H1 Assessment for Permit Application at Tremorfa Industrial Estate

Sims Group UK Limited

Date: February 2018

Our Ref: JER6108

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1 Introduction

1.1 Background

1.1.1 Sims Group UK Limited is applying for an environmental permit for the storage and treatment of waste metal and other similar wastes.

1.1.2 Surface water run-off from the site would drain to foul sewer. As such a risk assessment is required to accompany the permit application in the form of the Environment Agency's H1 Risk Assessment Tool.

1.1.3 This report summarises the approach to the H1 assessment and discusses the output from the assessment of the surface water run-off from the process areas at the Tremorfa site into the foul sewer.

2 H1 Assessment of Discharge to Sewer

2.1 Site Operations

Overview

2.1.1 The principle activities to be undertaken at the Tremorfa site are:

- Storage and treatment of ferrous and non-ferrous metals;
- Storage and treatment of general mixed scrap metal;
- Storage and treatment of End of Life Vehicles (ELVs);
- Storage of Waste Electrical and Electronic Equipment (WEEE);
- Storage of Waste Batteries;
- Storage of Waste Tyres.

2.1.2 Recovered secondary metals are sold for re-smelting into new materials. Wastes from the process that are currently incapable of further viable treatment for metals recovery are transported from site for authorised disposal or further recovery.

Permitted Waste Types

2.1.3 The waste types to be permitted on the site are summarised in 2.5 of the Operating Techniques document accompanying the permit application and include:

- Copper, bronze, brass from construction and demolition waste;
- Aluminium from construction and demolition;
- Lead from construction and demolition;
- Zinc from C&D wastes;
- Iron & steel from construction and demolition;
- Tin from construction and demolition;
- Mixed metal from construction and demolition;
- Cables;
- Iron & steel from shredding;
- Non-ferrous from shredding;
- Fluff-light fraction and dust (from shredding of metal containing waste);
- Other fractions (from shredding of metal containing waste);
- Ferrous metal from other waste facilities (mechanical treatment);
- Non-ferrous metal from other waste facilities (mechanical treatment);
- Other wastes (including mixtures of materials) from mechanical treatment.

Potential Contaminants of Concern

2.1.4 On the basis of permitted waste types and process carried out, the principal contaminants of concern which could potentially be present in discharges from the Tremorfa facility include the following:

- Heavy metals;
- Suspended solids;
- Dissolved phase petroleum hydrocarbons and discrete phase oils and greases;
- Other organic compounds that may be present in minor quantities (e.g. solvents, PAHs etc);
- Reduced forms of nitrogen (measured as ammoniacal nitrogen) associated with any organic material entrained in the site run-off.

Site Discharge Location

2.1.5 Three separate water collection and discharge systems will be in place as follows:

- Domestic wastewaters from office buildings amenities etc. will be discharged into the foul drainage system and discharged to foul sewer;
- Surface water run-off generated from areas free of contaminants will be discharged into Welsh Water's surface water network along Martins Road; and
- Surface water run-off from process areas will be discharged into Welsh Water's foul sewer at a rate no greater than 10 l/s.

2.1.6 The proposed drainage layout including the proposed new connection to the foul sewer network is shown on the Drawing 1.

Cardiff East Waste Water Treatment Works

2.1.7 The foul sewer conveys water to Cardiff East Waste Water Treatment Works (WWTW). The Cardiff East WWTW is permitted to discharge treated effluent into the Severn Estuary under the control of Consent Ref. AN0303701provided in *Appendix 1*.

2.1.8 The nearest gauging station to the discharge location is approximately 80 km upstream at Haw Bridge, Gloucestershire.

2.1.9 River flow data for the River Severn at Haw Bridge has been obtained from the national River Flow Archive (http://nrfa.ceh.ac.uk/data/station/info/54057) and is provided in *Appendix 2*. The Q95 and mean flow for the River Severn at Haw Bridge is 20.1 m^3/s and 108.179 m^3/s respectively.

2.1.10 The discharge point for the Cardiff East WWTW is via a 4.2 km long (measured from the mean high water spring tide mark), 2000 millimetre diameter pipe terminating with a diffuser section comprising of 10 risers, each with two 450 millimetre diameter ports, with a minimum spacing of 18 metres between risers.

2.1.11 The permitted discharge rate is 7,500 litres per second with a maximum volume of discharge per day of 523,584 m^3 per day.

2.1.12 The depth of the discharge point is not known however has been assumed to be at least 3 m and is likely to be deeper given its location within the Severn Estuary.

2.1.13 The following table shows limits contained within the Welsh Water Discharge consent for the discharge to the Estuary.

Table 1 - Discharge Limits

Contaminant	Limit mg/l
BOD	100
Ammoniacal Nitrogen	48
Suspended Solids	250
Zinc	0.36
Lead	0.09
Chromium	0.39
Copper	0.15
Nickel	0.81
Cadmium	0.48

2.2 H1 Assessment

Overview

2.2.1 The releases of site drainage to sewer, and ultimately into the Severn Estuary, have been assessed using the Environment Agency H1 software tool approach. The H1 methodology applies a sequence of screening tests to establish the environmental effect of whether a discharge is considered insignificant. For discharges to water there are four screenings tests as follows:

- Test 1 screens out any substances as insignificant where the release concentration is less than 100% of the Environmental Quality Standard (EQS).
- Test 2 only applies where the discharge is to a riverine estuary or direct to a low water channel within an estuary.
- Test 3 only applies where the discharge is to a location with restricted dilution / dispersion characteristics.

- Test 4 only applies where the discharge is to a location less than 50 m offshore of chart datum or to a location where the sea bed is less than 1 m below chart datum or where the discharge is negatively buoyant.
- Test 5 assesses whether the Effective Volume Flux is greater than the Allowable Volume Flux.

2.2.2 For those potential contaminants of concern not included on the H1 Assessment Tool a comparison of discharge limits and limits for the Cardiff WWTW discharge has been undertaken.

Environmental Quality Standards

2.2.3 The freshwater Environmental Quality Standards (EQS) used within the inventory of the H1 Assessment Tool have been used in this assessment. These principally relate to priority substances or specific pollutants as summarised in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. For the majority of the contaminants of concern identified in *paragraph 2.1.4* (i.e. metals) the freshwater EQSs relate to dissolved phased concentrations measured as annual averages:

- Cadmium (dissolved) – 0.02 µg/l
- Chromium (dissolved) – 3.4 µg/l (Chromium IV)
- Copper (dissolved) – 3.6 µg/l
- Iron (dissolved) – 1000 µg/l
- Lead (dissolved) – 1.3 µg/l
- Nickel (dissolved) – 8.6 µg/l
- Zinc (dissolved) – 6.8 µg/l
- Ammoniacal Nitrogen - 200 µg/l

2.2.4 The limits for chromium, copper and zinc are considered particularly conservative. The EQS for chromium relates to a single form of chromium (i.e. Chromium IV) whereas analysis typically measures total chromium. The EQS for copper and zinc are also highly conservative as they related to the “bioavailable” fraction of the dissolved concentration which is dependent on the water quality in the receiving watercourse.

2.2.5 In addition the H1 tool also includes Maximum Allowable Concentration (MAC) for the following parameters that can be screened against the maximum flows:

- Cadmium (dissolved) – 0.44 µg/l
- Chromium (dissolved) – 32 µg/l
- Lead (dissolved) – 14 µg/l
- Nickel (dissolved) – 34 µg/l

River Flow

2.2.6 The Q95 flow for the River Severn at Haw Bridge of 20.1 m^3/s has been used in the H1 Assessment.

Effluent Discharge Rate

2.2.7 The H1 Assessment Tool requires an estimate of the mean and maximum flow "Effluent Discharge Rate (EDR)" to the on-site point of entry to the sewer (S2 in ***Error! Reference source not found.***). For the purpose of this assessment the following flow rates have be used:

- Mean Effluent Discharge Rate - 0.01 m^3/sec
- Maximum Effluent Discharge Rate - 0.01 m^3/sec

2.2.8 In order to provide a conservative assessment the maximum and mean discharge rates have been assumed to be the same. In reality the mean discharge rate is likely to be lower. The maximum EDR represents the maximum rate that has been agreed with Welsh Water.

Effluent Water Quality

2.2.9 The EQSs included in the H1 software and used in this assessment relate to the dissolved phase concentration of each contaminant, which is relevant to their respective eco-toxicity in the receiving watercourse. Actual run off water quality data available for the Sims nearby Rover Way site has therefore been used in this assessment to determine the likely acceptability of the site discharge. This site and its operation is considered to be comparable to the proposed operation at Tremorfa. This assessment is based on the water quality analysis provided in the monitoring report in *Appendix 2*. As only limited data is available from this site the worst case has been used for each contaminant in order to ensure a conservative assessment.

