APPLICATION FOR AN ENVIRONMENTAL PERMIT CHRISTCHURCH TREATMENT CENTRE

Environmental Risk Assessment

Wessex Water Enterprises Limited

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1 INTRODUCTION

1.1.1 This Environmental Risk Assessment (ERA) has been carried out in support of an application for an Environmental Permit for the operation of the Christchurch Treatment Centre, Stony Lane, Christchurch, Dorset, BH23 7LQ.

1.1.2 The scope of the ERA considers risks associated with the operation of the facility and demonstrate that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

1.1.3 The Environment Agency's 'Risk Assessments for your environmental permit'[1] covers a range of environmental risks. Those aspects relevant to the operation of the proposed facility are covered within the following sections:

1.1.4 Section 2 provides the environmental risk assessment of 'Amenity and Accident' hazards associated with the operation of the Christchurch Treatment Centre. This document provides the relevant risk assessments covering these aspects.

1.1.5 There are no process emissions to water or sewer from the Treatment Centre.

[1] Environment Agency (2019), Risk Assessments for your Environmental Permit. Available at Risk assessments for your environmental permit - GOV.UK (www.gov.uk)

2 SITE DETAILS

2.1 Site Setting

2.1.1 The site is located north of Purewell and is approximately 1 km from Christchurch station. It is also east of the River Avon.

2.1.2 The site address is:

Christchurch TC

Stony Lane

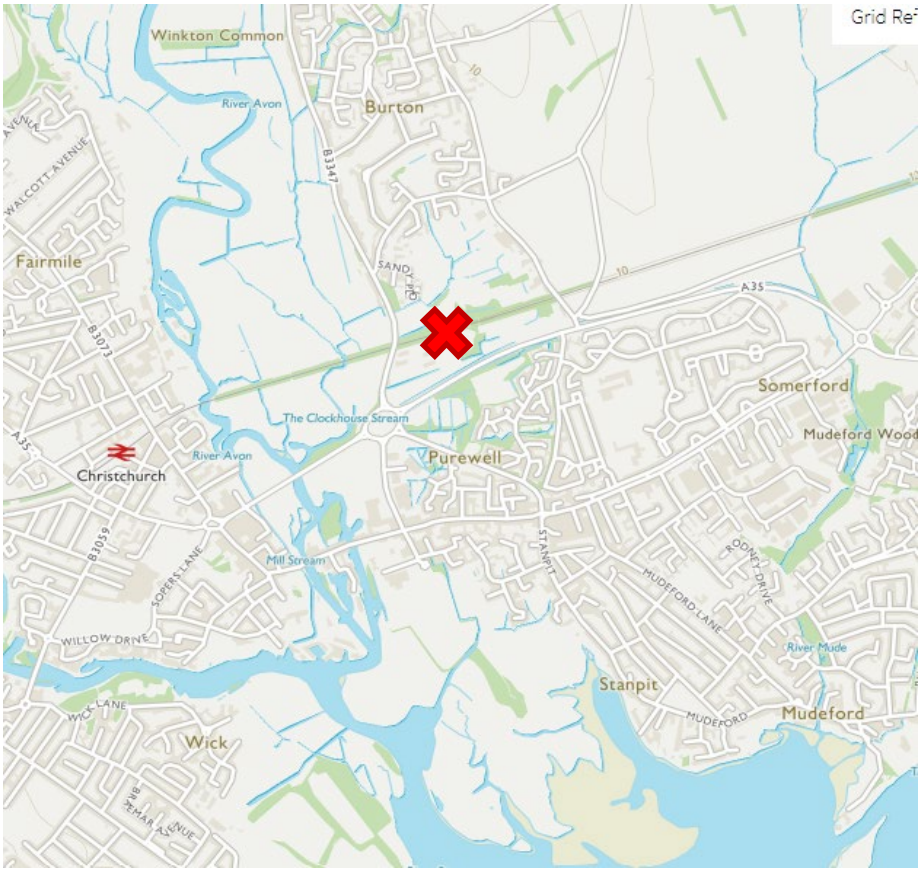
Christchurch

Dorset

BH23 7LQ

2.1.3 The location is shown marked with a red X in Figure 2.1 below:

Figure 2.1: Site Location



2.1.4 The centre of the site is at National Grid Reference (NGR): SZ 16584 93656.

2.1.5 The main land use surrounding the area in which the facility is sited is identified as rural. The current surrounding land uses are:

North – Agricultural Land and Burton approximately 0.5 km away;

East – Agricultural Land and Residential Land use;

South – Agricultural Land and Residential Land use with Purewell approximately 0.5 km away;

West – Agricultural Land and Christchurch town approximately 1km away.

2.1.6 The nearest residential receptor is a housing estate approximately 0.23 km north and south east.

2.1.7 The nearest surface water features to the site are River Avon (~760 m west) and River Stout (~1.3 km South) and Dorset Coast (~2.6 km south/southeast).

2.1.8 A Habitats Screening Assessment for the Environment Agency (EA) has identified the following relevant statutory and local ecological sites in Table 2.1 below. The Habitats Screening Assessment is included as Appendix A:

Table 2-1: Statutory Designated Sites

Site Name	Screening Distance (km)	Distance/Direction from the Proposed Site
Special Areas of Conservation		
Dorset Heaths	10	8 km / North West
River Avon		0.8 km / West
The New Forest		10 km / North East
Special Protection Areas		
Solent and Dorset Coast	10	2.6 km / South, South East
Dorset Heathlands		8 km / North West
Avon Valley		12 km / North
New Forest		10 km / North East
Ramsar		
Avon Valley	10	12 km / North
New Forest		10 km / North East
Dorset Heathlands		8 km / North West
Sites of Special Scientific Interest (SSSI)		
Christchurch Harbour	2	1.5 km / South
River Avon System		0.8 km / West
Avon Valley (Bickton to Christchurch)		12k m / North
Town Common		1.2 km / South West
Purewell Meadows		0.3km / South West
Local Nature Reserve (LNR)		
Iford Meadows	2	2.3 km / West
Hengistbury Head		3.5 km/ South
Purewell Meadows		0.3 km / South West
Stanpit Marsh, Christchurch		1.5 km / South
Local Wildlife Sites (LWS)		
Iford Meadows	2	2.5 km / West
Stanpit		1.3 km / South
Stony Lane Drain		0.2 km / West
Mude Valley Nature Reserve		2 km / North East
Tuckton Bridge		2 km / South West
Jumpers Cemetery		2 km / West

2.1.9 A description of the geology of the area from the British Geological Survey Geology of Britain[2] viewer shows the bedrock and geology as follows:

- **Bedrock geology description**: Branksome Sand Formation - Sand. Sedimentary Bedrock formed approximately 41 to 48 million years ago in the Palaeogene Period. Local environment previously dominated by swamps, estuaries and deltas
- **Setting**: Swamps, estuaries and deltas. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).
- **Superficial deposits description:** River Terrace Deposits, 5 - Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by rivers (U).
- **Setting**: rivers (U). These sedimentary deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).

2.1.10 The bedrock and superficial deposits are classified as Secondary A Aquifers.

2.1.11 Magic map[3] has shown that the site is not located within any source protection zones.

2.1.12 A Pre-application Conservation Screening Report can be found in Appendix A.

[2] Geology of Britain viewer | British Geological Survey (BGS)

[3] Magic Map Application (defra.gov.uk)

3 ENVIRONMENTAL RISK ASSESSMENT

3.1.1 The environmental risk assessment complies with regulatory guidance and uses the following approach for identifying and assessing the risks in six steps:

- Step 1: Identify and consider risks for your site, and the sources of the risks;
- Step 2: Identify the receptors (people, animals, property and anything else that could beaffected by the hazard) at risk from your site;
- Step 3: Identify the possible pathways from the sources of the risks to the receptors;
- Step 4: Assess risks relevant to your specific activity and check they're acceptable andcan be screened out;
- Step 5: State what you'll do to control risks if they're too high;
- Step 6: Present your assessment as part of you permit application.

