

Pam Brown Associates



**October
2019**

Site Condition Report

LAND ADJACENT MAELOR FOODS LTD
CROSS LANES
WREXHAM
LL13 0UE



Report Ref. 1572-16 / Final
Revision 1 – 23rd October 2019

Pam Brown Associates



SITE CONDITION REPORT

LAND ADJACENT MAELOR FOODS LTD
CROSS LANES,
WREXHAM
LL13 0UE

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Report Status: Final
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CONTENTS

1.0 INTRODUCTION

2.0 SITE DETAILS

- 2.1 SITE LOCATION AND DESCRIPTION
- 2.2 PROPOSED AMENDMENT
- 2.3 SITE WALKOVER

3.0 CONDITION OF LAND AT PERMIT ISSUE

- 3.1 ENVIRONMENTAL SETTING
- 3.2 POLLUTION HISTORY
- 3.3 SITE HISTORY
- 3.4 PREVIOUS GROUND INVESTIGATIONS
 - 3.4.1 Nicholls Colton 'Preliminary Ground Investigation' 2011
 - 3.4.2 PBA 'Geo-Environmental Site Investigation' March 2016

4.0 CURRENT PERMITTED ACTIVITIES

5.0 PHASE II ENVIRONMENTAL SITE INVESTIGATION

- 5.1 GENERAL
- 5.2 WINDOWLESS SAMPLE BOREHOLES
- 5.3 INSTRUMENTATION AND MONITORING
- 5.4 CHEMICAL LABORATORY TESTING

6.0 GROUND CONDITIONS ENCOUNTERED

- 6.1 GENERAL
- 6.2 GROUNDWATER
- 6.3 GROUND GAS MONITORING

7.0 ENVIRONMENTAL ASSESSMENT

- 7.1 METHODOLOGY
- 7.2 ENVIRONMENTAL LABORATORY RESULTS – SOIL

8.0 CONCEPTUAL SITE MODEL

- 8.1 IDENTIFIED CONTAMINATIVE ISSUES AND SOURCES
- 8.2 PROTECTIVE MEASURES AND SURVEILLANCE
- 8.3 IDENTIFIED CONTAMINANTS AND SOURCES
- 8.4 RISK ASSESSMENT
- 8.5 RECOMMENDATIONS

9.0 STATEMENT OF SITE CONDITION

PBA TERMS AND CONDITIONS

FIGURES

Figure 1	Site Location Plan
Figure 2	Existing Site Plan
Figure 3	Stockpile Location Plan
Figure 4	Change to Site Boundary
Figure 5	Exploratory Hole Location Plan
Figure 6	Drainage Plan
Figure 7	Monitoring Point Location Plan
Figure 8	Drainage Survey Plan

APPENDICES

Appendix 1	Site Audit Photographic Record
Appendix 2	NRW Flood Maps
Appendix 3	Environmental Permit EPR/AB3591ZQ
Appendix 4	Borehole and Trial pit Logs
Appendix 5	Soil Analysis Certificates
Appendix 6	Ground Gas Monitoring Certificate
Appendix 7	Soil Guidelines for Commercial/Industrial End-use
Appendix 8	Definitions used in Risk Evaluation
Appendix 9	Drainage Survey
Appendix 10	Risk Assessment Register and Aspects and Impacts Register

1.0 INTRODUCTION

Pam Brown Associates Ltd (PBA) has been appointed by *Maelor Foods Ltd* to prepare a Site Condition Report (SCR) for the plot of land to south and southwest of the Maelor Foods Facility, to support a variation in the facilities existing permit EPR/AB3591ZQ, and allow the use of this plot as a parking area for HGV vehicles carrying livestock.

The main objective of the study was to provide baseline data on the ground and groundwater conditions of the adjacent plot of land (herein referred to as 'the site') to the existing facility and determine if there are any contaminative issues.

The Industrial Emissions Directive requires that the operator of any IED installation using, producing or releasing "relevant hazardous substances" (RHS) shall, having regarded the possibility that they might cause pollution of soil and groundwater, submit a "baseline report" with its permit application. It is considered the SCR fulfils this requirement.

The report includes a characterisation of the site's geological, hydrological, hydrogeological and environmental setting, as well as an overview of its previous uses. It also reports the findings of a Phase II Environmental investigation carried out with the aim of assessing the soil and groundwater quality across the site and on a limited basis ground gas generation, in order to evaluate the risk to sensitive receptors, and to confirm the potential requirement or otherwise for remedial action.

Reference has also been made to the following reports:

- Aardvark "The First Milk Cheese Company - IPPC Application Report' prepared for SDI Plant Maelor. October 2006.
- 'Site Condition Report – SDI Plant, Maelor' prepared for the First Milk Cheese Company. August 2011.
- Nicholls Colton Geotechnical "Preliminary Ground Investigation Report' for Chalcroft Limited. Ref. No. G11109. Final. September 2011.
- PBA 'Site Condition Report' for Maelor Foods Ltd. Ref. 1572-16. Final Amended. 22nd August 2016.

The report aims to characterise the site based upon the procedures identified within Environment Agency Contaminated Land Report 11 'Model Procedures for the Management of Land Contamination'. These procedures relate to 'past' contamination, and assume that legislative controls such as Pollution Prevention and Control authorisations control current potentially polluting activities. Emphasis is therefore upon historic use and the overall approach in dealing with past land contamination is one of risk management.

A conceptual model is formulated by reviewing the environmental setting of the site using, geological, hydrological, hydrogeological and historical data determined from a review of available information sources including site-based data, mapped references and extracts from the Groundsure environmental database.

The information obtained is then used to evaluate the environmental sensitivity (vulnerability) of aquatic, human and ecological systems in the site's vicinity in

support of the identification and assessment of pollutant linkages. This is undertaken in accordance with CIRIA C552 (2001)¹ to determine whether significant harm is being caused or there is a significant possibility of such harm being caused as outlined in EPA1990: Part IIA² and further described in DEFRA (2006, 2012) statutory guidance^{3,4}. The classification of risk is obtained by combining the severity of the harm likely to arise from a given on/off site activity and the probability that harm may arise to a particular sensitive receptor.

Limitations

The conclusions reached within this report are restricted to those that can be determined from the available data and within the inherent limitations of a discrete investigation. Conclusion and/or recommendations made in this report may be subject to amendment in the light of additional information becoming available.

The information provided by third parties is presented in good faith; however, PBA cannot accept any responsibility/liabilities for the information derived from these and/or for discrepancies or inaccuracies found in the data.

The report presents the findings of the ground investigation exploratory logs, tests and monitoring results and interpretation of this data which is limited to the specific exploratory locations and scope under which the study was commissioned. As with any site, there may be differences in conditions between exploratory hole locations, the data included in the report reflects the observations made at the time of the investigation. Seasonal fluctuations may occur in groundwater and ground gas levels which may not be accounted for as part of this study. PBA cannot take responsibility for conditions that have not been revealed by the exploratory holes, or variations which may occur between them.

The information derived from previous studies carried out by 3rd parties is presented in good faith; however, it is important to emphasise these studies were commissioned under different scopes and without the knowledge of future development plans. On this basis, PBA cannot accept any liability for the information derived from previous studies and/or for discrepancies and/or inaccuracies found in the data.

This report has been prepared solely for the use of the *Maelor Foods Ltd* to support the environmental permit variation application under which this study was commissioned and is strictly restricted to the areas investigated. If the document is used/viewed by any other party for any other purpose than the one specified above, reference must be made to PBA to confirm its suitability for use. No responsibility will be accepted where a third party uses this report, either in part or in its entirety, unless formally re-assigned.

¹ Rudland, D., Lancefield, R.M., Mayel, P.N. (2001) "Contaminated land Risk Assessment: A guide to good practice. CIRIA C552. UK. pp.80.

² Environmental Protection Act 1990: Part IIA. Contaminated Land. Section 78A(ii).

³ Department of Environment, Food and Rural Affairs (2006) DEFRA Circular 01/2006 – Environmental Protection Act 1990: Part2A. September 2006. U.K.

⁴ Department of Environment, Food and Rural Affairs (2012) Environmental Protection Act 1990:Part2A – Contaminated Land Statutory Guidance. April 2012. U.K.

2.0 SITE DETAILS

Name of Applicant	Maelor Foods Ltd
Activity Address	Pickhill Lane, Cross Lanes, Wrexham LL13 0UE
National Grid Reference	338510E, 346712N
Document reference and dates for Site Condition Report at permit application or surrender	PBA 'Site Condition Report' July 2016
Document references for site plans (including location and boundaries)	Figure 1 - Site Location Plan Figure 2 - Existing Site Plan

2.1 SITE LOCATION AND DESCRIPTION

The site is situated off Pickhill Lane, Cross Lanes in Wrexham, to the south of the existing Maelor Foods Ltd facility, close to the A525 road between Wrexham and Whitchurch and approximately 1km north of the village of Bangor on Dee.

An extract of the 1:50,000 Ordnance Survey map showing the general location of the site is included as Figure 1.

The site is irregular in shape and covers an area of approximately 1.73ha. The western area of the site is currently comprised of hard standing surfaces, sheds and a disused building. The central part of the site is comprised of hard standing surfaces associated with demolished structures and the eastern part of the site is comprised of rough open ground. A plan showing the current site layout is presented in Figure 2.

The site's topography is generally flat, but an abrupt decrease in ground level is noted on the eastern portion of the site. The two parts of the site are separated north to south by a retaining wall.

Access into the site is via Pickhill Lane, and through the one-way system in operation at the Maelor Foods Facility. The northern boundary is defined by a part of the one-way system around the facility. To the east is the effluent treatment plant and silos beyond which is a heavily vegetated / wooded area. To the west and south are open fields.

2.2 PROPOSED AMENDMENT

It is understood that the environmental permit for the Maelor Foods facility, is to be amended to include the site (land immediately south of the existing Maelor Foods Facility). The extent of land under study is shown in Figure 2.

It is proposed to use the land as a parking area for HGV carrying livestock. No proposed plans have been submitted.

2.3 SITE WALKOVER

A site walkover was undertaken between 8th – 9th July alongside the investigation works. The main site features and potential issues identified during this survey are detailed below.

The general topography of the site was flat; however, a significant elevation change was noted on the eastern portion of the site between locations WS5 and WS6. The site is separated north to south by a retaining wall of approximately 1.5-2m height, varying along the boundary. This is assumed to be the boundary between the demolished structures and undeveloped land.

The site was generally covered in hard standing surfaces in good condition on the western part of the site and weathered in the central area of the site. Open ground noted on the eastern portion of the site, is recorded as made ground, generally comprising a brown gravelly sand with gravels of sandstone, brick, mudstone and concrete. Landscaped areas were not recorded. The southern site boundary was delineated by fencing and dense shrubbery and trees. The eastern site boundary was defined by a large bund of vegetated earth.

The western area of the site was still in use and was frequently trafficked by heavy goods vehicles (HGV's) carrying livestock. Concrete hardstanding surfaces were in good condition. Skips were found near location WS2 assumed to be for metal recycling. A derelict building was noted near location WS2 with Heras fencing around the building entrance, which was assumed to be undergoing renovation. Please see the photographic log included as Appendix 1.

Two (2No.) other buildings were noted on the western part of the site, to the southwest was a large shed to house the livestock before entering the facility and to the northwest was a small shed used to fix broken bird cages; this structure was undergoing maintenance during the site investigation.

To the central-western area of the site, in the area of demolished buildings, were hard standing surfaces (concrete and asphalt) showing signs of weathering, including surface cracks and significant growth of weeds/ vegetation. Unlabelled blue drums were noted on the south western portion of the site, near the site boundary.

Towards the central area of the site was a small concrete bund containing a brown liquid, which exhibited an oily sheen on its surface. Within the water was a broken/ damaged yellow waste bin. Please see photographic log included as Appendix 1.

Various stockpiles of material were noted containing broken ceramic and plastic pipework, wood, metal, plastic cones, insulation, plastic sheeting, metal wiring, bricks, foam packaging, concrete, stone and tiles. The approximate locations of these stockpiles can be viewed in Figure 3.

On the eastern part of the site (undeveloped land), a large stockpile was noted comprising clay pipes and broken concrete hardstanding surfaces.

Towards the central-eastern area of the site, where the elevation changes, an unlabelled IBC was noted full of an unknown liquid.

3.0 CONDITION OF LAND AT PERMIT ISSUE

3.1 ENVIRONMENTAL SETTING

An overview of the environmental setting of the Maelor Foods facility is provided below based on the mapped references and extracts from the Groundsure 'GeoInsight' and 'EnviroInsight' acquired as part of the PBA '2016' Site Condition Report for the Maelor Foods Facility immediately north of the site.

Environmental Setting	
Geology	<p>The British Geological Survey (BGS) and Groundsure reports record the site to be underlain by undifferentiated River Terrace Deposits, comprising sands and gravels. The stratum is considered to have a high to very high permeability with intergranular flow.</p> <p>The bedrock geology comprises the Kinnerton Sandstone Formation, which includes soils of high permeability with intergranular flow.</p> <p>An area of historic surface workings covers the southeastern section of the site, listed as an unspecified heap.</p> <p>Historic ground workings had taken place across the eastern part of the site, from north to south and extending beyond the site boundary. Groundsure identifies these as railway sidings, which were associated with an abandoned / disused railway line, which ran across the northeastern corner of the site, from the northwest towards the southeast.</p> <p>Risks identified in association with geological hazards include:</p> <ul style="list-style-type: none"> • Very low risk from landslides • Very low risk from collapsible ground stability hazards • Very low to Low risk from running sand ground stability hazards • Negligible to very low risk from shrinking and swelling clay ground stability hazards • Negligible to Moderate risk from compressible ground stability hazards • Negligible risk of ground dissolution stability hazards <p>BGS records indicate a 25m deep borehole, Porthwgan Sesswick, was excavated at 63m west of the site. In addition to this, previous studies indicated a shallow well was located at Pickhill Old Hall; it is unclear if this remains operational.</p>
Mining	<p>According to Groundsure, the site is not recorded as being within an area affected by coal and non / coal mining. However, it is within the specified search distance of an identified mining area approximately 474m northwest.</p>
Radon	<p>According to the Health Protection Agency (HPA), the site is not located within a Radon Affected Area, as less than 1% of properties are above the action level.</p> <p>According to Building Research Establishment publication BR211 (2007) 'Radon: Guidance on Protective Measures for New Dwellings', no radon protective measures are necessary.</p>

Environmental Setting					
Hydrogeology	<p>The superficial River Terrace Deposits are classed as a Secondary A aquifer. These formations are permeable layers capable of supporting water supplies at a local rather than strategic scale, in some cases forming an important source of base flow to rivers.</p> <p>The Kinnerton Sandstone Formation is classed as a Principal aquifer, with soils of an intermediate to high leaching potential. Such aquifers comprise materials of high intergranular or fracture permeability, typically providing a high level of water storage and may support water supply and base flow to rivers on a strategic scale.</p> <p>An abstraction well is recorded on the Maelor Foods site to abstract and “Process Water”, not exceeding 275,000m³ per year. The abstracted water is to be returned to the River Dee. The licence was issued 21st July 2017 to Maelor Foods Limited which was varied on 20th November 2018, due to expire 31st March 2027.</p> <p>No other groundwater abstraction licenses have been recorded within 1km, although anecdotal evidence suggests there is a well at Pickhill Old Hall, at approximately 250m northeast.</p> <p>The site is located within a groundwater source protection zone (SPZ) 3 – Total Catchment. This is defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source.</p>				
	<p>The closest surface water feature is a drain, immediately adjacent to the northern site boundary. The River Dee is located at approximately 120m south. The chemical quality of this feature was graded as A - ‘Very good’, from 2005-2008 taken from a point approximately 1195m south.</p> <p>A series of tertiary water features (rivers/culverts) are also noted within a 250m radius.</p> <p>Two (2No.) active surface water abstraction licenses were noted approximately 267m south, for the direct abstraction of potable water from the River Dee at Twll, Bangor.</p> <p>Natural Resource Wales (NRW)⁵ Long Term Flood Risk map did not identify the site as being within an area at risk of flooding, included as Appendix 2 The NRW Development Advice map identified the site as being within a Zone A – Considered to be at little of no risk of fluvial or coastal/tidal flooding. Included as Appendix 2.</p> <p>The site and surrounding area are considered to be prone to groundwater flooding, (Clearwater) from the unconfined aquifer, however BGS have “low” confidence rating in this assessment.</p>				
	Discharge Consents (within 250m)	Effluent Treatment Plant (ETP) @ Maelor Foods Ltd	Treated effluent	~10m E	Reference: P/2017/0626 Dated: 26.07.17
		PTP @ Maelor Poultry Ltd	Sewage Discharges – final/treated effluent	~17m E	New issued under EPR 2010 01.02.16
		Maelor Creamery Maerchweil	Trade discharges - unspecified	~151m E	Revoked 05.01.95
The First Milk Cheese Factory Ltd		Sewage & Trade combined - Unspecified	~175m E	New issued under EPR 2010 03.08.10	
Surface Water Hydrology					

⁵ <https://naturalresources.wales/flooding/?lang=en>. Last Accessed 25.07.19.

Environmental Setting					
Surface Water Hydrology	Discharge Consents (within 250m)	Maelor Creamery Marchweil	Sewage & Trade combined - Unspecified	~247m E	Revoked 16.03.09
		Maelor Creamery Marchweil	Trade discharges - unspecified	~247m E	New consent by application WRA91-Section 88
		Pickhill Old Hall Marchweil	Sewage discharges – final treated effluent	~254m NE	New consent by application WRA91-Section 88

Environmental Sensitive Sites		
Sites of Special Scientific Interest	Afon Dyfrdwy (River Dee)	~78m SE
Special Areas of Conservation (SAC)	River Dee and Bala lake	~78m SE
Ancient Woodlands	Six (6No.) ancient woodlands recorded – restored, ancient and semi-natural woodlands	500-1000m SW, NW, W

3.2 POLLUTION HISTORY

Permits and Authorisations				
Part 1(A)&IPPC Authorised Activities	The First Milk Cheese Company Ltd	Process: Other waste disposal; non-hazardous waste >50T/D by biological treatment	Immediately North	Status: Effective
		Process: Animal Vegetable and food, treated ETC animal raw materials (not milk) for food >75T/D	Immediately North	Status: Effective
		Process: Other waste disposal; non-hazardous waste >50T/D by biological treatment	Immediately North	Status: Superceded
		Process: Animal Vegetable and food, treated ETC animal raw materials (not milk) for food >75T/D	Immediately North	Status: Superceded
		Process: Other waste disposal; non-hazardous waste >50T/D by biological treatment	Immediately North	Status: Surrender effective
		Process: Animal Vegetable and food, treated ETC animal raw materials (not milk) for food >75T/D	Immediately North	Status: Surrender effective
Records of Part A(2) and Part B Activities and Enforcements	The First Milk Cheese Company Ltd	Other waste Disposal	Immediately North	Historic Permit (Wood Processing)

Permits and Authorisations				
Environment Agency Historic Landfill Sites	Cross Lanes Landfill	Waste type: Inert	~324m NW	Licence issued: 08.12.1980 Last recorded deposit 01.10.1980 Licence surrendered 01.10.1981
Potential for Infilled Land	Two (2No.) unspecified heaps recorded as being present on site. Potential infilled land in the vicinity includes ponds, cuttings and unspecified ground workings.			

Pollution History				
Pollution Incidents	Incident date: 01-Nov-2001	Pollutant: Oils and Fuel - Diesel	~118m S	Water Impact: Minor (Cat. 3) Land Impact: No impact (Cat. 4) Air Impact: No impact (Cat. 4)

Potentially contaminative uses recorded within a 500m radius include:

- Unspecified tanks
- Creamery
- Railway Sidings
- Unspecified heaps
- Unspecified commercial / industrial use
- Cuttings
- Unspecified Ground workings

The previous Aardvark report (2006) listed up to thirty-six (36No.) tanks associated with the facility, which were used for multiple purposes.

3.3 SITE HISTORY

A review of the historic maps and anecdotal evidence provided by the client as part of previous appraisals is summarised below with the aim to provide an overview of the site's development history and relevant activities that took place in the vicinity. The historic maps covered the period 1873-2011 and were included in the Nicholls Colton 2011 report.

By the 1900, the Wrexham and Ellesmere Railway line was noted approximately 100m north of the site boundary. This feature was dismantled in the late 1970's.

The site was a green field until the late 1930s when various large and medium size units were constructed on site. It is understood the site was used as a creamery and was bought from Cadbury's by Dairy Crest in the 1970's.

By the 1960's a large unit was recorded covering the site from the western site boundary to the central-eastern area of the site. A small unit was observed on the southwestern site boundary.

By the mid-1970s two structures were built on the southwest and north-western parts of the site.

In the 1970's and 1980's, the facility was expanded with additional units built off-site to the north and tanks established to the west. The site is noted as a 'creamery' and by 1988; it was expanded across the former railway line, with a new complex of small buildings noted towards off-site to the north. Evidence provided in previous studies indicated the SDI plant was built during this period as a joint venture with Corning and became fully owned by Dairy Crest in 1989, when the site expanded to enable the drying of lactose and manufacture of delactosed whey concentrate. Whey syrups were apparently discontinued in 2001 and a new boiler was installed in 2006.

The water treatment plant was constructed adjacent to eastern site boundary in the 1970's. The plant went through a series of upgrades between the late 1970's and early 1990's which included the installation of high rate bio-filters, a balancing tank, DAF unit and a divert system to measure pH, dissolved oxygen and turbidity.

By 2002, one of the large buildings within the creamery complex to the south of the site was demolished.

The site ownership was transferred to First Milk Ltd in October 2006. It is understood operations at the facility ceased in 2012.

From 2017 the facility immediately adjacent the northern boundary has been operating as a poultry processing facility by Maelor Foods Ltd.

3.4 PREVIOUS GROUND INVESTIGATIONS

3.4.1 Nicholls Colton 'Preliminary Ground Investigation' 2011

In 2011, Nicholls Colton Geotechnical were appointed by Chalcroft Ltd and Grout Buckton Partners to carry out a 'Preliminary Ground Investigation' with the aim to provide preliminary data about the ground conditions across the site, to areas adjacent to the southern and eastern boundaries to allow for the design and construction of two (2No.) food processing buildings.

A summary of the ground conditions encountered across these specific areas and their environmental quality is provided below. Further details on the geotechnical appraisal and foundation recommendations applicable for these two zones (which are not within the current permit application area) can be consulted in the full version of the report.

Scope of the investigation

The investigation comprised the excavation of five (5No.) Cable Percussive holes to depths of 5.0-15.45m below ground level (bgl). An additional borehole location was attempted but could not be progressed due to the presence of a concrete floor slab, which could not be penetrated. Standard penetration tests were carried out using split spoon apparatus (SPT) and cone apparatus (CPT). Soil samples were retrieved for chemical and geotechnical testing.

Ground Conditions

Made ground varied in thickness between 0.2m to 0.75m, comprising a combination of reinforced concrete floor slabs, bituminous surfacing, sub-base and turf over red brown slightly organic silty sandy gravel. A layer of probable made ground was noted on the area to the east of the site between 0.75-4.0m bgl, consisting of very loose

and loose clayey / silty sand and gravel with a basal layer of slightly organic sandy gravelly silt / clay. SPT values in this stratum ranged between N=1-6.

Underground concrete obstructions were identified on the areas investigated, as deep and notably hard concrete.

River Terrace Deposits were recorded beneath the made ground between 2.65m and 6.5m bgl, comprising medium dense variably clayey / silty sand and gravel. SPT values ranged between N=7-25.

The Kinnerton Sandstone Formation was encountered beneath the river terrace deposits, comprising a combination of stiff to very stiff clay, dense and very dense sand and very weak and weak sandstone. SPT values ranged between N=33- >50.

Contamination Assessment

Five (5No.) soil samples were taken from the exploratory boreholes and tested for a range of organic and inorganic contaminants. The results have been compared with generic assessment criteria current at the time of the investigation⁶, for a commercial land use.

When compared with the former soil assessment criteria and current guidelines for commercial / industrial land use, all contaminant concentrations were below their respective assessment criterion.

Two (2No.) soil samples were tested for the presence of asbestos. No asbestos was encountered in either one of the samples.

Leachate analysis was carried out on two (2No.) soil samples and the results were compared against the EA Environmental Quality Standards and Drinking Water Standards. Nicholls Colton concluded on the basis of the leachate results that no further assessment or remedial measures were necessary with regards to groundwater contamination.

Current EQS and UK DWS standards were applied and the results were re-assessed. The results reported all contaminant concentrations below their respective assessment criterion.

Further works

Nicholls Colton recommended for further investigations to be carried out in the areas to the east and south of the site to include:

- Further trial pits and/or boreholes to confirm foundation recommendations and ground conditions if these areas are developed in the future
- Further soil and groundwater chemical analysis to assess the risk to the underlying aquifers and submission of the findings to the regulatory authorities.

3.4.2 PBA 'Geo-Environmental Site Investigation' March 2016.

Under instruction from Maelor Foods Ltd (then Maelor Poultry), a geo-environmental ground investigation was undertaken, with the following aims:

- Provide indicative foundation solutions for the proposed extension plans and water treatment plant.
- Provide an environmental assessment of the baseline conditions of the site.

Scope of the investigation

The fieldwork was carried out between the 29th February and 4th March 2016 and comprised the completion of five (5No.) cable percussive boreholes to depths between 10.0-17.5m bgl and thirteen (13No.) trial pits to a maximum depth of 2.5m bgl.

Due to the positions of above and underground services, obstructions and accessibility issues to certain areas and following a site walkover with the client's engineers, exploratory locations were moved from their original positions.

Ground Conditions

Made ground was encountered in all locations to a maximum depth of 4.2m bgl comprising, topsoil, hardcore fill/demolition crush, granular made ground and hardstanding. Concrete and asphalt were encountered in two (2No.) locations to a maximum depth of 0.23m bgl.

Topsoil was encountered at the surface of seven (7No.) excavations within landscaping and was generally described as brown organic slightly clayey gravelly sand with frequent roots and rootlets with gravels of concrete, quarts, granite, sandstone and occasional ceramic pipe fragments.

Made ground underlying the topsoil and hardstanding was generally described as a clayey ashy gravelly sand/ sandy gravel. Gravel of charcoal, brick, concrete, granite, clinker, slag, charcoal, ceramics, sandstone, limestone, burnt wood, rope, rebar, coal and kerbstone.

Hydrocarbon odour was encountered in one location (TP112) from 0.7-1.2m bgl.

Natural material encountered beneath the made ground was generally described as soft to firm becoming stiff with depth, sandy gravelly CLAY overlying dense to very dense SAND.

Groundwater

No groundwater strikes were observed during the intrusive investigation.

Groundwater seepages were observed in two (2No.) locations between 1.25-2.08m bgl.

Subsequent groundwater monitoring visits identified resting groundwater levels between 4.65—7.16m bgl.

Ground Gas

Two (2No.) ground gas-monitoring visits were undertaken from the 15th-21st March 2016. The results did not identify methane above the limits of detection. A maximum

carbon dioxide concentration of 3.3% v/v was recorded and flow rates were not recorded above the limits of detection

A preliminary calculation of the hazardous gas flow rate was estimated to be 0.0033 l/hr based on the previous data, giving a Gas Risk Situation 1 (CS1) 'Very Low' Hazard potential.

Contamination Assessment – Soil

Soil chemical analysis results were compared against assessment criteria current at the time of the site investigation for land under a commercial/industrial end use. The analysis concluded that none of the analytes exceeded the assessment criteria.

Soil chemical results of the March 2016 site investigation, have been reassessed against current LQM CIEH (2015) 'Suitable for Use Levels for Human Health Risk Assessment' (S4ULs). Where no S4UL is available, the analytical results have been compared against CLEA (2009) Soil Guideline Values (SGVs) and CL:AIRE Category 4 Screening Levels (C4SLs). EIC/AGS/CL:AIRE (2009). The specific S4UL, SGV and C4SL criteria used for comparison purposes with soil analysis results correspond to values for land under a 'commercial/industrial' end use scenario.

The specific criteria for soil analysis results correspond to values for land under a commercial/industrial end use for material with an average Soil Organic Matter (SOM) of 1%.

Cyanide (Free, Total & Thiocyanate)

Thiocyanate and cyanide (total) were recorded at maximum concentrations of 5.2mg/kg and 2.5mg/kg, respectively. No assessment criteria are currently available for these contaminants in soils.

Metals and Metalloids

None of the metal/metalloid determinands were recorded at concentrations exceeding their generic assessment criteria.

Total Petroleum Hydrocarbons (TPHs)

None of the individual hydrocarbon fractions were found to be above their respective assessment criteria.

Polycyclic Aromatic Hydrocarbons (PAHs)

All PAH species within the soil samples were within their respective guideline values for the proposed industrial end use and in most cases, were found below the limits of detection

Phenols

All phenol determinations were below the laboratory limit of detection.

Contamination Assessment – Groundwater

Groundwater chemical results were compared against assessment criteria current at the time of the investigation. The assessment noted exceedances of cadmium, nickel, lead and selenium and evidence of hydrocarbon contamination on the eastern and south-eastern sections of the site with a maximum concentration of 9700ug/l, exceeding the UK DWS of 10ug/l.

Groundwater analysis results of the March 2016 site investigation have been reassessed against Environmental Quality Standards (EQS)⁷ for Inland Surface waters⁸, freshwaters⁹ and/or water intended for human consumption¹⁰ and UK Drinking Water Standards (DWS)¹¹. Where a range of EQS values is provided, the concentration used for comparison purposes is generally dependent upon the water hardness of the area – 5.41 degrees Clark (77.1mg/l CaCO₃) for the Llowyn Onn gravity Zone (Supply Zone Z08)¹².

Cyanide (Total, Free and Thiocyanate)

Cyanide was not recorded above the laboratory limits of detection,

Metals and Metalloids

Exceedances of Nickel (above 20ug/l) were recorded in all samples, ranging from 23-38ug/l. Exceedances of Selenium (above 10ug/l) were recorded in groundwater samples taken from BH2a, concentrations ranges from 1.9-97ug/l across all samples.

All other metals/metalloids were found to be below their respective guideline values.

Total Petroleum Hydrocarbons (TPHs)

TPHs were found to exceed the guideline value of 10ug/l ranging from <10-9700ug/l across the site. The hydrocarbon footprint consisted of medium to heavy range aliphatic and aromatic hydrocarbons (C16-C44).

Samples from the first monitoring round identified exceedances in both locations. In the subsequent monitoring visit, TPHs were not recorded above the laboratory limits of detection.

Polycyclic Aromatic Hydrocarbons (PAHs)

None of the individual PAHs were identified above the laboratory limits of detection.

Phenols

Samples from the first monitoring visit identified Total phenols ranging from 0.040-0.15mg/l, exceeding the EQS annual average for freshwater of 30ug/l. Water samples taken from the second monitoring visit, did not identify Total Phenol above the laboratory limits of detection.

⁷ European Parliament. (2008) Directive 2008/105/EC of the European Parliament and of the Council on environmental quality standards.

⁸ The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

⁹ Environment Agency. Surface Water Abstraction Directive (75/440/EEC) and Environmental Quality Standards List 1-2, EC Dangerous Substance Directive (76/464/EEC).

¹⁰ European Parliament. (2015) Council Directive 98/83/EC Quality of water intended for Human Consumption.

¹¹ Water Supply (Water Quality) Regulations 1989 (SI 1989/1147) as amended and Water Supply (Water Quality) Regulations 2000 (SI 2000/3184) as amended.

¹² Severn Trent Water (2019) 'My water quality' Available at: <https://www.hdcymru.co.uk/my-services/water-quality/check-my-water-quality/>

Conclusion

Based on the observed contaminant concentrations in the groundwater and soils, and level of ground gas recorded, it was regarded as a Moderate risk that harm could arise to human health and environmental receptors arising primarily as a result of historic activities.

It was considered that the proposed activities of the Maelor Poultry facility would pose a low to moderate risk of harm to sensitive receptors.

Recommendations

The report recommended further rounds of ground gas monitoring and basic protection measures for site workers whilst redevelopment works were to be undertaken.

It was also recommended that high specification service supply pipes were likely to be required for the proposed redevelopment.

Any arisings created as part of the redevelopment works would need to be characterised in order to dispose of them into a suitable licensed landfill.

4.0 CURRENT PERMITTED ACTIVITIES

Under the permit in which Maelor Foods Ltd currently operates (EPR/AB3591ZQ), the following activities outlined in Table 1 are included in Schedule 1 of the permit: The current permit has been included as Appendix 3.

Table 1. Activities outlined in Schedule 1 – Operations of permit AB3591ZQ

Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
S6.8 A1 (b)	Slaughtering of animals at a plant with a carcass production capacity of more than 50 tonnes per day	From receipt of live chickens to delivery of carcasses for meat processing. Limited to 1 million birds per week.
S6.8 A1 (d)(i)	Treating and processing of animal raw materials intended for the production of food with a finished product production capacity of more than 75 tonnes per day.	From receipt of carcasses to dispatch of final products. Limited to 158 Tonnes per day.
S5.4 A1 (a)(i)	Disposal of non-hazardous waste in a facility with a capacity of more than 50 tonnes per day by biological treatment.	Biological treatment of effluent produced within the site through to discharge of treated effluent to the River Dee. Limited to 1,500m ³ per day.
Directly Associated Activities		
Odour abatement plant	Chemical scrubber treating air extracted from odorous parts of the S6.8 A1 (b) process.	From extraction of air to release of air to atmosphere via exhaust stack.
Chemical storage	Storage of chemicals for use on site	Temporary storage of chemicals necessary for operation of the installation.
Refrigeration plants	Chilling of carcasses and processed meats	From receipt of slaughtered birds to despatch of final products
Water heating	Burning fuel in a combustion plant to heat water.	Heating of water in four gas fired boilers, three with capacities of 1.1MW and one with a capacity of 0.38MW
Waste arisings handling and storage	Temporary storage of wastes on site prior to removal.	From production of waste to removal from site.

Table 2. Permitting Changes

Changes to the activity	
Have there been any changes to the activity boundary?	<p>Yes – Proposals include the incorporation of land to the south ('the site') of the existing Maelor Foods Facility into the existing permit. It is proposed to use the site as a parking area for HGV's carrying livestock.</p> <p>The existing installation comprises a site area of approximately 5.7ha. The area proposed to be included within the licence is approximately 1.73ha</p> <p>This is not expected to be a significant change to the operation of the permit.</p>
Have there been any changes to the permitted activities?	No
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	No
Checklist of supporting information	<ul style="list-style-type: none"> Figure 4 – Changes to Site Boundary

5.0 PHASE II – ENVIRONMENTAL SITE INVESTIGATION

5.1 GENERAL

Upon instructions from Maelor Foods Ltd an environmental ground investigation was undertaken based on CLR11 (2004) 'Model Procedures for the Assessment of Land Contamination' and carried out in accordance with BS5930 (2015) 'Code of Practice for Site Investigations', Eurocodes 7, BS10175:2011+A2:2017 (2011) 'Investigation of Potentially Contaminated Sites – Code of Practice' based on the requirements of the client unless otherwise stated.

The site investigation works were commissioned with the following objectives:

- To provide a Baseline Condition Study of the plot of land adjacent the existing Maelor Foods facility.
- Provide an assessment of the soils and groundwater from an environmental perspective.
- To monitor ground gas and groundwater levels on-site.

The fieldwork was carried out between the 8th – 9th July 2019 and comprised the following:

- Seven (7No.) window sample boreholes to a maximum of 4m metres below ground level.
- Breaking out of exploratory locations using an excavator.
- Installation of four (4No.) wells to monitor groundwater and ground gas levels.

Prior commencement of works, all service plans as provided by the client were reviewed and the exploratory locations were cleared of services and confirmed as safe to drill by the client. Hand excavated inspection pits were progressed to a maximum 1.2m depth within exploratory locations where doubt existed as to the presence of buried services.

All exploratory hole locations were scanned for buried services using a Cable Avoidance Tool (CAT) and Ground Penetrating Radar (GPR).

Equipment brought onto site was inspected by PBA personnel prior to commencement of the investigation and confirmed as being in a clean, safe and tidy condition free of any leaks of fuel, hydraulic, engine and gear oil.

The soil profile and other significant features were recorded from the materials extracted from each exploratory location as the excavation proceeded. The logging of soils and rocks was undertaken in accordance with BS5930:2015 except where superseded by the soil and rock description methodology in BS EN14688-1(2002), BS EN14688-2(2004) and BS EN14689-1(2003). The exploratory logs with descriptions of the strata encountered are included in Appendix 4.

Details of ground water conditions were noted in all boreholes, where present. Water level observations made at the time of the investigation vary across the site and may not reflect seasonal fluctuations.

5.2 WINDOWLESS SAMPLE BOREHOLES

Seven (7No.) windowless sample holes were excavated across the site area, to a maximum depth of 4.0m below existing ground level (bgl).

A plan showing the location of the exploratory borehole is included as Figure 5. The borehole logs are included in Appendix 4.