2.2.10 The effluent quality used in the assessment is as follows:

- Cadmium (dissolved) – 0.254 µg/l
- Copper (dissolved) – 3.47 µg/l
- Iron (dissolved) – 294 µg/l
- Lead (dissolved) – 4.14 µg/l
- Nickel (dissolved) – 7.9 µg/l
- Zinc (dissolved) – 79.7 µg/l
- Benzene – 7 µg/l (LoD)
- Toulene – 4 µg/l (LoD)

2.2.11 There is currently no available data for Chromium or Ammoniacal Nitrogen, however given the generally low levels of other metals and the processes that are proposed for the site it is not considered likely that levels of these contaminants would be at concentrations above those permitted for the discharge from the Cardiff East WWTW.

2.2.12 Where the dissolved phase concentration measured in runoff is less than the analytical Limit of Detection (LoD), the LOD has been used as the input concentration.

Contaminants Assessed

2.2.13 The contaminants of concern used in the assessment represent those for which effluent quality data exists and estuarine EQSs are available. In addition TSS and BOD, which are not

included on the H1 Assessment Tool, have been evaluated on the basis of a comparison of the limits for the Cardiff East WWTW.

2.3 Assessment Results

Emissions Screening

Test 1

2.3.1 All of the pollutants in the treated process wastewaters other than Cadmium, Lead and Zinc are released at <100% of the EQS and are therefore screened out by Test 1.

Test 2

2.3.2 The discharge location is not in a riverine estuary or direct to a low water channel within the estuary.

Test 3

2.3.3 The discharge location dos not have restricted dilution / dispersion characteristics.

Test 4

2.3.4 The discharge location is not less than 50 m offshore of chart datum or to a location where the sea bed is less than 1 m below chart datum.

Test 5

2.3.5 For Test 5 it has been assumed that the discharge location is at least 3 m below chart datum. It is likely that the discharge location is deeper than this. The background concentrations of contaminants are not known, therefore in line with EA guidance for completing risk assessments, where background data is not available the background concentration for each pollutant can be assumed to be at 10% of the EQS in clean water or 50% of the EQS in polluted water. To be conservative the background concentrations have been assumed to be at 50% of the annual average EQS.

Suspended Solids, Biochemical Oxygen Demand and pH

2.3.6 The analytical data provided in *Appendix 3* demonstrates that the majority of the contaminant load associated with the discharge from the Rover Way site is associated with the suspended sediment load. The Cardiff East WWTW discharge consent provides a limit for TSS of 250 mg/l. The analytical data suggests that the suspended solids found within the discharge from the site would be significantly less than the limit allowed to be discharged to the estuary following treatment. Therefore, even without treatment the discharge from the proposed site would be well below the Cardiff East WWTW discharge limit for TSS.

2.3.7 Similarly the analytical data suggests that the BOD levels for the site discharge would be approximately 136 mg/l. The consented discharge to the estuary allows for 100 mg/l. It is expected that treatment within the WWTW would be effective in ensuring that BOD is reduced to below the allowable level.

2.4 Conclusions

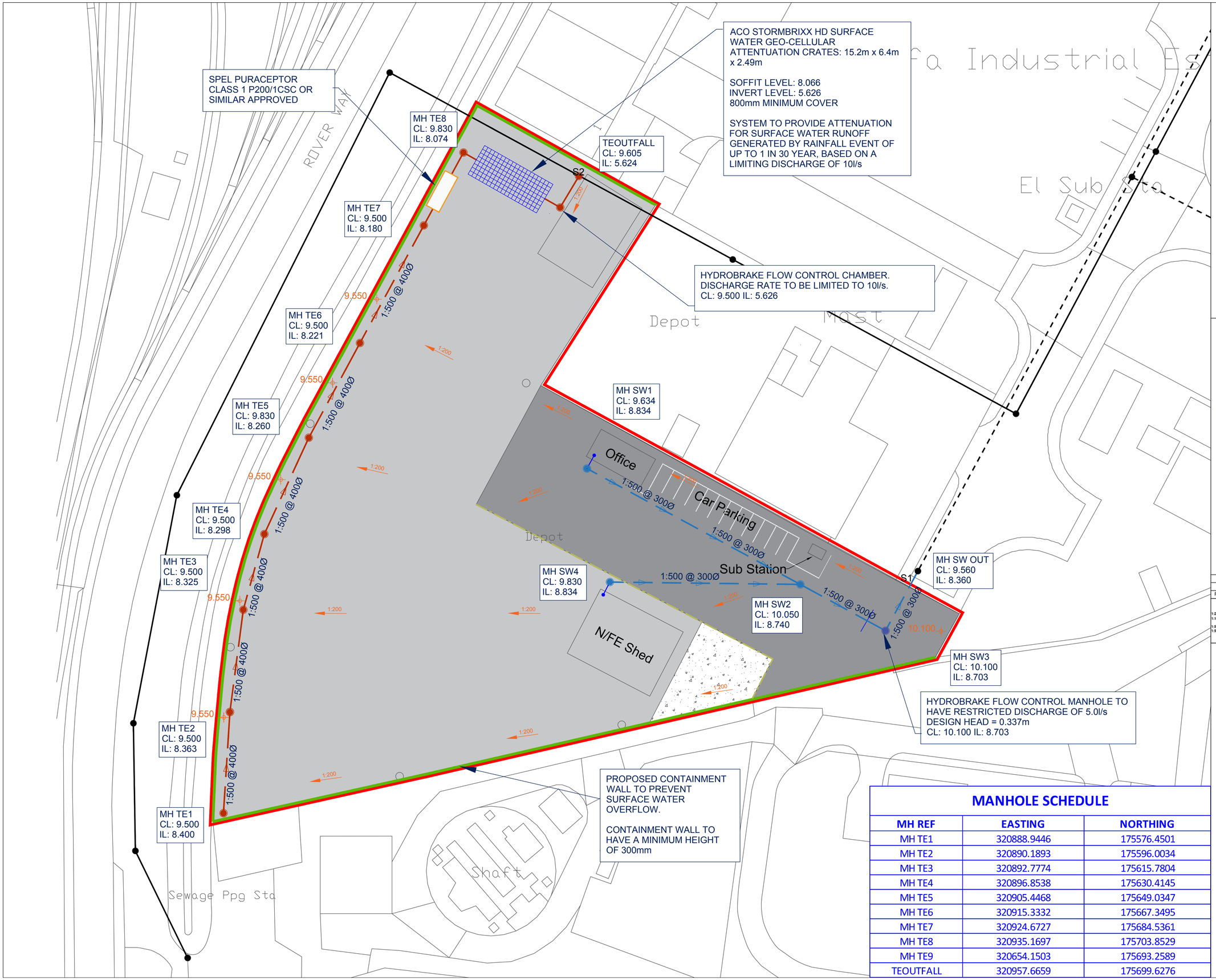
2.4.1 The discharge from the Tremorfa site would amount to approximately 0.13% of the consented discharge into the Severn Estuary.

2.4.2 On the basis of this assessment the potential contaminants of concern identified in the surface water discharge to sewer on the Tremorfa facility have been screened when using annual average EQS and the mean EFR. This demonstrates the risk to the receiving water is insignificant.

Glossary

AEFR	Allowable Flux Rate
BOD	Biochemical Oxygen Demand
EA	Environment Agency
EDR	Effluent Discharge Rate
EFR	Effective Flux Rate
EQS	Environmental Quality Standard
MAC	Maximum Allowable Concentration
PC	Process Contribution
TSS	Total Suspended Solids
WWTW	Waste Water Treatment Works