3.1.2 This section provides an assessment of risks to environmental amenity and from accidents that could arise from operation of the facility. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.

3.1.3 The scope of the assessment has covered the following aspects:

- Odour;
- Noise and vibration;
- Fugitive emissions; and
- Accidents.

3.1.4 For each of the above, the approach to the assessment has followed the following six stage process:

- Identify and consider risks for the site, and the sources of the risks;
- Identify the receptors at risk;
- Identify the possible pathways from the sources of the risks to the receptors;
- Assess risks relevant to the activity;
- Choose appropriate further measures to control these risks (if required); and
- Submit the assessment of overall risk.

3.1.5 Results of the assessment are provided in the following tables:

- Table 3-2 Odour Risk Assessment and Management Plan
- Table 3-3 Noise and vibration risk assessment and management plan
- Table 3-4 Fugitive emissions risk assessment and management plan
- Table 3-5 Accidents Risk Assessment and Management Plan

3.1.6 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- The probability of the exposure; and
- The consequence of the hazard to the environment or human health.

3.1.7 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

Table 3-1: Risk Matrix

Consequence of the hazard to the environment or human health	Probability of Exposure			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

3.1.8 In completing the assessment, the proposed prevention and control measures are assumed to be put in place prior to operation. Where relevant, details of these measures are identified within the assessment.

Table 3-2: Odour Risk Assessment and Management Plan

Hazard What has the potential to cause harm?	**Receptor** What is at risk? What do I wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs –who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Odour	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast. The Grange School located 0.6 km southeast.	Air	The site has been operational as an exempt wastewater treatment works for several years. The site Odour Management Plan states there is a very low risk of odour complaints being received under normal operating conditions. Waste acceptance procedures include checks for any odorous waste prior to discharge and should any odorous waste be found, it will be rejected and returned to the supplier. There are regular checks that Tanker connection and pipeline are in maintained order. Any odour complaints will be investigated as detailed in the EMS complaints procedures and details recorded in the site diary. See Odour Management Plan in Appendix I.	Very low	Very low - Odour nuisance	Very low

Table 3-3: Noise and vibration risk assessment and management plan

Hazard What has the potential to cause harm?	**Receptor** What is at risk? What dol wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs –who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
Noise from operational site plant and vehicle movements	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast). The Grange School located 0.6 km southeast.	Air	The site has been operating as an exempt wastewater treatment centre for a number of years and during this time has not received any complaints relating to noise or encountered any noise related issues from the site. The only noise will be from the tanker pumping off. No noise assessment has been completed. All plant equipment will be subject to regular inspection and planned preventative maintenance schedules to maintain its operational performance. The site will only be operational between the hours of 07:30 – 16:00 (Monday to Friday), and 07:30 – 12:00 Saturday.	Low	Low – Noise nuisance	Low

Table 3-4: Fugitive emissions risk assessment and management plan

HazardWhat has the potential to cause harm?	**Receptor** What is at risk? What dol wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs –who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? The balance of probability and consequence.
To Air						
VOCs from fuel storage	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast. Purewell Meadows (LNR & SSSI) located approximately 0.3 km south of site.	Air	Not Applicable. Fuel storage is not located within the permit boundary.	N/A	N/A	N/A

Dust	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast. Purewell Meadows (LNR & SSSI) located approximately 0.3 km south of site.	Air	Dust emissions will be minimised by the site operations being carried out with the following control measures in place: • All surfaces to be hard surfaced and regularly inspected and routinely swept. • Avoid site runoff of water and mud.	Very Low	Low	Very Low
Bio-aerosols	Local resident 0.23 km northwest	Air	The potential for release of bioaerosols is very low. The connection of tank to discharge via inlet is a closed connection. When not in use the inlet pipe will be capped off and locked. There are only up to 2 deliveries per day are expected. Pipework is regularly inspected and maintained. The closest residential receptor is located 230 m northwest of the site which is close to the 250 m threshold of being discounted as a sensitive receptor.	Very Low	Very Low	Very Low
To Water						

