09 µg/kg bw/day, respectively (Table 1). These intakes are below the TDI of 0.67 µg/kg bw/day. Moreover, the highest concentration measured is lower than the provision GV of 4.02 µg/l calculated. Therefore, no adverse effects to public health are anticipated.

Toluene (CAS 108-88-3)

An intermediate MRL of 200 µg/kg bw/day was derived by ATSDR (ATSDR, 2017). The MRL was based on a NOAEL of 22 mg/kg bw/day based on a significantly decreased thymus weight and significantly depressed immune responses in male mice (5/group) exposed to toluene (0, 5, 22 or 105 mg/kg bw/day) for 28 days (Hsieh et al., 1989, 1991 cited in ATSDR 2017). An AF of 100 (10 for interspecies differences and 10 for intraspecies differences) was applied to the NOAEL of 22 mg/kg bw/day to give the MRL of 200 µg/kg bw/day.

However, due to the short-term exposure in the pivotal study and a limited database, an additional AF of 6 has been added (in accordance with European Chemicals Agency (ECHA) guidance (ECHA, 2012)) for this risk assessment, giving a total AF of 600 and a TDI of 36.67 µg/kg bw/day.

Based on the highest concentration of toluene measured (1.72 µg/l), the intake of toluene by adults, children and infant is 0.06, 0.13 and 0.28 µg/kg bw/day, respectively (table 1). These intakes are below the TDI of 36.67 µg/kg bw/day. Moreover, the highest concentration measured is lower than the provision GV of 220.00 µg/l calculated. Therefore, no adverse effects to public health are anticipated.

Total xylenes + ethylbenzene (CAS 1330-20-7/100-41-4)

A chronic MRL of 200 µg/kg bw/day was derived for xylene by ATSDR (ATSDR, 2007). The MRL was based on a NOAEL of 250 mg/kg bw/day for decreased survival in rats exposed to mixed xylenes (0, 250 or 500 mg/kg bw/day) for 103 weeks by gavage (NTP, 1986 cited in ATSDR 2007). The NOAEL was adjusted for continuous exposure, giving an adjusted NOAEL of 179 mg/kg bw/day. An AF of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for database deficiencies) was applied to the adjusted NOAEL of 179 mg/kg bw/day to give the MRL of 200 µg/kg bw/day.

Based on the highest concentration of xylene + ethylbenzene measured (43.37 µg/l), the intake of xylene by adults, children and infant is 1.45, 4.34 and 6.94 µg/kg bw/day, respectively (Table 1). These intakes are below the MRL of 200.00 µg/kg bw/day. Moreover, the highest concentration measured is lower than the provision GV of 1200.00 µg/l calculated. Therefore, no adverse effects to public health are anticipated.

Response to question a.

Based on the hazard and risk assessment provided above, it is highly unlikely that water supplied to customers from either [(i) Kedington; (ii) Hannington; (iii) Diddington and (iv) Pitsford], any time during the periods in question, was unfit for human consumption.

Based on the highest concentration of the chemicals measured, as a worst-case scenario, the intake of all chemicals by infants, children and adults was below the very conservative TDIs derived for this risk assessment. Moreover, the highest concentration of each chemical measured was also lower than a provision, conservative GV for the chemical, that was determined for the purposes of this risk assessment. Therefore, adverse effects to public health are highly unlikely following consumption of water containing such levels of chemicals.

Table 1 Risk assessment of chemicals in PWSZ

Chemical	Highest conc. measured (µl)	Intake (µg/kg bw/day)			TDI (µg/kg bw/day)	Intake in adults, children and infants < HBGV	GV (µl)	Highest conc < GV	Reference
		Adults	Children	Infants					
Dibutyl phthalate 84-74-2	0.56	0.02	0.06	0.09	0.30	Yes	1.8	Yes	ANSES 2017 https://www.anses.fr/fr/system/files/SUBSTANCES2015SA0133EN.pdf
Diisobutyl phthalate 84-69-5	0.53	0.02	0.05	0.09	0.30	Yes	1.8	Yes	ANSES 2017 https://www.anses.fr/fr/system/files/SUBSTANCES2015SA0133EN.pdf
Diisooctyl phthalate 27554-26-3	0.55	0.02	0.06	0.09	0.67	Yes	4.02	Yes	ANSES 2017 https://www.anses.fr/fr/system/files/SUBSTANCES2015SA0133EN.pdf
Dioctyl phthalate 117-84-0	0.63	0.02	0.06	0.10	68.00	Yes	408.00	Yes	ATSDR 2011 https://www.atsdr.cdc.gov/toxprofiles/tp95.pdf
Toluene 108-88-3	1.72	0.06	0.17	0.28	36.67	Yes	220.00	Yes	ATSDR 2017 https://www.atsdr.cdc.gov/toxprofiles/tp56.pdf

Total xylenes + ethylbenzene 1330-20-7/100-41-4	34.90	1.16	3.49	5.58	200	Yes	1200.00	Yes	ATSDR 2007 https://www.atsdr.cdc.gov/toxprofiles/tp71.pdf

QUESTION B.

How confident are you in the assessment(s) made in the response(s) to question b?

Task b.

A description of any assumptions, caveats or uncertainties in the data is discussed below to help provide a confidence level regarding the risk assessment.

Chemicals measured from customer taps within these PWSZs supplied by each of the 4 assets

Dibutyl phthalate (CAS 84-74-2)

The TRV derived by ANSES was based on a developmental study by Lee et al. (2004). The study is considered to be of good quality (Klimisch 1). It has been selected as the pivotal, most sensitive study by a number of authoritative bodies including the ANSES, European Food Safety Authority (EFSA), Danish Environmental Protection Agency, and the European Chemicals Agency (ECHA) Risk Assessment Committee (RAC). The critical effects seen are consistent with effects seen in other studies and with other phthalates, and such effects are deemed relevant to humans.

However, there are several areas of uncertainty relating to the study. Firstly, animals were dosed from gestation day 15 to postnatal day 21 (total of approximately 30 days), whereas it is recommended in Organisation for Economic Co-operation and Development (OECD) test guidelines that females are dosed prior to and during mating, throughout pregnancy and at least 13 days after delivery (total of approximately 63 days). Nevertheless, developmental effects are still seen in male offspring after the shortened exposure duration. To be conservative in this risk assessment, the short exposure period has been taken into account by adding an additional AF of 6 (in accordance with ECHA guidance (ECHA, 2012)) when deriving the TDI.

Secondly, a LOAEL was determined as the point of departure as effects were seen even at the lowest dose. For the derivation of HBGVs to use in risk assessments, it is preferable to determine a NOAEL, which indicates a dose that does not cause any adverse effects, rather than a LOAEL that indicates the dose that causes some effects. The use of a LOAEL rather than a NOAEL has been taken into account by adding an additional AF of 10 (as cited in ECHA guidance (ECHA, 2012)) when deriving the TDI.

Overall, taking into consideration the uncertainties related to the point of departure and exposure duration, the level of confidence in the TDI derived for this risk assessment is moderate to high, as a LOAEL was used rather than a NOAEL as the point of departure, and a shorter duration of exposure was used in the pivotal study.

Diisobutyl phthalate (CAS 84-69-5)

The TRV derived by ANSES for diisobutyl phthalate was based on read-across from dibutyl phthalate, using the developmental study by Lee et al. (2004) as the pivotal study. Therefore, all the same uncertainties apply as for dibutyl phthalate, as described above.

An additional uncertainty arises in the use of read-across. Dibutyl phthalate and diisobutyl phthalate are structural isomers, meaning that both of compounds have the same formula, the same molecular weight, but differ in the position of the atoms in the side chain. However, despite minor differences being proposed by Saillenfait et al. (2008 cited in ANSES, 2017), the structural, physico-chemical and

toxicological properties are considered to be sufficiently similar to warrant using dibutyl phthalate to predict the toxicity of diisobutyl phthalate. Therefore, no additional AFs were warranted.

Studies on diisobutyl phthalate are available that could be used as the basis of the TDI i.e. the developmental toxicity by Saillenfait et al. (2008 cited in ANSES, 2017). However, the HBGV derived (DNEL = 210 µg/kg bw/day) was 200-fold higher than that derived using read-across. Hence, the read-across approach was selected to use in this risk assessment to be most conservative.

Overall, taking into account the uncertainties described for dibutyl phthalate as well uncertainties related to the use of read-across, the level of confidence in the TDI derived for this risk assessment is moderate as a LOAEL was used rather than a NOAEL as the point of departure, a shorter duration of exposure was used in the pivotal study and the risk assessment was based on a read-across approach using dibutyl phthalate.

Dioctyl phthalate (CAS 117-84-0)

The MRL derived by ATSDR was based on a short-term repeat dose toxicity study by Poon et al. (1995). The study is considered to be of good quality (Klimisch 1 or 2). It was also selected as the pivotal, most sensitive study by US Consumer Product Safety Commission (CPSC, 2010). Other studies are available that report lower NOAELs but were not selected due to lack of supporting evidence from other studies (CPSC, 2010).

However, there are several areas of uncertainty relating to the study. Firstly, there are inadequate or limited animal data relating to the carcinogenicity and reproductive or developmental toxicity potential of dioctyl phthalate. This is of potential concern due to the known reproductive toxicity of other phthalates with similar structures. However, ANSES stated that, unlike other medium chain phthalates, dioctyl phthalate does not appear to exert endocrine effects, although noted that few studies were available (ANSES, 2017). For other phthalates, reproductive and developmental effects have been shown to occur via an endocrine mechanism, hence the lack of endocrine effects seen with dioctyl phthalate could indicate reproductive and developmental effects are less likely. Nevertheless, to be conservative in this risk assessment, the limited database has been taken into account by adding an additional AF (in accordance with ECHA guidance (ECHA, 2012)) of 3 when deriving the TDI.

Secondly, animals were dosed for only 13 weeks. To be conservative in this risk assessment, the short exposure period has been taken into account by adding an additional AF of 2 (in accordance with ECHA guidance (ECHA, 2012)) when deriving the TDI.

Overall, taking into consideration the uncertainties related to limited database and exposure duration, the level of confidence in the TDI derived for this risk assessment is moderate, as there are no data available on the carcinogenicity, reproductive or developmental toxicity of dioctyl phthalate and a short exposure period was used in the pivotal study.

Diisooctyl phthalate (CAS 27554-26-3)

The TRV derived by ANSES for diisooctyl phthalate was based on read-across from dibutyl phthalate, using the developmental study by Lee et al. (2004) as the pivotal study. Therefore, all the same uncertainties apply as for dibutyl phthalate, as described above.

An additional uncertainty arises in the use of read-across. The structural, physico-chemical and toxicological properties are considered to be sufficiently similar to warrant using dibutyl phthalate to

predict the toxicity of diisooctyl phthalate, although it was considered that diisooctyl phthalate would induce the same toxicological effects but at 2-fold higher doses (ANSES, 2017).

Studies on diisooctyl phthalate are available that could be used as the basis of the TDI i.e. a developmental toxicity by Saillenfait et al. (2013 cited in ANSES, 2017) but reproductive effects were seen at much higher doses (1000 µg/kg bw/day) than those seen with dibutyl phthalate. Hence, the read-across approach was selected to use in this risk assessment to be most conservative.

Overall, taking into account the uncertainties described for dibutyl phthalate as well uncertainties related to the use of read-across, the level of confidence in the TDI derived for this risk assessment is moderate as a LOAEL was used rather than a NOAEL as the point of departure, a shorter duration of exposure was used in the pivotal study and the risk assessment was based on a read-across approach using dibutyl phthalate.

Toluene (CAS 108-88-3)

The MRL derived by ATSDR was based on a 28-day repeat dose toxicity study by Hsieh et al. (1989, 1991). The study is considered to be of good quality (Klimisch 1).

However, there are several areas of uncertainty relating to the toxicity of toluene. Firstly, there are limited animal data relating to the reproductive or developmental toxicity potential of toluene, although data do show that reproductive or developmental effects are only seen at doses that are significantly higher than those causing other systemic effects. To be conservative in this risk assessment, an additional AF (in accordance with ECHA guidance (ECHA, 2012)) of 3 was added to account for the limited database.

Secondly, there is some uncertainty regarding the immunotoxicity of toluene, due to the conflicting data between similar studies and the lack of suppression in host resistance. Indeed, US Environmental Protection Agency (USEPA) did not consider the immunotoxic endpoints to be critical effects (US EPA, 2005). Instead, USEPA chose to base their reference dose on a 13-week repeat-dose toxicity study where kidney effects were seen in rats, from which a lower 95th confidence limit on the benchmark dose (BMDL) of 238 mg/kg bw/day was determined. An AF of 3000 (10 for animal to human extrapolation, 10 for intrahuman variability, 10 for use of a subchronic study and 3 for database uncertainty) was applied to give a reference dose of 80 µg/kg bw/day. This is higher than the TDI proposed for this risk assessment. Hence, to be conservative, the lower TDI is used for this risk assessment.

Thirdly, animals were dosed for only 13 weeks. To be conservative in this risk assessment, the short exposure period has been taking into account by adding an additional AF of 2 (in accordance with ECHA guidance (ECHA, 2012)) when deriving the TDI.

Overall, taking into consideration the uncertainties related to the limited database, choice of point of departure and exposure duration, the level of confidence in the TDI derived for this risk assessment is moderate as there are no data available on the carcinogenicity, reproductive or developmental toxicity of toluene, there is conflicting opinion about the critical effects and a short exposure period was used in the pivotal study.

Total xylenes + ethylbenzene (CAS 1330-20-7/100-41-4)

The MRL for xylene derived by ATSDR was based on a 103-week repeat dose toxicity study by NTP (1986). The study is considered to be of good quality (Klimisch 1).

In the study, animals are dosed for an appropriate duration so no additional AFs are required. AFs for the limited database had already been applied by ATSDR, to account for the lack of data on neurological endpoints and lack of developmental and multi-generation data. The NOAEL was also adjusted for 5 day, rather than 7 day, dosing. Therefore, no additional AFs were applied.

The TDI for xylene was selected for use in the risk assessment as it was lower than that for ethyl benzene (400 µg/kg bw/day).

Overall, taking into consideration the uncertainties related to the limited database, the level of confidence in the TDI derived for this risk assessment is high, as there are no data available on neurological, reproductive or developmental toxicity.

Response to question b.

The level of confidence in the risk assessments for the chemicals identified is moderate to high, based on the uncertainties outlined above. Such uncertainties largely relate to the use of short-term studies, lack of data and use of read-across. However, additional AFs have been used in the derivation of the TDI for use in the risk assessment to account for such deficiencies, resulting in conservative TDIs.

QUESTION C.

In general, given a list of individual organic compounds and their concentrations in drinking-water are you able to determine the synergistic effects affecting short-term and/or long-term human health outcomes that may arise from these compounds at varying ranges of concentrations and exposures; please provide a detailed justification of your position in a form accessible to a non-technical audience.

Response to question c.

A synergistic effect occurs when two or more chemicals, when combined, produce a greater effect than the sum of the effects if each chemical were given separately. In other words, chemicals may enhance the effect of other chemicals, so they jointly exert a larger effect than predicted based on the individual chemicals (Cedergreen, 2014).

In the environment, Cedergreen stated that for synergistic interactions to occur, chemicals must co-occur and be present at levels high enough to induce the synergy. Indeed, in their research, synergy was seen with levels in the high µg/l to mg/l range, which, they noted, is considerably higher than levels measured in the environment. It is also considerably higher than concentrations of chemicals measured in the water taken at customer taps in PWSZs downstream of Pitsford WTW and Hannington Reservoirs. Overall, Cedergreen concluded that 'considering the generally high chemical concentrations needed to induce synergistic interactions, their importance as synergists within naturally occurring exposure scenarios is most likely of a relatively small importance compared to the additive effect of many co-occuring pollutants' (Cedergreen, 2014).

One method of assessing effects of chemical mixtures is to use a hazard index (HI) approach. The HI is the sum of the hazard quotients (HQs) for the individual substances and the HQ is the ratio of the potential exposure to a substance and its HBGV. A HI value of less than 1 indicates that no effects, including mixture effects, would be expected (Roell et al, 2017). In theory, this approach should only be used for assessing mixtures of chemicals that exert the same toxicological effect via the same mechanism of action. Nevertheless, this approach could be used for dissimilar chemicals as a conservative approach. The HQs and HIs have been calculated for PWSZs downstream of Pitsford WTW and Hannington Reservoirs 1A and 1B (Table 2, Table 3 and Table 4, respectively).

Based on the HQs presented, the HI for PWSZs downstream of Pitsford WTW is 0.52, for Hannington Reservoirs 1A the HI is 0.52 and for Hannington Reservoirs 1B the HI is 0.70. As all of the HQs and the HI are less than 1, effects, including mixture effects, are highly unlikely. This HI approach is conservative as the HBGVs are based on a variety of toxicological effects.

To conclude, the levels of chemicals measured in the PWSZ are in the low µg/l range, so it is unlikely that such levels are high enough to induce synergistic effects. However, as a conservative approach, a mixture risk assessment was carried out and the HQ and HI for the three PWSZs were calculated. All were less than 1, indicating that adverse health effects from single chemicals or as a mixture, are highly unlikely.

Table 2 HQ and HI calculation for chemicals measured in customer taps in Pitsford PWSZ

Chemical	Highest conc. in water (µg/l)	Highest intake (µg/kg bw/day)	TDI (µg/kg bw/day)	HQ
Dibutyl phthalate	0.56	0.09	0.33	0.27
Diisobutyl phthalate	0.53	0.08	0.33	0.25
Dioctyl phthalate	0.55	0.09	68.00	0.0013
Diisooctyl phthalate	Not present	-	-	-
Toluene	Not present	-	-	-
Total xylenes + ethylbenzene	1.11	0.18	200.00	0.0009
HI		**0.52**		

Table 3 HQ and HI calculation for chemicals measured in customer taps in Hannington 1A PWSZ

Chemical	Highest conc. in water (µg/l)	Highest intake (µg/kg bw/day)	TDI (µg/kg bw/day)	HQ
Dibutyl phthalate	0.56	0.09	0.33	0.27
Diisobutyl phthalate	0.53	0.08	0.33	0.25
Dioctyl phthalate	Not present	-	-	-
Diisooctyl phthalate	Not present	-	-	-
Toluene	Not present	-	-	-
Total xylenes + ethylbenzene	1.44	0.23	200.00	0.0012
HI		**0.52**		

Table 4 HQ and HI calculation for chemicals measured in customer taps in Hannington 1B PWSZ

Chemical	Highest conc. in water (µg/l)	Highest intake (µg/kg bw/day)	TDI (µg/kg bw/day)	HQ
Dibutyl phthalate	0.56	0.09	0.33	0.27
Diisobutyl phthalate	0.53	0.08	0.33	0.25
Dioctyl phthalate	0.63	0.10	68.00	0.0015
Diisooctyl phthalate	0.55	0.09	0.67	0.13
Toluene	1.72	0.28	36.67	0.008
Total xylenes + ethylbenzene	43.37	6.94	200.00	0.035
HI		**0.70**		

ABBREVIATIONS

AF	Assessment factor
ANSES	French Agency for Food, Environmental and Occupational Health and Safety
ATSDR	Agency for Toxic Substances and Disease Registry
CPSC	Consumer Product Safety Commission
ECHA	European Chemicals Agency
EFSA	European Food Safety Authority
GD	Gestation day
GV	Guideline value
HBGV	Health-based guidance value
LOAEL	Lowest observed effect level
MRL	Minimal risk level
NOAEL	No observed adverse effect level
OECD	Organisation for Economic Co-operation and Development
PND	Postnatal day
PWSZ	Public Water Supply Zones
RAC	Risk Assessment Committee
RE	Repeated exposure
STOT	Specific target organ toxicity
TDI	Tolerable daily intake
TRV	Toxicity reference value
USEPA	US Environmental Protection Agency

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USEPA, 2005	Toxicological review of toluene. https://iris.epa.gov/static/pdfs/0118tr.pdf

ANNEX 1

Table 5. Hazards of chemicals identified in soak tests

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Acetophenone	98-86-2	Yes	H302		H319							
Benzyl alcohol	100-51-6	Yes	H302/ H332									
Benzyl butyl phthalate	85-68-7	Yes							H360 Df			
Bismethylpropyl ester benzenedicarboxylic acid (Diisobutyl phthalate)	**84-69-5**	Yes							H360 Df			
Butanoic acid butyl ester (Butyl butyrate)	**109-21-7**	Yes										Not classified
Butoxyethoxy ethanol	112-34-5	Yes			H319							
Butyl benzenesulfonamide (N-butylbenzenesulphonamide)	**3622-84-2**	No	H302	H315	H319						H373	
Butyl dimethyl dioxane	**No CAS no.**	-										CAS No. for butyl trimethyl dioxane only

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Chloro phosphate propanol (Tris(2-chloro-1-methylethyl) phosphate)	**13674-84-5**	No	H302	H315	H319							
Cyclic actaatomic sulfur	**10544-50-0**	No										No data found
Cyclodecanone	1502-06-3	Yes			H319							
Decahydro tetramethyl naphthofuranone ([3aR-(3aα,5aβ,9aα,9bβ)]decahydro-3a,6,6,9a-tetramethylnaphth[2,1-b]furan-2(1H)-one)	**564-20-5**	Yes			H319							
Dibutyl phthalate	84-74-2	Yes							H360 Df			
Dicyclohexyl ester benzenedicarboxylic acid	84-61-7	Yes				H317			H360 D			
Dicyclohexyl ester phthalic acid (Dicyclohexyl phthalate)	**84-61-7**	Yes				H317			H360 D			
Diethyl phthalate	84-66-2	No			H319						H373	
Diisobutyl phthalate	84-69-5	Yes							H360 Df			

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Diisooctyl ester benzenedicarboxylic acid (Diisooctyl phthalate)	**27554-26-3**	Yes							H360FD			Most appropriate CAS No.
Dimethyl heptanone (2,6-dimethylheptan-4-one)	**108-83-8**									H335		
Dimethyl phthalate	131-11-3	No	H331		H319							
Dimethyl propanediol (2,2-dimethylpropane-1,3-diol)	**126-30-7**	No		H315	H318					H335		
Dimethyl pyridinediyl bis-ethanone	31931-68-7	-										No data found
Dimethyl pyridinediyl ethanone	**31931-68-7**	-										No data found
Dioctyl phthalate	117-84-0	No				H317			H361			
Dodecanoic acid	7632-48-6 / 8000-62-2	-										No data found
Dodecanol	27642-88-7	-										No data found
Ethoxy ethyl ester benzoic acid	**23676-0907**	-										No data found

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Ethoxyethoxy methyl ethyl ester butanoic acid	**19945-14-3**	-										No data found
Ethoxyethoxy octane	**54889-49-5**	-										No data found
Ethyl butoxy silacyclopentane	**No CAS no.**	-										Unable to find CAS No.
Ethyl isopropyl oxiranecarboxylate	**274689-93-9**	-										CAS No. For ethyl 3-isopropyl 3-methyloxirane -2-carboxylate
Ethyl trimethyl dioxolane	**4359-51-7**	-										No data found
Ethylhexyl ester hexanedioic acid (Bis(2-ethylhexyl) adipate)	**103-23-1**	No										Not classified
Hexamethyl cyclotrisiloxane (Hexamethylcyclotrisiloxane)	**541-05-9**	No		H315	H319					H335		
Hexanal	66-25-1	No		H315	H319	H317						
Hexanoic acid tetradecyl ester	**71801-23-5**	-										No data found
Hydroxy dimethyl hydroxy dimethylpropyl ester propanoic	**1115-20-4**	No			H318							

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
acid (3-hydroxy-2,2-dimethylpropyl 3-hydroxy-2,2-dimethylpropionate)												
Hydroxy tetramethyl pentanoic acid ethyl ester (Ethyl 2-hydroxy-4-methylvalerate)	**10348-47-7**	No			H319							
Isobutyl isothiocyanate	591-82-2	No	H302/ H312/ H332	H315	H319							
Lauric acid	143-07-7	No		H315	H318	H317						
Methoxy propyl acetate	108-65-6	Yes										Not classified
Methyl benzenemethanol	**587-03-01**	-										No data found
Methyl dimethyl hydroxypropionate (Methyl 3-hydroxypivalate)	**14002-80-3**	No		H315	H319					H335		
Myristic acid (same as tetradecanoic acid)	544-63-8	No		H315	H318	H317						
Nonanal	124-19-6	No		H315	H319	H317						
Octanal	124-13-0	No		H315	H319	H317						

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Octanoic acid hexyl ester (Hexyl octanoate)	**1117-55-1**	No										Not classified
Oleic acid	112-80-1	No		H315	H319							
Palmitic acid	57-10-3	No		H315	H319							
Palmitoleic acid	373-49-9	No		H315	H319							
Pentadecylic acid (Pentadecanoic acid)	**1002-84-2**	-		H315	H319							
Phenoxy ethanol	14164-05-3	Yes										No data found
Phthalic anhydride	85-44-9	No	H302	H315	H318	H317						Regulatory obligations
Squalene	111-02-4	No		H315	H319							
Tetradecanoic acid (same as myristic acid)	544-63-8	No		H315	H318	H317						
Tetramethyl decyne diol (2,4,7,9-tetramethyldec-5-yne-4,7-diol)	**126-86-3**	No			H318	H317				H335		
Toluene	108-88-3	Yes		H315				H361 D		H336	H373	
Total trihexyl silane	2929-52-4	No	H302	H315	H319					H335		

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-SE	STOT-RE	Comments
Total xylenes + ethylbenzene	1330-20-7/100-41-4	Yes	H312/ H302	H315							H373	
Triacetin	102-76-1	No										Not classified
Tributyl phosphate	126-73-8	Yes	H302	H315				H351				
Tridecanol	112-70-9	No		H315	H318							
Trimethyl hexenol (3,5,5-trimethylhexan-1-ol)	**3452-97-9**	No		H315	H318						H373	
Trimethyl pentanediol (2,2,4-trimethylpentane-1,3-diol)	**144-19-4**	No	H332	H315	H319					H335		
Trimethylsilyoxy pentanone	**72507-50-7**	-										No data found
Triphenyl phosphate	115-86-6	No		H315	H319	H317	H341	H351				
Vanillin	121-33-5	No	H302	H315	H319	H317						Only 1 entry for muta/carc

Bold – CAS numbers provided by Anglian Water; ( ) – alternative chemical name provided by Anglian Water

Table 6. Concentration of chemicals with long-term hazards

Chemical	CAS no.	Harmonised CLP classification	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-RE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
Benzyl butyl phthalate	85-68-7	Yes			H360 Df		6.96		
Bismethylpropyl ester benzenedicarboxylic acid (Diisobutyl phthalate)	**84-69-5**	Yes			H360 Df		18.1		
Butyl benzenesulfonamide (N-butylbenzenesulphonamide)	**3622-84-2**	No				H373	0.74		
Dibutyl phthalate	84-74-2	Yes			H360 Df		17.48		0.56
Dicyclohexyl ester benzenedicarboxylic acid	84-61-7	Yes			H360 D		3.72		
Dicyclohexyl ester phthalic acid (Dicyclohexyl phthalate)	**84-61-7**	Yes			H360 D		13.49		
Diethyl phthalate	84-66-2	No				H373	8.84		
Diisobutyl phthalate	84-69-5	Yes			H360 Df		30.09		0.53
Diisooctyl ester benzenedicarboxylic acid (Diisooctyl phthalate)	**27554-26-3**	Yes			H360f D		50.03		0.55
Dioctyl phthalate	117-84-0	No			H361		37.66		0.63

Chemical	CAS no.	Harmonised CLP classification	Mutagenicity	Carcinogenicity	Reproductive toxicity	STOT-RE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
Toluene	108-88-3	Yes			H361 D	H373	1.92		1.72
Total xylenes + ethylbenzene	1330-20-7/100-41-4	Yes				H373	71.92		43.37
Tributyl phosphate	126-73-8	Yes		H351			5.35		
Trimethyl hexenol (3,5,5-trimethylhexan-1-ol)	**3452-97-9**	No				H373	NA		
Triphenyl phosphate	115-86-6	No	H341	H351			0.78		

Bold – CAS numbers provided by Anglian Water; ( ) – alternative chemical name provided by Anglian Water

Table 7. Concentration of chemicals with short-term hazards

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	STOT-SE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
Acetophenone	98-86-2	Yes	H302		H319			1.9		
Benzyl alcohol	100-51-6	Yes	H302/ H332					0.64		
Butoxyethoxy ethanol	112-34-5	Yes			H319			0.59		
Butyl benzenesulfonamide (N-butylbenzenesulphonamide)	**3622-84-2**	No	H302	H315	H319			0.74		
Chloro phosphate propanol (Tris(2-chloro-1-methylethyl) phosphate)	**13674-84-5**	No	H302	H315	H319			1.43		
Cyclodecanone	1502-06-3	Yes			H319			2.13		
Decahydro tetramethyl naphthofuranone ([3aR-(3aα,5aβ,9aα,9bβ)]decahydro-3a,6,6,9a-tetramethylnaphth[2,1-b]furan-2(1H)-one)	**564-20-5**	Yes			H319			0.58		
Dicyclohexyl ester benzenedicarboxylic acid	84-61-7	Yes				H317		3.72		

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	STOT-SE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
Dicyclohexyl ester phthalic acid (Dicyclohexyl phthalate)	**84-61-7**	Yes				H317		13.49		
Diethyl phthalate	84-66-2	No			H319			8.84		
Diisooctyl ester benzenedicarboxylic acid (Diisooctyl phthalate)	**27554-26-3**	Yes					H335	7.65		0.55
Dimethyl heptanone (2,6-dimethylheptan-4-one)	**108-83-8**	Yes					H335	2.02		
Dimethyl phthalate	131-11-3	No	H331		H319			0.72		
Dimethyl propanediol (2,2-dimethylpropane-1,3-diol)	**126-30-7**	No		H315	H318		H335	NA		
Dioctyl phthalate	117-84-0	No				H317		37.66		0.63
Hexamethyl cyclotrisiloxane (Hexamethylcyclotrisiloxane)	**541-05-9**	No		H315	H319		H335	0.88		
Hexanal	66-25-1	No		H315	H319	H317		2.28		0.5
Hydroxy dimethyl hydroxy dimethylpropyl ester propanoic acid (3-hydroxy-2,2-	**1115-20-4**	No			H318			NA		

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	STOT-SE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
dimethylpropyl 3-hydroxy-2,2-dimethylpropionate)										
Hydroxy tetramethyl pentanoic acid ethyl ester (Ethyl 2-hydroxy-4-methylvalerate)	**10348-47-7**	No			H319			NA		
Isobutyl isothiocyanate	591-82-2	No	H302/ H312/ H332	H315	H319			2.87		
Lauric acid	143-07-7	No		H315	H318	H317		0.49		
Methyl dimethyl hydroxypropionate (Methyl 3-hydroxypivalate)	**14002-80-3**	No		H315	H319		H335	NA		
Myristic acid (same as tetradecanoic acid)	544-63-8	No		H315	H318	H317		2.94		
Nonanal	124-19-6	No		H315	H319	H317		0.12	0.31	0.19
Octanal	124-13-0	No		H315	H319	H317		0.59		
Oleic acid	112-80-1	No		H315	H319			3.01	0.73	3.25
Palmitic acid	57-10-3	No		H315	H319			8.01		0.34
Palmitoleic acid	373-49-9	No		H315	H319			1.13		

Chemical	CAS no.	Harmonised CLP classification	Acute toxicity	Skin irritation	Eye irritation	Skin sensitisation	STOT-SE	Highest conc. measured in soak tests (µg/l)	Highest conc. measured in assets (µg/l)	Highest conc. measured in PWSZ (µg/l)
Pentadecylic acid (Pentadecanoic acid)	**1002-84-2**	-		H315	H319			1.16		
Phthalic anhydride	85-44-9	No	H302	H315	H318	H317		0.19		
Squalene	111-02-4	No		H315	H319			2.26		
Tetradecanoic acid (same as myristic acid)	544-63-8	No		H315	H318	H317		0.69		
Tetramethyl decyne diol (2,4,7,9-tetramethyldec-5-yne-4,7-diol)	**126-86-3**	No			H318	H317	H335	0.64		
Toluene	108-88-3	Yes		H315			H336	1.92		1.72
Total xylenes + ethylbenzene	1330-20-7/100-41-4	Yes	H312/ H302	H315				71.92		43.37
Tridecanol	112-70-9	No		H315	H318			0.86	0.86	
Trimethyl hexenol (3,5,5-trimethylhexan-1-ol)	**3452-97-9**	No		H315	H318			NA		
Triphenyl phosphate	115-86-6	No	H332	H315	H319		H335	NA		
Triphenyl phosphate	115-86-6	No		H315	H319	H317		0.78		
Vanillin	121-33-5	No	H302	H315	H319	H317		0.99		

Bold – CAS numbers provided by Anglian Water; ( ) – alternative chemical name provided by Anglian Water; NA – not applicable (from Anglian Water spreadsheets)

In Supply between 31st March 2020 and 15th May 2020

W01KED CN

Date	Time	Asset in or out of supply?	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
18/03/2020		Out	20125592	MI	0	0	n/a	n/a	contact tank/balance tank no.1 MIC samples
19/03/2020		Out	20127179	MI	0	0	n/a	n/a	contact tank/balance tank no.2 MIC samples
19/03/2020	15:40	Out	20127200	MI	-	0	n/a	n/a	Pre into supply Performance sampling
20/03/2020	15:00	Out	20129565	MI	0	0	n/a	n/a	Pre into supply Performance sampling
21/03/2020	12:30	Out	20129566	MI	0	0	n/a	n/a	Pre into supply Performance sampling
22/03/2020	11:30	Out	20129567	MI	0	0	n/a	n/a	Pre into supply Performance sampling
23/03/2020	14:00	Out	20130518	MI	0	0	n/a	n/a	Pre into supply Performance sampling
24/03/2020	14:00	Out	20132367	SS	0	0	n/a	n/a	Pre into supply Performance sampling
25/03/2020	15:45	Out	20133656	MI	0	0	n/a	n/a	Pre into supply Performance sampling

Incorrectly coded - although coded as MI these samples should have been coded as SS

In supply February 2018 to September 2021
W01DIDECR
W01DIDWCR
W01DIDDCR

Date	Time	Asset in or out of supply?	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments	MK no.
05/10/2017		Out	17456944	MI	0	1		Undecanol 0.26 ug/l	Diddington incoming water (source supply)	11141
05/10/2017		Out	17456941	MI	0	0			Diddington West cell (1) hatch 1	11141
05/10/2017		Out	17456942	MI	0	1		Undecanol 0.27 ug/l, Oleic Acid 0.13 ug/l	Diddington West cell (1) hatch 2	11141
05/10/2017		Out	17456943	MI	0	1		Undecanol 0.12 ug/l	Diddington West cell (1) outlet main	11141
25/10/2017		Out	18031338	MI	0	0			Diddington West cell (1) hatch 1 (res at 31%)	11340
25/10/2017		Out	18031339	MI	0	0			Diddington West cell (1) hatch 2 (res at 31%)	11340
26/01/2017		Out	18032842	MI	1	0	Ethyl hexanol 0.14 ug/l		Diddington West cell (1) outlet main	11340
25/10/2017		Out	18031337	MI	0	0			Diddington East cell (2) hatch 1 (res at 34%)	11340
25/10/2017		Out	18031336	MI	0	0			Diddington East cell (2) hatch 2 (res at 34%)	11340
26/01/2017		Out	18032844	MI	1	0	Ethyl hexanol 0.19 ug/l		Diddington East cell (2) outlet main	11141
07/02/2018		Out	18059791	MI	0	0			Diddington reservoir incoming water	11384
07/02/2018		Out	18059788	MI	0	1		Tridecanol 0.17 ug/l, Methyl ester hexadecanoic acid 0.13 ug/l	Diddington West cell (1) hatch 1 (res around 60%)	11384
07/02/2018		Out	18059790	MI	0	1		Tridecanol 0.13 ug/l, Methyl ester hexadecanoic acid 0.14 ug/l	Diddington West cell (1) hatch 2 (res around 60%)	11384
07/02/2018		Out	18059789	MI	0	1		Tridecanol 0.86 ug/l, Methyl ester hexadecanoic acid 0.40 ug/l	Diddington reservoir incoming water	11384
07/02/2018		Out	18059787	MI	0	1		Tridecanol 0.21 ug/l, Methyl ester hexadecanoic acid 0.15 ug/l Tridecanol 0.83 ug/l, Methyl ester hexadecanoic acid 0.42 ug/l	Diddington East cell (2) hatch 1 (res around 60%)	11384
07/02/2018		Out	18059792	MI	0	1		Undecanol 0.12 ug/l	Diddington East cell (2) hatch 2 (res around 60%)	11384
08/02/2018		Out	18060918	MI	0	0			Diddington West cell (1) outlet main	11395
08/02/2018		Out	18060920	MI	0	0			Diddington East cell (2) outlet main	11395
30/05/2020	12:40	Out	20250181	MI	0	0	n/a	n/a	W01DIDECR	
23/05/2020	12:00	Out	20227429	MI	0	0	n/a	n/a	W01DIDWCR	

NOTE: These are all MI samples taken before the asset was originally put into supply in 2018 or when the asset was out of supply for further remedial work in 2020

In suply April 2016 to December 2021

W01CGJLCR

Date	Time	Asset in or out of supply?	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
16/04/2016	22:30	Out	16206458	MI	0	0	n/a	n/a	MIC Sample
04/06/2016	09:06	Out	16257518	MI	0	0	n/a	n/a	MIC Sample - Dip Sample
31/10/2022	15:50	Out	22620520	PR	0	0	n/a	n/a	DIP Sample - Labelled as Hannington Res 1A filling water MIC

In supply October 2016 to December 2021
W01PTW1CN

Date	Time	Asset in or out of supply?	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
06/10/2016	11:15:00	Out	16458105	MI	0	0			MIC sampling post remedial work - Dip Sample
09/11/2016	08:38:00	In	16513363	IM	0	0			
21/02/2017	08:22:00	In	17081797	IM	0	0			
18/05/2017	08:21:00	In	17227076	IM	0	0			
03/08/2017	07:45:00	Out	17355277	MI	0	0			MIC sampling post remedial work - Dip Sample
07/08/2017	08:22:00	In	17358408	IM	0	0			
01/11/2017	08:18:00	In	17501754	IM	0	0			
19/02/2018	09:29:00	In	18074647	IM	1	0	Iso-propyl alcohol 0.24 ug/l		
15/05/2018	08:15:00	In	18218964	IM	0	0			
10/08/2018	09:05:00	In	18365451	IM	0	0			
30/10/2018	09:01:00	In	18493340	IM	0	0			
06/11/2018	09:10:00	Out	18507597	MI	0	0			MIC Sampling pre work - Dip Sample
07/11/2018	13:55:00	Out	18509531	MI	0	0			MIC Sampling post work - Dip Sample
31/01/2019	08:34:00	In	19042618	IM	0	0			
25/04/2019	08:20:00	In	19185264	IM	0	0			
20/06/2019	13:05:00	Out	19280902	SS	-----	1	N/A	0.91 ug/l Heavy Gas Oil	This was sample kiosk replacement - Water Profile was 0.91 ug/l Total Heavy Gas Oil but is discounted as not the tank ([redacted] confirmed that this type of work would have been carried out around this time) RS taken 24/06/2019 all clear
24/06/2019	15:39:00	Out	19284461	RS	-----	0			Resample for above sample
05/07/2019	13:40:00	Out	19310816	MI	-----	0			MIC sample is related to two samples above
16/07/2019	11:31:00	In	19324784	IM	0	0			
11/10/2019	12:02:00	In	19468280	IM	0	-----			
21/10/2019	08:06:00	In	19481805	IM	-----	0			
22/03/2020	07:47:00	In	20129603	IM	0	0			
14/06/2020	07:02:00	In	20266857	IM	0	0			
06/09/2020	12:10:00	In	20408237	IM	0	0			
19/11/2020	11:15:00	In	20526380	SS	0	0			
29/11/2020	07:18:00	In	20539548	IM	0	0			
17/12/2020	08:21:00	In	20574828	RS	0	0			
12/03/2021	08:30:00	In	21117577	IM	1	1	Formamide 0.18 ug/l	Nonanal 0.18 ug/l	
04/06/2021	08:47:00	In	21257171	IM	0	1		Nonanal 0.17 ug/l	
24/08/2021	08:05:00	In	21384718	IM	0	0			

18/11/2021	09:03:00	In	21524911	IM	0	0

In supply January 2017 to January 2023

W01CAJLCR

Date	Time	Asset in or out of supply?	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
01/02/2017	23:45:00	Out	17056642	MI	0	0			MIC Dip sample
10/01/2022	10:45:00	In	22008899	SS	-----	0			
10/01/2022	10:45:00	In	22008900	SS	-----	0			
10/01/2022	10:45:00	In	22008901	SS	-----	0			
10/01/2022	10:45:00	In	22008902	SS	-----	0			
10/01/2022	10:45:00	In	22008903	SS	-----	0			
								Nonanal 0.14 ug/l	
20/01/2022	09:20:00	In	22024812	SS	0	1		Tridecanol 0.19 ug/l	
28/01/2022	07:43:00	In	22037518	SS	0	0			
03/02/2022	12:38:00	In	22055463	SS	0	1		Nonanal 0.1 ug/l	
09/02/2022	14:23:00	In	22063992	SS	0	1		Nonanal 0.12 ug/l	
15/02/2022	11:36:00	In	22072390	SS	0	0			
21/02/2022	08:37:00	In	22080244	SS	0	0			
04/03/2022	07:46:00	In	22108921	SS	0	1		Nonanal 0.13 ug/l	
10/03/2022	09:09:00	In	22116998	SS	0	0			
16/03/2022	13:27:00	In	22126156	SS	0	0			
24/03/2022	07:33:00	In	22139853	SS	0	0			
01/04/2022	09:26:00	In	22154158	SS	0	0			
04/04/2022	07:39:00	In	22156367	SS	0	0			
12/04/2022	11:27:00	In	22169059	SS	0	0			
								Total Heavy Gas Oil 0.69	
20/04/2022	08:10:00	In	22179304	SS	0	1		ug/l	
27/04/2022	09:33:00	In	22190797	SS	0	0			
04/05/2022	07:50:00	In	22205444	SS	0	0			
13/05/2022	09:18:00	In	22221412	SS	0	0			
16/05/2022	13:29:00	In	22224050	SS	0	0			
24/05/2022	07:33:00	In	22238561	SS	0	1		Nonanal 0.13 ug/l	
01/06/2022	07:27:00	In	22254315	SS	0	0			
09/06/2022	09:33:00	In	22262794	SS	0	0			

17/06/2022	08:38:00	In	22277360	SS		0	0	
22/06/2022	11:04:00	In	22284188	SS		0	0	
27/06/2022	07:30:00	In	22291626	SS		0	0	
06/07/2022	09:31:00	In	22310586	SS		0	0	
14/07/2022	11:47:00	In	22324957	SS		0	0	
22/07/2022	07:59:00	In	22338816	SS		0	1	Nonanal 0.14 ug/l
25/07/2022	08:28:00	In	22341493	SS		0	0	
02/08/2022	13:54:00	In	22354535	SS		0	0	
10/08/2022	06:51:00	In	22367561	SS		0	0	
18/08/2022	09:11:00	In	22380262	SS		0	0	
26/08/2022	07:47:00	In	22394627	SS		0	0	
								Ethyl hexanol 0.12 ug/l
								Nonanal 0.12 ug/l
02/09/2022	13:39:00	In	22405297	SS		0	1	Tridecanol 0.1 ug/l
08/09/2022	10:28:00	In	22413356	SS		0	0	
13/09/2022	09:50:00	In	22419756	SS		0	0	
20/09/2022	11:43:00	In	22429489	SS		0	0	
29/09/2022	07:24:00	In	22445200	SS		0	1	Nonanal 0.11 ug/l
07/10/2022	13:43:00	In	22461343	SS		0	-----	
10/10/2022	09:58:00	In	22463376	SS		0	0	
12/10/2022	12:55:00	In	22466844	SS	-----		0	
18/10/2022	12:23:00	In	22475102	SS		0	0	
28/10/2022	07:35:00	In	22610203	IM		0	1	Nonanal 0.26 ug/l
03/11/2022	10:53:00	In	22613179	IM		0	0	
10/11/2022	07:37:00	In	22623555	IM		0	0	
								Nonanal 0.27 ug/l
15/11/2022	08:09:00	In	22633924	IM		0	1	Oleic acid 0.58 ug/l
24/11/2022	14:24:00	In	22638935	SS		0	0	
								Nonanal 0.31 ug/l
30/11/2022	08:03:00	In	22641288	SS		0	1	Oleic acid 0.73 ug/l
								Ethyl Hexanol 0.12 ug/l
								Nonanal 0.1 ug/l
06/12/2022	07:34:00	In	22654927	SS		0	1	Oleic acid 0.51 ug/l
14/12/2022	10:01:00	In	22664860	SS		0	0	

21/12/2022	16:55:00	In	22671951	SS	-----	0
28/12/2022	09:51:00	In	22675403	SS	-----	0
12/01/2023	07:44:00	In	23008891	SS	0	0
19/01/2023	10:12:00	In	23009585	SS	0	0
24/01/2023	08:58:00	In	23022086	SS	-----	0

The dates which each asset was in supply can be found at the top of the individual sheet for that asset

The Asset In or Out of Supply column shows whether the asset was in supply or out of supply at the time each sample was taken

Both the P&T Result and DCM Result columns will show either a 0 or 1. This is an arbitrary figure and indicates whether the sample has shown a trace organics result or not, with a 0 indicating that no trace organics were present and a 1 indicating that some trace organics were detected. Where a sample has a blank or a dashed line in one of these columns it indicates that no P&T or DCM was taken for that particular sample.