Drawings



Notes

1. THIS DRAWING HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF RPS' APPOINTMENT WITH SIMS METAL MANAGEMENT AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THAT APPOINTMENT. RPS ACCEPTS NO LIABILITY OF ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES OF WHICH IT WAS PREPARED AND PROVIDED.
2. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES AOD UNLESS NOTED OTHERWISE.
3. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND VERIFYING ALL LEVELS AND DIMENSIONS PRIOR TO THE COMMENCEMENT OF THE WORKS.
4. THE EXTENTS OF EXISTING BELOW GROUND STRUCTURES AND THE LINE OF THE EXISTING SEWERS ARE INDICATIVE ONLY AND WILL NEED TO BE CONFIRMED ON SITE PRIOR TO WORK COMMENCING. THIS MAY AFFECT THE INFORMATION (E.G. INVERT LEVELS, COORDINATES ETC) DETAILED ON THIS DRAWING.
5. THE CONTRACTOR SHALL PHYSICALLY CHECK EXISTING SEWER LEVELS/GROUND PROFILE AT ALL CONNECTION POINT PRIOR TO THE COMMENCEMENT OF PIPE LAYING/ CHAMBER CONSTRUCTION. ANY DISCREPANCIES TO BE ADVISED TO THE PROJECT MANAGER IN ORDER THAT ANY DRAINAGE IMPLICATIONS CAN BE EXAMINED.
6. RPS WAS NOT PROVIDED WITH ANY UTILITIES PLAN AS PART OF THE DESIGN PACKAGE. IT IS THEREFORE NOT POSSIBLE TO SHOW EXTENT OF SERVICES WITHIN SITE. IT IS POSSIBLE THAT SERVICES EXIST. A FULL SERVICES SEARCH SHOULD BE UNDERTAKEN PRIOR TO ANY CONSTRUCTION.
7. PROPOSED DRAINAGE SYSTEM DESIGNED IN ACCORDANCE TO NON-STATUTORY TECHNICAL STANDARDS FOR SUSTAINABLE DRAINAGE SYSTEMS.
8. DRAINAGE SYSTEM DESIGNED TO CONVEY AND ATTENUATE SURFACE WATER RUNOFF GENERATED WITHIN THE PROPOSED YARD FOR RAINFALL EVENT UP TO 1 IN 30 YEAR.
9. SURFACE WATER RUNOFF GENERATED BY RAINFALL EVENT BETWEEN 1 IN 30 YEAR AND 1 IN 100 YEAR + 40% CLIMATE CHANGE TO BE CONTAINED ON SITE AND NOT CONTRIBUTE FLOODING OFFISTE. CONTAINMENT WALL TO BE ERECTED ALONG SITE BOUNDARY TO AVOID RUNOFF FROM FLOWING OFFSITE.
10. DISCHARGE RATES INTO WELSH WATER FOUL WATER NETWORK AND SURFACE WATER NETWORK AGREED IN PRINCIPLE WITH WELSH WATER.

Key

- Site Extent ~ 0.9400 hectares
- Existing Surface Water Sewer Network
- Existing Foul Water Sewer Network
- Proposed Surface Water Sewer Network
- Proposed Trade Effluent Water Sewer Network
- Proposed Rain Water Pipe (RWP) ~ 100Ø Connection
- Proposed Containment Wall ~ 300mm Minimum Height
- Proposed Channel Block Kerb Type CS1 ~ 125mm Upstand
- SPEL Puraceptor Class 1 P200/1CSC or Similar
- XXXXX Proposed Levels

MANHOLE SCHEDULE

MH REF	EASTING	NORTHING
MH TE1	320888.9446	175576.4501
MH TE2	320890.1893	175596.0034
MH TE3	320892.7774	175615.7804
MH TE4	320896.8538	175630.4145
MH TE5	320905.4468	175649.0347
MH TE6	320915.3332	175667.3495
MH TE7	320924.6727	175684.5361
MH TE8	320935.1697	175703.8529
MH TE9	320654.1503	175693.2589
TEOUTFALL	320957.6659	175699.6276

Rev	Description	Date	Initial	Checked

For guidance only. Do not scale off this drawing

1:20 - 0 200mm 400mm 600mm 800mm 1000 1200 1400 1600 1800 2000
1:100 - 0 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m
1:50 - 0 1m 2m 3m 4m 5m
1:5 - 0 100mm 200mm 300mm 400mm 500mm

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Project: Sims Cardiff, Unit 6, Tremorfa Industrial Estate, Cardiff, CF24 5SD

Title: Proposed Drainage Layout Option 1

Status	Drawn By	PM/Checked by
PRELIMINARY	ES	RR

Job Ref	Scale @ A1	Date Created
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Drawing Number: RCEF56767-D001

Rev: -

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Appendices

Appendix 1

Welsh Water Discharge Consent (ref: AN0303701)

CONSENT NO.	AN0303701

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

WATER RESOURCES ACT 1991

SECTION 88 - SCHEDULE 10

(AS AMENDED BY THE ENVIRONMENT ACT 1995)

CONSENT TO DISCHARGE

TO: Environment Quality Scientist
Dŵr Cymru Welsh Water
Plas y Ffynnon
Cambrian Way
Brecon LD3 7HP

The **ENVIRONMENT AGENCY** ("The Agency") in pursuance of its powers under the Water Resources Act 1991 **HEREBY CONSENTS** to the making of a discharge **OF SEWAGE EFFLUENT**, as follows:

Secondary Treated Sewage Effluent incorporating the requirements of the Urban Waste Water Treatment Regulations (UWWTR) 1994.

FROM: Cardiff Waste Water Treatment Works.

AT: Tide Field Road, Tremorfa, Cardiff, CF2 2RX

TO: The Severn Estuary.

HEREAFTER SUBJECT TO the conditions set out in the following schedule:

Secondary Treated Sewage Effluent:	Schedule No. AN030370101
UWWT Regulations 1994:	Schedule No. AN0303701/U

Subject to the provisions of Paragraphs 7 and 8 of Schedule 10 of the Water Resources Act 1991, no notice shall be served by the Agency, altering this consent, without the agreement in writing of the Consent Holder other than for the purposes described in condition 28 of the attached schedule AN030370101, during a period of 4 years from the date this Consent takes effect.

This consent is issued and takes effect on the 28th day of February 2001

Signed .....
Team Leader – Water Quality Consents

CONSENT NO.	**AN0303701**
SCHEDULE NO.	**AN030370101**
DATE ISSUED	28/2/01

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

CONDITIONS OF CONSENT TO DISCHARGE

Secondary Treated Sewage Effluent ("the Discharge")

FROM: Cardiff Waste Water Treatment Works

NATURE

1. The Discharge shall consist solely of secondary treated sewage effluent.

LOCATION

2. The Discharge shall be made in the manner and at the place specified as:

   (a) discharging via a 4.2Km long (measured from Mean High Water Spring Tide Mark), 2000 millimetre diameter pipe terminating with a diffuser section comprising of 10 risers, each with two 450 millimetre diameter ports, with a minimum spacing of 18 metres between risers;

   (b) discharging to the Severn Estuary;

   (c) between National Grid References ST 2508 7395 and ST 2525 7393;

   (d) shown marked 'Consent Point' on Plan AN0303701A attached as Annex 1.

SAMPLE POINT

3. An appropriately labelled sample point shall be provided and maintained at National Grid Reference ST 2148 7576, as shown marked 'Sample Point' on Plan AN0303701B attached as Annex 2, so that a representative sample of the Discharge may be obtained. The consent holder shall ensure that all constituents of the Discharge pass through the said sampling point at all times and in any legal proceedings it shall, for the purposes of Section 10 of the Rivers (Prevention of Pollution) Act 1961, be presumed, until the contrary is shown that any sample of the Discharge taken at the said sampling point is a sample of what was discharging into controlled waters.

VOLUME

4. The volume of the Discharge shall not exceed 523584 cubic metres per day.

5. The rate of discharge shall not exceed 7500 litres per second.

6. The Dry Weather Flow of the Discharge shall not exceed 309960 cubic metres per day.

   For the purpose of this condition Dry Weather Flow shall mean the average daily flow to the treatment works during seven consecutive days without rain (excluding a period which includes public holidays) following seven days during which the rainfall did not exceed 0.25 millimetres on any one day.

7. A continuous flow recorder, to a specification provided by the Agency, with on-site visual display from which readings can be readily obtained, shall be provided and operated to record the daily volume and instantaneous flow of the discharge.

8. As soon as practicable after completion of the flow recorder installation the Consent Holder shall employ an independent expert to certify that the installation complies with the Agency's specification. The Consent Holder shall satisfy himself as to the professional competence of the expert. A copy of the certifier's report shall be provided to the Agency when it is available.

9. Records of the flow readings shall be maintained by the Consent Holder and shall be provided to the Agency when requested, in a format specified by the Agency.

10. The Consent Holder shall produce and maintain a quality control manual, to the satisfaction of the Agency, specifying procedures for the calibration, operation and maintenance of the flow recorder. The flow recorder shall be calibrated, operated and maintained by the Consent Holder in accordance with the provisions of the manual. The Consent Holder shall keep a record of these procedures available for inspection by the Agency and provide a copy to the Agency on request.

11. The Consent Holder shall record all failures of the continuous flow recorder and any other breaks in the flow record. The reasons for these failures and breaks shall be recorded and all steps taken to prevent a re-occurrence. The Consent Holder shall ensure that as far as possible the recorder remains fully operational at all times. Any failures shall be remedied as soon as possible.

12. Flows of the discharge shall be measured at an inlet flume, or such other point as agreed by the Agency.

COMPOSITION

13. (a) Subject to paragraph (b) below, the Discharge shall not contain more than:

(i) 50 milligrammes per litre of biochemical oxygen demand (measured after 5 days at 20°C with nitrification suppressed by the addition of allyl-thiourea);

(ii) 20 milligrammes per litre of ammoniacal nitrogen (expressed as N).

(b) The limit for any of the relevant parameters set out in paragraph (a) above may be exceeded where, in any series of samples of the Discharge taken at regular but randomised intervals in any period of twelve consecutive months as listed in Column 1 of the table at Annex 3 to this consent, no more than the relevant number of samples, as listed in Column 2 of the said table, exceed the applicable limit for that relevant parameter.