Leak of fuel from tanks	Watercourse – River Avon (~250m West) and River Stour (1.3km South).	Groundwater / surface water	A spill kit is stored at a prominent location on site. Staff are aware of spill kit locations and are trained in spillage response. Minor spillages will be cleaned up immediately.	Low	Low – surface water/groundwater contamination	Low
Other:						
Unauthorised Wastes	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast.	Air/ Land/ Water	Waste pre-acceptance and waste acceptance procedures will be in place. All wastes will be subject to inspection and checking against the declaration on the waste transfer note. Upon delivery, waste will be subject to strict waste acceptance procedures to identify, reject and/or segregate potentially non-conforming waste. In the event that unauthorised waste is accepted to the site, the waste will be rejected and segregated. A rejection note will be completed detailing the alternative disposal route, a copy of this note is to be sent to the main office in Avonmouth.	Low	Low - Odour nuisance Contamination of land, surface water and groundwater .	Low
Pests	Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast.		There will be no storage of waste on site, the facility accepts the liquid waste and transfers it immediately to the adjacent WRC. The potential to attract pests is very low. Should liquid waste be spilled it would be cleared up immediately. A spill kit is stored at a prominent location on site. Staff are aware of spill kit locations and are trained in spillage response.	Very Low	Low	Very Low

Table 3-5: Accidents Risk Assessment and Management Plan

Hazard What has the potential to cause harm?	**Receptor** What is at risk? What dol wish to protect?	**Pathway** How can the hazard get to the receptor?	**Risk management** What measures will you take to reduce the risk? If it occurs –who is responsible for what?	**Probability of exposure** How likely is this contact?	**Consequence** What is the harm that can be caused?	**What is the overall risk?** What is the risk that still remains? Thebalance of probability and consequence.
Operator error	Variable - dependent onnature of the error	Air/Water/Land	The activities to be carried out at the facility are simple with limited potential for operator error. All operational staff are fully trained in the site operations. Training will not only address normal operations but will also include those actions required in the event of abnormal operations and emergencies.	Low	Variable depending upon nature of incident but mayresult in excessive noise/ spillage	Low - provided operating procedures are followed
Vandalism	Variable - dependent on nature of the error	Air/Water/ Land	There is a low probability of vandalism and trespass due to the site having gates which are locked between the hours of 16:00 – 07:30. During 7:30 – 16:00 the main gates are closed but not locked.	Low due to security measures in place.	Low/medium depending on the nature of the event. Potential contamination of local water courses/ air / land / and / or / local nuisance depending on nature of event.	Low, given the probability of any unauthorised access to the site.

Flooding	Watercourse – River Avon (~250m West) and River Stour (1.3km South).	Water / land	An assessment of flood risk shows that the site is located in a flood zone 3 and has a high probability of flooding; the annual probability of flooding from fluvial sources is classified as 1 in 100 and from tidal sources 1 in 200. If flooding occurs, water is unlikely to access site as most of the assets are raised above ground level.. If flooding does happen, the waste will be diverted to an alternative facility.	High	Medium/high depending on the nature of the flood event. Potential contamination of local water courses / land.	Medium
Fire causing emissions to air	Purewell Meadows LNR & SSSI 0.3 km south Local residents (the nearest residential receptor is a housing estate approximately 0.23 km north and southeast. The Grange School located 0.6 km southeast.	Direct release to air	All wastes are liquid with a low risk of self combustion. No waste is stored on site, the facility accepts the liquid waste and transfers it immediately to the adjacent WRC. The potential for an ignition source is very low. Fire Emergency Procedures are in place for the site and have been updated to include the operation of facility.	Very Low	Low Uncontrolled release of combustion gases to air – impacts likely to be short term	Low

4 EMISSIONS TO SURFACE WATER

4.1.1 There will be no direct emissions to surface water from the facility, however, the waste will be discharged directly into the Christchurch Water Recovery Centre for treatment.