Where a 1 has been recorded for either or both P&T or DCM samples the compound deteced along with its concentration can be seen in the next two columns headed 'P&T Compounds' and 'DCM Compounds'

Please note that where an asset shows only trace organics samples that have been taken when the asset was out of supply this is an indication that no trace organics sampling was performed at that asset for the date period that the asset was in supply

Each sample has a reason code listed against it. These codes are indicators of the reason why the sampling was carried out. The codes have the following meanings:
MI - Materials In Contact - these are samples usually carried out on an asset after work has been carried out on it but before it is returned to supply. They are meant to provide evidence for a risk based approach to show that new equipment installed or new materials used will not pose a risk to water quality once the asset is in supply.
SS - Special Survey - These samples are ad-hoc survey samples taken for a wide variety of reasons - these could include commissioning samples taken during the commissioning of new equipment, performance sampling to check the performance of installed equipment, additional monitoring survey samples taken as par of a water quality monitoring survey for a source or ad-hoc additional investigative samples taken as part of a water quality investigation of an asset.
RS - Resample - Samples taken at an asset or sample point as part of an investigation into a previous sample failure at that sample point or another associated asset.
IM - Internal Monitoring - Samples routinely taken by our regulatory samplers to routinely monitor water quality for our own internal monitoring purposes
PR - Process Control - Ad-hoc samples taken by our operations team after carrying out routine maintenance and sometimes materials in contact sampling on our assets
CC - Customer Contact - Samples taken at a customer property in response to a customer contact concerning water quality
MT - Regulatory Sampling - Randomised regulatory sampling carried out by our lab logistics team to monitor water quality - the results of this sampling are supplied to the regulator

In Supply between 31st March 2020 and 15th May 2020

PWSZs

Haverhill - SS23

Date	Time	Sample Number	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments

NONE

In supply February 2018 to September 2021
PWSZs
Huntingdon North - FW40
Huntingdon South - FW41

Date	Time	Sample Number	PWSZ (sample point code)	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
10/10/2018	17:55:00	18465931	W01FW40CT	SS		0	0		MK11736 KT SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:40:00	18465932	W01FW40CT	SS		0	0		MK11736 KT FL [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:18:00	18465933	W01FW40CT	SS		0	0		MK11736 AP SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:46:00	18465934	W01FW40CT	SS		0	0		MK11736 KT SP D/S [redacted] ST PETERS WAY ELLINGTON SAP#5 [redacted]
10/10/2018	18:20:00	18465935	W01FW40CT	SS		0	0		MK11736 KT SP U/S [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
25/08/2020	14:15:00	20384036	W01FW40CT	CC		0	0		[redacted] ARUNDEL ROAD KT FL D/S MK12657 SAP- [redacted]
25/08/2020	13:00:00	20384038	W01FW40CT	CC		0	0		[redacted] MILL ROAD KT FL U/S MK12657 SAP- [redacted]
25/08/2020	12:55:00	20384039	W01FW40CT	CC		0	0		[redacted] MILL ROAD KT SP U/S MK12657 SAP- [redacted]
25/08/2020	11:58:00	20384041	W01FW40CT	CC		0	0		[redacted] ARUNDEL ROAD KT FL MK12657 SAP- [redacted]
25/08/2020	11:55:00	20384042	W01FW40CT	CC		0	0		[redacted] ARUNDEL ROAD KT SP MK12657 SAP- [redacted]
28/07/2021	15:56:00	21340264	W01FW40CT	RS		0	0		D/S [redacted] Elizabeth Court; St Neots; PE19 [redacted]
28/07/2021	14:55:00	21340265	W01FW40CT	RS		0	1	Tridecanol 0.15 ug/l	SPOT [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
28/07/2021	15:26:00	21340266	W01FW40CT	RS		0	0		U/S [redacted] Laxton close; st Neots; PE 19 [redacted]
28/07/2021	14:57:00	21340267	W01FW40CT	RS		0	0		FLUSH [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
12/08/2019	13:59:00	19365719	W01FW41CT	RS	-		0		[redacted] CHILDS POND ROAD; PE19 [redacted]
12/08/2019	13:24:00	19365720	W01FW41CT	RS	-		0		[redacted] DEWPOND CLOSE; PE19 [redacted]

In supply October 2016 to December 2021

PWSZs

Ravensthorpe - RW10

Brixworth - RW11

Daventry - RW14

Northampton West - RW15

Northampton Central - RW16

Northampton East - RW18

Northampton North - RW19 **NOTE: No Trace Organics samples takne in RW19 during specified period**

Date	Time	Sample Number	PWSZ (sample point code)	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
29/03/2017	15:00:00	17142380	W01RW10CT	SS	0	0			MK10933 KT SP [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	15:15:00	17142381	W01RW10CT	SS	0	0			MK10933 KT FL [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	15:40:00	17142382	W01RW10CT	SS	0	0			MK10933 AP SP [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	16:00:00	17142383	W01RW10CT	SS	0	0			MK10933 KT U/S [redacted] WELFORD RD THORNBY [redacted]
29/03/2017	16:30:00	17142384	W01RW10CT	SS	0	0			MK10933 KT D/S [redacted] NASEBY ROAD THORNBY [redacted]
09/05/2017	09:30:00	17214122	W01RW10CT	SS	0	0			MK10989 KT SP [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	09:45:00	17214123	W01RW10CT	SS	0	0			MK10989 KT FL [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	10:20:00	17214124	W01RW10CT	SS	0	0			MK10989 AP SP [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	11:57:00	17214125	W01RW10CT	SS	0	0			MK10989 KT SP U/S [redacted] HIGH STREET YELVERTOFT [redacted]
09/05/2017	11:57:00	17214126	W01RW10CT	SS	0	0			MK10989 KT FL U/S [redacted] HIGH STREET YELVERTOFT [redacted]
09/05/2017	13:30:00	17214127	W01RW10CT	SS	0	0			MK10989 KT SP D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
09/05/2017	13:30:00	17214128	W01RW10CT	SS	0	0			MK10989 KT FL D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
12/04/2018	17:50:00	18166255	W01RW10CT	SS	-----	0			MK11492 KT [redacted] HENLEY HOUSE WATFORD
11/10/2018	16:00:00	18467713	W01RW10CT	RS	0	1		Dibutyl phthalate 0.56 ug/l	MK11749 AP SP [redacted] SCOTT CLOSE PLAST STANDPIPE FX SAP# [redacted]
11/10/2018	15:35:00	18467714	W01RW10CT	RS	0	0			MK11749 KT SP U/S [redacted] SCOTT CLOSE RAVENSTHORPE FX SAP# [redacted]
11/10/2018	15:19:00	18467715	W01RW10CT	RS	0	0			MK11749 KT SP D/S [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
12/10/2018	14:30:00	18470199	W01RW10CT	SS	0	0			MK11749 KT SP [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
12/10/2018	14:30:00	18470200	W01RW10CT	SS	0	0			MK11749 KT FL [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
13/11/2019	10:15:00	19518014	W01RW10CT	CC	0	0			[redacted] KT SP MK12253 SAP# [redacted]
13/11/2019	10:29:00	19518015	W01RW10CT	CC	0	0			[redacted] KT FL MK12253 SAP# [redacted]
14/11/2019	12:40:00	19519890	W01RW10CT	CC	1	1	Total petrol components 6.80 ug/l	Total petrol components 3.37 ug/l	[redacted] OT FL MK12253 SAP# [redacted]
14/11/2019	12:30:00	19519892	W01RW10CT	CC	1	1	Total petrol components 22.3 ug/l Methylcyclohexane 0.21 ug/l	Total petrol components 10.34 ug/l	[redacted] E OT SP MK12253 SAP# [redacted]
23/08/2021	14:39:00	21384500	W01RW11CT	CC	0	0			MK13174 [redacted] PITSFORD KT FL, SAP# [redacted]
23/08/2021	14:39:00	21384501	W01RW11CT	CC	0	0			MK13174 [redacted] PITSFORD KT SP, SAP# [redacted]
23/02/2017	13:55:00	17086218	W01RW14CT	SS	0	0			MK10877 KT [redacted] RIDGEWAY FURLONG SAP [redacted]
12/04/2018	17:00:00	18166249	W01RW14CT	SS	-----	0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:30:00	18166250	W01RW14CT	SS	-----	0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:00:00	18166251	W01RW14CT	SS	-----	0			MK11492 KT [redacted] STATION ROAD
12/04/2018	17:30:00	18166252	W01RW14CT	SS	-----	0			MK11492 KT [redacted] STATION ROAD
12/04/2018	14:30:00	18166253	W01RW14CT	SS	-----	0			MK11492 KT [redacted] PARK CLOSE WATFORD
12/04/2018	16:15:00	18166254	W01RW14CT	SS	-----	0			MK11492 KT GREAT HOUSE STATION ROAD
14/08/2017	19:45:00	17370209	W01RW15CT	RS	1	-----	Ethyl hexanol 0.22 ug/l		KT SP [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	20:00:00	17370210	W01RW15CT	RS	1	-----	Ethyl hexanol 0.43 ug/l		KT FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:35:00	17370211	W01RW15CT	RS	1	-----	Ethyl hexanol 0.85 ug/l		AP FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:00:00	17370212	W01RW15CT	RS	1	-----	Ethyl hexanol 0.81 ug/l		KT FL U/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	18:45:00	17370213	W01RW15CT	RS	1	-----	Ethyl hexanol 0.97 ug/l		KT FL D/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
09/06/2019	17:51:00	19261603	W01RW15CT	DP	0	0			56352478 - [redacted] Telford Street; Upton Northampton; NN5 [redacted]
09/06/2019	18:10:00	19261717	W01RW15CT	DP	0	0			56352478 [redacted] Baird Avenue; Upton; Northampton NN5 [redacted]
09/06/2019	18:24:00	19261718	W01RW15CT	DP	0	0			56352478 [redacted] Somerset Drive; Upton Northampton NN5 [redacted]
09/06/2019	17:26:00	19261719	W01RW15CT	DP	0	0			56352478 [redacted] High Street; Upton; Northampton NN5 [redacted]

09/06/2019	18:35:00	19261720	W01RW15CT	DP		0		0			[redacted] Hawkstone Close; Duston; Northampton NN5 [redacted]
10/06/2019	18:42:00	19263674	W01RW15CT	DP	-----			0			R/S. 19260971 [redacted] TELFORD STREET NN5 [redacted] flush 2min temp 15.4
10/06/2019	19:05:00	19263675	W01RW15CT	DP	-----			0			R/S. 19260971 [redacted] BAIRD AVE NN5 [redacted] flush 2min temp14.9
15/06/2019	17:10:00	19272181	W01RW15CT	RS		0	-----				56352478 - [redacted] Somerset Drive; Upton Northampton NN5 [redacted]
								Total xylenes and ethylbenzene			
01/03/2019	12:12:00	19101857	W01RW16CT	SS		1		0	0.70 ug/l		FLUSH - WH Shoebridge&Sons Garage;109 Billing Road; NN1 5HU
01/03/2019	12:53:00	19101858	W01RW16CT	SS		0		0			DS - [redacted] Barry Road Northampton [redacted].
01/03/2019	12:32:00	19101859	W01RW16CT	SS		0		0			US - [redacted] Billing Road Northampton. barlow [redacted]
										Total xylenes and ethylbenzene 0.67 ug/l	
								Total xylenes and ethylbenzene		Di-iso-octyl phthalate 0.55 ug/l	
06/03/2019	10:11:00	19107999	W01RW16CT	SS		1		1	1.44 ug/l	Unresolved polar hump 4.52 ug/l	[redacted] FLUSH WH SHOEBRIDGE & SONS 109; BILLING ROAD NN1 5H
								Total xylenes and ethylbenzene		Total xylenes and ethylbenzene	
13/03/2019	14:51:00	19117781	W01RW16CT	SS		1		1	0.68 ug/l	1.11 ug/l	FLUSH - WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
14/03/2019	15:17:00	19120041	W01RW16CT	SS		0		0			FLUSH U/S spray booth WH SHOEBRIDGE & SONS GARAGE; NN1 5HU
14/03/2019	15:09:00	19120043	W01RW16CT	SS		0		0			FLUSH-KT WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
08/10/2020	11:59:00	20461230	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:16:00	20461231	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:36:00	20461232	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	10:58:00	20461233	W01RW16CT	SS		0		0			U/S [redacted] ARTHUR STREET; NN2 [redacted]
08/10/2020	11:16:00	20461234	W01RW16CT	SS		0		0			U/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	11:39:00	20461235	W01RW16CT	SS		0		0			U/S [redacted] BUNTING RD; NN2 [redacted]
20/10/2020	12:41:00	20477011	W01RW16CT	RS		0		0			SPOT- GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON, NN7 2EG
20/10/2020	12:51:00	20477012	W01RW16CT	RS		0		0			FLUSH - GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON NN7 2EG
07/11/2016	14:07:00	16510070	W01RW18CT	SS		0		0			KT FL U/S THE MILLER PUBLIC HOUSE WELLINGBORO' [redacted]
03/09/2020	14:30:00	20405599	W01RW18CT	SS		0		1		Di-iso-butyl phthalate 0.53 ug/l	ARTEMIS, HARROWDEN ROAD, KT SP, MK 12667, SAP [redacted] XF
03/09/2020	14:45:00	20405600	W01RW18CT	SS		0		0			ARTEMIS, HARROWDEN ROAD, KT FL, MK 12667, SAP [redacted] XF

In suply April 2016 to December 2021

PWSZs
Newport Pagnell - MW21
Winslow - MW27
Milton Keynes City North West - MW28
Milton Keynes City North East - MW29
Milton Keynes City South East - MW31
Milton Keynes City West - MW58
Wellingborough - RW07
Desborough - RW08
Ravensthorpe - RW10
Brixworth - RW11
Daventry - RW14
Northampton West - RW15
Northampton Central - RW16
Northampton East - RW18
Northampton North - RW19
Buckingham - RW20
Kettering Town West - RW45

Grafham Resilience Support
Huntingdon North - FW40
Bedford Rural - MW23
Sandhouse - MW52

NOTE: No trace organics samples taken in PWSZs MW27, RW07 and RW19 for the specified period

Date	Time	Sample Number	PWSZ (sample point code)	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
10/10/2018	17:55:00	18465931	W01FW40CT	SS	0	0			MK11736 KT SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:40:00	18465932	W01FW40CT	SS	0	0			MK11736 KT FL [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:18:00	18465933	W01FW40CT	SS	0	0			MK11736 AP SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:46:00	18465934	W01FW40CT	SS	0	0			MK11736 KT SP D/S [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	18:20:00	18465935	W01FW40CT	SS	0	0			MK11736 KT SP U/S [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
25/08/2020	14:15:00	20384036	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT FL D/S MK12657 SAP- [redacted]
25/08/2020	13:00:00	20384038	W01FW40CT	CC	0	0			[redacted] MILL ROAD KT FL U/S MK12657 SAP- [redacted]
25/08/2020	12:55:00	20384039	W01FW40CT	CC	0	0			[redacted] MILL ROAD KT SP U/S MK12657 SAP- [redacted]
25/08/2020	11:58:00	20384041	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT FL MK12657 SAP- [redacted]
25/08/2020	11:55:00	20384042	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT SP MK12657 SAP- [redacted]
28/07/2021	15:56:00	21340264	W01FW40CT	RS	0	0			D/S [redacted] Elizabeth Court; St Neots; PE19 [redacted]
28/07/2021	14:55:00	21340265	W01FW40CT	RS	0	1		Tridecanol 0.15 ug/l	SPOT [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
28/07/2021	15:26:00	21340266	W01FW40CT	RS	0	0			U/S [redacted] Laxton close; st Neots; PE 19 [redacted]
28/07/2021	14:57:00	21340267	W01FW40CT	RS	0	0			FLUSH [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
05/10/2021	10:22:00	21456098	W01FW40CT	RS	0	0			FLUSH U/S [redacted] HIGH STREET
05/10/2021	10:43:00	21456099	W01FW40CT	RS	0	0			FLUSH D/S [redacted] THRAPSTON ROAD
05/10/2021	08:42:00	21456100	W01FW40CT	RS	0	0			FLUSH [redacted] GRASS YARD KIMBOLTON PE18 [redacted]
05/10/2021	08:30:00	21456101	W01FW40CT	RS	0	0			SPOT [redacted] GRASS YARD KIMBOLTON PE18 [redacted]
31/05/2017	16:10:00	17250844	W01MW21CT	CC	0	0			MK11030 SP [redacted] COTTAGE CRANFIELD ROAD MOULSEA [redacted]
31/05/2017	17:38:00	17250845	W01MW21CT	CC	0	0			MK11030 FL [redacted] COTTAGE CRANFIELD ROAD MOULSEA [redacted]
								Caprolactam 0.45 ug/l	
31/05/2017	20:21:00	17250846	W01MW21CT	CC	0	1		Dibutyl phthalate 0.30 ug/l	MK11030 AP FL [redacted] COTTAGE CRANFIELD ROAD [redacted]
31/05/2017	21:12:00	17250847	W01MW21CT	CC	0	0			MK11030 AP FL [redacted] COTTAGE CRANFIELD ROAD [redacted]
02/06/2017	11:00:00	17254140	W01MW21CT	CC	0	0			MK11030 KT SP [redacted] CRANFIELD RD MOULSOE [redacted]

02/06/2017	12:43:00	17254141	W01MW21CT	CC		0	0		MK11030 KT SP [redacted] CRANFIELD RD MOULSOE [redacted]
02/06/2017	12:12:00	17254142	W01MW21CT	CC		0	0		MK11030 AP SP [redacted] CRANFIELD RD MOULSOE [redacted]
08/02/2019	14:45:00	19061651	W01MW21CT	RS		0	0		KT FL DS. [redacted] HYDE CLOSE MILTON KEYNES [redacted]
08/02/2019	15:20:00	19061654	W01MW21CT	RS		0	0		KT FL US MK16 [redacted]
08/02/2019	14:12:00	19061655	W01MW21CT	RS		0	0		KT SP [redacted] RUSKIN COURT NEWPORT MK 16 [redacted] E SODEN [redacted]
08/02/2019	14:41:00	19061660	W01MW21CT	RS		0	0		KT SP DS MK16 [redacted]
08/02/2019	14:20:00	19061661	W01MW21CT	RS		0	0		KT FL [redacted] RUSKIN COURT NEWPORT PAGNELL MK 16 [redacted]
08/02/2019	15:19:00	19061662	W01MW21CT	RS		0	0		KT SP US [redacted] PETERSHAM CLOSE CATHERINE PARK [redacted]
07/05/2019	09:33:00	19209206	W01MW21CT	CC		1	0	Cyclohexane 0.20 ug/l	MK11979 OT SP [redacted] OLNEY SAP [redacted]
07/05/2019	10:13:00	19209207	W01MW21CT	CC		0	0		MK11979 OT FL [redacted] OLNEY SAP [redacted]
07/05/2019	11:32:00	19209209	W01MW21CT	CC		0	0		MK11979 KT SP D/S ACORN NURSERIES EMBERTON SAP [redacted]
07/05/2019	11:23:00	19209347	W01MW21CT	CC		0	-----		MK11979 OT SP U/S [redacted] HONEY HILL EMBERTON SAP [redacted]
05/08/2021	11:20:00	21357251	W01MW21CT	RS		0	0		FLUSH [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S [redacted]
05/08/2021	11:14:00	21357252	W01MW21CT	RS		0	0		SPOT [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S [redacted]
05/08/2021	11:31:00	21357257	W01MW21CT	RS		0	0		[redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S [redacted]
05/08/2021	11:44:00	21357258	W01MW21CT	RS		0	0		[redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S [redacted]
09/08/2021	12:45:00	21361994	W01MW21CT	RS		0	0		SPOT [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
09/08/2021	12:54:00	21361995	W01MW21CT	RS		0	0		FLUSH [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
12/10/2019	11:05:00	19470367	W01MW23CT	RM		0	0		MANTON LANE RES KT FL MK12185 SAP# [redacted]
18/09/2020	12:26:00	20425500	W01MW23CT	SS		0	0		Sandpiper [redacted] Mill Ln Turvey MK43 [redacted]
18/09/2020	11:06:00	20425501	W01MW23CT	SS		0	0		[redacted] STATION RD; TURVEY MK43 [redacted]
18/09/2020	09:59:00	20425502	W01MW23CT	SS		0	0		[redacted] CARLTON RD; TURVEY MK43 [redacted] OR MK43 [redacted]
18/09/2020	12:48:00	20425503	W01MW23CT	SS		0	0		[redacted] Elmwood Turvey MK43 [redacted]
								Total Heavy Gas Oil 1.84 ug/l	
18/09/2020	10:26:00	20425504	W01MW23CT	SS		0	1		[redacted] NORFOLK RD; TURVEY MK43 [redacted]
18/09/2020	09:30:00	20425505	W01MW23CT	SS		0	0		[redacted] BAKERS CLOSE; TURVEY; MK43 [redacted]
18/09/2020	19:04:00	20426148	W01MW23CT	SS		0	0		[redacted] may road survey MK43 [redacted]
18/09/2020	19:07:00	20426149	W01MW23CT	SS		0	0		[redacted] TANDYS CLOSE TURVEY BEDFORD MK43 [redacted]
18/09/2020	19:53:00	20426150	W01MW23CT	SS		0	0		THE OLD KINGS ARMS JACKS LANE TURVEY MK43 [redacted]
18/09/2020	19:28:00	20426152	W01MW23CT	SS		0	0		[redacted] Norfolk road turvey Mk43 [redacted]
18/09/2020	18:45:00	20426153	W01MW23CT	SS		0	0		[redacted] carlton road survey MK43 [redacted]
19/09/2020	12:54:00	20426414	W01MW23CT	SS		0	0		2nd Mains; [redacted] Norfolk Road; Turvey; MK43 [redacted]
19/09/2020	12:38:00	20426415	W01MW23CT	SS		0	0		SPOT [redacted] Turvey; MK43 [redacted] [redacted]
19/09/2020	12:48:00	20426416	W01MW23CT	SS		0	0		FLUSH [redacted] Norfolk Road; Turvey; MK43 [redacted]
26/09/2020	16:52:00	20435746	W01MW23CT	RS		0	0		[redacted] - FLUSH - [redacted] NORFOLK ROAD TUVEY MK43 [redacted]
								Benzyl alcohol 0.12 ug/l	
24/02/2021	14:03:00	21069372	W01MW23CT	CC		0	1	Undecane 0.10 ug/l	MK12919, [redacted] MORRIS WALK, SAP# [redacted] SP, KT
24/02/2021	14:23:00	21069374	W01MW23CT	CC		0	0		MK12919, [redacted] MORRIS WALK, SAP# [redacted] FL, KT
15/10/2021	12:30:00	21472541	W01MW23CT	RS		0	0		D/S [redacted] Huntsman Way; Milton Ernest; MK44 [redacted]
15/10/2021	11:36:00	21472542	W01MW23CT	RS		0	0		SPOT [redacted] ARKWRIGHT RD MEARNEST BED. MK44 [redacted]
15/10/2021	11:42:00	21472543	W01MW23CT	RS		0	0		FLUSH [redacted] ARKWRIGHT RD MEAREST BED. MK44 [redacted]
15/10/2021	12:55:00	21472561	W01MW23CT	RS		0	0		U/S [redacted] ARKWRIGHT RD MEARNEST BED. MK44 [redacted]
19/07/2016	15:55:00	16328457	W01MW28CT	CC		0	0		MK10609 KT SPOT [redacted] HAMBLETON GROVE MILTON KEYNES [redacted]
19/07/2016	16:05:00	16328458	W01MW28CT	CC		0	0		MK10609 KT FLUSH [redacted] HAMBLETON GROVE MILTON KEYNES [redacted]
19/07/2016	16:20:00	16328459	W01MW28CT	CC		0	0		MK10609 AP FLUSH [redacted] HAMBLETON GROVE MILTON KEYNES [redacted]
19/07/2016	17:05:00	16328460	W01MW28CT	CC		0	0		MK10609 KT FLUSH [redacted] HAMBLETON GROVE MILTON KEYNES [redacted]
19/07/2016	16:45:00	16328461	W01MW28CT	CC		0	0		MK10609 KT FLUSH [redacted] HAMBLETON GROVE MILTON KEYNES [redacted]
14/09/2017	20:00:00	17419515	W01MW28CT	RS	-----		0		MK11191 KT SPOT UPSTREAM [redacted] CORNHILL TWO MILE ASH
								Heavy gas oil (nC22-nC28)	
14/09/2017	19:15:00	17419516	W01MW28CT	RS	-----		1	0.18 ug/l	MK11191 KT SPOT [redacted] LONGHORN DRIVE WHITE HOUSE
14/09/2017	19:20:00	17419517	W01MW28CT	RS	-----		0		MK11191 KT SPOT [redacted] LONGHORN DRIVE WHITE HOUSE
14/09/2017	19:30:00	17419518	W01MW28CT	RS	-----		0		MK11191 KT SPOT UPSTREAM [redacted] LONGHORN DRIVE WHITEHOUSESE
26/02/2018	09:20:00	18085221	W01MW28CT	CC	-----		0		[redacted] [redacted] WALLMEAD GARDENS, MK5 [redacted] KITCHEN TAP

								Nonanal 0.10 ug/l Propanol chloro phosphate 0.14 ug/l
08/01/2019	14:50:00	19008953	W01MW28CT	CC		0	1	Heptacosane 0.13 ug/l Propanol chloro phosphate 0.10 ug/l
08/01/2019	14:30:00	19008954	W01MW28CT	CC		0	1	Oleic acid 0.44 ug/l Total butanediyl-bis-oxymethylene-bis-oxirane 8.34 ug/l
08/01/2019	15:50:00	19008955	W01MW28CT	CC		0	1	Oleic acid 3.25 ug/l Propanol chloro phosphate 0.10 ug/l
08/01/2019	17:07:00	19008956	W01MW28CT	CC		0	1	Oleic acid 1.83 ug/l
10/01/2019	09:49:00	19012602	W01MW28CT	RS	-----		0	
10/01/2019	10:01:00	19012603	W01MW28CT	RS	-----		0	
10/01/2019	10:24:00	19012604	W01MW28CT	RS	-----		0	
10/01/2019	10:24:00	19012605	W01MW28CT	RS	-----		0	
14/01/2019	08:34:00	19016563	W01MW28CT	RS	-----		0	
14/01/2019	08:45:00	19016564	W01MW28CT	RS	-----		0	
14/01/2019	08:11:00	19016565	W01MW28CT	RS	-----		0	
14/01/2019	08:23:00	19016566	W01MW28CT	RS	-----		0	
18/01/2019	09:13:00	19024914	W01MW28CT	RS	-----		0	
18/01/2019	09:25:00	19024915	W01MW28CT	RS	-----		0	
18/01/2019	08:53:00	19024916	W01MW28CT	RS	-----		0	
18/01/2019	09:10:00	19024917	W01MW28CT	RS	-----		0	
25/08/2020	10:28:00	20381136	W01MW28CT	RS		0	0	
25/08/2020	10:25:00	20381137	W01MW28CT	RS		0	0	
25/08/2020	10:06:00	20381138	W01MW28CT	RS		0	0	
02/10/2020	13:49:00	20452648	W01MW28CT	RS		0	0	
02/10/2020	13:24:00	20452649	W01MW28CT	RS		0	0	
02/10/2020	13:26:00	20452650	W01MW28CT	RS		0	0	
02/10/2020	14:11:00	20452651	W01MW28CT	RS		0	0	
06/08/2021	19:48:00	21359919	W01MW28CT	RS		0	0	
06/08/2021	19:59:00	21359920	W01MW28CT	RS		0	0	
06/08/2021	20:51:00	21359921	W01MW28CT	RS		0	0	
06/08/2021	20:23:00	21359922	W01MW28CT	RS		0	0	
06/08/2021	19:40:00	21360093	W01MW28CT	RS		0	0	
10/01/2017	15:09:00	17010084	W01MW29CT	SS		0	0	
10/01/2017	15:18:00	17010085	W01MW29CT	SS		0	0	
25/09/2020	14:34:00	20434813	W01MW29CT	RS		0	0	
25/09/2020	15:38:00	20434814	W01MW29CT	SS		0	0	
25/09/2020	15:14:00	20434815	W01MW29CT	SS		0	0	
25/09/2020	14:28:00	20434816	W01MW29CT	RS		0	0	
20/10/2020	12:29:00	20476990	W01MW29CT	RS		0	0	
20/10/2020	12:25:00	20476992	W01MW29CT	RS		0	0	
05/07/2021	11:14:00	21305641	W01MW29CT	RS		0	0	
05/07/2021	11:28:00	21305646	W01MW29CT	RS		0	0	
05/07/2021	10:40:00	21305647	W01MW29CT	RS		0	0	
05/07/2021	10:40:00	21305649	W01MW29CT	RS		0	0	
28/07/2021	11:05:00	21340137	W01MW29CT	RS		0	0	
28/07/2021	11:20:00	21340138	W01MW29CT	RS		0	0	
28/07/2021	11:57:00	21340149	W01MW29CT	RS		0	0	

MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 AP FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT FL U/S [redacted] BELVOIR AV. EMERSON VALLEY SAP#[redacted]
MK11823 KT SP U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 KT FL U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 AP SP U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 AP FL U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 KT SP [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 AP SP [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 AP FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT SP D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 KT FL D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 AP SP D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 AP FL D/[redacted] 5 BARKSTONE CLOSE EMERSON VALL SAP[redacted]
FLUS[redacted] MEDHURST; MK8[redacted] RS- 20368031 SAP-[redacted] MK- 1264
SPOT[redacted] MEDHURST; MK8[redacted] RS- 20368031 SAP-[redacted] MK- 1264
U/S [redacted] MEDHURST TWO MILE ASH; MK8 [redacted]
RS 20440233 D/S K/T [redacted] GRAMONDE DRIVE WYMBUSH
RS 20440233 SPOT K/T RICO COURIERS 13 GRAMONDE DR WYMBUSH
RS 20440233 FL K/T RICO COURIERS 13 GRAMONDE DR WYMBUSH
RS 20440233 U/S K/T [redacted] GRAMONDE DR k
FL K/T [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
U/S K/T 1 [redacted] BLACKMOOR GATE
U/S K/T [redacted] DULVERTON DRIVE
D/S [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
SPOT K/T [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
MK10820 KT SP [redacted] GREEN LANE WOLVERTON [redacted]
MK10820 KT FL [redacted] GREEN LANE WOLVERTON [redacted]
FLUSH - TESA UK LTD.; Yeomans Drive; Milton Keynes MK14 5LS
U/S FLUSH - VOLKSWAGEN LTD security YEOMANS DRIVE; MK14 5AN
D/S FLUSH-CocaCola; Blakelands House;Yeomans Drivs; MK14 5LZ
SPOT - TESA UK LTD.; Yeomans Drive; Milton Keynes MK14 5LS
SPOT: TESA; UK LTD.; YEOMANS DRIVE; MILTON KEYNES MK14 5LS
FLUSH TESA; UK LTD.; YEOMANS DRIVE; MILTON KEYNES; MK14 5LS
[redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
[redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
SPOT [redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
FLUSH [redacted] ST PETERS WAY NEW BRADWELL MK13 [redacted]
SPOT [redacted] BRAMBLE AVENUE MILTON KEYNES; MK14 [redacted]
FLUSH [redacted] BRAMBLE AVENUE MILTON KEYNES; MK14 [redacted]
D/S [redacted] BRAMBLE AVENUE; CONNIBURROW; MILTON KEYNES; MK14 [redacted]

28/07/2021	11:35:00	21340150	W01MW29CT	RS		0		0		U/S [redacted] BRAMBLE AVENUE; CONNIBURROW; MILTON KEYNES; MK14 [redacted]
22/06/2019	10:30:00	19282882	W01MW31CT	SS	-----			0		CRAMPBELL WHARF MARINA KT FLUSH MK12050 SAP#[redacted]
22/06/2019	11:00:00	19282883	W01MW31CT	SS	-----			0		FH 72899223 FH FLUSH MK 12050 SAP#[redacted]
04/12/2019	16:06:00	19556102	W01MW31CT	DP	-----			0		[redacted] - D/S [redacted] Elmswell Gate MK17 [redacted] pdcl 0.43
15/02/2021	16:54:00	21055772	W01MW31CT	RS		0		0		SPOT Toolstation; 6 Peverel Drive; Milton Keynes; MK1 1NL
15/02/2021	17:04:00	21055773	W01MW31CT	RS		0		0		FLUSH Toolstation; 6 Peverel Drive; Milton Keynes; MK1 1NL
15/02/2021	16:31:00	21055774	W01MW31CT	RS		0		0		U/S Lindal Security; Peverel Drive; Milton Keynes; MK1 1NL
23/06/2021	13:12:00	21283635	W01MW31CT	RS		0		0		SPOT- [redacted] ROCHFORDS; COFFEE HALL; MK6 [redacted]
23/06/2021	13:21:00	21283636	W01MW31CT	RS		0		0		FLUSH - [redacted] ROCHFORDS; COFFEE HALL; MK6 [redacted]
23/06/2021	13:41:00	21283637	W01MW31CT	RS		0		0		US - - [redacted] ROCHFORDS; COFFEE HALL; MILTON KEYNES MK6 [redacted]
23/06/2021	14:01:00	21283638	W01MW31CT	RS		0		0		DS - - [redacted] ROCHFORDS; COFFEE HALL; MILTON KEYNES MK6
29/09/2021	14:55:00	21445706	W01MW31CT	CC		0		0		[redacted] FISHERMEAD BLVD KT FL MK13222 [redacted] AIR GAP IN P+T
29/09/2021	14:40:00	21445707	W01MW31CT	CC		0		0		[redacted] FISHERMEAD BLVD KT SP MK13222 [redacted] AIR GAP IN P+T
29/09/2021	15:55:00	21445708	W01MW31CT	CC		0	-----			[redacted] FISHERMEAD BLVD FL D/S MK13222 SAP#[redacted]
29/09/2021	15:45:00	21445709	W01MW31CT	CC		0	-----			[redacted] FISHERMEAD BLVD SP D/S MK13222 SAP#[redacted]
29/09/2021	16:40:00	21445710	W01MW31CT	CC		0	-----			[redacted] HELFORD PUACK FL U/S D/S MK13222 [redacted] NO SPARE VIAL
29/09/2021	16:30:00	21445711	W01MW31CT	CC		0	-----			[redacted] HELFORD PUACK SP U/S D/S MK13222 SAP#[redacted]
08/11/2021	16:30:00	21510473	W01MW31CT	RS		0		0		[redacted] JEEVES CL PEARTREE BRIDGE MK MK6 [redacted] MK13265
08/11/2021	16:47:00	21510474	W01MW31CT	RS		0		0		[redacted] WOODSEY HEADLAND PEARTREE BRIDGE MK6 [redacted] MK13265
08/11/2021	17:15:00	21510475	W01MW31CT	RS		0		0		PEARTREE BRIDGE INN MK MK6 3PA MK13265
08/11/2021	17:30:00	21510476	W01MW31CT	RS		0		0		PEARTREE BRIDGE INN MK MK6 3PA MK13265
03/12/2021	14:30:00	21556819	W01MW31CT	RS		0		0		[redacted] ALBERT STREET; BLETCHLEY MK2 [redacted]
03/12/2021	13:28:00	21556820	W01MW31CT	RS		0		0		BURGER KING; SAXON STREET; BLETCHLEY MK2 2EN
03/12/2021	14:04:00	21556824	W01MW31CT	RS		0		0		[redacted] OLIVER ROAD; BLETCHLEY MK2 [redacted]
03/12/2021	15:00:00	21556825	W01MW31CT	RS		0		0		[redacted] FITZWILLIAM STREET; BLETCHLEY MK3 [redacted]
14/07/2016	13:56:00	16318985	W01MW58CT	SS		0		0		MK10604 KT SPOT [redacted] WIMBOURNE CRESCENT WESTCROFT [redacted]
14/07/2016	14:05:00	16318986	W01MW58CT	SS		0		0		MK10604 KT FLUSH [redacted] WIMBOURNE CRESCENT WESTCROFT [redacted]
14/07/2016	14:26:00	16318987	W01MW58CT	SS		0		0		MK10604 KT SPOT [redacted] WIMBOURNE CRESCENT WESTCROFT [redacted]
14/07/2016	14:36:00	16318988	W01MW58CT	SS		0		0		MK10604 KT FLUSH [redacted] WIMBOURNE CRESCENT WESTCROFT [redacted]
14/07/2016	15:01:00	16318989	W01MW58CT	SS		0		1	Hexanal 0.50 ug/l Hydroxy methyl pentanone 0.42 ug/l Nonanal 0.14 ug/l Palmitic acid 0.34 ug/l	MK10604 KT SPOT NEW COUNCIL BUILDING WIMBOURNE CR 52758693
14/07/2016	15:11:00	16318990	W01MW58CT	SS		0		1	Hydroxy methyl pentanone 0.31 ug/l	MK10604 KT FLUSH NEW COUNCIL BUILDING WIMBOURNE CR 52758693
14/07/2016	15:41:00	16318991	W01MW58CT	SS		0		1	Dibutyl phthalate 5.86 ug/l Heavy Gas Oil (nC21 –nC29) 2.70 ug/l Di octyl phthalate 0.20 ug/l Iodo octadecane 0.18 ug/l	MK10604 AP SPOT COUNCIL OFFICES WIMBOURNE CRESCENT 52758693
14/07/2016	15:51:00	16318992	W01MW58CT	SS		0		1	Dibutyl phthalate 1.13 ug/l	MK10604 AP FLUSH COUNCIL OFFICES WIMBOURNE CRES 52758693
19/07/2016	15:02:00	16324935	W01MW58CT	CC	-----			0		MK10604 KT FLUSH COUNCIL OFFICE SITE WIMBOURNE CRES 52758693
19/07/2016	15:46:00	16324936	W01MW58CT	CC	-----			0		MK10604 KT SPOT COUNCIL OFFICE SITE WIMBOURNE CRES 52758693
19/07/2016	15:11:00	16324937	W01MW58CT	CC		0		1	Diethyleneglycol dimethacrylate 1.35 ug/l	MK10604 AP SPOT IF0 COUNCIL OFFICE WIMBOURNE CRES 52758693

19/07/2016	15:17:00	16324938	W01MW58CT	CC		0		1			Diethyleneglycol dimethacrylate 10.47 ug/l
24/09/2021	10:37:00	21437742	W01MW58CT	RS		0		0			
24/09/2021	10:33:00	21437743	W01MW58CT	RS		0		0			
24/09/2021	10:09:00	21437744	W01MW58CT	RS		0		0			
24/09/2021	10:23:00	21437745	W01MW58CT	RS		0		0			
14/09/2020	15:25:00	20418957	W01RW08CT	RS		0		0			
14/09/2020	15:16:00	20418960	W01RW08CT	RS		0		0			
15/09/2020	13:36:00	20420467	W01RW08CT	RS		0		0			
15/09/2020	13:31:00	20420468	W01RW08CT	RS		0		0			
15/09/2020	13:46:00	20420469	W01RW08CT	RS		0		0			
15/09/2020	13:18:00	20420470	W01RW08CT	RS		0		0			
22/01/2021	15:32:00	21025017	W01RW08CT	SS		0		0			
22/01/2021	16:28:00	21025018	W01RW08CT	SS		0		0			
22/01/2021	17:40:00	21025019	W01RW08CT	SS		0		0			
22/01/2021	17:00:00	21025021	W01RW08CT	SS		0		0			
23/01/2021	17:40:00	21025457	W01RW08CT	SS		0	-----				
23/01/2021	16:46:00	21025458	W01RW08CT	SS		0	-----				
23/01/2021	17:06:00	21025459	W01RW08CT	SS		0	-----				
23/01/2021	16:23:00	21025460	W01RW08CT	SS		0	-----				
24/01/2021	16:07:00	21026137	W01RW08CT	SS	-----			0			
24/01/2021	15:51:00	21026138	W01RW08CT	SS	-----			0			
25/01/2021	12:00:00	21027217	W01RW08CT	SS		0		0			
25/01/2021	12:19:00	21027218	W01RW08CT	SS	-----			0			
29/03/2017	15:00:00	17142380	W01RW10CT	SS		0		0			
29/03/2017	15:15:00	17142381	W01RW10CT	SS		0		0			
29/03/2017	15:40:00	17142382	W01RW10CT	SS		0		0			
29/03/2017	16:00:00	17142383	W01RW10CT	SS		0		0			
29/03/2017	16:30:00	17142384	W01RW10CT	SS		0		0			
09/05/2017	09:30:00	17214122	W01RW10CT	SS		0		0			
09/05/2017	09:45:00	17214123	W01RW10CT	SS		0		0			
09/05/2017	10:20:00	17214124	W01RW10CT	SS		0		0			
09/05/2017	11:57:00	17214125	W01RW10CT	SS		0		0			
09/05/2017	11:57:00	17214126	W01RW10CT	SS		0		0			
09/05/2017	13:30:00	17214127	W01RW10CT	SS		0		0			
09/05/2017	13:30:00	17214128	W01RW10CT	SS		0		0			
12/04/2018	17:50:00	18166255	W01RW10CT	SS	-----			0			
11/10/2018	16:00:00	18467713	W01RW10CT	RS		0		1		Dibutyl phthalate 0.56 ug/l	
11/10/2018	15:35:00	18467714	W01RW10CT	RS		0		0			
11/10/2018	15:19:00	18467715	W01RW10CT	RS		0		0			
12/10/2018	14:30:00	18470199	W01RW10CT	SS		0		0			
12/10/2018	14:30:00	18470200	W01RW10CT	SS		0		0			
13/11/2019	10:15:00	19518014	W01RW10CT	CC		0		0			
13/11/2019	10:29:00	19518015	W01RW10CT	CC		0		0			
14/11/2019	12:40:00	19519890	W01RW10CT	CC		1		1	Total petrol components 6.80 ug/l; Methylcyclohexane 0.21 ug/l	Total petrol components 3.37 ug/l	
14/11/2019	12:30:00	19519892	W01RW10CT	CC		1		1	Total petrol components 22.3 ugl	Total petrol components 10.34 ug/l	
23/08/2021	14:39:00	21384500	W01RW11CT	CC		0		0			

MK10604 AP FLUSH IF0 COUNCIL OFFICE WIMBOURNE CRES 52758693
FLUSH - [redacted] ESSENDEN COURT; STONY STRATFORD; MK11 [redacted]
SPOT - [redacted] ESSENDEN COURT; STONY STRATFORD; MK11 [redacted]
D/S - [redacted] ESSENDEN COURT MK11 [redacted]
U/S - [redacted] ESSENDEN COURT; STONY STRATFORD MK11 [redacted]
U/S - [redacted] WELLAND COURT; DESBOROUGH NN14 [redacted]
D/S - [redacted] STATION ROAD DESBOROUGH NN14 [redacted]
SPOT - FLAT [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
FLUSH - [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
FLUSH - FLAT [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
SPOT - [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
SAP [redacted] MORRIS POND; CHURCH LANE; DINGLEY; LE16 [redacted]
SAP [redacted] [redacted] HERMITAGE RD; BRAMPTON ASH; LE16 [redacted]
SAP [redacted] [redacted] Harborough RD; Dingley; LE16 [redacted]
SAP [redacted] [redacted] Home Close; Dingley; LE16 [redacted]
[redacted] MK 12870 [redacted] Hermitage RD; Brampton Ash; LE16 [redacted]
[redacted] MK 12870 [redacted] Harborough RD; Dingley; LE16 [redacted]
[redacted] MK 12870 [redacted] Home Close; Dingley; LE16 [redacted]
[redacted] MK 12870 [redacted] Church Lane; Dingley LE16 [redacted]
[redacted] MK 12870 [redacted] Home Close; Dingley; LE16 [redacted]
[redacted] MK 12870 [redacted] Harborough RD; Dingley; LE16 [redacted]
Church Lane; Market Harborough; LE16 [redacted]
[redacted] MK 12870 [redacted] Church Lane; Dingley LE16 [redacted]
MK10933 KT SP [redacted] NASEBY RD THORNBY [redacted]
MK10933 KT FL [redacted] NASEBY RD THORNBY [redacted]
MK10933 AP SP [redacted] NASEBY RD THORNBY [redacted]
MK10933 KT U/S [redacted] WELFORD RD THORNBY [redacted]
MK10933 KT D/S [redacted] NASEBY ROAD THORNBY [redacted]
MK10989 KT SP [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
MK10989 KT FL [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
MK10989 AP SP [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
MK10989 KT SP U/S [redacted] HIGH STREET YELVERTOFT [redacted]
MK10989 KT FL U/S [redacted] HIGH STREET YELVERTOFT [redacted]
MK10989 KT SP D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
MK10989 KT FL D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
MK11492 KT [redacted] HENLEY HOUSE WATFORD
MK11749 AP SP [redacted] SCOTT CLOSE PLAST STANDPIPE FX SAP# [redacted]
MK11749 KT SP U/S [redacted] SCOTT CLOSE RAVENSTHORPE FX SAP# [redacted]
MK11749 KT SP D/S [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
MK11749 KT SP [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
MK11749 KT FL [redacted] SCOTT CLOSE RAVENSTHORPE SAP# [redacted]
[redacted] KT SP MK12253 SAP# [redacted]
[redacted] KT FL MK12253 SAP# [redacted]
[redacted] OT FL MK12253 SAP# [redacted]
[redacted] OT SP MK12253 SAP# [redacted]
MK13174 T [redacted] PITSFORD KT FL, SAP# [redacted]

23/08/2021	14:39:00	21384501	W01RW11CT	CC		0		0			MK13174 [redacted] PITSFORD KT SP, SAP#[redacted]
										Methyl-propanoic acid –anhydride 0.12 ug/l	
15/04/2016	11:45:00	16171398	W01RW14CT	SS		0		1		Oleic acid 0.36 ug/l	MK10480 KT SPOT [redacted] HAWKE ROAD DAVENTRY [redacted]
15/04/2016	11:51:00	16171399	W01RW14CT	SS		0		1		Oleic acid 0.61 ug/l	MK10480 KT FLUSH [redacted] HAWKE ROAD DAVENTRY [redacted]
15/04/2016	12:27:00	16171400	W01RW14CT	SS		0		1		Oleic acid 1.07 ug/l	MK10480 KT SPOT U/S [redacted] TRAFALGAR WAY DAVENTRY [redacted]
										Dibutyl phthalate 0.57 ug/l Palmitic acid 0.11 ug/l	
15/04/2016	13:06:00	16171401	W01RW14CT	SS		0		1		Oleic acid 2.41 ug/l	MK10480 KT SPOT D/S [redacted] HAWKE ROAD DAVENTRY [redacted]
23/02/2017	13:55:00	17086218	W01RW14CT	SS		0		0			MK10877 KT [redacted] RIDGEWAY FURLONG SAP [redacted]
12/04/2018	17:00:00	18166249	W01RW14CT	SS	-----			0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:30:00	18166250	W01RW14CT	SS	-----			0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:00:00	18166251	W01RW14CT	SS	-----			0			MK11492 KT [redacted] STATION ROAD
12/04/2018	17:30:00	18166252	W01RW14CT	SS	-----			0			MK11492 KT [redacted] STATION ROAD
12/04/2018	14:30:00	18166253	W01RW14CT	SS	-----			0			MK11492 KT [redacted] PARK CLOSE WATFORD
12/04/2018	16:15:00	18166254	W01RW14CT	SS	-----			0			MK11492 KT [redacted] STATION ROAD
14/08/2017	19:45:00	17370209	W01RW15CT	RS		1	-----		Ethyl hexanol 0.22 ug/l		KT SP [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	20:00:00	17370210	W01RW15CT	RS		1	-----		Ethyl hexanol 0.43 ug/l		KT FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:35:00	17370211	W01RW15CT	RS		1	-----		Ethyl hexanol 0.85 ug/l		AP FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:00:00	17370212	W01RW15CT	RS		1	-----		Ethyl hexanol 0.81 ug/l		KT FL U/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	18:45:00	17370213	W01RW15CT	RS		1	-----		Ethyl hexanol 0.97 ug/l		KT FL D/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
09/06/2019	17:51:00	19261603	W01RW15CT	DP		0		0			[redacted] - [redacted] Telford Street; Upton Northampton; NN5 [redacted]
09/06/2019	18:10:00	19261717	W01RW15CT	DP		0		0			[redacted] Baird Avenue; Upton; Northampton NN5 [redacted]
09/06/2019	18:24:00	19261718	W01RW15CT	DP		0		0			[redacted] Somerset Drive; Upton Northampton NN5 [redacted]
09/06/2019	17:26:00	19261719	W01RW15CT	DP		0		0			[redacted] High Street; Upton; Northampton NN5 [redacted]
09/06/2019	18:35:00	19261720	W01RW15CT	DP		0		0			[redacted] Hawkstone Close; Duston; Northampton NN5 [redacted]
10/06/2019	18:42:00	19263674	W01RW15CT	SS	-----			0			R/S. 19260971 [redacted] TELFORD STREET NN5 [redacted] flush 2min temp 15.4
10/06/2019	19:05:00	19263675	W01RW15CT	SS	-----			0			R/S. 19260971 [redacted] BAIRD AVE NN5 [redacted] flush 2min temp14.9
15/06/2019	17:10:00	19272181	W01RW15CT	RS		0	-----				[redacted] - [redacted] Somerset Drive; Upton Northampton NN5 [redacted]
01/03/2019	12:12:00	19101857	W01RW16CT	SS		1		0	Total xylenes and ethylbenzene 0.70 ug/l		FLUSH - WH Shoebridge&Sons Garage;109 Billing Road; NN1 5HU
01/03/2019	12:53:00	19101858	W01RW16CT	SS		0		0			DS - [redacted] Barry Road Northampton [redacted]
01/03/2019	12:32:00	19101859	W01RW16CT	SS		0		0			US - [redacted] Billing Road Northampton. [redacted]
										Total xylenes and ethylbenzene 0.67 ug/l Di-iso-octyl phthalate 0.55 ug/l	
06/03/2019	10:11:00	19107999	W01RW16CT	SS		1		1	Total xylenes and ethylbenzene 1.44 ug/l	Unresolved polar hump 4.52 ug/l	55932211 FLUSH WH SHOEBRIDGE & SONS 109; BILLING ROAD NN1 5H
13/03/2019	14:51:00	19117781	W01RW16CT	SS		1		1	Total xylenes and ethylbenzene 0.68 ug/l	Total xylenes and ethylbenzene 1.11 ug/l	FLUSH - WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
14/03/2019	15:17:00	19120041	W01RW16CT	SS		0		0			FLUSH U/S spray booth WH SHOEBRIDGE & SONS GARAGE; NN1 5HU
14/03/2019	15:09:00	19120043	W01RW16CT	SS		0		0			FLUSH-KT WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
08/10/2020	11:59:00	20461230	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:16:00	20461231	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:36:00	20461232	W01RW16CT	SS		0		0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	10:58:00	20461233	W01RW16CT	SS		0		0			U/S [redacted] ARTHUR STREET; NN2 [redacted]
08/10/2020	11:16:00	20461234	W01RW16CT	SS		0		0			U/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	11:39:00	20461235	W01RW16CT	SS		0		0			U/S [redacted] BUNTING RD; NN2 [redacted]
20/10/2020	12:41:00	20477011	W01RW16CT	RS		0		0			SPOT- GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON, NN7 2EG

20/10/2020	12:51:00	20477012	W01RW16CT	RS		0	0			FLUSH - GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON NN7 2EG
07/11/2016	14:07:00	16510070	W01RW18CT	SS		0	0			KT FL U/S THE MILLER PUBLIC HOUSE WELLINGBORO' 52502922
03/09/2020	14:30:00	20405599	W01RW18CT	SS		0	1		Di-iso-butyl phthalate 0.53 ug/l	ARTEMIS, HARROWDEN ROAD, KT SP, MK 12667, SAP 57768648, XF
03/09/2020	14:45:00	20405600	W01RW18CT	SS		0	0			ARTEMIS, HARROWDEN ROAD, KT FL, MK 12667, SAP 57768648, XF
18/07/2017	17:30:00	17330321	W01RW20CT	MI		0	0	Chloroform 0.89 ug/l Bromodichloromethane 2.10 ug/l Dibromochloromethane 4.84 ug/l		MK11124 KT FL [redacted] MANOR PARK MAIDS MORTON RETROSPEC [redacted]
08/09/2017	10:05:00	17412372	W01RW20CT	SS		1	-----	Bromoform 2.55 ug/l		MK11184 KT [redacted] ASTWICK UNNAMED ROAD
05/09/2019	17:15:00	19407948	W01RW20CT	CC		0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, [redacted]
05/09/2019	17:35:00	19407949	W01RW20CT	CC		0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, [redacted]
05/09/2019	15:55:00	19407950	W01RW20CT	CC		0	0			[redacted] STONY HILL, PAULERSPURY, KT, FL, MK12164, [redacted]
05/09/2019	15:45:00	19407952	W01RW20CT	CC		0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, [redacted]
17/08/2020	17:11:00	20370493	W01RW20CT	SS		0	0			57817710 - SPOT - ONE STOP 9 SWINNEYFORD RD NN12 6HD
17/08/2020	17:22:00	20370494	W01RW20CT	SS		0	0			57817710 - FLUSH - ONE STOP 9 SWINNEYFORD RD NN12 6HD
17/08/2020	17:44:00	20370495	W01RW20CT	SS		0	0			[redacted] - US FLUSH [redacted] SWINNEYFORD RD NN12 [redacted]
17/08/2020	18:03:00	20370496	W01RW20CT	SS		0	1		Oleic acid 0.64 ug/l	[redacted] - DS FLUSH - [redacted] SWINNEYFORD RD NN12 [redacted]
23/09/2020	08:22:00	20430626	W01RW20CT	RS		1	0	Total Petrol Components 1.71 ug/l Consisting of: Substituted Naphthalenes 0.13 ug/l Alkyl benzenes 1.58 ug/l		FLUSH [redacted]; BANBURY LANE ROTHERSTHORPE
23/09/2020	08:10:00	20430627	W01RW20CT	RS		1	0	Substituted Naphthalene 0.20 ug/l Total alkyl benzenes 1.80 ug/l		FLUSH [redacted]; BANBURY LANE ROTHERSTHORPE
25/09/2020	15:27:00	20434630	W01RW20CT	RS		1	0	Substituted naphthalenes 0.69 ug/l Total alkyl benzenes 1.40 ug/l		K/T SPOT-[redacted]; Banbury Lane; Rothersthorpe NN7 [redacted]
25/09/2020	15:28:00	20434631	W01RW20CT	RS		1	0	Substituted naphthalenes 1.07 ug/l Total alkyl benzenes 2.1 ug/l Naphthalene + substituted naphthalenes	Total alkyl benzenes 0.22 ug/l Naphthalene + substituted naphthalenes	K/T FLUSH-[redacted]; Banbury Lane;Rothersthorpe NN7 [redacted]
01/10/2020	14:00:00	20451444	W01RW20CT	RS		1	1	0.23 ug/l		[redacted], MK12715, SAP#[redacted]
13/10/2020	11:10:00	20467272	W01RW20CT	RS		0	0			FL [redacted] FM BANBURY LANE ROTHERSTHOPRE NN7 [redacted]
13/10/2020	11:17:00	20467274	W01RW20CT	RS		0	0			SPOT [redacted] BANBURY LANE ROTHERSTHORPE [redacted]
13/01/2017	10:00:00	17015913	W01RW45CT	CC	-----		0			MK10821 [redacted] WARKTON LANE KETTERING [redacted]
10/11/2017	18:30:00	17516957	W01RW45CT	CC		0	0			MK11278 AP FL [redacted] MALHAM DRIVE KETTERING [redacted]
10/11/2017	17:20:00	17516958	W01RW45CT	CC		0	0			MK11278 KT FL U/S [redacted] MALHAM DRIVE KETTERING [redacted]
10/11/2017	17:40:00	17516959	W01RW45CT	CC		0	0			MK11278 KT FL D/S [redacted] MALHAM DRIVE KETTERING [redacted]
17/11/2017	09:45:00	17526811	W01RW45CT	CC		0	0			MK11278 KT [redacted] MALHAM DRIVE KETTERING SAP: [redacted]
17/11/2017	09:51:00	17526812	W01RW45CT	CC		0	0			MK11278 KT [redacted] MALHAM DRIVE KETTERING SAP: [redacted]

07/06/2019	13:27:00	19261739	W01RW45CT	CC		0	1
07/06/2019	13:37:00	19261740	W01RW45CT	CC		0	0
13/06/2019	08:17:00	19269635	W01RW45CT	CC	-----		0
13/06/2019	08:15:00	19269636	W01RW45CT	CC	-----		0

Dichloro butane 0.34 ug/l
Tetrahydro pyranone 7.22 ug/l
Unidentified Compound (RT:11.743) 0.68 ug/l

[redacted] FAIRFIELD ROAD KT SP MK12033 SAP [redacted]
[redacted] FAIRFIELD ROAD KT FL MK12033 SAP [redacted]
[redacted] FAIRFIELD RD ISHAM KT FL MK12033 SAP# [redacted]
[redacted] FAIRFIELD RD ISHAM KT SP MK12033 SAP# [redacted]

In supply January 2017 to January 2023

PWSZs
Newport Pagnell - MW21
Winslow - MW27
Milton Keynes City North West - MW28
Milton Keynes City North East - MW29
Milton Keynes City South East - MW31
Milton Keynes City West - MW58
Wellingborough - RW07
Desborough - RW08
Ravensthorpe - RW10
Brixworth - RW11
Daventry - RW14
Northampton West - RW15
Northampton Central - RW16
Northampton East - RW18
Northampton North - RW19
Buckingham - RW20
Kettering Town West - RW45

Grafham Resilience Support
Huntingdon North - FW40
Bedford Rural - MW23
Sandhouse - MW52