14. The Discharge shall not contain more than:

(a) 100 milligrammes per litre of biochemical oxygen demand (measured after 5 days at 20°C with nitrification suppressed by the addition of allyl-thiourea);

(b) 48 milligrammes per litre of ammoniacal nitrogen (expressed as N).

(c) 250 milligrammes per litre of suspended solids (measured after drying at 105°C).

15. The Discharge shall not contain more than:

(a) 0.36 milligrammes per litre of total zinc.

(b) 0.09 milligrammes per litre of total lead.

(c) 0.39 milligrammes per litre of total chromium.

(d) 0.15 milligrammes per litre of total copper.

(e) 0.81 milligrammes per litre of total nickel.

(f) 0.48 microgrammes per litre of total cadmium.

WORKS OPERATION

16. The works shall be operated and the effluent shall be treated in a manner which, so far as reasonably practicable, minimises the polluting effects of the Discharge made from the works on controlled waters.

This condition does not require -

(a) any higher standard to be achieved in relation to any characteristic of the Discharge which is specifically regulated by conditions 13 to 15 than is required by those conditions;

(b) any alteration of the works or a change in the type of treatment used.

MAINTENANCE

17. The works shall be operated and maintained in accordance with good operational practice such that:

(a) it remains fully operational except at times of unavoidable mechanical or electrical breakdown which shall be attended to, and the Agency informed of the failure, as soon as practicable after the failure;

(b) following a failure all equipment shall be returned to normal operation as soon as practicable;

(c) tanks shall be desludged at sufficient frequency and in such a manner to prevent excessive carryover of suspended solids.

18. The Consent Holder shall maintain the outfall pipe and diffusers in an efficient operational condition, so as to minimise the probability of blockages or other failures, and shall implement periodic inspections of the integrity and performance of the diffusers and outfall pipe.

UNUSUAL WEATHER CONDITIONS

19. (a) No sample of the Discharge, taken at a time when unusual weather conditions are adversely affecting the operation of the sewage treatment works, shall be taken into account in deciding whether or not the conditions contained in paragraphs 13,14 and 16 of this consent have been complied with.

(b) For the purpose of this condition "unusual weather conditions" shall include:

(i) low ambient temperatures as evidenced by effluent temperatures of 5°C or less, or by the freezing of mechanical equipment in the works;

(ii) significant snow deposits;

(iii) tidal or fluvial flooding;

(iv) weather conditions causing unforeseen loss of power supply to the sewage treatment which could not be ameliorated by the reasonable provision and operation of standby generation facilities.

(c) On any occasion where unusual weather conditions adversely affect the operation of the sewage treatment works, the consent holder shall use its best endeavours to mitigate that adverse effect.

(d) For a sample of the Discharge to be considered for the purposes of (a) above, the consent holder shall notify the Agency by telefax or telephone as soon as unusual weather conditions are known to have adversely affected operations and shall confirm the circumstances in writing as soon as possible thereafter (and in any event within 14 days of the occurrence of such conditions). That notification shall include a full description of the unusual weather conditions and their impact on the operation of the works.

RECORDING AND REPORTING

20. (a) The consent holder shall establish and operate a documented maintenance programme and record all non-routine actions undertaken that may have adversely affected effluent quality. Copies of the programme shall be made available for inspection by the Agency's officers at all reasonable times.

(b) On request the consent holder shall supply the Agency with a written report on the maintenance and all non-routine actions that may have adversely affected effluent quality.

21. The consent holder shall notify the Agency in writing if any known or planned introduction or material change in respect of discharges from trade premises to the sewerage system occurs, that may increase or introduce into the effluent any "dangerous substance" (set out in Annex 4 to this notice as updated from time to time and notified to the consent holder in writing), and any other substance considered by the consent holder as having or likely to have a significant effect on the receiving waters.

SUBSTANTIAL CHANGE

22. A Discharge shall not be made from the works if it would cause a significant increase in the polluting effects of the Discharge on controlled waters as a result of a new or altered discharge of trade effluent into the works.

23. A discharge of trade effluent into the works is new if -

(a) it is made by the sewerage undertaker and is of a kind not made into the works by the undertaker immediately before the date of effect of this consent; or

(b) it is made by a third party and the discharge is authorised on or after that date.

24. A discharge of trade effluent into the works is altered if -

(a) it is made by the sewerage undertaker and its composition or quantity changes significantly on or after the date of effect of this consent; or

(b) it is made by a third party and the alteration of the discharge is authorised on or after that date.

25. An increase in the polluting effects of the Discharge on controlled waters is not significant for the purposes of this condition if it relates to any characteristic of the Discharge which is specifically regulated by conditions 13 to 15 of this consent but it may be significant if it is caused by a change in some other characteristic of the Discharge.

26. For the purposes of this condition "trade effluent" means -

(a) any discharge by the sewerage undertaker other than

(i) domestic sewage from premises connected directly or indirectly to the works; or

(ii) surface water run-off;

(b) any discharge by a third party which is authorised under Chapter III or Part IV of the Water Industry Act 1991 or which is only accepted as a result of a contract with the sewerage undertaker.

UNAUTHORISED DISCHARGES

27. A Discharge made from the works shall not contain any poisonous, noxious or polluting matter or solid waste matter which is attributable to any unauthorised discharge into the works.

(a) A Discharge into the works is unauthorised if it is made by a third party and either there is no obligation to receive it or conditions subject to which there is an obligation to receive it are not observed.

(b) Nothing in this, or any other, condition of this consent prevents anyone from relying on any defence available to them under Section 87 of the Water Resources Act 1991.

OTHER

28. The Agency may alter any of the conditions of this Consent at any time within 4 years of the date of issue for the purposes of the Conservation (Natural Habitats & c.) Regulations 1994 as amended.

CONSENT NO.	**AN0303701**
SCHEDULE NO.	**AN0303701/U**
DATE ISSUED	28/2/01

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

CONDITIONS OF CONSENT TO DISCHARGE

Secondary Treated Sewage Effluent ("the Discharge")

FROM: Cardiff Waste Water Treatment Works

URBAN WASTE WATER TREATMENT REGULATIONS

U0 (a) The Consent Holder shall comply with the Urban Waste Water Treatment (England and Wales) Regulations 1994 ('the Regulations').

(b) For the purpose of conditions U1 and U2 below, interpretations and references to a numbered regulation or Schedule shall have the meaning as in the Regulations, unless otherwise indicated.

U1 (a) The Discharge derives from an agglomeration with a population equivalent of more than 15,000 discharging to an estuary.

(b) The Consent Holder shall inform the Agency in writing of any change, or proposed change, to the population equivalent such as would make a material change to the application of the Regulations and shall, on request, inform the Agency in writing of the actual population equivalent.

(c) The Discharge shall be subject to Regulation 5(1) and shall satisfy the relevant requirements of Part I of Schedule 3.

U2 (a) The Consent Holder shall provide apparatus for the purpose of:

(i) measuring or recording the volume, rate of flow, nature, composition or temperature,

and (ii) collecting samples of any waste water,

as is necessary to ensure compliance with paragraph (b) below.