The exploratory locations were positioned with the following aims to:

- Provide a greater understanding of the geological sequence at shallow depth underlying the site including the thickness of made ground.
- Investigate and obtain information regarding the quality of the soils across the wider area and identify potential contamination.
- Facilitate installation of groundwater/gas monitoring wells.
- Accessibility/ongoing operations.
- Avoidance of assumed and identified underground services by the utility clearance contractor and plans provided by the client.

Following completion of the in-situ probing the boreholes were excavated using an Archway Competitor 130 windowless sampling rig. Windowless sampling comprises advancing 1.0m steel samplers in to the ground using the tracked windowless sampling rig. Samplers are advanced in to the ground by means of a 63.5kg weight being mechanically lifted and permitted to freefall 750mm on to an anvil connected by steel rods to the top of the sampler. When advanced its full length the sampler is recovered using the hydraulic-powered ram mounted on the mast of the rig or by using an auxiliary jacking system. Removable plastic liners contained within each sampler, ranging from 89mm to 37mm internal diameter, permit a continuous profile of the soil to be described and sampled for subsequent testing. SPT's were carried out approximately every metre.

A PBA engineer was present on-site full time to examine and supervise the excavations. The recovered core liners were split, photographed, logged and sub-sampled for environmental purposes prior to being sealed and clearly labelled. These were transported to the drilling Contractor to enable subsequent sampling and testing for geotechnical purposes. Samples obtained were representative of made ground and natural materials encountered, and where visual or olfactory contamination was identified. Samples were subsequently sent for further laboratory examination, chemical and geotechnical analysis at UKAS accredited laboratories.

The logs including descriptions of the strata encountered can be consulted in Appendix 4. The soil profile and other significant features were recorded based on the cores abstracted from each exploratory hole. Groundwater observations were made during the investigation works (where possible). These observations relate to the time of the investigation only, and do not necessarily reflect seasonal fluctuations.

On completion, 50mm HDPE standpipes were installed in six (6No.) of the exploratory locations to allow for subsequent gas and groundwater monitoring. Additional detail regarding installation depth and response zones is provided in Section 5.6.

On completion, WS3, WS5 and WS6 were backfilled using arisings, whilst monitoring wells were installed in WS1, WS2, WS4 and WS7.

5.3 INSTRUMENTATION AND MONITORING

On completion, monitoring wells were installed within four (4No.) of the exploratory locations for subsequent ground gas and groundwater monitoring. Details of the installations are summarised in the table below, and are included within the exploratory borehole logs (Appendix 4).

The installations were placed with the aim to provide coverage of the site.

Table 3. Installation of Long-Term Monitoring Wells

Exploratory Hole	Response Zone (m bgl)
WS1	2.0 – 4.0
WS2	2.5 – 4.0
WS4	1.5 – 4.0
WS7	2.5 – 4.0

One (1No.) ground gas and groundwater monitoring visit was carried out post completion of the drilling works on the 18th July 2019. No groundwater was encountered.

5.4 CHEMICAL LABORATORY TESTING

Soils

Eleven (11No.) soil samples were taken from the boreholes representative of the made ground and/or natural materials, depending on what was encountered in the excavation or if evidence of contamination was noted. Soil samples were stored within appropriate glass and plastic containers and kept within cool boxes at approximately 4°C. These were then sent within a 48hr-period to a UKAS accredited laboratory to be subjected to a suite of contamination testing which included:

- Metal and metalloid suite, including arsenic, boron and cyanide
- Petroleum hydrocarbons with aliphatic/aromatic speciation by CWG methodology
- Speciated polycyclic aromatic hydrocarbons (PAH)
- Sulphate, sulphide and sulphur
- Free Cyanide
- Asbestos screen – 7No. Samples
- VOC Suite – 7No. Samples
- Organic matter content
- Total phenols
- Soil pH

Certificates for the chemical analysis of soil samples are presented in Appendix 5.

6.0 GROUND CONDITIONS ENCOUNTERED

6.1 GENERAL

On the basis of published geological information and the findings of the investigation, the strata encountered in the exploratory holes included:

- Made Ground
- Weathered Kinnerton Sandstone (clays and sands)

The materials encountered are described in the following sections and strictly relate to the areas investigated. Reference should also be made to the exploratory borehole records (Appendix 4) for further detail on the nature and depth of the strata observed in each exploratory hole.

Made Ground

Made ground was encountered in all exploratory excavations to depths ranging from 1.5-3.2m bgl.

Reinforced concrete hardstanding was encountered in all excavations except WS3, WS6 and WS7 where, to a maximum depth of 0.27m bgl. Rebar was generally noted between 0.10-0.12m bgl.

Blue plastic layer was observed at the base of the concrete hardstanding in WS1.

Made ground in most exploratory locations, except WS1 and WS4, was generally described as a reddish brown to black clayey silty sandy gravel / sandy gravel and was encountered from ground level to 2.7m bgl.

Predominantly cohesive made ground was encountered in WS5, WS6 & WS7 from 0.65-3.2m bgl and was generally described as brown to black silty sandy very gravelly clay.

Made ground encountered in WS1 below the hardstanding comprised yellowish white very sandy gravel. Below which was possible reworked natural material generally described as a brown silty sandy clay / clayey silty gravelly sand.

Made ground was encountered in WS4 between 0.25-1.5m bgl and was described as a greyish red to black clayey very gravelly sand.

Weathered Kinnerton Sandstone (clays and sands)

Natural material was encountered across the site between 1.5m-4.0m bgl and was generally described as soft reddish brown silty sandy CLAY / gravelly fine to medium SAND.

Material encountered in WS5 and WS7 from 3.75m-4.0m bgl was generally described as a light brown slightly clayey sandy GRAVEL.

Greyish blue MUDSTONE cobble was encountered in WS7 at 4.0m bgl.

6.2 GROUNDWATER

No groundwater strikes or seepages were observed during the investigation.

Damp and wet materials were noted across the majority of locations at depths ranging from 1.3m-4.0m bgl within granular made ground and natural strata.

The subsequent monitoring visit did not identify any groundwater.

A copy of the monitoring certificate is included in Appendix 6.

6.3 GROUND GAS MONITORING

One (1No.) ground gas and groundwater-monitoring visit was carried out on 18th July 2019. The results are summarised in Table 4 below, although full details can be consulted in Appendix 6.

Table 4. Ground Gas Monitoring Results - 18th July 2019.

Exploratory Hole	Max CH ₄ (%vol) Steady	Max CO ₂ (%vol) Steady	Min O ₂ (% vol) Steady	Flow Rate (l/hr)
WS1	<0.1	1.5	18.6	<0.1
WS2	<0.1	0.2	20.0	<0.1
WS3	<0.1	0.3	19.9	<0.1
WS4	<0.1	0.2	20.1	<0.1

No Methane was recorded during the monitoring visit. Carbon dioxide concentrations ranged between 0.2%vol and 1.5%vol and a minimum oxygen concentration of 18.6%vol was noted. Recorded gas flow rates were below instrument levels of detection (<0.1l/hr).

7.0 ENVIRONMENTAL ASSESSMENT

7.1 METHODOLOGY

The results of the site investigation work have been assessed utilising a Tier 1 quantitative risk assessment. The risk assessment methodology used is taken from the Environment Agency (EA) R+D Publication 20 '*Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources*'.

The tiered approach acts as a screening process whereby low risk sites are eliminated in order to identify sites that present the greatest environmental risks. The information obtained from the site investigation is used to characterise any contaminant source and subsequently to identify any sensitive environmental receptors and appropriate target concentration at the receptor.

Any requirement for further quantitative analysis or remedial action is based on comparison of the soil and/or groundwater concentrations for each contaminant with current applicable screening criteria. A decision is then made as to appropriate action to be taken which includes: no action, continuation to the next tier assessment or to take remedial action. In a Tier 1 Assessment generic guidelines and screening values are adopted in the first instance as remedial target values as a conservative approach.

The adopted approach currently involves the following stages:

- selection of generic Tier 1 screening criteria
- comparison of measured contaminant concentrations with the generic screening criteria as part of a Tier 1 assessment
- where the Tier 1 screening level is exceeded then the Conceptual Site Model (CSM) is refined to summarise sources of contamination, potential migration/exposure pathways and potential receptors that may exist at the site and could be characterised by significant levels of risk

7.2 ENVIRONMENTAL LABORATORY RESULTS - SOIL

Soil contaminant concentrations determined by the chemical analyses have been compared against LQM CIEH (2015) 'Suitable for Use Levels for Human Health Risk Assessment' (S4ULs). Where no S4UL is available, the analytical results have been compared against CLEA (2009) Soil Guideline Values (SGVs) and CL:AIRE Category 4 Screening Levels (C4SLs). EIC/AGS/CL:AIRE (2009). The specific S4UL, SGV and C4SL criteria used for comparison purposes with soil analysis results correspond to values for land under a 'commercial/industrial' end use scenario. A copy of the assessment criteria is included as Appendix 7, and the soil analysis certificate is included in Appendix 5.

The specific criteria used for comparison purposes with soil analysis results correspond to values for land under a 'commercial/industrial' end use scenario for materials with an average 1% Soil Organic Matter Content for made ground and natural materials.

Metals and Metalloids

None of the metal/metalloid determinands were recorded at concentrations which exceeded their respective assessment criteria.

Total Petroleum Hydrocarbons (TPHs)

A maximum TPH concentration of 120mg/kg was recorded in WS2 on the western part of the site within made ground material (0.2-0.6m bgl).

None of the hydrocarbon fractions was found to be present at concentrations which exceeded their respective guideline criterion protective of human health given an industrial land use. In general, all results were below the laboratory limit of detection.

Polycyclic Aromatic Hydrocarbons (PAHs)

All PAH species within the soil samples were recorded below the laboratory limits of detection

Total Phenols

Total phenol was not recorded above the laboratory limits of detection.

VOCs

None of the VOC determinands tested were recorded above the laboratory limits of detection.

Asbestos

Asbestos was identified within made ground in two (2No.) locations on the central and eastern portions of the site (WS3 and WS6).

In WS3, a sample from 0.3-0.5m bgl identified chrysotile fibres/clumps and a sample from WS6 (0.65-1.0m bgl) identified chrysotile in the form of lagging. Subsequent asbestos semi-quantification via gravimetry was performed. The following table summarises the results.

Table 5. Summary of Laboratory Results

Location	Asbestos	Semi Quantification Analysis (%)
WS3 (0.3-0.5m bgl)	Chrysotile (Fibres/clumps)	0.004
WS6 (0.65-1.0m bgl)	Chrysotile (Lagging)	0.17

Supporting Information	Appendix 4. Exploratory Borehole Logs Appendix 5. Soil Analysis Certificates Appendix 6. Ground Gas Monitoring Certificate Appendix 7. Soil Guideline Values
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8.0 CONCEPTUAL SITE MODEL

For the assessment of land contamination, a Conceptual Site Model (CSM) is developed to identify the key sources of contamination, potential migration and exposure pathways and sensitive receptors which could be adversely affected. The CSM takes into account the hydrogeological conditions at the site and within this context aims to evaluate the significance of each pollutant pathway in accordance with Part IIA Environmental Protection Act 1990 (as amended 2012).

8.1 IDENTIFIED CONTAMINATIVE ISSUES AND SOURCES

According to DEFRA (2012)⁴, a contaminant is “a substance which is in, on or under the land and has the potential to cause significant harm to a relevant receptor, or to cause significant pollution to controlled waters”. This section lists the potential contaminants which may have arisen in soil and groundwater as a result of historic and/or current activities. The hazards are assessed according to the magnitude of their potential consequences (severity) when reaching a receptor, as described in CIRIA C552 report (2001)¹. This is known as environmental harm and can be classified as minor, mild, medium or severe. These classifications are defined in Appendix 8.

Historic Uses

The site and its immediate vicinity have a history of industrial use. The site itself was used as a creamery since the 1930's which extended further to the east and north. By the 1970's, an Effluent Treatment Plant was installed off-site on the eastern boundary, and was expanded in the following decades. A Specialised Dairy Ingredients facility was established in the 1980's for the manufacture of lactose and manufacture of delactosed whey concentrate. By 2002, this unit was demolished. It is understood operations at the facility ceased in 2012 and since 2017, the site has been operating as a process facility for poultry products.

Approximately 100m north of the site the Wrexham and Ellesmere Railway line ran towards the north / north-east of the site. Two associated railway sidings were present on the eastern part of the site. These features are believed to have been dismantled in the late 1970's.

Ground Investigation

The ground investigation identified made ground to a maximum depth of 3.2m bgl which was highly variable across the site but was mainly described as granular in nature. Most contaminants of concern either complied with their respective assessment criteria protective of human health and groundwater under a commercial/industrial scenario or were below the laboratory limits of detection, with the exception of Asbestos.

Chrysotile in the form of fibres/clumps and lagging was identified in made ground at two (2No.) locations WS3 and WS6, respectively. Further semi-quantification analysis identified chrysotile in WS3 at 0.004% and in WS6 at 0.17%.

Groundwater was not identified during the initial site investigation or the subsequent monitoring visit.

Based upon the nature of the materials encountered and all available information to date, it is anticipated that **medium** harm could arise to human health receptors based on the asbestos identified within made ground materials on the site.

It is anticipated that as groundwater was not encountered in any of the locations on site and that concentrations of all contaminants except asbestos, were found to be meet their respective assessment criteria, that **Mild** Harm could arise to sensitive water receptors from the ground conditions encountered.

Proposed

It is proposed to vary the permit to include the site (plot of land immediately south of the Maelor Foods Facility) into the permit, which is currently in operation, EPR reference number: AB3591ZQ. It is proposed to use the site as a parking area for HGV's carrying livestock.

It is understood that there will be no storage of raw materials or waste and no additional raw materials will be created as a result of the variation.

It is anticipated that pollution risks associated with the proposed plan would be diesel oil for road vehicles (DERV) from HGV fuel tanks. To support the proposed plans, a renewed surface water drainage scheme that would feed into the existing surface water drainage system and oil interceptors, is proposed to be implemented. Updated drainage plans are included as Figure 6.

A recent drainage survey was carried out on the 21/08/19 which identified issues with the existing drainage runs present on the site. The report has been included as Appendix 9.

8.2 PROTECTIVE MEASURES AND SURVEILLANCE

It is acknowledged that as part of the environmental permit in which Maelor Foods Ltd currently operates, the facility is required to undertake continuous and weekly monitoring for point source emissions to water (other than sewer) and land, as outlined in Schedule 1. This has been summarised below.

Table 6. Point source emissions to water (other than sewer) and land

Reference Point	Source	Parameter	Limit	Reference Period	Monitoring Frequency	Monitoring Standard or method
W1*	Effluent Treatment Plant, treated effluent	Max Daily Volume	1500m ³ per day	Daily	Continuous flow monitoring	MCERTS
		Mean Daily Volume	1200m ³ per day	Per Annum	Continuous flow monitoring	MCERTS
		Biological Oxygen Demand	20 mg/l	Flow proportional daily composite	Weekly (unless otherwise agreed in writing NRW)	BS EN 1899-1
		Total Suspended Solids	30 mg/l			BS EN 872:2005
		Ammonia as N	5 mg/l			BS EN 11732:2005
		Phosphate as P	2.5 mg/l			BS EN ISO 15681-1:2004
		pH range – Minimum to Maximum	6 to 9	Continuous	Continuous	MCERTS
		Temperature	30°C	Continuous	Continuous	Standard Temperature Sensor
		Visible oil and grease	None Visible	Instantaneous	Weekly	Visual
W2*	Uncontaminated surface water runoff from clean yards and roofes	Visible oil and grease	None Visible	Instantaneous	Weekly	Visual
W3*	Uncontaminated surface water runoff from clean yards and roofes	Visible oil and grease	None Visible	Instantaneous	Weekly	Visual
* Location can be viewed in Figure 7.						

Maelor Foods existing Risk Assessment Register and Aspects and Impacts Register has been updated to include potential water and land contamination associated with the proposed HGV movements on-site. The updated sections have been included in Appendix 10.

Drainage

Current drainage plans include surface water (rainwater), Domestic Waste and Trade Effluent Treated water which flow west to east parallel to the northern site boundary. Trade Effluent Treated water flows to the Effluent Treatment Plant (ETP) noted off-site to the east before discharging to the River Dee at point W1, as indicated on Figure 7.

The site drainage discharges via two (2No.) surface water sewers into the surface water culvert at point W2, to the southeast, and W3 south of the site, as noted on Figure 7. These points join the land drainage system to the south of the site, flowing west, then south before joining the River Dee further downstream.

Recent drainage surveys undertaken 21/08/19, indicate drainage will need to be renewed prior to operation of the site as an HGV parking area. Drainage on-site has not been used for a significant period of time as it has become blocked/ broken in places. The drainage report has been included within Appendix 9 and associated survey plan is included as Figure 8.

Details provided by the client and its consultants suggest that surface water drainage on site will be updated as per Figure 6. The western part of the site will have renewed storm water drainage that will feed into the existing surface water drainage system, discharging at points W2 and W3.

It is proposed to install new pipework for the domestic waste from a building on the western portion of the site. This will then be connected to the main domestic waste system, off-site, in the main office block which will then go through the septic tank and then to W2.

The Factory Effluent channel noted running parallel to the northern site boundary, flowing east, will connect to the Effluent Treatment Plant (ETP) before discharging to point W1, to the River Dee.

It is understood there will be no direct or indirect fugitive emission points to land as no additional activities will be undertaken on the site.

In addition, the site is proposed to be completely surfaced in impermeable hardstanding surfaces and it is anticipated that the surface water drains will feed into the existing system, passing through existing oil interceptors.

Please see attached Risk Assessment Register and Aspects & Impacts Register, included as Appendix 10.

Weekly visual checks of drainage outlets will be performed. External areas where spillages could occur, will drain through oil interceptors with shut off facilities. All site infrastructure is inspected and maintained on a regular basis and no underground pipes or sumps are installed on-site.

Records will be kept of the site drainage, interceptors and surfacing maintenance schedule and inspection.

Spillages

The facility's operating and emergency procedures will cover safe handling of materials associated with HGV parking, i.e. DERV, Adblue etc. and will implement measures to take if a spillage occurs. The Risk Assessment Register is included as Appendix 10.

Spill kits will be available at key locations around the site and should a major spillage occur, this will be dealt with in accordance with the facility's emergency response procedures.

DERV will be stored safely and securely in drums/IBCs and Diesel and ad-blue will be stored in bunded tanks in accordance with Oil Storage Regulations.

The Site Drainage Plan will be held with the Emergency Management Plan to ensure any spillages can be quickly isolated and prompt and effective remedial action taken.

8.3 IDENTIFIED CONTAMINANTS AND SOURCES

The chemical analysis results carried out on samples from the made ground and natural materials from the site, did not identify any soil contaminant concentrations above the current generic assessment criteria for a proposed commercial end use except for asbestos.

Asbestos was identified in two (2No.) samples of near surface made ground (0.3-1.0m bgl) comprising chrysotile fibres/clumps and lagging. Subsequent semi-fibre quantification identified between 0.004-0.17% by gravimetry.

As asbestos lagging (chrysotile) has been identified in the made ground, any work which may disturb the asbestos, would be classed as licensable, and as such must only be carried out by a licensed contractor and must comply with the 'Control of Asbestos Regulations (CAR) 2012'.

No groundwater was found in any of the monitoring locations.

Based on the findings of the investigation, it is considered that 'medium' harm could arise to future site users (human health receptors) from the asbestos identified within near surface materials. It is anticipated that 'mild' harm could arise to nearby sensitive water receptors from the environmental quality of the soils on-site.

8.4 RISK ASSESSMENT

Under the terms of the Environment Act 1995, a plausible pollutant linkage must exist to link the source to the receptors in order for an environmental risk to exist. Once these have been identified the likelihood and severity of each pollutant linkage are considered such that the scenarios of most concern can be addressed. A preliminary assessment of risk is then undertaken using a risk evaluation method, based on an EA/CIRIA scoring system, which aims to categorise the significance of risk in terms of the probability of the receptors being exposed to a given hazard (i.e. high likelihood, likely, low likelihood, unlikely) and the magnitude/severity of the environmental harm resulting from the hazard.

The risk categories are then assessed based upon the consequence vs. probability assigned to each scenario, in accordance with guidance originally produced by the DETR. These categories are outlined in Appendix 8.

The identified pathways and receptors with assigned risk categories are described in Table 7 below. Further details on receptor types can be found in Tables 8 and 9, of the DEFRA (2012) Contaminated Land Statutory Guidance⁴.

Table 7. Potential Sensitive Receptors and Likelihood of Exposure

Pathway	Receptor	Harm	Probability	RISK
Direct contact, ingestion and Inhalation of dust/soil	Site Users	Medium	Likely – Asbestos has been identified on the eastern part of the site, within near surface material, 0.3-1.0m bgl, which is likely to be disturbed during any redevelopment / maintenance works	M
Ingestion and Inhalation - dust/asbestos/soil	Adjacent users	Medium	Likely –dust is likely to be generated during any redevelopment / maintenance works allowing for subsequent inhalation of dust/asbestos/soil.	M
Direct contact, ingestion and inhalation of contaminated dust/soil during any maintenance works requiring the ground to be broken	Construction / Maintenance Workers	Medium	Likely – Ground workers would be in direct contact with potentially impacted materials during groundworks/redevelopment or maintenance works. This could be reduced via the use of appropriate PPE and mitigation measures.	M
Surface runoff of contaminated water	River Dee (120m south)	Mild	Low – It is anticipated that the current surface water drainage system in place would capture any surface water fun-off.	L
Lateral migration of near surface water			Low – due to the distance to the River Dee and no groundwater was encountered during the investigation.	L
Vertical migration of contaminants through the soil profile	Secondary A (Superficial) Principal (Bedrock)	Mild	Low - no soil source of contamination was identified during the site investigation and the site is covered mainly in hardstanding surfaces, limiting the vertical migration of meteoric waters.	L
Migration of vapours/gases into building/service runs and subsequent inhalation/explosion	Future site users	Mild	Low – gas-monitoring visit did not identify methane or gas flow rates above the limits of detection and a maximum CO2 concentration of 1.5 %v/v was identified; therefore, the underlying materials are expected to have a low gas generation potential. It is recommended that additional ground gas monitoring rounds be carried out to confirm the above, in accordance with CIRIA C556.	L
	Construction/ maintenance workers			
Concentration of gases in exploratory holes and/or excavated trenches	Construction/ Maintenance Workers	Mild	Low – gas generation potential of near surface materials is expected to be low, and materials are predominantly granular in nature. It is recommended that additional ground gas monitoring rounds be carried out to confirm the gas generation potential of the underlying materials, in accordance with CIRIA C556.	L

KEY

M – Moderate

M/L – Moderate to Low

L - Low

Based on the comparison of the magnitude of the harm and the likelihood that a contaminant pathway would be established, it is considered a '**Moderate Risk**' that harm could arise to human health from the asbestos identified within the made ground, during any redevelopment/ maintenance works. This assumes appropriate PPE/RPE is used by construction/maintenance workers and continuous monitoring of site activities and waste materials is undertaken.

In accordance with a '**Moderate Risk**' classification (CIRIA 522), it is possible that harm could arise to a designated receptor from an identified hazard. However, if it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Some remedial works may be required in the longer term.

It is regarded as a '**Low Risk**' that harm could arise to environmental or sensitive water receptors from the contaminative issues identified on-site, as a result of current, historic and off-site activities. Assuming continued monitoring of site activities, waste material generated and monitoring at discharge points.

In accordance with a '**Low Risk**' classification based on CIRIA C552, it is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

As the proposal does not constitute a significant change to the operating procedure of the facility to the north, it is anticipated there is a '**Low Risk**' of harm to sensitive receptors, from the proposed inclusion of the site, into the permit in which Maelor Foods Ltd currently operates.

8.5 RECOMMENDATIONS

Whilst no specific remedial measures are anticipated to be required to protect human health, environmental receptors or controlled waters, based on the findings of the ground investigation, the following recommendations are recommended to confirm the suitability of the site.

- Carry out at least three (3No.) additional ground gas monitoring visits. A full monitoring regime must be carried out in order to adequately characterise the site and its potential for ground gas production in accordance with CIRIA C556.
- Due to the presence of asbestos pipe lagging in the made ground, any work which may disturb the asbestos, would be classed as licensable work and as such, must only be carried out by a licensed contractor and must comply with the 'Control of Asbestos Regulations (CAR) 2012'.
- Waste characterisation of stockpiles and all potential arisings, in accordance with WM3, of material across the site, and subsequent disposal at a suitable and licensed facility.
- Use of appropriate PPE and good hygiene standards by construction/maintenance workers.
- Ground workers should be briefed for the potential presence of unexpected contamination and/or asbestos containing materials which may be encountered during any future development.

- Site workers to be vigilant of unexpected ground conditions or asbestos containing materials which may be encountered during any future development.

As with any site, other areas of contamination, or more significant contamination, not identified during site investigation works, may come to light in the course of any future development. Accordingly, a Discovery Strategy must be in place during any future development to ensure any unknown/unexpected contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to prepare a formal remedial strategy for the site and also characterise any arisings for waste classification purposes.

Further ground investigation works may be required if the development plans vary / are amended from those under which this investigation was originally design and commissioned.

9.0 STATEMENT OF SITE CONDITION

The site has remained largely unused since 2002 when buildings associated with the creamery were demolished. The site is proposed to be incorporated into the Maelor Foods facility immediately north of the site, which has been operating since 2017. The proposed use of the site would be for HGV parking containing livestock.

A site investigation was undertaken on the 8th-9th July 2019 in order to assess the baseline soil and groundwater conditions across the site.

Soils

Made ground materials were recorded on site to a maximum of 3.2m bgl, often granular in nature across the majority of the site. Contaminant concentrations within these materials met the generic assessment criteria protective of human health for land under commercial/industrial use for all contaminants except asbestos, which was identified in two (2No.) locations in the form of chrysotile fibres/clumps and lagging, within the top 1.0m of made ground.

Groundwater

Groundwater strikes were not encountered during the site investigation and groundwater was not identified in the subsequent monitoring visit.

Ground Gases

One (1No.) ground gas monitoring visit was undertaken and the findings record methane and gas flow rates below the limits of detection, and a maximum carbon dioxide concentration of 1.5% v/v.

Risk Summary

Based upon the findings, it is estimated there is a **Moderate Risk** of harm to human health receptors, from the asbestos identified on site. It is anticipated there is a **Low Risk** of harm to nearby environmental and controlled water receptors.

As the proposal does not constitute a significant change to the operating procedure of the facility to the north, it is anticipated there is a **Low risk** of harm to sensitive receptors from the proposed inclusion of the site, into the permit in which Maelor Foods Ltd currently operates.

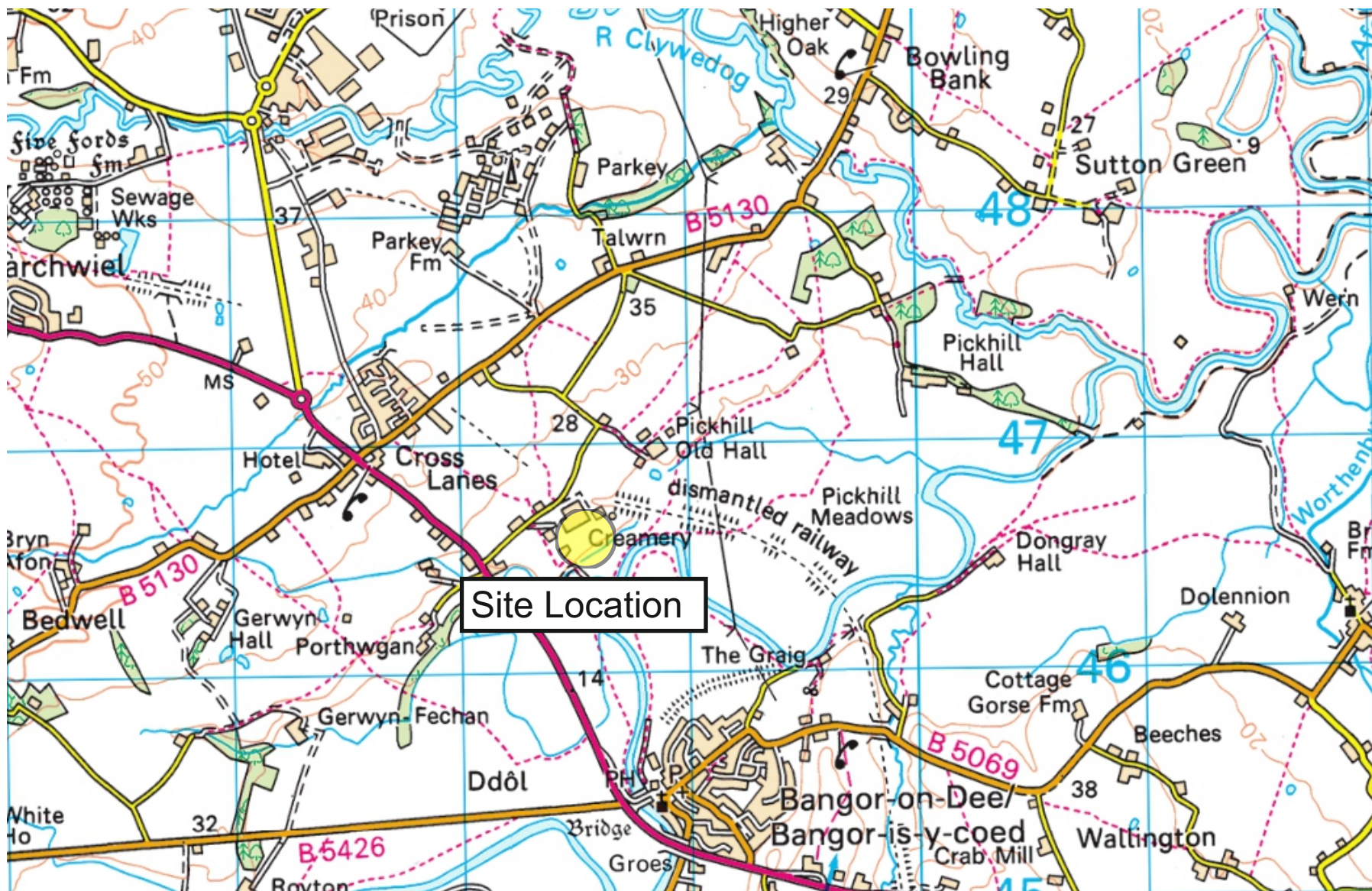
In accordance with a '**Low risk**' classification it is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Pam Brown Associates
October 2019

Terms and Conditions

1. Interpretative assessments are based upon the ground conditions as revealed by trial pits and boreholes, together with the results of any field or laboratory testing, plus other relevant data, which may have been obtained including previous site investigations. Due to the nature of geotechnical or contamination issues, there can be no certainty that any or all such areas will have been located and/or sampled.
2. Should at a future date, any additional information be made available with regard to special conditions associated with the site, the findings may be subject to amendment.
3. Where any data supplied by the client or from other sources, including that from previous site investigations, has been used it has been assumed that the information is correct. However it is always advised that without the appropriate indemnification all data supplied by others should be verified, and no responsibility can be accepted by Pam Brown Associates Ltd for inaccuracies within the data.
4. Whilst an opinion may be expressed on possible ground conditions between or beyond trial pit or borehole locations, or on the possible presence of features based on either visual, verbal or published evidence this is for guidance only and no liability can be accepted for the accuracy thereof.
5. Comments on groundwater conditions will be based upon observations made at the time of the investigation unless otherwise stated. Groundwater conditions may vary due to seasonal or other effects. Where possible an assessment of likely changes will be made for guidance purposes. Additional investigation may be required for confirmation.
6. The quotation has been prepared in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the findings in whole or part after its original submission.
7. The copyright in the written materials shall remain the property of Pam Brown Associates Ltd, but with a royalty-free perpetual licence to the Client deemed to be granted on payment in full to Pam Brown Associates Ltd by the Client of the outstanding amounts.
8. The report is provided for sole use by the Client and is confidential to them and their professional advisers. No responsibility whatsoever for the contents of the report will be accepted to any persons other than the Client.
9. These terms apply (or in addition to another written contract which may be in place instead thereof) unless specifically agreed otherwise in writing.
10. Fees are based on the methods and evaluation stated in this proposal. This fee proposal will be void and a revised fee proposal will be produced if the client alters or requires an alteration to be made to the proposal. This quote will remain valid for three months from the date of this quote
11. The client shall be entitled to use documents prepared by the consultant in the execution of this agreement provided that: i) all fees due to the consultant at that stage have been paid, ii) the use relates only to the project or part of the project for which the material was prepared.
12. If either party to this agreement considers modifications to the project to be necessary, full details must be provided in writing.
13. Fees associated with the acquisition of data, ground investigation, laboratory testing, monitoring, etc. shall be paid in full prior to the final factual and/or interpretive report of the findings is issued. The findings of any investigation and assessment shall remain the property of PBA and may not be able to be disclosed until full payment for the above has been received.
14. Terms of payment are **strictly 30 days** from date of invoice. Payment shall be made via BACS.
15. In accordance with Late Payment of Commercial Debts Regulations (2002), Pam Brown Associates reserves the right to charge interest on any outstanding amount after the payment due date. We reserve the right to charge interest at 3% over bank base rate on overdue invoices.
16. It is the policy of the company to recover all debts, associated costs, and legal fees incurred in so doing.