NOTE: No trace organics samples taken in PWSZ RW07 for the specified period

Date	Time	Sample Number	PWSZ (sample point code)	Reason	P&T Result	DCM Result	P&T Compounds	DCM Compounds	Comments
10/10/2018	17:55:00	18465931	W01FW40CT	SS	0	0			MK11736 KT SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:40:00	18465932	W01FW40CT	SS	0	0			MK11736 KT FL [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:18:00	18465933	W01FW40CT	SS	0	0			MK11736 AP SP [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	17:46:00	18465934	W01FW40CT	SS	0	0			MK11736 KT SP D/S [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
10/10/2018	18:20:00	18465935	W01FW40CT	SS	0	0			MK11736 KT SP U/S [redacted] ST PETERS WAY ELLINGTON SAP# [redacted]
25/08/2020	14:15:00	20384036	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT FL D/S MK12657 SAP- [redacted]
25/08/2020	13:00:00	20384038	W01FW40CT	CC	0	0			[redacted] MILL ROAD KT FL U/S MK12657 SAP- [redacted]
25/08/2020	12:55:00	20384039	W01FW40CT	CC	0	0			[redacted] MILL ROAD KT SP U/S MK12657 SAP- [redacted]
25/08/2020	11:58:00	20384041	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT FL MK12657 SAP- [redacted]
25/08/2020	11:55:00	20384042	W01FW40CT	CC	0	0			[redacted] ARUNDEL ROAD KT SP MK12657 SAP- [redacted]
28/07/2021	15:56:00	21340264	W01FW40CT	RS	0	0			D/S [redacted] Elizabeth Court; St Neots; PE19 [redacted]
28/07/2021	14:55:00	21340265	W01FW40CT	RS	0	1		Tridecanol 0.15 ug/l	SPOT [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
28/07/2021	15:26:00	21340266	W01FW40CT	RS	0	0			U/S [redacted] Laxton close; st Neots; PE 19 [redacted]
28/07/2021	14:57:00	21340267	W01FW40CT	RS	0	0			FLUSH [redacted] Elizabeth Court; St Neots; Eaton Socon; PE19 [redacted]
05/10/2021	10:22:00	21456098	W01FW40CT	RS	0	0			FLUSH U/S [redacted] HIGH STREET
05/10/2021	10:43:00	21456099	W01FW40CT	RS	0	0			FLUSH D/S [redacted] THRAPSTON ROAD
05/10/2021	08:42:00	21456100	W01FW40CT	RS	0	0			FLUSH [redacted] GRASS YARD KIMBOLTON PE18 [redacted]
05/10/2021	08:30:00	21456101	W01FW40CT	RS	0	0			SPOT [redacted] GRASS YARD KIMBOLTON PE18 [redacted]
01/09/2022	17:15:00	22402496	W01FW40CT	CC	0	0			KT FL [redacted] DESBOROUGH ROAD [redacted] MK13664
							Total petrol components 1.07 ug/l Toluene 0.33 ug/l Total Xylenes and ethyl benzene 0.59 ug/l Total Alkyl benzenes 0.15 ug/l		
01/09/2022	17:15:00	22402497	W01FW40CT	CC	1	1	Total alkyl alkanes 0.34 ug/l	Total xylenes and ethyl benzene 0.76 ug/l	KT SP [redacted] DESBOROUGH ROAD SAP [redacted] 4 MK13664
06/09/2022	14:28:00	22409464	W01FW40CT	RS	0	0			SPOT [redacted] DESBOROUGH ROAD; HUNTINGDON; PE29 [redacted]
06/09/2022	14:35:00	22409465	W01FW40CT	RS	0	0			FLUSH [redacted] DESBOROUGH ROAD; HUNTINGDON; PE29 [redacted]
07/09/2022	13:05:00	22411559	W01FW40CT	CC	0	0			MK13664 XF KT SP SAP61041534 [redacted] DESBORO PE29 [redacted]
07/09/2022	13:10:00	22411560	W01FW40CT	CC	0	1		Undecanol 4.06 ug/l	MK13664 XF KT FL SAP61041534 [redacted] DESBORO PE29 [redacted]
31/05/2017	16:10:00	17250844	W01MW21CT	CC	0	0			MK11030 SP [redacted] CRANFIELD ROAD MOULSEA [redacted]
31/05/2017	17:38:00	17250845	W01MW21CT	CC	0	0			MK11030 FL [redacted] CRANFIELD ROAD MOULSEA [redacted]
								Caprolactam 0.45 ug/l	
31/05/2017	20:21:00	17250846	W01MW21CT	CC	0	1		Dibutyl phthalate 0.30 ug/l	MK11030 AP FL [redacted] CRANFIELD ROAD [redacted]

31/05/2017	21:12:00	17250847	W01MW21CT	CC	0	0			MK11030 AP FL [redacted] CRANFIELD ROAD [redacted]
02/06/2017	11:00:00	17254140	W01MW21CT	CC	0	0			MK11030 KT SP [redacted] CRANFIELD RD MOULSOE [redacted]
02/06/2017	12:43:00	17254141	W01MW21CT	CC	0	0			MK11030 KT SP [redacted] CRANFIELD RD MOULSOE [redacted]
02/06/2017	12:12:00	17254142	W01MW21CT	CC	0	0			MK11030 AP SP [redacted] CRANFIELD RD MOULSOE [redacted]
08/02/2019	14:45:00	19061651	W01MW21CT	RS	0	0			KT FL DS. [redacted] HYDE CLOSE MILTON KEYNES [redacted]
08/02/2019	15:20:00	19061654	W01MW21CT	RS	0	0			KT FL US MK16 [redacted]
08/02/2019	14:12:00	19061655	W01MW21CT	RS	0	0			KT SP [redacted] RUSKIN COURT NEWPORT MK 16 [redacted]
08/02/2019	14:41:00	19061660	W01MW21CT	RS	0	0			KT SP DS MK16 [redacted]
08/02/2019	14:20:00	19061661	W01MW21CT	RS	0	0			KT FL [redacted] RUSKIN COURT NEWPORT PAGNELL MK 16 [redacted]
08/02/2019	15:19:00	19061662	W01MW21CT	RS	0	0			KT SP US [redacted] PETERSHAM CLOSE [redacted]
07/05/2019	09:33:00	19209206	W01MW21CT	CC	1	0	Cyclohexane 0.20 ug/l		MK11979 OT SP [redacted] OLNEY SAP [redacted]
07/05/2019	10:13:00	19209207	W01MW21CT	CC	0	0			MK11979 OT FL [redacted] OLNEY SAP [redacted]
07/05/2019	11:32:00	19209209	W01MW21CT	CC	0	0			MK11979 KT SP D/S ACORN NURSERIES EMBERTON SAP 56201897
07/05/2019	11:23:00	19209347	W01MW21CT	CC	0	-----			MK11979 OT SP U/S [redacted] HONEY HILL EMBERTON SAP [redacted]
05/08/2021	11:20:00	21357251	W01MW21CT	RS	0	0			FLUSH [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
05/08/2021	11:14:00	21357252	W01MW21CT	RS	0	0			SPOT [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
05/08/2021	11:31:00	21357257	W01MW21CT	RS	0	0			[redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
05/08/2021	11:44:00	21357258	W01MW21CT	RS	0	0			[redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
09/08/2021	12:45:00	21361994	W01MW21CT	RS	0	0			SPOT [redacted] SHAW CLOSE; NEWPORT PAGNELL; MK16 [redacted] R/S 21353365
12/10/2019	11:05:00	19470367	W01MW23CT	RM	0	0			MANTON LANE RES KT FL MK12185 SAP# [redacted]
18/09/2020	12:26:00	20425500	W01MW23CT	SS	0	0			[redacted] Mill Ln Turvey MK43 [redacted]
18/09/2020	11:06:00	20425501	W01MW23CT	SS	0	0			[redacted] STATION RD; TURVEY MK43 [redacted]
18/09/2020	09:59:00	20425502	W01MW23CT	SS	0	0			CARLTON RD; TURVEY MK43 8EG OR MK43 [redacted]
18/09/2020	12:48:00	20425503	W01MW23CT	SS	0	0			Elmwood Turvey MK43 [redacted]
18/09/2020	10:26:00	20425504	W01MW23CT	SS	0	1		Total Heavy Gas oil 1.84 ug/l	[redacted] NORFOLK RD; TURVEY MK43 [redacted]
18/09/2020	09:30:00	20425505	W01MW23CT	SS	0	0			BAKERS CLOSE; TURVEY; MK43 [redacted]
18/09/2020	19:04:00	20426148	W01MW23CT	SS	0	0			[redacted] may road survey MK43 [redacted]
18/09/2020	19:07:00	20426149	W01MW23CT	SS	0	0			[redacted] TANDYS CLOSE TURVEY BEDFORD MK43 [redacted]
18/09/2020	19:53:00	20426150	W01MW23CT	SS	0	0			THE OLD KINGS ARMS JACKS LANE TURVEY MK43 8DH
18/09/2020	19:28:00	20426152	W01MW23CT	SS	0	0			[redacted] Norfolk road turvey Mk43 [redacted]
18/09/2020	18:45:00	20426153	W01MW23CT	SS	0	0			[redacted] carlton road survey MK43 [redacted]
19/09/2020	12:54:00	20426414	W01MW23CT	SS	0	0			2nd Mains; [redacted] Norfolk Road; Turvey; MK43 [redacted]
19/09/2020	12:38:00	20426415	W01MW23CT	SS	0	0			SPOT [redacted] Turvey; MK43 [redacted]
19/09/2020	12:48:00	20426416	W01MW23CT	SS	0	0			FLUSH [redacted] Norfolk Road; Turvey; MK43 [redacted]
26/09/2020	16:52:00	20435746	W01MW23CT	RS	0	0			57936475 - FLUSH - [redacted] NORFOLK ROAD TUVEY MK43 [redacted]
								Benzyl alcohol 0.12 ug/l	
24/02/2021	14:03:00	21069372	W01MW23CT	CC	0	1		Undecane 0.10 ug/l	MK12919, [redacted] MORRIS WALK, SAP# [redacted], SP, KT
24/02/2021	14:23:00	21069374	W01MW23CT	CC	0	0			MK12919, [redacted] MORRIS WALK, SAP# [redacted], FL, KT
15/10/2021	12:30:00	21472541	W01MW23CT	RS	0	0			D/S [redacted] Huntsman Way; Milton Ernest; MK44 [redacted]
15/10/2021	11:36:00	21472542	W01MW23CT	RS	0	0			[redacted] 3 ARKWRIGHT RD MEARNEST BED. MK44 [redacted]
15/10/2021	11:42:00	21472543	W01MW23CT	RS	0	0			FLUSH [redacted] ARKWRIGHT RD MEAREST BED. MK44 [redacted]
15/10/2021	12:55:00	21472561	W01MW23CT	RS	0	0			U/S [redacted] ARKWRIGHT RD MEARNEST BED. MK44 [redacted]
05/01/2022	14:00:00	22004199	W01MW27CT	CC	0	0			[redacted] CRICKTORS ROW WINSLOW KT SP MK13339 SAP# [redacted]
05/01/2022	12:45:00	22004200	W01MW27CT	CC	1	1	Ethyl Hexanol 0.1 ug/l Nonanal 0.23 ug/l	Ethyl Hexanol 0.42 ug/l	[redacted] LOWNDES WAY U/S KT SP MK13339 SAP# [redacted]
05/01/2022	13:52:00	22004202	W01MW27CT	CC	1	0	Ethyl hexanol 0.19 ug/l		[redacted] LOWNDES WAY KT FL MK13339 SAP# [redacted]
05/01/2022	12:20:00	22004203	W01MW27CT	CC	0	0			[redacted] LOWNDES WAY KT SP MK13339 SAP# [redacted]
14/09/2017	20:00:00	17419515	W01MW28CT	RS	-----	0			MK11191 KT SPOT UPSTREAM [redacted] CORNHILL TWO MILE ASH
								Heavy gas oil (nC22-nC28) 0.18 ug/l	
14/09/2017	19:15:00	17419516	W01MW28CT	RS	-----	1			MK11191 KT SPOT [redacted] LONGHORN DRIVE WHITE HOUSE
14/09/2017	19:20:00	17419517	W01MW28CT	RS	-----	0			MK11191 KT SPOT [redacted] LONGHORN DRIVE WHITE HOUSE
14/09/2017	19:30:00	17419518	W01MW28CT	RS	-----	0			MK11191 KT SPOT UPSTREAM [redacted] LONGHORN DRIVE WHITEHOUSESE
26/02/2018	09:20:00	18085221	W01MW28CT	CC	-----	0			54630822, [redacted] WALLMEAD GARDENS, MK5 [redacted] KITCHEN TAP
								Nonanal 0.10 ug/l Propanol chloro phosphate 0.14 ug/l	
08/01/2019	14:50:00	19008953	W01MW28CT	CC	0	1		Heptacosane 0.13 ug/l Propanol chloro phosphate 0.10 ug/l	MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP# [redacted]
08/01/2019	14:30:00	19008954	W01MW28CT	CC	0	1		Oleic acid 0.44 ug/l	MK11823 AP FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP# [redacted]

								Total butanediyl-bis-oxymethylene-bis-oxirane 8.34 ug/l
08/01/2019	15:50:00	19008955	W01MW28CT	CC		0	1	Oleic acid 3.25 ug/l Propanol chloro phosphate 0.10 ug/l
08/01/2019	17:07:00	19008956	W01MW28CT	CC		0	1	Oleic acid 1.83 ug/l
10/01/2019	09:49:00	19012602	W01MW28CT	RS	-----		0	
10/01/2019	10:01:00	19012603	W01MW28CT	RS	-----		0	
10/01/2019	10:24:00	19012604	W01MW28CT	RS	-----		0	
10/01/2019	10:24:00	19012605	W01MW28CT	RS	-----		0	
14/01/2019	08:34:00	19016563	W01MW28CT	RS	-----		0	
14/01/2019	08:45:00	19016564	W01MW28CT	RS	-----		0	
14/01/2019	08:11:00	19016565	W01MW28CT	RS	-----		0	
14/01/2019	08:23:00	19016566	W01MW28CT	RS	-----		0	
18/01/2019	09:13:00	19024914	W01MW28CT	RS	-----		0	
18/01/2019	09:25:00	19024915	W01MW28CT	RS	-----		0	
18/01/2019	08:53:00	19024916	W01MW28CT	RS	-----		0	
18/01/2019	09:10:00	19024917	W01MW28CT	RS	-----		0	
25/08/2020	10:28:00	20381136	W01MW28CT	RS		0	0	
25/08/2020	10:25:00	20381137	W01MW28CT	RS		0	0	
25/08/2020	10:06:00	20381138	W01MW28CT	RS		0	0	
02/10/2020	13:49:00	20452648	W01MW28CT	RS		0	0	
02/10/2020	13:24:00	20452649	W01MW28CT	RS		0	0	
02/10/2020	13:26:00	20452650	W01MW28CT	RS		0	0	
02/10/2020	14:11:00	20452651	W01MW28CT	RS		0	0	
06/08/2021	19:48:00	21359919	W01MW28CT	RS		0	0	
06/08/2021	19:59:00	21359920	W01MW28CT	RS		0	0	
06/08/2021	20:51:00	21359921	W01MW28CT	RS		0	0	
06/08/2021	20:23:00	21359922	W01MW28CT	RS		0	0	
06/08/2021	19:40:00	21360093	W01MW28CT	RS		0	0	
10/01/2017	15:09:00	17010084	W01MW29CT	SS		0	0	
10/01/2017	15:18:00	17010085	W01MW29CT	SS		0	0	
25/09/2020	14:34:00	20434813	W01MW29CT	RS		0	0	
25/09/2020	15:38:00	20434814	W01MW29CT	SS		0	0	
25/09/2020	15:14:00	20434815	W01MW29CT	SS		0	0	
25/09/2020	14:28:00	20434816	W01MW29CT	RS		0	0	
20/10/2020	12:29:00	20476990	W01MW29CT	RS		0	0	
20/10/2020	12:25:00	20476992	W01MW29CT	RS		0	0	
05/07/2021	11:14:00	21305641	W01MW29CT	RS		0	0	
05/07/2021	11:28:00	21305646	W01MW29CT	RS		0	0	
05/07/2021	10:40:00	21305647	W01MW29CT	RS		0	0	
05/07/2021	10:40:00	21305649	W01MW29CT	RS		0	0	
28/07/2021	11:05:00	21340137	W01MW29CT	RS		0	0	
28/07/2021	11:20:00	21340138	W01MW29CT	RS		0	0	
28/07/2021	11:57:00	21340149	W01MW29CT	RS		0	0	
28/07/2021	11:35:00	21340150	W01MW29CT	RS		0	0	
22/06/2019	10:30:00	19282882	W01MW31CT	SS	-----		0	
22/06/2019	11:00:00	19282883	W01MW31CT	SS	-----		0	
04/12/2019	16:06:00	19556102	W01MW31CT	DP	-----		0	
15/02/2021	16:54:00	21055772	W01MW31CT	RS		0	0	
15/02/2021	17:04:00	21055773	W01MW31CT	RS		0	0	
15/02/2021	16:31:00	21055774	W01MW31CT	RS		0	0	
23/06/2021	13:12:00	21283635	W01MW31CT	RS		0	0	
23/06/2021	13:21:00	21283636	W01MW31CT	RS		0	0	
23/06/2021	13:41:00	21283637	W01MW31CT	RS		0	0	
23/06/2021	14:01:00	21283638	W01MW31CT	RS		0	0	
29/09/2021	14:55:00	21445706	W01MW31CT	CC		0	0	
29/09/2021	14:40:00	21445707	W01MW31CT	CC		0	0	
29/09/2021	15:55:00	21445708	W01MW31CT	CC		0	-----	
29/09/2021	15:45:00	21445709	W01MW31CT	CC		0	-----	
29/09/2021	16:40:00	21445710	W01MW31CT	CC		0	-----	

MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT FL U/S [redacted] BELVOIR AV. EMERSON VALLEY SAP#[redacted]
MK11823 KT SP U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 KT FL U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 AP SP U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 AP FL U/S [redacted] BELVOIR AVENUE SAP#[redacted]
MK11823 KT SP [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 AP SP [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 AP FL [redacted] BARKSTONE CLOSE EMERSON VALLEY SAP#[redacted]
MK11823 KT SP D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 KT FL D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 AP SP D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]
MK11823 AP FL D/S [redacted] BARKSTONE CLOSE EMERSON VALL SAP[redacted]5
FLUS [redacted] MEDHURST; MK8 [redacted] RS- 20368031 SAP-[redacted] MK- 1264
SPOT [redacted] MEDHURST; MK8 [redacted] RS- 20368031 SAP-[redacted] MK- 1264
U/S [redacted] MEDHURST TWO MILE ASH; MK8 [redacted]
RS 20440233 D/S K/T [redacted] GRAMONDE DRIVE WYMBUSH
RS 20440233 SPOT K/T RICO COURIERS 13 GRAMONDE DR WYMBUSH
RS 20440233 FL K/T RICO COURIERS 13 GRAMONDE DR WYMBUSH
RS 20440233 U/S K/T [redacted] GRAMONDE DR k
FL K/T [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
U/S K/T 1 [redacted] BLACKMOOR GATE
U/S K/T [redacted] DULVERTON DRIVE
D/S [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
SPOT K/T [redacted] BLACKMOOR GATE FURZTON MILTON KEYNES MK4 [redacted]
MK10820 KT SP [redacted] GREEN LANE WOLVERTON [redacted]
MK10820 KT FL [redacted] GREEN LANE WOLVERTON [redacted]
FLUSH - TESA UK LTD.; Yeomans Drive; Milton Keynes MK14 5LS
U/S FLUSH - VOLKSWAGEN LTD security YEOMANS DRIVE; MK14 5AN
D/S FLUSH-CocaCola; Blakelands House;Yeomans Drivs; MK14 5LZ
SPOT - TESA UK LTD.; Yeomans Drive; Milton Keynes MK14 5LS
SPOT: TESA; UK LTD.; YEOMANS DRIVE; MILTON KEYNES MK14 5LS
FLUSH TESA; UK LTD.; YEOMANS DRIVE; MILTON KEYNES; MK14 5LS
[redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
[redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
SPOT [redacted] ST PETERS WAY NEW BRADWELL MILTON KEYNES MK13[redacted]
FLUSH [redacted] ST PETERS WAY NEW BRADWELL MK13 [redacted]
SPOT [redacted] BRAMBLE AVENUE MILTON KEYNES; MK14 [redacted]
FLUSH [redacted] BRAMBLE AVENUE MILTON KEYNES; MK14 [redacted]
D/S [redacted] BRAMBLE AVENUE; CONNIBURROW; MILTON KEYNES; MK14 [redacted]
U/S [redacted] BRAMBLE AVENUE; CONNIBURROW; MILTON KEYNES; MK14 [redacted]
CRAMPBELL WHARF MARINA KT FLUSH MK12050 SAP#56376045
FH 72899223 FH FLUSH MK 12050 SAP#56376045
56958622 - D/S [redacted] Elmswell Gate MK17 [redacted] pdcl 0.43
SPOT Toolstation; 6 Peverel Drive; Milton Keynes; MK1 1NL
FLUSH Toolstation; 6 Peverel Drive; Milton Keynes; MK1 1NL
U/S Lindal Security; Peverel Drive; Milton Keynes; MK1 1NL
SPOT- [redacted] ROCHFORDS; COFFEE HALL; MK6 [redacted] 59161507
FLUSH - [redacted] ROCHFORDS; COFFEE HALL; MK6 [redacted] 5916507
US - - 5916507 [redacted] ROCHFORDS; COFFEE HALL; MILTON KEYNES MK6 [redacted]
DS - - 5916507 [redacted] ROCHFORDS; COFFEE HALL; MILTON KEYNES MK6
[redacted] FISHERMEAD BLVD KT FL MK13222 [redacted] AIR GAP IN P+T
[redacted] FISHERMEAD BLVD KT SP MK13222 [redacted] AIR GAP IN P+T
[redacted] FISHERMEAD BLVD FL D/S MK13222 SAP#[redacted]
[redacted] FISHERMEAD BLVD SP D/S MK13222 SAP#[redacted]
[redacted] HELFORD PUACK FL U/S D/S MK13222 [redacted] NO SPARE VIAL

29/09/2021	16:30:00	21445711	W01MW31CT	CC		0	-----		[redacted] HELFORD PUACK SP U/S D/S MK13222 SAP#[redacted]
08/11/2021	16:30:00	21510473	W01MW31CT	RS		0		0	[redacted] JEEVES CL PEARTREE BRIDGE MK MK6 [redacted] MK13265
08/11/2021	16:47:00	21510474	W01MW31CT	RS		0		0	[redacted] WOODSEY HEADLAND PEARTREE BRIDGE MK6 [redacted] MK13265
08/11/2021	17:15:00	21510475	W01MW31CT	RS		0		0	PEARTREE BRIDGE INN MK MK6 3PA MK13265
08/11/2021	17:30:00	21510476	W01MW31CT	RS		0		0	PEARTREE BRIDGE INN MK MK6 3PA MK13265
03/12/2021	14:30:00	21556819	W01MW31CT	RS		0		0	[redacted] ALBERT STREET; BLETCHLEY MK2 [redacted]
03/12/2021	13:28:00	21556820	W01MW31CT	RS		0		0	BURGER KING; SAXON STREET; BLETCHLEY MK2 2EN
03/12/2021	14:04:00	21556824	W01MW31CT	RS		0		0	[redacted] OLIVER ROAD; BLETCHLEY MK2 [redacted]
03/12/2021	15:00:00	21556825	W01MW31CT	RS		0		0	[redacted] FITZWILLIAM STREET; BLETCHLEY MK3 [redacted]
22/02/2017	20:30:00	17084365	W01MW52CT	RS		0		0	KT SP [redacted] CONISTON WAY BLETCHLEY [redacted]
22/02/2017	20:45:00	17084366	W01MW52CT	RS		0		0	KT FL [redacted] CONISTON WAY BLETCHLEY [redacted]
22/02/2017	20:55:00	17084367	W01MW52CT	RS		0		0	AP FL [redacted] CONISTON WAY BLETCHLEY [redacted]
22/02/2017	21:15:00	17084368	W01MW52CT	RS		0		0	KT FL [redacted] CONISTON WAY BLETCHLEY [redacted]
22/02/2017	21:30:00	17084370	W01MW52CT	RS		0		0	KT FL U/S [redacted] HUNTER DRIVE BLETCHLEY [redacted]
22/02/2017	21:02:00	17084371	W01MW52CT	RS		0		0	KT FL D/S [redacted] TUMMEL WAY BLETCHLEY [redacted]
23/02/2017	10:31:00	17086219	W01MW52CT	RS		0		0	MK10876 KT [redacted] CONISTON WAY SAP [redacted]
28/09/2019	16:29:00	19450247	W01MW52CT	MI		0		0	[redacted] OXFORD STREET KT FL MK12189 SAP [redacted]
28/09/2019	16:12:00	19450249	W01MW52CT	MI		0		0	[redacted] OXFORD STREET KT SP MK12189 SAP [redacted]
10/09/2021	17:50:00	21418090	W01MW52CT	RS		0		1	Nonanal 0.19 ug/l [redacted] RYDAL WAY; BLETCHLEY; MK2 [redacted]
10/09/2021	17:14:00	21418091	W01MW52CT	RS		0		1	Nonanal 0.12 ug/l U/S [redacted] RYDAL WAY; BLETCHLEY; MK2 [redacted]
10/09/2021	17:36:00	21418092	W01MW52CT	RS		0		1	Nonanal 0.13 ug/l D/S [redacted] RYDAL WAY; BLETCHLEY; MK2 [redacted]
24/09/2021	10:37:00	21437742	W01MW58CT	RS		0		0	FLUSH - [redacted] ESSENDEN COURT; STONY STRATFORD; MK11 [redacted]
24/09/2021	10:33:00	21437743	W01MW58CT	RS		0		0	SPOT - [redacted] ESSENDEN COURT; STONY STRATFORD; MK11 [redacted]
24/09/2021	10:09:00	21437744	W01MW58CT	RS		0		0	D/S - [redacted] ESSENDEN COURT MK11 [redacted]
24/09/2021	10:23:00	21437745	W01MW58CT	RS		0		0	U/S - [redacted] ESSENDEN COURT; STONY STRATFORD MK11 [redacted]
14/09/2020	15:25:00	20418957	W01RW08CT	RS		0		0	U/S - [redacted] WELLAND COURT; DESBOROUGH NN14 [redacted]
14/09/2020	15:16:00	20418960	W01RW08CT	RS		0		0	D/S - [redacted] STATION ROAD DESBOROUGH NN14 [redacted]
15/09/2020	13:36:00	20420467	W01RW08CT	RS		0		0	SPOT - FLAT [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
15/09/2020	13:31:00	20420468	W01RW08CT	RS		0		0	FLUSH - [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
15/09/2020	13:46:00	20420469	W01RW08CT	RS		0		0	FLUSH - FLAT [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
15/09/2020	13:18:00	20420470	W01RW08CT	RS		0		0	SPOT - [redacted] STATION ROAD; DESBOROUGH NN14 [redacted]
22/01/2021	15:32:00	21025017	W01RW08CT	SS		0		0	SAP [redacted] CHURCH LANE; DINGLEY; LE16 [redacted]
22/01/2021	16:28:00	21025018	W01RW08CT	SS		0		0	SAP [redacted] HERMITAGE RD; BRAMPTON ASH; LE16 [redacted]
22/01/2021	17:40:00	21025019	W01RW08CT	SS		0		0	SAP [redacted] Harborough RD; Dingley; LE16 [redacted]
22/01/2021	17:00:00	21025021	W01RW08CT	SS		0		0	SAP [redacted] Home Close; Dingley; LE16 [redacted]
23/01/2021	17:40:00	21025457	W01RW08CT	SS		0	-----		[redacted] MK 12870 [redacted] Hermitage RD; Brampton Ash; LE16 [redacted]
23/01/2021	16:46:00	21025458	W01RW08CT	SS		0	-----		[redacted] MK [redacted] [redacted] Harborough RD; Dingley; LE16 [redacted]
23/01/2021	17:06:00	21025459	W01RW08CT	SS		0	-----		[redacted] MK 12870 3; Home Close; Dingley; LE16 [redacted]
23/01/2021	16:23:00	21025460	W01RW08CT	SS		0	-----		[redacted] MK 12870 [redacted] Church Lane; Dingley LE16 [redacted]
24/01/2021	16:07:00	21026137	W01RW08CT	SS	-----			0	[redacted] MK 12870 [redacted] Home Close; Dingley; LE16 [redacted]
24/01/2021	15:51:00	21026138	W01RW08CT	SS	-----			0	[redacted] MK 12870 [redacted] Harborough RD; Dingley; LE16 [redacted]
25/01/2021	12:00:00	21027217	W01RW08CT	SS		0		0	[redacted] Church Lane; Market Harborough; LE16 [redacted]
25/01/2021	12:19:00	21027218	W01RW08CT	SS	-----			0	[redacted] MK 12870 [redacted] Church Lane; Dingley LE16 [redacted]
29/03/2017	15:00:00	17142380	W01RW10CT	SS		0		0	MK10933 KT SP [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	15:15:00	17142381	W01RW10CT	SS		0		0	MK10933 KT FL [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	15:40:00	17142382	W01RW10CT	SS		0		0	MK10933 AP SP [redacted] NASEBY RD THORNBY [redacted]
29/03/2017	16:00:00	17142383	W01RW10CT	SS		0		0	MK10933 KT U/S [redacted] WELFORD RD THORNBY [redacted]
29/03/2017	16:30:00	17142384	W01RW10CT	SS		0		0	MK10933 KT D/S [redacted] NASEBY ROAD THORNBY [redacted]
09/05/2017	09:30:00	17214122	W01RW10CT	SS		0		0	MK10989 KT SP [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	09:45:00	17214123	W01RW10CT	SS		0		0	MK10989 KT [redacted] [redacted] CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	10:20:00	17214124	W01RW10CT	SS		0		0	MK10989 AP SP 1 CRICK ROAD YELVERTOFT N'HAMPTON [redacted]
09/05/2017	11:57:00	17214125	W01RW10CT	SS		0		0	MK10989 KT SP U/S [redacted] HIGH STREET YELVERTOFT [redacted]
09/05/2017	11:57:00	17214126	W01RW10CT	SS		0		0	MK10989 KT FL U/S [redacted] HIGH STREET YELVERTOFT [redacted]
09/05/2017	13:30:00	17214127	W01RW10CT	SS		0		0	MK10989 KT SP D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
09/05/2017	13:30:00	17214128	W01RW10CT	SS		0		0	MK10989 KT FL D/S [redacted] DRAYSON LANE YELVERTOFT [redacted]
12/04/2018	17:50:00	18166255	W01RW10CT	SS	-----			0	MK11492 KT [redacted] HENLEY HOUSE WATFORD
11/10/2018	16:00:00	18467713	W01RW10CT	RS		0		1	Dibutyl phthalate 0.56 ug/l MK11749 AP SP [redacted] SCOTT CLOSE PLAST STANDPIPE FX SAP#[redacted]
11/10/2018	15:35:00	18467714	W01RW10CT	RS		0		0	MK11749 KT SP U/S [redacted] SCOTT CLOSE RAVENSTHORPE FX SAP#[redacted]
11/10/2018	15:19:00	18467715	W01RW10CT	RS		0		0	MK11749 KT SP D/S [redacted] SCOTT CLOSE RAVENSTHORPE SAP#[redacted]
12/10/2018	14:30:00	18470199	W01RW10CT	SS		0		0	MK11749 KT SP [redacted] SCOTT CLOSE RAVENSTHORPE SAP#[redacted]
12/10/2018	14:30:00	18470200	W01RW10CT	SS		0		0	MK11749 KT FL [redacted] SCOTT CLOSE RAVENSTHORPE SAP#[redacted]
13/11/2019	10:15:00	19518014	W01RW10CT	CC		0		0	ASHBY LODGE KT SP MK12253 SAP#[redacted]

13/11/2019	10:29:00	19518015	W01RW10CT	CC		0	0			ASHBY LODGE KT FL MK12253 SAP#[redacted]
14/11/2019	12:40:00	19519890	W01RW10CT	CC		1	1	Total petrol components 6.80 ug/l Methylcyclohexane 0.21 ug/l	Total petrol components 3.37 ug/l	ASHBY LODGE OT FL MK12253 SAP#[redacted]
14/11/2019	12:30:00	19519892	W01RW10CT	CC		1	1	Total petrol components 22.3 ugl	Total petrol components 10.34 ug/l	ASHBY LODGE OT SP MK12253 SAP#[redacted]
29/08/2022	13:02:00	22395583	W01RW10CT	CC		0	0			MK13661 XF KT SP D/S SAP[redacted] NASEBY RD HASELBECH
28/08/2022	17:00:00	22395584	W01RW10CT	CC		0	0			MK13661 XF KT SP SAP[redacted] NASEBY RD HASELBECH
28/08/2022	17:05:00	22395585	W01RW10CT	CC		0	0			MK13661 XF KT FL SAP[redacted] NASEBY RD HASELBECH
28/08/2022	17:30:00	22395587	W01RW10CT	CC		0	0			MK13661 XF KT SP U/S SAP[redacted] NASEBY RD
23/08/2021	14:39:00	21384500	W01RW11CT	CC		0	0			MK13174 [redacted] PITSFORD KT FL, SAP#[redacted]
23/08/2021	14:39:00	21384501	W01RW11CT	CC		0	0			MK13174 [redacted] PITSFORD KT SP, SAP#[redacted]
23/02/2017	13:55:00	17086218	W01RW14CT	SS		0	0			MK10877 [redacted] RIDGEWAY FURLONG SAP [redacted]
12/04/2018	17:00:00	18166249	W01RW14CT	SS	-----		0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:30:00	18166250	W01RW14CT	SS	-----		0			MK11492 KT [redacted] HENLEY COURT STATION ROAD
12/04/2018	15:00:00	18166251	W01RW14CT	SS	-----		0			MK11492 KT [redacted] STATION ROAD
12/04/2018	17:30:00	18166252	W01RW14CT	SS	-----		0			MK11492 KT [redacted] STATION ROAD
12/04/2018	14:30:00	18166253	W01RW14CT	SS	-----		0			MK11492 KT [redacted] PARK CLOSE WATFORD
12/04/2018	16:15:00	18166254	W01RW14CT	SS	-----		0			MK11492 KT [redacted] STATION ROAD
14/08/2017	19:45:00	17370209	W01RW15CT	RS		1	-----	Ethyl hexanol 0.22 ug/l		KT SP [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	20:00:00	17370210	W01RW15CT	RS		1	-----	Ethyl hexanol 0.43 ug/l		KT FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:35:00	17370211	W01RW15CT	RS		1	-----	Ethyl hexanol 0.85 ug/l		AP FL [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	19:00:00	17370212	W01RW15CT	RS		1	-----	Ethyl hexanol 0.81 ug/l		KT FL U/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
14/08/2017	18:45:00	17370213	W01RW15CT	RS		1	-----	Ethyl hexanol 0.97 ug/l		KT FL D/S [redacted] DUSTON ROAD NORTHAMPTON [redacted]
09/06/2019	17:51:00	19261603	W01RW15CT	DP		0	0			56352478 - [redacted] Telford Street; Upton Northampton; NN5 [redacted]
09/06/2019	18:10:00	19261717	W01RW15CT	DP		0	0			56352478 [redacted] Baird Avenue; Upton; Northampton NN5 [redacted]
09/06/2019	18:24:00	19261718	W01RW15CT	DP		0	0			56352478 [redacted] Somerset Drive; Upton Northampton NN5 [redacted]
09/06/2019	17:26:00	19261719	W01RW15CT	DP		0	0			56352478 [redacted] High Street; Upton; Northampton NN5 [redacted]
09/06/2019	18:35:00	19261720	W01RW15CT	DP		0	0			56352478 [redacted] Hawkstone Close; Duston; Northampton NN5 [redacted]
10/06/2019	18:42:00	19263674	W01RW15CT	SS	-----		0			R/S. 19260971 [redacted] TELFORD STREET NN5 [redacted] flush 2min temp 15.4
10/06/2019	19:05:00	19263675	W01RW15CT	SS	-----		0			R/S. 19260971 [redacted] BAIRD AVE NN5 [redacted] flush 2min temp14.9
15/06/2019	17:10:00	19272181	W01RW15CT	RS		0	-----			[redacted] - [redacted] Somerset Drive; Upton Northampton NN5 [redacted]
01/03/2019	12:12:00	19101857	W01RW16CT	SS		1	0	Total xylenes and ethylbenzene 0.70 ug/l		FLUSH - WH Shoebridge&Sons Garage;109 Billing Road; NN1 5HU
01/03/2019	12:53:00	19101858	W01RW16CT	SS		0	0			DS - [redacted] Barry Road Northampton [redacted]
01/03/2019	12:32:00	19101859	W01RW16CT	SS		0	0			US - [redacted] Billing Road Northampton. [redacted]
06/03/2019	10:11:00	19107999	W01RW16CT	SS		1	1	Total xylenes and ethylbenzene 1.44 ug/l	Total xylenes and ethylbenzene 0.67 ug/l Di-iso-octyl phthalate 0.55 ug/l Unresolved polar hump 4.52 ug/l	55932211 FLUSH WH SHOEBRIDGE & SONS 109; BILLING ROAD NN1 5H
13/03/2019	14:51:00	19117781	W01RW16CT	SS		1	1	Total xylenes and ethylbenzene 0.68 ug/l	Total xylenes and ethylbenzene 1.11 ug/l	FLUSH - WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
14/03/2019	15:17:00	19120041	W01RW16CT	SS		0	0			FLUSH U/S spray booth WH SHOEBRIDGE & SONS GARAGE; NN1 5HU
14/03/2019	15:09:00	19120043	W01RW16CT	SS		0	0			FLUSH-KT WH SHOEBRIDGE & SONS GARAGE; 109 BILLING RD NN1 5HU
08/10/2020	11:59:00	20461230	W01RW16CT	SS		0	0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:16:00	20461231	W01RW16CT	SS		0	0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	12:36:00	20461232	W01RW16CT	SS		0	0			D/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	10:58:00	20461233	W01RW16CT	SS		0	0			U/S [redacted] ARTHUR STREET; NN2 [redacted]
08/10/2020	11:16:00	20461234	W01RW16CT	SS		0	0			U/S [redacted] BUNTING RD; NN2 [redacted]
08/10/2020	11:39:00	20461235	W01RW16CT	SS		0	0			U/S [redacted] BUNTING RD; NN2 [redacted]
20/10/2020	12:41:00	20477011	W01RW16CT	RS		0	0			SPOT- GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON, NN7 2EG
20/10/2020	12:51:00	20477012	W01RW16CT	RS		0	0			FLUSH - GOODSON ELECTRICAL, NORTH HATCHERY, QUINTON NN7 2EG
14/07/2022	17:15:00	22325133	W01RW16CT	CC		0	0			KT SP [redacted] DEAL COURT MK13600 SAP#[redacted]
14/07/2022	17:40:00	22325134	W01RW16CT	CC		0	0			KT FL [redacted] DEAL COURT MK13600 SAP#[redacted]
20/07/2022	20:15:00	22334368	W01RW16CT	CC		0	0			MK13607 XF KT SAP[redacted] [redacted] KINGSLAND AVE NN2 [redacted]

20/07/2022	20:00:00	22334370	W01RW16CT	CC	1	1	Total petrol components 52.49 ug/l Total Ethyl benzene and xylenes 30.21 ug/l Total Alkyl benzenes 20.96 ug/l Toluene 1.32 ug/l	Total petrol components 21.03 ug/l Total Ethyl benzene and xylenes 11.04 ug/l Total Alkyl benzenes 8.8 ug/l Toluene 0.6 ug/l Total naphthalene and subsituted naphthalene 0.59 ug/l	MK13607 XF KT SP SAP [redacted] KINGSLAND AVE NN2 [redacted]
20/07/2022	20:05:00	22334371	W01RW16CT	CC	1	1	Total petrol components 58.2 ug/l Total Ethyl benzene and xylenes 34.9 ug/l Total Alkyl benzenes 21.58 ug/l Toluene 1.72 ug/l	Total petrol components 16.75 ug/l Total Ethyl benzene and xylenes 8.97 ug/l Total Alkyl benzenes 6.86 ug/l Toluene 0.48 ug/l Total naphthalene and subsituted naphthalene 0.44 ug/l	MK13607 XF KT FL SAP [redacted] KINGSLAND AVE NN2 [redacted]
21/07/2022	19:06:00	22336107	W01RW16CT	SS	0	0			SPOT - [redacted] KINGSLAND AVE; NORTHAMPTON NN2 [redacted]
03/08/2022	12:40:00	22357034	W01RW16CT	CC	1	1	Hexene 0.1 ug/l	Total petrol components 52.15 ug/l Total Ethyl benzene and xylenes 43.37 ug/l Total Alkyl benzenes 8.49 ug/l Total naphthalene and substituted naphthalenes 0.29 ug/l Dimethyl Phenol 0.11 ug/l	MK13607 KT SPOT [redacted] KINGSLAND AVE #61015063
03/08/2022	12:50:00	22357035	W01RW16CT	CC	1	1	Hexene 0.1 ug/l	Total Ethyl benzene and xylenes 0.16 ug/l	MK13607 KT FLUSH [redacted] KINGSLAND AVE #61015063
15/08/2022	14:05:00	22373723	W01RW16CT	RS	0	0			FLUSH [redacted] KINGSLAND AVENUE; NORTHAMPTON; NN2 [redacted]
15/08/2022	13:58:00	22373726	W01RW16CT	RS	1	0	Total alkyl alkanes 2.6 ug/l Total alkyl alkenes 0.18 ug/l		SPOT [redacted] KINGSLAND AVENUE; NORTHAMPTON; NN2 [redacted]
25/08/2022	09:26:00	22390183	W01RW16CT	RS	-----	1		Trimethyl pentanediol diisobutyrate 0.25 ug/l Triallyl cyanurate 1.03 ug/l Ditert butyl oxaspiro decadiene dione 0.14 ug/l Oleic acid 0.78 ug/l	MK13607 FLUSH [redacted] KINGSLAND AVENUE NORTHAMPTON NN2 [redacted]
25/08/2022	09:07:00	22390186	W01RW16CT	SS	0	0			FLUSH [redacted] KINGSLAND AVENUE; NORTHAMPTON; NN2 [redacted]
25/08/2022	08:55:00	22390191	W01RW16CT	SS	0	0			SPOT [redacted] KINGSLAND AVENUE; NORTHAMPTON; NN2 [redacted]
25/08/2022	09:10:00	22390193	W01RW16CT	RS	1	0	Unidentified compound, RT 5.39 0.82 ug/l		MK13607 SPOT [redacted] KINGSLAND AVENUE NORTHAMPTON NN2 [redacted]
15/11/2022	13:16:00	22635363	W01RW16CT	SS	0	1		Hydroxy methyl pentanone 2.06 ug/l Nonanal 0.12 ug/l Tributyl acetylcitrate 0.31 ug/l	
15/11/2022	13:21:00	22635364	W01RW16CT	SS	0	1		Hydroxy methyl pentanone 0.33 ug/l Nonanal 0.18 ug/l Tributyl acetylcitrate 0.22 ug/l Dioctyl phthalate 0.63 ug/l	
03/09/2020	14:30:00	20405599	W01RW18CT	SS	0	1		Di-iso-butyl phthalate 0.53 ug/l	ARTEMIS, HARROWDEN ROAD, KT SP, MK 12667, SAP 57768648, XF
03/09/2020	14:45:00	20405600	W01RW18CT	SS	0	0			ARTEMIS, HARROWDEN ROAD, KT FL, MK 12667, SAP 57768648, XF
27/09/2022	13:20:00	22441704	W01RW19CT	CC	0	0			MK13687 SAP613373737 ST MARYS PRIMARY SCHOOL, WOODSIDE WAY
27/09/2022	13:20:00	22442084	W01RW19CT	CC	0	0			MK13687 SAP61333737 ST MARYS PRIMARY SCHOOL NN57HU
18/07/2017	17:30:00	17330321	W01RW20CT	MI	0	0			MK11124 KT FL [redacted] MANOR PARK MAIDS MORTON RETROSPEC [redacted]
08/09/2017	10:05:00	17412372	W01RW20CT	SS	1	-----	Chloroform 0.89 ug/l Bromodichloromethane 2.10 ug/l Dibromochloromethane 4.84 ug/l Bromoform 2.55 ug/l		MK11184 KT [redacted] ASTWICK UNNAMED ROAD
05/09/2019	17:15:00	19407948	W01RW20CT	CC	0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, SAP [redacted]

05/09/2019	17:35:00	19407949	W01RW20CT	CC	0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, SAP[redacted]
05/09/2019	15:55:00	19407950	W01RW20CT	CC	0	0			[redacted] STONY HILL, PAULERSPURY, KT, FL, MK12164, SAP[redacted]
05/09/2019	15:45:00	19407952	W01RW20CT	CC	0	0			[redacted] STONY HILL, PAULERSPURY, KT, SP, MK12164, SAP[redacted]
17/08/2020	17:11:00	20370493	W01RW20CT	SS	0	0			57817710 - SPOT - ONE STOP 9 SWINNEYFORD RD NN12 6HD
17/08/2020	17:22:00	20370494	W01RW20CT	SS	0	0			57817710 - FLUSH - ONE STOP 9 SWINNEYFORD RD NN12 6HD
17/08/2020	17:44:00	20370495	W01RW20CT	SS	0	0			57817710 - US FLUSH [redacted] SWINNEYFORD RD NN12 [redacted]
17/08/2020	18:03:00	20370496	W01RW20CT	SS	0	1	Total Petrol Components 1.71 ug/l Consisting of: Substituted Naphthalenes 0.13 ug/l	Oleic acid 0.64 ug/l	57817710 - DS FLUSH - [redacted] SWINNEYFORD RD NN12 [redacted]
23/09/2020	08:22:00	20430626	W01RW20CT	RS	1	0	Alkyl benzenes 1.58 ug/l		FLUSH [redacted]; BANBURY LANE ROTHERSTHORPE
23/09/2020	08:10:00	20430627	W01RW20CT	RS	1	0	Substituted Naphthalene 0.20 ug/l Total alkyl benzenes 1.80 ug/l		FLUSH [redacted]; BANBURY LANE ROTHERSTHORPE
25/09/2020	15:27:00	20434630	W01RW20CT	RS	1	0	Substituted naphthalenes 0.69 ug/l Total alkyl benzenes 1.40 ug/l		K/T SPOT-[redacted]; Banbury Lane; Rothersthorpe NN7 [redacted]
25/09/2020	15:28:00	20434631	W01RW20CT	RS	1	0	Substituted naphthalenes 1.07 ug/l Total alkyl benzenes 2.1 ug/l		K/T FLUSH-[redacted]; Banbury Lane;Rothersthorpe NN7 [redacted]
01/10/2020	14:00:00	20451444	W01RW20CT	RS	1	1	Naphthalene + substituted naphthalenes 0.23 ug/l	Total alkyl benzenes 0.22 ug/l Naphthalene + substituted naphthalenes 0.76 ug/l	[redacted], MK12715, SAP#[redacted]
13/10/2020	11:10:00	20467272	W01RW20CT	RS	0	0			FL [redacted] BANBURY LANE ROTHERSTHOPRE NN7 [redacted]
13/10/2020	11:17:00	20467274	W01RW20CT	RS	0	0			SPOT [redacted] BANBURY LANE ROTHERSTHORPE [redacted]
14/06/2022	21:10:00	22273801	W01RW20CT	CC	0	0			MK13557 KT SP SAP [redacted] DOVE BARN WICKEN RD MK19[redacted]
14/06/2022	21:20:00	22273802	W01RW20CT	CC	1	0	Ethyl hexanol 0.23 ug/l		MK13557 KT FL SAP [redacted] DOVE BARN WICKEN RD MK19[redacted]
15/06/2022	14:00:00	22273804	W01RW20CT	CC	0	0			MK13557 KT SP SAP [redacted] WICKEN RD DEANSHANGER MK19[redacted]
15/06/2022	15:40:00	22273805	W01RW20CT	CC	0	0			MK13557 KT SP SAP [redacted] WICKEN RD DEANSHANGER MK19[redacted]
26/07/2022	11:20:00	22342755	W01RW20CT	SS	0	0			[redacted] CHURCH ROAD; UPPER BODDINGTON; NN11 [redacted]
26/07/2022	11:35:00	22342758	W01RW20CT	SS	0	0			[redacted] FARM STILE; UPPER BODDINGTON; NN11 [redacted]
26/07/2022	11:49:00	22342759	W01RW20CT	SS	0	0			[redacted] PRIOR HARWICK ROAD; UPPER BODDINGTON; NN11 [redacted]
28/07/2022	11:39:00	22346672	W01RW20CT	SS	0	0			Farm Stile; Upper Boddington; NN11 [redacted]
28/07/2022	10:33:00	22346673	W01RW20CT	SS	0	0			Church Road; Upper Boddington; NN11 [redacted]
28/07/2022	12:15:00	22346676	W01RW20CT	SS	0	0			[redacted] Prior Harwick Road; Upper Boddington; NN11 [redacted]
24/08/2022	19:13:00	22389138	W01RW20CT	RS		0	1	Phenylene bis ethanone 0.15 ug/l Hydroxy methylethyl phenyl ethanone 0.11 ug/l Thiabendazole 0.12 ug/l Diphenyl sulfone 0.12 ug/l	2nd mains tap- [redacted] The Green; NN11 [redacted] [redacted]
24/08/2022	19:01:00	22389139	W01RW20CT	RS		0	1	Tributyl acetylcitrate 0.59 ug/l	PRE BACTI- [redacted] The Green; Banbury Road; NN11 [redacted]
24/08/2022	19:08:00	22389140	W01RW20CT	RS		0	0		POST BACTI- [redacted] The Green; Banbury Road; NN11 [redacted]
24/08/2022	18:29:00	22389141	W01RW20CT	RS		0	0		POST BACTI- [redacted] NN11 [redacted]
24/08/2022	19:41:00	22389142	W01RW20CT	RS		0	1	Oleic acid 0.65 ug/l	POST BACTI- [redacted] The Green; Banbury Road NN11 [redacted]
31/08/2022	11:38:00	22397889	W01RW20CT	SS		0	0		[redacted] The Green; Lower Boddington; NN11 [redacted]
31/08/2022	12:21:00	22397890	W01RW20CT	SS		0	0		[redacted]; Lower Boddington; NN11 [redacted]
31/08/2022	11:07:00	22397891	W01RW20CT	SS		0	0		[redacted]; Banbury Road; Lower Boddington; NN11 [redacted]
13/01/2017	10:00:00	17015913	W01RW45CT	CC	-----		0		MK10821 [redacted] WARKTON LANE KETTERING [redacted]
10/11/2017	18:30:00	17516957	W01RW45CT	CC		0	0		MK11278 AP FL [redacted] MALHAM DRIVE KETTERING SAP[redacted]
10/11/2017	17:20:00	17516958	W01RW45CT	CC		0	0		MK11278 KT FL U/S [redacted] MALHAM DRIVE KETTERING SAP[redacted]
10/11/2017	17:40:00	17516959	W01RW45CT	CC		0	0		MK11278 KT FL D/S [redacted] MALHAM DRIVE KETTERING SAP[redacted]
17/11/2017	09:45:00	17526811	W01RW45CT	CC		0	0		MK11278 KT [redacted] MALHAM DRIVE KETTERING SAP:[redacted]
17/11/2017	09:51:00	17526812	W01RW45CT	CC		0	0	Dichloro butane 0.34 ug/l Tetrahydro pyranone 7.22 ug/l Unidentified Compound (RT:11.743) 0.68 ug/l	MK11278 KT [redacted] MALHAM DRIVE KETTERING SAP:[redacted]
07/06/2019	13:27:00	19261739	W01RW45CT	CC		0	1		[redacted] FAIRFIELD ROAD KT SP MK12033 SAP[redacted]
07/06/2019	13:37:00	19261740	W01RW45CT	CC		0	0		[redacted] FAIRFIELD ROAD KT FL MK12033 SAP[redacted]
13/06/2019	08:17:00	19269635	W01RW45CT	CC	-----		0		[redacted] FAIRFIELD RD ISHAM KT FL MK12033 SAP#[redacted]
13/06/2019	08:15:00	19269636	W01RW45CT	CC	-----		0		[redacted] FAIRFIELD RD ISHAM KT SP MK12033 SAP#[redacted]
01/02/2022	13:40:00	22052728	W01RW45CT	SS		0	1	Nonanal 0.15 ug/l Tridecanol 0.18 ug/l	KT [redacted] COTTESMORE AVENUE BARTON SEAGRAVE SAP[redacted] MK13372
01/02/2022	12:30:00	22052729	W01RW45CT	SS		0	1	Nonanal 0.17 ug/l	KT FL [redacted] COTTESMORE AV BARTON SEAGRAVE SAP[redacted] MK13372
01/02/2022	13:55:00	22052730	W01RW45CT	SS		0	-----		KT U/S [redacted] COTTESMORE AV BARTON SEAGRAVE SAP[redacted] MK13372
01/02/2022	13:25:00	22052731	W01RW45CT	SS		0	1	Nonanal 0.16 ug/l	KT SP [redacted] COTTESMORE AV BARTON SEAGRAVE SAP[redacted] MK13372

The dates which each asset was in supply can be found at the top of the individual sheet for that asset - all samples on these sheets were takne in the Public Water Supply Zones (PWSZs) supplied by these assets during the specified date period.