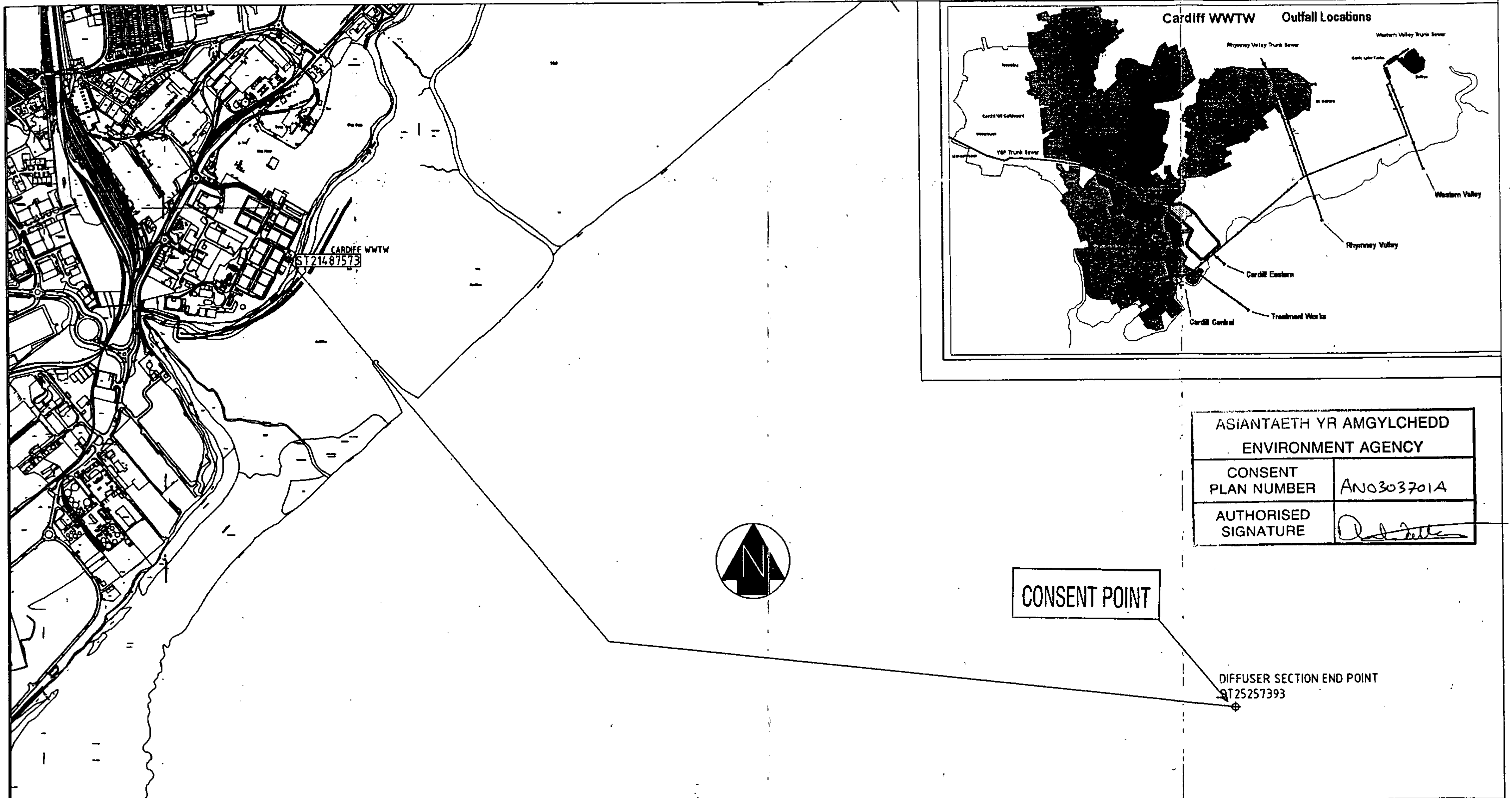
(b) The Consent Holder shall monitor the Discharge to verify compliance with the requirements of condition U1(c) above in accordance with control procedures as set out in Part II of Schedule 3.

(c) The Consent Holder shall provide to the Agency any information collected in complying with paragraph (b) above in a manner agreed with the Agency.

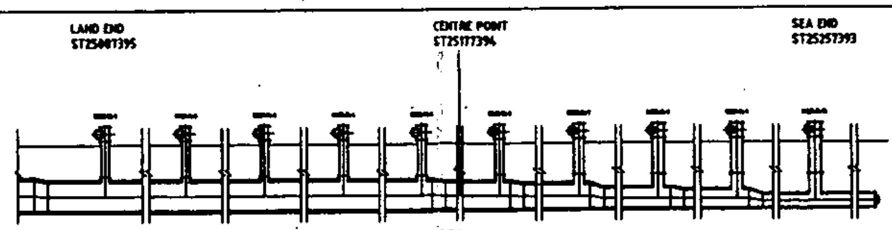
U3 Condition U2 above shall apply for the purpose of verifying compliance with the Directive from the date as specified in the relevant paragraph of Regulation 5 as incorporated into this consent under condition U1(c) above.

U4(a) An appropriately labelled sample point shall be provided and maintained at National Grid Reference ST 2136 7570, as shown marked 'Crude Sewage Sampling Point UWWTD' on the attached Plan AN0303701B, or some other point as agreed in writing with the Agency, so that a representative sample of the Influent may be obtained.

U4(b) An appropriately labelled sample point shall be provided and maintained at National Grid Reference ST 2148 7576, as shown marked 'Final Effluent Sampling Point UWWTD' on the attached Plan AN0303701B, or some other point as agreed in writing with the Agency, so that a representative sample of the Discharge may be obtained.



ANNEX 1



DIFFUSER SECTION

Issue	Description	Auth.	Chd.	Appd.	Date
B	DESIGNED DIFFUSER SECTION ADDED	R.J.T.			28/9/9
A	FIRST ISSUE	R.J.T.	C.J.T.	M.A.B.	1/6/99

Notes

CWP
CARDIFF · WASTE WATER · PARTNERS

Client	DWR CYMRU WELSH WATER
Scale A1	N.T.S.
Datum	LOCAL
Project	CARDIFF WASTE WATER TREATMENT WORKS SCHEME
Title	CARDIFF TREATMENT WORKS OUTFALL
Project Code	NE00929
Drawing No.	SK9
Issue	B

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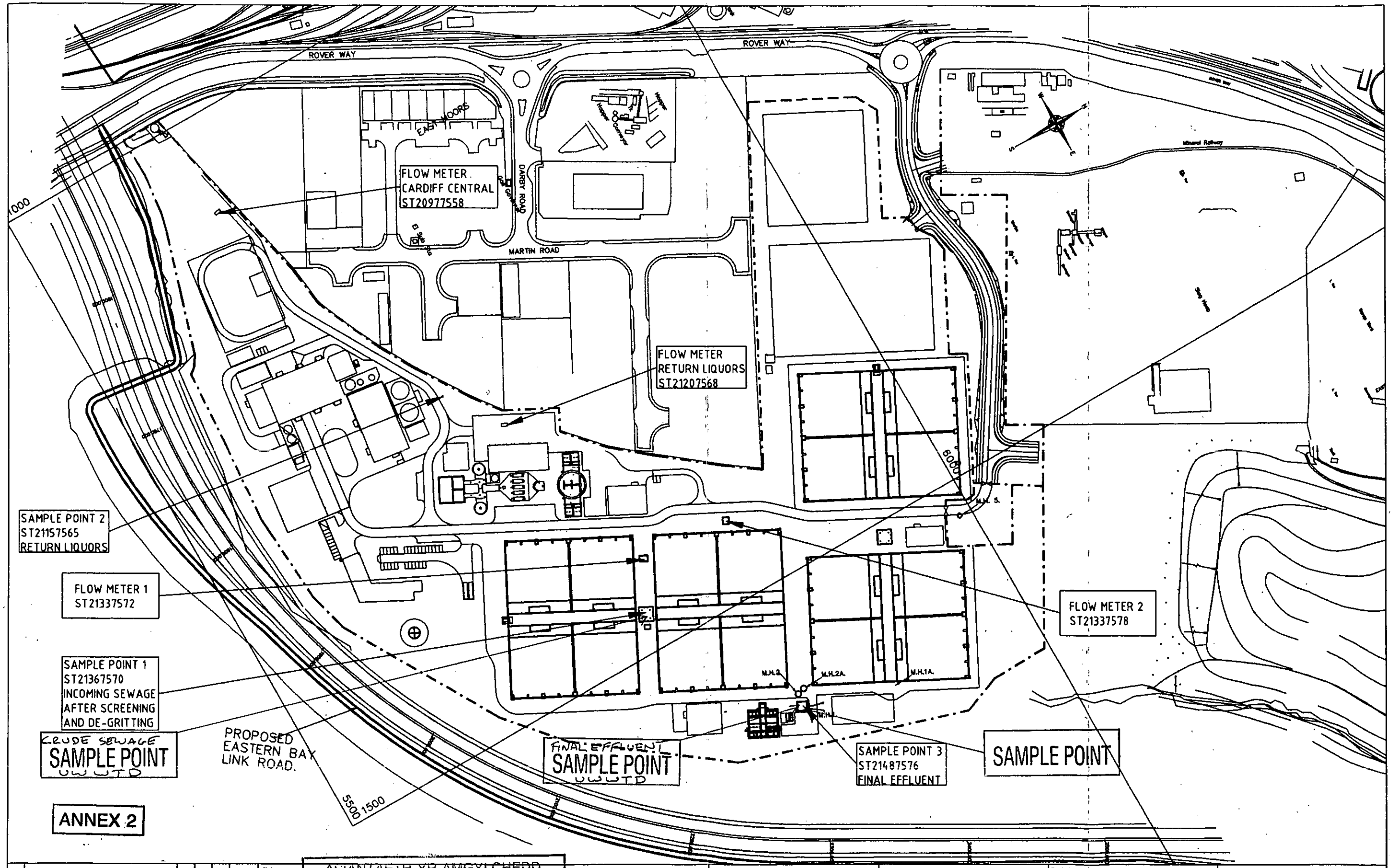

ANNEX 2

Issue	Description	Auth.	Chd.	Appd.	Date
B	FLOW CHAMBERS ADDED AND CO-ORDINATES REVISED	R.J.T.			28/9/99
A	FIRST ISSUE	R.J.T.	C.J.T.	A.R.	26/7/99