4.1.2 The releases of waste to the Christchurch WRC, and ultimately into the Lower Avon, have been assessed using the EA's H1 software tool. This is included as Appendix B. The data input and assumptions underpinning the assessment are described below.

4.1.3 The assessment has been undertaken using the proposed volume of waste to be accepted daily which is 60 m^3.

4.2 Overview

4.2.1 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 10% of the Environmental Quality Standard (EQS).
- **Test 2** screens out any substances as insignificant where the Process Contribution (PC) is less than 4% of the EQS.
- **Test 3 and Test 4** are only required where substances have not been screened out in Test 2. For releases where the screening criterion in Test 2 is exceeded, the predicted environmental concentration (PEC) shall be determined. To identify which releases may need more detailed modelling, the PEC shall be assessed in relation to the background pollutant levels and the Annual Average EQS (EQS-AA) and the Maximum Allowable Concentration (EQS-MAC).

4.2.2 Data for the assessment has been provided by the operator and is based on chemical analysis undertaken of the wastes to be accepted at the facility. The data provided is based on analysis from the waste streams accepted at identical sites that WWEL operate that already carry out the same activity with the same list of EWC codes. It is these same wastes that may be accepted at some point in the future at the Christchurch site. The list of pollutants provided is therefore considered accurate and adequately represents a sample.

4.2.3 Whilst it is initially envisaged that leachate will be accepted a wider list of EWC codes may be accepted in the future. On this basis the H1 assessment has been carried out for two scenarios:

1. Assuming the only waste is leachate.
2. Assuming all permitted wastes are accepted.

4.2.4 The tanker sampling procedure is completed in front of a technician and involves connecting a tube to the bottom of the tank. A detailed description of the sampling technique is included in Appendix F.

4.2.1 A copy of this analysis can be found in Appendix C.

4.3 Scenario 1: Leachate H1 Assessment

4.3.1 For this assessment the composition of the discharge is based on analysis of the received waste for EWC code 19 07 03. The parameters assessed in the H1 are summarised below:

- Ammonia
- Sulphate

- Chloride
- Boron
- Vanadium
- Chromium
- Iron
- Cobalt
- Nickel
- Copper
- Zinc
- Cadmium
- Mercury
- Lead
- Arsenic

4.3.2 The assessment has used the maximum and average of the concentrations for all analysis for the purpose of this assessment.

4.3.2 River Flow

4.3.1 The nearest flow gauge part of the National River Flow Archive is the Knapp Mill Hampshire Avon gauging station which is located upstream of the Christchurch Water Recovery Centre discharge location. The records for this station indicate the River Deben is located significantly downstream of the site discharge and records indicate Q95 of 6.3 m^3/s.