The PWSZs supplied by each asset can be found at the top of each asset sheet - the name of the PWSZ along with its unique identifier code are shown.

Both the P&T Result and DCM Result columns will show either a 0 or 1. This is an arbritrary figure and indicates whether the sample has shown a trace organics result or not, with a 0 indicating that no trace organics were present and a 1 indicating that some trace organics were detected. Where a sample has a blank or a dashed line in one of these columns it indicates that no P&T or DCM was taken for that particular sample.

Where a 1 has been recorded for either or both P&T or DCM samples the compound deteced along with its concentration can be seen in the next two columns headed 'P&T Compounds' and 'DCM Compounds'

Each sample has a reason code listed against it. These codes are indicators of the reason why the sampling was carried out. The codes have the following meanings:
MI - Materials In Contact - these are samples usually carried out on an asset after work has been carried out on it but before it is returned to supply. They are meant to provide evidence for a risk based approach to show that new equipment installed or new materials used will not pose a risk to water quality once the asset is in supply.
SS - Special Survey - These samples are ad-hoc survey samples taken for a wide variety of reasons - these could include commissioning samples taken during the commissioning of new equipment, performance sampling to check the performance of installed equipment, additional monitoring survey samples taken as par of a water quality monitoring survey for a source or ad-hoc additional investigative samples taken as part of a water quality investigation of an asset.
RS - Resample - Samples taken at an asset or sample point as part of an investigation into a previous sample failure at that sample point or another associated asset.
IM - Internal Monitoring - Samples routinely taken by our regulatory samplers to routinely monitor water quality for our own internal monitoring purposes
PR - Process Control - Ad-hoc samples taken by our operations team after carrying out routine maintenance and sometimes materials in contact sampling on our assets
CC - Customer Contact - Samples taken at a customer property in response to a customer contact concerning water quality
MT - Regulatory Sampling - Randomised regulatory sampling carried out by our lab logistics team to monitor water quality - the results of this sampling are supplied to the regulator
DP - Depressurisation - Samples taken in response to a depressurised main
RM - Repaired Main - Samples taken after a mains repair

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21st March 2024

Dear [redacted]

Re: Use of non-regulatory approved materials by Anglian water (our reference CIRIS 65136)

Thank you for your enquiry on 11th December 2023, regarding the use of materials in contact with drinking water that did not have Regulation 31 approval (i.e., Regulation 31 of the Drinking water quality regulations 2016 as amended).

Background

The General Toxicology and Biomonitoring Programme at UKHSA understands that the Drinking Water Inspectorate (DWI) is investigating potential breaches of Regulation 31 of the Drinking water quality Regulations 2016 as amended. It is reported that in May 2021, Anglian water became aware that pipework with an external surface/coating that did not have Regulation 31 approval had been used submerged and in contact with drinking water. Following further investigations, Anglian water discovered that this may have occurred at 4 sites. The affected sites were: Kedington water treatment works, Diddington reservoir, Hannington reservoir (1A and 1B) and Pitsford storage tank.

Anglian water conducted soak tests on the coatings/materials that did not have regulatory 31 approval used at Diddington, Hannington 1A (A soak test was not conducted on the material used at 1B), Kedington and Pitsford. The soak test conducted on the coating/material used at Pitsford was reported to have not detected any chemicals in the analysis. The DWI indicated to UKHSA that these soak tests were not conducted to the standard used for the purposes of regulatory 31 approval for materials contacting drinking water (for example, chlorinated water was not used).

Additionally, water sampling results for the relevant water supply zones/customers' taps were made available for Diddington, Hannington (1A and 1B) and Pitsford. No water supply zone/customers' taps sampling results were provided for Kedington.

Anglian water commissioned a consultant to undertake a toxicological health risk assessment for the potential exposures based on the soak tests and sampling results referred to above. The DWI has requested a health risk assessment from UKHSA on the potential exposures and for any views on the health risk assessment provided by the consultant toxicologist.

Approach adopted

Key factors to consider are whether there is sufficient identification of all chemicals that could have migrated from the non-approved pipework/coatings into drinking water and whether there is sufficient detection of the resultant concentrations. This would give an indication of consumer exposure from the use of these non-regulatory approved materials.

Identifying the chemicals which migrated from the non-approved pipework/coatings has uncertainty because non-standard soak tests were conducted on the various materials/coatings. There is also some uncertainty of whether the provided water supply zones sampling results were sufficiently representative of all the chemicals that could have migrated from the non-approved materials/coatings and sufficiently quantified the concentrations present in the water supply zones/customers' taps.

Additionally, the condition of the various non-approved coatings/materials may have changed or deteriorated over time. It is also not clear whether the soak tests were undertaken on new product of the coatings/material or product that had been in use for some time. This may have affected the chemicals released into water, adding to the uncertainty as to how representative this health risk assessment is of consumer exposure.

Following discussion with the DWI, it was agreed that the most pragmatic approach to this health risk assessment was to consider only chemicals that were detected in at least one of the soak tests and in at least one of the water supply zones or customer tap sampling results.

Health risk assessment

This risk assessment uses the highest reported concentrations for each chemical detected in the water supply zones/customers' taps.

To assess potential intakes the World Health Organization (WHO) drinking water quality guidelines default assumptions were used, which assumes that a 60 kilogram (kg) adult drinks 2 litres (L) of water per day, a 10 kg young child drinks 1 L of water per day, and a 5 kg bottle-fed infant drinks 0.75 L per day.

Table 1 below details the identified chemicals common to the soak tests and the water supply zones or customer tap sampling results and Table 2 summarises its relevant health-based guideline values

Table 1. List of common chemicals found in both the soak test and PWSZ and their related details.							
S.No.	Chemical Name	CAS No.	Highest concentration in PWSZ/Consumer taps (µg/L)				Highest concentration used in the risk assessment (µg/L)
			Diddington	Pitsford	Hannington 1A	Hannington 1B	
1	Dibutyl phthalate	84-74-2	-	0.56	5.86	0.56	5.86
2	Diisobutyl phthalate	84-69-5	-	0.53	0.53	0.53	0.53
3	Diisooctyl phthalate	27554-26-3	-	0.55	0.55	0.55	0.55
4	Dioctyl phthalate	117-84-0	-	-	0.2	0.63	0.63
5	Toluene	108-88-3	-	-	-	1.72	1.72
6	Benzyl alcohol	100-51-6	-	-	0.12	0.12	0.12
7	Hexanal	66-25-1	-	-	0.5	-	0.5
8	Nonanal	124-19-6	-	-	0.14	0.31	0.31
9	Oleic acid	112-80-1	-	-	3.25	3.25	3.25
10	Palmitic acid	57-10-3	-	-	0.34	-	0.34
11	Total xylenes + ethylbenzene	1330-20- 7/ 100-41-4	-	-	1.44	43.37	43.37
12	Tridecanol	112-70-9	0.86	-	0.15	0.15	0.86

Table 2. Summary of the chemical concentrations and health-based values					
S.No.	Chemical Name	CAS No.	Highest concentration used in the risk assessment (µg/L)	WHO Guideline value (µg/L)	Health based guideline value (µg/kg bw/day)
1	Dibutyl phthalate	84-74-2	5.86	-	10 (EFSA TDI)
2	Diisobutyl phthalate	84-69-5	0.53	-	2 (ANSES TRV)
3	Diisooctyl phthalate	27554-26-3	0.55	-	4 (ANSES TRV)
4	Dioctyl phthalate	117-84-0	0.63	8	400 (ATSDR MRL)
5	Toluene	108-88-3	1.72	700	-
6	Benzyl alcohol	100-51-6	0.12	-	4000 (EFSA ADI)
7	Hexanal	66-25-1	0.5	-	JECFA ‘no safety concern’ 13
8	Nonanal	124-19-6	0.23	-	JECFA ‘no safety concern’ JECFA ADI 100
9	Oleic acid	112-80-1	3.25	-	JECFA ‘no safety concern’ -
10	Palmitic acid	57-10-3	0.34	-	JECFA ‘no safety concern’ 3.9
11	Total xylenes + ethylbenzene	1330-20- 7/ 100-41-4	43.37	500/300	-
12	Tridecanol	112-70-9	0.15	-	TTC Value – 1.5

Dibutyl phthalate (CAS number 84-74-2)

Dibutyl phthalate was detected at the highest reported concentration of 5.86 micrograms per litre (µg/L).

Dibutyl phthalate has been identified as a substance of very high concern (SVHC) by the European Chemicals Agency (ECHA). It has also been classified by the European Union (EU) as a Category 1B reproductive toxicant and as an endocrine disruptor (ECHA).

The most sensitive endpoints for this chemical (those occurring at the lowest doses) are reproductive/developmental effects. This substance is not considered to be genotoxic. No adequate long-term carcinogenicity studies are available (EFSA, 2005).

The European Food Safety Authority (EFSA) had derived a Tolerable Daily Intake (TDI)[1] of 10 micrograms per kilogram of body weight per day (µg/kg bw/day) for dibutyl phthalate. This was based on a Lowest Observed Adverse Effect Level (LOAEL)[2] of 2000 µg/kg bw/day and the application of a total uncertainty factor of 200 (a default factor of 100 and a factor of 2 for use of a LOAEL) (EFSA, 2019).

For an adult, child and bottle-fed infant drinking water containing dibutyl phthalate at the highest reported concentration of 5.86 µg/L, the estimated intake would be approximately 0.2, 0.6 and 0.9 µg/kg bw/day, respectively.

These estimated intakes are below the EFSA TDI of 10 µg/kg bw/day. If a WHO Drinking Water Guidelines default allocation of 20% of the TDI to drinking water (i.e., 20% of 10 µg/kg bw/day = 2 µg/kg bw/day) were used, the estimated intakes are also below this value. Therefore, the detected concentration is unlikely to present a risk to health.

Di-isobutyl phthalate (DIBP) (CAS number 84-69-5)

Di-isobutyl phthalate (DIBP) was detected at the highest reported concentration of 0.53 µg/L.

Diisobutyl phthalate has been identified as a substance of very high concern (SVHC) by the European Chemicals Agency (ECHA).

A REACH registration dossier submitted to ECHA classifies DIBP as a reproductive toxicant (Category 1B reproductive toxicant – i.e. may damage the unborn child and suspected of damaging fertility) (ECHA).

The European Scientific Committee on Consumer Products (SCCP, 2007) in its opinion on phthalates in cosmetic products, identified a critical No Observed Adverse

[1] The TDI s an estimate of the amount of a contaminant, expressed on a body weight basis (e.g., mg/kg bodyweight) that can be ingested over a lifetime without appreciable health risk.

[2] The LOAEL is the lowest dose in a study at which adverse effect(s) are observed.

Effect Level (NOAEL)[3] for oral toxicity of 50,000 µg/kg bw/day for liver toxicity (SCCP, 2007).

The USA Consumer Product Safety Commission 2010 (CPSC.GOV) derived short-term oral Acceptable Daily Intakes (ADIs)[4] for DIBP by using benchmark dose modelling to derive a Benchmark dose (BMD)[5]. For general population short-term exposure an ADI of 140 µg/kg bw/day was derived from a $BMDL_{10}$ for effects on maternal body weight during gestation of 14000 µg/kg bw/day and the application of a total uncertainty factor of 100. A lower short-term ADI for protection against reproductive effects seen following exposure during pregnancy of 98 µg/kg bw/day was derived by the application of an uncertainty factor of 100 to the $BMDL_{10}$ of 9800 µg/kg bw/day for adverse reproductive effects.

An evaluation by ANSES reported that because of the structural, physico-chemical and toxicological similarities between Di-butyl phthalate (DBP) and Di-iso butyl phthalate (DIBP), a read-across between the data on DBP and DIBP could be considered appropriate to derive a reproductive toxicity 'Toxicity Reference Value' (TRV)[6] for DIBP. A Toxic reference value (TRV) of 2 µg/kg bw/day was derived. The TRV was derived using read-across from a developmental study mentioned for DBP (see above). An Assessment Factor (AF) of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for extrapolation from LOAEL to a NOAEL) was applied to the LOAEL of 2000 µg/kg bw/day to give the TRV of 2 µg/kg bw/day (ANSES, 2015).

For an adult, child and bottle-fed infant drinking water containing diisobutyl phthalate at a concentration of 0.53 µg/L, the estimated intake would be approximately 0.02, 0.05 and 0.08 µg/kg bw/day, respectively.

These estimated intakes are below the health-based values reported above.
If a WHO Drinking Water Guidelines default allocation of 20% of the ANSES TRV to drinking water (i.e., 20% of 2 µg/kg bw/day = 0.4 µg/kg bw/day) were used, the estimated intakes are below this value. Similarly, if 20% of the USA consumer Product Safety Commission ADI (i.e., 20% of 98 µg/kg bw/day = 19.6 µg/kg bw/day) were used, the estimated intakes are below this value. Therefore, the detected concentration is unlikely to present a risk to health.

Diisooctyl phthalate (DIOP) (CAS 27554-26-3)

Diisoctyl phthalate (DIOP) was detected at the highest reported concentration of 0.55 µg/L.

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[3] The No Observed Adverse Effect Level (NOAEL) is the highest administered dose at which no adverse effect has been observed.

[4] Acceptable Daily Intake (ADI) is the estimate of the amount of a substance in food or drink, expressed on a body weight basis (e.g., mg/kg body weight/day), that can be ingested daily over a lifetime by humans without appreciable risk.

[5] The BMD uses mathematical modelling to fit all the data points in a dose-response study to estimate the dose that corresponds to a specific response (a benchmark response) often 10%. The BMDL10 is the lower 95% confidence limit of the BMD10.

[6] TRV is a toxicological indicator for qualifying or quantifying a risk to health.

An Australian Government Department of Health and Aging assessment noted that poorly detailed summaries of studies in rats and dogs on di-iso octyl phthalate (DIOP) suggested that short-term repeated oral exposure at doses up to 1000 milligrams per kilogram of body weight per day (mg/kg bw/day) are not associated with any apparent changes of toxicological significance and that DIOP is unlikely to be genotoxic. Pregnant rats exposed to DIOP showed a decrease in foetal weight, skeletal variations, foetal mortality and impairment of the reproductive system in male offspring. However, the lack of details from these summaries did not allow the determination of a repeated dose NOAEL or LOAEL for DIOP (NICNAS, 2008).

An evaluation by ANSES reported that because of the toxicological similarities between Di-butyl phthalate (DBP) and Di-iso octyl phthalate (DIOP) that DIOP may induce effects comparable to DBP under the same conditions but at doses twice as high. A read-across between the data on DIOP and DBP was therefore considered appropriate to derive a reproductive toxicity TRV for DIOP after adjustment of their respective toxicities. A TRV of 4 µg/kg bw/day was derived using read across from a developmental study mentioned for DBP (see above). The LOAEL was adjusted to take into account difference in toxicity between DBP and DIOP, giving a LOAEL of 4000 µg/kg bw/day. An uncertainty factor of 1000 (10 for interspecies differences, 10 for intraspecies differences and 10 for extrapolation from LOAEL to a NOAEL) was applied to the LOAEL of 4000 µg/kg bw/day to give the TRV of 4 µg/kg bw/day (ANSES, 2015).

For an adult, child and bottle-fed baby drinking water containing diisooctyl phthalate at a concentration of 0.55 µg/L, the estimated intake would be approximately 0.02, 0.06 and 0.08 µg/kg bw/day, respectively.

These estimated intakes are lower than the ANSES TRV of 4.0 µg/kg bw/day. If a WHO Drinking Water Guidelines default allocation of 20% of the ANSES TRV to drinking water (i.e., 20% of 4.0 µg/kg bw/day = 0.8 µg/kg bw/day) were used, the estimated intakes are also below this value. Therefore, the detected concentration is unlikely to present a risk to health.

Di-n-octyl phthalate (DnOP) (CAS 117-84-0)

Di-n-ioctyl phthalate (DnOP) was detected at the highest reported concentration of 0.63 µg/L.

The US Agency for Toxic Substances and Disease Registry (ATSDR) derived an intermediate duration of exposure Minimal Risk Level (MRL)[7] for di-n-octyl phthalate of 400 µg/kg bw/day. This was based on a NOAEL of 40.8 mg/kg bw/day for liver effects observed in rats fed di-n-octyl phthalate in the diet. The NOAEL was divided by a total uncertainty factor of 100 (10 for extrapolation from animals to humans and 10 for human variability (ATSDR 1997).

[7] An MRL is defined as an estimate of daily human exposure to a substance that is likely to be without an appreciable risk of adverse effects (noncarcinogenic) over a specified duration of exposure.

For an adult, young child and bottle-fed infant drinking water containing di-n-octyl phthalate at a concentration of 0.63 µg/L, the estimated intakes would be approximately 0.02, 0.06 and 0.09 µg/kg bw/day.

These estimated intakes are orders of magnitude below the ATSDR intermediate duration MRL of 400 µg/kg bw/day. The estimated intakes are also orders of magnitude below a possible adjusted value of 40 µg/kg bw/day by applying a default uncertainty factor of 10 to adjust for long-term exposure and substantially below a default allocation of 20% for exposure from drinking water. This suggests that there is unlikely to be an appreciable risk to health.

Toluene (CAS number 108-88-3)

Toluene was detected at a highest reported concentration of 1.72 µg/L.

This concentration is below the WHO drinking water guideline value of 700 µg/L (WHO, 2022) and below the reported odour threshold in water of 24 µg/L (WHO, 2004). Additionally, the detected concentration is below the Four Member States Initiative (4MSI) Common Approach on Organic Materials Contacting drinking water Positive list Maximum Tap Concentration (MTC) for toluene of 60 µg/L (4MSI Positive list for organic substances). Therefore, there is unlikely to be a risk to health.

Benzyl alcohol (CAS 100-51-6)

Benzyl alcohol was detected at a highest reported concentration of 0.12 µg/L.

Benzyl alcohol is approved for use as a food additive within the EU (E1519) (UK Food Standards Agency).

The EU Scientific Committee on Food (SCF) evaluated the available toxicity data for benzyl alcohol in respect to a proposal to use benzyl alcohol as a carrier solvent for flavouring substances at levels up to 300 ppm (in the final food as consumed). The committee considered that this substance was not carcinogenic at the highest dose tested in studies in rats and mice (200 mg/kg bw/day in mice and 400 mg/kg bw/day in rats) and that the NOAELs in available sub-chronic studies in rats and mice were ≥400 mg/kg bw/day. The SCF considered that benzyl alcohol could be included in the group ADI of 0-5 mg/kg bw/day (equivalent to 5000 µg/kg bw/day) for benzoic acid and benzoates, as benzyl alcohol is metabolised to benzoic acid via benzaldehyde (JECFA).

Furthermore, an EFSA panel on Food Additives and Flavouring established an ADI of 4 mg/kg bw/day (equivalent to 4000 µg/kg bw/day) based on a NOAEL of 400 mg/kg bw/day in a long-term oral rat carcinogenicity study and the application of a total uncertainty factor of 100 (for uncertainty or species difference and human individual variability). Mean and high European exposures to benzyl alcohol from the diet were estimated to be 0.27 and 0.81 mg/kg bw/day in toddlers, respectively. The Panel noted that intakes from the diet for all populations did not indicate a risk to health (EFSA 2019).

For an adult, child and bottle-fed baby drinking water containing benzyl alcohol at a concentration of 0.12 µg/L, the estimated intake would be 0.004, 0.012 and 0.018 µg/kg bw/day, respectively.

The estimated intakes are well below the ADIs and the default 20% allocation for drinking water exposure. Therefore, the detected concentration is unlikely to present a risk to health.

Hexanal (CAS number 66-25-1)

Hexanal was detected at a highest reported concentration of 0.5 µg/L.

According to the classification provided by companies to ECHA in REACH registration, this substance in sufficient amounts can cause serious eye irritation, and can cause skin irritation (ECHA).

The WHO/FAO Joint Expert Group on Food Additives (JECFA) (JECFA 1998) considered that a dietary intake of 780 micrograms per day (approximately 13 µg/kg bw/day, for a 60kg adult) of hexanal as a flavouring substance was of 'no safety concern'. JECFA noted a NOAEL of greater than 125 mg/kg bw/day (the highest tested dose) in a rat oral 28-day toxicity test.

Additionally, EFSA allocated a NOAEL of 120 mg/kg bw/day to a group of similar compounds including hexanal and stated that applying a total uncertainty factor of 200 (10 each for inter and intra species variation and an additional factor of 2 due to the extrapolation to a group of chemicals) to this would give a value of 0.6 mg/kg bw/day (equivalent to 600 µg/kg bw/day) that would not be expected to present a risk to health (EFSA 2013).

For an adult, child and bottle-fed baby drinking water containing hexanal at a concentration of 0.5 µg/L, the estimated intake would be approximately 0.02, 0.05 and 0.08 µg/kg bw/day, respectively.

These estimated intakes are below the intake value of 13 µg/kg bw/day, considered by JECFA to not present a risk to health and the intake value of 600 µg/kg bw/day considered by EFSA to not present a risk to health.

If a WHO Drinking Water Guidelines default allocation of 20% of these health-based values to drinking water (i.e., 20% of 13 µg/kg bw/day = 2.6 µg/kg bw/day; and 20% of 600 = 120 µg/kg bw/day) were used, the estimated intakes are also below these values. Therefore, the detected concentration is unlikely to present a risk to health.

1-Nonanal (CAS number 124-19-6)

1-Nonanal was detected at a highest reported concentration of 0.31 µg/L.

JECFA 2002 considered that nonanal was of 'no safety concern' when used as a flavouring agent at its level of use in food and reaffirmed its previous ADI of 100 µg/kg bw/day (JECFA, 2021).

For an adult, child and bottle-fed baby drinking water containing nonanal at a concentration of 0.31 µg/L, the estimated intake would be approximately 0.01, 0.03 and 0.05 µg/kg bw/day, respectively.

These estimated intakes are below the JECFA ADI of 100 µg/kg bw/day. Additionally, if a WHO drinking water guidelines 20% default of this value was allocated to exposure from water, this would give an intake value of 20 µg/kg bw/day. The estimated intakes are all below this value. Therefore, there is unlikely to be a risk to health.

Oleic acid (CAS number 112-80-1)

Oleic acid was detected at a highest reported concentration of 3.25 µg/L.

Oleic acid occurs naturally in various animal and vegetable fats and oils. When evaluating the fatty acids food additive (E 570), which includes oleic acid, EFSA considered that they show low acute toxicity; the subchronic toxicity evidence was limited; and that there was no evidence of toxicity at does up to 10% in the diet (equivalent to 9,000 mg lauric acid/kg bw/day). EFSA considered that the fatty acids E 570 did not raise a concern for genotoxicity. The reproductive and developmental toxicity were too limited to draw conclusions on these endpoints. However, overall, EFSA concluded that the food additive fatty acids (E 570), which includes oleic acid, was of no safety concern at the reported levels of use (EFSA 2017).

Oleic acid was reported to have given negative results in the Ames test (ECHA).

Additionally, in 1998, JECFA concluded that there were 'no safety concern' at the levels of intake when used as a flavouring agent (JECFA, 1998).

For an adult, child and bottle-fed baby drinking water containing oleic acid at a concentration of 3.25 µg/L, the estimated intake would be approximately 0.1, 0.3 and 0.48 µg/kg bw/day, respectively. It is reasonable to assume that these estimated intakes would be relatively minor compared with those naturally occurring in the diet and therefore, according to the above EFSA opinion, are unlikely to present a risk to health.

Hexadecanoic acid (Palmitic acid) (CAS number 57-10-3)

Hexadecanoic acid was detected at a highest reported concentration of 0.34 µg/L.

Hexadecanoic acid is also known as palmitic acid. JECFA considered that this natural dietary constituent is of 'no health concern' at the estimated dietary intakes of approximately 3.9 µg/kg bw/day (JECFA 1998 and JECFA 1997).

A REACH Registration dossier submitted to ECHA reported that an oral repeat dose toxicity study conducted according to OECD Test Guideline 422 (Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test) in rats with a 'read-across' similar chemical docosanoic acid (CAS number 112-85-6) indicated no adverse effects and a NOAEL of 1000 mg/kg bw/day (ECHA).

Negative results were reported in an *in vitro* mammalian cell chromosome aberration test with the 'read across' similar chemical docosanoic acid (Cas number 112-85-6) and in the *in vitro* mouse lymphoma L5178Y cells mammalian gene mutation test with the 'read across' similar chemical decanoic acid (CAS number 206-376-4) (ECHA).

A Derived No Effect Level (DNEL) of 2500 µg/kg bw/day for the general population oral exposure was suggested by applying an overall assessment factor (AF) of 400 (10 for inter species variation; 10 for intra species variation; and 4 for exposure duration) to a repeat dose oral NOAEL of 1000 mg/kg bw/day (presumably for a 'read-across' chemical) (ECHA).

For an adult, child and bottle-fed baby drinking water containing hexadecenoic acid at a concentration of 0.34 µg/L, the estimated intake would be approximately 0.01, 0.03 and 0.05 µg/kg bw/day, respectively.

These estimated intakes are below the intake level of 3.9 µg/kg bw/day considered by JECFA to not present a concern for health and below the suggested oral DNEL of 2500 µg/kg bw/day for the general population submitted to ECHA in a REACH Registration dossier. If a WHO Drinking Water Guidelines default allocation of 20% of these health-based values to drinking water (i.e., 20% of 3.9 µg/kg bw/day = 0.8 µg/kg bw/day; and 20% of 2500 µg/kg bw/day = 500 µg/kg bw/day) were used, the estimated intakes are also below these values. Therefore, the detected concentration is unlikely to present a risk to health.

Ethylbenzene (CAS number 100-41-4)

Ethylbenzene + total xylenes were detected at a highest reported total concentration of 43.37 µg/L. this is below the WHO drinking water guideline value of 300 µg/L for ethylbenzene (WHO 2022). Therefore, there is unlikely to be a risk to health.

Total xylenes (CAS 1330-20-7)

Total xylenes (CAS 1330-20-7) + ethylbenzene was detected at a highest reported total concentration of 43.37 µg/L. This is below the WHO drinking water guideline value of 500 µg/L for total xylenes (WHO 2022). Therefore, there is unlikely to be a risk to health.

Tridecan-1-ol (CAS number 112-70-9)

Tridecanol was detected at a highest reported concentration of 0.86 µg/L.

A REACH registration dossier submitted to ECHA reported a NOAEL of 1000 mg/kg bw/day for a similar chemical docosanol (22 carbon chain length rather than 13 carbon) in an oral 26 week repeat dose toxicity test (with a similar protocol to OECD Test Guideline 408).

A NOAEL of 1000 mg/kg bw/day was also reported for tridecanol and similar chemicals (e.g., hexanol and docosanoic acid) in oral reproductive/development toxicity tests (ECHA).

Regarding genotoxicity, tridecanol is reported to have given a negative result in the Ames test (ECHA). A similar chemical (e.g., docosanol) was also reported to have given negative result in an in vitro test for chromosome aberrations (ECHA).

The REACH registration dossier submitted to ECHA suggested an oral Derived No Effect Level (DNEL) for the general population of 5 mg/kg bw/day. This was derived from a NOAEL of 1000 mg/kg bw/day and a total AF of 200 (10 for inter species variation; 10 for intra species variation; and 2 for differences in duration of exposure) (ECHA). It is unclear what chemical or studies this DNEL was based on.

Due to the various uncertainties and lack of toxicity data specifically on tridecanol, it is reasonable to adopt a Threshold of Toxicological Concern (TTC) approach. A joint World Health Organization and European Food Safety Authority (WHO/EFSA 2016) review of Threshold of Toxicological Concern (TTC)[8] approach recommended that if there are no structural alerts or chemical specific genotoxicity data, such as the Ames test results, that indicate that the chemical has the potential to be DNA-reactive carcinogen based on weight of evidence, then a non-genotoxic TTC approach to the risk assessment of the chemical could be adopted where chemical specific data are very limited or not available.

From the negative Ames test results and negative chromosome aberration test for a similar compound it can reasonably be regarded as non-mutagenic.

For an adult, child and bottle-fed baby drinking water containing tridecanol at a concentration of 0.86 µg/L, the estimated intake would be approximately 0.03, 0.09 and 0.1 µg/kg bw/day, respectively. These estimated intakes are below the most conservative TTC for a non-organophosphate/carbamate chemical of 1.5 µg/kg bw/day. Although there is some uncertainty in this approach, it indicates that there is unlikely to be a risk to health.

Discussion

There are several uncertainties in this health risk assessment. For example, the soak tests conducted were not standard tests and were not conducted with chlorinated water (i.e., not standard tests used for the purposes of regulation 31 approval). This limited the extent to which chemicals that could migrate into drinking water from contact with the non-regulatory approved materials could be identified. Additionally, a soak test was not conducted for the material used at Hannington 1B.

Furthermore, it is uncertain whether the sampling results provided for the relevant water supply zones/consumers' taps are sufficiently representative of the chemicals and concentrations arising from the use of the non-regulatory approved materials. The various materials used may have been in varying conditions over time. Therefore, the chemicals released into water could have varied over time and their detection would have depended on the timing of sampling. Also, it appeared that no water supply zone/customers' taps sampling results were provided for Kedington.

[8] The Threshold of Toxicological Concern (TTC) is a methodology that may be used to assess potential human health concerns for a chemical based on its structural characteristics and estimated exposure when chemical-specific data are scare or absent.

We adopted an approach of considering all the chemicals that were common to any soak test and any public water supply zones/customers' taps. We did not attempt to match up specific soak test results with specific water supply zones or customers' taps locations. However, it was agreed with the DWI that this was a reasonable pragmatic approach. This also means that if any material had been used in another location, then chemicals migrating into that location may have been detected in the water supply or customer tap samples. We have not specifically considered dermal hazards, such as skin sensitisation or skin irritation. However, as noted by the WHO Guidelines for drinking water the various uncertainty factors and 20 percent allocations of relevant health-based values to drinking water are generally considered sufficient to be protective against potential additional exposures from other routes (e.g., dermal and inhalation).

Overall, noting the various uncertainties highlighted above, the chemicals and concentrations reported are unlikely to have presented an appreciable risk to health.

Consultant risk assessment

Anglian water commissioned a consultant toxicologist to provide a health risk assessment on the available results. We have not provided a detailed critique of this risk assessment, but we have made a few observations. This evaluation also only considered chemical that were common to both the soak tests and the water supply zones or customers' taps. However, for the commonly identified chemicals a health risk assessment was only provided for those where long-term hazards were identified (i.e., commonly identified chemicals with only short-term hazards were not risk assessed). We conducted a health risk assessment on all common chemicals for all potential hazards including short-term hazards.

The consultant health risk assessment aimed to use the highest reported chemical concentrations, but it appears there may have been a few relatively minor errors in this respect. The concentrations used for nonanal 0.19 µg/L (Hannington 1B), total xylenes and ethylbenzene 1.1 µg/L (Pitsford) and dibutyl phthalate 0.56 µg/L (Hannington 1A) were not the highest reported concentrations. The respective highest reported concentrations were 0.31 µg/L, 43.37 µg/L and 5.86 µg/L.

However, despite the few differences in the approach, we agree with the overall conclusions in the consultant health risk assessment report. We agree that the chemicals it identified and assessed were unlikely to have presented an appreciable risk to health, noting the uncertainties highlighted above.

Conclusions

Overall, noting the various uncertainties highlighted above, the chemicals and concentrations reported are unlikely to have presented an appreciable risk to health.

[redacted]

Principal Toxicologist, Senior Toxicologist & Higher Toxicologist

March 2024

WRITTEN STATEMENT UNDER CAUTION

I make this statement of my own free will. I understand that I do not have to say anything but that it may harm my defence if I do not mention when questioned something which I later rely on in court. This statement may be given in evidence.

For and on behalf of Anglian Water Services Ltd.

Name [redacted]

Position in company Director of the Water Business Stream

Signature [redacted] Date 20 February 2023

I understand that the Inspectorate is conducting an investigation related to the circumstances of four regulation 31 events reported to the Inspectorate in 2021 by Anglian Water. The four events involved the installation of materials that were potentially not compliant with the requirements of regulation 31 at Kedington Water Treatment Works, Diddington Reservoir, Hannington Reservoir (1A and 1B) and Pitsford Water Treatment Works Storage Tank B.

Section 0: Our purpose as a responsible business

Anglian Water is the largest water and water recycling company in England and Wales by geographic area supplying water and water recycling services to almost seven million people in the East of England and Hartlepool. Employing c. 5,000 people, Anglian Water supplies on average 1.2 billion litres of clean, safe drinking water to 4.3 million people every day.

Our purpose is to bring environmental and social prosperity to the region we serve through our commitment to love every drop, and in 2019, we became the first large European utility to change its constitution (Articles of Association) to lock

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public interest into the way our business is run, both for current and for future generations.

Safe, clean drinking water is one of our key board-agreed outcomes – we know customers view that delivering safe, clean water is the most vital service we offer. We have recently published our updated Long Term Plan for the quality of drinking water supplies and outlined our four key strategies to deliver this outcome – to protect and improve raw water quality at source; to increase resilience in our treatment processes; to safeguard quality across our distribution system; and to ensure water is clean and safe within the home.

The year 2021 was our best ever year for acceptability customer contacts, meaning that the number of contacts we received from customers about the appearance, taste and odour of their water was the lowest ever, at 1.03 customer contacts per 1,000 customers. In 2022 we believe we will have improved on this again reaching 1.01 contacts per 1,000 customers.

The Compliance Risk Index (CRI) score for Anglian Water in 2021 was higher than we would expect at 4.01 although still below the industry average of 4.417 for the 10 large Water and Wastewater companies. To swiftly address this, we have instigated a number of programmes aimed at reducing the number of water quality exceedances from our assets. As a result, in 2022 we anticipate an improved performance of 2.78.

In 2021 the provisional Event Risk Index (ERI) score calculated by the Drinking Water Inspectorate (DWI) for Anglian Water was 0.972. This does not include the assessed scores for the four events which are still under consideration by the DWI. In 2022 we anticipate a score of 3.36 which reflects our continued efforts to

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minimise adverse impacts to water quality on the rare occasions when failures do occur.

Maintaining supplies of high-quality drinking water is our biggest priority, and we engage and invest from source to tap to maintain and improve on our performance. We have a comprehensive Materials In Contact process in place within the company detailed in our Policies and Standards for Water Supply Hygiene (POSWSH). This includes the documentation and assessment of products to be used in contact with drinking water, and additional assurance sampling to further assure the Company that the water supply remains safe for consumers.

All of our water colleagues play a part in achieving our goal of keeping the water supply safe and we have pledged our commitment to our Hygiene Charter. Nothing is so important we cannot take the time to do it hygienically. In 2021 our Hygiene Charter was updated to include the commitment to 'Only Use Approved Chemicals, Fittings and Materials - If you are unsure if an item is approved, Stop and Report It'.

Section 1: Summary of understanding of the issues under investigation

Anglian Water has notified the Inspectorate via our self-reporting (3-day and 20-day reporting) of potential issues associated with regulation 31 in relation to events surrounding Kedington Water Treatment Works, Diddington Reservoir, Hannington Reservoirs 1A and 1B, and Pitsford Water Treatment Works Storage Tank B.

Despite having a robust system of policies and procedures in place to manage our compliance with regulation 31 a set of circumstances arose in these instances which caused these systems to be circumvented. We have acted quickly to learn

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the lessons from these events and build on our existing framework to provide a greater level of assurance and reduce the likelihood of human interventions.

At all times the water supplied was wholesome meeting the requirements of the Water Supply (Water Quality) Regulations 2016 and as a result Anglian Water was fully compliant with the general requirements of regulation 4. Further, we have not received any notifications or reports where consumers have rejected water supplied from the four sites in question for matters that could be related in any way to non-compliance of the requirements of regulation 31. As a result the duty placed on Anglian Water under Part III Chapter 3 of the Water Industry Act 1991 has been fully complied with at all times.

In relation to the events under investigation Anglian Water believes that at no point during the periods in question were consumers put at risk from the issues surrounding regulation 31 as the requirements of regulation 4(2)(a)(i) and (ii) have been satisfied throughout those periods.

Immediately following the initial discovery by Anglian Water of the potential issue with regulation 31 compliance at Kedington WTW in May 2021, and during our subsequent investigations, we have been open and transparent with the Inspectorate regarding our concerns, our findings and the actions we have been taking to remediate the individual sites as well as sharing our program of review and improvements to ensure that such occurrences cannot be repeated in the future. Further we have acted swiftly, openly, transparently and in good faith in all our interactions with the Inspectorate be that either in a voluntary or a formal capacity.

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As we became aware that the potential issues may be wider than those discovered and reported first at Kedington Water Treatment Works in May 2021 and then at Diddington Reservoir in September 2021 we undertook a program of asset inspections to investigate the potential for similar issues with pipework at other sites. As both Kedington WTW and Diddington Reservoir were new build tanks, initially this program was to inspect all new build treated water tanks from 2010 onwards. Once this phase of the program was underway a decision was taken to widen coverage of the inspections to include resilience schemes where modifications to pipework were made within a treated water tank (Diddington Reservoir was also part of the Grafham resilience scheme).

In total eleven sites falling into these categories were inspected – Kedington Water Treatment Works, Diddington Reservoir, Hannington Reservoir, Pitsford Water Treatment Works Storage Tank B, Boughton Reservoir, Ludham (Horstead) Reservoir, Pulloxhill Water Treatment Works, Postwick Water Treatment Works, Hall Water Treatment Works, Mattishall Water Treatment Works and Raithby Water Treatment Works.

Anglian Water's actions in first of all recognising that the two separate issues discovered at Kedington and then Diddington could be linked via the delivery routes of the improvements, and then taking further action to proactively seek assurance that no other asset was similarly affected, demonstrates very clearly the Company's commitment to ensure the wholesomeness of drinking water supplied to all our customers and to retain the public's confidence in their drinking water.

As soon as we became aware of the issues affecting Kedington Water Treatment Works in May 2021, then Diddington Reservoir in September 2021, and subsequently as a result of our proactive investigations, the issues at Hannington

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Reservoir and Pitsford Water Treatment Works in December 2021, we alerted the Inspectorate of our concerns. Throughout we have been open and transparent and maintained an open dialogue with the Inspectorate. This approach mirrors our corporate values and demonstrates our commitment to ensuring that we are always adopting a water quality first approach for all of our customers at all times.

Section 2: Kedington Water Treatment Works

2.1 Details of the event

Kedington WTW is a new works utilising an existing raw water borehole source. The construction of Kedington WTW was an AMP6 engineering scheme designed to provide a low metaldehyde source of water to blend with water from Great Wratting WTW. The works entered supply for a short period on 31 March 2020.

Following a period out of supply to carry out additional commissioning of automatic control systems, the works was returned to supply on 27 April 2020 but then taken off-line on 14 May 2020 following a quantitative odour detection in a sample taken from the regulatory sample point which was related to source water quality. Kedington WTW pumped drinking water into supply for a total of 412 hours during this period.

Kedington borehole has a hydrogen sulphide raw water challenge, and the Water Treatment Works site has remained out of supply since 14 May 2020 to carry out a full investigation and installation of additional treatment to address this issue.

On 27 and 28 May 2021 as part of a planned warranty inspection the contact and balance tanks were drained down for inspection. The inspections revealed evidence of small blue flakes on the tank flooring. These were assumed at the

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time to be paint from the internal pipework and an investigation into the origin of the flakes commenced.

The Inspectorate were informed of these findings on 22 June 2021 once preliminary investigations on-site had been completed. During the period of these investigations the works remained out of supply.

Prior to the works going into supply in March 2020, as part of the wet commissioning of the new assets at Kedington WTW, a full program of commissioning sampling was undertaken, this included Materials In Contact (MIC) sampling to ensure materials used did not pose a water quality risk. Our MIC sampling consists of an extensive suite of analysis covering a range of aesthetic, microbiological and chemical parameters including trace organics screening.

The commissioning sampling consisted of seven sets of analyses which were carried out over a 10-day period. MIC sampling was carried out at each of the newly constructed process stages using source raw water. Due to the anaerobic conditions at depth, the source raw water from the borehole has a naturally occurring sulphurous odour. The results of the MIC sampling contained odours that were associated with the raw source water. The sample results were assessed as demonstrating no change from the reference source water and had not been influenced as a result of contact with the new materials.

The completed Materials In Contact (MIC) document for Kedington WTW stated that the required pipework was to be Saint-Gobain System CL, which holds DWI regulation 31 approval for total immersion in water and suitable to be installed within the contact and balance tanks. The MIC approval for the scheme, such approval is required prior to entering supply, was given on this basis.

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Subsequent investigations have found that a change was subsequently made and the pipework installed within the contact and balance tanks was Electrofresh Plus ductile iron pipework. This revision was not added to the MIC document and was therefore not subject to assessment by the Risk Scientist as part of our assurance process. Electrofresh Plus has DWI regulation 31 approval for the conveyance of water, above and below ground, but not for being permanently submerged in water. The external epoxy coating of this pipework has WRAS approval 1807507.

Further investigation also identified that following modification to the original pipework required to facilitate installation, the contractor, FT Ductile, coated areas of the original pipe affected by cutting and/or welding activity with material ISF QD8 "promatch" coating. ISF QD8 "promatch" does not have DWI regulation 31 approval. It is this overcoat that has partly flaked off and exposed some of the bare fitting underneath. The application of this additional coating by the manufacturer at their facility had not been notified to Anglian Water at the time of purchase and installation. Therefore MIC approval for the scheme was given on the basis of the installation of approved pipework for this submerged environment. However, a change was made outside the MIC procedure, resulting in a pipework installation that was not approved for this particular environment.

Kedington WTW remains out of supply pending the installation and commissioning of sodium bisulphate dosing to address the issue of the treatability of the raw water and the replacement of all sections of pipework within the contact and balance tanks with pipework with the correct approvals.

2.2 Impact on water quality

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At an early stage of our internal investigation we identified the C-scoring approach detailed by the Inspectorate in regulation 31 Advice Sheet 8 as a mechanism to better understand any potential impacts the fittings found at Kedington may have had. The C-scores were calculated for the items listed above. These were found to be 11.37 for the contact tank; 34.41 for the balance tank, and 19.04 for the combined contact and balance tanks. As all of these were well below the small surface area C-score threshold of 100 we considered that the pipework in contact with the water for the short duration of supply posed a very low risk to water quality.

While Anglian Water has not relied on this approach to inform our actions following the discovery of the coated pipework, our real-time monitoring of water quality parameters and the subsequent review of both water quality and customer complaint data confirms that there were in fact no supply quality issues related to the pipework installed in the tank.

During the period in which Kedington WTW was in supply from March to May 2020, a total of 44 regulatory monitoring samples, 4 internal monitoring samples and 24 operational samples were taken. A number of different water quality parameters were analysed on each sample.

All sample results obtained from Kedington final water point during this period were satisfactory and below regulatory limits with the exception of one sample on 11 May 2020 with a 'bad eggs' odour where panellists declined to taste the sample. In response to this, the works was removed from supply on 14 May 2020.

As already stated, there have been regular odour detections at the Kedington source water borehole since 2017. These detections have consisted of 'bad eggs'

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or ‘musty’ odours and are the same as the odour that was detected at Kedington final water in May 2020. Investigations have been carried out and it has been determined that the odour detected in the final water was as a result of the source water quality.

In addition to the sampling at our assets, we carry out extensive sampling at our customers’ properties to ensure compliance with the regulations at the point of consumption. We also have a full and thorough internal monitoring programme which goes over and above our regulatory requirements to further assure our water quality first approach.

During the period in which Kedington WTW was in supply from March to May 2020, a total of 7 regulatory and internal monitoring samples were taken at customers taps in the downstream distribution zone. All of these samples were satisfactory for all parameters analysed.

Anglian Water considers that sample results obtained whilst this asset was in supply demonstrate that the water presented to supply was wholesome throughout.

Laboratory soak tests were carried out on blue particulate matter found in the tank at Kedington Water Treatment Works. The tests were carried out to establish whether the flake materials were likely to have come from the pipework or from some other unknown source and to identify the chemical makeup of the pipework coating in question. Several organic compounds were detected in the soak tests carried out. None of these compounds have been detected in subsequent sampling at the tanks or final water point. As part of our due diligence the organic compounds detected were compared to SNARLs (Suggested No Adverse Response

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Levels) where available. Of the compounds detected 9 were found not to have any SNARLs, the remaining 21 were found to be well below the published SNARLs.

Having again reviewed the data relating to drinking water quality we can find no evidence that the wholesomeness of the drinking water being supplied from Kedington WTW was in any way failing to meet the requirements of the Regulations. Further, our re-examination of customer contacts from the area showed that there had been no increase over the background number of issues being raised by consumers.

Section 3: Diddington Reservoir

3.1 Details of the event

The construction of Diddington Reservoir was an AMP6 engineering scheme designed to provide resilience to Grafham WTW in the event of a major issue at this key treatment works. The reservoir was constructed by our AMP6 Special Project delivery vehicle with construction starting in 2015. The reservoir entered supply on 27 February 2018. The design was completed by Mott Macdonald and the construction by JN Bentley. Diddington Reservoir consists of two tank cells (East and West) with full height dividing walls, and individual operational tank capacities of 20,000m^3.

The commissioning of Diddington Reservoir was managed via a Major Impact Plan as part of our POSWSH procedure for 'Water Quality Risk Assessment and Control'. The impact plan includes sampling requirements and is approved by Supply, Network, Water Quality and Tactical Operations teams.

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Our extensive Materials in Contact (MIC) sampling which I detailed earlier in this statement was carried out on both cells and the combined sample point, prior to commissioning in February 2018. Two low level organic compounds were detected in the first sets of MIC samples from the West cell, and one from the first set in the East cell. These were significantly below the health-based SNARLs for those compounds. A subsequent sample from the West and East Cell with a longer standing time, along with the MIC sample from the combined sample point were all satisfactory and had no trace organic compounds detected. All taste and odour samples were satisfactory.

A routine warranty internal inspection of both cells was completed on 21 November 2019. Three areas were recorded requiring remedial work with areas identified of wall weeping, roof ingress and hatch ingress. Remedial work was completed to replace the hatches, repair roof ingress and overband the wall areas around the overflow pipework. Further internal inspections were carried out on 22 May 2020 for the West cell and 29 May 2020 for the East cell, both of which were satisfactory with items requiring remediation from the prior internal inspection having been rectified. MIC sampling was also completed on the individual cells after the remedial work was carried out in 2020, before the reservoir was returned to supply in June 2020. All results were satisfactory with no trace organic compounds detected.

Diddington Reservoir was removed from supply on 21 September 2021 to enable further validation testing of our Grafham resilience scheme. An internal inspection was carried out at Diddington Reservoir on 02 November 2021 prior to returning the reservoir to supply. Following the event at Kedington WTW particular attention was paid to the pipework within the tank. It was identified at this inspection that sections of blue pipework on both overflows were noted to have areas of blistering

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and in some areas peeling of their coating. These findings were escalated within the business and subsequently reported to the Inspectorate on 15 November 2021. Diddington Reservoir remains out of service. An investigation was initiated to further understand the details of this pipework.

The overflows in both cells of Diddington Reservoir are comprised of a paddle flange socket, a section of coated ductile iron pipework and a duckfoot bellmouth. The paddle flange sockets and connecting sections of pipework are coated ductile iron pipework supplied from Electrosteel Castings Ltd.

The Electrosteel pipework is Electrofresh Plus which comprises a cement mortar lined, ductile iron pipe with a seal coat, Copon Hycote 162 PWX, that conforms to EN 545. This product held and still holds a DWI approval of DWI 56/4/537. The pipe is approved as a product for use for the conveyance of water.

Our subsequent investigation has identified the following process is carried out on the Electrofresh pipework. Standard 5.5m lengths of Electrofresh pipes are manufactured at Electrosteel's facility in India. An external blue epoxy coating is applied as part of the manufacturing process. The coating applied was Electrocoat EP812 which was WRAS approved (1305512) at time of purchase and still holds an active approval (1807507).

Electrosteel produce required lengths of pipe from these full 5.5m lengths at their UK facility. We understand that the pipework was subject to the following process in the UK:

(a) The pipe was cut to length as required;

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(b) The end of the pipe was finished to remove the external coating to give a clean substrate for attaching the flange;

(c) The flange was cut, heated, and hydraulically pressed on to the receiving pipe barrel, before cooling and welding;

(d) Any bare metal areas on the external surface, had a zinc paint application before being finished with 3M Scotchkote Epoxy 162PWX coating. 3M Scotchkote Epoxy 162PWX held both DWI and WRAS approvals (DWI approval 56/4/300) at the time of purchase and installation;

(e) The external barrel of the pipe was then coated with a synthetic coating for aesthetic purposes. The paint used was V&M enamel, and this holds no approval for contact with drinking water.

It is this overcoat that has partially flaked off and exposed some of the bare fitting underneath. The application of this additional coating by the manufacturer at their facility had not been notified to Anglian Water at the time of purchase and installation.

3.2 Impact on water quality

At an early stage of our internal investigation we identified using the C-scoring approach detailed by the Inspectorate in regulation 31 Advice Sheet 8 as a potential mechanism to better understand any potential impacts the fittings found at Diddington Reservoir may have had. C-scores were calculated for the overflow pipework installed within Diddington Reservoir (East and West cells combined). The total C-score for the overflow pipework at Diddington Reservoir was 6.20. As this is well below the small surface area C-score threshold of 100 we considered that the items in contact with the water posed a low risk to water quality.

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While Anglian Water has not relied on this approach to inform our actions following the discovery of the pipework it is worth noting that our real-time monitoring of water quality parameters and the subsequent review of both water quality and customer complaint data, did not identify any issues that could be related to the items installed in the tank.

During the period in which Diddington Reservoir was in supply, February 2018 to September 2021, a total of 191 regulatory monitoring samples were taken; 61 internal monitoring samples were taken; and 67 operational samples were taken. A number of different water quality parameters were analysed on each sample.

All sample results for the period when the reservoir was in supply were satisfactory and below regulatory limits. Between March and April 2018 elevated 3-day plate counts were detected. This was thoroughly investigated and it was identified that these were as a result of the new sample line which had been commissioned at that time.

In addition to the sampling at our assets, we carry out extensive sampling at our customers' properties to ensure compliance with the regulations at the point of consumption. We also have a full and thorough internal monitoring programme which goes over and above our regulatory requirements to further assure our water quality first approach.

During the period in which Diddington Reservoir was in supply from February 2018 to September 2021, a total of 1767 regulatory and internal monitoring samples were taken at customers taps in downstream distribution zones. This extensive sampling identified 10 individual parameter exceedances which were all fully investigated by our Scientific team.

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The sample results obtained whilst this asset was in supply demonstrate that the water presented to supply was wholesome.

Laboratory soak tests were carried out on blue particulate matter taken from the pipework in the tanks at Diddington Reservoir. The soak tests were conducted in order to establish the chemical makeup of the pipework coating in question. Several organic compounds were detected in the soak tests carried out. None of these compounds have been detected in subsequent sampling at the reservoir. As part of our due diligence the organic compounds detected were compared to SNARLs (Suggested No Adverse Response Levels) where available. Of the compounds detected 14 were found not to have any SNARLs, the remaining 96 were found to be well below the published SNARLs.