Notes

ASIANTAETH YR AMGYLCHEDD
ENVIRONMENT AGENCY

CONSENT PLAN NUMBER	AN030370\B
AUTHORISED SIGNATURE	

CARDIFF · WASTE WATER · PARTNERS

Client: DWR CYMRU WELSH WATER

Project: CARDIFF WASTE WATER TREATMENT WORKS SCHEME

Title: SITE LAYOUT SAMPLE POINTS AND FLOW METER LOCATIONS

Scale: A1 N.T.S. | Datum: LOCAL

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Project Code: NE00929 | Drawing No.: SK10 | Issue: B

ANNEX 3

TABLE

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

Column 1 Number of samples taken in any period of 12 months	Column 2 Maximum number of samples permitted to exceed limit for given determinand
4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18
252-268	19
269-284	20
285-300	21
301-317	22
318-334	23
335-350	24
351-365	25

ANNEX 4

1.	Mercury and its compounds	2.	Cadmium and its compounds
3.	Hexachlorocyclohexane (lindane and related compounds)		
4.	Carbon tetrachloride		
5.	DDT (the isomers of 1,1,1-trichloro-2,2 bis{p-chlorophenyl} ethane)		
6.	Pentachlorophenol (PCP)	7.	Aldrin
8.	Dieldrin	9.	Endrin
10.	Isodrin	11.	Hexachlorobenzene (HCB)
12.	Hexachlorobutadiene (HCBD)	13.	Chloroform
14.	Polychlorinated biphenyls	15.	Dichlorvos
16.	1,2-Dichloroethane	17.	Trichlorobenzene
18.	Atrazine	19.	Simazine
20.	Tributyltin compounds	21.	Triphenyltin compounds
22.	Trifluralin	23.	Fenitrothion
24.	Azinphos-methyl	25.	Malathion
26.	Endosulfan	27.	Lead
28.	Chromium	29.	Zinc
30.	Copper	31.	Nickel
32.	Arsenic	33.	*Iron
34.	*pH outside range 5.5 to 9.0	35.	*Boron
36.	Vanadium	37.	PCSD'S
38.	Cyfluthrin	39.	Sulcofuron
40.	Flucofuron	41.	Permethrin
42.	4-Chloro-3-methyl-phenol	43.	2-Chlorophenol
44.	2,4-Dichlorophenol	45.	2,4-D (ester)
46.	2,4-D (non ester)	47.	1,1,1-Trichloroethane
48.	1,1,2-Trichloroethane	49.	Bentazone
50.	Benzene	51.	Biphenyl
52.	Chloronitrotoluenes	53.	Demeton
54.	Dimethoate	55.	Linuron
56.	MCPA	57.	Mecoprop
58.	Mevinphos	59.	Napthalene
60.	Omethoate	61.	Toluene
62.	Triazophos	63.	Xylene
64.	Cyanide	65.	Azinphos-ethyl
66.	Fenthion	67.	Parathion
68.	Parathion-methyl	69.	Trichloroethylene
70.	Tetrachloroethylene	71.	Dioxins
72.	PAHs	73.	Nonyl phenol
74.	Nonyl phenyl ethoxylate	75.	Di-ethylhexyl phthalate
76.	Bisphenol-A	77.	Diazinon
78.	Chlorfenvinphos	79.	Chlorotoluron
80.	Isoproturon	81.	Diuron
82.	Propetamphos	83.	Flumethrin
84.	Amitraz	85.	High-Cis Cypermethrin
86.	Cyromazine	87.	Deltamethrin
88.	Cypermethrin		

This list is applicable as at 1 December 1998 and will be updated as and when changes to the relevant legislative requirements occur.

*Notification to the Agency by the Consent holder is only required in respect of changes to trade effluents likely to cause significant changes to the pH value, and/or iron or boron concentrations, of the crude sewage.

Appendix 2

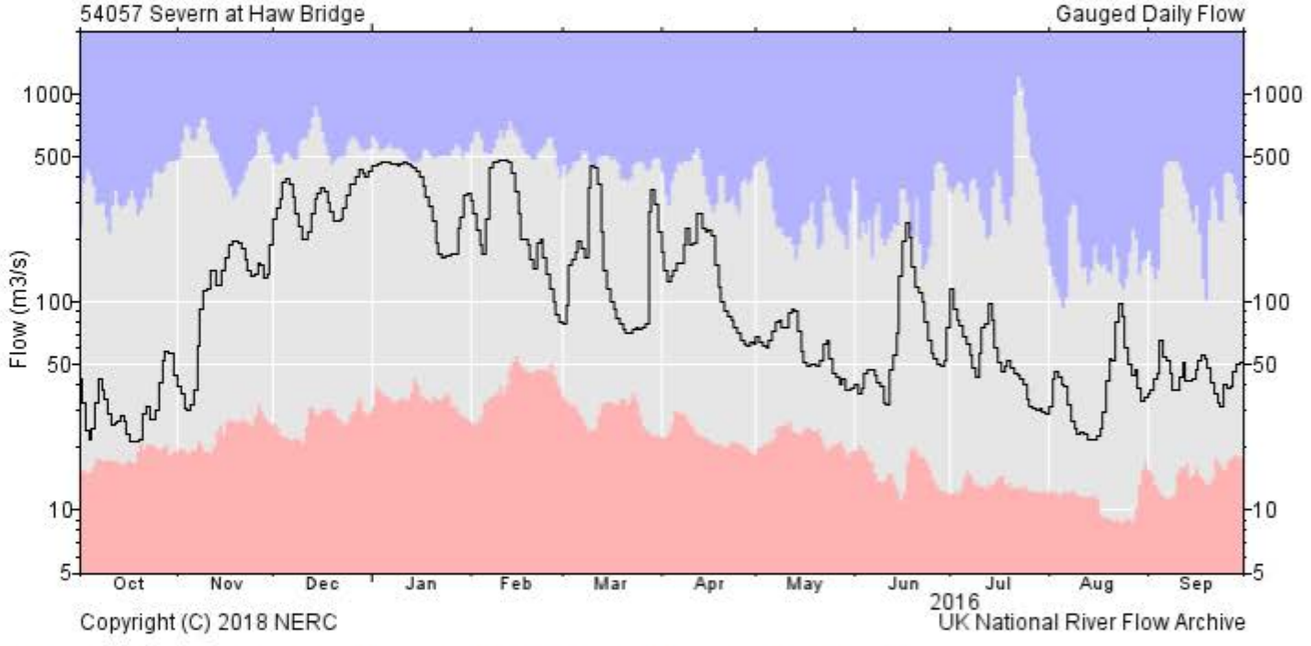
Flow Data for River Severn at Haw Bridge

54057 - Severn at Haw Bridge

Data Series: Gauged Daily Flow

Period of Record:	1971 - 2016
Percent Complete:	100 %
Base Flow Index:	0.57
Mean Flow:	108.179 m^3/s
95% Exceedance (Q95):	20.1 m^3/s
70% Exceedance (Q70):	39.58 m^3/s
50% Exceedance (Q50):	66.6 m^3/s
10% Exceedance (Q10):	262.3 m^3/s

Graph Type: Annual Hydrograph



Key: Red and blue envelopes represent lowest and highest flows on each day over the period of record.

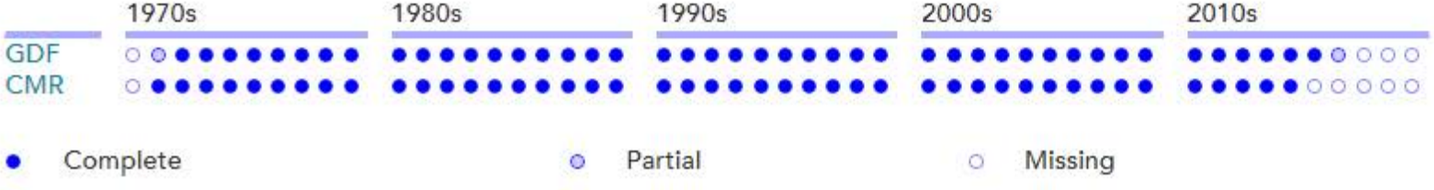
Underlying data supplied by the Environment Agency

Download Data

River flow time series data are available for this station for download.

Download flow data

Data Completeness



Appendix 3

Water Quality Data for Sims Rover Way Facility

Sims Group UK Limited, Rover Way, Cardiff EAWML 30124
Interceptor Water Quality Sampling

The tables below detail analytical results for the sample taken from the WS3 interceptor outfall surface water discharge at Sims Group UK Limited, Rover Way, Cardiff on 27th February 2017.

A sample could not be taken from WS1 due to lack of flow.

The sample was collected and transferred under refrigeration to ALS Environmental's UKAS accredited laboratory by their own courier service. Alcontrol has recently been acquired by ALS Environmental.