FIGURES



Pam Brown Associates

Environmental Consultants

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Newborough Road, Needwood
Burton on Trent, DE13 9PD
Tel: 01283 575733
www.pambrownassociates.co.uk

Project:

Land South of Maelor Foods Ltd
Cross Lanes
Wrexham
LI13 0UE

Title:

Site Location Plan

Scale: NTS

Job No.: 1572-16

Figure 1



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Project:

Land South of Maelor Foods Ltd
Cross Lanes
Wrexham
LI13 0UE

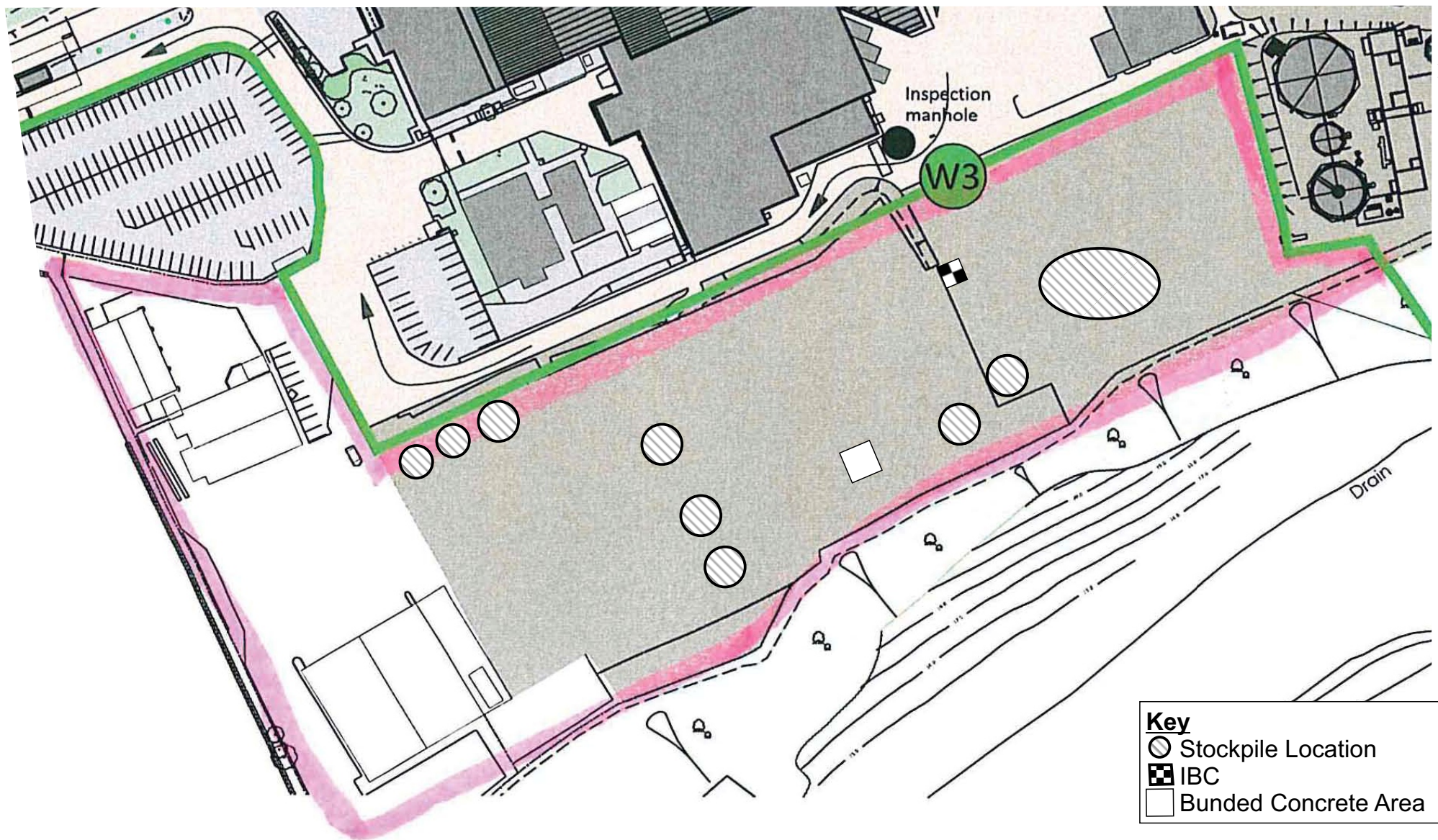
Title:

Current Site Layout

Scale: NTS

Job No.: 1572-16

Figure 2



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Newborough Road, Needwood
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Project:

Mealor Poultry
Pickhill Ln, Cross lanes
Wrexham
LI13 0UE

Title:

Stockpile Location Plan

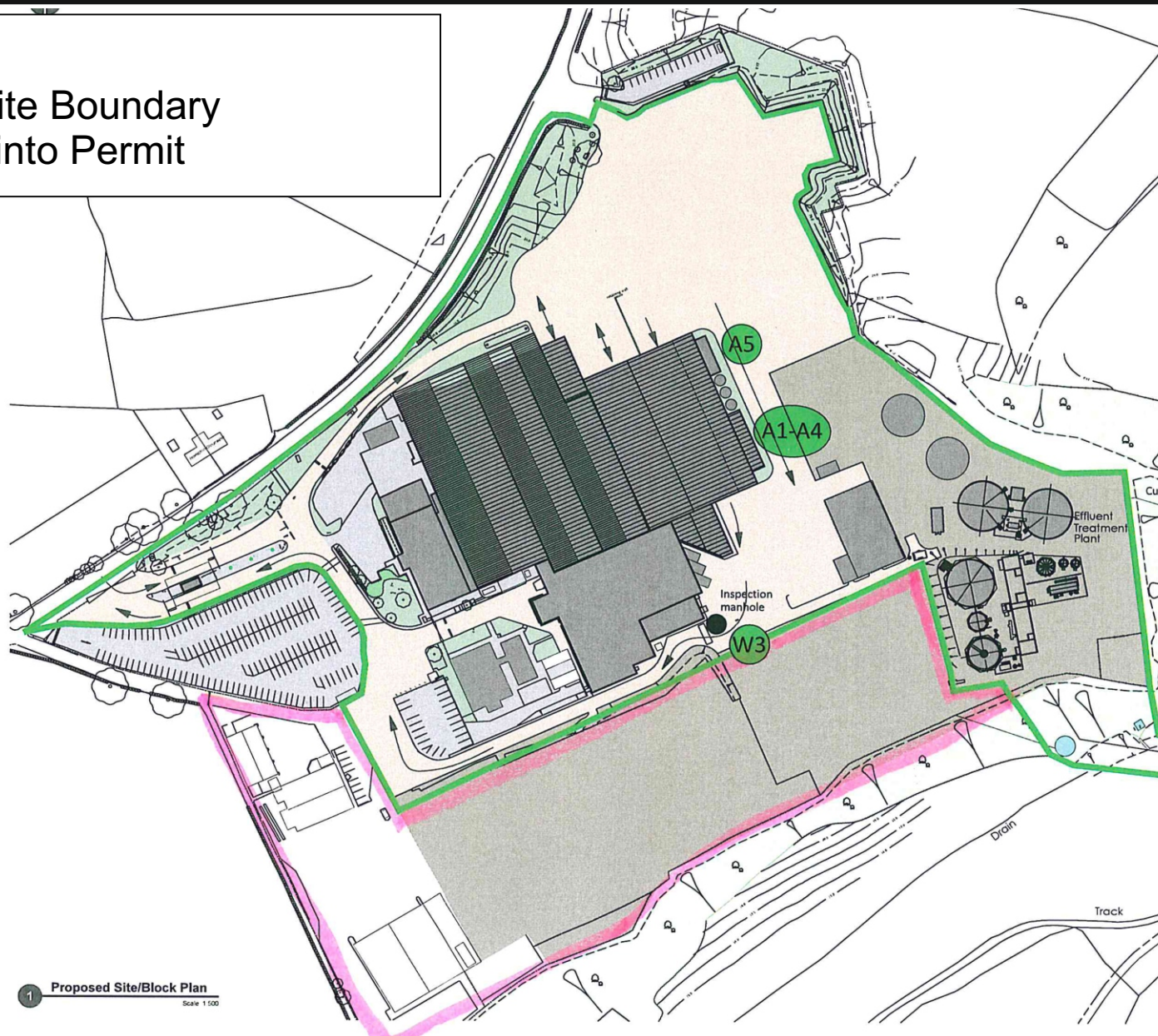
Scale: NTS

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Figure 3

Key

- Current Site Boundary
- Inclusion into Permit



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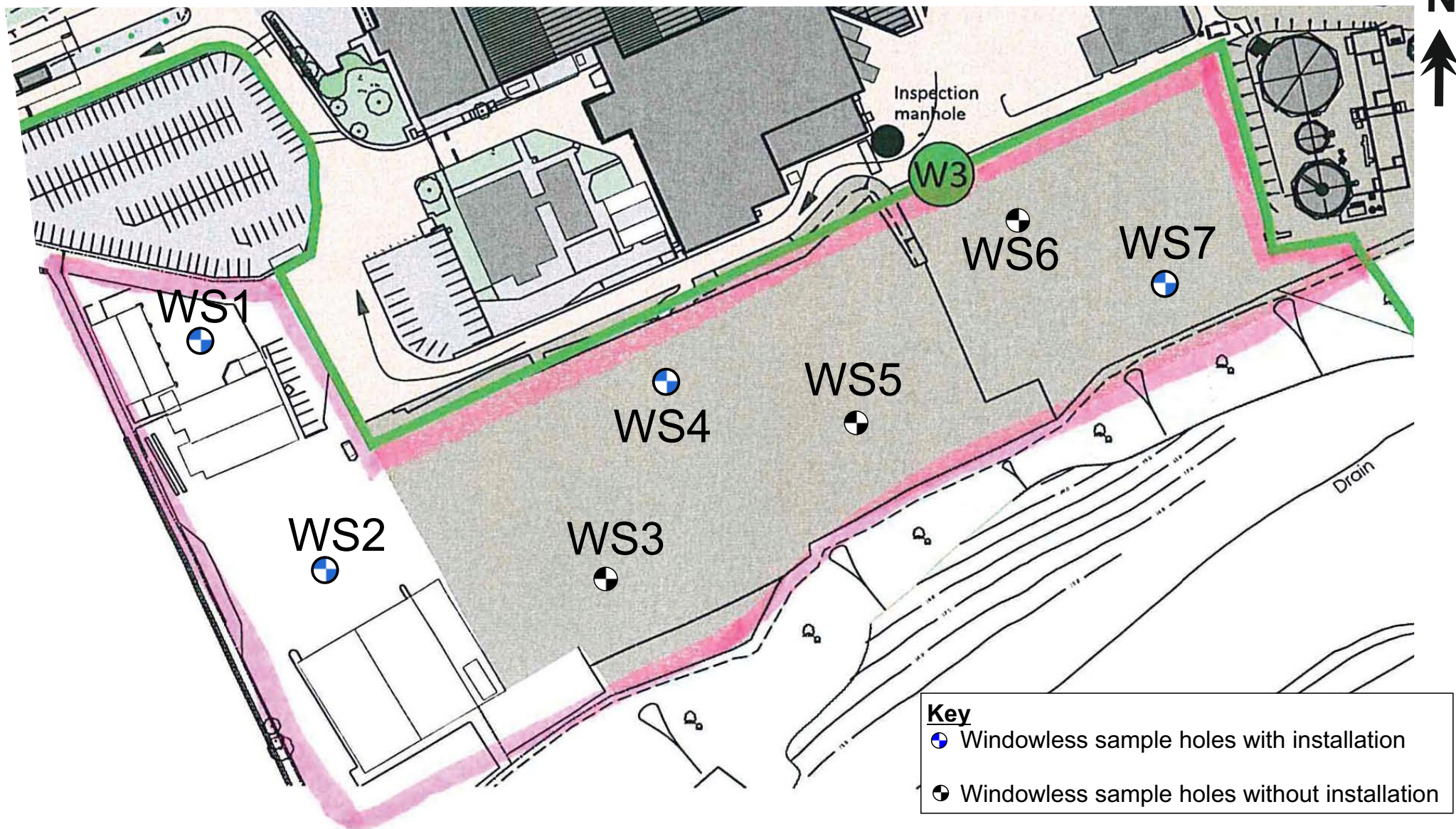
Title:

Changes To Site Boundary

Scale: NTS

Job No.: 1572-16

Figure 4



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Pickhill Ln, Cross lanes
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LI13 0UE

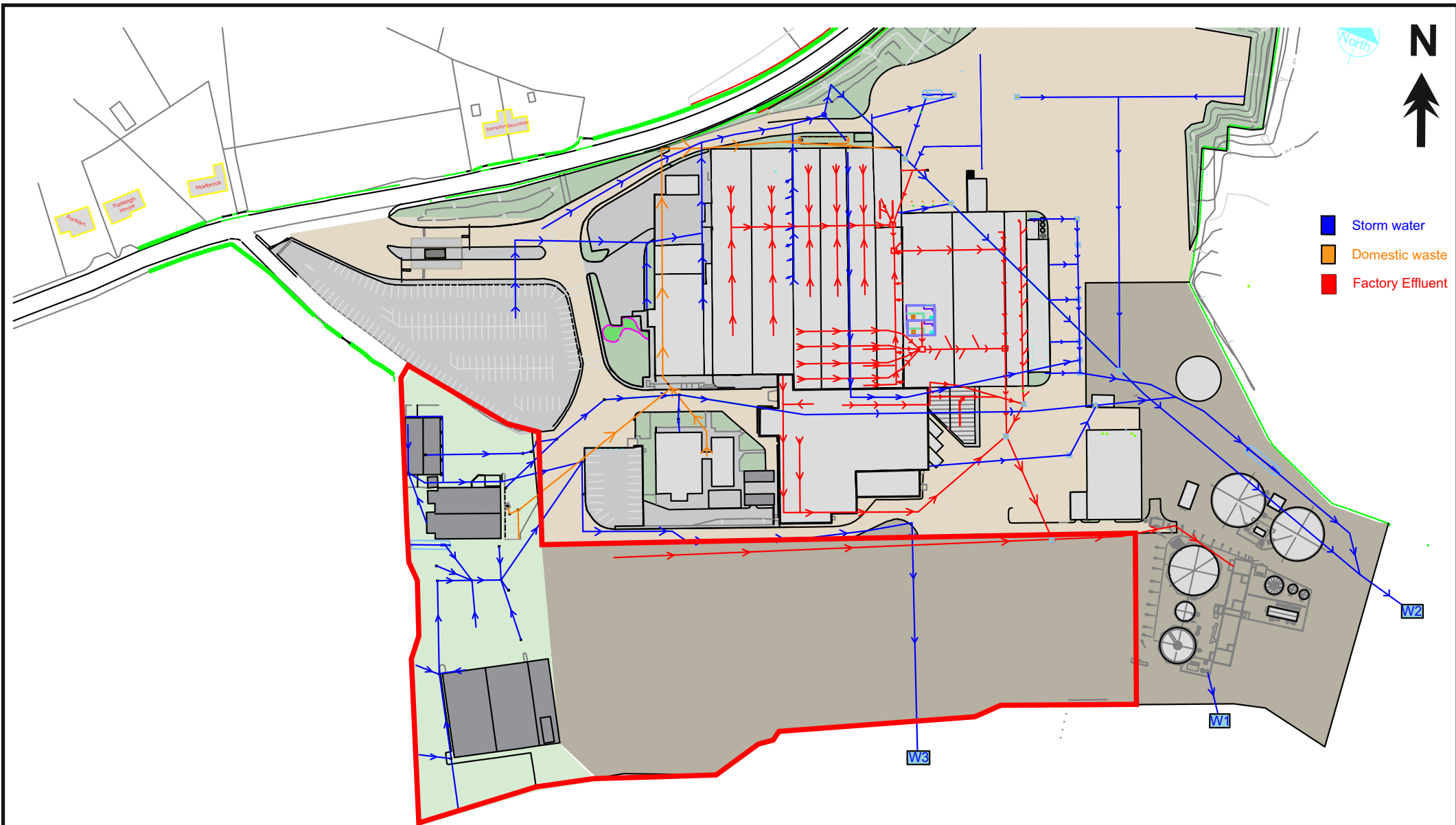
Title:

Proposed Exploratory Hole
Location Plan
(Supplementary Investigation)

Scale: NTS

Job No.: 1572-16

Figure 5



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Project:

Mealor Poultry
Pickhill Ln, Cross lanes
Wrexham
LI13 0UE

Title:

Drainage Plan

Scale: NTS

Job No.: 1572-16

Figure 6



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Project:

Mealor Poultry
Pickhill Ln, Cross lanes
Wrexham
LI13 0UE

Title:

Monitoring Point Location Plan

Scale: NTS

Job No.: 1572-16

Figure 7

APPENDICES

APPENDIX 1

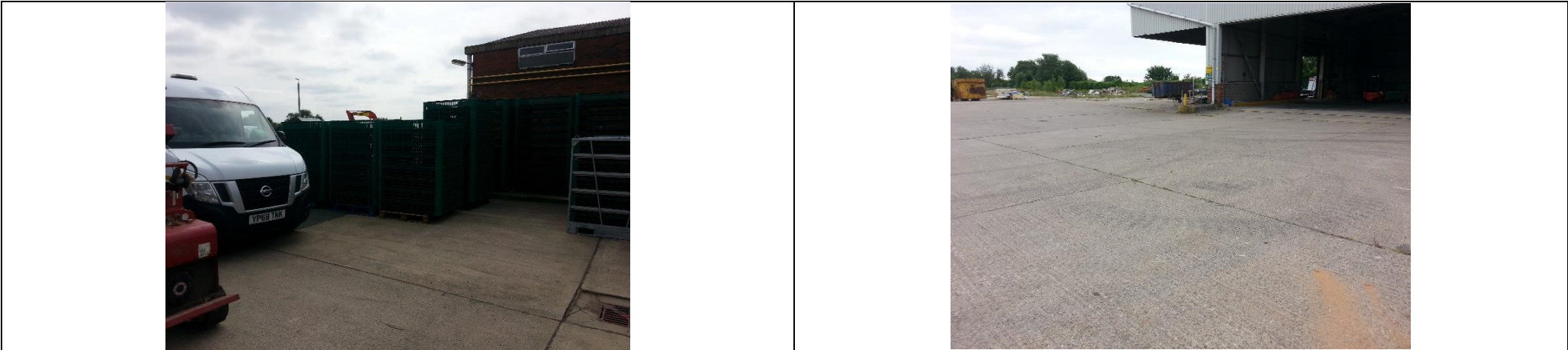


Plate 1. Photo from area around WS1 – Hardstanding in good condition facing south

Plate 2. Photo of current HGV waiting area carrying livestock, near WS2



Plate 3. Showing poor condition of hard standing facing west, near WS3



Plate 4. Showing stockpiles of waste material, heavy overgrowth and poor hardstanding condition facing west, near WS3



Plate 5. Photo of derelict building facing north, near WS2



Plate 6. Showing stockpile of waste material facing southeast, near WS3



Plate 7. Showing poor quality of hardstanding, overgrowth and waste materials facing northeast, near WS3



Plate 8. Showing stockpiles of waste material and growth of vegetation facing west, near WS4



Plate 9. Showing condition of hardstanding surfaces facing northeast, Near WS5



Plate 10. Showing height of retaining wall facing north, near WS6







Plate 11. Showing stockpile on eastern portion of the site facing east, near WS5

APPENDIX 2

Maelor Development Advice

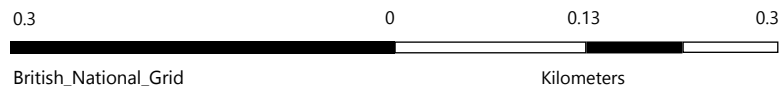
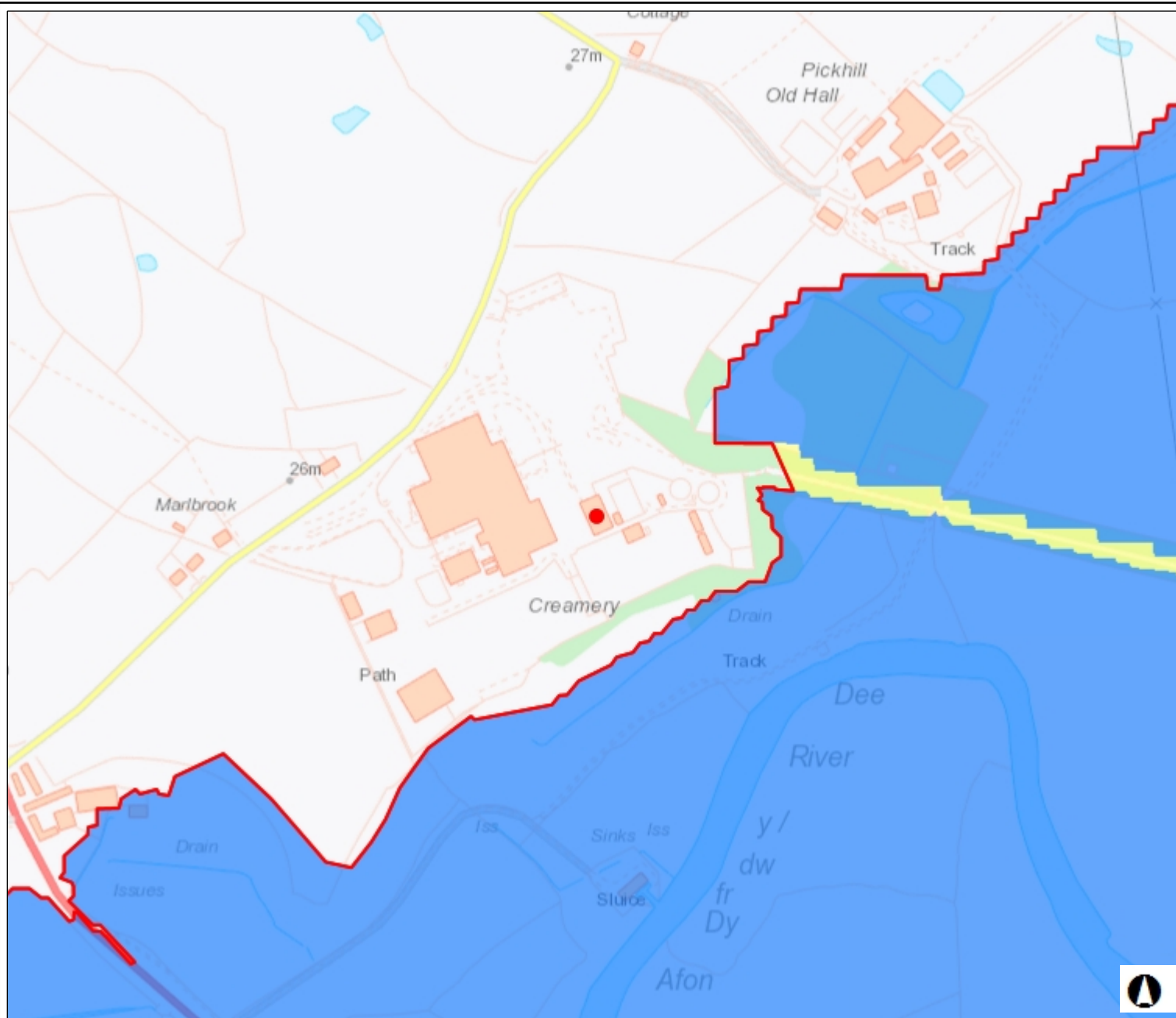
Map Perygl Llifogydd / Flood Risk Map

Allwedd / Map Key

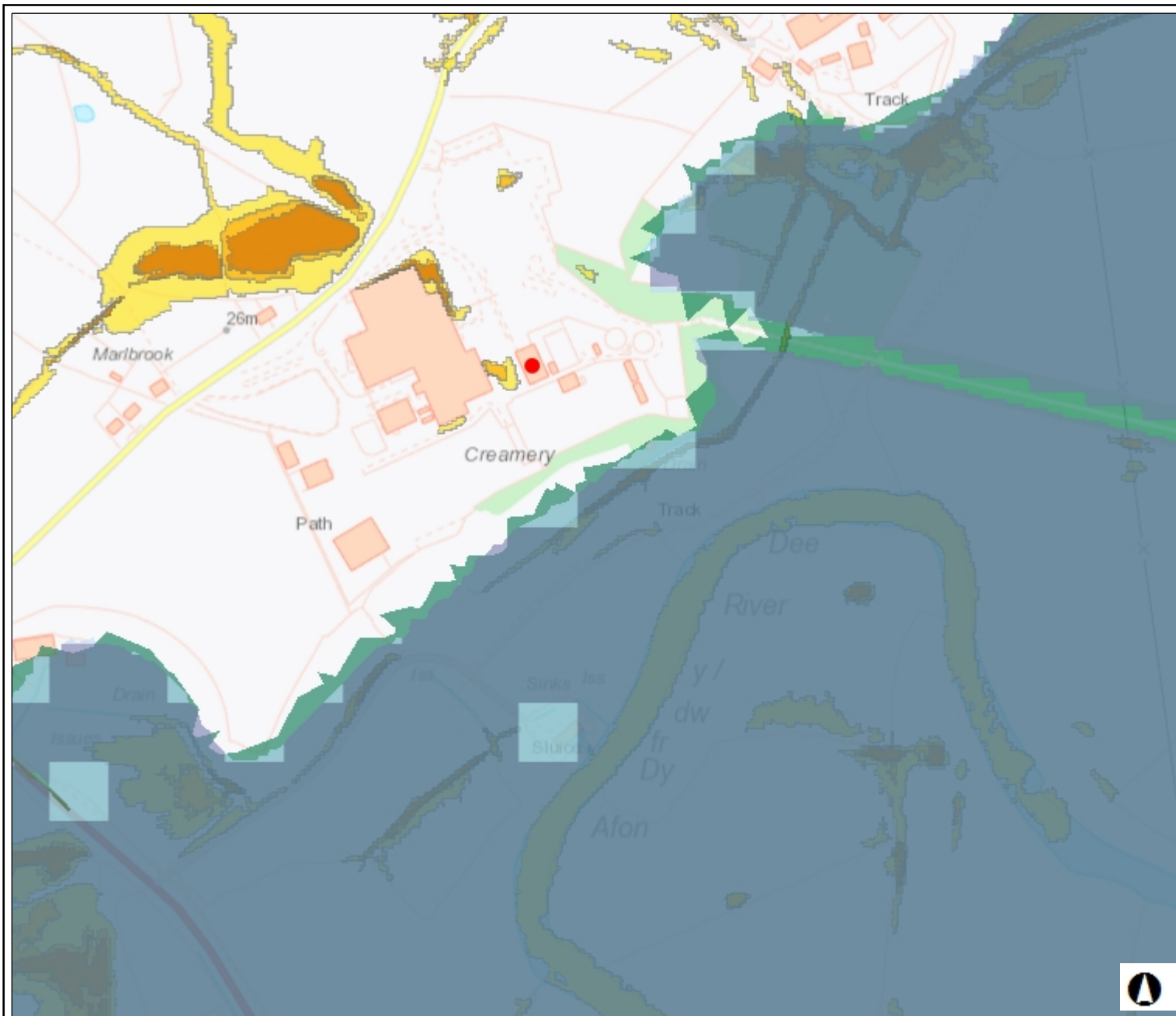
-  Zone C1
-  Zone C2
-  Zone B
-  Zone A

Graddfa / Scale 1: 4,999

Dyddiad / Date
25/07/2019



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Maelor Foods Ltd

Map Perygl Llifogydd / Flood Risk Map

Allwedd / Map Key

— Flood Defences

Risk of Flooding from Rivers & Sea

■ High

■ Medium

■ Low

■ Very Low

■ Risk of Flooding from Reservoirs - Extent

■ Low Surface Water Flood Risk - Extent

Graddfa / Scale 1: 4,999

Dyddiad / Date
25/07/2019

0.3 0 0.13 0.3
British_National_Grid Kilometers

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APPENDIX 3



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Maelor Foods Limited

**Maelor Poultry Processing Plant
Pickhill Lane
Cross Lanes
Wrexham
LL13 0UE**

Permit number

EPR/AB3591ZQ

Maelor Poultry Processing Plant

Permit number EPR/AB3591ZQ

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

This installation is located approximately 4km south east from Wrexham and is permitted for the slaughtering of poultry and meat preparation as well as associated waste effluent treatment. The permitted throughput being 1 million birds per week.

Live birds are delivered to the site in “modules” on HGV lorry trailers. They are unloaded, remaining in the modules into the lairage area. They are then passed into the gas stunning area and are killed, bled, scalded, de-feathered, eviscerated and chilled.

Some birds are packaged for despatch to retail at this stage while the remaining birds pass to the meat processing part of the installation where the products are packaged for dispatch. In the meat processing part of the plant, whole birds will be cut into various portions on automated and manual processing lines, and packaged for dispatch.

The blood tank is emptied and cleaned daily to reduce odour generation. Animal by-products and feathers are stored in trailers within an enclosed building and removed daily. The air from this storage area, the blood tank and de-feathering process is passed through a scrubber to reduce odours before being released from the elevated stack.

Modules and vehicles are washed before leaving the site.

Wash down waters and process effluents flow to the on site effluent treatment plant before being treated and discharged to the River Dee (Approximately half of the treated water is returned to the installation for vehicle and module washing).

Hot water for the process is provided by small scale on site boilers.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application PAN-001271	Duly made 07/02/17	Application for poultry slaughterhouse, meat processing and effluent treatment
Additional information requested	20/03/17	
Additional information requested	07/04/17	

Status log of the permit		
Description	Date	Comments
Additional information received	19/04/17	Further data on odour modelling figures used, odour controls and procedures
Additional information received	26/04/17	Updated Installation plan and further applicable information
Additional information received	05/06/17	Additional information relating to containment, odour control and monitoring at the effluent treatment plant
Additional information received	14/07/17	Layout plan, details of new boilers, H1 assessment
Permit determined	29/08/17	Permit issued to Maelor Food Limited

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number
EPR/AB3591ZQ

The Natural Resources Body for Wales (“Natural Resources Wales”) authorises,
under regulation 13 of the Environmental Permitting (England and Wales)
Regulations 2016

Maelor Foods Limited (“the operator”),
whose registered office is

**Salisbury House
Vulcan Road
Bilston
West Midlands
WV14 7HT**

company registration number 09156025
to operate an installation at

**Maelor Poultry Processing Plant
Pickhill Lane
Cross Lanes
Wrexham
LL13 0UE**

to the extent authorised by and subject to the conditions of this permit.

Signed

Date

	29/08/2017
---	-------------------

Iwan Hughes

Technical Specialist, Permitting Service (Regulated Industry)

Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

- (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.
- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

- 2.3.1
 - (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by Natural Resources Wales.
 - (b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.
- 2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
 - (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.
- 2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by Natural Resources Wales.
- 2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

2.5 Pre-operational conditions

- 2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4A have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
 - (a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.3 The operator shall:
- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
 - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:
- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
 - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.5 Pests

- 3.5.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.
- 3.5.2 The operator shall:
- (a) if notified by Natural Resources Wales, submit to Natural Resources Wales for approval within the period specified, a pests management plan which identifies and minimises risks of pollution, hazard or annoyance from pests;
 - (b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by Natural resources Wales.

3.6 Monitoring

- 3.6.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) point source emissions specified in tables S3.1 and S3.2;
- 3.6.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by Natural Resources Wales.
- 3.6.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1 and S3.2 unless otherwise agreed in writing by Natural Resources Wales.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by Natural Resources Wales.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to Natural Resources Wales using the contact details supplied in writing by Natural Resources Wales.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production/treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by Natural Resources Wales, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to Natural Resources Wales, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

- 4.3.1 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately
- (i) inform Natural Resources Wales,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
- (b) in the event of a breach of any permit condition the operator must immediately
- (i) inform Natural Resources Wales, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
- (c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3. shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.

4.3.4 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

- (a) any change in the operator's trading name, registered name or registered office address; and
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

In any other case:

- (a) the death of any of the named operators (where the operator consists of more than one named individual);
- (b) any change in the operator's name(s) or address(es); and
- (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) Natural Resources Wales shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 Natural Resources Wales shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, Natural Resources Wales shall be notified within one month of:

- (a) a decision by the Secretary of State not to re-certify the agreement;
- (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
- (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “without delay”, in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
S6.8 A1 (b)	Slaughtering of animals at a plant with a carcass production capacity of more than 50 tonnes per day	From receipt of live chickens to delivery of carcasses for meat processing. Limited to 1 million birds per week.
S6.8 A1 (d)(i)	Treating and processing of animal raw materials intended for the production of food with a finished product production capacity of more than 75 tonnes per day.	From receipt of carcasses to dispatch of final products. Limited to 158 Tonnes per day.
S5.4 A1 (a)(i)	Disposal of non hazardous waste in a facility with a capacity of more than 50 tonnes per day by biological treatment.	Biological treatment of effluent produced within the site through to discharge of treated effluent to the River Dee. Limited to 1,500m ³ per day.
Directly Associated Activities		
Odour abatement plant	Chemical scrubber treating air extracted from odorous parts of the S6.8 A1 (b) process.	From extraction of air to release of air to atmosphere via exhaust stack.
Chemical storage	Storage of chemicals for use on site	Temporary storage of chemicals necessary for operation of the installation.
Refrigeration plants	Chilling of carcasses and processed meats	From receipt of slaughtered birds to despatch of final products
Water heating	Burning fuel in a combustion plant to heat water.	Heating of water in four gas fired boilers, three with capacities of 1.1MW and one with a capacity of 0.38MW
Waste arisings handling and storage	Temporary storage of wastes on site prior to removal.	From production of waste to removal from site.

Table S1.2 Operating techniques

Description	Parts	Date Received
Application PAN-001271	Part B2 and B3 of the application and all referenced supporting documents.	07/02/17
Application PAN-001271	Pre-Operational Odour management Plan	07/02/17
Additional information	Section 2 Installation Plan	26/04/17
Response to Schedule 5 Notice dated 20/03/17	Responses to schedule 5 Notice questions	19/04/17
Response to Schedule 5 Notice dated 07/04/17	Responses to schedule 5 Notice questions	19/04/17
Additional information	Additional information relating to containment, odour control and monitoring at the effluent treatment plant	05/06/17
Additional Information	Additional information relating to gas fired boilers to be installed on site	14/07/17

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC1	The operator shall inform Natural Resources Wales of the date of commencement of activity type S6.8 A1 (b)	Within 7 days of commencement of activity S6.8 A1 (b)
IC2	<p>The Operator shall undertake an operational olfactometry survey of all potentially odorous release points from the installation. The survey should quantify the odour emissions and their offensiveness once the site is fully operational and odours have become established. The survey shall include an assessment of the efficiency of the odour abatement plant.</p> <p>The results of the survey shall be used to review the odour impact assessment for the installation.</p> <p>A report on the olfactometry survey and odour impact assessment shall be sent to NRW for approval and shall include proposals, with timescales, for further improvements to reduce odours if the assessment identifies potentially significant offsite odour concentrations at sensitive receptors.</p>	Within six months from the commencement of activity type S6.8 A1 (b)
IC3	Upon completion of IC2 the Operator shall review the odour management plan and submit to NRW	Within three months from the completion of IC2 above

Table S1.4A Pre-operational measures	
Reference	Pre-operational measures
PO1	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System prior to commencement of activity type S6.8 A1 (b)
PO2	The operator shall submit to Natural Resources Wales an updated site drainage plan, showing the as built site drainage and containment for all surface water and effluent drainage prior to commencement of activity type S6.8 A1 (b)

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
None set	None Set

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 to A4 as shown on site plan in Schedule 7	Boiler Plant, Rehema P200 series boiler exhausts (556Kw combined thermal input)	No parameter set	No limit set	N/A	N/A	N/A
A5 as shown on site plan in Schedule 7	Chemical scrubber	No parameter set	No limit set	N/A	N/A	N/A
High velocity roof fans outlets located on the lairage room roof	High velocity roof fans	No parameters set	No limit set	N/A	N/A	N/A
Air outlet from the DAF plant emission vent	DAF clarifier emission vent (after passing through activated carbon filter)	No parameters set	No limit set	N/A	N/A	N/A
Air outlet from sludge tank	Sludge tank emission vent (after passing through activated carbon filter)	No parameters set	No limit set	N/A	N/A	N/A

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 on site plan in schedule 7 emission to River Dee	Effluent Treatment Plant, treated effluent	Maximum daily volume	1,500 m ³ per day	Daily	Continuous flow monitoring	MCERTS
		Mean daily volume	1,200 m ³ per day	Per annum	Continuous flow monitoring	MCERTS
		Biological Oxygen Demand	20 mg/l	Flow proportional daily composite	Weekly (unless otherwise agreed in writing with NRW)	BS EN 1899-1
		Total suspended solids	30 mg/l			BS EN 872:2005
		Ammonia as N	5 mg/l			BS EN 11732:2005
		Phosphate as P	2.5 mg/l			BS EN ISO 15681-1:2004
		pH range minimum to maximum	6 to 9	Continuous	Continuous	MCERTS
		Temperature	30°C	Continuous	Continuous	Standard Temperature sensor
W2 on site plan in schedule 7 emission to drainage ditch, leading to River Dee	Uncontaminated surface water run off from clean yards and roofes	Visible oil and grease	None visible	Instantaneous	Weekly	Visual
		Visible oil and grease	None visible	Instantaneous	Weekly	Visual

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W3 on site plan in schedule 7 emission to Drainage ditch, leading to River Dee	Uncontaminated surface water run off from clean yards and roofes	Visible oil and grease	None visible	Instantaneous	Weekly	Visual

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.6.1	None	None	N/A
Emissions to water Parameters as required by condition 3.6.1	W1	Every 3 months	1 January

Table S4.2: Annual production/treatment

Parameter	Units
Number of chickens slaughtered per week	Number (maximum week in reporting year)
Chicken Products produced per week	Tonnes (maximum week in reporting year)

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Water usage per bird	Annually	Litres/bird
Energy usage per bird	Annually	KWh/Bird

Table S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Water	Form water 1 or other form as agreed in writing by Natural Resources Wales	29/08/17
Water usage	Form water usage 1 or other form as agreed in writing by Natural Resources Wales	29/08/17
Energy usage	Form energy 1 or other form as agreed in writing by Natural Resources Wales	29/08/17
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	29/08/17

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment

To be notified Immediately

Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a permit condition

To be notified immediately

Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) In the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment:

To be notified immediately	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

“accident” means an accident that may result in pollution.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by Natural Resources Wales under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“disposal” means any of the operations provided for in Annex IIA to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit..

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

“MCERTS” means the Environment Agency's Monitoring Certification Scheme.

“pests” means Birds, Vermin and Insects.

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“quarterly” for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

“recovery” means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

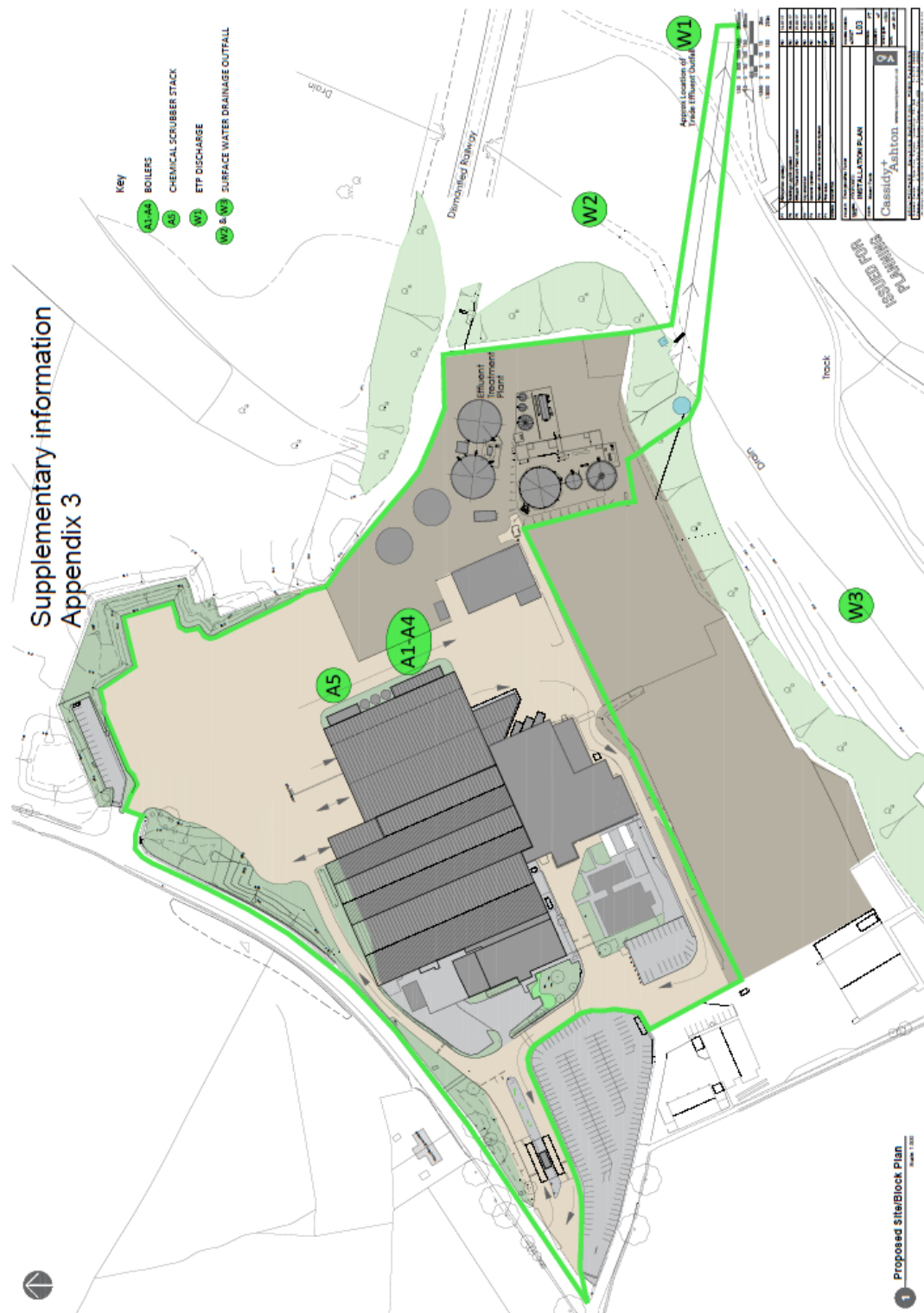
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content

“year” means calendar year ending 31 December.