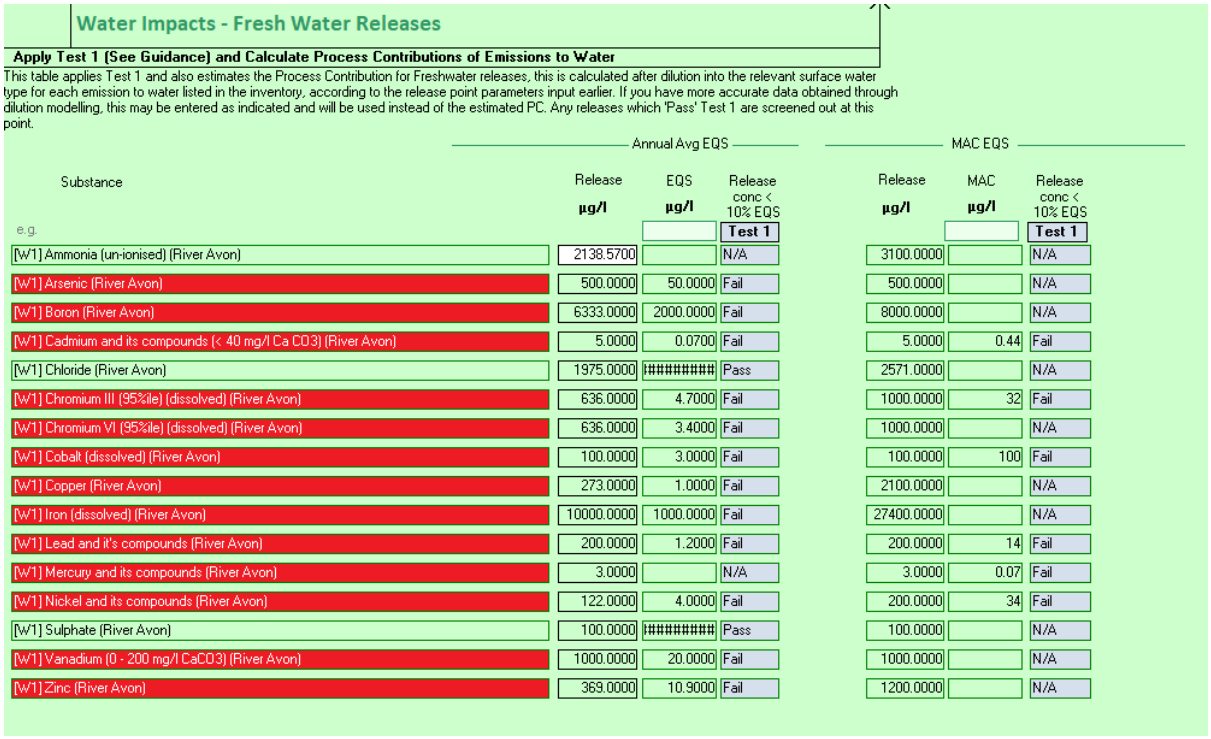
4.3.3 Emissions Screening

Test 1 Emissions Screening

4.3.1 The following parameters exceeds 10% of the EQS and are assessed further by Test 2.

- Boron
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Mercury
- Nickel
- Vanadium
- Zinc
- Arsenic

Figure 4-1: Test 1 Leachate



Water Impacts - Fresh Water Releases

Apply Test 1 (See Guidance) and Calculate Process Contributions of Emissions to Water

This table applies Test 1 and also estimates the Process Contribution for Freshwater releases, this is calculated after dilution into the relevant surface water type for each emission to water listed in the inventory, according to the release point parameters input earlier. If you have more accurate data obtained through dilution modelling, this may be entered as indicated and will be used instead of the estimated PC. Any releases which 'Pass' Test 1 are screened out at this point.