Analytical Results

WS3

Substance/ Parameter	Result	Test Method	Sample Date
pH	7.41	GLpH Meter	27.02.17
Hardness mg/l	236	ICP-OES	27.02.17
Conductivity uS/cm	486	Conductivity Meter	27.02.17
BOD mg/l	136	Oxygen Meter	27.02.17
COD mg/l	184	COD Dr Lange Kit	27.02.17
Suspended Solids mg/l	32.8	2540D	27.02.17
Organics			
Benzene ug/l	<7	GC-FID	27.02.17
Toluene ug/l	<4	GC-FID	27.02.17
Ethylbenzene ug/l	<5	GC-FID	27.02.17
Xylene	<11	GC-FID	27.02.17
MTBE ug/l	<3	GC-FID	27.02.17
Total Petroleum Hydrocarbons C5-C35 ug/l	1550	GC-FID	27.02.17
Metals			
Iron mg/l	0.294	DIN 38405 D17	27.02.17
Cadmium ug/l	0.254	ICP-MS	27.02.17
Copper ug/l	3.47	ICP-MS	27.02.17
Nickel ug/l	7.9	ICP-MS	27.02.17
Lead ug/l	4.14	ICP-MS	27.02.17
Zinc ug/l	79.7	ICP-MS	27.02.17

Interpretation of Results for WS3

BTEX and MTBE were not detected. Metals and TPH results are acceptable.

Sims Group UK Limited, Rover Way, Cardiff EAWML 30124
Interceptor Water Quality Sampling

The tables below detail analytical results for the samples taken from the interceptor outfall surface water discharges at Sims Group UK Limited, Rover Way, Cardiff on 10th May 2016.

The samples were collected and transferred under refrigeration to Alcontrol's UKAS accredited laboratory by their own courier service.

Analytical Results

WS1

Substance/ Parameter	Result	Test Method	Sample Date
pH	7.77	GLpH Meter	10.05.16
Hardness mg/l	133	ICP-OES	10.05.16
Conductivity uS/cm	567	Conductivity Meter	10.05.16
BOD mg/l	<1	Oxygen Meter	10.05.16
COD mg/l	43.5	COD Dr Lange Kit	10.05.16
Suspended Solids mg/l	<2	2540D	10.05.16
Organics			
Benzene ug/l	<7	GC-FID	10.05.16
Toluene ug/l	<4	GC-FID	10.05.16
Ethylbenzene ug/l	<5	GC-FID	10.05.16
Xylene	<3	GC-FID	10.05.16
MTBE ug/l	<3	GC-FID	10.05.16
Total Petroleum Hydrocarbons C12-C35 ug/l	<10	GC-FID	10.05.16
Metals			
Iron mg/l	<0.1	DIN 38405 D17	10.05.16
Cadmium ug/l	<0.1	ICP-MS	10.05.16
Copper ug/l	2.77	ICP-MS	10.05.16
Nickel ug/l	6.15	ICP-MS	10.05.16
Lead ug/l	0.227	ICP-MS	10.05.16
Zinc ug/l	99.3	ICP-MS	10.05.16

Interpretation of Results for WS1

BTEX, MTBE and TPH were not detected. Metals results are acceptable.

WS3

Substance/ Parameter	Result	Test Method	Sample Date
pH	8.24	GLpH Meter	10.05.16
Hardness mg/l	205	ICP-OES	10.05.16
Conductivity uS/cm	495	Conductivity Meter	10.05.16
BOD mg/l	25.4	Oxygen Meter	10.05.16
COD mg/l	76.3	COD Dr Lange Kit	10.05.16
Suspended Solids mg/l	21.1	2540D	10.05.16
Organics			
Benzene ug/l	<7	GC-FID	10.05.16
Toluene ug/l	<4	GC-FID	10.05.16
Ethylbenzene ug/l	<5	GC-FID	10.05.16
Xylene	<3	GC-FID	10.05.16
MTBE ug/l	<3	GC-FID	10.05.16
Total Petroleum Hydrocarbons C12-C35 ug/l	695	GC-FID	10.05.16
Metals			
Iron mg/l	<0.1	DIN 38405 D17	10.05.16
Cadmium ug/l	<0.1	ICP-MS	10.05.16
Copper ug/l	<0.85	ICP-MS	10.05.16
Nickel ug/l	4.35	ICP-MS	10.05.16
Lead ug/l	0.185	ICP-MS	10.05.16
Zinc ug/l	0.937	ICP-MS	10.05.16

Interpretation of Results for WS3

BTEX and MTBE were not detected. Metals and TPH results are acceptable.

Appendix 4

Sewage Treatment Reduction Factors for H1 Assessments

Multiply the concentration of the substance in your effluent by the sewage treatment reduction factor

Substance	Percentage	Percentage	Percentage volatilised	STRF (prop	STRF (prop	STRF (proportion rema
Acetaldehy	-	-	3.14	-	-	0.9686
Acrolein	-	-	5.81	-	-	0.9419
Acrylamide	-	-	0	-	-	1
Acrylonitril	-	-	6.46	-	-	0.9354
Alachlor	25	25	-	0.75	0.75	-
Aldrin	99.94	99.94	-	0.0006	0.0006	-
Allyl alcohc	-	-	0.28	-	-	0.9972
Aluminium	0	0		1	1	
Amitrole (a	-	-	0	-	-	1
Ammonia	92	92	-	0.08	0.08	-
Aniline (be	95	95	-	0.05	0.05	-
Anthracene	12	12	-	0.88	0.88	-
Antimony a	-	-	0	-	-	1
Arsenic and	11	11	-	0.89	0.89	-
Asbestos	80	80	-	0.2	0.2	-
Atrazine	99.8	3.67	-	0.002	0.9633	-
Azamethip	8.9	8.9	-	0.911	0.911	-
Azinphos-n	99.86	99.86	-	0.0014	0.0014	-
Benzene	100	98	-	0	0.02	-
Benzo(a)py	0	0	0	1	1	1
Benzo(b)flu	-	-	0	-	-	1
Benzo(g,h,i	39	39	-	0.61	0.61	-
Benzo(k)flu	-	-	0	-	-	1
Benzyl buty	96	80	-	0.04	0.2	-
Benzyl chlc	-	-	15.49	-	-	0.8451
Beryllium a	-	-	0	-	-	1
Bisphenol-a	63	63	-	0.37	0.37	-
Boron and	-	-	0	-	-	1
Brominated	54	54	-	0.46	0.46	-
Bromoethe	-	-	82.19	-	-	0.1781
Butadiene	-	-	96.06	-	-	0.0394
Butene - al	-	-	98.03	-	-	0.0197
Cadmium (	11	11	-	0.89	0.89	-
Cadmium (	63	63		0.37	0.37	
Carbon disı	-	-	0	-	-	1
Carbon tetı	95	96	-	0.05	0.04	-
Chlordane	92.9	92.9	-	0.071	0.071	-
Chlordecor	87	87	-	0.13	0.13	-
Chlorfenvir	90	90	-	0.1	0.1	-
Chlorides	-	0	0	-	1	1	-
Chloroetha	-	-	90.03	-	-	0.0997
Chlorofluor	-	-	96.31	-	-	0.0369
Chloroform	91	99	-	0.09	0.01	-
Chloropren	-	-	94.47	-	-	0.0553
Chlorpyrifo	93	90	-	0.07	0.1	-
Chromium	84	48	-	0.16	0.52	
Chrysene	-	-	0.01	-	-	0.9999
Clotrimazo	97.2	97.2	-	0.028	0.028	-