Having again reviewed the data relating to drinking water quality, we can find no evidence that the wholesomeness of the drinking water being supplied from Diddington Reservoir failed to meet the requirements of the Regulations. Further, our re-examination of customer contacts from the area showed that there had been no increase over the background number of issues being raised by consumers.

Section 4: Hannington Reservoirs 1A and 1B

4.1 Details of the event

The installation of the new outlet pipework into Hannington Reservoirs 1A and 1B was an AMP6 engineering scheme designed to provide support and resilience to Grafham Water Treatment Works. The engineering work was undertaken in 2016

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and 2017. Two new outlet mains were installed into each reservoir, i.e. four new outlet mains in total, two each in 1A and 1B. The work to install the new outlet mains into Reservoir 1A was completed in early 2016 and the work on Reservoir 1B was completed in early 2017.

The return to service of Hannington Reservoir compartments 1A and 1B was managed via Major Impact Plans as part of our POSWSH procedure for 'Water Quality Risk Assessment and Control'. The impact plan includes sampling requirements and is approved by Supply, Network, Water Quality and Tactical Operations teams.

Following the installation of the new pipework, each reservoir underwent Materials in Contact sampling which as I previously stated consists of an extensive suite of analysis covering a range of aesthetic, microbiological and chemical parameters including trace organics screening. All sample results were satisfactory including trace organics and taste and odour analysis.

Following events reported to the Inspectorate at Kedington WTW and Diddington Reservoir, a program of asset inspections to investigate the potential for similar pipework issues at other sites was undertaken. Initially this programme comprised of all new build treated water tanks from 2010 onwards (as both Kedington WTW and Diddington Reservoir were new build tanks). It was later expanded to include resilience schemes where modifications to pipework had been made within a treated water tank (as Diddington Reservoir was part of the Grafham resilience scheme).

As part of this expanded program Hannington Reservoirs 1A and 1B were identified for inspection. Hannington Reservoir 1A was isolated from supply on 15 December

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2021 and an internal inspection was carried out on 20 December 2021 with particular attention being paid to the new pipework installed in 2016. During this inspection sections of blue pipework on the new outlets were identified as having areas of blistering of their coating. This finding was reported to the Inspectorate on 21 December 2021.

The new outlets in Hannington Reservoir 1A and 1B are sections of coated ductile iron pipework. The pipework was supplied from Electrosteel Castings Ltd.

The Electrosteel pipework is Electrofresh Plus which comprises a cement mortar lined, ductile iron pipe with a seal coat, Copon Hycote 162 PWX, that conforms to EN 545. This product held and still holds a DWI approval of DWI 56/4/537. The pipe is approved as a product for use for the conveyance of water.

Our subsequent investigation has identified the following process is carried out on the Electrofresh pipework. Standard 5.5m lengths of Electrofresh pipes are manufactured at Electrosteel's facility in India. An external blue epoxy coating is applied as part of the manufacturing process. The coating applied was Electrocoat EP812 which was WRAS approved (1305512) at time of purchase and still holds an active approval (1807507).

Electrosteel produce required lengths of pipe from these full 5.5m lengths at their UK facility. We understand that the pipework was subject to the following process in the UK:

(a) The pipe was cut to the required length;

(b) The end of the pipe was finished to remove the external coating to give a clean substrate for attaching the flange;

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(c) The flange was cut, heated, and hydraulically pressed on to the receiving pipe barrel, before cooling and welding;

(d) Any bare metal areas on the external surface, had a zinc paint application before being finished with 3M Scotchkote Epoxy 162PWX coating. 3M Scotchkote Epoxy 162PWX held both DWI and WRAS approvals (DWI approval 56/4/300) at the time of purchase and installation;

(e) The external barrel of the pipe was then coated with a synthetic coating for aesthetic purposes. The paint used was V&M enamel, and this holds no approval for contact with drinking water.

As before, it is this overcoat that has partially flaked off and exposed some of the bare fitting underneath. The application of this additional coating by the manufacturer at their facility had not been notified to Anglian Water at the time of purchase and installation.

4.2 Impact on water quality

At an early stage of our internal investigation we identified using the C-scoring approach detailed by the Inspectorate in regulation 31 Advice Sheet 8 as a potential mechanism to better understand any potential impacts the fittings found at Hannington Reservoir may have had. C-scores were calculated for the outlet pipework installed within Reservoir 1A and 1B. The total C-score for the outlet pipework at Hannington reservoir was 1.64 for Reservoir 1A and 1.64 for Reservoir 1B. As this is well below the small surface area C-score threshold of 100 we considered that the items in contact with the water posed a low risk to water quality.

While Anglian Water has not relied on this approach to inform our actions following the discovery of the pipework it is worth noting that our real-time monitoring of water quality parameters and the subsequent review of both water quality and

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customer complaint data did not identify any issues that could be related to the items installed in the tank.

During the period which Hannington Reservoir 1A was in supply, April 2016 to December 2021 a total of 302 regulatory monitoring samples were taken; 126 internal monitoring samples were taken; and 86 operational samples were taken. A number of different water quality parameters were analysed on each sample.

All sample results collected at Hannington Reservoir 1A between April 2016 and December 2021 have been satisfactory and below regulatory limits.

Elevated 3-day plate count levels were detected between April 2018 and October 2018. Investigations into these elevated levels concluded that these were as a result of the sample tap which was rectified.

During the period which Hannington Reservoir 1B was in supply from January 2017 to January 2023, a total of 313 regulatory monitoring samples were taken; 183 internal monitoring samples were taken; and 193 operational samples were taken. A number of different water quality parameters were analysed on each sample.

All sample results collected at Hannington Reservoir 1B between January 2017 and January 2023 have been satisfactory and below regulatory limits with the exception of a small number of individual parameters detailed below.

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Elevated 3-day plate count levels were detected between May 2017 and May 2018. Investigations into these elevated levels concluded that these were as a result of the sample tap which was rectified.

One coliform was detected on a sample tap refurbishment sample collected on 31 May 2017. Resamples taken in response were clear. Investigations concluded that this detection was as a result of the sample tap.

Enhanced trace organics monitoring has been in place at Hannington 1B since January 2022 with samples being taken on a weekly basis. Four different compounds have been detected at very low levels significantly below their respective SNARLs, where available.

In addition to sampling at our assets, we carry out extensive sampling at our customers' properties to ensure compliance with the regulations at the point of consumption. We also have a full and thorough internal monitoring programme which goes over and above our regulatory requirements to further assure our water quality first approach.

During the period in which Hannington Reservoir was in supply from April 2016 to January 2023, a total of 32087 regulatory and internal monitoring samples were taken at customers taps in downstream distribution zones. This extensive sampling identified 148 individual parameter exceedances which were all fully investigated by our Scientific team.

The sample results obtained whilst this asset was in supply demonstrate that the water presented to supply was wholesome.

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Laboratory soak tests were carried out on particulate matter taken from the outlet pipework in the tank at Hannington Reservoir 1A. The soak tests were conducted in order to establish the chemical makeup of the pipework coating in question. Several organic compounds were detected in the soak tests carried out. As part of our due diligence the organic compounds detected were compared to SNARLs (Suggested No Adverse Response Levels) where available. Of the compounds detected, all 3 were found to be well below the published SNARLs.

Having again reviewed the data relating to drinking water quality, we can find no evidence the drinking water being supplied from Hannington Reservoir was in any way failing to meet the requirements of the Regulations and was wholesome. Furthermore, our re-examination of customer contacts from the area showed that there had been no increase over the background number of issues being raised by consumers.

It should also be noted that Hannington Reservoir 1B has remained in supply from identification of the issue in Reservoir 1A on 20 December 2021 until 24 January 2023 while remedial work was carried out on Reservoir 1A. Enhanced water quality sampling has been carried out throughout this period. All results have been shared with the Inspectorate. This enhanced monitoring shows that the water has remained wholesome at all times.

Section 5: Pitsford Water Treatment Works

5.1 Details of the event

As part of an AMP6 engineering scheme to provide support and resilience to the area supplied from Pitsford Water Treatment Works, a new inlet was drilled into each of the storage tanks to provide an additional supply from Hannington Reservoirs. The work to install the inlet main into Storage Tank B was carried out

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in 2015 and the work to install the inlet main into Storage Tank A was carried out in 2020.

Following events reported to the Inspectorate at Kedington WTW and Diddington Reservoir, a program of asset inspections to investigate the potential for there to be similar pipework issues at other sites was undertaken. Initially this programme comprised of all new build treated water tanks from 2010 onwards (as both Kedington WTW and Diddington Reservoir were new build tanks) and was later expanded to include resilience schemes, where modifications to pipework were made within a treated water tank (as Diddington Reservoir was part of the Grafham resilience scheme).

As part of this expanded programme, Pitsford WTW Storage Tank B was identified for inspection. Storage Tank A underwent an internal inspection on 19 August 2021. Whilst reviewing the inspection report and associated photographs, the new inlet main installed in 2020 was identified as constructed from stainless steel and therefore did not require further inspection.

Pitsford WTW Storage Tank B was isolated from supply on 13 December 2021 and an internal inspection was carried out on 17 December 2021. Particular attention was paid to the inlet fittings and pipework installed in 2015. It was identified that sections of pipework on the new inlet had areas of flaking of their coating.

Construction records identify the inlet pipework to be comprised of four separate components, (i) a fabricated flanged spigot, (ii) a 90-degree flanged bend, (iii) a double-flanged spacer, and (iv) a flanged bell-mouth. The fittings were supplied by Jindal Sigma Ltd.

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The 90-degree flanged bend and flanged bell-mouth were coated with Resicoat R4 which is a factory applied powder coating. This coating held WRAS approval under 11125000 at the time of installation.

The flanged spigot and flanged spacer were coated with 3M Scotchkote™ Epoxy coating 162PWX which held WRAS approval under 1109548 at the time of installation.

The work to install the additional inlet main into Storage Tank B was completed in 2015. Storage Tank B was returned to service on 07 October 2016; samples collected ahead of its return to service were satisfactory.

Storage Tank B was removed from supply on 10 February 2017 to carry out further remedial work and a successful final inspection was carried out on 01 August 2017. Part A of the Materials In Contact document identifies that there had been the use of Acothane DW Blue, which holds DWI approval (DWI 56/4/1059) on pipework within the tank.

The Materials in Contact (MIC) sampling for this work was undertaken on the 03 August 2017; all sample results were reported as satisfactory including trace organics, and taste and odour analysis. Storage Tank B was passed and valved back into supply at 11:20 on 11 August 2017. An "into supply" sample was collected with the results also being satisfactory.

Our investigation identified that two sections of the new inlet pipework had subsequently been coated with a material believed to be Acothane DW Blue (DWI Approval 56/4/1059), as referenced in the MIC document from 2017 which may

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not have been applied in accordance with the Instructions For Use (IFU). The coating of the pipework adjacent to the tank wall, which is submerged when the tank is operational, had been subject to "flaking" and the potential cause of this flaking is the incorrect surface preparation ahead of coating application in accordance with manufacturer's Instructions for Use (IFU).

Pitsford Water Treatment Works Storage Tank B remains out of supply as of 21 February 2023.

5.2 Impact on water quality

At an early stage of our internal investigation we identified using the C-scoring approach detailed by the Inspectorate in regulation 31 Advice Sheet 8 as a mechanism to better understand any potential impacts the fittings found at Pitsford Storage Tank B may have had. C-scores were calculated for the inlet pipework installed within Pitsford Storage Tank B and found to be 21.13. As this is well below the small surface area C-score threshold of 100, the pipework in contact with the water posed a low risk to water quality.

While Anglian Water has not relied on this approach to inform our actions following the discovery of the pipework, it is worth noting that our real-time monitoring of water quality parameters and the subsequent review of both water quality and customer complaint data did not identify any issues that could be related to the items installed in the tank.

During the period in which Pitsford Storage Tank B was in supply, October 2016 to December 2021, a total of 1997 regulatory monitoring samples were taken; 856 internal monitoring samples were taken; and 447 operational samples were

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taken. A number of different water quality parameters were analysed on each sample.

Sample results obtained from Pitsford final water point whilst Storage Tank B was in supply between October 2016 and December 2021, were satisfactory and below regulatory limits with the exception of the small number of individual parameters detailed below.

Very low levels of trace organic compounds were detected on 3 samples in this period whilst Pitsford Storage Tank B was in supply – all 4 compounds detected were at levels well below their respective SNARLs.

A sample collected from Pitsford final water point on 18 March 2021 contained one confirmed coliform (zero *E.coli*). The investigation concluded that the likely cause of the coliform detection was as a result of ingress noted around the hatches on Storage Tank B. Subsequent resamples were all satisfactory.

One odour detection was identified at Pitsford final water point on 24 February 2021. All resamples taken in response to this one odour detection were satisfactory.

One taste detection was identified at Pitsford final water point on 28 August 2020. All resamples taken in response to this one taste detection were satisfactory.

Dip samples, taken directly from Storage Tank B between October 2016 and December 2021 (21 in total), were satisfactory and below regulatory limits.

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In addition to the sampling at our assets, we carry out extensive sampling at our customers' properties to ensure compliance with the regulations at the point of consumption. We also have a full and thorough internal monitoring programme which goes over and above our regulatory requirements to further assure our water quality first approach.

During the period in which Pitsford Storage Tank B was in supply from October 2016 to December 2021, a total of 6950 regulatory and internal monitoring samples were taken at customers taps in the downstream distribution zones. This extensive sampling identified 33 individual parameter exceedances which were all fully investigated by our Scientific team.

Anglian Water considers that sample results obtained whilst this asset was in supply demonstrate that the water presented to supply was wholesome.

Laboratory soak tests were carried out on particulate matter taken from the inlet pipework in Pitsford Storage Tank B. The soak tests were conducted in order to establish the chemical makeup of the pipework coating in question. No compounds were detected as part of these tests.

Having again reviewed the data relating to drinking water quality we can find no evidence that the wholesomeness of the drinking water being supplied from Pitsford Storage Tank B failed to meet the requirements of the Regulations. Furthermore, our re-examination of customer contacts from the area showed that there had been no increase over the background number of issues being raised by consumers.

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Section 6: Our policies and processes for compliance with the requirements of regulation 31

Our Materials In Contact (MIC) processes and procedures were originally implemented in 2005 as a way of checking items being used in contact with water intended for supply, in order to ensure and provide evidence that these items would not affect water quality.

The Materials In Contact (MIC) documentation originally comprised a form, set up as a simple single sheet in Excel, with a table listing items being used in contact with water intended for supply, alongside the relevant approvals (Part A). A second table was provided to show post-installation sample results, which were aimed at providing evidence that the item would not affect water quality (Part B). The engineer responsible for the work to install items in contact with water intended for supply would list the approvals of items being used on Part A of the form. Following installation, sample results were added to Part B of the form. The sample results were formally assessed for compliance by a scientist from the Drinking Water Standards Team, with compliance recorded and documented.

Over time the procedure has developed to include additional sections in the MIC form. Part A lists the materials/equipment to be used in contact with water intended for supply as before; Part B lists the agreed sampling requirements; Part C lists sample results obtained post installation, and Part D is the final completion of the form. Formal "sign-off" is captured in each section of the MIC form. For example, the engineer responsible for the work will now sign-off against each item listed on Part A of the MIC form, and this will be checked and countersigned by a Risk Scientist. Sections A, B and C are required to be signed-off, before Part D is finally completed.

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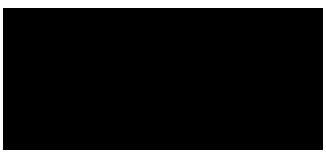
The MIC form has more recently become embedded in our quality management systems, becoming a controlled document in April 2022 as part of our Materials in Contact procedure.

Our policies, standards and procedures which govern our compliance with regulation 31 are documented within our Policies and Standards for Water Supply Hygiene (POSWSH) which forms a key part of our externally accredited integrated Management Systems framework complying with all requirements and standards of ISO9001 Quality Management.

Our policy and standard 'Materials and Chemicals in Contact with Water' has been in place for a number of years. It details how we maintain compliance with regulation 31 of the Water Supply (Water Quality) Regulations 2016 (as amended). Our policy and standards for 'Asset Design and Creation' mandates that all assets involved in the production and delivery of drinking water will be designed, commissioned and decommissioned, to ensure that they do not impact adversely on water quality, including meeting all regulation 31 requirements. Our asset design envelopes known as Minimum Asset Standards are developed according to these policies and standard requirements which must be adhered to by our Alliance partners for any scheme delivered.

Our 'Materials and Chemicals in Contact with Water' procedure documents the responsibilities of all employees working with any materials and chemicals which will be introduced into water intended for public supply to ensure they are fully compliant with regulation 31. This procedure outlines the requirements and process for a scheme 'owner' to request and populate an MIC form. This enables

Signature  Date 20 February 2023

the regulatory compliance status of items to be used in any given scheme to be listed and subsequently assessed as appropriate by the Water Quality Risk team.

This procedure ensures that appropriate water quality samples are taken in order to demonstrate that the scheme and any items introduced, have had no adverse impact on water quality. Prior to sampling we ensure the water has been in contact with material surfaces for a period double that which is likely during actual operation. The period of time 16 hours, or in line with any Instructions For Use documents, whichever is greater. The sampling includes analysis for taste, odour, and microbiological parameters, as well as other parameters such as pH, colour, turbidity, conductivity, and trace organics.

The procedure includes a requirement that Instructions For Use (IFU) documentation for products are obtained and adhered to, to ensure the regulatory compliance status of such items is adhered to. The procedure also provides instruction on the distinction between Large and Small surface area items, approved grades of stainless steel, producing risk assessments when required, and the specific material requirements related to water retaining structures.

For large schemes such as Kedington WTW, the Commissioning team undertake functional site acceptance tests following their commissioning plan. During this time flushing and sampling is undertaken as the specific units are tested. We then "run to waste" during a seven-day, hands off, performance trial. At the end of the trial we hold a "pre into supply meeting" to review the outcome of the hands-off trial. This meeting includes presentation of documentation and test results to the Risk Scientist, the Supply Manager (site owner) and Regional Supply Manager for agreement, before the asset can enter supply following the into supply impact plan. Smaller schemes are managed through our impact plan process, with

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appropriate sampling agreed with the Risk Scientist and signed-off by the Supply Manager (site owner).

An internal Regulation 31 Steering Group was established in 2019 to monitor and address continual improvements to our processes and procedures relating to regulation 31 compliance. The group covers improvement and updates to our procedures and training materials, communications, and raising awareness across the company relating to regulation 31. The core members of this group include the Water Quality Risk and Optimisation Manager, Water Quality Risk Managers, the Water Quality Regulation Manager, the Risk Scientist portfolio lead for regulation 31, a Materials Scientist and a Procurement Specialist. Subject matter experts are invited to these meetings for relevant slots to provide expert insight when decisions need to be made relating to regulation 31 compliance for items or equipment proposed for use across the business.

Anglian Water requires supplier assurance through 'framework contracts' awarded following supplier tendering, evaluation, and selection processes. This ensures selected suppliers are capable of meeting Anglian Water and regulation 31 requirements and are committed to doing so. Materials in Contact and product traceability requirements are built into the framework contracts. Assurance of key performance measures for our chemical suppliers are proactively sought via an electronic questionnaire that suppliers have to respond to on a regular basis. This includes confirming if there have been any changes such as to product manufacturing processes, raw material changes, or continuity of supply.

The Water Services Annual Assurance Programme includes regulation 31 focussed chemical and material supplier audits. Audits are carried out by Water Quality and Procurement representatives. Audit reports are published, and actions are

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categorised and tracked. Audits are carried out on risk-based frequencies varying from annual to every seven years.

Water quality performance is tracked, reviewed and high-level actions to safeguard water quality driven by the Water Services Compliance Monitoring Group (WSCMG). This group is chaired by the Head of Water Quality with a core membership including myself, the Director of Water Business Stream, members of the Water Senior Leadership team, the Tactical Operations Manager, members of Analytical Services and the Water Quality Senior Leadership team. At this meeting the Water Services Annual Assurance Programme is agreed and signed off, including our regulation 31 compliance focused audits. Lead Measures related to the Annual Assurance Programme are tracked, including a review of any open, high-risk actions, related to regulation 31 compliance supplier audits. The Water Services Compliance Monitoring Group also reviews our 'Could it Happen Here' process, providing an opportunity to obtain insight into industry regulation 31 related events or near misses, and learning how we can apply any insights to Anglian Water systems.

There are two modes of Materials in Contact training currently operating throughout Anglian Water; an e-learning module and a one-day classroom training course. The e-learning module was created in 2018 to raise overall awareness of key aspects of regulation 31 and includes a competency test as part of the module. To date over 550 members of staff have completed this e-learning module. In August 2021 we introduced a new requirement for this to be re-taken on a three-yearly basis. The one-day classroom training course has been in place for a number of years and builds on knowledge of regulation 31 requirements from the e-learning module. There are two versions of this course; one for engineers and one for our scientific team (forming part of our Licence to Operate programme). The training course was fully reviewed and updated in 2022 to include more

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practical elements. To date over 300 members of staff have completed this revised training.

We have also carried out specific targeted training within groups who partner and contract with Anglian Water to include a roll out our training to ensure they fully understand regulation 31 and our internal Materials in Contact requirements. For example, in 2016 Bentleys engineering, procurement and management teams attended an Anglian Water regulation 31 training day, which led to process improvements in terms of supervision and audits by their teams. In 2018 the Anglian Water Materials in Contact e-learning course was delivered to CRL and Stonbury, who carry out storage point refurbishment work on our behalf.

Our Water Quality Training team also produce Water Quality Alerts to the business and our partner organisations, to share good practice and learning from events or near misses. A number of regulation 31 themed Water Quality alerts have been produced and distributed over a number of years to share learning.

Anglian Water is able to clearly demonstrate leadership in the area of compliance with regulation 31. I believe that we are at the forefront of the industry in terms of good practice and that this is demonstrated through our policies, procedures and processes including the sampling and review components prior to entering into supply. Through our engagement and leadership across the industry we can be confident that the processes we had in place at the time these events occurred were above industry standard and remain as such.

Section 7: Materials in Contact Improvement Programme

Following the issue identified at Kedington WTW, we delivered a communication plan during August and September 2021 to refresh Materials in Contact awareness

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specifically across our Supply, Integrated Operational Solutions (IOS) and "@one Alliance" teams. This consisted of, (1) three text messages being sent to over 250 individuals' mobiles from our Supply, IOS and @one Alliance teams, reinforcing timely completion of MIC forms, adherence to IFUs and importance of refreshing training; (2) Creation of a Materials in Contact Tool Box Talk refresher, with five key takeaways, namely, to Plan ahead with MIC and complete forms early; Make sure the team has the correct training; Know your Small Surface Area approval routes; know your Large Surface Area approval routes; and Keep up to date and ask a scientist; (3) Revamping our internal regulation 31 Materials in Contact Lighthouse intranet page with useful information and links for those involved in our MIC process; (4) Updating our hygiene charter to include a new commitment specific to regulation 31; and (5) News articles in Anglian Water and @one Alliance weekly digital newsletters. These included links to the Materials in Contact Tool Box Talk and refreshed intranet page.

In January 2022 we initiated a Materials in Contact Improvement Programme in response to the reported events and recognition that we wanted to further improve our processes. We held a Materials in Contact Improvement Workshop on 3rd February 2022, which was attended by over 40 representatives from across Anglian Water and our Alliance partners. The workshop included a 'How Might We?' session reflecting on the recent reported events, as well as a creative problem-solving session to generate ideas and opportunities for improvement. The workshop outputs were grouped into common themes to form the Materials in Contact Improvement Plan, with a dedicated Project Manager being assigned to drive the work forward.

The Materials in Contact Improvement Plan comprised three core workstreams to deliver improvements in the areas of: (1) 'Design and Engineering Standards'; (2) 'Procurement and Logistics'; and (3) 'Process Review, Delivery Assurance and Compliance'. There were also three enabling workstreams to support delivery of

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the core workstreams focussing on: (1) 'Digital Opportunities'; (2) 'Training and Competency'; and (3) 'Communications'. Workstream leads were secured and planning sessions held to review workshop outputs and agree actions to be taken forward to improve our Materials in Contact processes. Project structure and governance was put in place to set expectations for workstream leads. The Materials in Contact Improvement Programme is sponsored by myself, the Director of Water Business Stream and our Head of Water Quality.

The initial programme goals were to: (1) Create an improved, streamlined, business-wide process across Anglian Water and our Alliances; (2) Adopt a 'right first time' approach with less rework; (3) Improve communications and hand-overs between teams; and (4) Improve traceability of evidence of regulation 31 approval and Instructions for Use compliance.

The improvement programme progressed in that format for several months, during which time some of the key activities undertaken were: (1) Regulation 31 and Instructions for Use clauses were updated in 35 Minimum Asset Standard documents. This included introducing a standard for new assets that specifies submerged pipework must be constructed from stainless steel, ensuring the pipework will be of a suitable material both internally and externally; (2) A Design Delivery Working Group was formed with representatives from across our Alliances to share good practice among design teams; (3) Over 40 of our key suppliers were briefed on our Materials in Contact process and the importance of regulation 31 compliance in June 2022; (4) We amended our @one Alliance procurement process such that copies of certification are requested at the 'Requisition for Quotation' stage before an order is raised; (5) Improvements were made to the Materials in Contact Excel based form including introduction of drop down options guiding the individual completing the form, with warning and information notes based on the route of compliance being used, automated highlighting of upcoming end date of approvals, a requirement to state the intended use for each line item,

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and the requirement to centrally save any supporting documents; (6) Implementation of an additional internal check of the Materials in Contact form for @one Alliance schemes before it is submitted to the Water Quality team for approval; (7) Inclusion of a Water Quality Risk Manager to approve standalone schemes in our capital delivery Totex Delivery Workflow process as an additional check that Materials in Contact forms are completed before a scheme progresses through the capital delivery process, and (8) Mapping of the 'as is' Materials in Contact process for eleven different delivery routes across Anglian Water and our Alliance partners.

The key themes from the individual 'as is' process maps were brought together with a view to consolidating our Materials in Contact process. Gap analysis was carried out and identified three key checkpoints as control points in the process; a design check for regulation 31 compliance, a check of materials ordered, and a check before onsite installation. This process mapping work led to the request for additional project and programme management support to improve, create and embed the checkpoints identified.

In October 2022 our programme was extended to accelerate and deliver the Materials in Contact Improvement Programme. This includes a dedicated Programme Manager, three Project Managers and a Technical Lead. Programme governance has remained broadly the same with sponsorship by myself, the Director of Water Business Stream and our Head of Water Quality. The Materials in Contact Improvement Plan remains largely the same structure, with three core workstreams designed around the three key checkpoints identified in the process mapping work, a process review workstream, and three enabling workstreams.

The core workstreams encompass: (1) 'Design and Engineering Standards' to ensure schemes are designed using regulation 31 compliant materials, change

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control processes are defined and designs are reviewed for regulation 31 compliance; (2) 'Procurement and Logistics' to develop a database of compliant materials and a procurement check that materials are regulation 31 compliant before purchase; and (3) 'On-site Installation and Scheme Handover' to develop an onsite check to confirm that goods received are as per design, and ensure that inspection, sampling and evidence Instructions for Use documents were followed is checked before scheme handover.

There is a 'Process Review, Quality Assurance and Documentation' workstream, designed to streamline our current Materials in Contact process, ensure documentation is stored in a central, accessible location, and to review audit and assurance processes.

The three enabling workstreams are: (1) 'Digital Opportunities' to develop a digital solution for the Materials in Contact Excel based form, along with a method to retain evidence to prove compliance; (2) 'Training and Competency' to develop a training matrix with clear requirements for different roles involved with the Materials in Contact process; and (3) 'People and Communications' to guide Anglian Water staff and our Alliance partners through the changes the programme will create, and to ensure clear, concise communication at all stages of the changes and beyond the programme lifecycle.

Some of the key objectives of the Materials in Contact Improvement Programme are to ensure that regulation 31 requirements are fully embedded into our digital systems. This includes Building Information Modelling (BIM 360) construction management software, used by our @one Alliance design teams to create 3D models that can include regulation 31 status of materials, ensuring traceability from design through to commissioning and operation.

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We recently insourced our logistics operations at a state of the art facility in Peterborough, and are investing in technology that will enable us to track parts and materials from delivery to installation, therefore increasing control and visibility. We are exploring how we can capture compliance information and link this to asset data as part of our SAP S4/HANA Evolution Programme.

We are currently trialling Radio-Frequency Identification (RFID) tags which capture information on regulation 31 compliance and Instructions for Use for individual products and allow this information to be accessed at the point of use onsite during installation. We are also refining Inspection and Test Plans (ITPs) which have been developed for quality management and consist of a series of checkpoints during the installation process.

In addition to our internal improvement activity, we are also leading wider industry engagement. We organise and chair quarterly Regulation 31 Industry Working Group meetings, bringing together representatives from other water companies, Water UK, Energy and Utility Skills, WRc and DWI to share learning from events and near misses, and to share good practice across the industry. Topics of interest are discussed, and we are working towards a programme of joint industry chemical supplier audits and providing support for an Energy and Utility Skills regulation 31 competency scheme. It is through this wider industry engagement that we can be sure that we are at the forefront of the industry in terms of good practice in the area of regulation 31 compliance.

In March 2023 we are jointly organising a regulation 31 industry workshop, in collaboration with Southern Water, Northumbrian Water and WRc. The event will cover the whole Materials in Contact process from design to procurement, to

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installation, to handover, and aims to surface industry wide issues around laboratory test facilities, availability of compliant products, clarity of Instructions For Use documents, and improving supplier understanding of industry challenges. The workshop will include speakers from the water industry, suppliers and EU Skills, and will include two interactive breakout sessions to encourage collaboration and sharing of best practice.

In addition, we have committed to leading the industry in identifying and implementing real and practical solution to address the issue of regulation 31 testing facilities to ensure a wide range of approved products are available across the industry. This is the commitment our CEO has made to the Chief Inspector at the DWI and we are in active engagement with a number of parties.

Through the improvements we have implemented and the actions I have detailed in this statement, Anglian Water is able to clearly demonstrate our continued leadership in the area of compliance with regulation 31. As stated previously I believe that we are at the forefront of the industry in terms of good practice. Further, I believe that our commitment to sharing our experiences and practices with our peers in the wider industry, for example through the chairing of the Regulation 31 Industry Working Group, demonstrates that we are seeking to improve practices across the sector – our leadership in these areas is very practical and very real.

Section 8: In conclusion

As soon as Anglian Water became aware of the issues at Kedington WTW in May 2021 we immediately commenced our investigations and informed the Inspectorate of the situation. In our subsequent reporting to the Inspectorate we identified the pipework defects as a potential issue with regulation 31. We

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reviewed our water quality and customer contact data and did not identify any instances of water quality supplied to consumers where the water contained any substance at a concentration or value which would constitute a potential danger to human health.

We undertook to ensure that the lessons learned from our internal investigations at Kedington WTW were disseminated throughout the business. As a result of this when the routine internal inspections of the tanks at Diddington Reservoir were undertaken in November 2021, particular attention was paid to the condition of the internal pipework. As a result of the discovery of the issues at Diddington Reservoir, further work was undertaken to drain and inspect all tanks constructed or with pipework modifications since 2010 during the AMP 5, 6 and 7 periods. This due diligence on behalf of the company revealed potential regulation 31 issues at a further two sites, Hannington Reservoir and Pitsford Storage Tank B. For all three sites, we reviewed our water quality and customer contact data and did not identify any instances of water quality supplied to consumers where the water contained any substance at a concentration or value which would constitute a potential danger to human health.

Immediately following the initial discovery by Anglian Water of the potential issue with regulation 31 at Kedington WTW in May 2021 and during our subsequent investigations we have been open and transparent with the Inspectorate regarding our concerns, our findings and the actions we have been taking to remediate the individual sites as well as sharing our program of review and improvements to ensure that such occurrences cannot be repeated in the future. Further we have acted swiftly, openly, transparently and in good faith in all our interactions with the Inspectorate throughout their subsequent investigation of these events be that either in a voluntary or a formal capacity.

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While these events occurred, that is despite the company having an extensive system in place to ensure that all aspects of the requirements of regulation 31 were being followed, our subsequent self-regulatory actions did identify the issues at the assets affected and steps were taken to immediately rectify the situation. I believe that this is an example of the self-regulatory principles that are at the core of the regulatory framework being shown to work – a possible error occurred, and it was identified and addressed immediately without the need for any third-party oversight.

In all of the four specific instances being investigated I believe there is no evidence of a breach of The Water Supply (Water Quality) Regulations 2016 (as amended) regulation 4 (Wholesomeness) and there is no evidence that Anglian Water supplied water unfit for human consumption.

Our internal inquiries and lessons learned scrutiny did not identify any premeditation on the part of those involved in terms of deliberately setting out to ignore the requirements of either the company's internal requirements or that of regulation 31 itself. The company has in no way benefited from the actions that led to the issues under investigation, indeed the contrary is true as we have devoted significant resources in terms of people, time and money to review our working practices and propose significant root-and-branch improvements to 'engineer out' as far as possible the possibility of similar mistakes occurring in the future.

Reviewing the water quality data from the four sites for the periods in question we believe the water supplied to consumers at no time constituted a potential danger of harm to human health. In this regard, while we acknowledge the potential issues with regulation 31 compliance, in all other respects there have

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been no victims in terms of customers associated with these occurrences. Further there has been no adverse impact on the communities served by these assets.

Despite the extensive systems the company had in place, in each case a set of site-specific and in all likelihood human-specific circumstances occurred to allow the alleged breaches to go undetected and unrectified at the time.

As I have previously described we had an industry-leading set of robust policies and procedures in place supported through in-depth training. We had engaged with highly experienced Alliance partners of good standing in their respective professional fields of expertise. We undertook checking and monitoring of materials intended to be used as part of the drinking water supply system in excess of the minimum requirements understood to operate in other parts of the industry. But despite all of this, on four separate occasions the system may not have prevented the potential issues identified related to regulation 31 compliance.

With hindsight we have identified further areas where additional improvements could and are being made and I have described these in this statement but, at the time when the alleged events took place, could the Company in all reasonableness have anticipated the events that eventuated? I am of the firm belief that a reasonable person would conclude that at the time of the alleged breaches, the Company had taken significantly more care that would normally have been expected to have occurred elsewhere in the industry and so the failures could not have been reasonably foreseen as all reasonable precautions had been in place.

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I would like to take this opportunity of recording my appreciation for the way in which colleagues across the business have approached these matters both internally, through our Alliance partnerships and in all dealings with the Inspectorate. Myself and all my colleagues have recognised the importance of the issues being investigated and have received every request for information, access to sites or requests to attend informal interviews with a positive, respectful and helpful manner. At all times we have endeavoured to provide the Inspectorate with the information or resources requested in a timely manner despite some of these requests having significant and sustained impacts on parts of the business. Making sure we work co-operatively with the investigation to make our processes more robust in future has been the hallmark of everyone's approach and I wish to express my sincere gratitude for all the efforts that have been made by colleagues throughout this investigation.

Finally, as I stated earlier, I believe that Anglian Water is able to clearly demonstrate leadership in the area of compliance with regulation 31. Through our engagement across the industry I believe that we are at the forefront of the industry in terms of best practice and that this is shown through our policies, procedures and processes including the sampling and review of components prior to entering into supply. I believe that we go 'above and beyond' what I understand to be practices in other areas of the industry and that our commitment to sharing our experiences and practices with our peers in the wider industry, for example through the chairing of the Regulation 31 Industry Working Group, demonstrates that we are seeking to improve practices across the sector. We are absolutely committed to leading improvements in Regulation 31 awareness, testing and competency across the Water industry and associated supply chain.

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Section E.103
SEV079 IUC Transcript
Index

Transcript created by Epiq

Event:	Drinking Water Inspectorate - Anglian Water DWI311/2021 - interview under caution CD1
Date:	21 February 2023
Interviewers:	[redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate
Interviewees:	[redacted] - Anglian Water
Also present:	[redacted] - Anglian Water

[redacted] So, this interview with [redacted] is being recorded on compact discs and is being conducted with the Drinking Water Inspectorate to offices in Nobel House, London. In sight of all present we have put three CDs into the machine and set the machine to record.

The case reference number is DWI/2021-8118. This is the event reference for Keddington, which was the first of four Regulation 31 Events for the Portable Anglian Water to the Inspectorate in 2021.

The other references are 2021-8338 for Diddington, 2021-8379 for Hannington, 2021-8380 for Pitsford.

The date is 21 February 2023 and the time on the recording machine is …

[redacted] 13.21.31.

[redacted] I am [redacted] Inspector from the Drinking water Inspectorate, currently on secondment as the Vice Principal Inspector. My colleagues are … ?

[redacted] I'm an Inspector too.

[redacted] [redacted] Principal Inspector for the North Area.

[redacted] Also present in the room are company representatives of Anglian Water. Can you please state your name and job title?

[redacted] Yes, [redacted] Director of the Water Business Stream.

[redacted] Assistant Regulation Solicitor.

[redacted] Thank you very much. For the purposes of the CD, please can you confirm your business address and date of birth, please [redacted]

[redacted] [redacted]. Business address Lancaster House, Ermine Business Park, Huntingdon.

[redacted] At the conclusion of the interview, I will give you a notice explaining what happens to the audio recording. We will record the interview on triple kit, and you may, if you wish, take a working copy away with you.

[redacted] Thank you.

[redacted] As you know I am making enquiries regarding the water quality events that occurred at four sites from 2016 onwards when the product's not compliant with the required Water Regulation 31, were put into supply. We can refer to any of the Company 3-0 20-day reports as required in the interview. By way of a summary, as I understand it, the events supported by Anglian Water took place at Keddington Water Treatment works, Diddington Reservoir, Arlington Reservoir 1A and 1B, and Pitsford Storage Tank B.

I am going to ask you some questions about these events, but before I do so I am required to caution you. You do not have to say anything, but it harm your defence if you do not mention, when questioned, something which you later rely on in court. Anything you do say maybe given in evidence. Do you understand that caution?

[redacted] I do.

[redacted] Thank you. I would like to confirm you're entitled to legal advice, and you can request the presence of an observer as well. You've got [redacted] here for legal advice and you can call -- so PACE code of practice which are all here on the table. You can exercise any of those rights now, or at any time during the interview.

I'm now going pass on a notice called a Notice to Interviewee, but I think you have already had that as well in your indication letter.

[redacted] Thank you.

[redacted] That sets out your rights on there. Before I continue, I'd just like to point out that in these cases the Inspectorate is only considering prosecution of the water company not individuals responsible for water supply. Specifically we're investigating whether offences may have been committed under Regulation 33.3 of the Water Supply/Water Quality Regulations 2016 in respect of Regulation 31 of the same Regulations.

We're also investigating whether the Company committed any offences under Section 70 of the Water Industry Act. It is a criminal offence for a water undertaker to contravene Regulation 31. It is also a criminal offence to supply water that maybe unfit for human consumption in breach of Section 70 of the Act.

I'd like to put to you a series of questions from the information we have collected so far, but I need to ask you to confirm a few details.

Can you please confirm who your employer is and how long you've been employed by them?

[redacted] Yes, Anglian Water Services Limited. I have been employed with Anglian Water since 1996. I've been Director of the Water Business Stream since April 2021.

[redacted] So my next question were you in this role between April 2016 and end of May 2020?

[redacted] No.

[redacted] What would you have been doing at that time?

[redacted] So no I wasn't. So, I was Director of our customer and wholesale services business in that time.

[redacted] Yeah, and what does your current role involve, and you've said you started that in April 2021.

[redacted] 2021, yes, so Director of the Water Business Stream so I'm accountable for the extraction, treatment and distribution of water to customers in the Anglian Water area.

[redacted] That's for all Anglian not any specific area or department?

[redacted] All of Anglian Water, yeah.

[redacted] Are you authorised to speak for and on behalf of the Company in this matter?

[redacted] I am.

[redacted] (Overspeaking) the purpose.

[redacted] Yeah.

[redacted] Can you confirm Anglian Water Services Limited is the appointed water undertaker under Section 6 of the Water Industry Act for supplying water to customers from Hannington Reservoir Site 1A and 1B, Diddington Reservoir, Keddington Works and Pitsford Storage Tank B.

[redacted] Yes, it is.

[redacted] Thank you. Are you aware of all four events and the circumstances of these events?

[redacted] So, I have read the 20-day report, so I've gone through the information that's been provided to you. I've produced a written statement. However, what I am is strategic leader of the business unit and business stream. What I don't have will be the intimate detail of every nuance of every sample of each event.

[redacted] But have you been advised by your water quality team on what you need to know and what we're going to talk about in terms of what they presented to us? In terms of the 20-day reports and water quality --

[redacted] So, my written statement is very much based on those reports. Yes, I have been advised by my water quality team, independent, scientific experts and professionals, yes.

[redacted] Thank you for sending your pre-prepared statement today. Can you confirm that statement's not changed since yesterday and that there are no amendments.

[redacted] That's correct, yes.

[redacted] Are you happy to read that out today?

[redacted] I am.

[redacted] Just to confirm that the statement is your own words?

[redacted] It is.

[redacted] Can you confirm the date it was written?

[redacted] The that it's signed is 20 February 2023 and it's been in draft for some time before that.

[redacted] I have brought a copy.

[redacted] It's all right, I've got one here.

[redacted] Yeah, I've got it, just get one out.

[redacted] Okay.

[redacted] So, if you're happy to read that out, we'll let you do that. I've got this copy here and I'm going give it Exhibit reference 1. Is that okay? Whenever you're ready --

[redacted] Okay, for me to start?

[redacted] -- in your time, let me know if you need a drink or anything.

[redacted] Thank you, that's very kind. So, written statement under caution.

"I make this statement of my own free will. I understand that I do not have to say anything, but it may harm my defence if I do not mention, when questioned, something I later rely on in court. This statement may be given in evidence, so it's for and on behalf of Anglian Water Service Limited. My name is [redacted] I'm Director of the Water Business Stream and as we've said this statement was signed as of 20 February 2023.

So I understand that the Inspectorate is conducting an investigation related to the circumstances of four Regulation 31 events reported to the Inspectorate in 2021 by Anglian Water. The four events involved the installation of materials that were potentially not compliant with

the requirements of Regulation 31 at Keddington Water Treatment works, Diddington Reservoir, Hannington Reservoir 1A and 1B and Pitsford Water Treatment Works Storage Tank B.

Section 0 - Our Purpose as a responsible business.

Anglian Water is the largest water and water recycling company in England and Wales by geographical area. Supplying water and water recycling services to almost 7 million people in the East of England and Hartlepool. Employing circa 5,000 people Anglian Water Supplies on average 1.2 billion litres of clean, safe drinking water to 4.3 million people every day.

Our purpose is to bring environmental and social prosperity to the region we serve and to our commitment to love every drop. In 2019, we became the first large European utility to change its constitution Articles of Association to lock public interest in the way our business is run both for current and for future generations. Safe, clean drinking water is one of our key board-agreed outcomes. Know the customers view that delivering safe, clean water is the most vital service we offer.

We have recently published our long-term plan for the quality of drinking water supplies and outlined our four strategies to deliver this outcome. To protect and improve more water qualities at source. To increase resilience in our treatment processes, safeguard quality across our distribution system and to ensure water is clean and safe within the home.

The year 2021 was our best ever year for acceptability, customer contacts. Meaning that the number of contacts we received from customers about the appearance, taste and odour of their water was the lowest ever. At one point 0.3 customer contacts per

1,000 customers. In 2022, we believe we have improved on this again reaching 1.1 contacts per 1,000 customers. The compliance risk index, CRI score, for Anglian Water in 2021 was higher than that we would have expect at 4.01 was still below the industry average of 4.17 for the ten large water and sewage companies.

To swiftly address this we have instigated a number of programmes aimed at reducing the number quality (Inaudible) from our assets. As a result in 2022 we anticipate an improved performance of 2.70. In 2021, the provisional Event Risk Index, ERI score, calculated by the Drinking Water Inspectorate, DWI, for Anglian Water was 0.972. This does not include the assessed scores for the four events which were still under consideration by the DWI.

In 2022, we anticipate a score of 3.36 which reflects our continual efforts to minimise the adverse impacts to water quality on the rare occasions when failures do occur. Maintaining supplies of high-quality drinking water is our biggest priority and we engage and invest from source to tap to maintain and improve our performance. We have a comprehensive materials and contact process in place within the company detailed in our policy and standards for water supply and hygiene, PSWSH. This includes the documentation and assessment of products to be used in contact with drinking water, an additional assurance of sampling to further assure the company that the water remains safe for customers.

All or our water colleagues play a vital part in achieving our goal of keeping the water supply safe and we have pledged our commitment to our hygiene charter. Nothing is so important we cannot take the time to do it hygienically. In 2021 our hygiene charter was updated to

include the commitment to only use approved chemicals, fittings and materials. If you are unsure if an item is approved, stop and report it.

Section 1 - Summary of understanding of the issues under investigation

Anglian Water has notified the Inspectorate via our self-reporting 3-day and 20-day event reporting of potential issues associated with Regulation 31 in relation to events surrounding Keddington Water Treatment Works, Diddington Reservoir, Hannington Reservoirs 1A and 1B and Pitsford Water Treatment Works Storage Tank B.

Despite have a robust system of policies and procedures in place to manage our compliance with Regulation 31, a set of circumstances arose in these instances which caused these systems to be circumvented. We have acted quickly to learn the lessons from these events and build on our existing framework to provide a greater level of assurance and reduce the likelihood of human interventions.

At all times the water supply was wholesome, meeting requirements for the water supply, water quality regulations 2016, and as a result Anglian Water was fully compliant with the general requirements of Regulation 4.

Furthermore, we have not received any notifications or reports where customers have rejected water supply from the four sites in question for matters that could be related in any way to noncompliance of the requirements for Regulation 31-. As a result, the duty placed upon Anglian Water under Part 3, Chapter 3 of the Water Industry Act 1991 has been fully complied with at all times.

In relation to the events under investigation Anglian Water believes that at no point in the periods in question were consumers put at risk from the issues surrounding Regulation 31 as to requirements of Regulation 4(2)(a)(i) and (ii) have been satisfied throughout those periods.

Immediately from the initial discovery by Anglian Water of the potential issue of Regulation 31 compliance at Keddington Water Treatment Works in May 2021, and during our subsequent investigations we've been open and transparent with the Inspectorate regarding our concerns, our findings and the actions we've been taking to remediate the individual site as well as sharing our programme of review and improvements to ensure that such occurrences cannot be repeated in the future.

Furthermore, we have acted swifty, openly, transparently and in good faith in all our intentions with the Inspectorate, be that either in a voluntary or a formal capacity.

As we became aware that potential issues may be wider than those discovered and report first that Keddington Water Treatment Works in May 2021, and then at Diddington Reservoir in September 2021, we undertook a programme of asset inspections to investigate the potential for similar issues with pipework at other sites. As both Keddington Water Treatment Works and Diddington Reservoir were new-build tanks, initially this programme was to inspect all new treated water tanks from 2010 onwards.

Once this phase of the programme was underway, a decision was taken to widen the coverage of these inspections to include resilient schemes where modifications, the pipework were made within a treated water tank, Diddington Reservoir was also part of the Grafham's Resilience Scheme.

In total 11 sites were fall into these categories were inspected. Keddington Water Treatment Works, Diddington Reservoir, Hannington Reservoir, Pitsford Treatment Works Storage Tank B, Boughton Reservoir, Ludham (Horstead) Reservoir, Pullets(?) Hill

Water Treatment Works, Posset Water Treatment Works, Hall Water Treatment Works, Mattishall Water Treatment Works and Raithby Water Treatment Works.

Anglian Water's actions in first of all recognising the two separate issues discovered at Keddington and then Diddington, could be linked by the delivery routes of the improvement and then taking further action to proactively seek assurance that no other asset was similarly affected demonstrates very clearly the company's commitment to ensure the wholesomeness of drinking water supplied to all our customers and to retain the public's confidence in the drinking water.

As soon as we became aware of the issues affecting Keddington Water Treatment Works in May 2021, the Diddington Reservoir in September 2021 and subsequently a result of our proactive investigations. The issue at Hannington Reservoir and Pitsford Treatment Works in 2021 we alerted the Inspectorate of our concerns. Throughout we have been open and transparent and maintained an open dialogue with Inspectorate.

This approach mirrors our corporate values and demonstrates our commitment to ensure that we're always adopting a water quality first approach for all of our customers at all times.

Section 2 Keddington Water Treatment Works.

2.1 Details of the event

Keddington Water Treatment Works is a new works utilising existing bore hole source. The construction of Keddington Water Treatment Works was an AMP6 engineering scheme designed to provide a low metaldehyde source of water to blend with water from Great Wratting Water Treatment Works. The works entered supply for a short period on 31 March 2020.

Following a period out supply occurred, additional commissioning of automatic control systems, the works were returned to supply on 27 April 2020 but then taken offline on 14 May 2020 following a quantity of odour detection in a sample taken for theas al regulatory sampling point, which was related to source water quality. Keddington Water Treatment Works pump drinking water and supply for a total of 412 hours during this period.

Keddington Bore Hole has a hydrogen sulphide rural water challenge, and the Water Treatment Works has remained out of supply since 14 May 2020 to carry out a full investigation and installation of additional treatment to address this issue.

On 27 and 28 May 2021, as part of a planned warranty inspection the contact and balance tank were drained down for inspection. The inspections revealed evidence of small blue flakes on the tank flooring. These were assumed at the time to be paint from the internal pipework and an investigation into the origin of the flakes commenced. The Inspectorate were informed of these findings on 22 June 2021 once preliminary investigations on site had been completed. During the period of this investigations the works remained out of supply.

Prior to the works going in supply in March 2020, as part of the wet commissioning of the new assets at Keddington Water Treatment Works a full programme of commissioning sampling was undertaken. This included materials in contact (MIC) sampling to ensure material used did not pose a water quality risk. Our MIC sampling consists of an extensive suite of analysis covering a range of aesthetic, microbiological and chemical parameters including trace organic screening.

The commissioning sampling consists of seven sets of analyses which were carried over a ten-day period. MIC sampling was carried out on each of the newly

constructed process stages using source raw water. Due to the anaerobic conditions at depth, the source of raw water from the borehole was a naturally occurring sulphur (Inaudible). The results of the MIC sampling contained odours that were associated with the raw water source. The sample results were assessed as demonstrating no change from the reference source water and had not been influenced as a result of contact with the new materials.

The completed materials and contact MIC document with Keddington WDW stated that the required pipework was to be (Inaudible) system CL which holds DWI Regulation 30.1 approval for total immersion in water and suitable to install within the contact and balance tanks. The MIC approval for the scheme, such approval is required prior to entering supply -- was given on this basis.

Subsequent investigations have found that a change was subsequently made, and the pipework installed within the contact and balance tanks was Electrofresh Plus ductile iron pipework. The revision was not added to the MIC document and was therefore not subject to an assessment by the risks scientists, as part of our insurance process. Electrofresh Plus has a DWI Regulation 31 Approval for the conveyance of water above and below ground but not for being permanently submerged in water. The internal epoxy coating of this pipework has approval number 1807507.

Further investigation also identified that following modification to the original pipework required to facilitate installation the contractor FT Ductile coated the original pipe affected by cutting and/or welding activity with the material ISF QD8 Promatch Coating. ISF QD8 Promatch does not have Regulation 31 approval and it is this overcoat that has partly flaked off and exposed some of the bare fitting underneath. The

application of this additional coating by the manufacturer at their facility, had not been notified to Anglian Water at the time, purchase and installation.

Therefore, MIC approval for the scheme was given on the basis of the installation of the approved pipework for this submerged environment. However, a change was made outside the MIC procedure resulted in a pipework installation that was not approved for this particular environment. Keddington WTW remains out of supply pending the installation and commissioned of sodium bisulphate dosing to address the issue of treatability of the raw water and the replacement of all sections of pipework within the contact and balance tanks with the correct approvals.