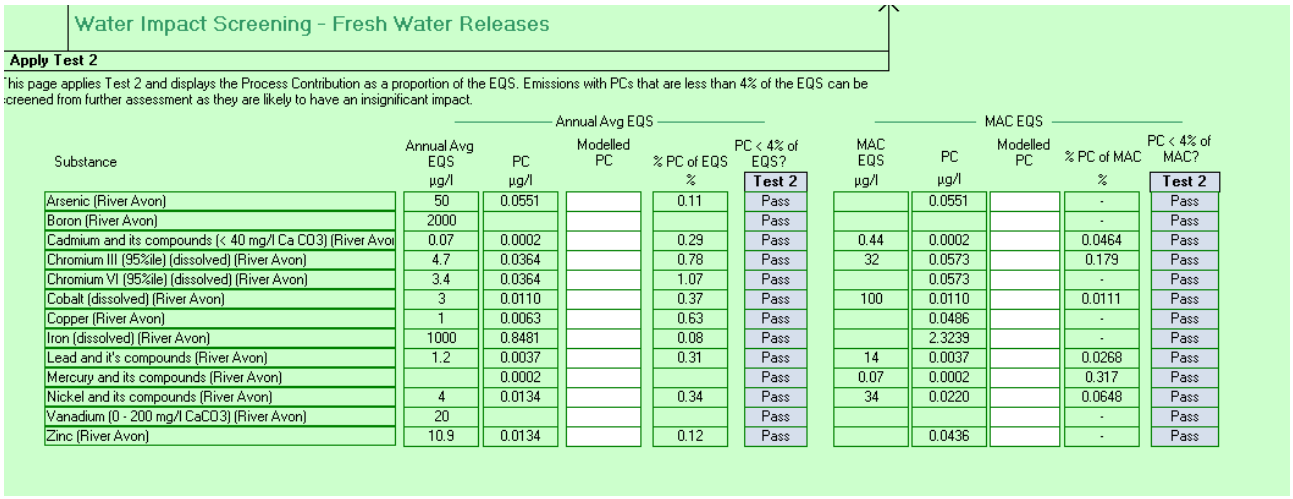
Substance	Annual Avg EQS Release µg/l	Annual Avg EQS EQS µg/l	Annual Avg EQS Release conc < 10% EQS Test 1	MAC EQS Release µg/l	MAC EQS MAC µg/l	MAC EQS Release conc < 10% EQS Test 1
e.g.						
[W1] Ammonia (un-ionised) (River Avon)	2138.5700		N/A	3100.0000		N/A
[W1] Arsenic (River Avon)	500.0000	50.0000	Fail	500.0000		N/A
[W1] Boron (River Avon)	6333.0000	2000.0000	Fail	8000.0000		N/A
[W1] Cadmium and its compounds (< 40 mg/l Ca CO3) (River Avon)	5.0000	0.0700	Fail	5.0000	0.44	Fail
[W1] Chloride (River Avon)	1975.0000	##########	Pass	2571.0000		N/A
[W1] Chromium III (95%ile) (dissolved) (River Avon)	636.0000	4.7000	Fail	1000.0000	32	Fail
[W1] Chromium VI (95%ile) (dissolved) (River Avon)	636.0000	3.4000	Fail	1000.0000		N/A
[W1] Cobalt (dissolved) (River Avon)	100.0000	3.0000	Fail	100.0000	100	Fail
[W1] Copper (River Avon)	273.0000	1.0000	Fail	2100.0000		N/A
[W1] Iron (dissolved) (River Avon)	10000.0000	1000.0000	Fail	27400.0000		N/A
[W1] Lead and it's compounds (River Avon)	200.0000	1.2000	Fail	200.0000	14	Fail
[W1] Mercury and its compounds (River Avon)	3.0000		N/A	3.0000	0.07	Fail
[W1] Nickel and its compounds (River Avon)	122.0000	4.0000	Fail	200.0000	34	Fail
[W1] Sulphate (River Avon)	100.0000	##########	Pass	100.0000		N/A
[W1] Vanadium (0 - 200 mg/l CaCO3) (River Avon)	1000.0000	20.0000	Fail	1000.0000		N/A
[W1] Zinc (River Avon)	369.0000	10.9000	Fail	1200.0000		N/A

Test 2 Emissions Screening

4.3.2 For Test 2 the Process Contribution (PCs) is calculated, which is the concentration of a discharged substance in the receiving water after dilution. The resulting diluted concentrations are screened against the relevant EQS. If the PC exceeds 4% of the EQS or MAC, it is not screened as insignificant and should be carried forward to Test 3.

4.3.3 The results of the Test 2 indicates all parameters pass Test 2 and are screened out as insignificant.

Figure 4-2: Test 2 Leachate



Water Impact Screening - Fresh Water Releases

Apply Test 2

This page applies Test 2 and displays the Process Contribution as a proportion of the EQS. Emissions with PCs that are less than 4% of the EQS can be screened from further assessment as they are likely to have an insignificant impact.