Schedule 7 - Site plan



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END OF PERMIT

Operator: Maelor Foods Limited

Form Number: Water1 / 29/08/17

Emission							
Emission Point	Substance / Parameter	Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
W1	Flow/volume	1,500 m³ per day	Daily		MCERTS		
W1	Flow/volume	1,200 m³ per day	Per annum (mean daily volume)		MCERTS		
W1	Temperature	30°C	Continuous		Standard Temperature sensor		
W1	Total suspended solids	30 mg/l	24-hour flow proportional sample		BS EN 872		
W1	Ammonia	5 mg/l	24-hour flow proportional sample		BS EN 11732:2005		
W1	Phosphate	2.5 mg/l	24-hour flow proportional sample		BS EN ISO 15681-1:2004		
W1	pH	6-9	Continuous		MCERTS		
W1	BOD	20 mg/l	24-hour flow proportional sample		BS EN 1899-1 (1998)		

- [1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
- [2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with Natural Resources Wales is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
- [3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

Date.....

Permit Number: AB3591ZQ

Operator: Maelor Foods Limited

Facility: Maelor Poultry Processing Plant

Form Number: WaterUsage1 / 29/08/17

Reporting of Water Usage for the year:

Water Source	Specific Usage (litres/bird)
Mains water	
Site borehole	
Other	
TOTAL WATER USAGE	

Operator's comments :

Signed
(authorised to sign as representative of Operator)

Date.....

Permit Number: AB3591ZQ Operator: Maelor Foods Limited

Facility: Maelor Poultry Processing Plant Form Number: Energy1 / 29/08/17

Reporting of Energy Usage for the year:

Energy Source	Energy Usage	
	Quantity	Specific Usage (KWh/bird)
Electricity *		
Natural Gas		
Gas Oil		
Recovered Fuel Oil		
TOTAL		

* Conversion factor for delivered electricity to primary energy = 2.4

Operator's comments :

Signed
(Authorised to sign as representative of Operator)

Date.....

Permit Number: AB3591ZQ

Operator: Maelor Foods Limited

Facility: Maelor Poultry Processing Plant

Form Number: Performance1 / 29/08/17

Reporting of other performance indicators for the period

to

Parameter	Units	Result
Number of chickens slaughtered per week	Number per week (maximum week in reporting year)	
Chicken Products produced per week	Tonnes per week (maximum week in reporting year)	

Operator's comments :

Signed
(Authorised to sign as representative of Operator)

Date.....

APPENDIX 4



Borehole Log

Borehole No.

WS1

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 08/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.27			[MADE GROUND] Reinforced concrete. Rebar noted at 0.12m bgl	
					0.27			[MADE GROUND] Blue Plastic Sheet	
					0.47			[MADE GROUND] Yellowish white very sandy gravel. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of limestone.	
					0.70			[Possible Reworked Natural] Soft friable brown silty sandy clay. Sand is fine	
								[Possible Reworked Natural] Grey brown clayey silty gravelly sand. Sand is fine to coarse. Gravel is angular fine to coarse of sandstone, quartzite and mudstone.	1
					2.00			Soft friable red silty very sandy CLAY. Sand is fine to medium.	2
					2.30			Red silty very clayey SAND. Sand is fine to medium	
					2.90			Red fine SAND.	3
					4.00			End of borehole at 4.00 m	4
									5

Remarks





Borehole Log

Borehole No.

WS2

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 08/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			Reinforced Concrete. Rebar at 0.10m bgl.	
					0.60			[MADE GROUND] Brownish grey sandy gravel. Sand is fine to coarse. Gravel is angular fine to coarse of quartzite and concrete.	
					1.00			[Possible Reworked Natural] Brown clayey sand. Sand is fine to coarse.	1
					1.30			[Possible Reworked Natural] Reddish brown clayey silty sandy gravel. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite, flint and sandstone.	
					2.50			[Possible Reworked Natural] Greenish red clayey silty gravelly sand. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite, flint and sandstone. Occasional cobbles of mudstone. <u>Wet</u>	2
					4.00			Very clayey fine to medium SAND. <u>Wet</u>	3
								End of borehole at 4.00 m	4
									5

Remarks





Borehole Log

Borehole No.

WS3

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 08/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.90			[MADE GROUND] Brownish black very gravelly sand. Sand is fine to coarse. Gravel is angular fine to coarse of asphalt, sandstone, mudstone and quartzite with occasional cobbles of sandstone.	
					1.30			[MADE GROUND] Reddish brown sandy gravel. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of quartzite, sandstone and mudstone with occasional cobbles of mudstone.	1
								[Possible Reworked Natural] Reddish brown clayey silty very gravelly sand. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of mudstone, quartzite and sandstone.	2
					2.60			Red clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is rounded fine to medium of quartzite.	3
					4.00			End of borehole at 4.00 m	4
									5

Remarks





Borehole Log

Borehole No.

WS4

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 08/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25			Reinforced Concrete. rebar at 0.10m bgl.	
					1.50			[MADE GROUND] Greyish red to black clayey very gravelly sand. Sand is fine to coarse. Gravel angular to subangular fine to coarse of sandstone and quartzite.	1
					2.50			[Possible Natural] Reddish brown fine to coarse SAND.	2
					3.40			Soft red silty very sandy CLAY. Sand is fine to medium	3
					4.00			Reddish brown fine to medium SAND.	4
								End of borehole at 4.00 m	5

Remarks





Pam Brown Associates
2 Needwood House
Lancaster Park
Needborough Road
Needwood
Burton-on-Trent
DE13 9PD

Borehole Log

Borehole No.

WS5

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 09/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.18			Reinforced Concrete. Rebar at 0.12m bgl.	
								[MADE GROUND] Black to reddish brown silty clayey very gravelly SAND. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of concrete, sandstone, mudstone and quartzite with occasional cobbles of quartzite and mudstone.	
								<i>Dark reddish brown</i>	1
								<i>Damp</i>	
								<i>Dry</i>	2
					2.70			[Reworked Natural] Brown silty sandy very gravelly clay. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone.	3
					3.20			Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine of sandstone.	
					3.60			Brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded of quartzite and sandstone.	
					3.70			Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine of sandstone.	
					3.75			Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of sandstone and mudstone.	4
					4.00			End of borehole at 4.00 m	

Remarks





Borehole Log

Borehole No.

WS6

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 09/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40			[MADE GROUND] Light grey very sandy gravel. Sand is fine to coarse. Gravel is rounded to angular fine to coarse of concrete and mudstone.	
					0.65			[MADE GROUND] Brick cobbles.	
					1.80			[MADE GROUND] Black to brown very sandy very gravelly clay. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone and sandstone.	1
					2.60			[MADE GROUND] Black to brown very sandy very clayey gravel. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone and sandstone.	2
					3.00			<i>Wet</i>	
								Soft to firm brown silty sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is rounded fine to medium of mudstone.	
								<i>Damp</i>	
								End of borehole at 3.00 m	3
									4
									5

Remarks





Pam Brown Associates
2 Needwood House
Lancaster Park
Newborough Road
Needwood
Burton-on-Trent
DE13 9PD

Borehole Log

Borehole No.

WS7

Sheet 1 of 1

Project Name: Maelor Foods

Project No.
1572-16

Co-ords: -

Hole Type
WLS

Location: Maelor, Wrexham, LL13 0UE

Level:

Scale
1:25

Client: Maelor Foods Ltd

Dates: 09/07/2019 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40			[MADE GROUND] Brown gravelly sand. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone, brick, mudstone and concrete with occasional cobbles of brick.	
					0.90			[MADE GROUND] Reddish brown/black clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone, quartzite, sandstone and concrete.	
					1.00			[MADE GROUND] Soft reddish brown sandy gravelly clay. Sand is fine to coarse. Gravel is angular to subrounded of sandstone and mudstone.	1
								[Possible Reworked Natural] Reddish brown/black clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mudstone, quartzite, sandstone. Occasional cobbles of sandstone.	
								<i>Very sandy</i>	2
								<i>Damp</i>	
					2.70			Soft to firm brown silty CLAY.	3
					3.80			Brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone.	
					3.98			Greyish blue MUDSTONE.	4
					4.00			End of borehole at 4.00 m	

Remarks



APPENDIX 5



2183

Amended Report

Report No.:	19-23412-2		
Initial Date of Issue:	22-Jul-2019	Date of Re-Issue:	30-Jul-2019
Client	Pam Brown Associates		
Client Address:	Needwood House, Lancaster Park Newborough Road Needwood Staffordshire DE13 9PD		
Contact(s):	Enquiries		
Project	1572-15 Maelor		
Quotation No.:		Date Received:	11-Jul-2019
Order No.:		Date Instructed:	15-Jul-2019
No. of Samples:	18		
Turnaround (Wkdays):	13	Results Due:	31-Jul-2019
Date Approved:	30-Jul-2019		

Approved By:



Details:

Amy Parekh-Pross, Technical Projects
Manager
Martin Dyer, Laboratory Manager

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856396	856397	856400	856402	856403	856404	856405	856406	856407
	Client Sample ID.:				WS1	WS1	WS2	WS2	WS3	WS3	WS3	WS4	WS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.3	0.5	0.2	1.8	0.3	0.5	2.6	0.3	0.8
	Bottom Depth (m):				0.45	0.7	0.6	2.0	0.5	0.7	2.9	0.5	1.0
	Date Sampled:				08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY			COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-		-		Fibres/Clumps			-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected		Chrysotile			No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-		-		Stereo Microscopy			-	
Asbestos by Gravimetry	U	2192	%	0.001					0.004				
Total Asbestos	N	2192	%	0.001					0.004				
Moisture	N	2030	%	0.020	2.8	13	1.8	4.7		7.5	12		4.1
pH	U	2010		N/A		8.0	12.1	9.3		8.6	8.5		8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40		< 0.40	0.57	< 0.40		< 0.40	< 0.40		< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	0.042	< 0.010		< 0.010	< 0.010		< 0.010
Sulphur (Elemental)	U	2180	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50
Thiocyanate	U	2300	mg/kg	5.0		< 5.0	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		4.9	1.5	0.93		< 0.50	0.62		< 0.50
Sulphate (Total)	U	2430	%	0.010		0.010	0.13	0.022		< 0.010	< 0.010		0.012
Arsenic	U	2450	mg/kg	1.0		6.8	22	8.9		16	9.9		10
Cadmium	U	2450	mg/kg	0.10		0.16	0.28	0.18		0.16	0.12		0.13
Chromium	U	2450	mg/kg	1.0		17	6.7	28		31	19		25
Copper	U	2450	mg/kg	0.50		13	5.9	22		29	22		21
Mercury	U	2450	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Nickel	U	2450	mg/kg	0.50		15	5.7	32		38	25		31
Lead	U	2450	mg/kg	0.50		73	9.5	22		24	20		14
Selenium	U	2450	mg/kg	0.20		< 0.20	< 0.20	< 0.20		< 0.20	< 0.20		< 0.20
Zinc	U	2450	mg/kg	0.50		70	13	61		85	53		62
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50
Organic Matter	U	2625	%	0.40		0.83	1.9	< 0.40		< 0.40	0.55		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0	72	< 1.0		< 1.0	< 1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	72	< 5.0		< 5.0	< 5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856396	856397	856400	856402	856403	856404	856405	856406	856407
	Client Sample ID.:				WS1	WS1	WS2	WS2	WS3	WS3	WS3	WS4	WS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.3	0.5	0.2	1.8	0.3	0.5	2.6	0.3	0.8
	Bottom Depth (m):				0.45	0.7	0.6	2.0	0.5	0.7	2.9	0.5	1.0
	Date Sampled:				08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY			COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0	47	< 1.0		< 1.0	< 1.0		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	47	< 5.0		< 5.0	< 5.0		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10	120	< 10		< 10	< 10		< 10
Naphthalene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Acenaphthylene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Acenaphthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Fluorene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Phenanthrene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Chrysene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0		< 2.0	< 2.0	< 2.0		< 2.0	< 2.0		< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
Bromomethane	U	2760	µg/kg	20	< 20		< 20			< 20			< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0			< 2.0			< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0		< 5.0			< 5.0			< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:					19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:					856396	856397	856400	856402	856403	856404	856405	856406	856407
	Client Sample ID.:					WS1	WS1	WS2	WS2	WS3	WS3	WS3	WS4	WS4
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.3	0.5	0.2	1.8	0.3	0.5	2.6	0.3	0.8
	Bottom Depth (m):					0.45	0.7	0.6	2.0	0.5	0.7	2.9	0.5	1.0
	Date Sampled:					08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019
	Asbestos Lab:					COVENTRY		COVENTRY		COVENTRY			COVENTRY	
Determinand	Accred.	SOP	Units	LOD										
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Benzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0			< 2.0			< 2.0	
Trichloroethene	N	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0		< 5.0			< 5.0			< 5.0	
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10			< 10			< 10	
Toluene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10			< 10			< 10	
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10		< 10			< 10			< 10	
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0		< 2.0			< 2.0			< 2.0	
Dibromochloromethane	U	2760	µg/kg	10	< 10		< 10			< 10			< 10	
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0		< 5.0			< 5.0			< 5.0	
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0			< 2.0			< 2.0	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Styrene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Tribromomethane	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Bromobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50		< 50			< 50			< 50	
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0			< 1.0	

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856396	856397	856400	856402	856403	856404	856405	856406
	Client Sample ID.:				WS1	WS1	WS2	WS2	WS3	WS3	WS3	WS4
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.3	0.5	0.2	1.8	0.3	0.5	2.6	0.3
	Bottom Depth (m):				0.45	0.7	0.6	2.0	0.5	0.7	2.9	0.5
	Date Sampled:				08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019	08-Jul-2019
	Asbestos Lab:				COVENTRY		COVENTRY		COVENTRY			COVENTRY
Determinand	Accred.	SOP	Units	LOD								
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0		< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50		< 50			< 50		< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0		< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0		< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0		< 2.0			< 2.0		< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0		< 1.0			< 1.0		< 1.0
Total Phenols	U	2920	mg/kg	0.30		< 0.30	< 0.30	< 0.30		< 0.30	< 0.30	< 0.30

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856408	856409	856410	856411	856412	856413	856415	856417	856418
	Client Sample ID.:				WS4	WS5	WS5	WS5	WS6	WS6	WS7	WS7	WS7
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.5	0.3	0.8	2.7	0.65	1.5	0.0	1.3	2.3
	Bottom Depth (m):				1.8	0.5	1.2	3.0	1.0	1.8	0.4	1.6	2.6
	Date Sampled:				08-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019
	Asbestos Lab:					COVENTRY			COVENTRY		COVENTRY		
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A		-			Lagging		-		
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected			Chrysotile		No Asbestos Detected		
ACM Detection Stage	U	2192		N/A		-			Stereo Microscopy		-		
Asbestos by Gravimetry	U	2192	%	0.001					0.17				
Total Asbestos	N	2192	%	0.001					0.17				
Moisture	N	2030	%	0.020	8.0		5.7	5.3	5.9	6.3		4.6	8.3
pH	U	2010		N/A	8.2		8.3	8.6		8.6			8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40		< 0.40	< 0.40		< 0.40			0.44
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010		< 0.010	< 0.010		< 0.010			0.031
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0		< 1.0	17		< 1.0			< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50			< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50			< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.62		< 0.50	0.51		0.60			< 0.50
Sulphate (Total)	U	2430	%	0.010	< 0.010		< 0.010	0.011		0.015			0.021
Arsenic	U	2450	mg/kg	1.0	8.3		14	13		14			15
Cadmium	U	2450	mg/kg	0.10	0.12		0.18	0.11		0.16			0.19
Chromium	U	2450	mg/kg	1.0	20		23	21		26			36
Copper	U	2450	mg/kg	0.50	18		23	22		24			33
Mercury	U	2450	mg/kg	0.10	< 0.10		< 0.10	< 0.10		< 0.10			< 0.10
Nickel	U	2450	mg/kg	0.50	27		28	27		33			38
Lead	U	2450	mg/kg	0.50	15		15	14		16			16
Selenium	U	2450	mg/kg	0.20	< 0.20		0.34	0.26		< 0.20			< 0.20
Zinc	U	2450	mg/kg	0.50	52		63	60		73			82
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50			< 0.50
Organic Matter	U	2625	%	0.40	< 0.40		< 0.40	< 0.40		< 0.40			0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0			< 1.0

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:					19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:					856408	856409	856410	856411	856412	856413	856415	856417	856418
	Client Sample ID.:					WS4	WS5	WS5	WS5	WS6	WS6	WS7	WS7	WS7
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					1.5	0.3	0.8	2.7	0.65	1.5	0.0	1.3	2.3
	Bottom Depth (m):					1.8	0.5	1.2	3.0	1.0	1.8	0.4	1.6	2.6
	Date Sampled:					08-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019
	Asbestos Lab:						COVENTRY			COVENTRY		COVENTRY		
Determinand	Accred.	SOP	Units	LOD										
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0			< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0			< 5.0	< 5.0		< 5.0			< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10			< 10	< 10		< 10			< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10			< 0.10	< 0.10		< 0.10			< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0			< 2.0	< 2.0		< 2.0			< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
Chloromethane	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
Vinyl Chloride	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
Bromomethane	U	2760	µg/kg	20				< 20		< 20			< 20	
Chloroethane	U	2760	µg/kg	2.0				< 2.0		< 2.0			< 2.0	
Trichlorofluoromethane	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
1,1-Dichloroethene	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
1,1-Dichloroethane	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	
Bromochloromethane	U	2760	µg/kg	5.0				< 5.0		< 5.0			< 5.0	
Trichloromethane	U	2760	µg/kg	1.0				< 1.0		< 1.0			< 1.0	

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856408	856409	856410	856411	856412	856413	856415	856417
	Client Sample ID.:				WS4	WS5	WS5	WS5	WS6	WS6	WS7	WS7
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.5	0.3	0.8	2.7	0.65	1.5	0.0	1.3
	Bottom Depth (m):				1.8	0.5	1.2	3.0	1.0	1.8	0.4	1.6
	Date Sampled:				08-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019
	Asbestos Lab:					COVENTRY			COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
1,1,1-Trichloroethane	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Benzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0			< 2.0		< 2.0			< 2.0
Trichloroethene	N	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Dibromomethane	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0			< 5.0		< 5.0			< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10			< 10		< 10			< 10
Toluene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10			< 10		< 10			< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10			< 10		< 10			< 10
Tetrachloroethene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0			< 2.0		< 2.0			< 2.0
Dibromochloromethane	U	2760	µg/kg	10			< 10		< 10			< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0			< 5.0		< 5.0			< 5.0
Chlorobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0			< 2.0		< 2.0			< 2.0
Ethylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
m & p-Xylene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
o-Xylene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Styrene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Tribromomethane	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Bromobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50			< 50		< 50			< 50
N-Propylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0

Results - Soil

Project: 1572-15 Maelor

Client: Pam Brown Associates	Chemtest Job No.:				19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412	19-23412
Quotation No.:	Chemtest Sample ID.:				856408	856409	856410	856411	856412	856413	856415	856417	856418
	Client Sample ID.:				WS4	WS5	WS5	WS5	WS6	WS6	WS7	WS7	WS7
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.5	0.3	0.8	2.7	0.65	1.5	0.0	1.3	2.3
	Bottom Depth (m):				1.8	0.5	1.2	3.0	1.0	1.8	0.4	1.6	2.6
	Date Sampled:				08-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019	09-Jul-2019
	Asbestos Lab:					COVENTRY			COVENTRY		COVENTRY		
Determinand	Accred.	SOP	Units	LOD									
1,2-Dichlorobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50			< 50		< 50			< 50	
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0	
Hexachlorobutadiene	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0			< 2.0		< 2.0			< 2.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0			< 1.0		< 1.0			< 1.0	
Total Phenols	U	2920	mg/kg	0.30	< 0.30		< 0.30	< 0.30		< 0.30			< 0.30

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

APPENDIX 6



Mr A Tabb
Pam Brown Associates Ltd
2 Needwood House
Newborough Road
Needwood
Burton -On-Trent
DE13 9PD

Environmental Site Sampling Ltd
94 Dillotford Avenue
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Coventry
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Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: PBA/5526

Dear Mr Tabb,

Please find enclosed a copy of the in-situ gas monitoring results undertaken at Maelor Poultry Facility, Pick Lane, Wrexham, LI13 0EU on 18th July 2019.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: PBA/5526

Client: Pam Brown Associates Ltd

Project: Maelor Poultry Facility, Pick Lane, Wrexham, LI13 0EU

18/07/19

Borehole	Gas Flow (l/hr)	Borehole Pressure (mb)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
WS 1	<0.1	0.10	<0.1	<0.1	<2	<2	1.5	1.5	18.6	18.6	<1	<1	Dry 3.981m
WS 2	<0.1	0.07	<0.1	<0.1	<2	<2	0.2	0.2	20.0	20.0	<1	<1	Dry 4.163m
WS 4	<0.1	0.05	<0.1	<0.1	<2	<2	0.3	0.3	19.9	19.9	<1	<1	Dry 4.041m
WS 7	<0.1	0.04	<0.1	<0.1	<2	<2	0.2	0.2	20.1	20.1	<1	<1	Dry 3.842m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.													

Additional Information	
Date Monitoring Undertaken:	18 th July 2019
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GA2000+ S/N 11567
Atmospheric Pressure Wrexham a.m. (mb):	1005mb
Atmospheric Pressure On-site (mb):	0999mb
Atmospheric Pressure Wrexham p.m. (mb):	1001mb
Weather During Visit:	Overcast, Dry, Wind W, 3m/s, 22°C
Comments:	

APPENDIX 7

Soil Assessment Criteria for land under COMMERCIAL /INDUSTRIAL USE

Parameters	Soil Guideline Values ¹ (mg kg ⁻¹)	Suitable for Use Levels ² (mg kg ⁻¹)		
Antimony	-	7500 ³		
Arsenic (inorganic)	640	640		
Barium	-	22000 ³		
Beryllium	-	12		
Boron	-	240000		
Cadmium	230	190		
Chromium	5000	8600 ⁽³⁺⁾ 33 ⁽⁶⁺⁾		
Copper	-	68000		
Lead	2300 ⁴	-		
Mercury (inorganic)	3600	1100		
Molybdenum	-	17000 ³		
Nickel	1800	980		
Selenium	13000	12000		
Zinc	-	730000		
Vanadium	-	9000		
Petroleum Hydrocarbons		1%SOM	2.5%SOM	6%SOM
TPH aliphatic >C5-C6		3200	5900	12000
TPH aliphatic >C6-C8		7800	17000	40000
TPH aliphatic >C8-C10		2000	4800	11000
TPH aliphatic >C10-C12		9700	23000	47000
TPH aliphatic >C12-C16		59000	82000	90000
TPH aliphatic >C16-C35		1600000	1700000	1800000
TPH aliphatic >C35-C44		1600000	1700000	1800000
TPH aromatic >C5-C7		26000	46000	86000
TPH aromatic >C7-C8		56000	110000	180000
TPH aromatic >C8-C10		3500	8100	17000
TPH aromatic >C10-12		16000	28000	34000
TPH aromatic >C12-C16		36000	37000	38000
TPH aromatic >C16-C21		28000	28000	28000
TPH aromatic >C21-C35		28000	28000	28000
TPH aromatic >C35-C44		28000	28000	28000
Polyaromatic Hydrocarbons				
Napthalene		190	460	1100
Acenaphthylene		83000	97000	100000
Acenaphthene		84000	97000	100000
Fluorene		63000	68000	71000
Phenanthrene		22000	22000	23000
Anthracene		520000	540000	540000
Fluoranthene		23000	23000	23000
Pyrene		54000	54000	54000
Benz[a]anthracene		170	170	180
Chrysene		350	350	350
Benzo[b]fluoranthene		44	44	45
Benzo[k]fluoranthene		1200	1200	1200
Benzo[a]pyrene		35	35	36
Dibenz[a,h]anthracene		3.5	3.6	3.6
Indeno[1,2,3c-d]pyrene		500	510	510
Benzo[g,h,i]perylene		3900	4000	4000

Parameters	Soil Guideline Values ¹ (mg kg ⁻¹)	Suitable for Use Levels ² (mg kg ⁻¹) Generic Assessment Criteria ³ (mg kg ⁻¹)		
		1% SOM	2.5% SOM	6% SOM
BTEX				
Benzene	95	27	47	90
Toluene	4400(6% SOM)	56000	110000	180000
Ethylbenzene	2800(6% SOM)	5700	13000	27000
m-xylene	3500	6200	14000	31000
p-xylene	3200	5900	14000	30000
o-xylene	2600	6600	15000	33000
Phenol and Chlorophenols				
Phenols	3200(6% SOM)	760	1500	3200
Chlorophenols (4 congeners)		3500	4000	4300
Pentachlorophenol		400	400	400
Volatile Organic Compounds				
1,2-Dichloroethane		0.67	0.97	1.7
1,1,1-Trichloroethane		660	1300	3000
1,1,2,2 Tetrachloroethane		270	550	1100
1,1,1,2 Tetrachloroethane		110	250	560
Tetrachloroethene		19	42	95
Tetrachloromethane (carbon tetrachloride)		2.9	6.3	14
Trichloroethene (TCE)		1.2	2.6	5.7
Trichloromethane (chloroform)		99	170	350
Chloroethene (vinyl chloride)		0.059	0.077	0.12
1,1,2, Trichloroethane		94	190	400
1,1-Dichloroethane		280	450	850
1,1-Dichloroethene		26	46	92
1,2,4-Trimethylbenzene		42	99	220
1,2-Dichloropropane		3.3	5.9	12
2,4-Dimethylphenol		16000	24000	30000
2,4-Dinitrotoluene		3700	3700	3800
2,6-Dinitrotoluene		1900	1900	1900
2-Chloronaphthalene		390	960	2200
Biphenyl		18000	33000	48000
Bis (2-ethylhexyl) phthalate		85000	86000	86000
Bromobenzene		97	220	520
Bromodichloromethane		2.1	3.7	7.6
Bromoform		760	1500	3100
Butyl benzyl phthalate		940000	940000	950000
Carbon Disulphide		11	22	47
Chlorobenzene		56	130	290
Chloroethane		960	1300	2100
Chloromethane		1.0	1.2	1.6
Cis 1,2 Dichloroethene		14	24	47
Dichloromethane		270	360	560
Diethyl Phthalate		150000	220000	290000
Di- <i>n</i> -butyl phthalate		15000	15000	15000
Di- <i>n</i> -octyl phthalate		89000	89000	89000
Hexachlorobutadiene		31	66	120
Hexachloroethane		22	53	120
Isopropylbenzene		1400	3300	7700
Methyl <i>tert</i> -butyl ether		7900	13000	24000
Propylbenzene		4100	9700	21000
Styrene		3300	6500	11000

Values in italics are provisional
Updated: May 2015

Parameters	Soil Guideline Values ¹ (mg kg ⁻¹)	Suitable for Use Levels ² (mg kg ⁻¹) Generic Assessment Criteria ³ (mg kg ⁻¹)		
		1% SOM	2.5% SOM	6% SOM
Total Cresols (2-,3-&4-methylphenol)		160000	180000	180000
<i>Trans</i> 1,2 Dichloroethene		22	40	81
Tributyl tin oxide		130	180	200
Chlorobenzenes				
Chlorobenzene		56	130	290
1,2-Dichlorobenzene		2000	4800	11000
1,3-Dichlorobenzene		30	73	170
1,4-Dichlorobenzene		4400	10000	25000
1,2,3-Trichlorobenzene		102	250	590
1,2,4-Trichlorobenzene		220	530	1300
1,3,5-Trichlorobenzene		23	55	130
1,2,3,4-Tetrachlorobenzene		1700	3080	4400
1,2,3,5-Tetrachlorobenzene		49	120	240
1,2,4,5-Tetrachlorobenzene		42	72	96
Pentachlorobenzene		640	770	830
Hexachlorobenzene		110	120	120
Polychlorinated Biphenyls	0.24			
Explosives				
2,4,6 Trinitrotoluene (TNT)		1000	1000	1000
RDX		210000	210000	210000
HMX		110000	110000	110000
Pesticides				
Aldrin		170	170	170
Dieldrin		170	170	170
Atrazine		9300	9400	9400
Dichlorvos		140	140	140
Alpha-Endosulfan		5600	7400	8400
Beta-Endosulfan		6300	7800	8700
Alpha-Hexachlorocyclohexane		170	180	180
Beta-Hexachlorocyclohexane		65	65	65
Gamma-Hexachlorocyclohexane (including Lindane)		67	69	70

References

¹ Environment Agency (2009) 'Soil Guideline Values for 'Arsenic', 'Cadmium', 'Mercury', 'Nickel', 'Selenium', 'Benzene', 'Ethylbenzene', 'Toluene', 'Xylenes', 'Phenol', 'Dioxins, Furans and Dioxin-like PCBs in soil'. Science Report SC050021. UK.

² Nathanail, C.P., McCaffrey, C., Gillett, A.G., Ogden, R.C. and Nathanail, J.F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham.

³ EIC/AGS/CL:AIRE (2009) 'Soil Generic Assessment Criteria for Human Health Risk Assessment'. UK.

⁴ CL:AIRE (2014) SP1010-Development of Category 4 Screening Levels for assessment of Land Affected by Contamination. Final Project Report (Revision 2). Appendix H Provisional C4SL.

*Note for xylenes the most health protective value in each scenario is highlighted in **bold** see ref 1, section 16.5 para 28 for further detail.*

APPENDIX 8

DEFINITIONS USED IN RISK EVALUATION

This Appendix provides definitions of the terms used in the classification of harm, probability of a pollutant linkage becoming established, and classification of overall risk, as described in CIRIA Report C552¹

CLASSIFICATION OF CONSEQUENCE/HARM

Table A, reproduced from CIRIA C552 (Table 6.3)¹, provides definitions of the terms used in the classification of consequence. Hazards are classed according to the magnitude of the potential consequence (severity) when reaching a receptor. This is known as environmental harm and can be classified as minor, mild, medium or severe.

Table A. Classification of Consequence/Harm

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part IIA/ Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from a site into controlled water. Explosion causing building collapse.
Medium	Chronic damage to Human Health ('Significant Harm' as defined in DETR (2000)). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant exceed generic or site specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in the 'draft circular of contaminated land', DETR 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent effects to human health (easily prevented by means such as PPE). Easily repairable effects/damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

¹ Rudland, D., Lancefield, R.M., Mayel, P.N. (2001) "Contaminated land Risk Assessment: A guide to good practice. CIRIA C552. UK.

CLASSIFICATION OF PROBABILITY

The likelihood that receptors could be affected by on site contaminants, if present, is classified using CIRIA C552 (Table 6.4) ¹. Table B, reproduced from CIRIA C552, provides definitions of the terms used when assessing the likelihood of a pollution linkage becoming established.

Table B. Classification of Probability

Classification	Definition
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short-term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all of the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long term.
Low Likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur, however it is by no means certain that even over a longer period that such an event would take place, and it is less likely in the shorter term.
Unlikely	There is a pollutant linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

RISK ASSESSMENT

The risk categories are assessed based upon the consequence vs. probability assigned to each scenario, based upon guidance originally produced by the DETR (2000). Table C shows a reproduction of the risk matrix (Table 6.5) as published in CIRIA C552, which is used to evaluate the overall risk to each identified receptor on the basis of consequence v probability. Table D records the definition of each of the risk categories, and is reproduced from Table 6.6 in CIRIA C552.