2.2 Impact on water quality

At an early stage of our internal investigations we identified that the C-scoring approach detailed by the Inspectorate in Regulation 31 Advice Sheet 8, is a mechanism to better understand any potential impacts of fittings found at Keddington may have had. The C Scores were calculated the items listed above. (Inaudible) found to be 11.37 for the contact tank, 34.41 for the balance tank and 19.04 for the combined contact and balance tanks.

As all the (Inaudible) well below the small surface area of C-score threshold 100 we considered that pipework in contact with the water for the short duration of supplies, posed a very low risk to water quality. Where Anglian Water has not relied on this approach to inform our actions following the discovery of the coated pipework, our real time monitoring of water quality parameters and subsequent review of both water quality and customer complaint data confirms

that in fact no supply quality issues related to the pipework installed in the tank.

During the period in which Keddington WTW was in supply from March to May 2020 a total of 44 regulatory monitoring samples, 4 internal monitoring samples and 24 operational samples were taken. A number of different water quality parameters were analysed on each sample. All sample results obtaining from Keddington Water final water point during this period was satisfactory and below regulatory limits with the exception of one sample on 11 May 2020 with a bad eggs odour, but panellists declined to taste the sample. In response to this the works was removed from supply on 14 May 2020.

As already stated there had been regular odour detections at the Keddington source water boreholes in 2017. These detections consist of bad egg or musty odours and are the same as the odours detected at Keddington final water in May 2020. Investigations have been carried out and it's been determined that the odour detected in the final water was a result of a source water quality.

In addition to the sampling of their assets we carry out extensive sampling at our customers' properties to ensure compliance with the regulations at the point of consumption. We have also a full and thorough internal monitoring programme which goes above and beyond our regulatory requirements to further assure a water quality first approach.

During the period in which Keddington WTW was in supply from March to May 2020 a total of seven regulatory and internal monitoring samples were taken at customers' taps in the downstream distribution zone. All of these samples were satisfactory for all parameters analysed. Anglian Water considers that the samples results obtained while this asset

was in supply demonstrated that water presented for supply was wholesome throughout.

Laboratory soak tests were carried out on the blue particle matter found in the take at the Keddington Water Treatment Works. These tests were carried out to establish whether the flake materials were likely to have come from the pipework or from some other unknown source and to identify the chemical makeup of that pipework coating in question.

Several organic chemical compounds were detected in the soak test carried out. None of these compounds had been detected in substance sampling of the tanks final water point. As part of our due diligence the organic compounds were detected and compared to SNARLS suggested no adverse response levels where available. Of the compounds detected, nine were found not to have any SNARLS and the remaining 21 were found to be well below the published SNARLS.

Having again reviewed the data related to drinking water quality, we can find no evidence of the wholesomeness of the drinking water being supplied from Keddington Water Treatment Works was in any way failing to meet the requirements of the Regulations. Furthermore, our re-examination of customer contacts from the area, show there had been no increase over the background number of issues being raised by customers.

Section 3: Diddington Reservoir

3.1 Details of the event

The construction of Diddington Reservoir was an AMP6 Engineering Scheme designed to improve the resilience to Grafham Water Treatment Works in the event of a major issue at this (Inaudible) treatment works. The Reservoir was constructed by our AMP6 special projects delivery vehicle with construction started in 2015.

The Reservoir entered supply on 27 February 2018. The design was completed by Mott McDonald and the construction by JM Bentley. Diddington Reservoir consists of two tanks cells, East and West with full height dividing walls and individual operational tank capacities of 20,000 cubic metres.

The commissioning of Diddington Reservoir was managed via a major impact plan as part of our PSWSH procedure for water quality, risk assessment and control. The impact plan includes a sampling requirement and is improved by supply network quality and tactical operations teams. Our extensive materials and contact sampling, which are detailed in this statement was carried out on both cells and on the combined sample point prior to the commissioning in February 2018.

Two low-level organic compounds were detected in the first set of MIC samples from the West Cell and one from the first set in the East Cell. These were significantly below the health-based SNARLS for both those compounds. A subsequent sample for the West and East Cell with a longer standing time along with the MIC sample at the combined sample point were all satisfactory and no trace of organic compounds detected. All taste and odour samples were satisfactory.

A routine warranty inspection of both cells was completed on 21 November 2019. Three areas were recorded requiring remedial work with areas identified (Inaudible) roof ingress and hatch ingress. Remedial work was completed to replace the hatches, repair roof ingress and over ban the wall areas around the overflow pipework. Further internal inspections were carried out on 22 May 2020 for the West Cell and the 29 May 2020 for the East Cell. Both of which were satisfactory with items requiring remediation from the prior internal inspection having been rectified.

MIC sampling was also completed on the individual cells after remedial work was carried out in 2020 before the Reservoir was returned to supply in June 2020. All results were satisfactory with no trace of organic compounds detected.

Diddington Reservoir was removed from supply on 21 September 2021, to enable further validation testing of our Grafham Resilience Scheme. An internal inspection was carried out at Diddington Reservoir on 2 November 2021 prior to returning the Reservoir into supply.

Following the event at Keddington particular attention was paid to the pipework within the tank. It was identified at this inspection that sections of blue pipework on both overflows were noted to have areas of blistering and some areas peeling of their coating. These findings were escalated within the business and a subsequent report made to the Inspectorate on 15 November 2021. Diddington Reservoir remained out of service and an investigation was initiated to further understand the details of this pipework.

The overflows in both cells at Diddington Reservoir are comprised of a paddle flange socket, a section of coated ductile iron pipework and a duct foot bail mouth. The paddle flange sockets and connecting sections of pipework are coated ductile iron pipework supplied by Electrosteel Castings Limited.

The Electrosteel pipework is a Electrofresh Plus which comprises of cement, mortar lined ductile iron pipework with a sealed coat (Inaudible) 162 PWX that confirms to EN545. This product held and still holds a DWI approval of DWI564/537. The pipe was approved as a product for the use for the conveyance of water.

A subsequent investigation has identified the following processes carried out on the Electrofresh pipework. The standard 5.5 metre

lengths of Electrofresh pipes are manufactured at Electrosteel's facility in India. An external blue epoxy coating is applied as part of the manufacturing process. The coating applied was Electrocoat EP812 which was WRAS approved 1305512 at the time of purchase and still holds an active approval 1807507.

Electrosteel produce required lengths of pipe in these 4 and 5.5 metre lengths at the UK facility. We understand the pipe was subject to the following processes in the UK:

(a) the pipework was struck to length as required.

(b) the end of the pipe was finished to remove the external coating to give a clean substrate to attach the flange.

(c) the flange was cut, heated and hydraulically pressed onto a receiving pipe barrel before cooling and welding.

(d) any bare areas on the external surface had a zinc paint application before being finished with a 3M Scotch Coat Epoxy 162 PWX coating.

3M Scotch Coat Epoxy 162 PWX held both DWI and WRAS approvals, DWI Approval 564300 at the time of purchase and installation.

The external pipework was then coated with a synthetic coating for aesthetic purposes.

Paint used with a VNM enamel and holds no approval for the contact with drinking water. It is this overcoat that has partly flaked off and exposed some of the bare metal fitting underneath. The application of this existing coating by the manufacturer at their facility had not been notified to Anglian Water at the time of the purchase and installation.

3.2 Impact on water quality

At an early stage of our internal investigations we identified using the C-Scoring approach detailed by the Inspectorate in Regulation 31, Advice Sheet 8, as a potential mechanism to better understand any potential impacts the fittings found, at Diddington Reservoir, may have had. C-scores were calculated for the overflow pipework installed within Diddington Reservoir East and West Cells combined. The total C-Score for the overflow pipework at Diddington Reservoir was 6.20. As this is well below the small surface area of C-Score threshold of 100, we considered the items in contact with the water posed a low risk to water quality.

While Anglian Water has not relied on this approach to inform our actions following discovery of the pipework, it is worth noting the real time monitoring of the water quality parameters and subsequent review of both water quality and customer complaint data did not identify any issues that could be related to the items installed in the tank.

During the period in which Diddington was in supply, February 2018 to September 2021, the total of 191 regulatory monitoring samples were taken. 61 internal monitoring samples were taken, and 67 operational samples were taken. A number of different water quality parameters were analysed on each sample. All sample results for the period when the Reservoir was in supply was satisfactory and below regulatory limits.

Between March and April 2018 elevated 3-day plate counts were detected. This was thoroughly investigated, and it was identified these were as a result of the new sample line which had been commissioned at the time. In addition to the sampling of our assets, we carried out status sampling of our customers' properties to ensure compliance with the regulations at the point of consumption.

We have also a full and thorough internal monitoring programme which goes above and beyond our regulatory requirements to further assure our water quality first approach. During the period in which Diddington Reservoir was in supply, from February 2018 to September 2021, a total of 1,767 regulatory and internal monitoring samples were taken at customer taps in the downstream distribution zone. This extensive sampling identified ten individual parameters. Exceedances were all fully investigated by a scientific team.

The sample results obtained while this asset was in supply demonstrate the water presented supply was wholesome. Laboratory soak tests were carried out on the blue particular matter taken from the pipework in the tanks, at Diddington Reservoir. The soak tests were conducted in order to establish the chemical makeup of the pipework coating in question. Several organic compounds were detected, and soak tests carried out. None of these compounds had been detected in subsequent sampling at the Reservoir. As part of our due diligence the organic compounds detected were compared to the SNARLS, so the suggested no-adverse response levels, where available.

Of the compounds detected 14 were found to not had any SNARLS and the remaining 96 were found to be well below the published SNARLS. Having again reviewed the data related to drinking water quality, we can find no evidence that the wholesomeness of drinking water being supplied from Diddington Reservoir failed to meet the requirements of our regulations.

Further, our re-examination of customer contacts from the area show there had been no increase over the background number of issues being raised by customers.

<u>Section 4: Hannington Reservoirs 1A and 1B</u>

Section 4.1: Details of the event

The installation of a new outlet pipework into Hannington Reservoir's 1A and 1B was an AMP6 engineering scheme designed to provide support and resilience to Grafham Water Treatment Works. The engineering works was undertaken in 2016 and 2017. To new outlet mains were installed into each Reservoir ie four new out mains in total, two each into 1A and 1B.

The work to install the new outlet mains into Reservoir 1A was completed in 2016. The work on Reservoir 1B was completed in early 2017. The return to service of Hannington Reservoir compartments 1A and 1B was managed by major impact plans as part of our PSWSH procedure for water quality risk assessment and control. The impact plan includes sampling requirements and it's approved by Supply Network Water Quality and Tactical Operations Teams.

Following the installation of new pipework each Reservoir underwent materials and contact sampling, which as I've previously stated, consists of an extensive suite of analyses covering a range of aesthetic microbiological and chemical parameters including trace organic screening. All sample results were satisfactory including trace organics and taste and odour analysis.

Following events reported to the Inspectorate at Keddington and Diddington Reservoir a programme of asset inspections to investigate the potential for similar pipe issues at other sites was undertaken. Initially this programme comprised of all new build treated water tanks from 2010 onwards as both Keddington and Diddington Reservoirs were new built tanks. It was later expanded to include resilience schemes and modifications to pipework had been made within a

treated water tank as Diddington Reservoir was part of the Grafham Resilience Scheme.

As part of this expanded programme, Hannington Reservoirs 1A and 1B were identified for an inspection. Hannington 1A was isolating supply on 15 December 2021 and an internal inspection was carried out on 20 December 2021 with particular attention being paid to the new pipework installed in 2016.

During this inspection, sections of blue pipework on the new outlets were identified as having areas of blistering on their coating. This finding was reported to the Inspectorate on 21 December 2021. The new outlets in Hannington Reservoir 1A and 1B are (Inaudible) to the coated ductile iron pipework were supplied from the Electrosteel Castings Limited. The Electrosteel pipework is Electrofresh Plus which comprised a cement mortar lined ductile iron pipe with a sealed coat (Inaudible) coat 162 PWX that conforms to EN545. This product held and still holds a DWI approval of DWI 56/4/537. The pipe was approved as a product for the use of conveyance for water.

On subsequent investigation, as identified the following processes carried out on the Electrofresh pipework standard 5.5 metre lengths of Electrofresh pipes manufactured at Electrosteel's facility in India, an external blue epoxy coating is applied as part of the manufacturing process. The coating was Electrocoat EP 18 -- 812, which was a WRAS approved (1305512) at the time of purchase and still holds an (Inaudible) approval (180570 - sorry 7507).

Electrosteel produce required lengths of pipe from these full 5.5 metre lengths in their UK facility. We understand that the pipe was subject to the following process in the UK:

(a) the pipework was cut to the required length.

(b) the end of the pipe was finished to remove the external coating to give a clean substrate for attaching the flange.

(c) the flange was cut, heated and hydraulically pressed onto the receiving pipework barrel before cooling and welding.

(d) any bare metal areas on the external surface had a zinc paint application before being finished with a 3M Scotch Coat Epoxy 162 PWX coating.

3M Scotch Coat Epoxy 162 PWX held both DWI and WRAS approvals, DWI Approval 56/4/300 at the time of purchase and installation.

The external barrel of the pipe was then coated with a synthetic coating for aesthetic purposes. The paint used was a VNM enamel and holds no approval for the contact with drinking water. As before, it is this overcoat that has partly flaked off and exposed some of the bare fitting underneath. The application of this additional coating by the manufacturer at their facility had not been notified to Anglian Water at the time of the purchase and installation.

4.2 Impact on water quality

At an early stage of our internal investigation we identified using the C-Scoring approach detailed by the Inspectorate in Regulation 31, Advice Sheet 8, as a potential mechanism to better understand any potential impacts the fittings found, at Hannington Reservoir, may have had. C-scores were calculated for the outlet pipework installed within Reservoir 1A and 1B. The total C-Score for the outlet pipework at Hannington Reservoir was 1.64 in Reservoir 1A and 1.64 for Reservoir 1B. As this was well below the small surface area of CScore- threshold of 100, we considered that the items in contact with water posed a low risk to water quality.

Where Anglian Water has not relied on this approach to inform our actions following discovery of the pipework, it is worth noting that real time monitoring of the water quality parameters and subsequent review of both water quality and customer complaint data did not identify any issues that could be related to the items installed in the tank.

During the period in which Hannington Reservoir 1A was in supply, April 2016 to December 2021, the total of 302 regulatory monitoring samples were undertaken. 126 internal monitoring samples were undertaken, and 86 operational samples were undertaken. A number of different water quality parameters were analysed on each sample. All sample results collected at the Hannington 1A between April 2016 and December 2021 have been satisfactory and below regulatory limits.

Elevated 3-day plate counts were detected between April 2018 and October 2018. Investigations into these elevated levels concluded that they was as a result of the sample tap, which was rectified.

During the period which Hannington Reservoir 1B was in supply, from January 2017 to January 2023, a total of 313 regulatory monitoring samples. 183 internal monitoring samples were taken, and 193 operational monitoring samples were taken at a number of different water quality premises were analysed on each sample.

All sample results collected at the Hannington 1B between January 2017 and January 2023, have been satisfactory and below regulatory limits with the exception of a small number of individual parameters listed below.

Elevated 3-day plate counts were detected between May 2017 and May 2018. Investigations into these elevated levels concluded that these were as a result of the sample tap, which was rectified.

One coliform was detected in the sample tap refurbishment sample collected on 31 May 2017. Re-samples taken response were clear, investigation concluded that this detection was a result of the sample tap.

Enhanced trace organics monitoring has been in place at Hannington 1B since January 2022, with samples being taken on a regular weekly basis. Four different compounds have been detected at very low levels significantly below the respective SNARLS were available.

In addition to sampling our assets we carry out extensive sampling at our customers' properties to ensure compliance with the regulations at the point of consumption. We have also a full and thorough internal monitoring programme which goes above and beyond our regulatory requirements to further assure our water quality first approach.

During the period in which Hannington Reservoir was in supply from April 2016 to January 2023 a total of 32,087 regulatory and internal monitoring samples were taken at customers' taps in the downstream distribution zones. This extensive sampling identified 148 individual parameters exceedance, which were all fully investigated by a scientific team. Sample results obtained while this asset was in supply demonstrate the water presented to supply was wholesome. Laboratory soak tests were carried out on particular matter taken from outlet pipework in the tank, at Hannington 1A Reservoir. The soak tests were conducted in order to establish the chemical make-up of the pipework coating in question. Several organic compounds were detected in soak tests carried out. As part of our due diligence the organic compounds detected were compared to the SNARLS, suggested no-adverse response levels, where available. Of the compounds detected, all three were found to be well below the published SNARLS.

Again, having reviewed the data related to drinking water quality, we can find no evidence that the drinking water being supplied from Hannington Reservoir was in any way failing to meet the requirements of the Regulations and was wholesome. Furthermore, our re-examination of customer contacts from the area, show there had been no increase over the background number of issues being raised by consumers.

It should also be noted that Hannington 1B Reservoir has remained in supply from identification of the issue in Reservoir 1A in the on 20 December 2021 until 24 January 2023, while remedial work was carried out in Reservoir 1A. Enhanced water quality sampling has been carried out throughout this period. All results have been shared with the Inspectorate. This enhanced monitoring shows that the water has remained wholesome at all times.

Section 5: Pitsford Water Treatment Works

5.1: Details of the event

As part of an AMP6 engineering scheme to provide support and resilience to the area supply for Pitsford Water Treatments, a new inlet was drilled into each of the storage tanks to provide an additional supply from Hannington Reservoirs. The work to install the inlet main into Storage Point B was carried out in 2015 and the work to install the inlet main into Storage Tank A was carried out in 2020.

Following events reported to the Inspectorate that Keddington Water Treatment Works and Diddington Reservoir, a programme of asset inspections to investigate the potential for there to be similar pipework issues at other sites was undertaken. Initially this programme comprised of all new build water treatment tanks from 2010 onwards, as both Keddington Water Treatment works, and Diddington Reservoir were known new build tanks and was later expanded to

include resilience schemes where modifications to pipework were made within the treated water tank as Diddington Reservoir's part of the Grafham Resilience Scheme.

As part of this expanded programme, Pitsford Water Treatment Works Storage B was identified for inspection. Storage Tank A underwent an internal inspection on 19 August 2021, whilst revealing the inspection report and associated photographs, the new inlet main installed was identified as being constructed from stainless steel and therefore did not require inspection.

Pitsford Water Treatment Works Storage B was isolated for supply on 13 December 2021 and an internal inspection was carried out on 17 December 2021. Particular attention being paid to the inlet fittings and the pipework installed in 2015. It was identified that sections of pipework in the new inlet had areas of flaking on their coating.

Construction records identified the inlet pipework to be comprised of four separate components:

(i) a fabricated flange spigot,

(ii) a 90-degree flange bend,

(iii) a double flange spacer, and

(iv) a flange bearer.

These fittings were supplied by Gindell Sigma Limited. The 90-degree flange bend and flange bell mouth were coated with (Inaudible) coat R4 which is a factory applied powder coating. This coating held WRAS approval under 111/2530 at the time of installation.

The flange spigot and flange spacer were coated with 3M Scotch Coat epoxy 162 PWX which held WRAS approval under 1109548 at the time of installation. The work to install the additional inlet main,

into Storage Tank B was completed in 2015. Storage Tank B was returned to service on 7 October 2016. Samples collected ahead of its return to service were satisfactory. Storage Tank B was removed from supply on 10 February 2017 to carry out further remedial work and a successful final inspection was carried out on 1 August 2017.

Part A of the materials in content document identifies there had been use of acanthine DW blue which holds DWI approval (DWI 56/4/1059) on pipework within the tank.

The materials in contact sampling for this work was undertaken 3 August 2017. All sample results report to the satisfactory including trace organics and taste and odour analysis. Storage Tank B was passed and bailed in supply at 11.20 on 11 August 2017. In supply samples collected with results also being satisfactory. Our investigation identified that two sections of new inlet pipework had subsequently been coated in the material believed to be acanthine DW blue (DWI approval 56/4/1059) as referenced in the MIC document from 2017 which may not have been applied in accordance with the instructions for use, IFU.

The coating of the pipework adjacent to the tank wall which is submerged when the tank is operational had been subject to flaking and the potential cause of this flaking is the incorrect surface preparation ahead of the coating in accordance with the manufacturer's instructions for use (IFU).

Pitsford Water Treatment Works Storage B remains out of supply as of the 21 February 2023.

5.2 Impact on water quality

At an early stage of our internal investigations we identified, using the C-Scoring approach detailed by the Inspectorate in Regulation 31 Advice Sheet 8, as a mechanism to better understand any potential

impacts of fittings found at Pitsford Storage Tank B may have had. The C Scores were calculated with the inlet pipework installed within Pitsford Storage B and found to be 21.13.

As this is well below the small surface C-score threshold of 100 the pipework in contact with water posed a very low risk to water quality. Where Anglian Water has not relied on this approach to inform our actions following the discovery of the pipework, it is worth noting that our real time monitoring of water quality parameters and subsequent review of both water quality and customer complaint data did not identify any issues that could be related to the items installed in the tank.

During the period in which Pitsford Storage B was in supply, October 2016 to December 2021, a total of 1,997 regulatory monitoring samples were taken. 856 internal monitoring samples were taken, and 447 operational samples were taken. A number of different water quality parameters were analysed on each sample. Sample results from Pitsford Storage point B was in supply between October 2016 and December 2021, was satisfactory and below regulatory limits with the exception of a small number of individual parameters detailed below:

one sample on 11 May 2020 with a bad eggs odour but panellists declined to taste the sample. In response to this the works was removed from supply on 14 May 2020.

Very low levels of trace organic compounds were detected on three samples in this period while Pitsford Storage Tank was in supply. All four compounds detected at levels well below their respective SNARLS.

A sample collected from Pitsford final water point on 18 March 2021 contained one confirmed chloroform zero E-coli. The investigation concluded that the likely cause of the Coli point detection was a result of ingress noted about the hatches on Storage Point B. Subsequent re-samples were all

satisfactory. One odour detection was identified at Pitsford final water point on 24 February 2021. All resamples were taken in responses one odour detector and satisfactory. One taste detection was identified at Pitsford final water point, on 28 August 2020, all resamples taken response to this. One taste detection was satisfactory. Did samples taken directly from Storage Tank B between October 2016 and December 2021 -- 21 in total satisfactory and below regulatory limits.

In addition to the sampling at our assets we carry out extensive sampling of our customers' properties to ensure the compliance with the regulations at the point of consumption. We have a full and thorough internal monitoring programme that goes above and beyond our regulatory requirements to further assure our water quality first approach.

During the period in which Pitsford Storage Tank B was in supply from October 2016 to December 2021 a total of 6,950 regulatory and internal monitoring samples were taken at customer taps in the downstream distribution zones. This extensive sampling identified 33 individual parameter exceedance which were all fully investigated by our scientific team.

Anglian Water considers that the sample results obtained while this asset was in supply, demonstrate the water presented to supply was wholesome.

Laboratory soak tests were carried out on the particle matter taken from the inlet in Pitsford Storage Tank B. The soak tests were conducted to establish the chemical make-up of this pipework coating in question. Not compounds were detected as part of these tests.

Having reviewed the data related to drinking water quality, we can find no evidence that the wholesomeness of the drinking water being supplied from Pitsford Storage Tank B failed to meet the requirements of the Regulations. Furthermore, our re-examination of customer contacts from the area,

show there had been no increase over the background levels of issues being raised by customers.

Section 6: Our policies and processes for compliance with the requirements of Regulation 31

Our materials in contact (MIC) processes and procedures were originally implemented in 2005 as a way of checking items being used in contact with water intended for supply. In order to ensure and provide evidence that these items would not affect water quality. The materials in contact (MIC) documentation originally comprised of a form, set up as a simple sheet in Excel with a table listing items being used in contact with the water intended for supply, alongside the relevant approvals Part A.

A second table was provided to show post-installation sample results which are aimed at providing evidence that the item would not affect water quality, Part B.

The engineer responsible for the work to install items in contact with the water, intended for supply, will list approvals of items being used on Part A of the form. Following installation, sample results were added to Part B of the form.

The sample results are formally assessed for compliance by scientists with the drinking water standards D with the compliance recorded and documented. Over time this procedure has developed and includes additional sections in the MIC form. Part A lists the materials, equipment to be used in contact with water intended for supply as before.

Part B lists the agreed (Inaudible) requirements Part C, lists the results obtained post-installation of Part D as a final completion of the form. Formal sign off is captured in each section of the MIC form.

For example the engineer responsible for the work will now sign off against each item listed in Part A of the MIC form and then be checked and countersigned by a risk scientist. Sections A, B and C are required to be signed off before Part D is fully completed.

The MIC form has more recently become embedded in our quality management system becoming a controlled document in April 2022 as part of our materials in contact procedure.

Our policy standards and procedures which govern our compliance with Regulation 31, are documented within our policy and standards for water supply hygiene (PSWSH), which forms a key part of our externally accredited, integrated management system framework for complying with all requirements and standards of ISO 9001 Quality Management.

Our policy and standards material (Inaudible) in contact with water have been in place for a number of years. It details how we maintain compliance with Regulation 31 Water Quality Regulations 2016 as amended. Our policy and standards were asset designed creation, mandates that all assets involved in the production and delivery and of our drinking water will be designed, commissioned and decommissioned to ensure that they do not impact adversely on the water quality including meeting all Regulation 31 requirements.

Our asset design envelopes known as minimum asset standards are developed according to these policies and standing requirements which must be adhered to by our alliance partners for any scheme delivered on material and chemicals in contact with water procedure document responsibilities of all employees working with any materials and chemicals that will be introduced into water intended for public supply to ensure they're fully compliant with Regulation 31.

This procedure outlines the requirements and the process by which a scheme owner to request and populate an MIC form. This enables the regulatory compliance data of items to be used in any given scheme to be listed and subsequently assessed as an appropriate by the water quality risk team.

This procedure ensures that the appropriate water quality samples are taken demonstrate that the scheme and any items introduced have no adverse impact on water quality.

Prior to sampling we will ensure that the water has been in contact with material surfaces for a period double that which is like during the actual operation. This period of time, 16 hours, or in line with any instructions for use document which is ever greater, the sampling includes analysis for taste, odour and microbiological parameters as well as other parameters such as PH, colour, tepidity, conductivity and trace organics.

The procedure includes a requirement that the instructions for use documentation for products were obtained and adhered to, to ensure that regulatory compliance standards of such items is adhered to.

The procedure also provides on the distinction between large and small surface area items, approved grades of stainless-steel producing risk assessments where required and specific material requirements related to water retaining structures.

For large schemes, such as Keddington Water Treatment Works, the commissioning team undertake functional site acceptance tests following their commissioning plan. During this time flushing and sampling is undertaken as the specific units are tested. We then run to waste during a seven-day hands off performance trial. At the end

of the trial, we hold an inter-supply (Inaudible) by meeting to review the outcome of the hands-off trial.

This risk meeting includes presentation of documents and test results to the risk scientist's supply manager (site owner) and the regional supply manager agreement before the asset can enter supply following the inter supply impact plan.

Smaller schemes are managed through our impact plan process with the appropriate sampling agreed with the risk scientists and signed off by the supply manager/site owner.

An internal regulation steering group was established in 2019 to monitor and address continual improvements to our process and procedures relating to Regulation 31 compliance. The group covers improvement and updates through our procedures and training materials, communications and raising awareness across the company relating to Regulation 31. The core members of this group include the water quality risk and optimisation manager, water quality risk managers, the water quality regulation manager, the risk science for Regulation 31 and material scientists and procurement specialists. Subject matter experts are invited to these meetings for relevant slots, to provide expert insight when decisions need to be made relating to Regulation 31 compliance for items of equipment proposed for use across the business.

Anglian Water requires supplier assurance through framework contracts awarded following the supply of tendering a valuation and selection process. This ensures the selection suppliers are capable of meeting Anglian Water Regulation 31 requirements and are committed to doing so.

Materials in contact and product traceability requirements are built into the framework contracts. Assurance of key performance measures for our chemical suppliers are proactively sought by an electronic questionnaire that suppliers have to respond to on a regular basis. This includes confirming if there have been changes such to the product manufacturing process, raw material changes or continuity of supply.

The water services annual assurance process includes Regulation 31 focused chemical and material supplier audits, audits are carried out by the water quality and procurement representatives. Audit reports are published, and actions categorised and trapped. Audits are carried out on a risk-based frequency ranging from annual to seven years. Water quality performance is tracked, reviewed and high-level actions to safeguard water quality drinking by the water service compliance monitoring group WSCMG, the group is chaired by the Head of Water Quality with a core membership including myself the Director of the Water Business Stream, members of the Water Senior Leadership Team, the Tactical Operations managers, members of the analytical service and the water quality senior leadership team.

At this meeting the water services annual assurance programme is agreed and signed off including our Regulation 31 compliance focus audits. These measures relating to the annual assurance programme, are tracked including the review of any open and high-risk actions Regulation 31 compliance via audit.

The water services compliance monitoring group also reviews could it happen here process, providing an opportunity to obtain insight into industry Regulation 31 related events or near misses and learning on how we can apply any insights to Anglian Water Systems.

There are two modes of material in contact training currently operating throughout Anglian Water. An e-learning module and a one-day classroom training course. The e-learning module was created in 2018 to raise overall awareness of key aspects of Regulation 31 includes a competency test as part of the module. To date over 550 members of staff have completed this e-learning module in August 2021. We'd used a new requirement for this to be retaken on a three-yearly basis.

The one-day classroom training course has been in place for a number of years and built on the knowledge of Regulation 31 requirements from the e-learning module. There are two versions of this course, one for engineers and one for the scientific team, which forms part of our licence to operate programme.

The training course was reviewed and updated in 2022 to include more practical elements. To date, over 300 members of staff have completed this revised training. We have also carried out specific targeted training within groups who partner and contract with Anglian Water to include a roll-out of a training to ensure they fully understand Regulation 31 and our internal materials and contact requirements. For example in 2016 Bentley's engineering, procurement and management teams attended an Anglian Water Regulation 31 training day, which led to process improvements in terms of supervision and audits by the team. In 2018 the Anglian Water materials in contact e-learning course was delivered to CRL and Stombrie who carry out storage point refurbishment work on our behalf.

Our water quality training team also produce water quality alerts to the business and our partner organisations to share good practice

and learning from events and/or near misses. A number of Regulation 31 themed water quality alerts have been produced and distributed over a number of years to share learning. Anglia Water is able to clearly demonstrate leadership in the area of compliance with Regulation 31. I believe we are at the forefront of the industry in terms of good practice, and this is demonstrated through our policies, procedures and processes including the sampling review of the components prior to entering supply through our engagement leadership across the industry can be confident that processes we had in place at the time of the event were above industry standard and remain as such.

[redacted] Can I just point out -

[redacted] Course you can.

[redacted] - about might need changing (Overspeaking)

[redacted] Okay, sure.

[redacted] So if you hear some beeps that's -

[redacted] Do you want to stop and change?

[redacted] We've got about ten minutes, nine minutes or so.

[redacted] Don't rush, just read it and then we'll stop when the tape stops.

[redacted] When I beeps.

[redacted] Are you sure?

[redacted] Just didn't want it to scare you when it came on. I thought that, seeing as you were going on to a new section.

[redacted] Okay, no that's great, yeah, I'll probably beep the next way through the next section.

[redacted] That's all right, we can swap it.

[redacted] Okay. I think -

[redacted] Do you want more water?

[redacted] Yeah, I wouldn't mind if that's okay.

[redacted] What is it? 72 or 75? (Confers)

[redacted] Okay.

[redacted] Yeah.

[redacted] You're all right, sorry, I didn't want to scare -- when it started beeping at --

[redacted] No, (Inaudible) probably would have done.

[redacted](Laughs)

[redacted] Yeah, sure, okay.

Section 7: Materials in contact improvement programme

So, following the issues identified at Keddington, we delivered the communication plan during August and September 2021 to refresh materials in contact awareness, specifically across a supply integrated operational IOS and AT1 alliance teams. This consists of:

(1) three text messages being sent to over 250 individuals' mobile phones marked supply IOS and AT1 alliance teams, reinforcing timely completion of MIC forms adherence to IFUs and the importance of refresher training.

(2) creation of the materials in contact toolbox tool refresher with five key takeaways, namely, to plan ahead with MIC and complete forms early. Make sure the team has the correct training. Know your small surface area, approvalries, know your large surface area approvalries and to keep up to date and ask the scientists.

(3) revamping our internal Regulation 31 materials in contact intranet page with useful information and links with those involved in our MIC process.

(4) updating our hygiene charter to include a new commitment specific to Regulation 31 and

(5) news articles in Anglian Water At One weekly digital newsletters. These included links to the materials in contact toolbox talk and refreshed intranet page.

In January 2022 we initiated a materials in contact improvement programme in response to the reported events and a recognition that we wanted to further improve our processes. We held the materials in contact approval workshop on 3 February 2022 which was attended by over 40 representatives from across Anglian Water and our alliance partners.

The workshop included a how might we session, reflecting on the recent reported events as well as a creative problem-solving session to generate ideas and opportunities for improvement. The workshop outputs were grouped into common themes to form the materials in contact improvement plan with a dedicated project manager being assigned to drive the work forward.

The materials in contact improvement comprised of three core workstreams to deliver improvements in the areas of firstly design and engineering standards, (2) procurement and logistics, and (3) process review delivery assurance and compliance. There were also three enabling workstreams for delivery of the core workstreams comprising of:

(1) digital opportunities.

(2) training and competency; and

(3) communications.

Workstream leads were secured, and planning sessions held to review workshop output and agree actions taken forward to improve our materials in contact processes. Project structure and governance was put in place to set expectations for work stream leads. The materials in contact improvement programme is chaired - sponsored by myself, the Director of the Water Business Stream and the Head of Water Quality.

The initial improvement goals were to create an improved streamline and business wide process across Anglian Water and our alliances.
(2) To adopt a right time approach with less rework, and
(3) improve communications and handovers between teams, and
(4) improve traceability of evidence of Regulation 31 approval and instruction to be used for compliance.
The improvement programme progressed in that format for several months during which time some of the key activities undertaken were:
(1) Regulation 31 instructions for use clauses were updated in 35 minimum asset standard documents. This included producing a standard for new assets that specifies that submerged pipework must be constructed from stainless steel, ensuring that pipework will be of a suitable material both internally and externally.
(2) a design delivery working group was formed. Representatives from across our alliances to share good practice among design teams.
(3) over 40 of our key suppliers were briefed on a materials in contact process and the importance of Regulation 31 compliance in June 2022.
(4) we amended @one Alliance procurement process such that copies of certification are requested that quests for quotations stays before an order is raised.
(5) improvements are made to the materials in contact Excel based form including introduction of drop-down options in guiding the individual completing the form with warning and information notes based upon the root of the appliance being used. Automated highlighting of the upcoming end date of approval. A required to state the intended use for each line item and requirement to centrally say -

[redacted] Right, we're now on page 36 of the pre-prepared statement presented by [redacted] under Exhibit 1. We're going to take a break to change the CDs, the time is now 14.34.49 seconds.

(Break)

Transcript created by Epiq

Event:	Drinking Water Inspectorate - Anglian Water DWI311/2021 - interview under caution
Date:	28 February 2023
Interviewer:	[redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate
Interviewee:	[redacted] - Anglian Water
Also present:	[redacted] - Anglian Water

[redacted] So everybody's ready. We'll begin. This interview with [redacted] is being recorded on compact discs. It's being conducted with the Drinking Water Inspectorate offices in Noble House London.

In sight of all present, we have put three CDs into the machine and set the machine to record.

The case reference number is DWI-2021-8118. This is the event reference for Keddington, which was the four -- first of four Regulation 31 events reported by Anglian Water to the Inspectorate in 2021. The other event references are 2021-8338, Diddington. 2021-8379 for Hannington. 2021-8380 for Pittsford. The date is 28 February 2023, and the time is …

[redacted] 12:12:02 pm

[redacted] I am [redacted] Inspector from the Drinking Water Inspectorate, currently on secondment as an IS Principal Inspector. My colleagues are …

[redacted] I'm an inspector too.

[redacted] And [redacted] Principal Inspector for the North Area.

[redacted] Also present at the interview are company representatives of Anglian Water. If you could please state your name and job title.

[redacted] [redacted] Director of the Water Business Room.

[redacted], Assistant Regulations Solicitor.

[redacted] can you please confirm that nothing in relation to your business address, job title, or responsibilities have changed since we last spoke on the 21 February 2023?

[redacted] Yeah, that's correct.

[redacted] Thank you. And same as last week. At the conclusion of the interview, I'll give you a notice explaining what happens to the audio recording. We will record the interview in triplicate, and you may, if you wish to take a working copy away with you. As you know, I am making inquiries regarding the water quality events that occurred at four sites from 2016 onwards.

When products not compliant with the requirements of Regulation 31 report into supply. We could all refer to any of the company three and or 20 day reports as required in the interview. By way of a summary, as I understand it, the events reported by Anglian Water took place at Keddington Water Treatment Works, Diddington Reservoir, Hannington Reservoir 1A and 1B, and Pittsford Storage Tank B.

You read out your statement last week under caution. I'll be asking some events how -- sorry, I will start that sentence again. I'll be asking some questions about these events, but before I do so, I am required to caution you. You do not have to say anything, but it may harm your defence if you do not mention when questioned, something which you later rely on in court. Anything you do say may be given in evidence. Do you understand the caution?

[redacted] I do.

[redacted] Thank you. I would like to confirm that you are entitled to legal advice, and you have brought [redacted] with you today. You can request the presence of an observer and you're entitled to leave the interview at any time. You can consult the police codes of practice if you so wish, and you may exercise any of those rights now or at any time during the interview.

I now want to pass onto you a notice called, “Notice to Interviewee”. You've already had that by letter, but there it is again.

[redacted] Thank you.

[redacted] No problem. That provides more detail around those rights that I just mentioned, and that’s for you to keep.

[redacted] Lovely.

[redacted] I'd like to confirm that in these cases, the inspectorate is only considering the prosecution of the water company, not individuals responsible for water supply. specifically, we are investigating whether offences may have been committed under Regulation 33(3) of the Water Supply Water Quality Regulations 2016. In respect of Regulation 31 of the same regulations.

We are also investigating whether the company committed any offences under Section 70 of the Water Industry Act 1991. It is a criminal offence for a water undertaker to contravene Regulation 31. It is also a criminal offence to supply water that may be unfit for human consumption in breach of section 70 of the Water Industry Act.

As per the statement made by you on behalf of the company on the 21 February 2023, you stated, you are aware of all four events and the circumstances of the events being discussed today. Do you wish to add anything to your statement as read out on the 21 February 2023?

[redacted] No, thank you.

[redacted] Thank you. Can you confirm that we have not had any prior conversations about these four events. And any potential offences under consideration before we met last week on the 21 February 2023. And you read out your pre-prepared statement?

[redacted] Yes.

[redacted] Confirm, yes, we haven't.

[redacted] Yes, I confirm we haven't.

[redacted] Thank you. Can you also please confirm that we have not had a conversation since last week regarding these four events?

[redacted] I can confirm that as well.

[redacted] Thank you. I printed your pre-prepared statement.

[redacted] Thank you.

[redacted] And here it is if you wish to refer to it in the interview. Last week we gave this exhibit reference one and [redacted] making a record of all the exhibits from today.

[redacted] Okay. Thank you.

[redacted] If everybody's ready we can now start to continue the interview. So [redacted] can you please explain to us what the company consider to be the requirements of regulation 31 of the Water Supply Water Quality Regulations. Which from now on I'll refer to as the regs or regulations throughout our chat.

[redacted] Yeah, I mean Regulation 31 is … It is as set out in the Water Supply Water Quality Regulations 2016. Regulation 1, it's about the introduction of materials into supply. Needs to have Civic Secretary of State approval to ensure safety of water delivered to customers. I mean, there is a variety of parameters set out in the regulations and in your subsequent advice notes is probably where I would leave it. There -- I mean, as a business those regulations are transposed into our POSWASH quality systems, which are ISO 9001 accredited. They're embedded now in our training mechanisms and then managed through our whole MIC process, which I've outlined in my statement as of last week.

[redacted] Thank you. And were those accreditations and training in place at the time of the four events?

[redacted] So accreditation 9001 training was -- sorry. The accreditation was the training has evolved over the time as we have learned and developed our processes. You know.

[redacted]: There was classroom training though?

[redacted] Yes. No, I was going to say to be really clear there was, sorry. There was, there was --

[redacted]: I was just prompting him.

[redacted] There was, there was --

[redacted]Yeah. I just -- yeah, we have to ask him to answer.

[redacted] Yeah, there was training. That training has evolved over time as we developed our processes both in response to normal improvements we would make. But also clearly subsequently learning from these instances as well.

[redacted]Okay. Thank you. And you touched on it briefly but speaking on behalf of the company, do you know why products used in contact with drinking water need to be approved before they're introduced into supply?

[redacted] Well, ultimately, it's the protection of customers.

[redacted] Can you'll elaborate a bit more on the protection of customers? So do you mean from a water quality perspective?

[redacted] Yes, absolutely. Yes. From a wholesomeness perspective.

[redacted] Thank you. Last week you mentioned the use of C scores for the pipework and coating. Can you explain to us why the company consider these C scores to be relevant to these four events?

[redacted] Yeah, sure.

[redacted] Thank you.

[redacted] So, I mean, we've used the C scores as a proxy to determine potential risk. So only one parameter of that to be really, really clear. So we've calculated the C scores for all four for events. The C scores on all four fall below a hundred. I mean, clearly within your guidance, we think within, I believe it's advice sheet eight. You give a process for C scores below a hundred.

So we used it as a proxy for risk. As I said to you the MIC process and the MIC samples, which show -- which basically go in excess of BS 6920, are also used as that backstop check to ensure that nothing that could cause the water to be anything less than wholesome goes into supply.

So the C scores have been used as a, you know, as I say, as an approximation for risk. I mean, it is a matter of fact, I believe, that those C scores are under a hundred. So we do fall under advice sheet eight.

I think, I mean it is -- I would just note that in advice sheet eight, it does include touch up coatings associated with pipe welds and other factory coated products. That is an exemplar list on advice sheet eight. And -- but what I would also say, and as I did outline last time, what we're not saying that you know, clearly, we did not know at that time that those products were installed.

However, the MIC sampling and the robustness of our -- of that process, is that final checkpoint to ensure that nothing of any danger to or possible harm to customers can go into supply.

[redacted] So this has been to look back on what the potential risk was. Is that what you're saying? It wasn't applied at the time the product went in.

[redacted] So -- well, it is a matter of fact that those C scores are below a hundred. The calculation was done, yes, as part of the three day and 20 day report. I think as, you know, as we've outlined, and as I outlined in my statement. It was to, as part of our investigations, to determine the risk associated with the events that we reported to you.

[redacted] So based on guidance sheet eight, can you explain to us what you understand the requirement to be for C scores between one and a hundred, in terms of testing or what the requirements are for products that fall in that range?

[redacted] Well, I can read you -- give me one second. I can read you -- I don't know if you've got advice sheet eight, I've got it somewhere here. I mean, it is on your page, page seven bottom of page seven. So I can read you the final paragraph.

"If the contact risk score C is less than a hundred, it may be appropriate to use the product under the provisions of Regulation 31(4b). In these cases, the water supply must satisfy itself as part of the risks risk assessment. The use of product is not like to adversely impact the quality of the view of water, particularly in respective of odour and flavour and microbiological growth (for non-metallic materials), meeting the current requirements for ODEM flavour under the growth of microorganism test specified in BS 6920, part 2.21(a) and 0.24 is, is recommended."

I mean, there is more to it than that. As I say all I am saying -- what I am saying is that those, as a matter of fact, that those pipes were below a hundred, the MIC tests are in excessive requirements of BS 6920.

What I'm not saying though is that we knew that those pipes were in at the time, because we patently didn't. But that has been part of our investigation at C score. But the MIC test is part of our process, which again, as I outline in our statement, I believe to be industry leading.

But clearly, we have continued to learn and evolve those they are that, that final check to make sure nothing goes into supply. Because, you know, it is the primary purpose of a water undertaker and one that Anglian Water takes so extremely seriously to ensure that water supplied to customers is wholesome at all, all time.

[redacted] So, can I just check the reference? Because I've got it here if I need to get it, but you've got it open there. The BS number?

[redacted] BS 6920.

[redacted] 6920?

[redacted] Yes.

[redacted] Thank you. So did you engage with any consultants to conduct any BS 6920 testing on the products themselves?

[redacted] No. So what I -- so I think what I've said, and again, what I've outlined in my statement is the MIC tests themselves. So the suite of sampling that we do. The stand time on new works, the seven day run to waste is in excess of the requirements of 6920.
What, again, as I outlined in our statement that we did, was we undertook a series of soak tests on the material itself. And I think I've outlined that in some detail in my statements.

[redacted] No, those soak tests were done retrospectively.

[redacted] Correct. Correct.

[redacted] And so under advice sheet eight, what that's describing to you is that a product would have undergone the risk assessment from the company and have had the BS 6920 testing completed on it prior to its installation within the tank.

[redacted] So I think yes.

[redacted]: We understand.

[redacted] So yeah, I understand that, I mean, what -- I'm sorry, I wanted to be really clear. What I'm not saying is the soak test were anything to do with BS 6920. All I'm saying is that our MIC process and sampling is above the requirements, we believe, of BS 6920.

And that is part of our standard and has always been part of our standard process of MIC testing in line with our materials and contact process that's embedded in our ISO documentation. And has been a process that's been in place now for many years. You say, I believe, industry leading.

But as I've said, you know, we are absolutely being really clear. Both we have learned we are continuing to learn, and we really want to lead the industry forward on this. So we do not absolutely at any moment rest on our laurels on these things.

[redacted] So the BS 6920 testing, is that something your company's accredited to do, or should it be outsourced to an accredited company for testing the products?

[redacted] So again, just to be clear, what I'm saying is that the requirements -- the testing we do, the sampling we do through our accredited laboratory is in excess of the requirements of BS 6920.

At the moment, no, we are not accredited to test for BS 6920. But interestingly, one of the things we absolutely are doing, and I've outlined it in my statement, is we are engaging with a number of suppliers on how we deal with the whole issue of Reg 31 testing in the industry.

And you know, what we are really keen to doing and say, our CEO gave commitment to the Chief Inspector that we are, we are going to

lead this for the industry and move this one forward to resolution. Because you know, we genuinely believe, I think as you do that, the issue of testing and sampling is a real issue.

Now, as part of that, what we may also look to potentially is whether, you know, as part of that solution, do we get ourselves BS 6920 accredited? But again, to answer your question our sampling through our accredited lab equates to and goes above the requirements of 6920.

[redacted] Thanks, [redacted] Retrospectively then, having seen the compounds in the paint and the toxicity data sheets (Inaudible) the compounds. Would the company's risk assessment that would have been conducted on items with a C score of one to a hundred have concluded that these were suitable to have been put in supply.

[redacted] So I think what we would have said, I mean, clearly, you know, our MIC process is very, very clear that, you know, only approved products can go in supply. And I think in my previous answer, again, I've been very clear with you that we accept that those products at the time did not have specific Secretary of State approval.

However, yeah, as I've said, they did fall under the category of below a hundred. Yeah, having known it, no, we would have not put those in as installed.

[redacted] Okay. Thank you. And we've mentioned this last week, but just as a reminder because we've moved on since then. Is the company aware that it is a criminal offence under Regulation 33(3) for a water company to fail to comply with the requirements of Regulation 31?

[redacted] Yes, we are.

[redacted] Thank you. Can you tell us why the company, so speaking about the company, because you are talking about the company.

[redacted] Yeah, sure.

[redacted] And obviously I don't hold you personally responsible for anything, and yet this can get be a quite difficult conversation throughout, and it'll be probably quite tiring by the end of it, but we will have regular breaks.

Can you explain to us why you think these four events have occurred and why the unapproved products were installed on four separate schemes?

[redacted] So I think it's -- so I think what we would say is that on each individual scheme, there was an element of human error on all four schemes. I think they are different on each one. I mean, clearly our processes are designed to root out and protect against human error.

And those processes, I believe, were robust at the time. But have subsequently been improved in response to learning from this, but learning, frankly, learning anyway. I think, you know, we would have to -- if we dealt with Keddington for firstly, so it was clear on the MIC sheet that that was written as an approved material.

Reg 31 approved Saint-Gobain approved material, which does actually fall under the, I believe, a listed, specifically listed material.

Now, at some point, that was substituted. With the other two

Diddington and Hannington, pipes that were designed in the design, it was clear that they should have been Reg 31 approved.

The design was absolutely specific about them being Reg 31 approved. At a point in the process pipes that were only approved for the conveyance as approved -- as opposed to the immersion in water were installed.

Again, human error between the design and the installation. With Pittsford we have two approved products in place. We believe probably during one of the inspections, the Alkathene was applied to the product, to the pipe, potentially not in line with the IFU.

[redacted] And could you explain a little bit on what your understanding is of the IFU for us?

[redacted] Well, again, I mean, I probably would just have to say that, you know, I'm a strategic leader and I do not have intimate details of the IFU. However, clearly instructions for use have to be applied -- complied with as part of Regulation 31. I probably would -- can't say anything more than that.

[redacted] Yeah. We'll go through each event in a bit more detail if you want to

[redacted] Okay.

[redacted] I'm just trying to get a general view at the moment.

[redacted] Sure.

[redacted] Just trying to understand really why they were allowed to happen repeatedly, you know, same, similar sort of failings. Do you have a view?

[redacted] So, so I think there is a -- so I think what I would say there has been an element of, yeah, the Reg 31 approval. And the issue, effectively, around immersion or conveyance is, I would suggest, the route of that.

I mean, these are complex schemes with, you know, a lot of installed pipe work, a lot of installed plant, and a lot of installed fittings. Yeah, I believe that is the, you know, that is the main issue here. And again, as I say, we have -- we, you know, we absolutely apologise for that. And we have learned from that.

[redacted] What specifically have you done differently to prevent it happening again?

[redacted] Well, I think I've outlined -- so I've outlined a whole host of things in my statement. So immediately there has been -- yeah, there was a whole communications piece throughout the organisation detail into the requirements of Regulation 31.

I think in the specific examples what we have done is we've updated our minimum asset standards. And that includes -- now basically stipulates, that any installed submerged pipe work must be of the correct grade stainless steel pipe work.

Now, I think what that, what -- now that is clearly more expensive for the business. But what that -- I believe what that does is that just

removes a, you know, it is visible, it is clear. It just removes any issue of confusion from that.

What also we've done, we've improved our MIC process. We have we have a further check upstream at the point of designs. So right the away through our capital delivery process, we've improved our training. We've made a requirement for refresher training as well. We've conducted a complete as is and to be review of our whole end to end MIC process.

I think we've outlined this statement, we've introduced something called BIM 360, which is a digital process which basically tran -- from design right through to construction, so you can get complete traceability of material. So you can see what is designed, is installed. We've also installed a whole supply chain, sorry, we are insourcing a whole supply chain operation.

So what we are doing is at our -- we've got a whole new logistics centre in Peterborough. That will be an element of -- to be able to control our -- so while we will still clearly source from the external, we will be able to bring through that central logistics system.

Now, what that will enable us to do, because we recognise that these are complicated supply chains. Again it then provides a final check. We are changing our whole ERP system and making sure that links up ensuring that visibility.

We're trialling RFID tags again about that point of visibility and really, really clear what this is. I think I've highlighted as well; we are leading the industry on this. So we chair the industry Reg 31 group, recognising that this is across industry and certainly across supply chain challenge.

So what we are clearly producing are learning, encouraging others to share their learning as well. We're on the 15 March, we are leading with Southern Water and Northumbrian Water and industry Regulation 31 event.

I think some of the key areas we are really keen, and we want to want to nail are the issue around industry training for Regulation 31. So, engaging with EU skills in that area. But also the one I've highlighted previously, the issue around testing facilities. And we want to -- we are committed to the lead on that and resolving the industry challenge around how we get adequate and robust and sufficient testing facilities.