Copper (dis	42	42	-		0.58	0.58	-	
Copper (to	79	79			0.21	0.21		
Crotonalde	-	-		1.07	-	-		0.9893
Cumene hy	-	-		0.01	-	-		0.9999
Cyanides -	68	68	-		0.32	0.32	-	
Cypermeth	98	95	-		0.02	0.05	-	
Di(2-ethylh	90	90	-		0.1	0.1	-	
Diazinon	99.84	93.56	-		0.0016	0.0644	-	
Dibutyl pht	99.8	99.8	-		0.002	0.002	-	
Dichlorodip	99.95	99.95	-		0.0005	0.0005	-	
2,4-dichlor	0	0	-		1	1	-	
Dichlorvos	89.97	89.97	-		0.1003	0.1003	-	
Diclofenac	18	18			0.82	0.82		
Dieldrin	99.94	99.94	-		0.0006	0.0006	-	
Diethyl anil	-	-		7.83	-	-		0.9217
Diethyl eth	-	-		33.5	-	-		0.665
Diisopropy	-	-		47.4	-	-		0.526
Dimethyl-o	-	-		4.51	-	-		0.9549
Dimethyl-p	-	-		2.48	-	-		0.9752
Dimethyl si	-	-		0.23	-	-		0.9977
Dimethylar	-	-		2.91	-	-		0.9709
1-ethyl-3,5	-	-		44.88	-	-		0.5512
Dimethylfo	-	-		0	-	-		1
Dioxane -	-	-		0	-	-		1
Diphenylar	-	-		0.17	-	-		0.9983
Diuron	40	20	-		0.6	0.8	-	
Dodecylph	76.2	76.2	-		0.238	0.238	-	
EDTA	37	37			0.63	0.63		
Emamectin	94.1	94.1	-		0.059	0.059	-	
Endosulfan	99.99	99.99	-		0.0001	0.0001	-	
Endrin	99.94	99.94	-		0.0006	0.0006	-	
Erythromyc	32	32			0.68	0.68		
Ethinyloest	36	36			0.64	0.64		
2-ethoxyet	-	-		0	-	-		1
2-ethoxyet	-	-		0.18	-	-		0.9982
Ethyl acryla	-	-		13.44	-	-		0.8656
Ethyl benze	87.1	85	-		0.129	0.15	-	
Ethyl brom	-	-		73.99	-	-		0.2601
Ethylene (e	-	-		98.57	-	-		0.0143
Ethylene di	34.04	34.04	-		0.6596	0.6596	-	
Ethylene ox	92.2	92.2	-		0.078	0.078	-	
Ethyltoluer	-	-		61.62	-	-		0.3838
Fenitrothio	99.86	99.86	-		0.0014	0.0014	-	
Fluoranthe	27	27			0.73	0.73	-	
Fluorides -	50	50	-		0.5	0.5	-	
Fluorine an	-	-		0	-	-		1
Fluoxetine	28	28			0.72	0.72		
Formaldeh	-	-		0.02	-	-		0.9998
Halogenate	24	24	-		0.76	0.76	-	
Halons -	-	-		98.64	-	-		0.0136
Heptachlor	92.6	92.6	-		0.074	0.074	-	

Hexabromc	94.1	94.1	-		0.059	0.059	-	
Hexabromc	60	60	-		0.4	0.4	-	
Hexachlorc	97	74	-		0.03	0.26	-	
Hexachlorc	100	83	-		0	0.17	-	
1,2,3,4,5,6-	65	37	-		0.35	0.63	-	
Hexane	-	-		85.3	-	-		0.147
1-hexene	-	-		93.81	-	-		0.0619
Hydrobrom	-	-		96.06	-	-		0.0394
Hydrochlor	-	-		52.83	-	-		0.4717
Hydrofluor	-	-		88.32	-	-		0.1168
Ibuprofen	93	93			0.07	0.07		
Indeno (1,2	41	41		0	0.59	0.59		1
Iodometha	-	-		66.87	-	-		0.3313
Iron (dissol	23	23			0.77	0.77		
Iron (total)	52	52			0.48	0.48		
Isodrin	93.5	93.5	-		0.065	0.065	-	
Isophorone	-	-		0.37	-	-		0.9963
Isophorone	-	-		0.95	-	-		0.9905
Isoprene	-	-		95.81	-	-		0.0419
Isoproturor	55	55	-		0.45	0.45	-	
Lead (disso	33	33			0.67	0.67		
Lead (total	83	83	-		0.17	0.17	-	
Lindane	37	37	-		0.63	0.63	-	
Linuron	99.99	99.99	-		0.0001	0.0001	-	
Long chain	93	93	-		0.07	0.07	-	
Malathion	99.99	99.99	-		0.0001	0.0001	-	
Maleic anh	-	-		0	-	-		1
Manganese	-	-		0	-	-		1
Mecoprop	0	0	-		1	1	-	
Medium ch	93	93	-		0.07	0.07	-	
Mercury (d	0	0			1	1		
Mercury (t	33	33	-		0.67	0.67	-	
Methane	-	-		100	-	-		0
Methanol	99	99	-		0.01	0.01	-	
2-methoxy	-	-		0	-	-		1
2-(methoxy	-	-		0.18	-	-		0.9982
2-methoxy	-	-		0.01	-	-		0.9999
2-methyl-2	-	-		97.49	-	-		0.0251
3-methyl-1	-	-		98.35	-	-		0.0165
Methyl bro	-	-		70.48	-	-		0.2952
Methyl chl	-	-		77.01	-	-		0.2299
Methyl chl	-	-		85.84	-	-		0.1416
Methyl chl	3	3	-		0.97	0.97	-	
Methyl isoc	-	-		27.91	-	-		0.7209
Methylene	94.5	90	-		0.055	0.1	-	
4,4'-methy	-	-		0	-	-		1
4-4'-methy	-	-		0.01	-	-		0.9999
4,4'-methy	-	-		0	-	-		1
Mirex	80	80	-		0.2	0.2	-	
Naphthaler	0.02	0.02	-		0.98	0.98	-	
Nickel (diss	0	0			1	1		

Nickel (tota	24	24	-		0.76	0.76	-	
Nitrobenze	-	-	-		-	-	-	
Nitrogen - t	52	52	-		0.48	0.48	-	
2-nitroprop	-	-		5.69	-	-		0.9431
Non-metha	-	-		50	-	-		0.5
4-nonylphe	83	83			0.17	0.17		
Nonylphen	79	79	-		0.21	0.21	-	
Nonylphen	71	71	-		0.29	0.29	-	
Octylphenc	79	79	-		0.21	0.21	-	
Octylphenc	73	73	-		0.27	0.27	-	
Oestradiol	77	77			0.23	0.23		
Oestrone	44	44			0.56	0.56		
Ofloxacin	33	33			0.67	0.67		
Organotin (	90	90	-		0.1	0.1	-	
Oxytetracy	75	75			0.25	0.25		
Para-dichlc	-	-		44.42	-	-		0.5558
Particulate	-	-		0	-	-		1
Particulate	-	-		0	-	-		1
Particulate	-	-		0	-	-		1
Pentachlor	83.6	83.6	-		0.164	0.164	-	
Pentachlor	96	76	-		0.04	0.24	-	
Pentane	-	-		94.24	-	-		0.0576
Pentene - a	-	-		97.77	-	-		0.0223
Perfluoro c	96	96	-		0.04	0.04	-	
Perfluoroca	-	-		0	-	-		1
Permethrin	80	80	-		0.2	0.2	-	
Phenols - p	83	83	-		0.17	0.17	-	
Phosgene	-	-		77.22	-	-		0.2278
Phosphoru	20	20	-		0.8	0.8	-	
Polychlorin	98	84.47	-		0.02	0.1553	-	
Polychlorin	-	-		0.01	-	-		0.9999
Polychlorin	82	82	-		0.18	0.18	-	
Polycyclic a	80	80	-		0.2	0.2	-	
Propranolo	15	15			0.85	0.85		
Propetamp	13	13	-		0.87	0.87	-	
Propylbenz	-	-		70.55	-	-		0.2945
Propylene	-	-		98.27	-	-		0.0173
Propylene (	5	5	-		0.95	0.95	-	
Selenium a	-	-		0	-	-		1
Short chair	93	93	-		0.07	0.07	-	
Simazine	99.74	99.74	-		0.0026	0.0026	-	
Styrene	-	-		50.32	-	-		0.4968
Sulphur he	-	-		99.57	-	-		0.0043
Sulphur oxi	-	-		0	-	-		1
Teflubenzu	59.2	59.2	-		0.408	0.408	-	
Tert-butyl r	99	99	-		0.01	0.01	-	
4-tert-buty	97.2	97.2	-		0.028	0.028	-	
Tetrabrom(	98	98	-		0.02	0.02	-	
Tetrachlorc	-	-		14.15	-	-		0.8585
Tetrachlorc	96	95	-		0.04	0.05	-	
Tetrafluorc	-	-		99.28	-	-		0.0072

Toluene	100	96	-		0	0.04	-	
Toluene dii	-	-		0.5	-	-		0.995
Total orgar	-	-		100	-	-		0
Toxaphene	91	91	-		0.09	0.09	-	
Tributyltin	85	85	-		0.15	0.15	-	
Trichlorobe	100	88	-		0	0.12	-	
Trichloroet	79.58	79.58	-		0.2042	0.2042	-	
Trichloroto	-	-		8.15	-	-		0.9185
Triclosan	89	89	-		0.11	0.11	-	
Trifluralin	99.91	80.59	-		0.0009	0.1941	-	
Trimellitic a	-	-		0	-	-		1
Trimethylb	-	-		54.88	-	-		0.4512
Triphenylti	90	90	-		0.1	0.1	-	
Vanadium	-	-		0	-	-		1
Vinyl aceta	-	-		18.36	-	-		0.8164
Vinyl chlori	96.6	96.6	-		0.034	0.034	-	
Xylene - all	100	93.5	-		0	0.065	-	
Zinc (dissol	0	0	-		1	1	-	
Zinc (total)	67	67			0.33	0.33		

(STRF) to work out the concentration remaining in the sewage effluent after treatment.

ining) after volatilisation

Appendix 5

H1 Assessment Tool – Summary Files

Please refer to electronic file

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