Table C. Classification of Consequence v Probability

Probability	Consequence				
		Severe	Medium	Mild	Minor
	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
>	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table D. Description of Risk Classifications and Likely Action Required

Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild . Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild .
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

APPENDIX 9

Project

Project Name:	Maelor Foods, Wrexham 05-08-2019
Project Date:	8/5/2019
Project Standard:	MSCC4 Sewers & Drainage GB (SRM4 Scoring)
Wincan Version:	v. 1.1.12.3

Table of Contents

Project Name
Maelor Foods, Wrexham 05-08-2019

Project Number:

Date:
8/5/2019

Project Information	P-1
Section: 1; S1A- S1	1
Section: 2; S1B- S1	2
Section: 3; S2- S3	4
Section: 4; S1- S2	5
Section: 5; S2A- S2	8
Section: 6; S2B- S2	10
Section: 7; S3- S4	12
Section: 8; S5- S6	13
Section: 9; S4A- S4	15
Section: 10; S4B- S4	17
Section: 11; S4C- S4	18
Section: 12; S5C- S5	19
Section: 13; S5B- S5	20
Section: 14; S5A- S5	21
Section: 15; S7- S8	22
Section: 16; S7A- S7	23
Section: 17; S8- S9	25
Section: 18; S9- S10	26
Section: 19; S4- S5	27
Section: 20; S5- S6	28
Section: 21; S5- S6	30
Section: 22; S13- S6	32
Section: 23; S14- S6	33
Section: 24; S10- S11	34
Section: 25; S11- S12	35
Section: 26; S12- S15	36
Section: 27; S16- S14	38

Table of Contents

Project Name Maelor Foods, Wrexham 05-08-2019	Project Number:	Date: 8/5/2019
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Section: 28; S17-S16	39
Section: 29; S18-S16	41
Section: 30; S18A-S18	42
Section: 31; S18B-S18	44
Section: 32; S19A-S19	45
Section: 33; S19B-S19	46
Section: 34; S19-S8	47
Section: 35; S17A-S17	48
Section: 36; S17B-S17	50
Section: 37; F1-F2	51
Section: 38; F2-F3	52
Section: 39; F3A-F3	53
Section: 40; F3-F4	55

Project Information

Project Name:
Maelor Foods, Wrexham 05-08-2019

Client's Ref:

Contractor's Ref:

Project Date:
8/5/2019

Client

Company: Maelor Food
Street: Cross Lanes
Town or City: Wrexham
Post Code: LL13 0UE

Site

Company: Maelor Food
Street: Cross Lanes
Town or City: Wrexham
Post Code: LL13 0UE

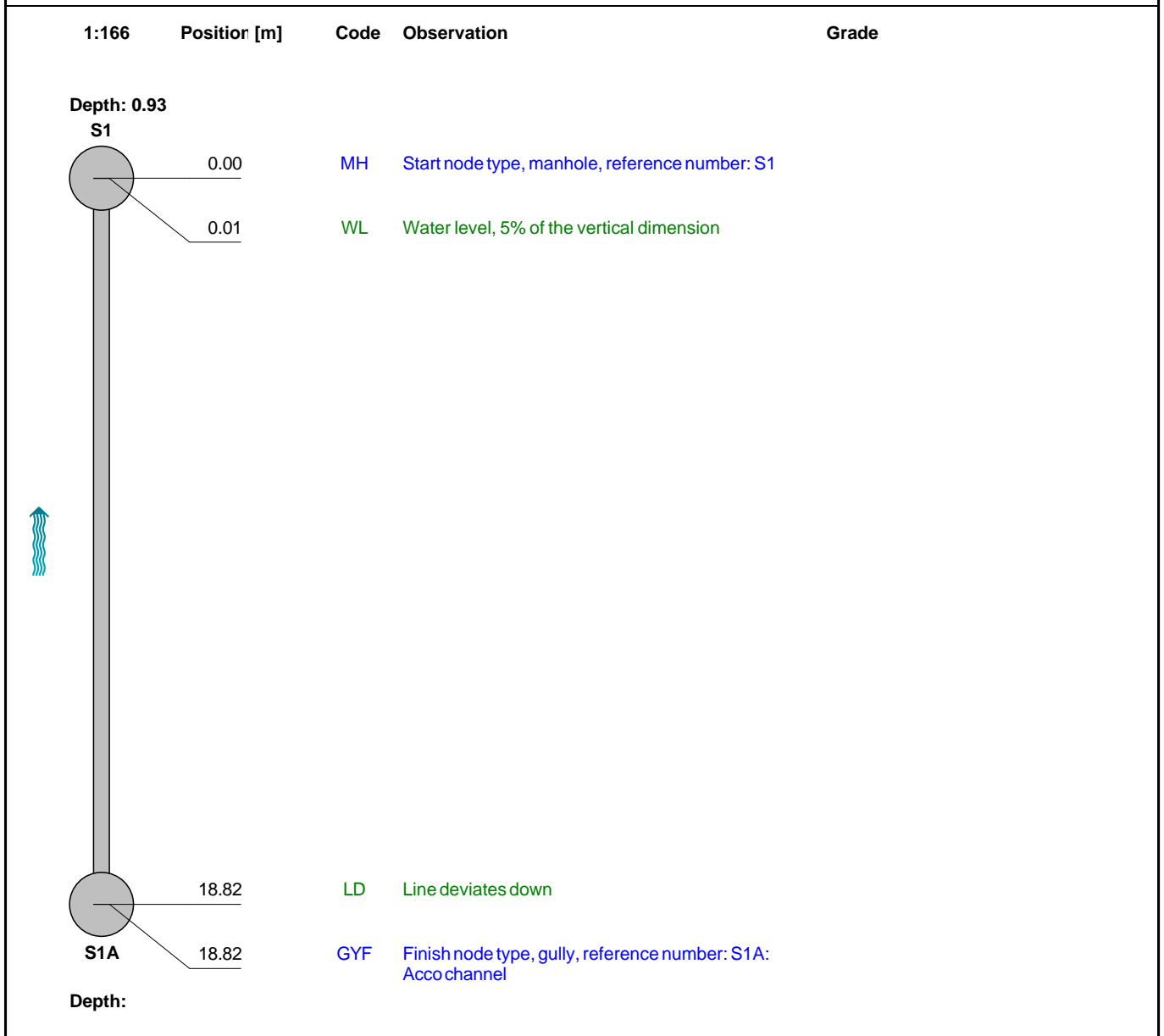
Contractor

Company: Trade Effluent Services Limited
Contact: Gary Ribgy
Street: Hugmore Lane
Town or City: LLan-Y-Pwll
County: Wrexham
Post Code: LL13 9YE
Phone: 01978 661866

Section Inspection - 8/5/2019 - S1AX

Section: 1	Inspection: 1	Date: 05/08/19	Time: 11:59	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S1AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S1 << S1A	US MH:	S1A
Road:	Maelor Foods	Inspected Length:	18.82 m	US Depth:	
Location:		Total Length:	18.82 m	DS MH:	S1
Surface Type:		Pipe Length:	0.00 m	DS Depth:	0.930 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

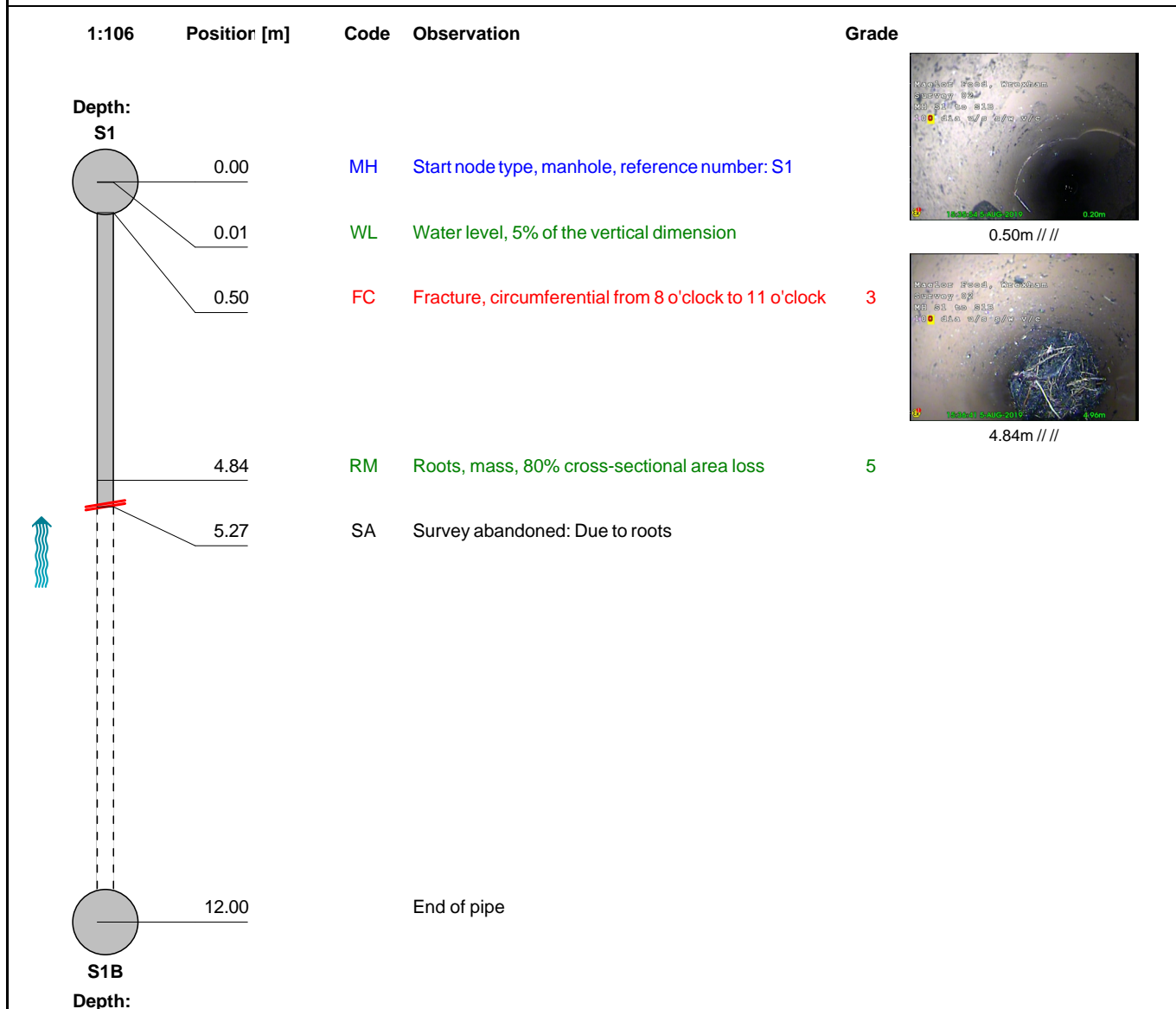


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/5/2019 - S1BX

Section: 2	Inspection: 2	Date: 05/08/19	Time: 12:13	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S1BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S1 << S1B	US MH: S1B
Road: Maelor Foods	Inspected Length: 5.27 m	US Depth:
Location:	Total Length: 12.00 m	DS MH: S1
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	3.3	40.0	3.0	1	20.0	1.7	20.0	5.0

Section Pictures - 8/5/2019 - S1BX

Section Number: 2	Inspection Direction: S1 << S1B	PLR: S1BX	Client's Ref:	Contractor's Ref:
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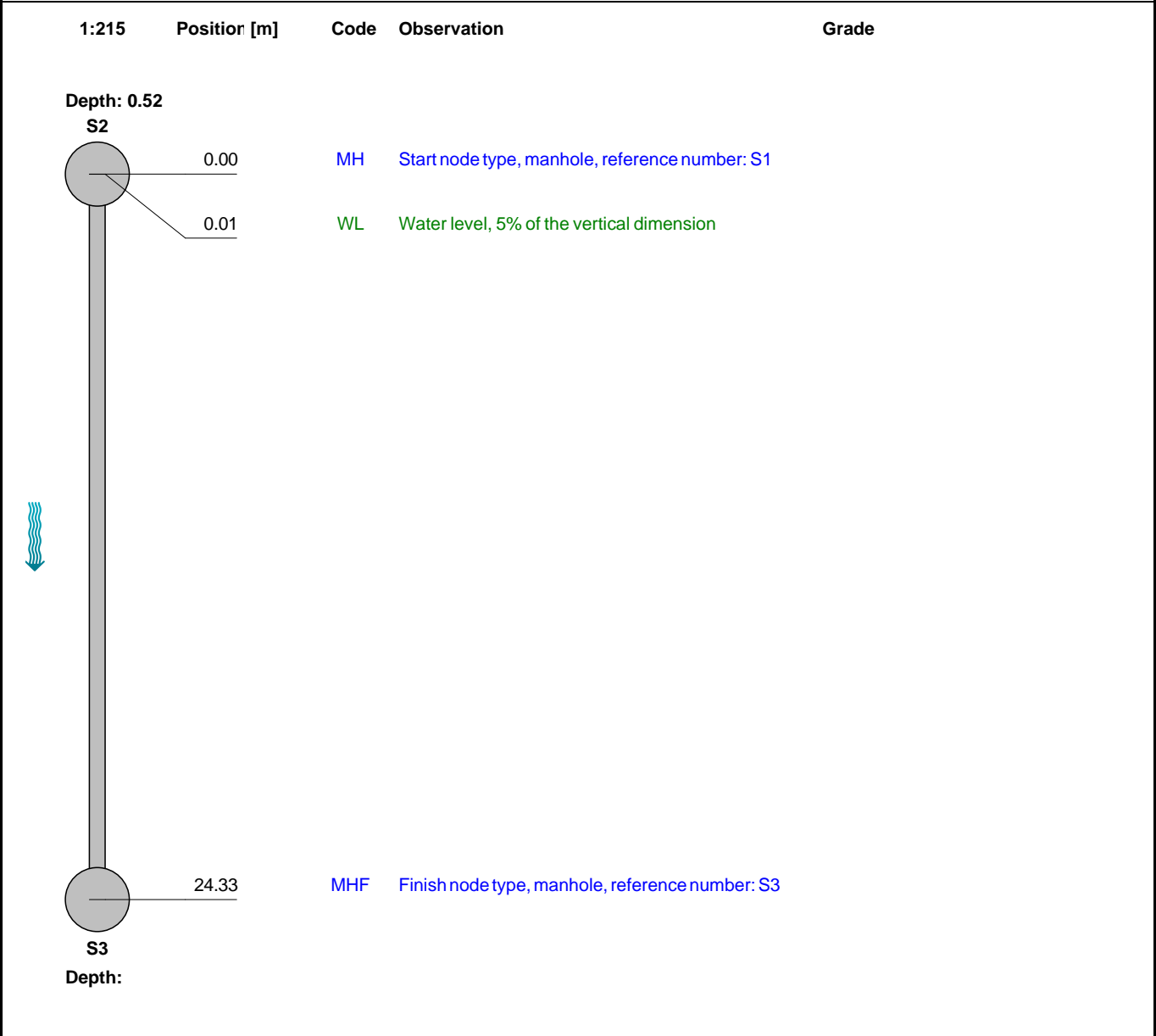
S1BX_b156a5fb-e561-4582-bede-1cc2464815b3_20190831_151707_263.jpg, ,0.50m
Fracture, circumferential from 8 o'clock to 11 o'clock



S1BX_2ba055a9-13eb-4fbb-90e1-8ddb62a9c48_20190831_151739_040.jpg, ,4.84m
Roots, mass, 80% cross-sectional area loss

Section Inspection - 8/5/2019 - S2X							
Section: 3	Inspection: 3	Date: 05/08/19	Time: 12:23	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S2X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S2 >> S3	US MH:	S2
Road:	Maelor Foods	Inspected Length:	24.33 m	US Depth:	0.520 m
Location:		Total Length:	24.33 m	DS MH:	S3
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water		Pipe Shape:	Circular	
Type of Pipe:	Gravity drain/sewer		Height / Width:	150 mm	
Year Constructed:			Pipe Material:	Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose:	Sample survey to determine asset condition		Lining Type:	Cured in place lining	
Flow Control:	No flow control		Lining Material:	None	
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/5/2019 - S1X																																													
Section: 4	Inspection: 4	Date: 05/08/19	Time: 13:24	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S1X																																						
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:																																						
Town or Village: WREXHAM				Insp Dir: S2 << S1	US MH: S1																																								
Road: Maelor Foods				Inspected Length: 32.69 m	US Depth: 0.930 m																																								
Location:				Total Length: 32.69 m	DS MH: S2																																								
Surface Type:				Pipe Length: 0.00 m	DS Depth: 0.520 m																																								
Use: Surface water				Pipe Shape: Circular																																									
Type of Pipe: Gravity drain/sewer				Height / Width: 150 mm																																									
Year Constructed:				Pipe Material: Vitrified clay pipe (i.e. all clayware)																																									
Inspection Purpose: Sample survey to determine asset condition				Lining Type: None																																									
Flow Control: No flow control				Lining Material: None																																									
Comment:																																													
Recommendation:																																													
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>1:289 Position [m] Code Observation Grade</p> <div style="display: flex; align-items: center;"> <div style="width: 20%;"> <p>Depth: 0.52</p> <p>S2</p> </div> <div style="width: 80%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">0.00</td> <td style="width: 10%;">MH</td> <td style="width: 60%;">Start node type, manhole, reference number: S2</td> <td style="width: 20%;"></td> </tr> <tr> <td>0.01</td> <td>WL</td> <td>Water level, 5% of the vertical dimension</td> <td></td> </tr> <tr> <td>1.99</td> <td>JDM</td> <td>Joint displaced, medium</td> <td>1</td> </tr> <tr> <td>5.34</td> <td>JN</td> <td>Junction at 9 o'clock, diameter: 100mm</td> <td></td> </tr> <tr> <td>7.18</td> <td>JDM</td> <td>Joint displaced, medium</td> <td>1</td> </tr> <tr> <td>10.58</td> <td>JDM</td> <td>Joint displaced, medium</td> <td>1</td> </tr> <tr> <td>27.83</td> <td>JDM</td> <td>Joint displaced, medium</td> <td>1</td> </tr> <tr> <td>28.01</td> <td>JN</td> <td>Junction at 9 o'clock, diameter: 100mm</td> <td></td> </tr> <tr> <td>32.69</td> <td>MHF</td> <td>Finish node type, manhole, reference number: S1</td> <td></td> </tr> </table> </div> </div> </div> <div style="width: 30%;"> </div> </div>										0.00	MH	Start node type, manhole, reference number: S2		0.01	WL	Water level, 5% of the vertical dimension		1.99	JDM	Joint displaced, medium	1	5.34	JN	Junction at 9 o'clock, diameter: 100mm		7.18	JDM	Joint displaced, medium	1	10.58	JDM	Joint displaced, medium	1	27.83	JDM	Joint displaced, medium	1	28.01	JN	Junction at 9 o'clock, diameter: 100mm		32.69	MHF	Finish node type, manhole, reference number: S1	
0.00	MH	Start node type, manhole, reference number: S2																																											
0.01	WL	Water level, 5% of the vertical dimension																																											
1.99	JDM	Joint displaced, medium	1																																										
5.34	JN	Junction at 9 o'clock, diameter: 100mm																																											
7.18	JDM	Joint displaced, medium	1																																										
10.58	JDM	Joint displaced, medium	1																																										
27.83	JDM	Joint displaced, medium	1																																										
28.01	JN	Junction at 9 o'clock, diameter: 100mm																																											
32.69	MHF	Finish node type, manhole, reference number: S1																																											
Structural Defects					Construction Features																																								
Service & Operational Observations					Miscellaneous Features																																								
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade																																				
4	1.0	0.1	4.0	1.0	0	0.0	0.0	0.0	1.0																																				

Section Pictures - 8/5/2019 - S1X

Section Number: 4	Inspection Direction: S2 << S1	PLR: S1X	Client's Ref:	Contractor's Ref:
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S1X_89ad0789-a15f-4878-9a5f-28bd63b423fc_20190831_152209_383.jpg, , 1.99m
Joint displaced, medium



S1X_f076290c-a229-4d32-9721-ffcd157d96cf_20190831_152254_213.jpg, , 7.18m
Joint displaced, medium

Section Pictures - 8/5/2019 - S1X

Section Number: 4	Inspection Direction: S2 << S1	PLR: S1X	Client's Ref:	Contractor's Ref:
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S1X_c2a9191b-cc80-48d4-ba1f-9bb299068c05_20190831_152321_169.jpg, , 10.58m
Joint displaced, medium

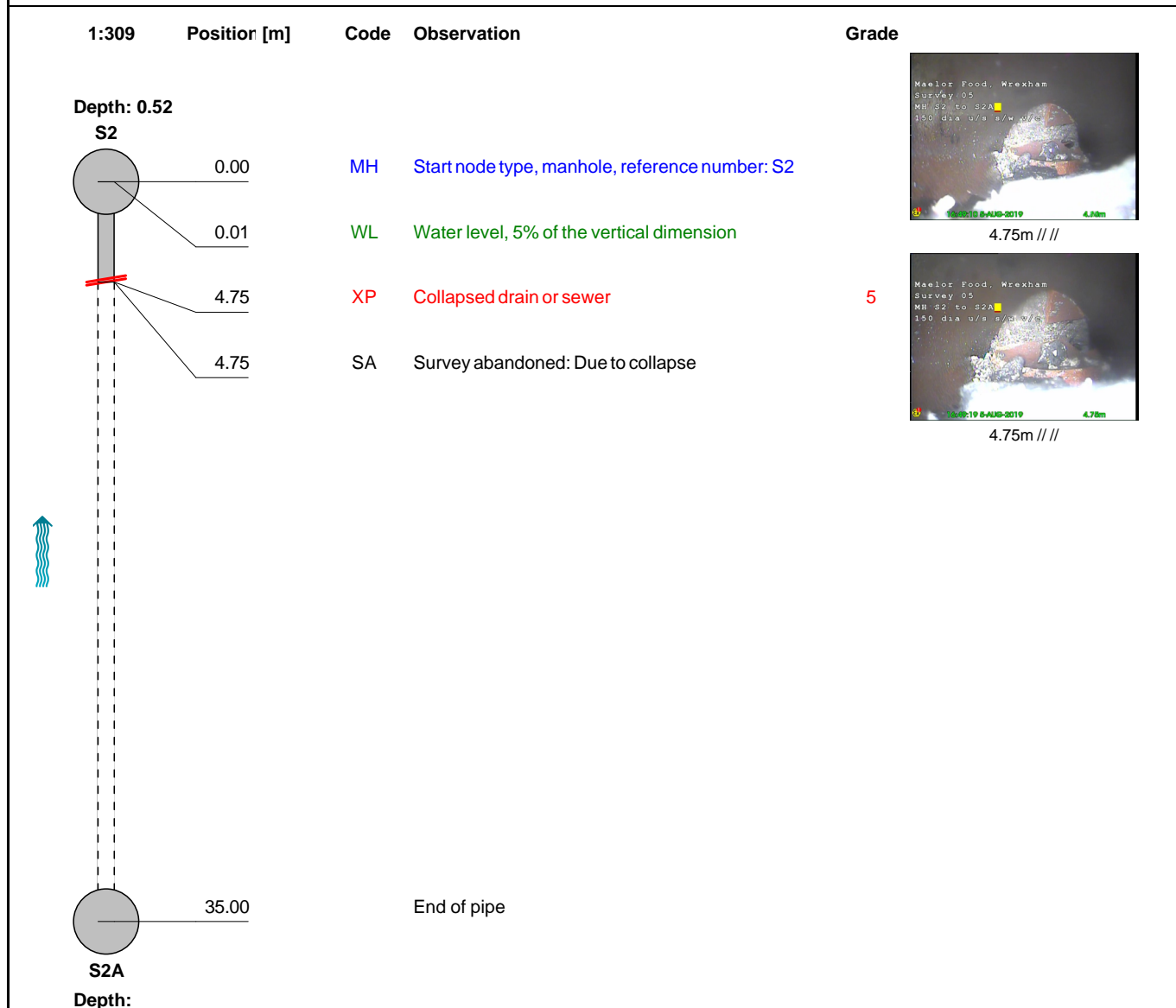


S1X_57513bce-5eb0-43a4-871b-4ff319134bec_20190831_152428_691.jpg, , 27.83m
Joint displaced, medium

Section Inspection - 8/5/2019 - S2AX

Section: 5	Inspection: 5	Date: 05/08/19	Time: 13:42	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S2AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S2 << S2A	US MH: S2A
Road: Maelor Foods	Inspected Length: 4.75 m	US Depth:
Location:	Total Length: 35.00 m	DS MH: S2
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.520 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	165.0	4.7	165.0	5.0	0	0.0	0.0	0.0	1.0

Section Pictures - 8/5/2019 - S2AX

Section Number: 5	Inspection Direction: S2 << S2A	PLR: S2AX	Client's Ref:	Contractor's Ref:
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S2AX_bfa92ef3-b481-4bc5-9f70-bad4e8cc225d_20190831_152534_770.jpg, 4.75m
Collapsed drain or sewer

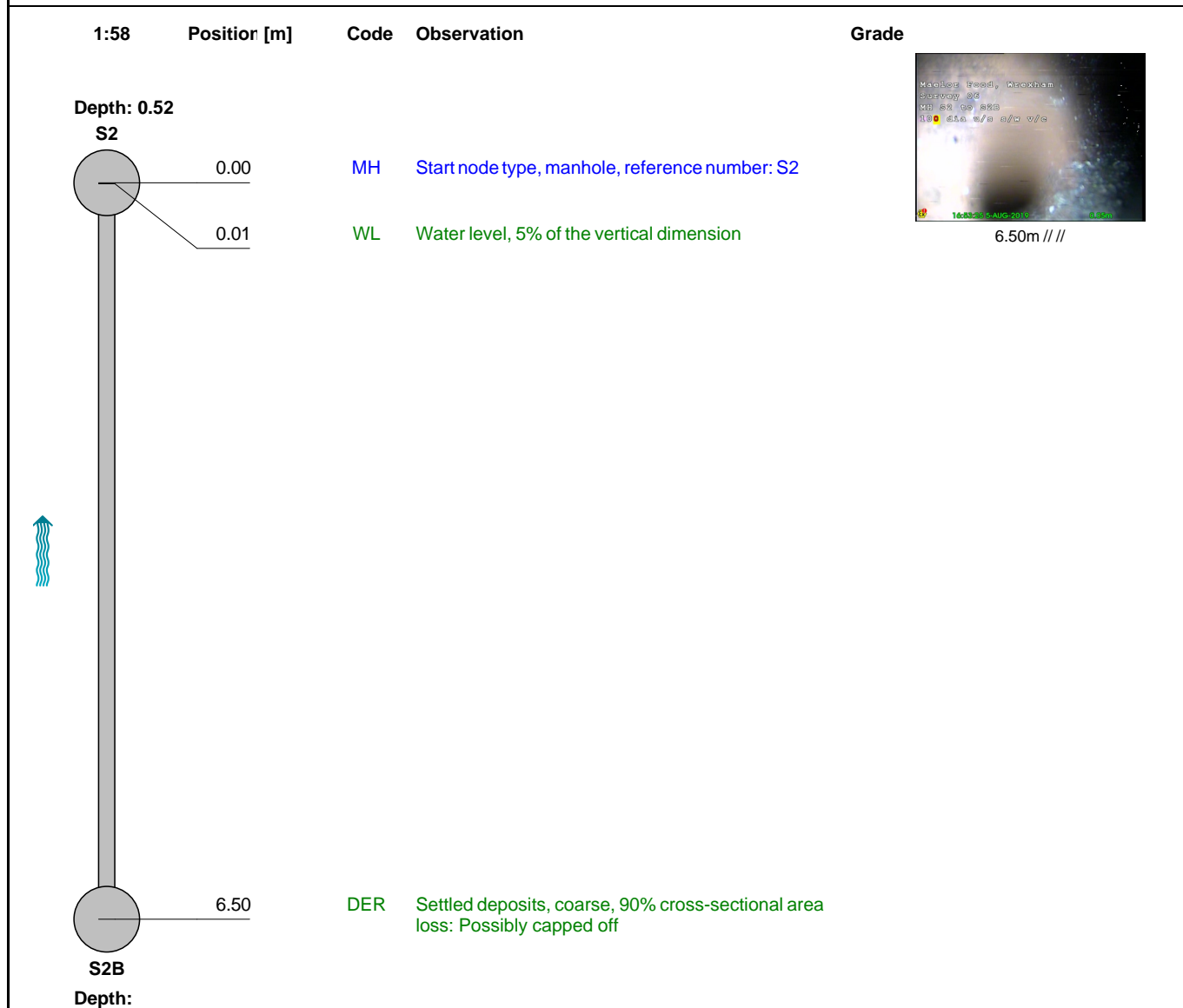


S2AX_ef852247-d9a3-4e89-b767-18eeffcb66a0_20190831_152544_502.jpg, 4.75m
Survey abandoned

Section Inspection - 8/5/2019 - S2BX

Section: 6	Inspection: 6	Date: 05/08/19	Time: 13:47	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S2BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S2 << S2B	US MH: S2B
Road: Maelor Foods	Inspected Length: 6.50 m	US Depth:
Location:	Total Length: 6.50 m	DS MH: S2
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.520 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Pictures - 8/5/2019 - S2BX

Section Number: 6	Inspection Direction: S2 << S2B	PLR: S2BX	Client's Ref:	Contractor's Ref:
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S2BX_dc71426f-fe8d-45e7-95a7-78c20e875e39_20190831_152700_651.jpg, , 6.50m
Settled deposits, coarse, 90% cross-sectional area loss

Section Inspection - 8/5/2019 - S3X									
Section: 7	Inspection: 7	Date: 05/08/19	Time: 14:00	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S3X		
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:		

Town or Village: WREXHAM	Insp Dir: S4 << S3	US MH: S3
Road: Maelor Foods	Inspected Length: 11.55 m	US Depth: 0.450 m
Location:	Total Length: 11.55 m	DS MH: S4
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.840 m

Use: Surface water	Pipe Shape: Circular
Type of Pipe: Gravity drain/sewer	Height / Width: 225 mm
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)
Inspection Purpose: Sample survey to determine asset condition	Lining Type: Cured in place lining
Flow Control: No flow control	Lining Material: None

Comment:
 Recommendation:

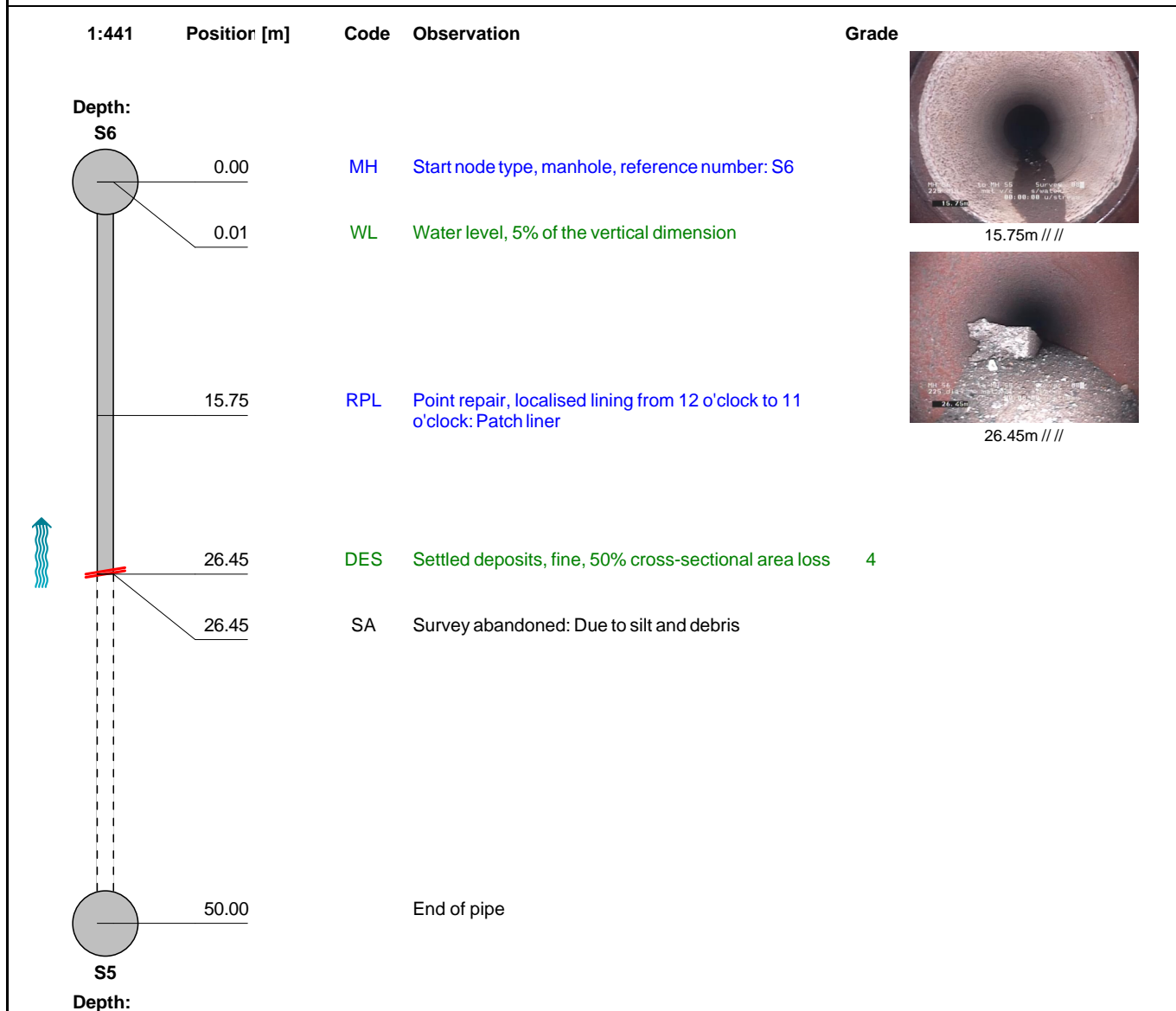
1:102	Position [m]	Code	Observation	Grade												
<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>Depth: 0.84</p> <p>S4</p> </div> <div style="flex: 2; padding-left: 20px;"> <table style="width: 100%;"> <tr> <td style="width: 10%;">0.00</td> <td style="width: 10%;">MH</td> <td>Start node type, manhole, reference number: S4</td> </tr> <tr> <td style="width: 10%;">0.01</td> <td style="width: 10%;">WL</td> <td>Water level, 5% of the vertical dimension</td> </tr> <tr> <td colspan="3" style="height: 300px;"></td> </tr> <tr> <td style="width: 10%;">11.55</td> <td style="width: 10%;">MHF</td> <td>Finish node type, manhole, reference number: S3</td> </tr> </table> </div> </div>					0.00	MH	Start node type, manhole, reference number: S4	0.01	WL	Water level, 5% of the vertical dimension				11.55	MHF	Finish node type, manhole, reference number: S3
0.00	MH	Start node type, manhole, reference number: S4														
0.01	WL	Water level, 5% of the vertical dimension														
11.55	MHF	Finish node type, manhole, reference number: S3														

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/5/2019 - S5X

Section: 8	Inspection: 8	Date: 05/08/19	Time: 14:05	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S6 << S5	US MH: S5
Road: Maelor Foods	Inspected Length: 26.45 m	US Depth:
Location:	Total Length: 50.00 m	DS MH: S6
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 225 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	5.0	0.1	5.0	4.0

Section Pictures - 8/5/2019 - S5X

Section Number: 8	Inspection Direction: S6 << S5	PLR: S5X	Client's Ref:	Contractor's Ref:
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S5X_49f79797-b73d-4239-8ce6-aa7553c7f003_20190831_152956_167.jpg, , 15.75m
Point repair, localised lining from 12 o'clock to 11 o'clock

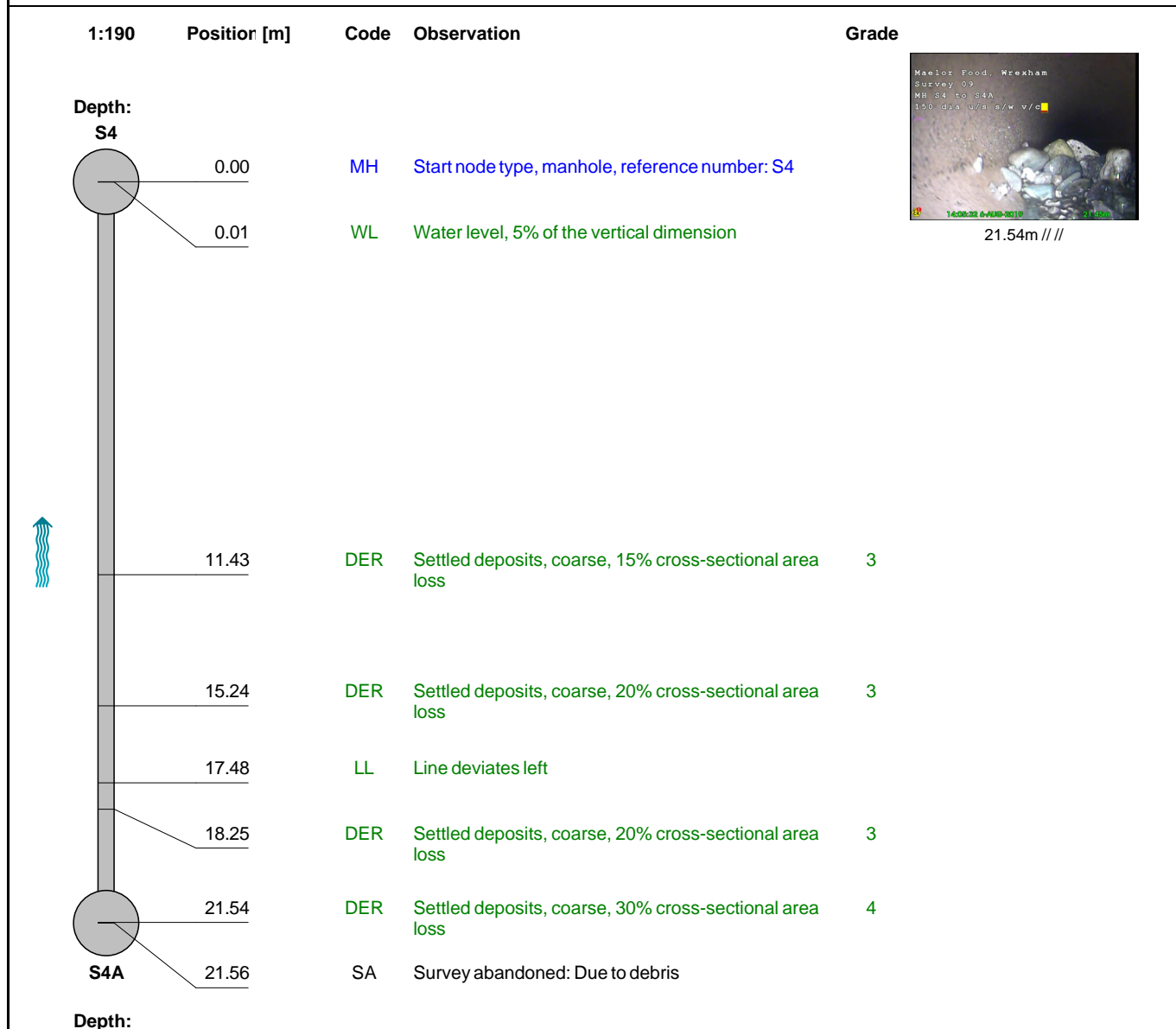


S5X_8b46bbdc-0edf-4bba-bda0-e6bca71cf85c_20190831_153057_297.jpg, , 26.45m
Settled deposits, fine, 50% cross-sectional area loss

Section Inspection - 8/6/2019 - S4AX

Section: 9	Inspection: 9	Date: 06/08/19	Time: 10:55	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S4AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S4 << S4A	US MH: S4A
Road: Maelor Foods	Inspected Length: 21.56 m	US Depth:
Location:	Total Length: 21.56 m	DS MH: S4
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	4	5.0	0.5	11.0	4.0

Section Pictures - 8/6/2019 - S4AX

Section Number: 9	Inspection Direction: S4 << S4A	PLR: S4AX	Client's Ref:	Contractor's Ref:
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S4AX_cf6e278b-8b76-4949-9463-6e8631fc79dd_20190831_153519_168.jpg, , 21.54m
Settled deposits, coarse, 30% cross-sectional area loss

Section Inspection - 8/6/2019 - S4BX

Section: 10	Inspection: 10	Date: 06/08/19	Time: 11:06	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S4BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S4 << S4B	US MH: S4B
Road: Maelor Foods	Inspected Length: 7.96 m	US Depth:
Location:	Total Length: 7.96 m	DS MH: S4
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	

Comment:

Recommendation:

1:71 **Position [m]** **Code** **Observation** **Grade**

Depth:

S4



0.00

MH

Start node type, manhole, reference number: S4

0.01

WL

Water level, 5% of the vertical dimension

7.96

LD

Line deviates down

S4B

7.96

GYF

Finish node type, gully, reference number: S4B: Gully has been filled in

Depth:

Structural Defects

Construction Features

Service & Operational Observations

Miscellaneous Features

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

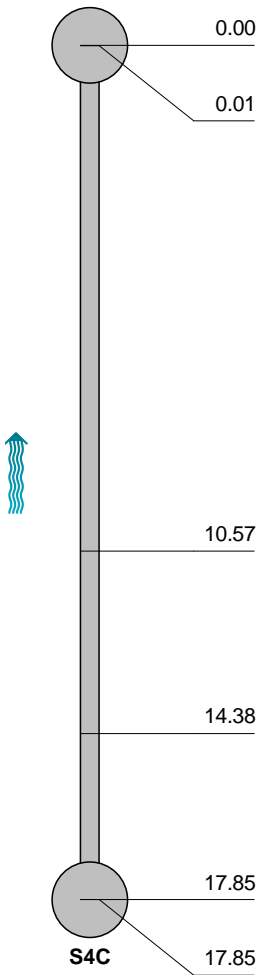
Section Inspection - 8/6/2019 - S4CX

Section: 11	Inspection: 11	Date: 06/08/19	Time: 11:47	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S4CX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S4 << S4C	US MH: S4C
Road: Maelor Foods	Inspected Length: 17.85 m	US Depth:
Location:	Total Length: 17.85 m	DS MH: S4
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	

Comment:

Recommendation:

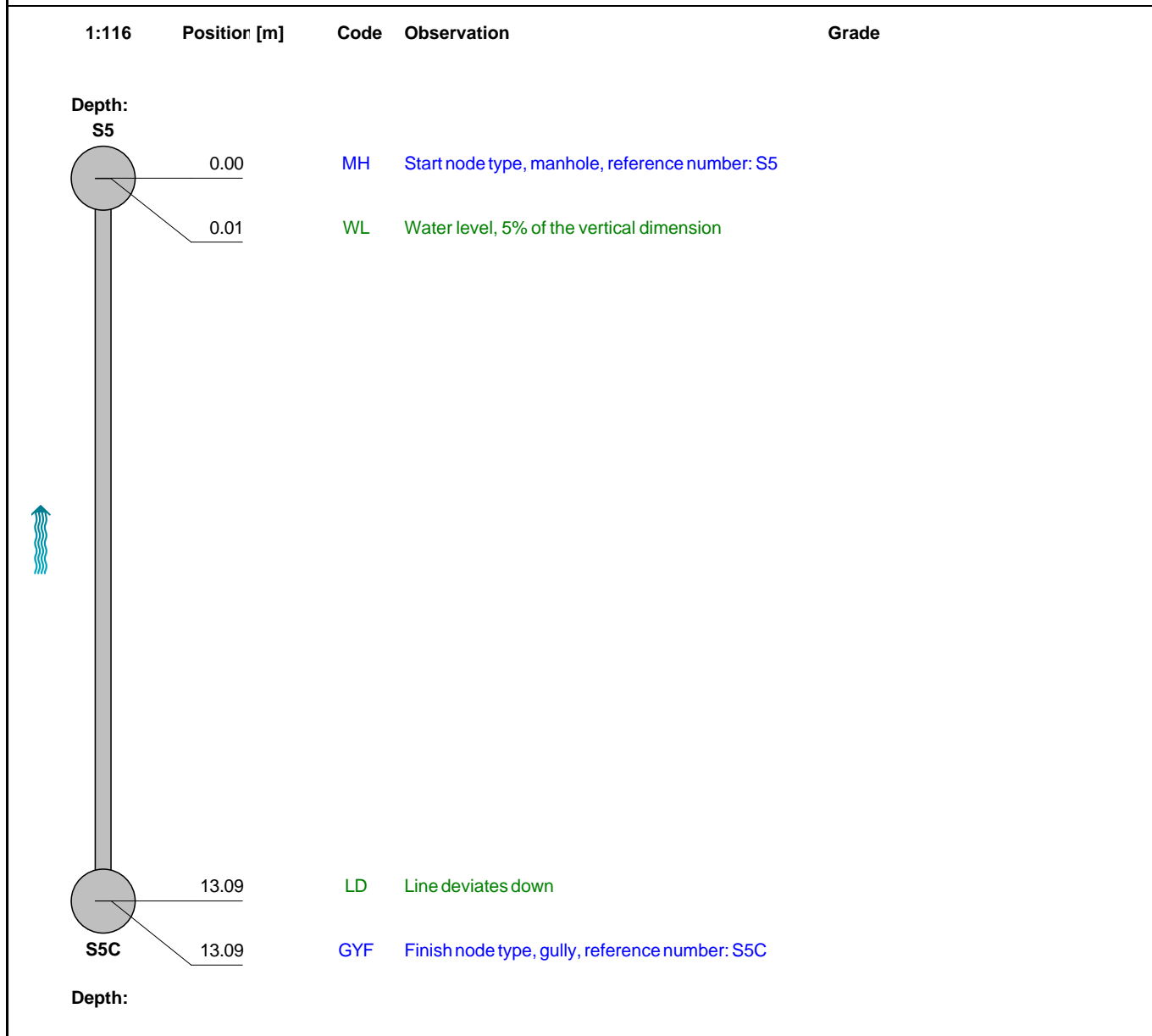
1:158	Position [m]	Code	Observation	Grade																								
<div><div><div>Depth: S4</div><div></div><table><tr><td>0.00</td><td>MH</td><td>Start node type, manhole, reference number: S4</td><td></td></tr><tr><td>0.01</td><td>WL</td><td>Water level, 5% of the vertical dimension</td><td></td></tr><tr><td>10.57</td><td>DES</td><td>Settled deposits, fine, 15% cross-sectional area loss</td><td>3</td></tr><tr><td>14.38</td><td>DES</td><td>Settled deposits, fine, 15% cross-sectional area loss</td><td>3</td></tr><tr><td>17.85</td><td>LD</td><td>Line deviates down</td><td></td></tr><tr><td>17.85</td><td>MHF</td><td>Finish node type, manhole, reference number: S4C: Interceptor</td><td></td></tr></table></div></div> <div><div>Depth:</div></div>					0.00	MH	Start node type, manhole, reference number: S4		0.01	WL	Water level, 5% of the vertical dimension		10.57	DES	Settled deposits, fine, 15% cross-sectional area loss	3	14.38	DES	Settled deposits, fine, 15% cross-sectional area loss	3	17.85	LD	Line deviates down		17.85	MHF	Finish node type, manhole, reference number: S4C: Interceptor	
0.00	MH	Start node type, manhole, reference number: S4																										
0.01	WL	Water level, 5% of the vertical dimension																										
10.57	DES	Settled deposits, fine, 15% cross-sectional area loss	3																									
14.38	DES	Settled deposits, fine, 15% cross-sectional area loss	3																									
17.85	LD	Line deviates down																										
17.85	MHF	Finish node type, manhole, reference number: S4C: Interceptor																										

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	2.0	0.2	4.0	3.0

Section Inspection - 8/6/2019 - S5CX

Section: 12	Inspection: 12	Date: 06/08/19	Time: 13:38	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5CX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S5 << S5C	US MH:	S5C
Road:	Maelor Foods	Inspected Length:	13.09 m	US Depth:	
Location:		Total Length:	13.09 m	DS MH:	S5
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	150 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

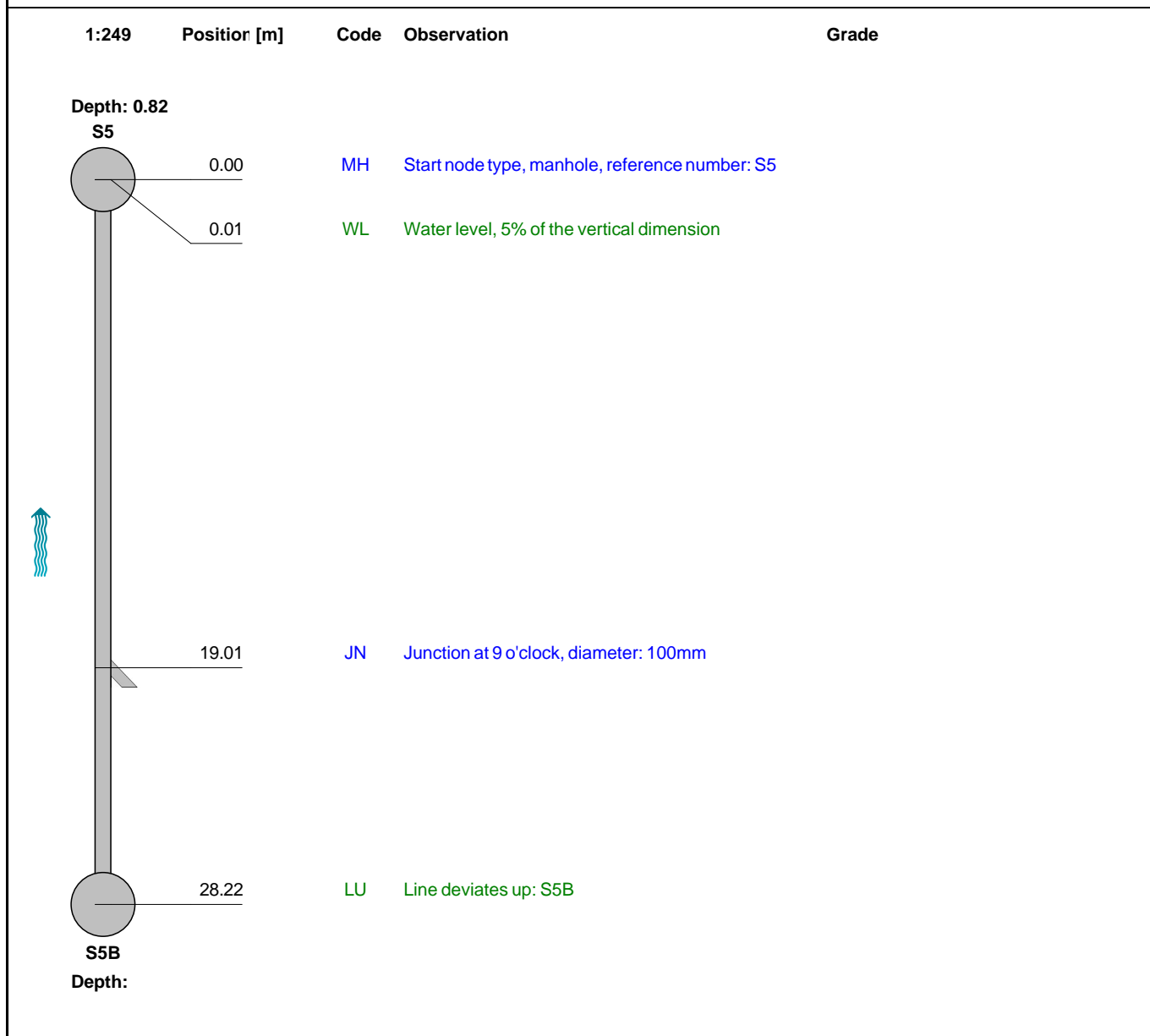


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/6/2019 - S5BX

Section: 13	Inspection: 13	Date: 06/08/19	Time: 13:42	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S5 << S5B	US MH:	S5B
Road:	Maelor Foods	Inspected Length:	28.22 m	US Depth:	
Location:		Total Length:	28.22 m	DS MH:	S5
Surface Type:		Pipe Length:	0.00 m	DS Depth:	0.820 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	150 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

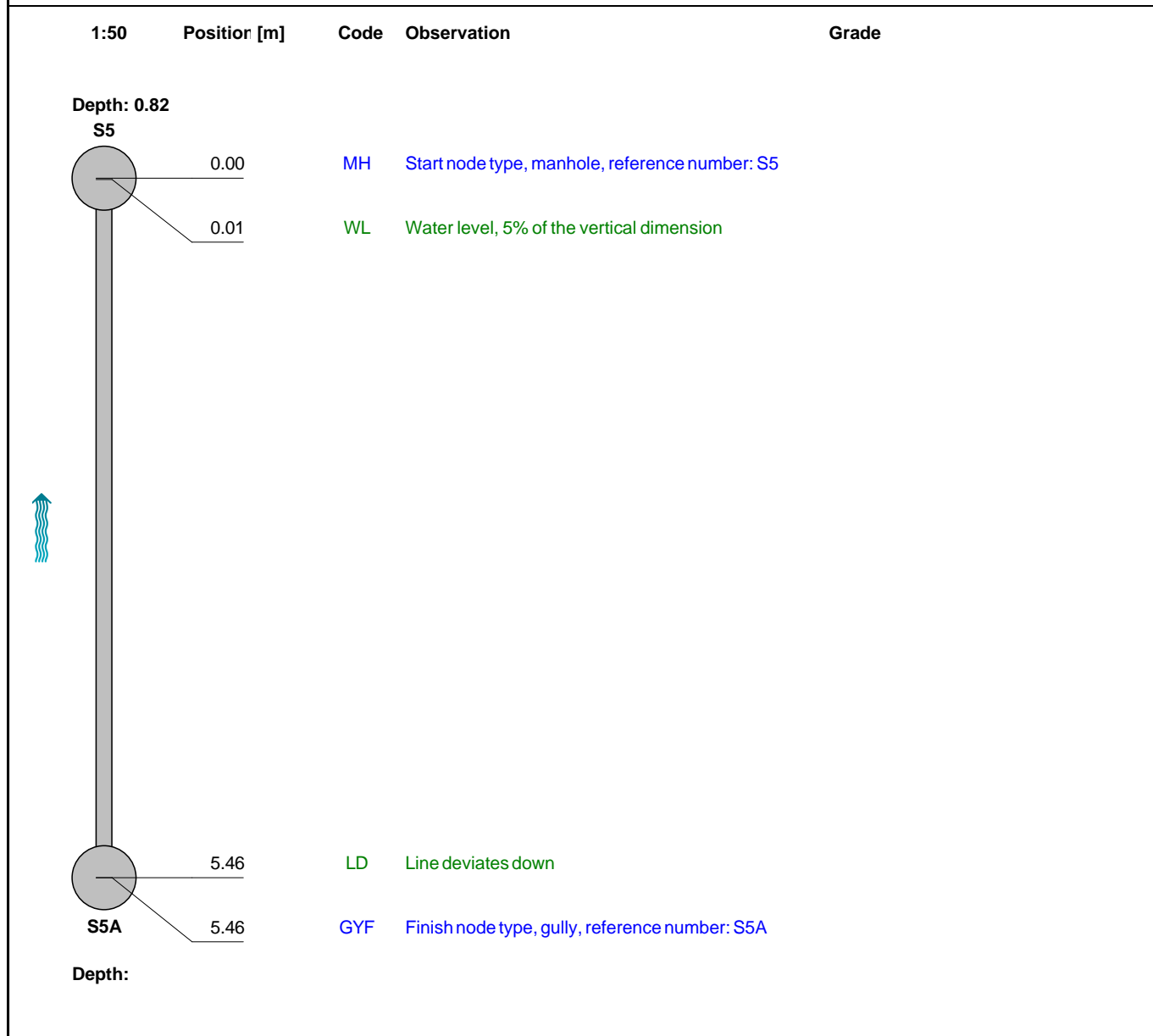


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 8/6/2019 - S5AX

Section: 14	Inspection: 14	Date: 06/08/19	Time: 14:13	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S5 << S5A	US MH:	S5A
Road:	Maelor Foods	Inspected Length:	5.46 m	US Depth:	
Location:		Total Length:	5.46 m	DS MH:	S5
Surface Type:		Pipe Length:	0.00 m	DS Depth:	0.820 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/6/2019 - S7X									
Section: 15	Inspection: 15	Date: 06/08/19	Time: 14:56	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S7X		
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:		

Town or Village: WREXHAM	Insp Dir: S8 << S7	US MH: S7
Road: Maelor Foods	Inspected Length: 13.93 m	US Depth: 1.070 m
Location:	Total Length: 13.93 m	DS MH: S8
Surface Type:	Pipe Length: 0.00 m	DS Depth: 1.200 m

Use: Surface water	Pipe Shape: Circular
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None
Flow Control: No flow control	Lining Material: None

Comment:
 Recommendation:

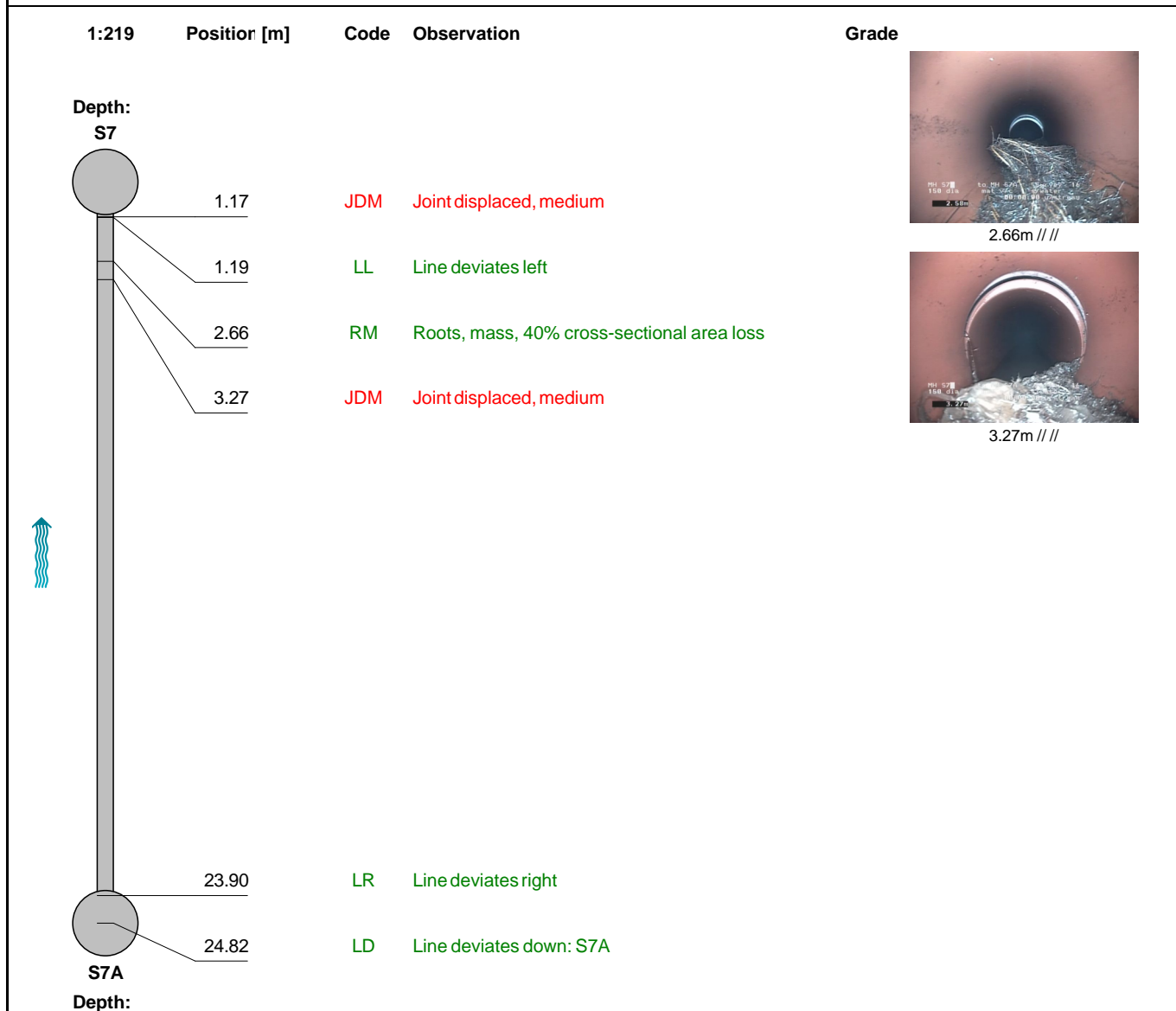
1:123	Position [m]	Code	Observation	Grade
<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>Depth: 1.20</p> <p>S8</p> </div> <div style="flex: 1; padding-left: 20px;"> <p>0.00 MH Start node type, manhole, reference number: S8</p> <p>0.01 WL Water level, 5% of the vertical dimension</p> <p>13.93 MHF Finish node type, manhole, reference number: S7</p> </div> </div>				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/6/2019 - S7AX

Section: 16	Inspection: 16	Date: 06/08/19	Time: 15:05	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S7AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S7 << S7A	US MH:	S7A
Road:	Maelor Foods	Inspected Length:	23.65 m	US Depth:	
Location:		Total Length:	24.82 m	DS MH:	S7
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	150 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Pictures - 8/6/2019 - S7AX

Section Number: 16	Inspection Direction: S7 << S7A	PLR: S7AX	Client's Ref:	Contractor's Ref:
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S7AX_4e6393c3-12bd-4b5e-a1d9-61dbb4d7ea56_20190831_154328_075.jpg, ,2.66m
Roots, mass, 40% cross-sectional area loss



S7AX_ca0b25ba-d372-4765-bb6d-46a92d997eda_20190831_154342_689.jpg, ,3.27m
Joint displaced, medium

Section Inspection - 8/6/2019 - S8X									
Section: 17	Inspection: 17	Date: 06/08/19	Time: 15:20	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S8X		
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:		

Town or Village: WREXHAM	Insp Dir: S8 >> S9	US MH: S8
Road: Maelor Foods	Inspected Length: 20.79 m	US Depth: 1.200 m
Location:	Total Length: 20.79 m	DS MH: S9
Surface Type:	Pipe Length: 0.00 m	DS Depth:

Use: Surface water	Pipe Shape: Circular
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None
Flow Control: No flow control	Lining Material: None

Comment:
 Recommendation:

1:184	Position [m]	Code	Observation	Grade
<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>Depth: 1.20</p> <p>S8</p> </div> <div style="flex: 2; padding-left: 20px;"> <p>MH Start node type, manhole, reference number: S8</p> <p>WL Water level, 5% of the vertical dimension</p> <p>JN Junction at 9 o'clock, diameter: 100mm</p> <p>MHF Finish node type, manhole, reference number: S9</p> </div> </div>				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/6/2019 - S9X									
Section: 18	Inspection: 18	Date: 06/08/19	Time: 15:29	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S9X		
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:		

Town or Village: WREXHAM	Insp Dir: S9 >> S10	US MH: S9
Road: Maelor Foods	Inspected Length: 7.55 m	US Depth:
Location:	Total Length: 7.55 m	DS MH: S10
Surface Type:	Pipe Length: 0.00 m	DS Depth:

Use: Surface water	Pipe Shape: Circular
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None
Flow Control: No flow control	Lining Material: None

Comment:
 Recommendation:

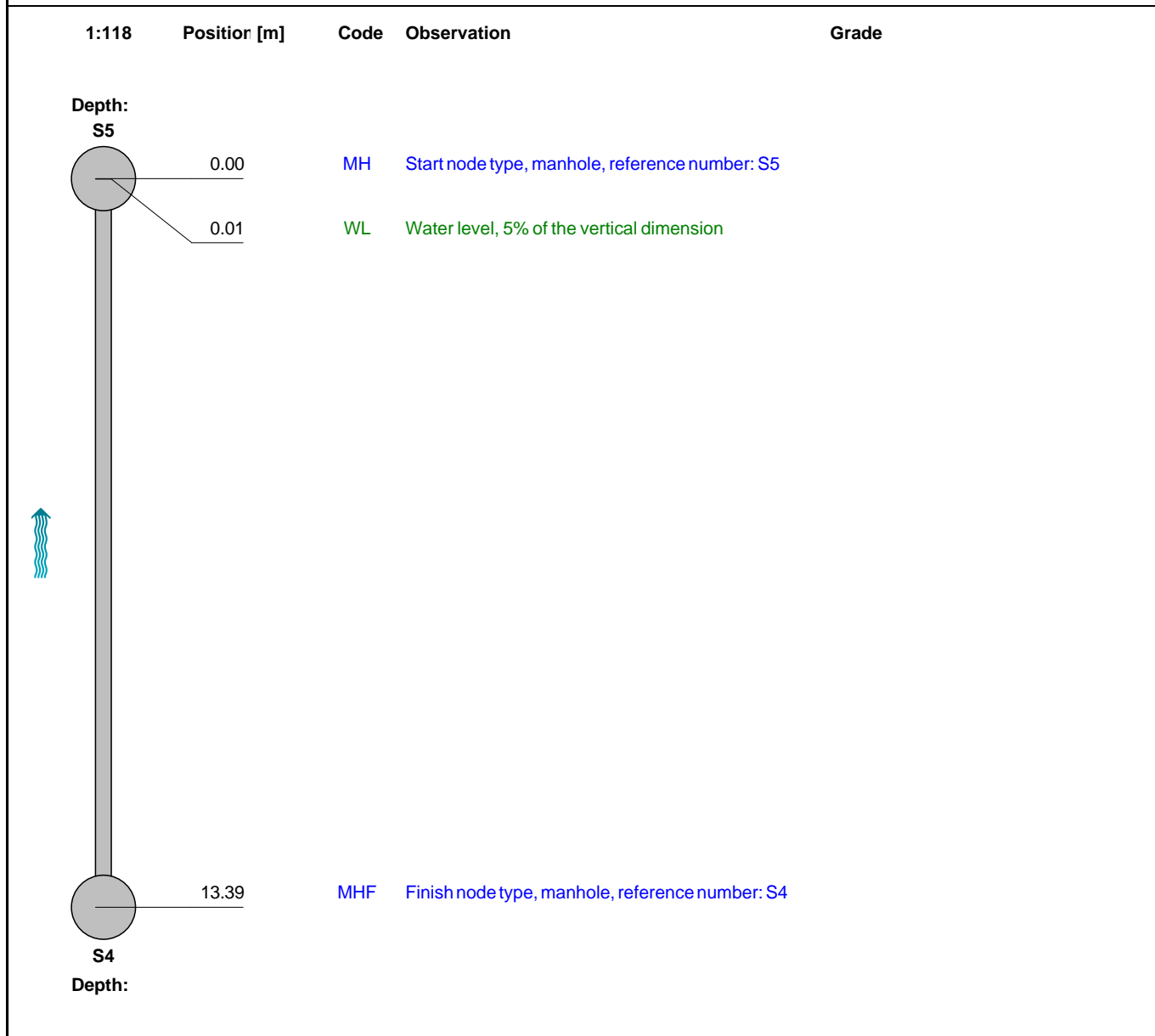
1:67	Position [m]	Code	Observation	Grade															
<div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>Depth: S9</p> <p>S10 Depth:</p> </div> <div style="flex: 2; padding-left: 20px;"> <table style="width: 100%;"> <tr> <td style="width: 10%;">0.00</td> <td style="width: 10%;">MH</td> <td>Start node type, manhole, reference number: S9</td> </tr> <tr> <td>0.01</td> <td>WL</td> <td>Water level, 5% of the vertical dimension</td> </tr> <tr> <td>0.12</td> <td>LL</td> <td>Line deviates left</td> </tr> <tr> <td colspan="3" style="height: 200px;"></td> </tr> <tr> <td>7.55</td> <td>MHF</td> <td>Finish node type, manhole, reference number: S10</td> </tr> </table> </div> </div>					0.00	MH	Start node type, manhole, reference number: S9	0.01	WL	Water level, 5% of the vertical dimension	0.12	LL	Line deviates left				7.55	MHF	Finish node type, manhole, reference number: S10
0.00	MH	Start node type, manhole, reference number: S9																	
0.01	WL	Water level, 5% of the vertical dimension																	
0.12	LL	Line deviates left																	
7.55	MHF	Finish node type, manhole, reference number: S10																	

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S4X

Section: 19	Inspection: 19	Date: 21/08/19	Time: 9:43	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S4X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S5 << S4	US MH:	S4
Road:	Maelor Foods	Inspected Length:	13.39 m	US Depth:	
Location:		Total Length:	13.39 m	DS MH:	S5
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	225 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S5X

Section: 20	Inspection: 20	Date: 21/08/19	Time: 10:27	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S5 >> S6	US MH: S5
Road: Maelor Foods	Inspected Length: 11.40 m	US Depth:
Location:	Total Length: 48.00 m	DS MH: S6
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 225 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	

Comment:

Recommendation:

1:423 **Position [m]** **Code** **Observation** **Grade**

Depth:

S5

0.00

MH Start node type, manhole, reference number: S5

0.01

WL Water level, 5% of the vertical dimension

11.40

OBS Obstacles built into structure from 1 o'clock to 4 o'clock, 25% cross-sectional area loss: Piece of wood

5

11.40

SC Size changes, new size(s), 150mm high: Pushed into line as a repair

11.40

SA Survey abandoned: Due to diameter change

11.40

48.00

S6

End of pipe

Depth:



11.40m ///

Structural Defects

Construction Features

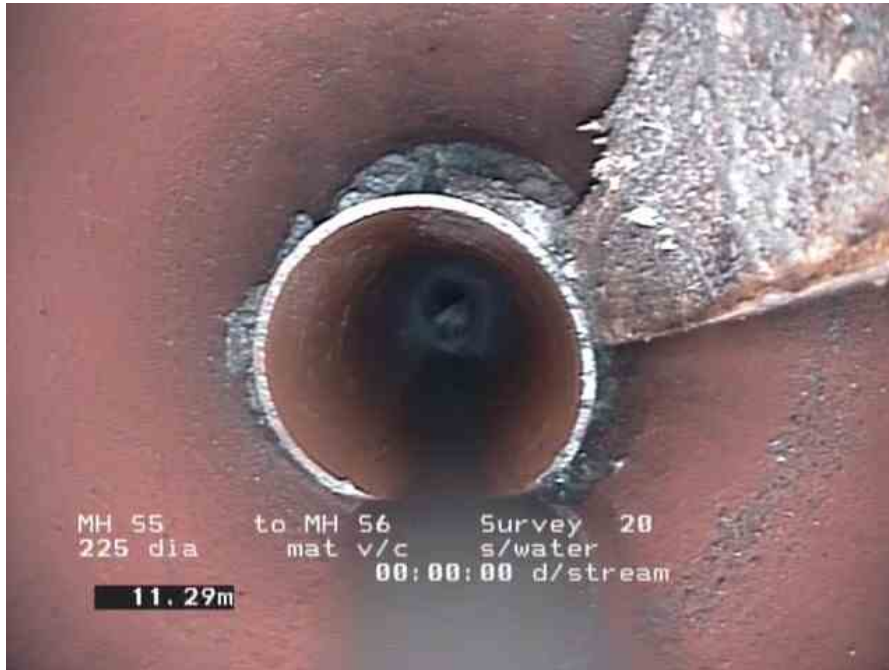
Service & Operational Observations

Miscellaneous Features

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	10.0	0.2	10.0	5.0

Section Pictures - 8/21/2019 - S5X

Section Number: 20	Inspection Direction: S5 >> S6	PLR: S5X	Client's Ref:	Contractor's Ref:
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S5X_7f7dacf4-3dbc-476d-8d9c-5dbca32d2f86_20190831_154642_435.jpg, , 11.40m
Obstacles built into structure from 1 o'clock to 4 o'clock, 25% cross-sectional area loss

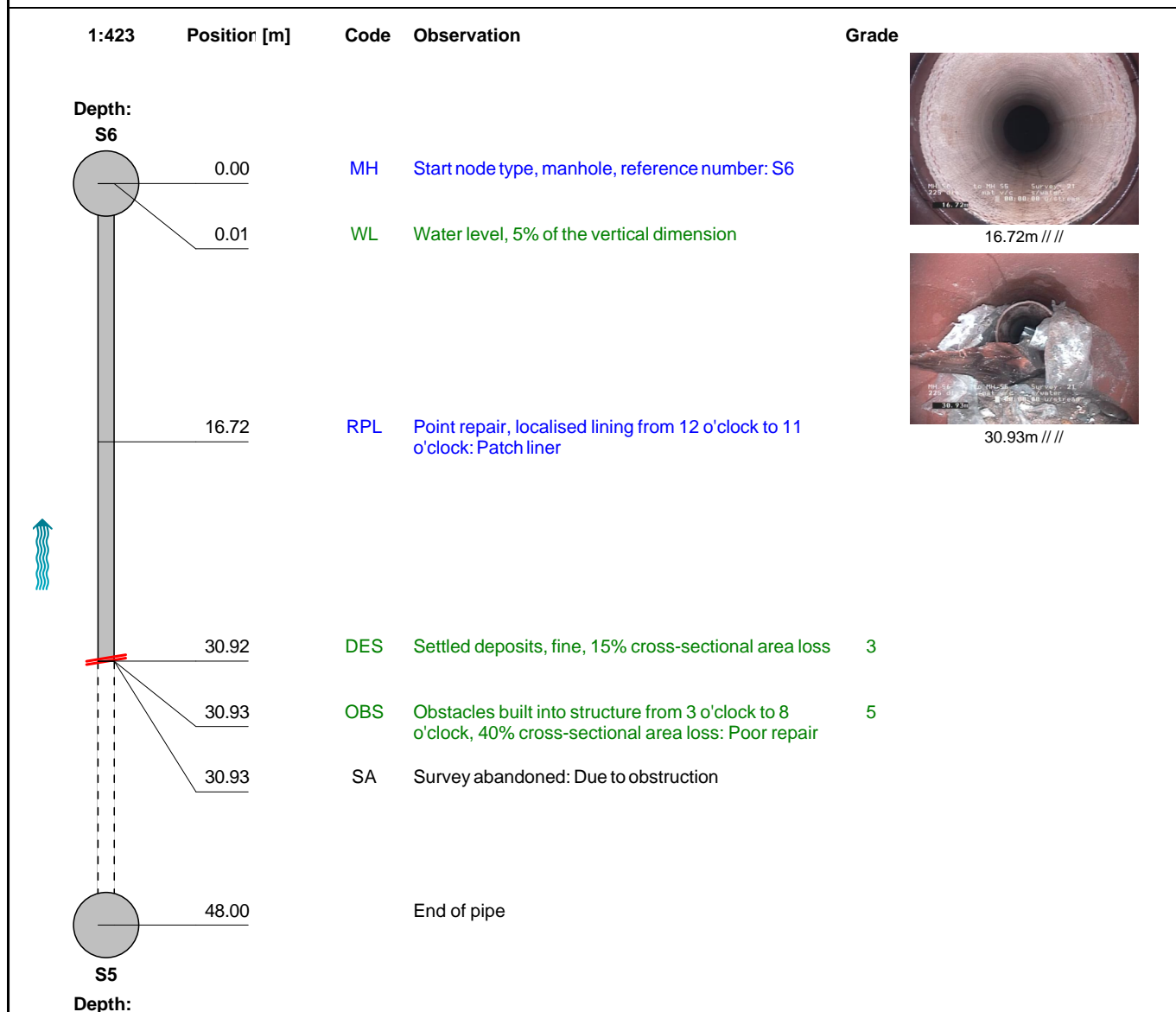
Section Inspection - 8/21/2019 - S5X

Section: 21	Inspection: 21	Date: 21/08/19	Time: 10:57	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S5X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S6 << S5	US MH: S5
Road: Maelor Foods	Inspected Length: 30.93 m	US Depth:
Location:	Total Length: 48.00 m	DS MH: S6
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 225 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	

Comment:

Recommendation:



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	12.0	0.3	12.0	5.0

Section Pictures - 8/21/2019 - S5X

Section Number: 21	Inspection Direction: S6 << S5	PLR: S5X	Client's Ref:	Contractor's Ref:
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S5X_07b4e33c-280a-48a8-8a40-a63b7ba0fc5b_20190831_154800_512.jpg, 16.72m
Point repair, localised lining from 12 o'clock to 11 o'clock