So, you know, we have not -- there has not been a stone that has been left unturned on this. So I together with my head of water quality are sponsoring the Reg 31 Improvement group. And, you know, I won't rest until we have resolved these issues both as a business and have learned, but also taking that learning and leading across the industry.

[redacted] Thanks for explaining that, [redacted] I'm glad that there is some developments being made, but part of our role is to investigate the four events that did occur.

[redacted] I understand.

[redacted] And we still have to get through all of those as well.

[redacted] I understand.

[redacted]So I've still got to continue with some questions.

[redacted] I understand.

[redacted]Is that all right?

[redacted] I understand.

[redacted]Good. So, can you explain to us, please, the specific steps that the company took to investigate the events once they were discovered?

[redacted] Yeah, I mean, I think I have -- is all four events, or?

[redacted]If you did similar sort of things, you can generalise.

[redacted] Okay. So I think if I probably -- if I can start with Keddington, because I think that starts a story. I mean, I have outlined it within my statement. So I mean, broadly at Keddington as part of a warranty inspection on the tank, it was noted that blue flakes of material were present in the floor of the tank.

And what that appeared to be was related to the install pipe work. So I mean, the first, clearly first part of the investigation is to ensure no danger, no risk to public health. That was the clear, clear focus.

Then what we wanted to do very quickly was trace back, well, what was this? How had that become installed?

So tracing that supply chain backwards as soon as we were aware that that was a potentially non-compliant Reg 31 material, we

reported that to you. And then, you know, continued to conduct a lessons learnt on Keddington.

Then Diddington, again as part of an inspection on that reservoir, similar flaking or a type of flaking was observed on the pipe work. Some of the pipe work of that reservoir. So again, similar processes were gone through at that stage. What we were -- we were clear, and I think to your point, I wanted to be clear and understand, well, what was the, you know, what potentially else was out there.

And I think we liaised with you, and we committed to drain down and inspect every tank that was installed since 2010. And in my statement, I believe there were 11 of those tanks that were drained down and inspected.

What we also did and kind of knowing the -- so Keddington was a new build. Diddington was a new build. What we also undertook to do was look at any significant modifications to storage tanks.

So one of the one of the significant changes we made was around our resilience investment in our RAT Hanford system. Which involved design changes to Pittsford water treatment work, storage tanks and Hannington reservoirs.

So broadly in the process of carrying out those drain downs and investigations, the issues at Hannington and the issues at Pittsford Storage Tank B were noted and reported to yourselves.

[redacted] Thank you. And which company records did you use to investigate, which company records, for the assets?

[redacted] Well, a whole variety of every record that we held. So it was a route and branch, route of branch review. I mean, I probably can't give you

details of every single record that we used. But every record that we had, you know, that that was available for us we used.
We went right back through the supply chain as well and investigated all the records they held, and clearly spoke and interviewed individuals as well.

[redacted] Thanks. Would that have included, like all the MIC form and samples etc?

[redacted] Yes.

[redacted] And res(?) inspections?

[redacted] Yes.

[redacted] So how did the company assess the risk of harm consumers from drinking water from these affected assets? What evidence did the company rely on?

[redacted] So I think I've, again, I've outlined that pretty significantly and pretty clearly within my statement. But an assessment was made on every step of the process. So, you know, the first step clearly was understanding the material, what was used.
A review of the MIC sampling, which again, as I outlined previously, is that on installation, that final checkpoint before an asset goes into supply, there is no harm to human health. We went through every single sample for those assets. So 45,705 samples for each 79 for

Keddington, 2086 for Diddington, 33,290 for Hannington, 10,250 for Pittsford Storage Tank B.

So of those 45,000 samples, not a single one of those showed any evidence that the installed pipe work had any impact on the wholesomeness of water supplied to customers.

What we also did for each of those each of those assets was undertook soak tests of the material found in the tank. That was to determine what the makeup of that material was and potential any associated toxicity.

It's really important to note that those soak tests did not represent the water supplied to those customers. But every one of those soak tests the toxicity of all compounds analysed was below the published snarls(?) for those. So that's a suggested no adverse response levels which use UK WIR toxicity data sheets.

So it was below the suggested snarls for all of those samples.

[redacted] Can I just ask on those samples, which type of samples were they? Was that compliance sample data, so some big numbers (Overspeaking)

[redacted] The samples that like --

[redacted] That you just quoted.

[redacted] Quoted to--yeah, let me just, sorry. Just give me one second, I'll just refer to my note sheet. So Keddington 72 asset samples, seven customer tap samples. Diddington Reservoir 319 asset samples, 1,767 customer tap samples. Hannington Reservoir, 1,203 asset

samples 32,087 customer tap samples. Pittsford Storage Tank B, 3,300 asset samples, 6,950 customer tap samples.

[redacted] And those are taken for the duration that that pilot was in supply.

[redacted] Correct. But that, to your question, that was part of our analysis of any potential or investigation of any potential harm.

[redacted] Okay. Thank you.

[redacted] And would that sampling strategy have been capable of picking up hydrocarbons and (Inaudible) based compounds and xylene, so your organics testing?

[redacted] I believe organics, well, I know organics is part of the MIC process. Listen, I'm not a scientist. I rely on my, you know, my professional and certified scientists for that. If you've got a specific question on that, I -- you know, if you want to put it in writing, we would be very happy to see if we can answer that.
But I do not feel that I am able to answer that question or best placed to do it. You know, I am not a scientist. But my scientists are absolutely categorically clear. There was no risk, no evidence of any risk from any of those pipes to public health.

[redacted] Who led on that investigation assessment to risk around consumers. Would that be your water quality team?

[redacted] It would be my water quality team, yeah.

[redacted] Headed up by, is that [redacted]?

[redacted] It is, yes.

[redacted] Would you be happy to identify [redacted] or [redacted] as somebody we could speak to if we wrote to him in writing.

[redacted]: If you put it in writing to [redacted] he will find the best people to answer the question.

[redacted] Yes, absolutely. I mean, I've just -- yeah, I mean, I hope you would agree. We've been, you know, open and honest you with you throughout.

[redacted] Yeah.

[redacted] And listen, if you have any other questions, you aren't answering we'll be open and honest and yeah, we will continue that. You know, that is part of the values we hold as a business. We're not trying to hide; we're not trying to anything here.

[redacted] Yeah. When I have seen organic sample results for the MIC, it seems that the organics are part of the MIC sampling, but not part of the longer term sampling strategy, which seems to be more your general chemistries and your regulatory and your (Inaudible).

[redacted] So I know organics are carried out. Again, I'm not best placed or qualified to answer that question, I'm afraid as I'm strategic leader. But again, be really happy to see if we've got that information, if you put that in writing to us.

[redacted] Okay. And do you know if [redacted] or her department consulted any expert wit -- like, toxicologists or health based professionals on any of this as part of the …

[redacted] Well, I think, again, I've probably -- yeah, what we have -- what we've outlined is our analysis of the published snarls and going through that whole toxicity database for all of those chemicals. Again, very happy to answer that, should you want to put that in writing to us. But again, not best placed to be able to answer that one.

[redacted] Yeah. Do I have some questions about the snarls and the limits? And it probably would be better if I did speak to [redacted]

[redacted] Well, I mean, I, listen, I will try to answer them, but you again, I would say I'm not a scientist.

[redacted] So if you ask them, then we can take them to [redacted]

[redacted] I just wanted to pick up on the previous point [redacted] made around whether you were aware of any toxicologists or public health professionals being consulted as part of the investigation? Were you aware of whether that took place, [redacted]

[redacted] Well, so what I, so what I am aware of, we consulted every available toxicity data sheet to understand the impact that that had.

[redacted] Okay, thank you. So it was a published toxicity data sheets that were used. Okay.

[redacted] Yes.

[redacted] Thank you.

[redacted] Do you know if any of that would have included long term exposure limits rather than snarls, which are seven days and 24 hours?

[redacted] Again, I -- you're going to, I'm afraid that would have to be put in writing to us.

[redacted] Okay, thank you. Who does the company consider was at fault, and I'm not -- I'm asking you all the question, but in terms of like, what is the company's view, as to who was at fault for causing the events? Obviously, parties involved are just contractors and other people, would you consider?

[redacted] I mean, I think we would -- you know, I think I, I've been clear. I think, you know, there is, you know, there has been human error that has occurred. I mean, I think, you know, we don't necessarily look to apportion blame or fault.

We look to learn, we look to develop, we look to develop our processes and as an organisation, we want to yeah, we want to get

better every day at these things. And you know we want to lead the industry on this.

[redacted] Okay. Based on what you've seen then and the outfall of what you've learned so far. What would you consider to be the most appropriate and effective control measures to prevent this happening?

[redacted] So, I mean, again, I think I probably have outlined those already. I think the -- so if we deal with, I think if we deal with the specifics of the of the pipe that was approved for the conveyance, not the immersion of water.

So the change to the minimum asset standards, that is really, really clear. The only thing we can put in a tank is the correct grade stainless steel material. I think --

[redacted]: It's over and above what needs to be isn't it?

[redacted] Yes, it's over and above the minimum standard. But it, I mean really, yeah, absolutely is probably from this specific immersion of materials in a tank is a key issue or a key learning. The, you know, the whole review of the MIC process, bring that MIC process up, further upstream.

So scientists are involved in the earlier parts of that design sign off of the process, I think it's really important. The whole training level improvements, the recalls on training again, awareness absolute acute, acute awareness of this. Some of the digital technology we're putting in place.

I've outlined BIM 360 to you already, the insourcing of our logistics centre. The linking of asset record through, get that whole end to end view from design to installation to construction and operation.

I believe, again, the leading of trying and find industry solutions too.

An accredited program for Reg 31 testing, sorry, Reg 31 training, but also dealing with the industry issue around Reg 31 testing as well.

So it's a whole host of things we've done, we've learnt, and what that is -- all those things are trying to do, are aiming to do is reduce the ability for human factors to form a part and try to engineer out human factors and human decision making and human failings.

[redacted] Were any of those controls that you just listed though in place and effective at the time?

[redacted] Yes. I believe our processes were effective. I believe our processes were industry leading at the time.

[redacted] Even when they occurred, when the events occurred?

[redacted] Yes, I believe they were effective. We have learned. But at the time, I believe, you know, with all reasonableness, you know, we carried out every possible activity to ensure the requirements of Reg 31 were met. There were specific issues, which I've outlined, but I do not believe that those processes weren't defective at the time.

[redacted] Okay. Were any of the products to be used on the four schemes submitted to the water quality team for approval before they were purchased for these events?

[redacted] I probably would need to -- yeah, again, I'm probably not placed to answer that question. Yeah, I would have to come back to you on that. I can't answer that question, I'm afraid.

[redacted] Okay.

[redacted] If you, again, probably, if you could put that one in writing to us, we'll answer that one if you can.

[redacted] Did anybody from the water quality team review the drawings, purchase orders, invoices, or delivery notes before granting approval for the material?

[redacted] Again, I'm sorry, I just don't have that level of detail for you.

[redacted] Did anybody from the Anglian Water team responsible for approving the products, physically inspect the installations and products before the assets went into supply?

[redacted] I think mean as part of the MIC process, yes. There was a review and an inspection. Again, the level of detail that I will, you know, if you could write to us, we will see what information is available.

[redacted] So some were physically inspected?

[redacted] Well, as part of the installation process, engineers would have inspected as part of the quality control process. Again, who inspected what we would have to come back to you, I'm afraid.

[redacted] Would it have been a water quality team person, or?

[redacted] Again, I'd have to come back to you on that.

[redacted] Speaking on behalf of the company, to what extent the process and controls or Regulation 31 rely on trust between the two parties? So that would be your contractors and the company?

[redacted] I mean, trust is clearly there. We install, we utilise framework partners who are of very good standing, who work across the industry. We have robust procurement processes in place. These are big, big organisations who are good standing.

So yes, there is an element of trust between our alliance partners and us. But clearly as well you know, again, I think I've outlined in my statement, there is assurance and controls that are put in place. Audits etc and other controls to ensure that those requirements are met.

So yes, trust, but yes, trust with control and assurance. But these are big, big organisations who we go through robust procurement process with them, and they are, you know, very, very clear on our MIC controls and processes.

[redacted] So earlier you said that you didn't believe that your processes were defective at the time of the events. And you've just described there that controls are in place, such as auditing and checks.

[redacted] Yep.

[redacted] And yet you've had four repeat events on Regulation 31. Were your controls effective at the time of these events occurring?

[redacted] I believe our controls were industry -- our process where industry leading. As I've said, you know, the final check of those, of the MIC process and those MIC samples, which are that final check of water put in supply is industry leading.

I believe our processes are industry leading. Yes, we've learned, yes, we've improved, but I do not believe those processes were defective at the time. And I, again, I'd say on any reasonable basis, I believe what I've outlined in my statement, we did absolutely everything possible to ensure the requirements of Reg 31 was met. But we've learnt, we have absolutely learnt, and we will continue to learn, and we will not rest.

[redacted] What is the company's view on the level of rig, what training in place, Anglian Water and contractors involved with the four events at the time the work was taking place?

[redacted] So training has evolved over that period. And clear, you know, this is an issue which I've highlighted as well, that we want to try and get an

industry position on a, you know, an approved training scheme for the industry.

But training was in place. I mean, I've outlined that within my statement. The training now, there are, I mean, there are two there's an e-learning. Yeah. So there is an what we call that EL123 MIC e-learning course. And what we have also WS083 MIC training classroom course, which is a basically there is a scientific element to that, which forms part of the scientists licence to operate, which forms part of their competent operator assessment.

The e-learning course was introduced in early 22018. And the requirement is now that any person signing off or completing lines in the MIC four must have completed both the e-learning and the WS083 courses.

There was training before on that. It was classroom based. It was not necessarily part of the licence to operate. All scientists have a licence to operate qualification. All scientists as part of that undertake three elements.

So there's an onsite assessment of their competence. There is a competency checklist I would call it cogniso(?), online competency, which details their -- both their ability to answer a question and their confidence in that. So the worst thing you can have is someone very confident with the wrong answer. It checks that degree of competence.

But they also have professional registration. So all the scientists involved in the signing off of all of those sites for all of those four schemes were professionally registered and chartered scientists.

And now we are stipulating that training needs to be refreshed on a three yearly basis.

Now, as part of also what we have done, you know, prior to these instances, have undertaken specific training with our supply chain and our supply chain partners. I think I outlined in my statement training that we've undertaken with Bentleys.

We are also, subsequent to the instance, undertaking training. We have brought all our supply chain into an all supply chain briefing on this. So, yeah, significant training in place. That training has evolved over time as we learn and evolve. And that training will continue to evolve and learn and grow over time.

And what I'm really keen to do is, we are trying to lead through the -- or we are leading through the industry Reg 31 group, and this is how do we get an industry recognised training standard for this? That's where we're engaging with EU skills on that.

[redacted] Thanks for that explanation, [redacted] but it was in reference to what was in place at the time. Are you telling me that all those training procedures, controls, were all in place at the time?

[redacted] Well, so classroom training was, let me just, classroom training was in place in 2012. The L2O has been in place. So the licence to operate for scientists has been in place since, I believe, the early 2000s. The training itself has evolved over time. If you just bear with me one second, I'll get you will find you a timeline of the way that that training has evolved.

So the WS083 which is the engineer course I believe came in in 2017. At the end of 2017 CPT was ready as well. The scientific training evolved, 2018 in its current format to 2019. And the MIC

training was formally integrated into the scientific L2O. And in August 2021 CPT moved to the three yearly refresher.

[redacted] Right, so --

[redacted] Now classroom -- sorry, to be really clear, classroom training was in before L2O was in before the training evolved -- has evolved over the time.

[redacted] Yeah. Did anyone explain that they sent records to us, based on what training were in place for people involved on those specific four schemes at the time?

[redacted] Yes. Yes.

[redacted] Because there weren't very many names listed who had a training record assigned to them for that.

[redacted] It's because of the historical --

[redacted] So, yeah, so I think some -- so what we have got is a number of people had grandfather or grandmother rights to the training, which they had done previously. But there was not the record of it. However, as I say, all scientists had their L2O training, the licence (Inaudible). All scientists were professionally chartered scientists. On Keddington, all scientists had completed the training for the engineers. We have records for all the engineers who completed the training with the one exception of a [redacted] However, he -- we

cannot find the record, although he is clear, he did complete the training.

[redacted] Okay. Thank you.

[redacted] So, can I just double check that that training that you've described is for Anglian Water employees? Does that include your At One Alliance Partners (Overspeaking)

[redacted] So there is an engineering training for Alliance partners who sign off the form and for Keddington. And that was introduced, as you say 2017 to 2018. For Keddington, all engineers had completed the training.

[redacted] So that was the engineers. And what about the project managers who were signed off the form?

[redacted] Anyone completing the form.

[redacted] Okay. Thank you.

[redacted] Okay.

[redacted] Yeah. So yes, to be clear any engine -- anyone completing (Inaudible) form.

[redacted] So whether they were an engineer or a project manager or an Anglian Water risk scientist?

[redacted] Yes.

[redacted] Thank you.

[redacted] And speaking specifically about the four events, how effective do you think the reservoir internal inspections were on picking up issues with the pipe work in the tanks?

[redacted] I would say they picked it up. So I would say they were effective because they picked --

[redacted] Even after it had been inspected several times in some cases such as Pittsford?

[redacted] We do not know. Yeah, there was no evidence to state that that pipe work was in a poor condition at the time that those tank were inspected.

[redacted] Yeah. Well, we'll speak a bit more specifically when we come to Diddington because I did have a statement from the res engineer that said that he had mentioned deterioration, or he'd noticed deterioration in pipe work, but didn't really make any connection.

[redacted] Should we go onto that when we go on to that section?

[redacted] We'll speak about that later, yeah, yeah.

[redacted] Okay.

[redacted] It might make more sense then. So in your view, [redacted] for the company, you think that the internal inspections were effective.

[redacted] Well, in the internal inspections, you trained reservoir engineers, you know, I think through the learning, were they more acute to the risks? Yes, I think they are. I suspect is probably a fair statement to make. However, you know, those, you know, Keddington was inspected for a warranty inspection. Diddington was inspected, you know, there wasn't anything on those forms or as part of the inspection that indicated that there was any issue. Now, you may have some information from, from the engineer. Happy to --

[redacted] Yeah, we'll come onto that.

[redacted] Happy to discuss that. But yeah …

[redacted] So based on every -- have you -- has everyone got any other section questions?

[redacted] No.

[redacted] So before I discuss each individual event with you, which I said that's what we'd like to cover, because they are four separate events. Does the company still have the view that they have not committed an offence under Regulation 33(3) by not meeting the requirements of Regulation 31 in all four events?

[redacted]: That's not what you said.

[redacted] I don't think, I don't think that's what I -- so I think I was quite clear what I said. I'll repeat what I said to you earlier. So if we think about the purpose of Reg 31 is to remove any adverse effect to customers, consumers from the quality of water. Yeah.

We are really, really clear that at all times, water was wholesome Regulation 4 requirements of the Water Supply Water Quality 2016 regulations were not breached in any way. We have robust and industry leading MIC process routine network and post-event soak testing.

Again, clearly demonstrated the 45,000 samples we talked about, that there is no danger at all to human health. What we accept is that the coatings applied to the pipe work were not approved by the Secretary of State at the time, despite the pipe work itself, having approval for the conveyance of water in the examples of Keddington, Diddington and Hannington,

As I've talked about before, the calculations put all the tanks to the C score of a hundred or below in the category of a small surface area covered by advice note eight. Advice note eight states that a risk assessment can be carried out, the use of products not carried out.

So the use of products are not likely to impact water -- the quality of water. Our MIC processes, the seven day run to waste on new assets, and particularly the MIC sampling, is designed to ensure that no products knowingly or unknowingly have an adverse impact on water.

And as I've outlined today, that those tests are done in excess of the requirements of BS 6920. But what we accept is that those coatings, it was not known that those coatings were in place at the time where those pipes were in place.

So, you know, although the MIC process forms that backstop, what I'm not saying was that a proactive risk assessment was carried out. Because it patently was not known that those products were installed. As I've said, I maintained that our process was industry leading. We, we've learned, and we've evolved our processes, and again, we lead the industry on this. We, you know, we sincerely apologise for putting those pipes in those tanks.

We believe that on any reasonable basis we carried out every possible activity to ensure the requirements of Reg 31 were met. But it, you know, it's ultimately -- you know, we reported these as potential Regulation 31 breaches. It's down to you to determine whether you believe this constitutes a breach of Regulation 31.

[redacted] And have you had advice from [redacted] on Reg 31?

[redacted] I think I've answered that point again.

[redacted] I mean from a legal perspective on what the interpretation of that requirement is.

[redacted] Well, I think I've said to you -- I think I've outlined pretty clearly there our position on it.

[redacted] Yeah. I think [redacted] I think he's covered all this.

[redacted] Yeah.

[redacted] I'm happy to move on. So obviously we have to investigate on behalf of the customers.

[redacted] Sure.

[redacted] We are there to protect public health. You've explained to us that got things a little bit wrong, Reg 31 because you're accept that you didn't know about the products and the impact that could have on water quality.

So we have come across various bits of information in the course of our investigation, including pictures, sample results, your soak test reports, witness statements, etc. And in turn, I'll start to come onto to each specific event, but one of the pictures that really did alarm me, was this one.

[redacted] So we'll call that exhibit two.

[redacted] Would you accept that that really is not acceptable for being in supply? Or would you consider that that would not cause any risk to consumers?

[redacted] So clearly, as I've said, we accept that the coatings applied to the pipework were not approved by the Secretary of State at the time. Despite the pipe, we're having approval for the conveyance of water. What I would say, and I believe exhibit two, that is Keddington?

[redacted] It is.

[redacted] Am I right in saying that? So all our MIC testing, all our sampling data, there is no evidence of any risk to customers. We are really clear on that.

[redacted] Okay. And we can discuss that in greater detail when we come to Keddington as well.

[redacted] Okay.

[redacted] But it just strikes me as quite alarming that that's a powder and quite readily could have gone into supply at any time.

[redacted] There's no evidence that that has gone into any customer taps or customer supply. All our samples point to water supplied at all times was wholesome and believe we took all reasonable steps and exercised all due diligence to ensure that requirements placed on Anglian water on section three, chapter three, the Water Industry Act, were met at all times.

[redacted] So having seen the soak test, are you confident that your sampling strategy would have picked up any compounds in that period?

[redacted] We believe that our sampling would have picked up any potential toxicity. Yes.

[redacted] But how many of those samples capable of detecting that toxicity took place for (Inaudible)?

[redacted] Again, I think about 90. I haven't got that level of detail, if you want to put that in writing to us, we'll be really happy to answer if we can.

[redacted] Thank you. Thank you. So as we mentioned before, we were also looking at under Section 70, potential offences for water company to supply water that's unfit for human consumption under Section 70 water industry in 1991.

And we took your statement last week, and I'm just going to ask again in the company's opinion, was the water quality supplied from all four assets fit for human consumption following the introduction of the unapproved pipe work and coating into supply?

[redacted] Sorry, I repeat what I said to you last week. At no point was the water not wholesome. The requirements of Regulation 4 were met at all times. There is no evidence of any rejections by customers, contacts, water quality contacts from customers actually reduced after pipe work was installed.

We took all reasonable steps and excised all due diligence to ensure the duties placed upon Anglian Water under Section 3, chapter three of the Water Industry Act were met at all times.

[redacted] And do you consider this to be reliable, and credible evidence to determine historic and prolonged exposure to consumers drinking the water from your assets on a daily basis?

[redacted] Yes, I believe we do.

[redacted] Does that include monitoring from reservoirs, which generally don't include trace organic samples?

[redacted] Again, I think if you would like details of the sampling regime, the specifics of the sampling regime, we will be happy to provide those if you put it in writing into us.

[redacted] Okay. And your assessment on public health do you believe that were carried out by your water quality team?

[redacted] Correct.

[redacted] And was there any consultation with public health?

[redacted] I think I've answered that one already.

[redacted] Or toxicologists?

[redacted] I think I've answered that already.

[redacted] Okay. Thank you. Has anybody factored in the cumulative exposure of multiple compounds collectively at the same time, or have they been looked at as individual?

[redacted] Again, I think yeah, if you would like that, that level of detail. We'll -- you need, I'm afraid you'll need to put that in writing to us and we will

respond. What I would say is that we've looked at every possible compound there and the, you know, the snarls, they are a factor below many multitudes below any published snarl for any compound that has been detected at any of the sites.

[redacted] Okay. Thank you. Are we to take a comfort break, shall we?

[redacted] Yeah, in about five minutes.

[redacted] Has the company been able to establish any quantities of paint or coating that may have been falling into supply?

[redacted] There is no evidence of any quantities of paint or compounds going, sorry, of any paint or flakes going into supply.

[redacted] And would you say that based on the fact that it turns into a powder? There's not --

[redacted] There's no evidence of any of it.

[redacted] But you've not been able to guess as to how much may.

[redacted] We have no evidence of anything going to supply.

[redacted] But have you conducted an analysis or a report?

[redacted] Well I kind of outlined our sampling regime, over 45,000 samples, none of them show any evidence of any of this paint, of any material

going into supply first 45,000, over 45,000 samples across those four assets.

Each individual sample analysed, no evidence from any of those samples showing any potential or possible harm related to the installation of those pipe work or that paint. No evidence of any of those flakes of paint going into customer supply.

[redacted] And that's based on customer contact and sample data.

[redacted] Over 45,000 samples, as I've outlined to you before from the assets and customer distribution. And as I say, analysis of customer contact reduced post those -- post the installation, there is no evidence of any of that paint.

[redacted] But you do appreciate that there are spot samples at one moment in time.

[redacted] 45,000 samples conducted across that asset base. There is not a shred of evidence, a single bit of evidence that states -- that shows that there has been any harm to customers from that installed pipe work.

[redacted] But you, sorry, I know we're going to come back to this, and we will speak to a representative of you assign with it [redacted] or whoever on this. But not all of those tests would be capable of picking up specific compounds in those paints.

Do you appreciate that in terms of a backty(?) sample, for example, wouldn't be representative of the chemical composition of that?

[redacted] So what I would say, we analyse for a range of parameters. Again, the detail of which we can provide to you. But there is a robust suite that goes way above the regulatory requirements. The MIC process itself conducts a whole suite of samples on that.

We undertook soak tests, soaking this material for in excess of 24 hours to understand any potential toxicology of those, of that material. Those soak tests on each individual pipe, again, not representative of what was put in supply, any snarls were factors below the published levels.

[redacted] I have brought some of that information. And we can look at that on each event as well.

[redacted] Is it a good time to take a break as the CD's approaching 77 minutes?

[redacted] Yeah, that's great by me, if that's okay with you guys.

[redacted] That's fine.

[redacted] Yeah, that's fine.

[redacted] Okay.

[redacted] We'll stop the recording at 13:24:52 pm.

Transcript created by Epiq

Event:	Drinking Water Inspectorate - Anglian Water DWI311/2021 - interview under caution CD2
Date:	28 February 2023
Interviewer:	[redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate [redacted] - Drinking Water Inspectorate
Interviewee:	[redacted] - Anglian Water
Also present:	[redacted] - Anglian Water

[redacted] This is a continuation of an interview with [redacted] from the Anglian Water Services Limited at Nobel House, London on 28 February 2023 which was interrupted to change the CDs and take a break. The time is now … ?

[redacted] 13.40, 31 seconds.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. Case reference is 2021 8118. Has anything been said or done during the interruption to change CDs and have a break which would influence the answers to my questions?

[redacted] No.

[redacted] May I remind you that you are still under caution.

[redacted] Yeah.

[redacted] And that you are happy to continue the interview.

[redacted] Yes.

[redacted] Thank you. Right, reflecting back on the picture -- I know you've just said there's no evidence that any of the (Inaudible 00:00:59) powers etc went out the gate at Keddington or any of the other assets. Well, how do you think a customer of Anglian Water would react to seeing that picture?

[redacted] Exhibit 2.

[redacted] So, I think probably what I would say -- sorry, I would repeat on this, there's absolutely no evidence that any of that went into supply. I think, you know, our customers would not know the intimate details of our distribution system and networks. We believe public confidence was maintained throughout.

The other point I would probably just make on this one is that that picture of course was taken on the warranty inspection, I think and believe that was in -- well I know that was in May 2021. Keddington was in supply -- came out of supply in May 2020. So that picture was taken a year after that tank and that pipe was taken out of supply.

[redacted] Thank you, but we did do some analysis of those paint powders and flakes. I have got some chemical data sheets here regarding the compounds. I know (Inaudible 00:02:16) personally data sheets. We've also looked at UK (Inaudible) reports which have indicated that some of those compounds are substances of concern, could be considered endocrine disrupting. They could cause birth defects, damage the health of unborn children, damage fertility, cause skin irritation and damage to organs when subject to repeat exposure. Some of the compounds such as DVP, BVP and DHP, which I'll come on to explain the full names for in a second, are substances which are banned from children's toys. I've got some data sheets here, I'll just read out one or two, and these compounds are listed in your own analysis that you conducted on the paint powders and flakes. And it will take some time to discuss the compounds found on each site in

greater detail, because I have got your reports in here. When we come to the specific events.

So, diisobutyl phthalate, this substance may damage an unborn child and is suspected of damaging fertility. ECHA identifies that this substance may be fatal if swallowed and entered airways. May damage fertility, or the unborn child. It is very toxic to aquatic life with long-lasting effects. It's very toxic to aquatic life.

Properties of concern, say it's toxic to reproduction. Some data submitters indicate this substance to be persistent, bio cumulative and toxic. Other properties of concern including endocrine disrupting. It's a substance of very high concern included the candidate list for specific authorisation under REACH. It's restricted under Annex 17 of REACH.

It's on the samples from Diddington and Keddington. Do you want to give it Exhibit 3? I'll talk about the specific chemicals on each site, so we don't get confused, because these are quite long (Overspeaking)

[redacted]To be fair, I don't think [redacted]is going to be able to answer any specifics on chemicals, he's not a chemist.

[redacted]I'm not going to ask him, so I'm just point out the risks.

[redacted]You just want to read them out then maybe you could just put it in writing rather than reading them out aloud on the tape.

[redacted]I'd like to go through each sheet, just so they're recorded. I'll summarise the content rather than read each in.

[redacted] Sure.

[redacted] So there's dibutyl phthalate which is also indicated as damaging fertility and being toxic to aquatic life. Toxic to reproduction, persistent, cumulative and toxic.

[redacted] In fact actually I think we might just stop the tape so we can have a look at these because you haven't produced them in advance, so we'd don't know what they are.

[redacted] They're on the toxicity data sheets.

[redacted] We haven't seen these, have you seen these before?

[redacted] Well, I can produce those, but they're much longer.

[redacted] No, but I haven't seen what you're reading out from previously.

[redacted] Well, if you'd like to take some time to read them, that's fine.

[redacted] Yeah, that would be lovely, thank you.

[redacted] Okay.

[redacted] Yeah. Would you prefer the full version.

[redacted] No, no we'll have your little summary, and then we'll have a read of them, thank you.

[redacted] Okay we'll just list the exhibits numbers for each sheet. So if we stop the recording …

[redacted] Time.

[redacted] At 13.45.55 so if you take a break to review the toxicity sheets.

(Break)

[redacted] This is a continuation of an interview with [redacted] from Anglian Water Services Limited at Nobel House, London on 28 February 2023 which was interrupted to take a break to consider information. The time is now … ?

[redacted] 13.53 and 20 seconds.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. The case reference number is 2021 8118. Has anything been said or done during the interruption to take a break to consider information which would influence the answers to my questions?

[redacted] No.

[redacted] May I still remind you that you are still under caution.

[redacted] Yes.

[redacted] Are you happy to continue with the interview.

[redacted] Yes.

[redacted] Thank you.

[redacted] Thank you for the opportunity to review the exhibits that you provided us. I'd probably just make three comments. Firstly, as I've been clear throughout, I'm not a scientist, I'm not a chemist. These are detailed, you know, detailed scientific sheets that I'm not qualified to answer --

[redacted] Well there's 300 pages there.

[redacted] That's why I wanted it to be a one-pager on the summary.

[redacted] Yes, but --

[redacted] So, Exhibits 3 through to 7, are just a single page --

[redacted] They are.

[redacted] -- of summaries.

[redacted] They are; however, they are based on very clear robust and -- well very voluminous amounts of material that are not qualified at answer on. So, what I would say is if you want any specific questions on this,

we'd be pleased to put them in writing, and we will consider them. We'd be very comfortable to answer where we can.

What I would restate again very very clearly, that all our sample data, over 45,000 samples, our MIC samples, our soak tests, on the paint on all four Reservoirs, all results were below published SNARLS quantifiable many factors below published SNARLS.

So the concentration of any chemicals, in that supply were many factors below safe limits.

[redacted] Thanks for that explanation. The reason I wanted to discuss it is because that analysis that's been conducted on soak tests, is obviously in some cases, many years down the line. So, I just wanted to discuss the potential risks that could have been present, which may not be picked up in the samples (Inaudible). Which from what I've seen so far, based on evidence I've collected, does not include organics-based sampling from Reservoirs, for example. Organic sample from Diddington which was the sample which we discussed which is one sample rather than an ongoing -- say like they do for your (Inaudible) and your chemistries which are weekly, quite frequent. So I wanted to discuss whether the strategy would have been capable of picking up these compounds and the historic risk that may have been present.

[redacted] So, I think again I probably would reiterate I'm not qualified to answer the specifics of that question. What I would say is that I have a team of expert, independent, fiercely independent, objective, professional, chartered, scientists who water quality, public health run through their veins. They have undertaken a thorough examination of all the

evidence of all the data across a myriad of samples, across a myriad of different combinations. They find no evidence that there has been any risk to public health from any of those materials that were introduced at any four of those Reservoirs or storage points.

[redacted] Right, the reason I brought those sheets as well, is as you've mentioned, use of SNARLS. And (Inaudible) when used to assess health risk which are contained in those more lengthy documents there and that's the reason we brought in. There are a couple of sample results in the soak test, which specifically mentioned those chemicals which you're going to discuss against each individual event. Are you happy for me to discuss those --

[redacted] Happy to discuss it. I will not --

[redacted] Without the scientific content.

[redacted] So, I will not be able to answer you the specific questions on those. I am not qualified to do that, as I've said. My independent expert professional scientists have conducted a thorough investigation on this.

[redacted] Yeah, so they've got a public health background potentially and some water quality knowledge.

[redacted] They're chartered professional scientists.

[redacted] Yeah. And also your customers are perhaps not chartered professional scientists. How do you think they would react to knowing those compounds were in their supply in whatever quantity?

[redacted] Well they might be anyway, mightn't they?

[redacted] I'm not sure it's -- I'm not sure I can speculate on how a customer would react to a -- to a distribution -- to a -- you know, to a quality sheet of chemicals that may or may not be in the supply. And they may or may not be in many other different types of chemicals that are way below any thresholds. I'm not sure where your question's going or what how --

[redacted] Well some of the risk factors do sound quite alarming. Damage to unborn child, damage to fertility, damage to organs.

[redacted] That's the same for any chemical, isn't it?

[redacted] Sorry, [redacted] to answer.

[redacted] Yeah, no but that's the same for any chemical you'd want to hear what they say about fluoride, which is naturally occurring.

[redacted] Would Anglian Water be able to prove that they caused no deterioration in water quality before and after.

[redacted] The thing is that -- I think what I've again clearly outlined is our scientists have carried out a robust review of all the available data.

Gone way beyond regulatory requirements in terms of data and analysis and find no evidence there of any lack of wholesomeness of the water. No evidence of any chemical getting into that water that is in any way near any level of toxicity.

The analysis are that the -- of the soak tests that the factors of the SNARLS are many, many factors below. As I've said, those soak tests do not represent the quality of water supplied to those customers The soak tests were carried out to extract chemicals from that paint. That is not representative of the water that was supplied to those customers. 45,000 samples, no evidence.

[redacted] So, [redacted] just to be clear, the soak tests were done as part of the investigation.

[redacted] Correct.

[redacted] Several years after the pipes had been in place. Exhibit 3 through to 7 were chemicals that were found during your investigation in the water supply in contact with the pipes or the paint flakes. Those tests were done several years after, they weren't done at the time the pipes were freshly in contact with that chlorinated water, of that system. Had the company got any data to prove that at the time of the installation this was not Exhibits 3 through 7, were not a risk?

[redacted] So at the time of the installation that is where the MIC samples that whole suite of analysis of those MIC samples which do recover again, beyond 6920, the requirements of that. That is what those samples show. Again, applying retrospective, I accept that, but in line with

your advice sheet, eight is a matter of fact that all those pipes were below the C-Score of 100. So in a small surface area category. Analysis against 6920, in your own guidance, states that those materials could be put in supply. What I'm telling is that our MIC samples are equipment and better than 6920.

I accept that was done retrospectively, with not knowing those pipes were in supply. I think I've been clear about that previously but, the process albeit retrospectively has been followed for a small surface area product as per your advice sheet 8.

[redacted] 6920 also requires the company to conduct a risk assessment and these scores between 1 and 100. And having seen these compounds would your risk assessment have not concluded they were --

[redacted] As I've said with you, we accept the materials that were not specified by the Sectary of State were put in supply and we apologise profusely for that. I've been really really clear on that. What I'm saying to you is that the requirements of -- by matter of fact are - the matter of fact that those pipes, all four of those pipes fell under the small surface area calculations. A C-score of below 100, your guidance states that a risk assessment would be carried out one of those quote as being 6920 testing. What I'm saying is that our MIC testing suite, that is carried out, you give me the example of Keddington. That was carried out with a seven-day testing regime. The testing on that goes above the requirements of 6920.

[redacted] Are you confident that that's the case for all four events in terms of materials in contact samples.

[redacted] So materials in contact sampling was carried out for all four reservoirs. I think you will be aware as well, that one of the Hannington sites remained in supply to January 2023. We've conducted as part of that enhanced sampling on that which we reported through to yourselves.

[redacted] Yeah, so I was going to move on, but I do come on to some of those compounds in Hannington which I'll break down products -- to some of those that were still in those SNARL sheets there as well.

[redacted] Okay, I mean I probably would just say again that I'm unlikely to be able to answer any specifics on the chemicals themselves.

[redacted] Have you informed Thames Water and Independent Water Networks -- some receive bulk.

[redacted] Yes, I believe we have.

[redacted] Are they aware of the proteins and the compounds in the paints in the investigation piping.

[redacted] I mean I can again - we can tell you what specifically we have told them. We have informed them again, happy to answer that question, if you want to put that in writing to us.

[redacted] So, I am going to now discuss each individual event in more detail, starting with the earliest going into supply. In the timeline of events this was Hannington.

[redacted] Okay, have you got …

[redacted] In fact it's in my paperwork here as well. The Inspectorate received notification of the event at Hannington on 21 December 2021. The event was given reference 2021 8379. The company provided a 3-day report on 24 December 2021. A 20-day report followed on 24 January 2022. I have a copy of the 20-day report here, somewhere. I'll give his Exhibit reference …

[redacted] The Hannington 20-day report is Exhibit Reference 8.

[redacted] So, we've got that, so … thank you.

[redacted] Last week you summarised what the company believes to have happened at Hannington. Can you explain the circumstances surrounding the introduction of Hannington Side 1A into supply on 15, 16 April 2016?

[redacted] I think I've covered that in my statement last week.

[redacted] Are you aware that the inlet valve failed, and the Res was valved into supply?

[redacted] So, I understand there was potential flooding on site and a risk assessment was carried out to fit that work, (Inaudible) storage points, by -- yes.

[redacted] We did speak to the OLC duty manager and a water quality representative at the time who told us about what happened. Did you realise at the time the asset went into supply that the materials used in the construction had not actually been listed or recorded on the MIC form for Hannington?

[redacted] So can you put the question please. I'm not clear what your question is.

[redacted] Are you aware at the time that Hannington Side 1A went into supply when the inlet valve failed and there was a decision made to valve the water into supply. That the materials listed on the scheme had not been recorded on the MIC form or listed anywhere for anyone to make a decision?

[redacted] So, I understand a risk assessment was carried out on Hannington to put it back into supply while the MIC tests were being carried out because there was potential flooding on the site.

[redacted] So your MIC analysis took place while the asset was in supply.

[redacted] Correct for Hannington, yes. I think I mean it was a matter of -- I can come back with the detail, but it was a matter of days.

[redacted] I do have Exhibit reference …

[redacted] Nine.

[redacted] Nine, which is the MIC form for Hannington. If you'd like to look at that, at any point.

[redacted] Thank you.

[redacted] So, who made the decision and conducted the risk assessment?

[redacted] So, that again I haven't got the precise detail of that, but that would be a decision between our OMC, operational management centre, duty manager, scientists and I suspect like a manager's -- but again we can provide you that detail should you wish to put that in writing to me. I have not got the precise detail of who said what to whom, I'm afraid.

[redacted] Do you believe that an adequate risk assessment could have been undertaken if they didn't have the MIC test results?

[redacted] Given the -- I mean I think given the minor -- yeah, the relatively minor modifications to the tank, they undertook the risk assessment as they saw fit at the time with the information that they had in front of them.

[redacted] So we have spoken to OMC, the manager that was on at that time and there was an option to put the water into a nearby dyke, where

the water could be dechlorinated. Why did the company make the decision to put water into supply and forward it to consumers?

[redacted] Again, so you're providing me with information of an interview that you've carried out that I hadn't had prior knowledge or notification of. Again, if you'd like to put that on writing to me, really happy to look into that.

[redacted] So in the company decision making risk assessment procedures, is the environment consider an iron impact or consequences of drinking water quality and public health.

[redacted] No, absolutely not. I'm very very clear in terms of what this company is here for. Is the safety of water supplied to our customers, that is number one together with the health and safety of our people. That is our absolute core reason for being. In all my strategies, in all my dealings with all my communication with my team, I am absolutely clear that is the foundation of block of what we are about as a business.

[redacted] Can you explain to me how the company did everything they could in this situation to protect public health and prevent the water going into supply? What other operational activities?

[redacted] So, again you're asking me -- I think you're asking me a layer of detail on a decision making that was made four years ago. That we've provided you with more than four -

[redacted] More than four years ago.

[redacted] Yeah, so some years ago, but I just do not have the detailed knowledge of. Very happy if you'd like to put that in writing to be able to answer that for you.

[redacted] As in being in the OMC previously, can you consider any other operational activities that would be --

[redacted] So, there will be an impact plan that is in place that details out the return to service of that, a risk assessment will be undertaken, and nothing would be put into supply without the absolute authorisation of an independent qualified scientist. So, an assessment will be done, on that. Again, I cannot comment on the detail of this specific -- your specific question.

[redacted] Okay. On behalf of the company should this event have been reported to the DWI, as per the requirements of Regulation 35 given the risk to water quality?

[redacted] Again, you're asking me to comment on something that happened over seven years ago. Again, very happy to answer that if you put that in writing. We believe we've carried every -- we've reported to you openly throughout this. If you've got a specific question on that, again happy to consider that.

[redacted] Yeah, so based on information that we've received so far, we've not seen any evidence that anybody was consulted from Water Quality.

[redacted] Again, without the detailed assessment of the -- or knowledge of what happened I can't comment on that. I was commenting on -- to your point on what my knowledge was of the operation of the business. If you want to put it in writing to me, very happy to consider that.

[redacted] Based on what I see, in black and white and information I've seen so far, there's a situation where there's a tank where the materials were not listed or recorded. It was a weekend. There'd been efforts made to contact senior management, they weren't capable of getting hold of that person. The water was forwarded into supply, and nobody really understood what that chemical composition were of that water at that time.

Samples were taken which weren't available until some four days later. Based on what I've just said, would you say that would be a reportable event?

[redacted] Again, happy to answer that with a review of that information. Can't answer that at this moment in time.

[redacted] Just again based on what [redacted] has just described and with the knowledge that water quality was not consulted is that appropriate? Would Anglian Water consider that as not following their procedures?

[redacted] So, again, I'm unclear whether the Water Quality Team were consulted or not. You're putting that to me, I don't have the information to be able to say, "Yes, they were", or, "No, they weren't". Or the specific background of this going into supply as you heard --

as you have outlined. I just do not have that level of detail on an event that was seven years ago.

[redacted] As part of our investigation we did take a statement from a member of the Water Quality Team that did look after that area at the time. And he'd had a period of absence from work and when he came back, he'd found about it. Yes, they would have sent this event to a senior line manager when he returned to work, stating that he presumed that the incident would have been identified and notified as an event to the DWI.

He heard nothing back on the matter. Do you know why the company made the decision not to report the event and why? Based on an email to [redacted] dated 4 May 2016.

[redacted] You can only speculate, can't you. You can't really answer that.

[redacted] I'll have a look at the email, but, yeah.

[redacted] No way you can answer what [redacted] was thinking in 2016 or so, I don't …

[redacted] So, Exhibit 10 is an email between [redacted] and (Overspeaking)

[redacted] Not just [redacted], [redacted].

[redacted] [redacted]t, [redacted] and [redacted] (Overspeaking)

[redacted] Thank you.

(27 seconds of silence)

[redacted] Again, yeah, I would purely speculate on that so if you'd like to put that in writing to us, I'd be very happy to look into that for you.

[redacted] Okay, thank you.

[redacted] The witness did go on to state that Grout(?) had been using that tank at Hannington which also had WRAS approval and that this had also been in supply during the period that Hannington had been in supply when the inlet valve failed. But knowing that, would that have triggered a notification based on the knowledge of (Overspeaking)

[redacted] Again, you're asking me to speculate on something you've just put to me. I can't … yeah.

[redacted] Okay, thank you. Is it true to say that Exhibit …

[redacted] Ten is the email.

[redacted] The MIC form, sorry.

[redacted] That's Exhibit 9.

[redacted] Exhibit 9 MIC form 2361. That the records were completed after the asset went into supply on 16 April with the form being raised on

18 April and subsequent materials being listed including the pipework. And may --

[redacted] Again, it's a level of detail below which I have, if you'd like to put that in writing to us, we'd be happy to look into that and answer that.

[redacted] There are dates on the form though.

[redacted] Yeah, there are dates on the form. As I say, what I do know is the risk assessment was carried out. You're asking me again to speculate and know the intimidate details of an operation or incident that happened nearly seven years ago. I just do not have that level of detail to (Inaudible) Director of this business. Very happy to go and look into it, very happy to give you the answers if you put that in writing to us.

[redacted] I assume (Inaudible) shown in Exhibit 9, the dates do not match he time that that tank went into supply.

[redacted] Well, that you've said that. He can't actually comment on it because he doesn't know any more.

[redacted] Could you comment on whether or not that has followed the typical Anglian Water process for putting into supply?

[redacted] So I think what we would say is that an assessment was carried out. What 'm not saying is that the MIC samples were carried out post that going into supply. Clearly, let's be really clear again that MIC

samples are not industry standard. Our MIC samples go way above industry standard. We know others don't carry out MIC testing so you're asking me, "Yes, was our above -- did this fully follow the process. There were issues specific, operational issues on that site where an assessment was made. I think as you say it is a matter of fact that those samples were carried out post that going into supply. What I cannot give you is the detail of the assessment, the conversations that were -- happened. You clearly interviewed people which we hadn't had sight of and you're putting questions to me or putting points to me that has been of what has been stated in those interviews.

Really happy to go away and look at those, if you put them in writing but (Inaudible) where I can say it's due to the person said that in 2016 and I cannot recall the details of that.

[redacted] I don't find it surprising that [redacted] or somebody from Water Quality Team had not made you aware of this as part of ongoing dialogue.

[redacted] So, I'm aware that the Reservoir went into supply before the MIC samples were carried out. An assessment was carried out. What I'm not aware of is the detail of that. Now, let's also be clear, that hose MIC samples passed as well, so those MIC samples showed that that water was wholesome. I sort of say again, being really clear, that those MIC samples are above industry standard. As I've outlined to you previously.

[redacted] Some companies don't take samples because the procurement doesn't allow them to buy things to go in the wrong place. They're not

necessarily a fault on other companies for not having enhanced sampling as part of their --

[redacted] I'm not - I wasn't suggesting it was a fault on other companies. I'm saying there are sampling, and our processes go above and beyond industry standards.

[redacted] Okay. Part of that same exhibit before, was an email from [redacted] who was a project manager.

[redacted] Exhibit 10.

[redacted] Yeah.

[redacted] She goes on to say that (Inaudible) had been listed at that point and that there were (Inaudible).

[redacted] Okay, again not aware until this point. You've provided that to me. Happy to -- if you want to put that in writing to review that and come back to you.

[redacted] What's the point we consider that this looks like, in terms of controlling the risk to public health. And this comes to light, when you're in conversations with Drinking Water Inspectorate? That a tanks gone into supply with retrospective samples taken that weren't left to stand for an appropriate amount of time.

[redacted] So again, what I would say to you that an assessment was carried out. An operational decision was made on that. I believe an assessment was carried out; we can provide you the detail of that. Again, as I would say, those MIC samples go above and beyond industry standard. I'm not sure what more I can comment on that. You're asking me to speculate on events that may or may not have happened.

[redacted] So, the pipework on the lines three and four on the MIC form, which I think is Exhibit 9. That was actually signed off and approved by Water Quality. That pipework is not specifically approved for submersion, and it was listed on 10 May 2016, after the water had gone into supply. What information would you use to reassure me the company had good control of their Reg 31 processes, when this event occurred.

[redacted] Sorry, I'm just …

[redacted] I don't know if I can -- do you want me to get you that printed --

[redacted] It's (Inaudible) for Exhibit 9 which says, "Incorrect pipework is listed".

[redacted] Yeah, so the question was, based on that information how do you reassure me that the company have good control of their Reg 31 processes when this event occurred?

[redacted] So, I've outlined in Section 6 of my statement in quite some detail last week our processes and policies for compliance with Reg 31. Obviously, the MIC form forms a key part of that. The detailing of materials in Part A and the countersigning of that in Part B clearly the training as well the embedding of our policies and procedures within our policies and standards for Water for Supply Hygiene ISO 9001 accredited minimum asset standards that specify that all material must be Reg 31 approved.

I work with suppliers, our MIC process. I believe at the time those polices and procedures were robust as I've said to you a number of times. We've learned, we continue to learn, we continue to improve, and we've learned from these events.

[redacted] I don't (Inaudible) robust really in that it's gone into supply then listed afterwards, in a sample after an event.

[redacted] Again, I think I've outlined our policies and procedures. I believe those processes were robust. A specific assessment was made because of issues on that site at that time. The details of which I have said to you I'm very happy to provide you with. The process was there, an assessment was made against that process on the balance of risk. The detail of which again happy to provide you should you wish to put that in writing to us.

I contend that our processes are robust, were robust and we've learned and made those continually to improve those.

[redacted] Can I assume that there was a lessons learned report produced at this time following the asset going into supply.

[redacted] Again, I haven't got the detail, we can provide you with that. Again, that was seven years ago.

[redacted] Is it possible that the company could have prevented the other three events from occurring had this event have been notified and the materials investigated properly at the time of the asset going into supply?

[redacted] That's speculation.

[redacted] That is speculation.

[redacted] So how important is the MIC form to the company as a control measure for ensuring the correct material to use.

[redacted] The MIC form forms a key part of our process. It is one part of our accredited MIC process that goes from design through to installation, training, assurance and check. I mean just to be really clear though, even if those samples had have been taken at the time, before that Reservoir was put in supply that would have not highlighted that as an issue. So, those samples were clear.

[redacted] They were clear, but had they stood for your own company's standard of 16 hours or don't just continuously fine and then going back out. We don't know, do we?

[redacted] You're speculating. You're speculating again, that those samples --

[redacted] But they weren't subject to your normal procedures.

[redacted] Those samples were clear. Again, all subsequent analysis, the ongoing -- the particular, the enhanced sampling done on the Reservoir Hannington, that's still in supply has not shown any materials anywhere near any public health limits. So, I just don't see how -- again you're speculating, asking me to speculate. I can't speculate.

[redacted] The MIC forms formed part of your investigation. Have you used these forms to look at the risk to consumers and what has happened?

[redacted] They've been reviewed, haven't they?

[redacted] Yes, they've been reviewed and they're behind our investigation as part of the process.

[redacted] Would they have prevented what happened in four events, from occurring?

[redacted] In the MIC forms?

[redacted] Yeah, because you kind of mentioned that the form would not have stopped it happening. That there'd been the clear sample.

[redacted] Yeah, so we'd -- so again I think I've been pretty clear, I hope I've been clear in this. So the issue with Hannington and Diddington is a

pipe that is approved for the conveyance of water that was used for immersion. Now, what we have subsequently done in our process is -- and learned is within the MIC form, put it in a specific field to say, "Immersion", or, "Conveyance", that is the learning -- one of the areas of learning from this.

As I say the MIC form, the sampling forms part of our process, which I think I've been pretty clear on.

[redacted] So it would have been used to assess the risk to consumers when reporting the form then?

[redacted] The MIC form, the analysis of what the material was, so we've gone right back through our supply chain to understand what has happened, the analysis against the side of the pipe, the C-Score all the sample analysis, both regulatory and customer taps. The analysis of those MIC samples, the analysis of the flakes, the immersion dip tests and against the SNARLS.

So, yes, I mean I've outlined in my statement, in some detail, the analysis that we did to understand the risk to consumers. Again, I would say and be really clear with you again all the analysis that we had done conducted by our independent assured, professional scientists showed no risk to public health from the installation of those pipework.

[redacted] Can you think or explain why the form, the soak tests and such additional information to draw the conclusion of the risk assessment to public health, not readily provided with a 3- and 20-day reports.

With the exception of Keddington, to actively request all soak tests, and all materials in contact forms retrospectively.

[redacted] I mean I would say --

[redacted] We wouldn't speculate that either.

[redacted] I think what I would say, the whole investigation, this is many months of work by many, many people across my business stream and across the business, we'd be open and transparently at every turn. We've provided you with all the possible information you've requested. It's taken literally weeks, months of people's time to do this.

I've only used it -- being open and honest now if we haven't provided you with information I apologise, but we pride ourselves on our openness. We're not trying to hide anything; we've reported these events to you. We've proactively gone and looked in 11 separate tanks, we were clear with you we were doing that. We were clear that these were issues and as soon as we knew these were issues, we reported them to you. I just don't know why, yeah.

[redacted] I'd consider it quite important information for a risk assessment to public health would remain on those records, to be perfectly honest. I had to go and ask for the lot -- information.

[redacted] Well, all I can say we've been open and honest with you throughout.

[redacted] Okay, let's move on a little bit. What chemicals of concern did the company consider in the coatings and paint on the pipework at Hannington?

[redacted] Again, I'm not a chemist. I am not able to answer that question.

[redacted] Water Quality Team have not given you a list of what -- in the soak tests or … ?

[redacted] I've outlined to you in my statement the Hannington -- let me just … you know, the Hannington results of the soak tests that. I am not going to comment on the specific detail of the chemicals, but I am not qualified to do that. All levels were quantifiably below the SNARLS. As I say it would be -- my scientists are highly professional, highly qualified, assured, competent, independent, fiercely protective of drinking water quality.

They have carried out a full and thorough investigation on this and find no evidence of any harm to public health. I am not qualified, and I will not get into the detail of individual chemicals listed within those SNARL tests. If you'd like the details really happy to -- if you want to put it in writing, we'd be really happy to answer that. If you want a full response, we will need to ask people who are suitably qualified to do that.

[redacted] I need to assess some of the value of the questions in that case for what I've prepared for you.

[redacted] Sure.

[redacted] Can we take five minutes? I don't want to waste your time.

[redacted] Yes, let's take the break so the time is 14.35.49 seconds, and we'll stop the recording there.

(Break)

[redacted] This is a continuation of an interview with [redacted] of Anglian Water Services Limited at Nobel House, London on 28 February 2023, which was interrupted to take a break to consider information. The time is now …

[redacted] 1500 hours and 57 seconds.

[redacted] I am [redacted] Inspector of the Drinking Water Inspectorate. The case reference number is 2021-8118. Has anything been said or done during the interruption to take a break which would influence your answers to my questions?

[redacted] No.

[redacted] May I still remind you that you're under caution.

[redacted] You can.

[redacted] Thank you. Are you happy to continue with the interview?

[redacted] Yes.

[redacted] Okay, I've tried to remove some of the specific scientific questions because I don't think it's helpful for either of us to keep going over it.

[redacted] I agree, I agree.

[redacted] We'll come onto that a little bit later as to next steps.

[redacted] Okay.

[redacted] Remain on Hannington, the situation as we understand it, is that Hannington 1A had been removed to have remedial work. Can you give us a status update on Hannington 1A, please?

[redacted] So, 1A and 1B?

[redacted] So, 1B remained in supply up until recently. I just want to check whether it's still in supply or if it's been removed.

[redacted] No, my understanding and again probably could come back with the absolute -- the Hannington 1B has now come …

[redacted] Out.

[redacted] … out of supply as of 24 January 2023. Hannington 1A is --

[redacted] It's on page 23.

[redacted] Yeah, is now back in supply.

[redacted] So, 1A is back in.

[redacted] Yeah.

[redacted] From my understanding, so Hannington 1A returned to supply, I've not got an exact date but November 2022.

[redacted] Sounds about right.

[redacted] So now we're saying Reservoir 1B has been removed from supply on 24 January. I didn't have an update on that. The last I've heard were it was still in supply.

[redacted] I think that's in my statement page 22.

[redacted] So 24 January.

[redacted] Yeah.

[redacted] Thank you. So the 20-day report Exhibit -- I've got my list.

[redacted] 8.

[redacted] Exhibit 8 stated that:

"When the work was complete on Hannington 1A, this Reservoir will be returned to supply following appropriate sampling and approval. Hannington 1B will then be removed from supply immediately to enable the appropriate remedial work on this Reservoir. We currently anticipate Hannington 1B will be removed from supply by the end of February 2022."

Can you explain the delays in removing this asset from supply?

[redacted] So, Hannington 1B could only be taken out of supply once Hannington 1A was put back in supply. Remedial works were carried out and it was returned to supply in November. Yeah, 1A has been taken out on -- yeah, in January.

[redacted] 1B sorry.

[redacted] Yeah, sorry, 1B has been taken out in January. When I think as I said to you, as you're aware of every enhanced water quality sample had been carried out throughout the period on 1B. Those results including the trace organics have been shared with yourselves.

[redacted] Have you got a summary of those results there, [redacted] at all?

[redacted] No, I haven't, no.

[redacted] We did see some of the organics and obviously we don't want to go into specifics with you but what you were told on the low-level organics. Were you happy that that water should have remained in supply based off information passed from Water Quality.

[redacted] Yes, and I assume you were as well because you had the sample data as well.

[redacted] We did have the sample data, we didn't get an update from September, so … significant results and we had seen but we were aware that 1A could not be removed at the same time as 1B.

[redacted] Correct.

[redacted] So, I'm just wondering why did it take so long for the remedial work on 1A?

[redacted] I mean it goes through normal engineering process ensuring safety, ensuring we can get a robust solution in place that resolves all issues. I think we've shared with you the work that was done. Yeah, we wanted to make sure that they were robust solutions put in place, then could be replicated in the other half of the Reservoir. Work is carried out on pretty much throughout at the same time enhanced monitoring done on other part of the Reservoir to ensure wholesomeness of water supplied at all times.

[redacted] Has anybody got any other additional questions before we move onto Diddington?

[redacted] No, more on Hannington for me.

[redacted] I'd like to take a short break if that's all right. Just to get a glug of water.

[redacted] Yeah, of course.

[redacted] So the time is 15.06 and 40 seconds and I'll pause the recording.

(Break)

[redacted] This is a continuation of an interview with [redacted] of Anglian Water Services Limited at Nobel House, London on 28 February 2023, which was interrupted to take a break and consider information. The time is now …

[redacted] 1529 hours and 44 seconds.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. The case reference number is 2021-8118. Has anything been said or done during the interruption to change CDs which would influence your answers to my questions?

[redacted] No.

[redacted] May I still remind you that you're under caution.

[redacted] You can, thank you.

[redacted] Are you happy to continue with the interview?

[redacted] I am.

[redacted] We can all still take regular breaks etc. Let me know if you still feel comfortable. So now we'll talk about Diddington. I'm moving onto Diddington because some of the products in pipework were similar in nature to those that we just spoke about at Hannington.
We have the 3-day report for Diddington here.

[redacted] Which we'll call Exhibit 11.

[redacted] The event number for Diddington is 2021 8338. We can refer to the three-day report at any time.

[redacted] Thank you.

[redacted] Last week you explained that you was aware of the circumstances surrounding the event at Diddington. Can you explain why the company think this situation or event occurred? Is it the same reason for event at Hannington or similar circumstances? If you'd like to put that into your own words. Sorry, I do apologise. Cancel that question, it's one that I removed.

[redacted] That's all right.

[redacted] Did anyone from Anglian Water team responsible for approving the products at Diddington physically inspect the installations and products before the assets went into supply?

[redacted] Again, I mean that's probably something I can't answer at this moment, and put that one in writing I'm afraid, and we'll have to come back to you.

[redacted] Thank you. I understand from your res inspection engineers that Anglian Water did not carry out an internal inspect of this Reservoir before it went in supply for the very first-time following construction. Do you think this event could have been prevented if someone had inspected the pipework?

[redacted] So, we believe a Reservoir inspection was carried out. I believe Res inspection was carried out between 16 and 18 January 2018, before it went into supply. So we have diary and log entries and email entries that show that. However, what I cannot do is locate the inspection report.

[redacted] Thanks for confirming that, that's quite helpful actually. So there's no available report. I guess you've no indication as to why?

[redacted] I can't speculation, I'm afraid.

[redacted] I am now going to show a picture of the overflow pipework from one cell at Diddington. Call that Exhibit …

[redacted] 12.

[redacted] 12.

[redacted] Thank you.

[redacted] Does anything look immediately obvious with this pipework and the two sections?

[redacted] This is a picture. A picture of the pipework. I mean clearly retrospectively we now know that the section going through the wall was Electrosteel pipework that was approved for the conveyance, not the immersion in water.

[redacted] Would your company expect this to have been picked up by the water quality team or res inspection team? Had they physically inspected the reservoir?

[redacted] So I mean again MIC samples were taken on Diddington in 2018 and 2019. The colour of the material does not indicate whether that material is approved or is not approved.

[redacted] At the time I think you said 16 to 18 January 2018.

[redacted] Correct.

[redacted] There's no report but there's evidence to suggest an inspection.

[redacted] Correct.

[redacted] Have taken place. Would your company have given your employees the right skills to look for changes or differences in pipework or … ?

[redacted] Well, our engineers are very experienced reservoir engineers. Again, competent individuals. We employ competent alliance partners who work across the industry, trusted Alliance partners. A scientist, as I've said, are fiercely independent professionally very proud and take water quality extremely, extremely seriously.

[redacted] At the time of the event, had the reservoir engineers undergone Regulation 31 training?

[redacted] I can check that. I haven't got that information to hand.

[redacted] One of the inspections from Diddington revealed some paint flakes on the floor. Sorry, I'll give that an exhibit reference first.

[redacted] 13.

[redacted] Thank you. Exhibit 13. Can you think of any reason why that may not be considered a significant finding in the bottom of the reservoir?

[redacted] What's the date of the photo.

[redacted] We have got a dated photo. These have been supplied by Anglian Water following migration onto share point and we said the information had lost some of their -- what do you call the data that sits behind the photo?

[redacted] When it transferred across.

[redacted] When it transferred across, yeah. So …

(11 seconds of silence)

[redacted] Number 4. The Res inspection 2019 to 2020 Res 1. Anglian Water weren't able to give me specific dates for the photos, so they were provided by [redacted] by [redacted] in a slide pack.

[redacted] Okay, so I think that we did --

[redacted] We understand it to be 2019 to 2020.

[redacted] We know it's 2019 to 2020.

[redacted] That's the only information that we've been provided with. It's an inspection --

[redacted] The inspection which took place.

[redacted] I don't --

[redacted] 2019 to 2020.

[redacted] I don't know when that photo was taken so I think it was difficult to answer the question without the specific date.

[redacted] Would you like me provide the inspection report, would that be helpful but have to do by computer?

[redacted] (Confers) We know that that was taken on ain inspection that was between 2019 and 2020, when the tank originally went into supply in 2018. That is after the pipework had gone into the tank and the tan had gone into supply.

[redacted] Yeah, I think it's going to be difficult.

[redacted] I can provide the information.

[redacted] Okay.

[redacted] And these were supplied because I did specifically ask for the date, metadata, that's the word I'm looking for.

[redacted] Metadata, right.

[redacted] So it will say what were the date and time. Anglian Water weren't able to provide that, they just said it was under inspection between 2019 and 2020.

[redacted] Between -- that's right.

[redacted] There is a named inspection report for that time.

[redacted] Okay.

[redacted] Right. On we go then. The company res engineer in his statement said that he saw the paint was a little bit flaky but:

"I did not see this as a risk because I believed the pipe to have been approved."

He states that when he returned to the pipe in 2021, "The paint had further deteriorated to a powder". What compounds of concern were in the paint at Diddington? I'm going to specific questions but what were you told by the water quality team? I'm not going to ask for like technical data on each. Did they say any specific compounds found in the powder or paint?

[redacted] Again, we'll come back to the SNARLS, the SNARL tests that we carried out on the paint. Again, with Diddington, so it would have been materials and contact sampling done in 2018, when the Reservoir was put into supply. There was then materials in contact sampling done in that interim -- in that yearly annual inspection we believe 2019.

Then analysis was done on the paint, the soak tests.

[redacted] I've got that report here.

[redacted] Which I've outlined in my statement. So, as part of our due diligence of reading my statement, organic compounds were detected, were compared with the SNARLS where available of the compounds, detected 14 were found not to have any SNARLS. The remaining 96 were found to be published well below the public SNARLS. Again

emphasising that those SNARLS and those soak tests were not representative of water supplied to customers as I've outlined previously in previous statements.

[redacted] Yeah, I'm not going to go into any specifics of the compounds, but the company did provide a soak test report and listed all the compounds and associate at 24-hour SNARLS and 7-day SNARLS. On this report, I just want to point to two compounds --

[redacted] Just the one, just the one.

[redacted] No there is two because that was similar. Sorry, no, sorry, [redacted] right. Diiosobutyl Phthalate at 30 micrograms per litre with a 7-day SNARL of 60. I was just curious to understand whether the company had pointed out that some were quite close, or at least half of those 7-day SNARLS?

[redacted] So they're all well below the published SNARLS.

[redacted] Do you know what, I think it's worth noting that they're below the SNARL, but these soak tests were done several years after the tank originally went into supply. Then that specific compound that says, "Diisobuty".

[redacted] Commented on.

[redacted] Yeah.

[redacted] "It's half the SNARL several years later."

[redacted] Let's be really clear again that those soak tests are not representative of water supplied to customers. They are specifically designed to extract any material from that paint, to understand if the constituent parts of it -- it's also clear that two sets of MIC samples were done on Diddington Reservoir, when it went into supply in 2018. And on that inspection, on that interim inspection report on its warranty inspection, all MIC results showed that water was wholesome at all times.

[redacted] Based on the inspection report with the paint flakes, how confident would Anglian Water's customers be if they knew that interior inspections may have not been carried out before the asset went into supply. Then had paint detections on the floor of the Reservoir.

[redacted] I think I've said that the Reservoir was inspected before it went into supply and if you said we would need to confirm the date of that photo to be able to provide you with the detail on that.

[redacted] You know why that information is only coming to light now, that Diddington was inspected, and we've not seen any inspection reports.

[redacted] We can't find the inspection report. We've done some further tests -- we've done some further checks to understand why or where -- when that was carried out.

[redacted] I think (Overspeaking) have just looked through a diary. We only go the information ourselves this morning.

[redacted] Okay, thank you.

[redacted] So, how effective do you think Anglian Water's reservoir inspections have been for the assets we mentioned so far at Hannington and Diddington?

[redacted] Our reservoir inspections are comprehensive; they're carried out by trained engineers with many years of standing and experience. Again, my knowledge of these engineers are they are very robust. They are looking out for any defect in those structures, and they will point out any defect and we are very risk averse about putting reservoirs into supply.

Now, clearly, as we go through, we learn, we improve as I've highlighted with our MIC processes. You've read out a statement to me from one of the res engineers. I take that on face value, as you said, I think he's explained to you his thought process. I probably can't commit any more than that.

[redacted] So you mention that they're very risk averse and yet we've got evidence from inspections after the tank going into supply that there was paint flakes on the floor. We've got a statement from the Reservoir engineer saying that they noticed the paint flakes and yet it was still -- the company still seemed to be unaware. Why was --

[redacted] Well, we can't --

[redacted] Yeah, so I guess I can't -- sorry, I didn't -- cut across you, sorry.

[redacted] If they are risk averse, why wasn't this escalated?

[redacted] So, I mean he's given you in his statement the reason why he didn't. I take that at face value, I probably can't -- without speaking to that and doing more detail on that. I can't comment. What I will say is that a number of defects in that reservoir were highlighted and remedial action was taken.

So that reservoir -- an inspection a warranty inspection to ensure that that reservoir is watertight. Is safe and a number of defects were raised, and material work was then conducted.

You've read to me the statement of the engineer, I take that as it, as you stated.

[redacted] Thank you.

[redacted] On 20 June 2022, I sent some questions to your water quality team about Dacrylate paint and risk to water quality and got a response on the 18 July. A series of questions.

[redacted] 14.

[redacted] 14

[redacted] Just the bit highlighted in orange.

[redacted] Thank you.

[redacted] The question was on -- at this point the company were aware of the compound in the silk test report which we've previously discussed. Can you explain why the company didn't advise me of the soak tests at this time. Whether the results had been available from 19 November 2021.

[redacted] I think all I can say is we have been open and honest with you throughout. We have conducted months of work and respond to every single question that you've had. We have produced what I believe are comprehensive 3-day and 20-day reports. People have been interviewed, either voluntary or in a formal capacity. At every possible juncture, we have been open with you.

[redacted] Sorry, I've missed a question now, this is when you're skipping a view. Have any comparison sampling been carried out on water entering the tanks compared to going out? Where are these assets?

[redacted] I don't know.

[redacted] I can't answer that one for you, I'm afraid. Again, if you put that writing we're very happy to look into that.

[redacted] Thank you. Can you explain the company's decision to encase the pipework at Diddington in concrete.

[redacted] Just to say we've got two minutes left if you want, shall we pause the recording?

[redacted] Shall we pause, yeah.

[redacted] So the time is 15.48 and 36 seconds.

Transcript created by Epiq

Event:	Arbitration
Date:	28 February 2023
Interviewers:	[redacted] Drinking Water Inspectorate [redacted] Drinking Water Inspectorate [redacted] Drinking Water Inspectorate
Interviewee:	[redacted] Anglian Water
Also present:	[redacted], Anglian Water

[redacted] This is a continuation of an interview with [redacted] from Anglian Water Services Limited at Noble House, London on 28 February 2023, which was interrupted to change CDs. The time is now?

[redacted] 15:52:39 pm.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. The case reference number is 2021-8118. Has anything been said or done during the interruption to change CDs, which would influence your answers to my questions?

[redacted] No.

[redacted] May I still remind you that you are under caution?

[redacted] Okay.

[redacted] Are you happy to continue with the interview?

[redacted] I am.

[redacted] So I have a picture of your solution at Diddington, exhibit 15. Can you just explain the company's decision to encase pipework in concrete rather than remove it?

[redacted] Yeah. The decision was based on concrete is a reg 31 approved material. Removal of the pipe would have remove -- pertained to removal, potential removal of a significant proportion of the roof of the

reservoir and yeah, we could achieve a fully compliant solution with reg 31 and minimise the risk to health and safety of people working on that reservoir.

[redacted] Is the company confident that that won't create any future problems --

[redacted] We are.

[redacted] -- water quality?

[redacted] We are.

[redacted] Advised on ... who's provided that advice?

[redacted] Well it's a reg 31 approved material.

[redacted] Which might degrade.

[redacted] Concrete. (Inaudible) of concrete. I do not think that is going to degrade. That is ... you know, it's ... yeah, that is an engineering assessment of that by competent engineers, again, of many years' standing and a high degree of professionalism, chartered, civil engineers that are absolutely assured that that is the most robust and safe solution for that pipe.

[redacted] Okay. Thank you, [redacted]

[redacted] Now, it's 15:54.38. pm. We will pause the recording before we start with the Kedington questions.

[redacted] Okay. Thank you.

(A short break)

[redacted] This is a continuation of an interview with [redacted] from Anglian Water Services Limited at Noble House, London on 28 February 2023, which was interrupted to consider information. The time is now?

[redacted] 16:28:17 pm.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. The case reference number is 2021-8118. Has anything been said or done during the interruption to take a break and consider information, which would influence your answers to my questions?

[redacted] No.

[redacted] May I remind you that you are still under caution?

[redacted] You can.

[redacted] Are you happy to continue with the interview?

[redacted] I am.

[redacted] Right. All set with your paperwork?

[redacted] All set.

[redacted] Right. My information. I'm now going to move onto the event at Kedington as the pipework at Kedington was also the same Electrofresh pipe involved at Addington (Inaudible). The 20 day report available, which we can refer to is on event reference 2021-8118 and I will give this an exhibit number.

[redacted] Exhibit 15.

[redacted] Thanks very much.

[redacted] You explained last week that you were aware of the event which took place at Kedington.

[redacted] Correct.

[redacted] So there was a change of a specification of pipework, which you discussed. You considered to have been Saint-Gobain System CL.

[redacted] Yeah.

[redacted] To Electrofresh Plus pipe.

[redacted] Yeah.

[redacted] Does the company know when the change in pipe specification was made from the original design and who made it and why?

[redacted] No. No. There was an issue from design, which clearly stated ... it stated it on the NYC form. It's not been possible to determine when the Electrofresh pipework ... when that was substituted for Electrofresh pipework.

[redacted] So to your knowledge [redacted] you don't know why it was substituted?

[redacted] No. No.

[redacted] Okay.

[redacted] And is this based on accounts from the (Inaudible)? Did company speak to the contractors involved?

[redacted] Yes. I mean the contractors ... I mean the scheme was still live at the time so a root branch review was carried out.

[redacted] Does each capital scheme keep a change log for changes like this?

[redacted] Again, I'd probably need to come back to you on that specific point on the capital programme.

[redacted] As part of our investigation, we took a statement from FLI as contractors involved. They provided email and written instruction from [redacted] at Anglian Water Alliance on 17 July 2019 to change the pipe material from the epoxy coated carbon steel to ductile iron. [redacted] was copied into this email. Can you think of any reason why this May not have been escalated internally (Inaudible) water?

[redacted] So, again, you've provided me with a statement that I wasn't aware of prior to this so I'd have to consider statement and respond to you on that one, should you wish me to do that.

[redacted] Have you got MIC form?

[redacted] Yeah. Not that one. We were going to ask that, just --

[redacted] Oh, yeah. Sorry. I didn't want to start getting scientific. So the Saint-Gobain System CL pipework was listed on the MIC form on the cross site pipework. We have a statement from [redacted] who told us that all the pipework he listed to refers to underground pipework only. So the System CL pipework listed under cross site pipework didn't refer to the pipework in the contact tank.

[redacted] You're going to have to say that again. Sorry.

[redacted] So we took a statement from [redacted] who was responsible for below ground pipework. Now with what he explained, the below ground pipework refers to anything, literally underground and above

ground pipeworks considered anything in tanks. He stated that the System CL pipework to which he referred to only referred to pipework underground.

[redacted] So what are you asking? What's the question you're asking me?

[redacted] Oh, so I was going to ask, do you agree that neither pipework material is captured on the materials and contact form? That was the materials and contact form. I can find that. Just a sec. It is quite a long page of the report. So there it's come round as (Overspeaking)

[redacted] Yeah. It's a ...

[redacted] You need this a bit more (Inaudible) sorry.

[redacted] Yeah.

[redacted] So the contact type pipework is all listed under here, which is FLI Carlow. None of hit refers to System CL Saint-Gobain. When we spoke to [redacted] who was responsible for cross pipework, he said that it only referred to the underground pipework.

[redacted] Well, I mean, you say he's provided me with a materials and contact sheet that is one, two, three, four, five, six, seven, eight pages of --

[redacted] That's part of the reason (Overspeaking)

[redacted] This has been supplied to us as part of the (Overspeaking)

[redacted] No. I understand. I understand that. You're asking me to comment on a specific line on a materials and contact sheet that is ... yeah, 8 pages long and has probably got about 30 lines on it. What I would say is that Saint-Gobain pipework is listed on there. You've clearly carried out an interview and your proposition has been made. I just ... you know, in all fairness and reasonableness, I'm unable to comment on that level of detail.

[redacted] And [redacted]is this the first time you've seen that MIC form?

[redacted] No. No, no, no. No.

[redacted] You have seen it previously?

[redacted] I've seen the MIC form. Yes.

[redacted] Okay.

[redacted]: But he's not memorised it.

[redacted] Yeah.

[redacted] Yeah, no, and that's why we printed it out as an exhibit. But I think the point [redacted]trying to make is that the System CL is only listed as being used for the underground pipework and there's no direction in there to use the System CL on the above ground pipework.

[redacted] Which is listed as contact 10.

[redacted]: Well I'm sure if you put it in writing we can have a look at it.

[redacted] Yeah. We will review that. Thank you.

[redacted] Right. Anything?

[redacted] I'm just wondering why the company believed that it was Saint-Gobain System CL that was specified?

[redacted] Again, we will come back to you.

[redacted] Okay. Thank you. So the 20 day report was submitted on 20 July 2021. On page 33 it states that the company were aware of the events on 28 May 2021. Can you explain the delay in reporting?

[redacted] Yeah. There was ... I mean there was no delay in reporting. We needed to understand what pipework was in the tank. What was clear relatively early on that it didn't appear to be the Saint-Gobain pipework we believed it was. But what that pipework was, it was unclear. We had to carry out extensive research with the supply chain. Go back up the supply chain to determine what that pipework was, how it was modified and that took the time. The moment we realised and were clear that a product that had been put on that that did not have the specific approval of the Secretary of State, we reported that to you.

[redacted] For Kedington, at the time of the event, and I do appreciate that they've gone over this before on other events, what information did the company use to assess the risk to consumers at Kedington?

[redacted] Again, I mean I'll refer to, you know, the previous answers I've given. We undertook a review of all sampling data. We undertook a review of what the pipe was. We undertook the C scoring test on the pipe. The pipe was below ... again, below 100. We reviewed all MIC data. All subsequent sample analysis. We undertake soak tests of that pipe ... sorry, of the material on that pipework and all results were below published snarls. Again, we strongly state that the water was fit and wholesome at all times from that site.

[redacted] Thank you [redacted] I said that we wouldn't be getting technical and I'm trying to avoid being as technical as possible but where you made reference to some of the snarls, we've got some conflicting information. So are you okay for us to just chat on that?

[redacted] You can put that to me with -- I suspect we will need to take that away.

[redacted] Okay. So with the 20 day report, the company did provide a serial safety data sheet for QD Pro Match 8 paint, as per page 2.

[redacted] 17. So this is their material safety data sheet for QD Pro Match 8 and it's exhibit 17. And it's page 2.

[redacted] Thank you.

[redacted] I'll let you have a look at that. That product states that it's 30 per cent to 50 per cent xylene. The company also provided an up-rate toxicity data sheet, which we gave you earlier. There's a shortened version here rather than the long document.

[redacted] I'll call this exhibit 18 for the snarl information sheet.

[redacted] The reason I mention it as a question and, as I said, I don't want to get too technical into this, it says that xylene as a suggested operational snarl of 20 micrograms per litre and that xylene's described as having a sweet or aromatic taste and odour.

[redacted] So what's your question?

[redacted] Sorry. I'm just wondering on your statement that the operational snarls have been looked at for all compounds, with that one being at 70, just wondering where the information on the levels and them being within the limits came from. So on the flake analysis report, which I'm going to give you there as well, sent by Anglian Water, of the soak test the flakes found in the tank at Kedington, the total xylene and ethylbenzene concentrations were reported to be 71.92. That's exhibit 19. I'll pass that along.

[redacted] So that's above the operational snarl and does show a failure from that side.

[redacted] Yes. Okay. We will take that away. That is clearly a combination of the result for xylene and ethylbenzene. My understanding is the snarl is for xylene and not the combination.

[redacted] I think if you read the toxicity data sheet, which I can find again, ethylbenzene is actually the same thing as xylene. Same compound.

[redacted] Again, yeah, I'm not a chemist.

[redacted] No, but based on the conversation we're having you were told that all the compounds below the snarl limit.

[redacted] Again, we would need to take that away. As you've said, the totals there are for xylene and ethylbenzene. The snarl is for xylene. We will ...

[redacted] Yeah. So, again, I don't want to get into any technical but the report clearly states that xylene's associated with sweet taste and odours. Looking at the sample provided by Anglian Water whilst the asset was in supply in May 2020 ... I'm looking at references [redacted]

[redacted] 20.

[redacted] A sweet taste was detected on samples taken from the unblended final on 11 May 2020 by two analysts. This is the same day as the bad egg taste, which was on 11 May, which was the reason I believe in the 20 day report that states why the asset was removed from supply. I just wanted to put this to you that there was a sweet

detection at that time on the same day. Has the water quality team advised on that detection and provided any explanation as to why a sweet taste May have been detected on that date from the unblended (Overspeaking)

[redacted] So I mean there has been extensive work carried out at Kedington on the odours detected on that site. All odours have been associated with the raw water bore hole sources. Again, I would just be really clear on all the snarls. Those snarls do not represent water that is supplied to customers. MIC tests were carried out on the works before it went into supply. Seven day trials, seven day tests. Those results were satisfactory. Demonstrated that the water was wholesome. There was, to my understanding, some bad eggs or farming odours detected on some of the MIC samples that were, again, associated with the raw bore hole water.

[redacted] Can I just point out that that sample, as well as the asset, was in supply (Several inaudible words) got one of the MIC ones, just for clarity?

[redacted] Yeah. I --

[redacted] Or while we're into waste.

[redacted] Sorry?

[redacted] Oh, it's not while it's running to waste. This is a sample that was on the same day as the failing sample for the eggy taste detected on 11 May. But it's from the unblended works final.

[redacted] Okay. I think we'll take that one away. I mean I will just reiterate the extensive scientific analysis that has gone into Kedington treatment, which I think you'll be aware of because we're under notice with you on that. All results and all bench tests and all analysis have result that back to the issue with the raw water bore holes and the presence of polysulphides within that bore hole. That is what treatment has been designed to ... yeah, designed to remove.

[redacted] Thank you. Can the company explain why the analysis of the paint flakes was not mentioned in the 20 day report?

[redacted] Well, again, we have carried out extensive work and extensive work post, you know, post submission of the report. Three 20 day continues. We've been open and honest with you and everything you've asked for we have provided. Should we have not provided something we would learn from that and we will continue as ever to be as open ... to be fully open and honest with you.

[redacted] It's just to point out that the analysis was fully completed and the results available on 3 June for the first set of samples and 14 July on the second sample. A three day report was 25 June 2021 and the 20 day reports, 20 July 2021.

[redacted] Yeah. I refer to my previous answer.

[redacted] Would you have considered that an important piece of information to assess the risk to water quality?

[redacted] So I think what we would say is the snarl tests do not represent, and the soak tests, do not represent that water that was supplied to customers. We are being really very, very clear on that. As an indication of potentially what is in that paint and what could potentially leach out into the water under adverse situations where the pipe is or the paintwork is subject to intense ... intensive soaking and analysis. So that paint, those samples, are not representative.
Listen we will ... yeah, we will always review any information that we May or not have provided to you and we would learn from that.

[redacted] So in all three cases where the Electrofresh pipe was used with various paint coatings, should these three assets have been in supply?

[redacted] So, sorry, just to be clear, you're talking about the --

[redacted] Arlington, Diddington and Kedington.

[redacted] Okay. Right. Thank you. I think I would refer you to my previous statement which I'll ... I mean my previous answer which I'll read again:

"The purpose of reg 31 clearly is to regulate materials that go into ... into water supply systems, ensuring that there is no adverse effect to customers and consumers from the quality of the water. We strongly

maintain that the water was wholesome at all times. Regulation 4, the requirements for Water Supply, Water Quality regulations 2016 was not breached in any way. We contend that we have robust and industry leading MIC processes. We have robust and extensive sampling that goes way above industry standard and above regulatory requirements.

"We accept that the pipework and the coatings applied were not approved by the Secretary of State at the time, despite the pipework on those three assets having approval for the conveyance of water.

"As I have said, the calculations on all three assets put the C score below 100s and in the category of small, surface area covered by advice note 8. Your advice note 8 states that an assessment can be carried out on that material. I contend and continue to contend that our MIC sampling and processes go beyond the requirements of BS 6920, which is your recommended approach.

"I accept that we did not know that pipe was in supply so that risk assessment cannot be applied retrospectively. I maintain that our processes at the time were industry leading. We have learned and we continue to improve that. We will not rest on our laurels on this. I apologise that that pipe was in supply. I contend that on any reasonable basis we carried out every possible activity to ensure the requirements of reg 31 were met."

[redacted] Thank you. If it's all right with everybody I'd like to take a break as well now. We've got final section Pitsford.

[redacted] Sure.

[redacted] If you want to continue.

[redacted] The time is now 16:50:47 pm.

[redacted] Yeah.

[redacted] And I'll stop the recording.

[redacted] Right. Okay.

[redacted] I just need to strip ...

(A short break)

[redacted] This is a continuation of an interview with [redacted] from Anglian Water Services Limited at Noble House, London on 28 February 2023, which was interrupted to consider information. The time is now?

[redacted] 17:13:40 pm.

[redacted] I am [redacted] Inspector with the Drinking Water Inspectorate. The case reference number is 2021-8118. Has anything been said or done during the interruption to take a break to consider information which would influence your answers to my questions?

[redacted] No.

[redacted] May I remind you that you are still under caution?

[redacted] You may.

[redacted] And are you happy to continue with the interview?

[redacted] I am.

[redacted] Right. Nearly there. I'm now going to discuss with you the event at Pitsford. This has event reference number 2021-8380 and I will give this an exhibit number?

[redacted] 21.

[redacted] We can refer to that at any time. Last week you explained your understanding of the circumstances at Pitsford in relation to the pipework in storage tank B. Can you please describe the work that was carried out on the tank for the company?

[redacted] I think I've outlined that in my statement --

[redacted] At the bottom of page 22.

[redacted] -- at the bottom of page 22. Would you like me to read it out or ...

[redacted] We've got exhibit 1, which is your statement, so that's fine.

[redacted] Yeah.

[redacted] Yeah. Bottom of page 22.

[redacted] Bottom of page 22, yeah, onwards.

[redacted] Yeah. The specific question really was what new materials were added to the tank or retro-fitted as part of the work on the tank as you understand it?

[redacted] Well, again, it's outlined in my statement, I think, in the 20 day report. New inlet pipework. Again, in relation to the (Inaudible) resilience programme, which was bringing water from Hannington to Pitsford and allowing Pitsford to increase the resilience of that system.

[redacted] Thank you. As part of that work, we understand that there was a coating applied to the pipework on the inlet. Were any records kept by the company regarding the instructions for use of those products?

[redacted] So we have a record of the product applied and as part of that I would contend that we ... I suspect we would have details of the instructions for use. Again, we'd probably need to come back to you on that specific.

[redacted] The question more specifically was in relation to application of the product. So like cure times and temperature.

[redacted] Are you talking about Acothane?

[redacted] Acothane.

[redacted] Acothane.

[redacted] Yeah. So rather than the sheet itself, you know, the data sheet that described the instructions, would they have been kind of cure time records or temperature records or anything like that available?

[redacted] Well, so we would use the instructions for use. Again, this was now seven, eight years ago. What it hasn't been ... what we haven't been able to do is access all those records or find all those records.

[redacted] Thank you. Does the company now understand why and when the Acothane was applied to the pipework?

[redacted] I think it's fair to say we're not 100 per cent clear when that was applied to the pipework.

[redacted] And not by which contractor or person employed?

[redacted] It is not in our investigations. It has not been possible to fully determine when that or who installed that pipework. So we've gone back and had extensive discussions with Stone Brew, who are one of the main contractors. They had a significant data loss of files and we believe that the records of that May have been lost with that data loss.

[redacted] And had -- at the time if -- I mean what procedures has been followed, should that information have been held within the MIC form?

[redacted] Again, I will probably need to come back to you at the time in terms of what was specifically in that MIC form at that specific time. But clearly now, instructions for use form part of the MIC form. I'll need to come back to you as to the time, were they part of the MIC form and what was the practice at that time.

[redacted] And I guess what I'm asking is so Anglian Water are not sure when that Acothane was applied, why it was applied. If procedures had been followed, that information should be available. So is it fair to state that the procedures were not followed at the time that that was applied within the tank?

[redacted] So there would --

[redacted]: I don't think you know, do you?

[redacted] Again, I think we are ... as I said to you, I think we are not clear when it was applied. There appears to have been a data loss of that information. Clearly our procedures have been tightened and are continued to be tightened. I contend still that those procedures were robust and sufficient and above industry standard at the time. What it hasn't been able ... what we haven't been able to do is access all those records.

[redacted] Okay. Thank you.

[redacted]Thank you.

[redacted]: Oh, we said that it was referenced on (Inaudible).

[redacted] Yes. Yeah, we --

[redacted]: We need to take it away.

[redacted] As per my statement, yeah, we do need to take it away. Acothane was referenced in the 2017 MIC.

[redacted] I have got the MIC forms here, which (Several inaudible words).

[redacted] Yeah. I have looked at them.

[redacted] Yeah. Is the company aware that failing to comply with the instructions for use is also a breach of regulation 31?

[redacted] Yes.

[redacted] Okay. Thank you. So it's another kind of situation. I've got the MIC forms here but the MIC forms were not readily provided with the 20 day reports. They were made available at request. The first report sent to me was dated 24 March 2017. So this is the date the MIC form and MIC reference 2790. It's a short one. There's only seven products. I'll give it an exhibit reference.

[redacted] Which if form number 2790, exhibit 22.

[redacted] Thank you.

[redacted] Does the company consider that all material as expected to be listed for the work on storage tank B appear on that form?

[redacted] I think to the best of our knowledge, yes we do. Again, you're asking me to look back on a record that is now six years old.

[redacted] Okay. So following the form dated -- can you just tell me that reference? Is it 2970?

[redacted]: That MIC form.

[redacted] I've got it here.

[redacted] 2970. Yeah.

[redacted] Yeah. I was given an additional form dated 1796.

[redacted] This is exhibit 23.

[redacted] Which al so lists use of Acothane.

[redacted] Yes.

[redacted] 21 September 2016.

[redacted] And that is why we cannot determine when that Acothane was applied fully because, as you say, Acothane was listed on both MIC forms.

[redacted] So on that information from the pictures from the inside of storage tank B, we were also told that there was an outlet chamber that was created around a valve that was failing and we came across this picture of pipework, which I can't locate on either form. Sorry.

[redacted] This photograph is exhibit 24.

[redacted] Sorry. My question. I've started to fall asleep. Do you know what this section of pipework is and why it's not listed on the form? Multiple forms, so the two forms.

[redacted] So all I can say is I've got 330 storage points, 130 treatment works. I can't possibly know what every little bit of pipe is but very happy to look at that for you and respond to you.

[redacted] Has water quality team not escalated anything about that pipework specifically?

[redacted] Again, I'm very happy to look at that and take that away, should you have any questions. Well, if you'd like me to answer that one for you.

[redacted] Would you be able to provide us with a relevant MIC record for that pipe?

[redacted] As I say, not when water pipe is, where it is. I will take that away and if you would like to put that in writing, we'll come back to you when we've got the information.

[redacted] Just on the date of the pipework, originally we were provided with 2790 and then the second form --

[redacted] 1796.

[redacted]-- 17?

[redacted] 96.

[redacted]96 was followed at a later date. I just want to check with you, can you think of any reason why they provided one form and not the other one?

[redacted] So I think genuinely [redacted]been trying to backtrack and understand the work that was carried out with the issues with data loss that it was trying to put together, you know, the pieces of that jigsaw. All the information, as I said, has been provided in good faith at all times and we have been open and honest and transparent with you.

[redacted]Thank you. So the situation on 6 October 2016 when storage point 1 ... sorry, storage point B was put back into supply following all the work, are you aware of the circumstances of that tank being put into supply?

[redacted] I am broadly aware of the circumstances of that tank going into supply.

[redacted]And are you aware that the tank wasn't left for 16 hours to stand before sampling?

[redacted] My understanding, because of arable challenges on Pitsford work, a decision was taken to put that tank into supply before all MIC results

were available. So the MIC results would have been available at that time. Samples, I believe, were taken on 6 October. The works had returned on 7 October. I mean clearly then MIC samples came back and were all clear.

[redacted] Yeah. To point out, the statement from the res engineer and the OMC duty manager's log, which states that the res engineer was inside the tank at 2.50 am inspecting the tank and that the asset was then sampled at 11.15 am. So my question was really in relation to the stand time being less than the prescribed 16 hours, the return to service sample.

[redacted] Okay. Again, you probably asked me a layer of detail on an event that now happened seven years ago. I just don't have that level of detail I'm afraid. I'll take that away. If you want to put that in writing, I'm happy to look into and respond to that in detail.

[redacted] Okay. Thanks. So my next question was, did the company follow their own procedures for standing 16 hours and sampling? I guess we've covered that.

[redacted] Yeah. I mean what I'd say, we'll respond to you. There were clearly challenges at the works with regard to arable challenges. An assessment on the basis of risk was made. That basis of assessment, I have full confidence in, would have made on the basis of ensuring public health, number one. That is always the assessment that our scientists will make. They will always err on that side should there be doubt.

[redacted] Thank you. We're coming to the closing section now. Is the company aware of any other issues on any other sites in Anglian Water where product is not compliant with the requirement of sub 31 May have been installed?

[redacted] So I think as I've outlined to you what we did was an extensive investigation of all assets that were installed post 2010. We were open and honest with you on that. We drained down. We've inspected all those assets. We have reported to you all issues that we have found that we believe are a potential issue with regulation 31.

[redacted] And how confident is Anglian Water that all their materials in contact records will be accurate for all Anglian Water assets?

[redacted] So we would contend that our processes are industry leading. We would contend that our MIC sampling goes above and beyond those that the majority of the industry employ. Our processes have always been robust. They are assured to ISO 9,001. Clearly in these instances there were some human failings, as I say, with those. We have learned. We continue to learn. We continue to improve. We will continue to improve and continue to learn on this. We are taking an industry leading approach to this. We are leading the industry on some of the longer term issues around competence, around sampling, around approval of reg 31 products. Yeah. We will not rest on our laurels. We will continue through our leadership and I personally sponsor this to continue to improve our performance in this

area and, you know, continue to take that and have that leading industry approach.

[redacted] Thank you. Are the company aware of any other relevant information that has not been provided to the WI on these cases?

[redacted] No. We're not. I mean clearly you've asked us a number of questions on this. We would be very happy if you put them in writing to look into the information that you've requested and where available, we will respond as we have done fully and openly on all information that you've requested. And, you know, our people pride themselves on their openness. They pride themselves on their professional standards. They pride themselves on the responsibility of providing wholesome water at all times to our customers. It runs really deep within Anglian Water. You know, my scientists, my operational teams, this is their life blood. This is what they think about, number one, every day and any day. And, yeah, that is what makes us tick.

[redacted] Thank you. Lastly, are the company aware of any historic regulation 31 events that May have not been reported?

[redacted] No.

[redacted] Great. Are there any other comments you would want to add or clarify or anything you've already said or are there any areas we haven't touched on that you want to say?

[redacted] So, I mean, I think I would again reiterate my apologies and my sincere apologies for the issues that we reported to you. I would contend as well that we have robust processes. We have learned and we continue to learn. We will not rest on our laurels on this. I think ... I hope I have outlined an extensive improvement plan that covers the areas of training, that covers the areas of process, that really embraces digital in a way that, you know, now we are able to take out some of these human factors in this.

So I've talked to you about the BIM 360 system. The ability to visualise and control an asset from its design through to its operation. I've talked to you about the millions of pounds we are spending on our in sourced logistics operation with the aim of being able to control and get greater control of our ... of the assets so we have absolute visibility and are able to tie regulation 31 compliance into that.

I've talked to you about the communications. The awareness we've done through the business. I've talked to you about the changes that we've made to our minimum asset standard so any submerged pipework now must be of sufficient grade of stainless steel. That removes any issues with colours of pipes, being able to recognise. It is utterly clear that that is the only thing we'll accept in submerged tanks.

We have continued to improve our training. We now have a mandatory recall on all training after three years. We are working across the industry. We lead and chair the industry regulation 31 group. We're looking at how we share best practice. How we share learning from this event and from others in the industry across this, across the industry and across the supply chain. It is clear that there are supply chain issues here that we want to ensure that others are

aware of who May have had similar issues with products. We will continue to learn and we will continue to share best practice. We want to deal with the issue of training and we've made a personal commitment, I see it as a personal commitment, to the Chief Inspector to deal with the issue of regulation ... sorry, reg 31 sampling and the ability to have more products, increase lab capacity and we are in active discussions with a number of parties to increase that within the industry with the aim of having new laboratories that are able to approve, test and improve products into the industry.

We're holding an industry regulation 31 event that we are leading and chairing. I am opening. My head of water quality is chairing on 15 March. We take this really, really seriously and I think, as I've said in my statement, our leadership in this field is practical. Our leadership is real.

You know, we are immensely sorry about this. We have learned and we continue to learn and we continue to improve. You know, it is my mission to both improve regulation 31 compliance all the way through Anglian and learn the lessons across the industry.

[redacted] Thank you, [redacted]

[redacted] So there's been some aspect of the interview that have been quite detailed on water authority and chemical analysis that you've not been able to answer today. So are you able to identify and authorise another representative of Anglian Water to speak to us?

[redacted] So I think what we would much prefer is if we are able then to ... if you could put those in writing to us and we will answer those. We will

be able to give you a much fuller and more detailed and comprehensive response to that. I think it would be difficult frankly with the breadth of questions you've asked to put a single individual. Whether that be [redacted], our head of water quality, who clearly will have a significant higher level of technical understanding than myself on this. But if you want the absolute detail of toxicology, on individual compounds, then I think a more fuller response that will enable you to have the detail that you wish a response in writing ... if you ask the questions in writing we will respond in writing to you on (Overspeaking)

[redacted]: It's just more effective.

[redacted] We genuinely believe that is a more effective way of doing it.

[redacted]: Because it enables us to consult with different team members, different teams. There's no way that you could put one or two people forward that could have all this information and answer the questions that you're asking of us but we can look at them and say, "Well actually no one person could answer all of these, so it would be more effective and efficient if you can send us the questions and then we will do our level best to resolve and answer them".

[redacted] We'll take away. In these situations, we obviously have to speak to a representative at companies to see where they are but it's not something we've done, that approach that you've said.

[redacted] We'll take it away and I think we take on board that there's four events here and we would --

[redacted]: And they're all historic as well so there isn't anyone in Anglian Water that was involved in all of them. They're all, you know --

[redacted] And the important ... sorry.

[redacted]: -- years ago.

[redacted] I was just going to say, in an ideal situation, we would like to speak to somebody and we'd like you to identify and authorise but I take your comments on board and we'll review that internally and decide what we'll do next.

[redacted] Okay.

[redacted]: It is quite common in other regulators to send questions.

[redacted]Is it?

[redacted]: Yeah.

[redacted] I mean we genuinely are ... yeah, we want to get you the answers that you want and we're trying to be as helpful as possible. I believe that is the best way.

[redacted] Yeah. I mean reg 31 is one of the more serious regulations. It has been an in depth, and I do appreciate a lot of questions involved and everyone has cooperated. I do accept that but four events, I think well done to everybody involved for getting through today and your witness statement last week as well. So take this opportunity now to draw the interview to a close. I'll hand you a notice that explains what will happen to the CDs and how you can obtain copies of them. The time is now?

[redacted] 17:38:30 pm.

[redacted] The interview is concluded and I am switching off the recording equipment.

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2 September 2022

[redacted]
Water Quality Regulation Manager
Anglian Water Services
Lancaster House
Lancaster Way, Ermine Business Park
HUNTINGDON
Cambridgeshire
PE29 6XU

Dear [redacted]

Inspection of Reservoirs and Tanks Associated with Regulation 31 events – Pitsford Tank B, Hannington and Diddington Reservoirs

Thank-you for making the necessary access arrangements for the Inspectorate to examine the pipework removed from Kedington and Pitsford at Grafham Dam (1st September).

As part of our investigation, we would also like to inspect the reservoirs at Hannington and Diddington, and storage tank B at Pitsford. Our understanding is that these assets (or some compartments of them) are currently out of supply. We request that they remain out of supply until we have conducted an internal inspection of the tanks. Should this cause any operational issues, please let me know so that we can discuss the matter.

I will co-ordinate a team of Inspectors with the appropriate confined space training and agree a convenient date with you. I am making the request to leave the tanks empty now in order to minimise operational impact at a later date.

In relation to all the assets, including Kedington works, please can I have an update on the status of these assets (return to supply dates and remedial work completed to date).

Yours sincerely

[redacted]

[redacted]Inspector

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14 September 22

[redacted]
Water Quality Regulation Manager
Anglian Water Services
Lancaster House
Lancaster Way, Ermine Business Park
HUNTINGDON
Cambridgeshire
PE29 6XU

Dear [redacted]

Reservoir and Tank Inspections (Associated with Regulation 31 Events)

Further to my letter dated 2 September 2022, I am writing to inform you that the Inspectorate no longer intend to enter the tanks to inspect them in person at the current time.

Please provide an update on the operational status of these assets (for each individual compartment) and the intended return to supply dates.

We **require** a copy of the Reservoir Engineers Inspection/Assessment that is conducted before the assets are returned to supply. Please provide all associated photographs from the Inspection.

Please also provide the additional Materials in Contact records and all associated sample results for the assets being returned into supply.

I **note** that the company has encased the non-approved products in concrete rather than replace them with similar Regulation 31 approved pipework. I will request information about this decision under separate cover.

Yours sincerely

[redacted]

[redacted]Inspector

Responses to questions raised in email of 16 September 2022 regarding Hannington WTW

Please note – The original text/questions from [redacted] email of 16 September 2022 are set out below in black with Anglian Water's responses provided in blue text.

1. Please provide the name and contact details for the person responsible for creating the 20 day report

   The production of 20-day reports for the Inspectorate is a complex undertaking drawing on resources from across Anglian Water. No single individual is responsible for creating the report. The responsibility for the assembly of each report's component sections and the onwards transmittal to the Inspectorate of the assembled final report falls to the Water Quality Regulation Manager.

2. Please provide the contact details for [redacted]

   Anglian Water is committed to our continuing cooperation with the Inspectorate and the on-going investigations into issues relating to regulation 31 of The Water Supply (Water Quality Regulations) 2016. Anglian Water is committed to ensuring the health and welfare of its employees and contractors. Given the likely stress and anxiety that could be caused arising from direct contact from the Inspectorate to individuals, we would respectfully request that any contact with individuals is undertaken as previously practiced i.e. the contact is mediated through our Water Quality Regulation Manager so that individual's mental health and wellbeing can be protected. In order to further limit concerns and stress it would be helpful for individuals to be aware of the purpose of the contact e.g. areas of specific enquiry and its nature i.e. whether or not the contact is voluntary or otherwise, when the request is made to our Water Quality Regulation Manager.

3. Please provide the contact details for [redacted]

   Please see response to Q2

4. Please provide the internal inspection carried out before the asset first went into supply

   Response to follow (11 November 2022)

5. Please provide drawing WAT-05054-HANNWR-1H-DET-4581

   Appendix Q5 WAT-05054-HANNWR-1H-DET-4581

6. Please provide the dates for both assets (both compartments) being in and out of supply (supported with level trends) since beginning of 2016