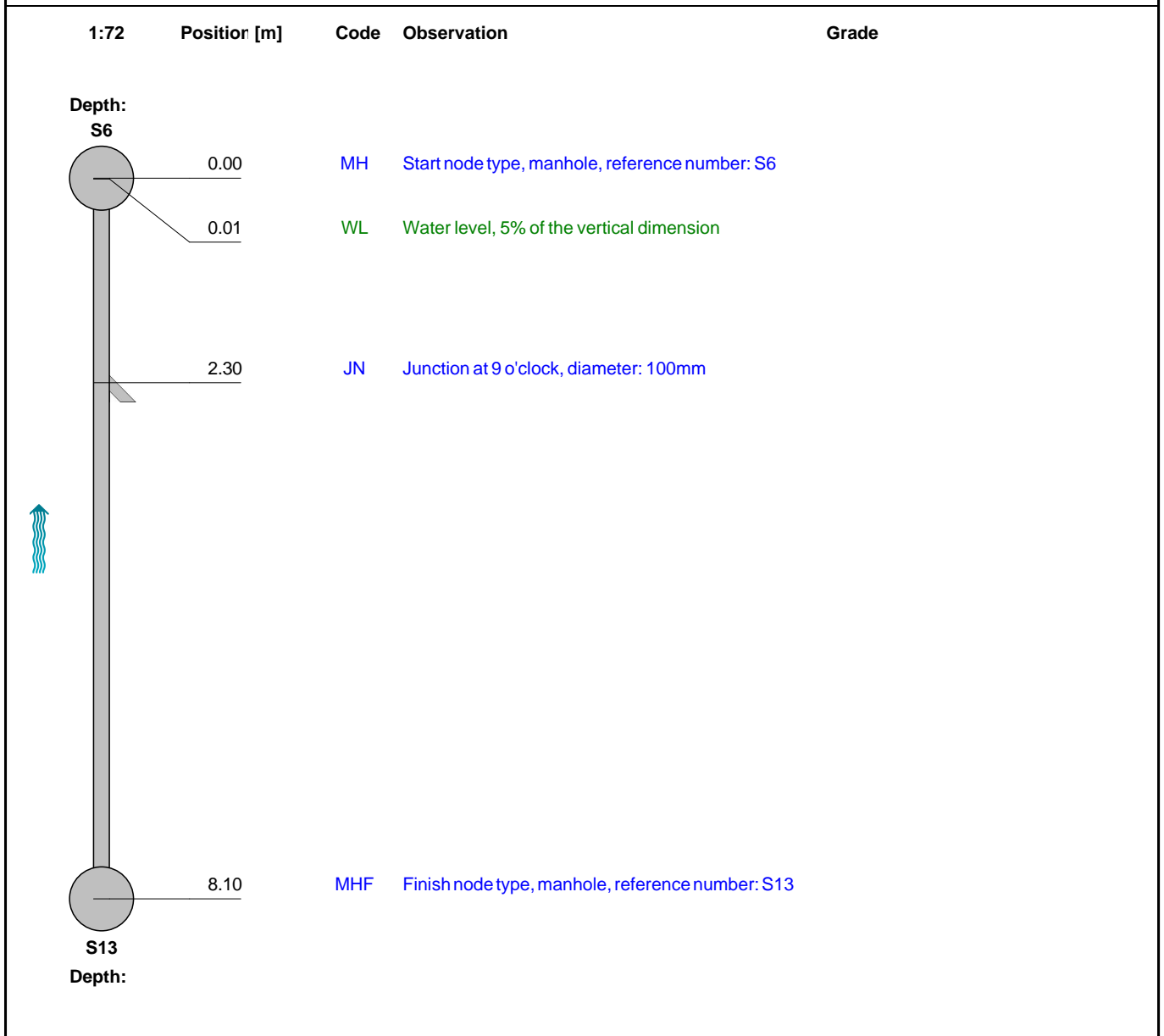


S5X_b9a80b22-8a74-4485-8e98-95494038ba3a_20190831_154920_610.jpg, 30.93m
Obstacles built into structure from 3 o'clock to 8 o'clock, 40% cross-sectional area loss

Section Inspection - 8/21/2019 - S13X

Section: 22	Inspection: 22	Date: 21/08/19	Time: 11:25	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S13X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S6 << S13	US MH: S13
Road: Maelor Foods	Inspected Length: 8.10 m	US Depth:
Location:	Total Length: 8.10 m	DS MH: S6
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		

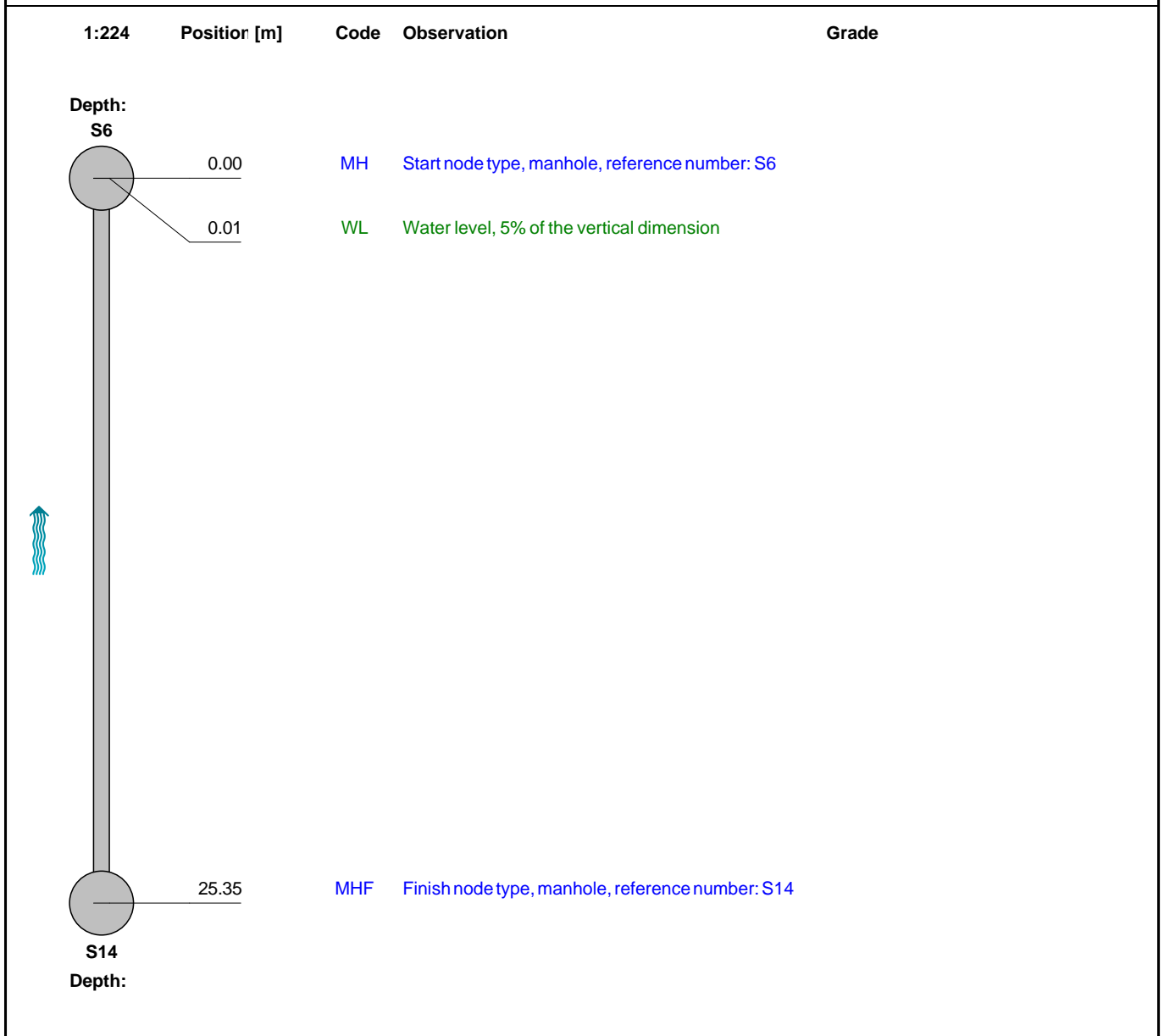


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S14X

Section: 23	Inspection: 23	Date: 21/08/19	Time: 11:32	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S14X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S6 << S14	US MH:	S14
Road:	Maelor Foods	Inspected Length:	25.35 m	US Depth:	
Location:		Total Length:	25.35 m	DS MH:	S6
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water		Pipe Shape:	Circular	
Type of Pipe:	Gravity drain/sewer		Height / Width:	150 mm	
Year Constructed:			Pipe Material:	Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose:	Sample survey to determine asset condition		Lining Type:	Cured in place lining	
Flow Control:	No flow control		Lining Material:	None	
Comment:					
Recommendation:					

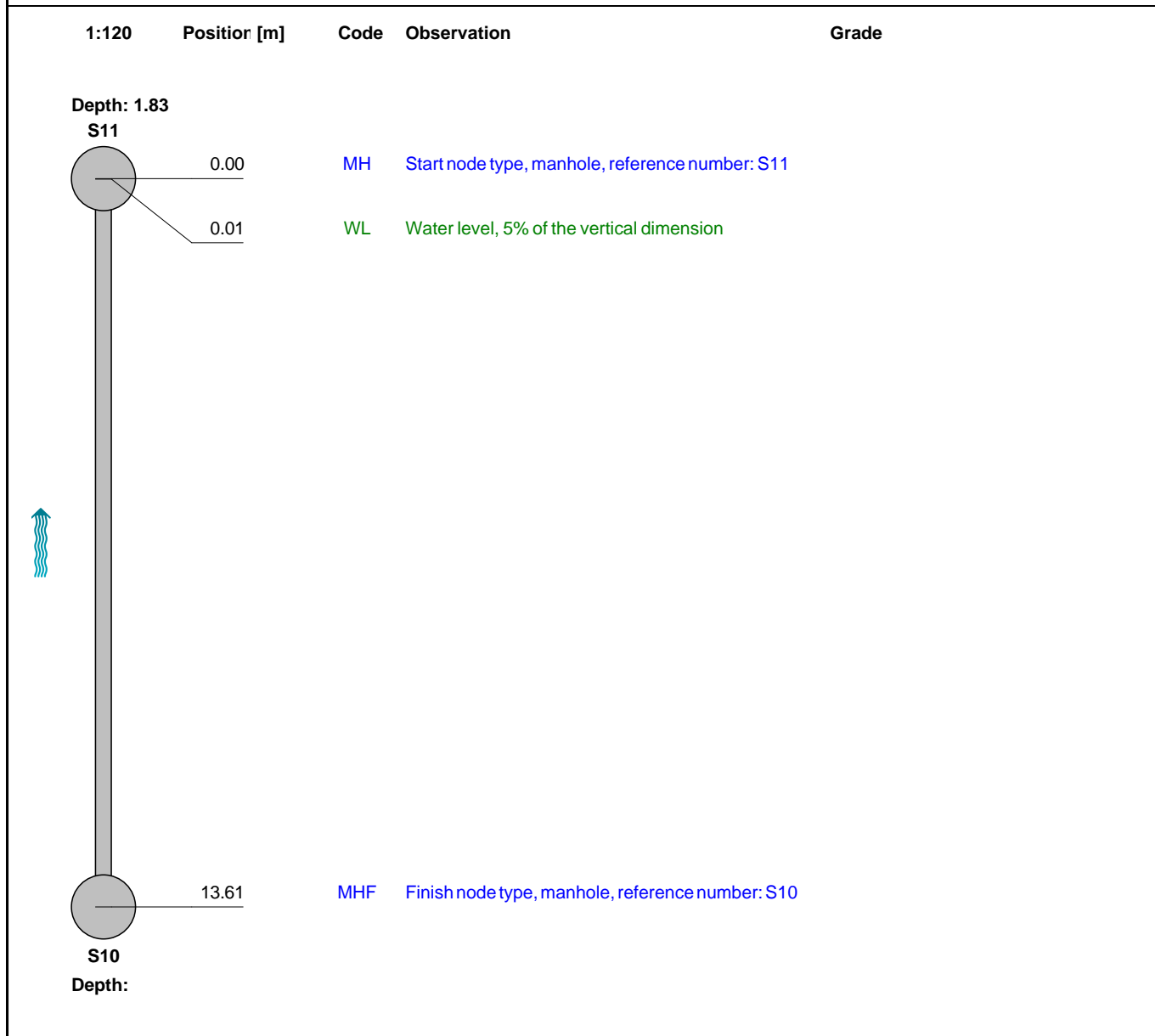


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S10X

Section: 24	Inspection: 24	Date: 21/08/19	Time: 11:58	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S10X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S11 << S10	US MH:	S10
Road:	Maelor Foods	Inspected Length:	13.61 m	US Depth:	
Location:		Total Length:	13.61 m	DS MH:	S11
Surface Type:		Pipe Length:	0.00 m	DS Depth:	1.830 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	150 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S11X

Section: 25	Inspection: 25	Date: 21/08/19	Time: 12:06	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S11X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S12 << S11	US MH:	S11
Road:	Maelor Foods	Inspected Length:	0.76 m	US Depth:	
Location:		Total Length:	0.76 m	DS MH:	S12
Surface Type:		Pipe Length:	0.00 m	DS Depth:	1.810 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	150 mm		
Year Constructed:		Pipe Material:	Brick		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

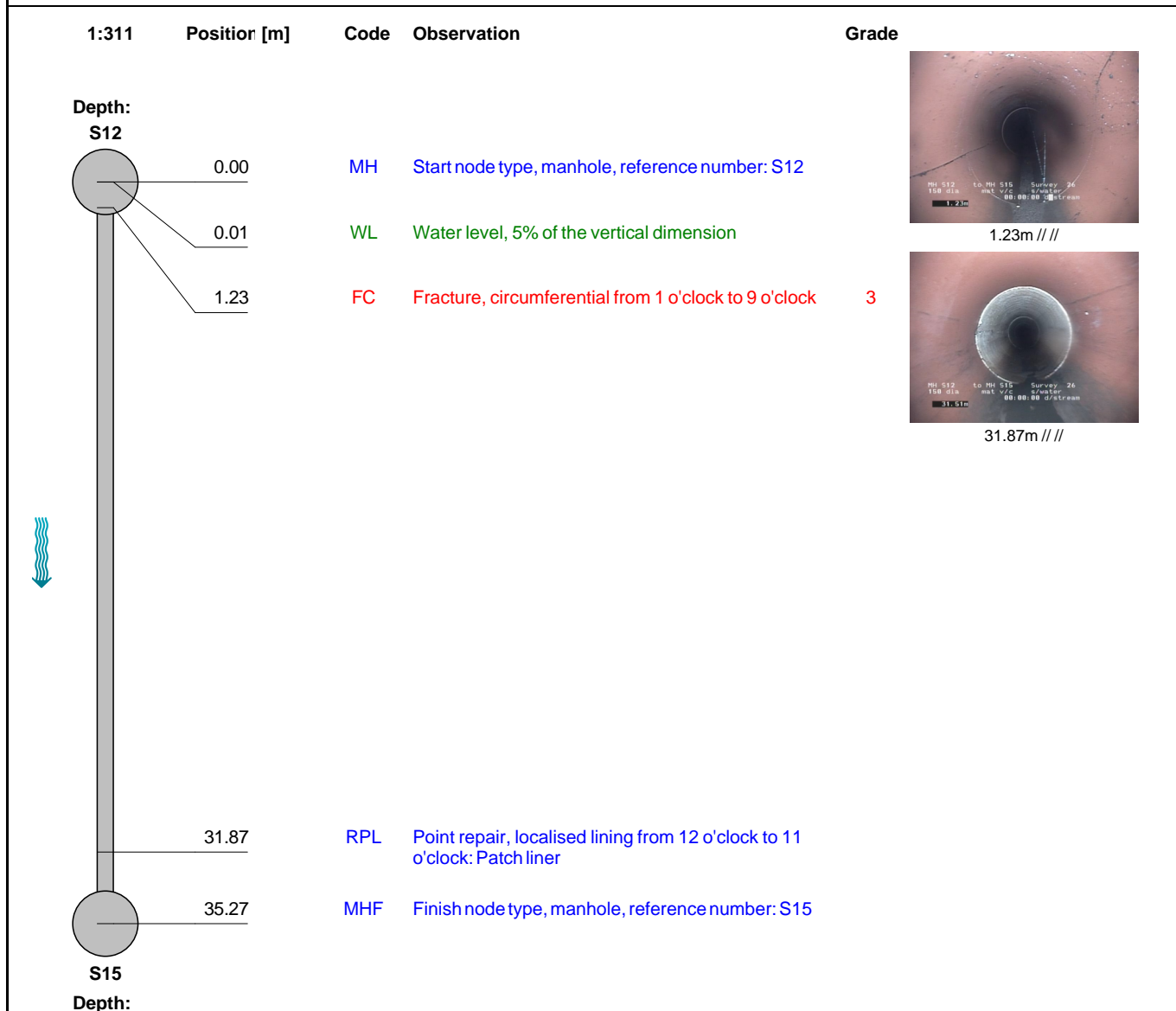
1:50	Position [m]	Code	Observation	Grade
<p>Depth: 1.81 S12</p> <p>0.00</p> <p>0.01</p> <p>0.76</p> <p>S11 Depth:</p>				
		MH	Start node type, manhole, reference number: S12	
		WL	Water level, 5% of the vertical dimension	
		MHF	Finish node type, manhole, reference number: S11	

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S12X

Section: 26	Inspection: 26	Date: 21/08/19	Time: 12:14	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S12X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S12 >> S15	US MH: S12
Road: Maelor Foods	Inspected Length: 35.27 m	US Depth:
Location:	Total Length: 35.27 m	DS MH: S15
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	1.1	40.0	3.0	0	0.0	0.0	0.0	1.0

Section Pictures - 8/21/2019 - S12X

Section Number: 26	Inspection Direction: S12 >> S15	PLR: S12X	Client's Ref:	Contractor's Ref:
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S12X_50c434ec-2dba-482b-9d2c-ca77962d7113_20190831_155227_638.jpg, , 1.23m
Fracture, circumferential from 1 o'clock to 9 o'clock



S12X_6b652c16-f3ac-4c81-866a-854d12ce5751_20190831_155341_367.jpg, , 31.87m
Point repair, localised lining from 12 o'clock to 11 o'clock

Section Inspection - 8/21/2019 - S16X

Section: 27	Inspection: 27	Date: 21/08/19	Time: 14:24	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S16X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S16 >> S14	US MH:	S16
Road:	Maelor Foods	Inspected Length:	21.96 m	US Depth:	
Location:		Total Length:	21.96 m	DS MH:	S14
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water		Pipe Shape:	Circular	
Type of Pipe:	Gravity drain/sewer		Height / Width:	100 mm	
Year Constructed:			Pipe Material:	Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose:	Sample survey to determine asset condition		Lining Type:	None	
Flow Control:	No flow control		Lining Material:	None	
Comment:					
Recommendation:					

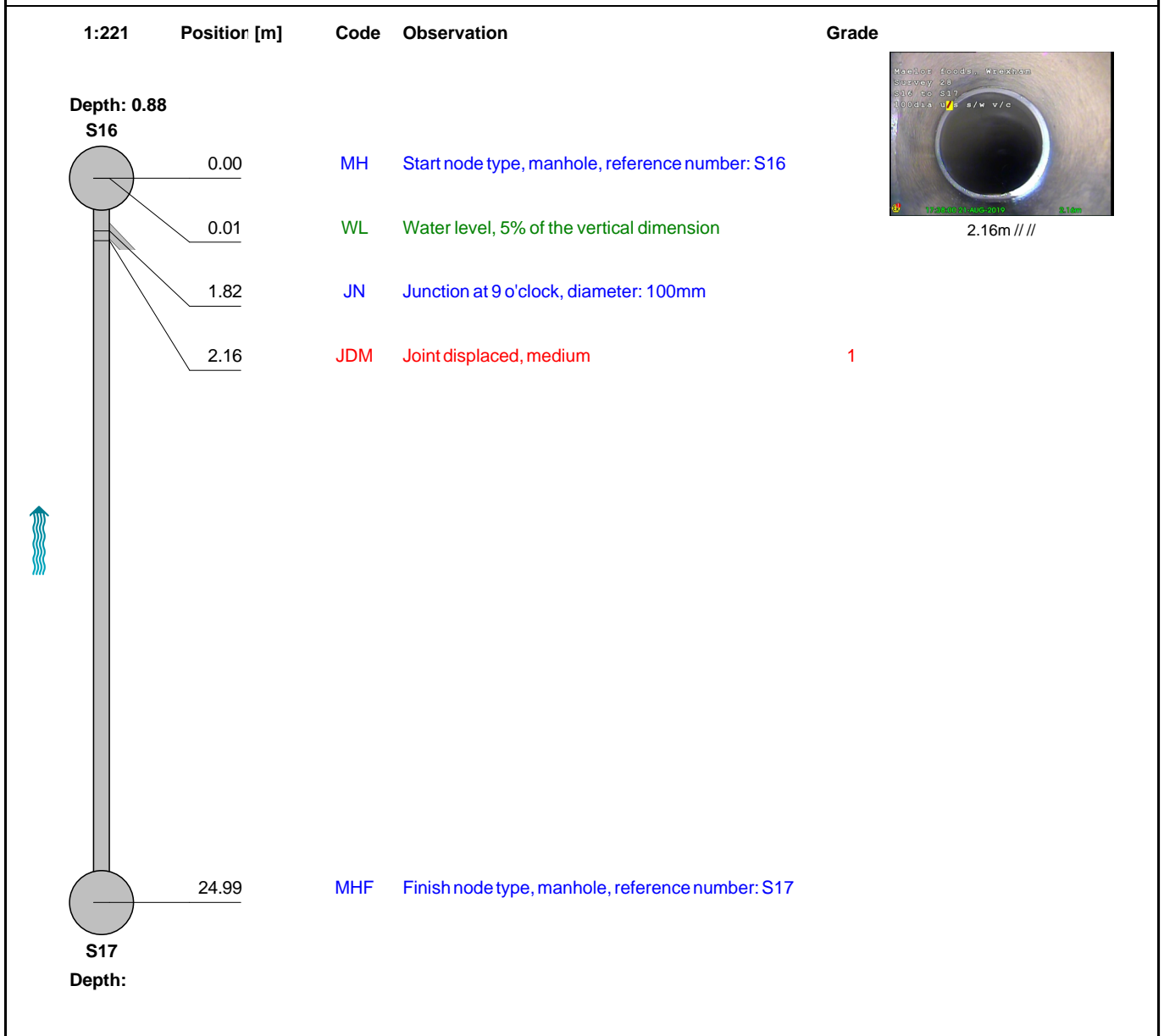
1:194	Position [m]	Code	Observation	Grade
<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <p>Depth: S16</p> <p>0.00</p> <p>0.01</p> <p>13.46</p> <p>13.78</p> <p>21.96</p> <p>S14 Depth:</p> </div> <div> <p>MH Start node type, manhole, reference number: S16</p> <p>WL Water level, 5% of the vertical dimension</p> <p>JDL Joint displaced, large</p> <p>JN Junction at 9 o'clock, diameter: 100mm</p> <p>MHF Finish node type, manhole, reference number: S14</p> </div> </div>				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	2.0	0.1	2.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S17X

Section: 28	Inspection: 28	Date: 21/08/19	Time: 14:30	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S17X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S16 << S17	US MH: S17
Road: Maelor Foods	Inspected Length: 24.99 m	US Depth:
Location:	Total Length: 24.99 m	DS MH: S16
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.880 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	1.0	0.0	1.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 8/21/2019 - S17X

Section Number: 28	Inspection Direction: S16 << S17	PLR: S17X	Client's Ref:	Contractor's Ref:
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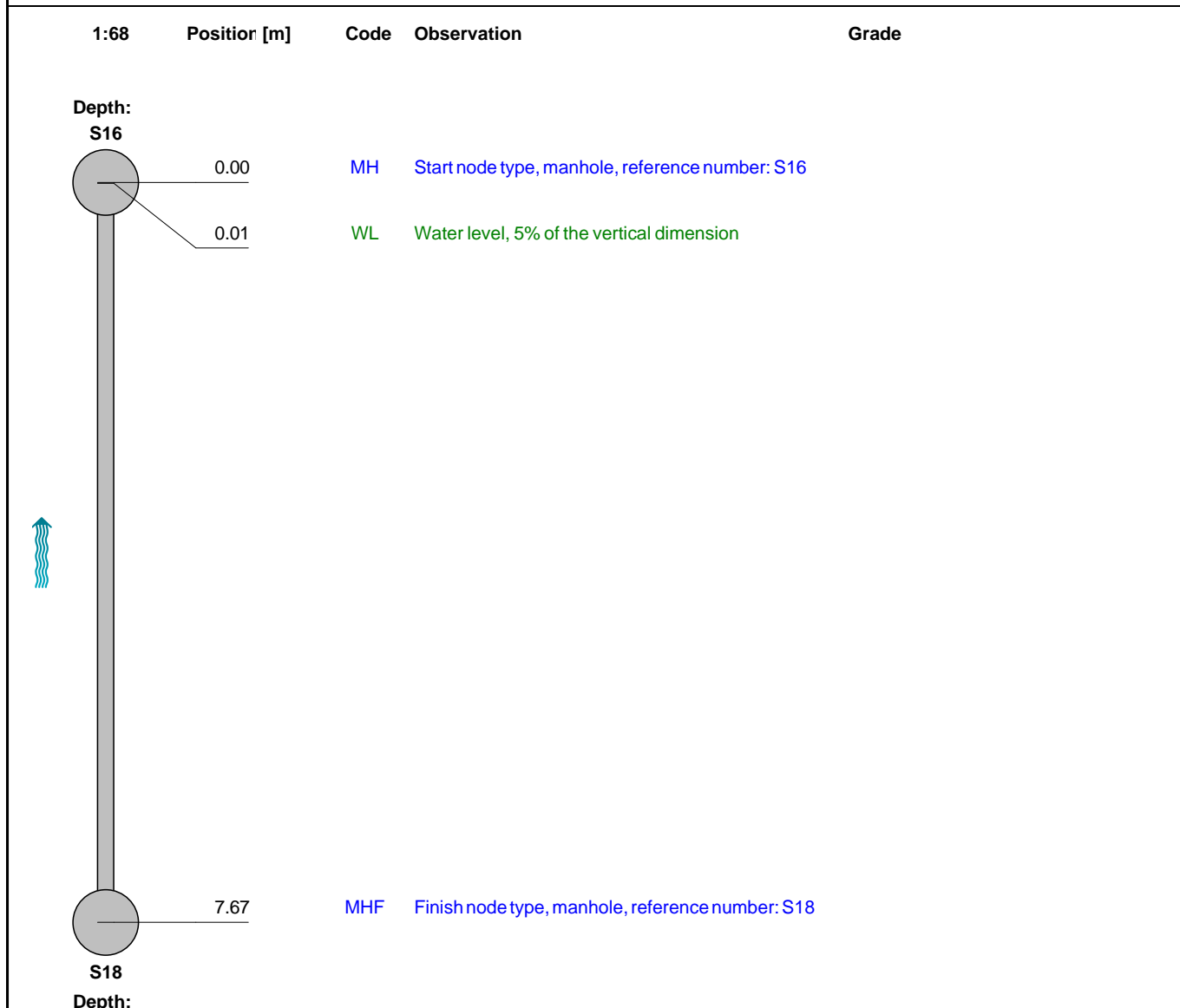


S17X_61dff4ed-df79-473d-bb73-f6807787cc87_20190901_142902_769.jpg, , 2.16m
Joint displaced, medium

Section Inspection - 8/21/2019 - S18X

Section: 29	Inspection: 29	Date: 21/08/19	Time: 14:40	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S18X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S16 << S18	US MH: S18
Road: Maelor Foods	Inspected Length: 7.67 m	US Depth:
Location:	Total Length: 7.67 m	DS MH: S16
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		

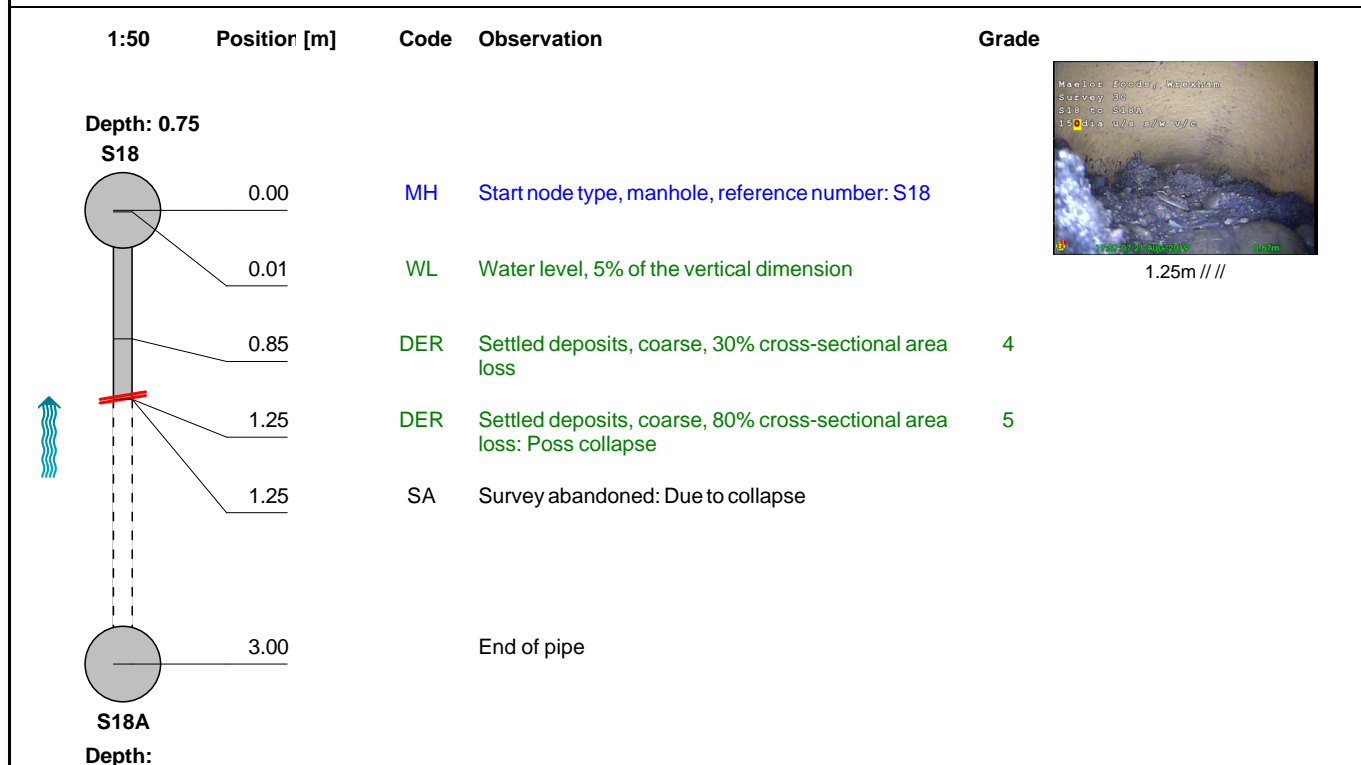


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S18AX

Section: 30	Inspection: 30	Date: 21/08/19	Time: 14:50	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S18AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S18 << S18A	US MH: S18A
Road: Maelor Foods	Inspected Length: 1.25 m	US Depth:
Location:	Total Length: 3.00 m	DS MH: S18
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.750 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 150 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	10.0	5.0	15.0	5.0

Section Pictures - 8/21/2019 - S18AX

Section Number: 30	Inspection Direction: S18 << S18A	PLR: S18AX	Client's Ref:	Contractor's Ref:
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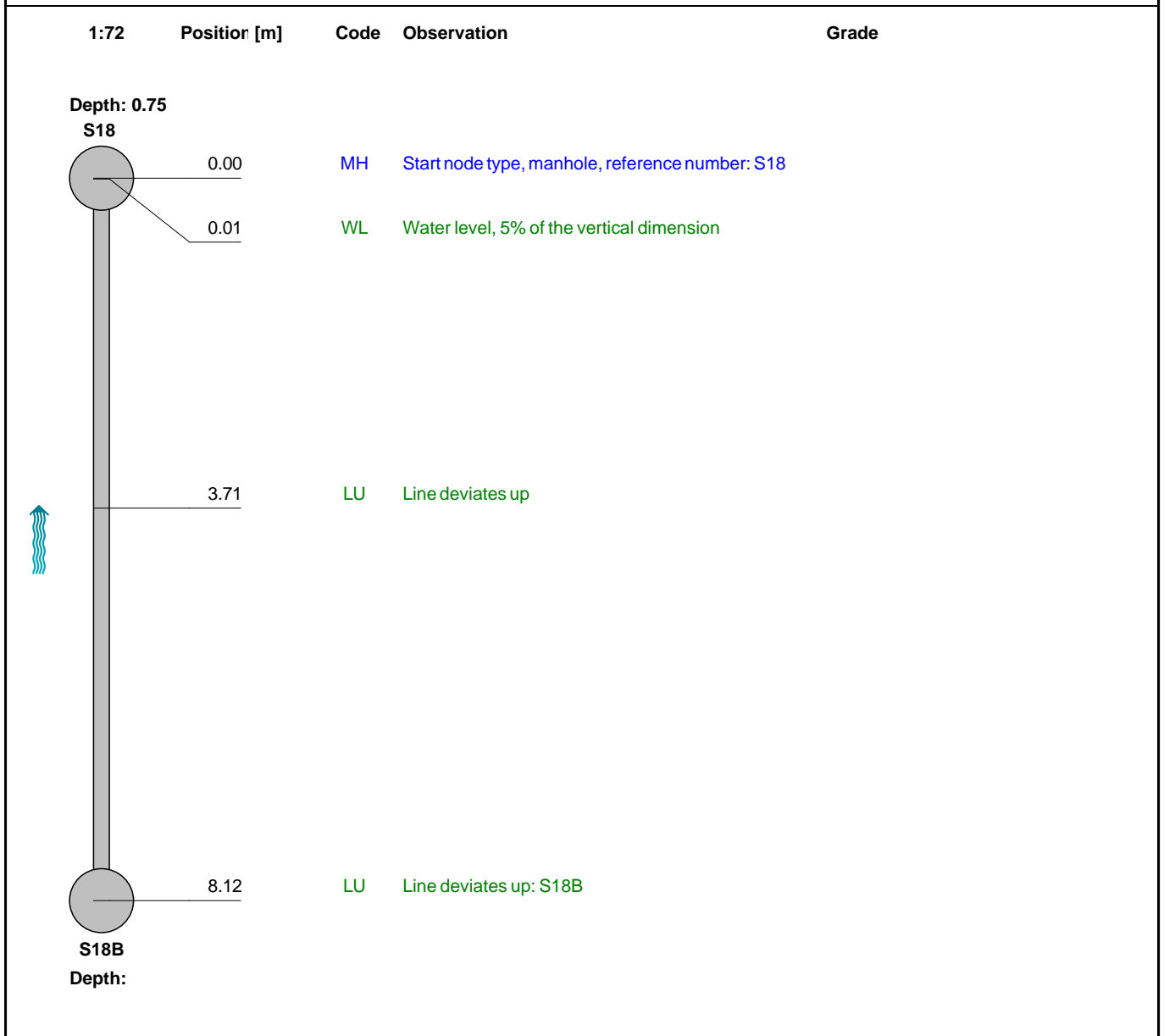


S18AX_10c15f4b-8ad3-4905-8990-d8c740d23703_20190901_143129_919.jpg, , 1.25m
Settled deposits, coarse, 80% cross-sectional area loss

Section Inspection - 8/21/2019 - S18BX

Section: 31	Inspection: 31	Date: 21/08/19	Time: 14:53	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S18BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S18 << S18B	US MH:	S18B
Road:	Maelor Foods	Inspected Length:	8.12 m	US Depth:	
Location:		Total Length:	8.12 m	DS MH:	S18
Surface Type:		Pipe Length:	0.00 m	DS Depth:	0.750 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

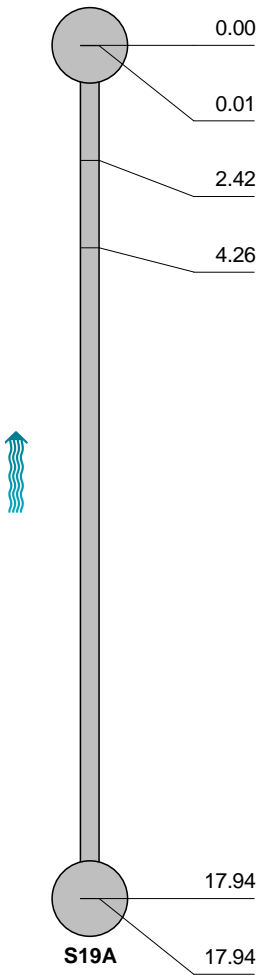


Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 8/21/2019 - S19AX

Section: 32	Inspection: 32	Date: 21/08/19	Time: 15:02	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S19AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S19 << S19A	US MH: S19A
Road: Maelor Foods	Inspected Length: 17.94 m	US Depth:
Location:	Total Length: 17.94 m	DS MH: S19
Surface Type:	Pipe Length: 0.00 m	DS Depth:
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		

1:159	Position [m]	Code	Observation	Grade
<div><div><div>Depth: S19</div><div></div></div></div>				
	0.00	MH	Start node type, manhole, reference number: S19	
	0.01	WL	Water level, 5% of the vertical dimension	
	2.42	LR	Line deviates right	
	4.26	LR	Line deviates right	
	17.94	LD	Line deviates down	
	17.94	GYF	Finish node type, gully, reference number: S19A	
<div><div>Depth:</div></div>				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S19BX

Section: 33	Inspection: 33	Date: 21/08/19	Time: 15:10	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S19BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S19 << S19B	US MH: S19B
Road: Maelor Foods	Inspected Length: 2.09 m	US Depth:
Location:	Total Length: 2.09 m	DS MH: S19
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.680 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		

1:50

Position [m]

Code

Observation

Grade

Depth: 0.68

S19

S19B

Depth:

0.00

MH

Start node type, manhole, reference number: S19

0.01

WL

Water level, 5% of the vertical dimension

1.37

LR

Line deviates right

2.09

LD

Line deviates down

2.09

GYF

Finish node type, gully, reference number: S19B

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

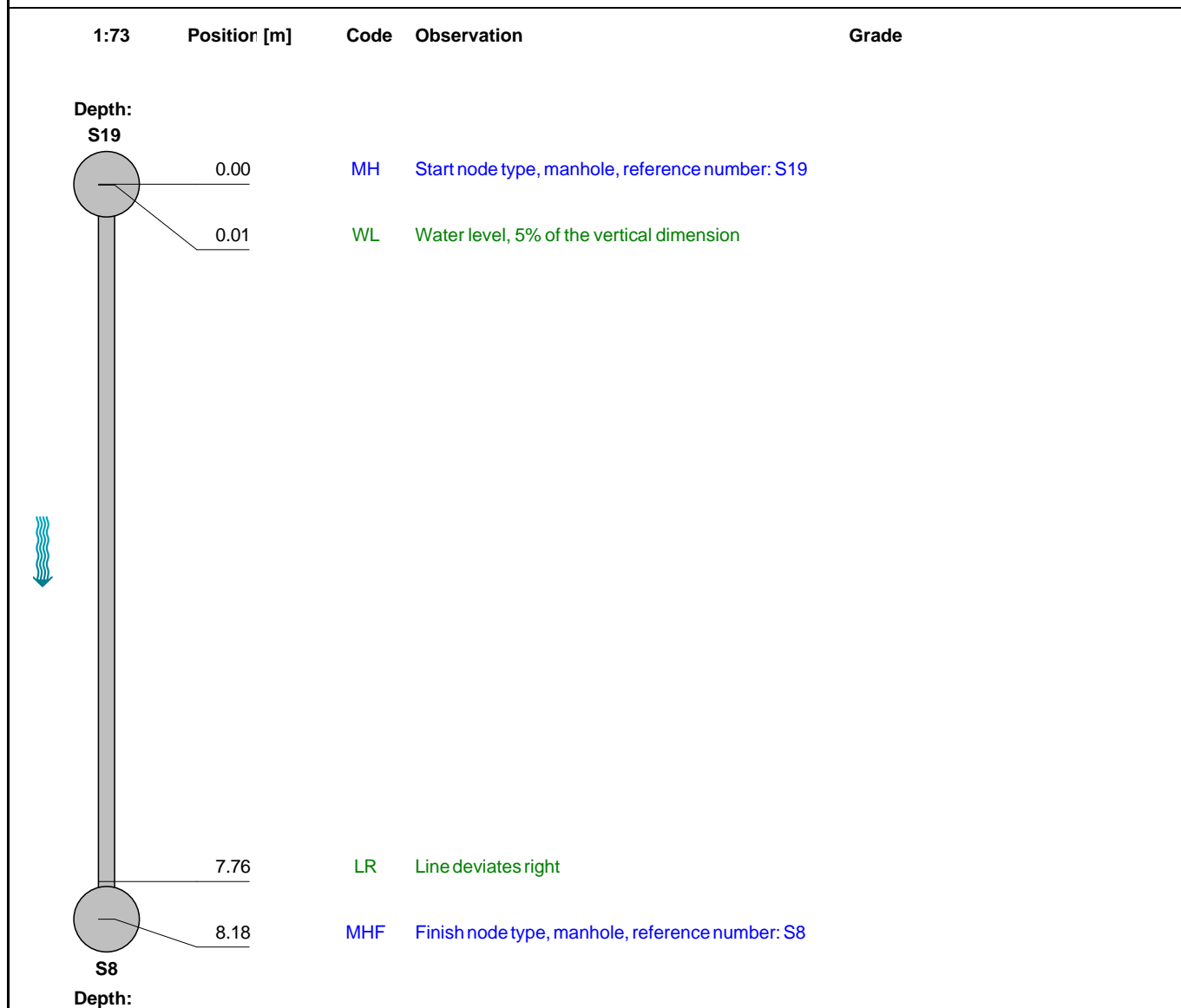
Section Inspection - 8/21/2019 - S19 X

Section: 34	Inspection: 34	Date: 21/08/19	Time: 15:13	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S19 X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S19 >> S8	US MH:	S19
Road:	Maelor Foods	Inspected Length:	8.18 m	US Depth:	
Location:		Total Length:	8.18 m	DS MH:	S8
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		

Comment:

Recommendation:



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - S17AX

Section: 35	Inspection: 35	Date: 21/08/19	Time: 15:27	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S17AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village: WREXHAM	Insp Dir: S17 << S17A	US MH: S17A
Road: Maelor Foods	Inspected Length: 1.89 m	US Depth:
Location:	Total Length: 1.89 m	DS MH: S17
Surface Type:	Pipe Length: 0.00 m	DS Depth: 0.710 m
Use: Surface water	Pipe Shape: Circular	
Type of Pipe: Gravity drain/sewer	Height / Width: 100 mm	
Year Constructed:	Pipe Material: Vitrified clay pipe (i.e. all clayware)	
Inspection Purpose: Sample survey to determine asset condition	Lining Type: None	
Flow Control: No flow control	Lining Material: None	
Comment:		
Recommendation:		

1:50

Position [m]

Code

Observation

Grade

Depth: 0.71

S17

0.00

MH

Start node type, manhole, reference number: S17

0.01

WL

Water level, 5% of the vertical dimension

1.02

FC

Fracture, circumferential from 8 o'clock to 4 o'clock

1.89

LU

Line deviates up: S17A

S17A

Depth:

Maelor Foods, Wrexham

Survey 35

S17 to S17A

100dbs u/s s/w v/c

1.02m

1.02m

1.02m

1.02m ///

Structural Defects

Construction Features

Service & Operational Observations

Miscellaneous Features

STR No. Def

STR Peak

STR Mean

STR Total

STR Grade

SER No. Def

SER Peak

SER Mean

SER Total

SER Grade

0

0.0

0.0

0.0

0.0

0

0.0

0.0

0.0

0.0

Section Pictures - 8/21/2019 - S17AX

Section Number: 35	Inspection Direction: S17 << S17A	PLR: S17AX	Client's Ref:	Contractor's Ref:
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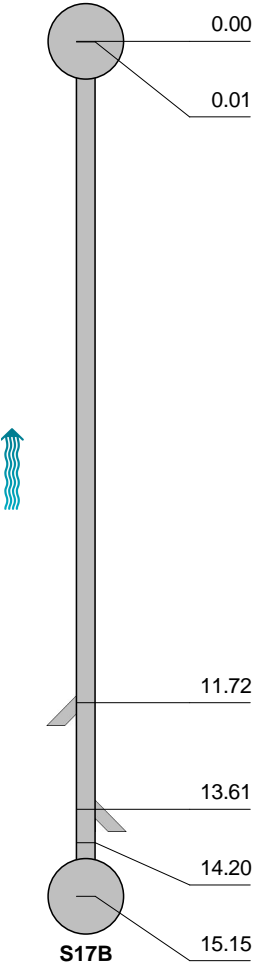


S17AX_3af38ca9-55df-4d11-aa63-5b291ee504bf_20190901_143608_665.jpg, 1.02m
Fracture, circumferential from 8 o'clock to 4 o'clock

Section Inspection - 8/21/2019 - S17BX

Section: 36	Inspection: 36	Date: 21/08/19	Time: 15:30	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: S17BX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	S17 << S17B	US MH:	S17B
Road:	Maelor Foods	Inspected Length:	15.15 m	US Depth:	
Location:		Total Length:	15.15 m	DS MH:	S17
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	Cured in place lining		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

1:134	Position [m]	Code	Observation	Grade																		
<div><div><div>Depth: S17</div><div></div></div><table><tr><td>0.00</td><td>MH</td><td>Start node type, manhole, reference number: S17</td></tr><tr><td>0.01</td><td>WL</td><td>Water level, 5% of the vertical dimension</td></tr><tr><td>11.72</td><td>JN</td><td>Junction at 2 o'clock, diameter: 100mm</td></tr><tr><td>13.61</td><td>JN</td><td>Junction at 9 o'clock, diameter: 100mm</td></tr><tr><td>14.20</td><td>LU</td><td>Line deviates up</td></tr><tr><td>15.15</td><td>REF</td><td>Finish node type, rodding eye, reference number: S17B</td></tr></table><div>Depth:</div></div>					0.00	MH	Start node type, manhole, reference number: S17	0.01	WL	Water level, 5% of the vertical dimension	11.72	JN	Junction at 2 o'clock, diameter: 100mm	13.61	JN	Junction at 9 o'clock, diameter: 100mm	14.20	LU	Line deviates up	15.15	REF	Finish node type, rodding eye, reference number: S17B
0.00	MH	Start node type, manhole, reference number: S17																				
0.01	WL	Water level, 5% of the vertical dimension																				
11.72	JN	Junction at 2 o'clock, diameter: 100mm																				
13.61	JN	Junction at 9 o'clock, diameter: 100mm																				
14.20	LU	Line deviates up																				
15.15	REF	Finish node type, rodding eye, reference number: S17B																				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - F1X

Section: 37	Inspection: 37	Date: 21/08/19	Time: 15:40	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: F1X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	F2 << F1	US MH:	F1
Road:	Maelor Foods	Inspected Length:	1.19 m	US Depth:	0.630 m
Location:		Total Length:	1.19 m	DS MH:	F2
Surface Type:		Pipe Length:	0.00 m	DS Depth:	0.840 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

1:50

Position [m]

Code

Observation

Grade

Depth: 0.84

F2

0.00

0.00

1.19

F1

Depth: 0.63

MH

Start node type, manhole, reference number: F2

WL

Water level, 5% of the vertical dimension

MHF

Finish node type, manhole, reference number: F1

Structural Defects

Service & Operational Observations

Construction Features

Miscellaneous Features

STR No. Def

STR Peak

STR Mean

STR Total

STR Grade

SER No. Def

SER Peak

SER Mean

SER Total

SER Grade

0

0.0

0.0

0.0

1.0

0

0.0

0.0

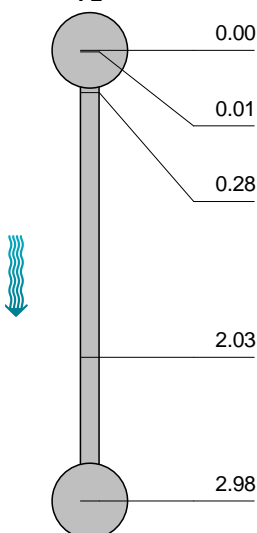
0.0

1.0

Section Inspection - 8/21/2019 - F2X

Section: 38	Inspection: 38	Date: 21/08/19	Time: 15:45	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: F2X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	F2 >> F3	US MH:	F2
Road:	Maelor Foods	Inspected Length:	2.98 m	US Depth:	0.830 m
Location:		Total Length:	2.98 m	DS MH:	F3
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					

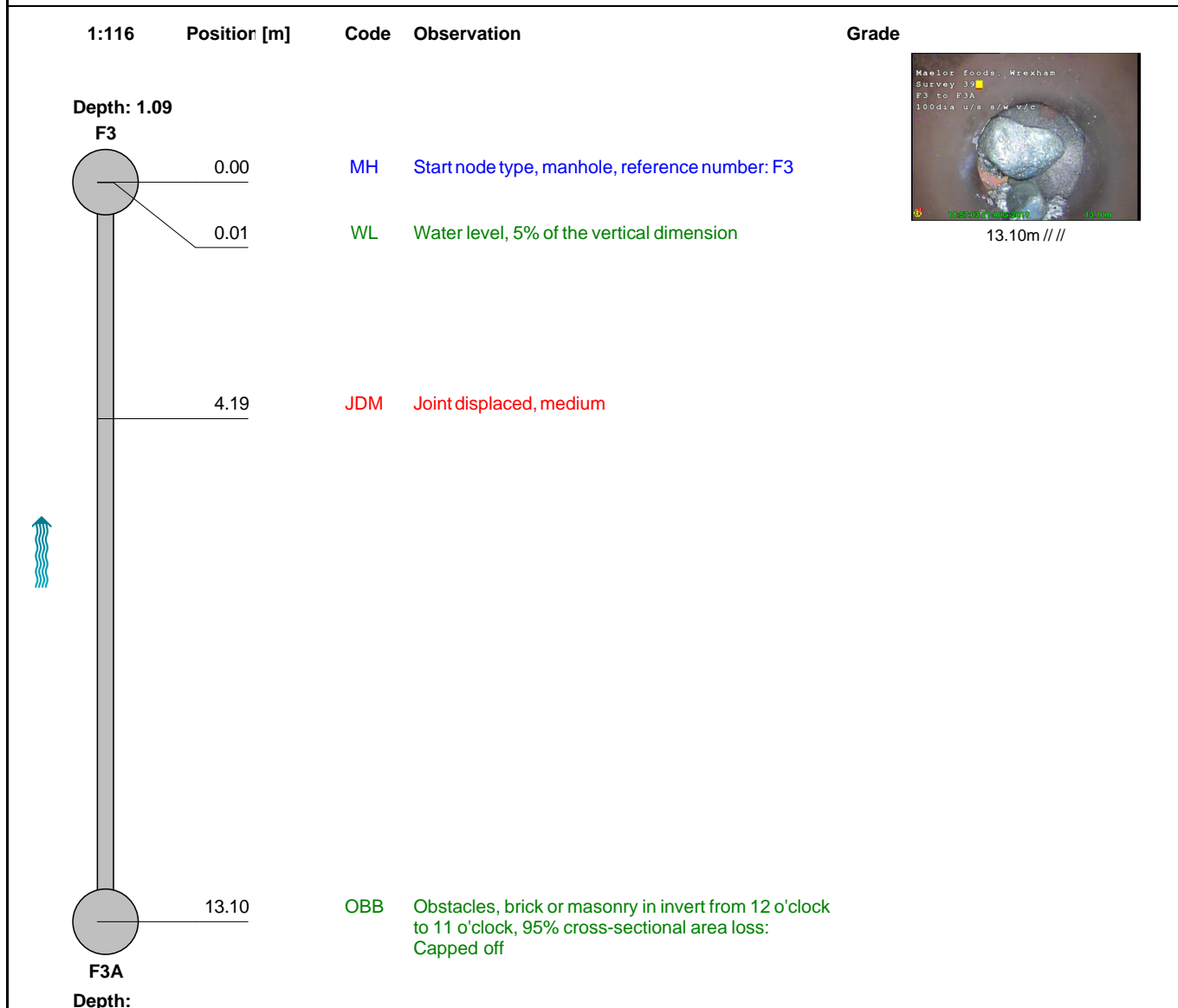
1:50	Position [m]	Code	Observation	Grade
<div><div><div>Depth: 0.83</div><div>F2</div><div></div><div><div>0.00</div><div>MH</div><div>Start node type, manhole, reference number: F2</div></div><div><div>0.01</div><div>WL</div><div>Water level, 5% of the vertical dimension</div></div><div><div>0.28</div><div>LL</div><div>Line deviates left</div></div><div><div>2.03</div><div>LR</div><div>Line deviates right</div></div><div><div>2.98</div><div>MHF</div><div>Finish node type, manhole, reference number: F3</div></div></div><div><div>F3</div><div>Depth:</div></div></div>				

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 8/21/2019 - F3AX

Section: 39	Inspection: 39	Date: 21/08/19	Time: 15:49	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: F3AX
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	F3 << F3A	US MH:	F3A
Road:	Maelor Foods	Inspected Length:	13.10 m	US Depth:	
Location:		Total Length:	13.10 m	DS MH:	F3
Surface Type:		Pipe Length:	0.00 m	DS Depth:	1.090 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Pictures - 8/21/2019 - F3AX

Section Number: 39	Inspection Direction: F3 << F3A	PLR: F3AX	Client's Ref:	Contractor's Ref:
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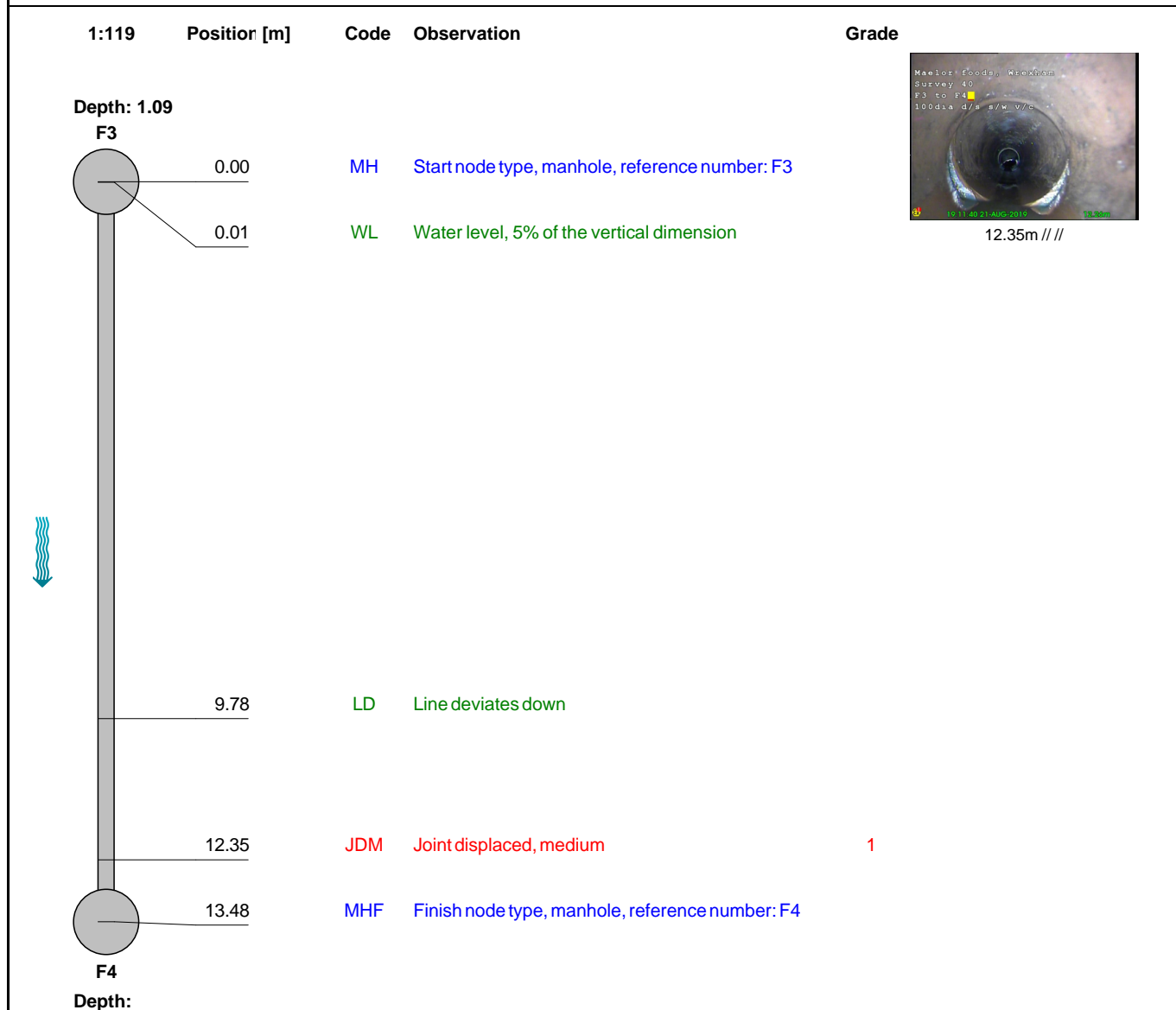


F3AX_08d98c01-fe34-4350-b699-8c7494d63b9b_20190901_144049_496.jpg, , 13.10m
Obstacles, brick or masonry in invert from 12 o'clock to 11 o'clock, 95% cross-sectional area loss

Section Inspection - 8/21/2019 - F3X

Section: 40	Inspection: 40	Date: 21/08/19	Time: 16:04	Client's Ref:	Weather: No Rain Or Snow	Pre Cleaned: Yes	PLR: F3X
Operator: Martin		Vehicle: VEHICLE 1		Camera: Camera 2	Preset Length:	Criticality Grade:	Alternative ID:

Town or Village:	WREXHAM	Insp Dir:	F3 >> F4	US MH:	F3
Road:	Maelor Foods	Inspected Length:	13.48 m	US Depth:	1.090 m
Location:		Total Length:	13.48 m	DS MH:	F4
Surface Type:		Pipe Length:	0.00 m	DS Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Height / Width:	100 mm		
Year Constructed:		Pipe Material:	Vitrified clay pipe (i.e. all clayware)		
Inspection Purpose:	Sample survey to determine asset condition	Lining Type:	None		
Flow Control:	No flow control	Lining Material:	None		
Comment:					
Recommendation:					



Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	1.0	0.1	1.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 8/21/2019 - F3X

Section Number: 40	Inspection Direction: F3 >> F4	PLR: F3X	Client's Ref:	Contractor's Ref:
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F3X_6abd29a4-a382-4ec8-91d1-ca435f9bd642_20190901_144154_920.jpg, , 12.35m
Joint displaced, medium

APPENDIX 10

Register of Environmental Impact Assessments								
Aspect	Impact	Pathway	Risk management techniques	Likelihood (L)		Potential impact severity (I)	Overall risk (L x I)	
Emissions of treated effluent to water. Discharge of treated effluent & package sewage treatment plant discharge to river. (a) Continuous discharge to river during normal operation – within emission limits	Water quality of River Dee (SAC) and habitat of flora and fauna, downstream users affected	Point source discharge to river	(a) Operating procedures for ETP.	(a) Normal operation	2	(a) No impact. See water quality modelling report.	1	Will also be minimised by use of management techniques
(b) Minor exceedances of the permit emission for short periods (e.g. several hours)			(b) Balance tank and diversion tank to deal with abnormal / high organic discharges to protect the ETP and prevent shock loading and damage to bacterial treatment.	(b) Could happen as deviations in effluent treatment could cause occasional discharges slightly outside permit limits but would be quickly identified by monitoring and management techniques.	2	(b) Minor exceedances of the env permit emission limit for short periods (e.g. several hours) unlikely to have any impact.	4	Will also be minimised by use of management techniques
(c) Prolonged minor exceedances (for several days)			(c) Continuous process control monitoring on ETP and treated effluent to warn of deviations from normal levels. Out of spec effluent can be diverted back into balance tank for re-treatment.	(c) Prolonged exceedances of emission limits less likely - would also require breakdown of monitoring and management techniques	3	(c) Prolonged minor exceedances (for several days) could lead to minor or short term exceedances of water quality standards.	3	Will also be minimised by use of management techniques
(d) Prolonged discharge of poorly treated effluent, e.g. Failure to maintain ETP or shock loading due to large spillage of blood not prevented from reaching ETP could cause bacterial die off			(d) ETP on preventative maintenance programme to ensure optimum treatment. In event of bacterial die off effluent would be tankered away until plant reseeded and back within emission limits. Emergency response plan and procedures to deal with large spillages of blood, chemicals or fuel to prevent them reaching ETP.	(d) Unlikely. A number of failures would be required; management systems, maintenance and monitoring. Several failures required for large blood spill to affect ETP and discharge of untreated effluent to occur unnoticed	2	(d) Discharges of poorly treated effluent could lead to fishery and short / medium term biodiversity damage – fish kill, invertebrate damage and loss of species habitat. Most likely to be short term effects and not long lasting and river would recover in short to medium term. Amenity use – water based activities could be temporarily affected and potable water abstraction points downstream may need monitoring.	4	Will also be minimised by use of management techniques
Site drainage - point source and fugitive emissions to surface waters, land / groundwater Contaminated site drainage discharge to tributary of river (W2 or W3). Potential leaks or spills from HGV movements, storing or handling fuels, additives, liquids or chemicals that could harm the environment. (a) Minor spillage <50L	Water quality of River Dee (SAC) and habitat of flora and fauna, downstream users affected Land contamination Aquifer contamination - groundwater SPZ (Zone III, total catchment)	Continuous discharge of site drainage to surface water drains and tributary of river. Fugitive –seepage or run off to surface drains or land / groundwater if concrete hard standings and bunds develop cracks.	Internal blood tank and ABPs stores with drains to ETP. Glycol in chiller – pressurised system with PLC control, area drains to ETP Fuels and ad-blue stored in banded tanks in accordance with Oil Storage Regs. Effluent treatment plant tanks fitted with corrosion prevention (sacrificial anodes) and ETP area has earth bund to contain. Other chemicals either stored in banded bulk tanks or smaller containers stored inside or on external hardstands on banded drip trays. External areas where oil spills could occur drain through oil interceptors with shut off facilities. Site infrastructure is inspected and maintained. No underground pipes or sumps. Delivery and collection procedures, spillage response procedures, emergency response plan, spill kits available across site. Safe and secure storage of materials, drums, IBC's, waste skips Site drainage plan with colour coded drains, drainage and infrastructure maintenance. No high-risk chemicals (e.g. pesticides) used that could have significant impact if spilt in small amounts Weekly visual checks of drainage outlets	(a) Minor spillage when handling fuels & chemicals is likely to occur but is easily cleaned up with spill kits and prevented from entering external drains. Chemicals mostly used inside.	4	(a) Small spillages of materials used on site would have a minor and short term impact if they did reach surface waters. Large dilution in River Dee.	1	Will also be minimised by use of management techniques
(b) Medium spillage 50L - 1000L				(b) Medium spillages most likely from a ruptured IBC or drum during delivery / handling. Spillage when offloading blood would be collected by effluent drains. Spills loading diesel, ad-blue or chemical tanks from a burst or uncoupled hose would be noticed quickly and transfer pumps stopped to limit to a small to medium size spill. Spill kits and spill response would be followed to contain on site.	4	(b) Medium spillages of materials used on site could have a short term local impact if they did reach surface waters. Large dilution in River Dee however. Ad-blue is ammonia based so sizeable spill could impact river if not contained by blocking off interceptor / spill kits but medium spill unlikely to have a severe impact.	2	Will also be minimised by use of management techniques
(c) Major spillage >1,000L				(c) Unlikely to lose full contents of bulk tanks. Bulk storage tanks banded and level controls / alarms. Less likely still that a spill scenario would coincide with failures of the yard infrastructure to allow to seep into ground.	2	(c) Discharges of polluting liquids to river could lead to fishery and biodiversity damage – fish kill, invertebrate damage and loss of species habitat. Most likely to be short term effects and not long lasting and river would recover in short to medium term. Amenity use – water based activities could be temporarily affected and potable water abstraction points downstream may need monitoring. Discharges to aquifer could contaminate groundwater supplies and cause short term or prolonged closure of potable and industrial supplies (Calypso Drinks).	4	Will also be minimised by use of management techniques
Private water supply contamination. Borehole supply contaminated and non wholesome for human consumption.	Product contamination by contaminated water. Human health impact, loss of product / waste of resource, water supply restricted	Fugitive –seepage or run off to surface drains or land / groundwater ingress into borehole	Borehole, headworks chamber and capped off trial pits are protected by: <ul style="list-style-type: none">• no storage of hazardous chemicals within 50m;• no livestock access / site perimeter secure• warning signage;• raised kerbing / drainage to prevent surface water inflow;• appropriate lining with casing material and grouted to prevent ingress of shallow subsurface and/ or surface water.• headworks / chamber sealed to prevent water / pests ingress• no abandoned wells and observation boreholes capped, fenced and protected Training and awareness of staff and contractors, operating procedures for disinfection of supply, accident and emergency plan covers measures to take if there is a spillage that could potentially leach into the ground. Review analytical results and monitor any trends that could indicate quality is deteriorating. Records available since start of operations. Last LA audit – copy of audit report held.	Physical and procedural measures in place backed up by local authority sampling and monitoring	2	Worst case it would be severe – restriction or loss of water supply, prosecution, human health risk, impact on business reputation	5	Will also be minimised by use of management techniques

Ref	Water 2	Title	Spillage / site drainage contamination					Area	Site drainage				
1. Aspect Description													
Potential leaks or spills from HGV movements around site, storing or handling of diesel, ad-blue, liquids, ABPs, effluent, sludges or chemicals which could contaminate drainage and pollute surface or ground waters.													
2. Impact description													
Site drainage discharges to tributary of River Dee via (W2 or W3). If contaminated it could lead to deterioration of water quality of River Dee (SAC), potential fish kill, affects on habitat of flora and fauna or downstream river users affected such as closure of water supply abstraction point or fishery. Potential prosecution / liability claims against company. Ad-blue contains ammonia which is toxic to aquatic life.													
Potential environmental impacts											Interested parties / stakeholders		
Resources	Waste	Air emissions	Climate change	Water pollution	Land pollution	Grdwater	Noise	Odour	Dust	Pests	Flora / fauna	NRW, downstream river users	
N	N	N	N	Y	Y	Y	N	N	N	N	Y		
3. Associated compliance obligation													
The Environmental Permitting (England & Wales) Regulations 2016													
Water Resources Act (Control of Pollution) (Oil Storage) (Wales) Regulations 2016													
Water Resources Act 1991 and (Amendment) (England and Wales) Regulations 2009 (WRA)													
The Environmental Damage (Prevention and Remediation) (Amendment) (Wales) Regulations 2015													
Anti-Pollution Works Regulations 1999													
4. Control mechanisms													
Internal blood tank and ABPs stores with drains to ETP. Glycol in chiller – pressurised system with PLC control, area drains to ETP Diesel and ad-blue stored in bunded tanks in accordance with Oil Storage Regs. Effluent treatment plant tanks fitted with corrosion prevention (sacrificial anodes) and primary tanks have alarm to warn of rapid change in level. Effluent treatment plant chemicals stored in bunded tanks with high level alarms. Bulk chemicals stored in bunded bulk tanks & smaller containers stored inside or on external hardstands on bunded drip trays. External areas where oil spills could occur drain through oil interceptors with shut off facilities. Site infrastructure is inspected and maintained. No underground pipes or sumps. Delivery and collection procedures, spillage response procedures, emergency response plan, spill kits available across site. Safe and secure storage of materials, drums, IBC's, waste skips Site drainage plan with colour coded drains, drainage and infrastructure maintenance. No high-risk chemicals (e.g. pesticides) used that could have significant impact if spilt in small amounts Weekly visual checks of drainage outlets													
5. Procedural and associated records													
Operational procedures & training for storage and handling of raw materials, liquids, fuels and waste													
Bulk chemical and fuel deliveries procedure													
Site drainage, interceptors and surfacing maintenance schedule and inspection records													
Site drainage plan													
Emergency plan and procedures for dealing with spillages													
6. EMS Target and objective?													
None													
7. Scenarios													
Normal					No contamination or minor spillage <50L								
Abnormal					Medium spillage >50L < 1,000L								
Emergency					Medium to large spillage >1000L enters site drainage and reaches river and kills fish								
8. Impact Severity Rating													
	Frequency		Compliance Obligations		Effect on environment		Concern		Controls		Total		
Normal		4		2		1		1		1		9	
Abnormal		2		3		2		2		2		11	
Emergency		1		4		4		4		3		16	
9. Overall Risk Significance													
Highest Risk Score		16											
High													
Version No		Date		Assessed by		Approved by		Changes made					

Ref	Water 3	Title	Water supply borehole contamination					Area	Water supply borehole					
1. Aspect Description														
Potential on site leaks or spills from storing or handling liquids, vehicles or chemicals could contaminate the water supply borehole either directly or indirectly via monitoring / inspection wells or ingress into land OR 3rd party causes offsite contamination which affects the borehole supply.														
2. Impact description														
Borehole supply contaminated and non wholesome for human consumption. Product contamination by contaminated water. Human health impact, loss of product / waste of resource, water supply restricted. Could lead to temporary or permanent closure of the water supply meaning mains water supply would be required at much greater expense. The aquifer could be contaminated and other users could be affected. Major impact on customers / consumers. Potential prosecution / liability claims against company.														
Potential environmental impacts											Interested parties / stakeholders			
Resources	Waste	Air emissions	Climate change	Water pollution	Land pollution	Grdwater	Noise	Odour	Dust	Pests	Flora / fauna	NRW, LA, other aquifer users, Water Company, FSA, customers		
Y	Y	N	N	N	N	Y	N	N	N	N	N			
3. Associated compliance obligation														
The Environmental Permitting (England & Wales) Regulations 2016 The Private Water Supplies (Wales) Regulations 2016 Water Resources (Abstraction and Impounding) Regulations 2006 Water Resources Act 1991 and (Amendment) (England and Wales) Regulations 2009 (WRA) The Environmental Damage (Prevention and Remediation) (Amendment) (Wales) Regulations 2015 Anti-Pollution Works Regulations 1999														
4. Control mechanisms														
Borehole, headworks chamber and capped off trial pits are protected by: No storage of hazardous chemicals within 50m; no livestock access / site perimeter secure; warning signage; raised kerbing / drainage to prevent surface water inflow; appropriate lining with casing material and grouted to prevent ingress of shallow subsurface and/ or surface water; headworks / chamber sealed to prevent water / pest ingress; no abandoned wells and observation boreholes capped, fenced and protected. Training / awareness of staff and contractors, operating procedures supply disinfection, accident and emergency plan covers measures to take if there is a spillage that could potentially leach into the ground. Mains water supply as back up and emergency / contingency plan covers interruptions to water supplies. Rural area so contamination of aquifer from farms could occur but aquifer is overlain with protective strata so unlikely to be affected in short term. Monitoring of water quality undertaken to review trends in quality for signs of deterioration along with Regulatory audits and inspections. Contingencies in place to be able to switch to mains supply and in emergency to bring in bowsers / tankers of potable water. Worst case contingency - production demands met by partner sites to be considered.														
5. Procedural and associated records														
Operational procedures & training for disinfection of supply, storage and handling of raw materials, liquids, fuels and waste														
Site drainage, interceptors, infrastructure and surfacing maintenance schedule and inspection records														
Water monitoring procedures and records of monitoring														
LA & NRW audit & inspection records														
Site drainage plan														
Emergency plan and procedures for dealing with spillages														
6. EMS Target and objective?														
None														
7. Scenarios														
Normal					No contamination - supply fit for human consumption									
Abnormal					Elevated contaminant levels detected after on site spillage but within acceptable limits for wholesome supply for human consumption									
Emergency					Borehole supply contaminated by offsite 3rd party and non wholesome for human consumption									
8. Impact Severity Rating														
			Frequency		Compliance Obligations		Effect on environment		Concern		Controls		Total	
Normal			4		2		1		1		1		9	
Abnormal			2		2		2		2		2		10	
Emergency			1		3		4		4		4		16	
9. Overall Risk Significance														
Highest Risk Score			16											
High														
Version No			Date		Assessed by		Approved by		Changes made					

Ref	Land 1	Title	Ground contamination			Area	Site					
1. Aspect Description												
Potential leaks or spills from HGV movements around site, storing or handling of diesel, ad-blue, liquids, ABPs, effluent, sludges or chemicals which could contaminate drainage and pollute surface or ground waters.												
2. Impact description												
Contamination of land and potential leaching of contamination into surface waters or underlying aquifer with potential impact on the site's private water supply or other aquifer users and or require ground / groundwater to be remediated. Aquifer is a groundwater SPZ (Zone III, total catchment). Potential prosecution / liability claims against company. This includes historical contamination before Maelor took over the site as well as during its operational period. Maelor are responsible for restoring the ground to the baseline condition at commencement of environmental permit.												
Potential environmental impacts												Interested parties / stakeholders
Resources	Waste	Air emissions	Climate change	Water pollution	Land pollution	Grdwater	Noise	Odour	Dust	Pests	Flora / fauna	NRW, LA
N	N	N	N	Y	Y	Y	N	N	N	N	Y	
3. Associated compliance obligation												
The Environmental Permitting (England & Wales) Regulations 2016												
Water Resources Act (Control of Pollution) (Oil Storage) (Wales) Regulations 2016												
Contaminated Land (Wales) Regulations SI 2006 (as amended)												
The Environmental Damage (Prevention and Remediation) (Amendment) (Wales) Regulations 2015												
Anti-Pollution Works Regulations 1999												
4. Control mechanisms												
Internal blood tank and ABPs stores with drains to ETP.												
Glycol in chiller – pressurised system with PLC control, area drains to ETP												
Diesel and ad-blue stored in bunded tanks in accordance with Oil Storage Regs.												
Effluent treatment plant tanks fitted with corrosion prevention (sacrificial anodes) and primary tanks have alarm to warn of rapid change in level. Effluent treatment plant chemicals stored in bunded tanks with high level alarms.												
Other chemicals stored in bunded bulk tanks or smaller containers stored inside or on external hardstands on bunded drip trays.												
External areas where oil spills could occur drain through oil interceptors with shut off facilities. Site infrastructure is inspected and maintained. No underground pipes or sumps.												
Delivery and collection procedures, spillage response procedures, emergency response plan, spill kits available across site.												
Safe and secure storage of materials, drums, IBC’s, waste skips												
Site drainage plan with colour coded drains, drainage and infrastructure maintenance. No high-risk chemicals (e.g. pesticides) used that could have significant impact if spilt in small amounts												
Weekly visual checks of drainage outlets												
5. Procedural and associated records												
Operational procedures & training for storage and handling of raw materials, liquids, fuels and waste												
Bulk chemical and fuel deliveries procedure												
Ground investigation surveys for planning consent and environmental permit												
Site drainage, interceptors and surfacing maintenance schedule and inspection records												
Incidents records & details of any site remediation												
Site drainage plan												
Emergency plan and procedures for dealing with spillages												
6. EMS Target and objective?												
None												
7. Scenarios												
Normal					No contamination or minor spillage <50L							
Abnormal					Medium spillage >50L < 1,000L with some run off onto unmade ground							
Emergency					Medium to large spillage >1000L all escapes onto unmade ground							
8. Impact Severity Rating												
	Frequency		Compliance Obligations		Effect on environment		Concern		Controls		Total	
Normal	3		2		1		1		1		8	
Abnormal	2		3		2		2		3		12	
Emergency	1		4		3		4		4		16	
9. Overall Risk Significance												
Highest Risk Score			16									
High												
Version No		Date		Assessed by		Approved by		Changes made				