Substance	Annual Avg EQS EQS µg/l	Annual Avg EQS PC µg/l	Annual Avg EQS Modelled PC	Annual Avg EQS % PC of EQS %	Annual Avg EQS PC < 4% of EQS? Test 2	MAC EQS MAC EQS µg/l	MAC EQS PC µg/l	MAC EQS Modelled PC	MAC EQS % PC of MAC %	MAC EQS PC < 4% of MAC? Test 2
Arsenic (River Avon)	50	0.0551		0.11	Pass		0.0551		-	Pass
Boron (River Avon)	2000				Pass				-	Pass
Cadmium and its compounds (< 40 mg/l Ca CO3) (River Avo	0.07	0.0002		0.29	Pass	0.44	0.0002		0.0464	Pass
Chromium III (95%ile) (dissolved) (River Avon)	4.7	0.0364		0.78	Pass	32	0.0573		0.179	Pass
Chromium VI (95%ile) (dissolved) (River Avon)	3.4	0.0364		1.07	Pass		0.0573		-	Pass
Cobalt (dissolved) (River Avon)	3	0.0110		0.37	Pass	100	0.0110		0.0111	Pass
Copper (River Avon)	1	0.0063		0.63	Pass		0.0486		-	Pass
Iron (dissolved) (River Avon)	1000	0.8481		0.08	Pass		2.3239		-	Pass
Lead and it's compounds (River Avon)	1.2	0.0037		0.31	Pass	14	0.0037		0.0268	Pass
Mercury and its compounds (River Avon)		0.0002			Pass	0.07	0.0002		0.317	Pass
Nickel and its compounds (River Avon)	4	0.0134		0.34	Pass	34	0.0220		0.0648	Pass
Vanadium (0 - 200 mg/l CaCO3) (River Avon)	20				Pass				-	Pass
Zinc (River Avon)	10.9	0.0134		0.12	Pass		0.0436		-	Pass

Test 3 Emissions Screening

4.3.4 The Test 3 is not required as all substances pass Test 2.

4.4 Scenario 2: Additional EWC Codes H1

4.4.1 In addition to EWC code 19 07 03 leachate which will be accepted on site immediately, the site is proposing to accept the following EWC codes in the future:

Table 4-1: Additional Permitted Waste Types

EWC Code	Description
02 01 01	Blood washings
02 03 01	Food waste washings
02 05 01	Animal wash water
02 05 02	Dairy Waste
19 09 02	Neutralised Chemical Washings
19 09 02	Storm Water
16 10 02	Cesspit/Chemical toilet/dirty water
20 03 04	Septic tank
02 07 04	Brewery Waste
20 03 06	Cesspit
19 09 06	Brine
20 01 08	Grease trap
20 01 25	Grease Trap

4.4.2 As per paragraph 4.2.2 data for the assessment has been provided by the operator and is based on chemical analysis undertaken of the waste currently accepted at other operational sites that could also be accepted at the facility.

4.4.3 The maximum and average for each EWC code chemical analysis has been calculated to create a worst case scenario waste stream with the highest values for each parameter, a copy of this analysis can be found in Appendix D. This has been put through The H1 Assessment Tool.

4.4.4 Please note that this is a conservative assessment as it is unlikely that any one waste stream would contain the worst case composition used the assessment. The wastes are not mixed and are put through in discrete loads with a maximum one tanker load in the morning and a second in the afternoon.

4.4.1 The parameters assessed in the H1 are summarised below:

- Ammonia
- Sulphate
- Chloride
- Boron
- Vanadium
- Chromium
- Iron
- Cobalt
- Nickel
- Copper
- Zinc

- Cadmium
- Mercury
- Lead
- Arsenic

4.4.5 River Flow

4.4.1 The nearest flow gauge part of the National River Flow Archive is the Knapp Mill Hampshire Avon gauging station which is located upstream of the Christchurch Water Recovery Centre discharge location. The records for this station indicate a on the River Deben is located significantly downstream of the site discharge and records indicate Q95 of 6.3 m^3/s.

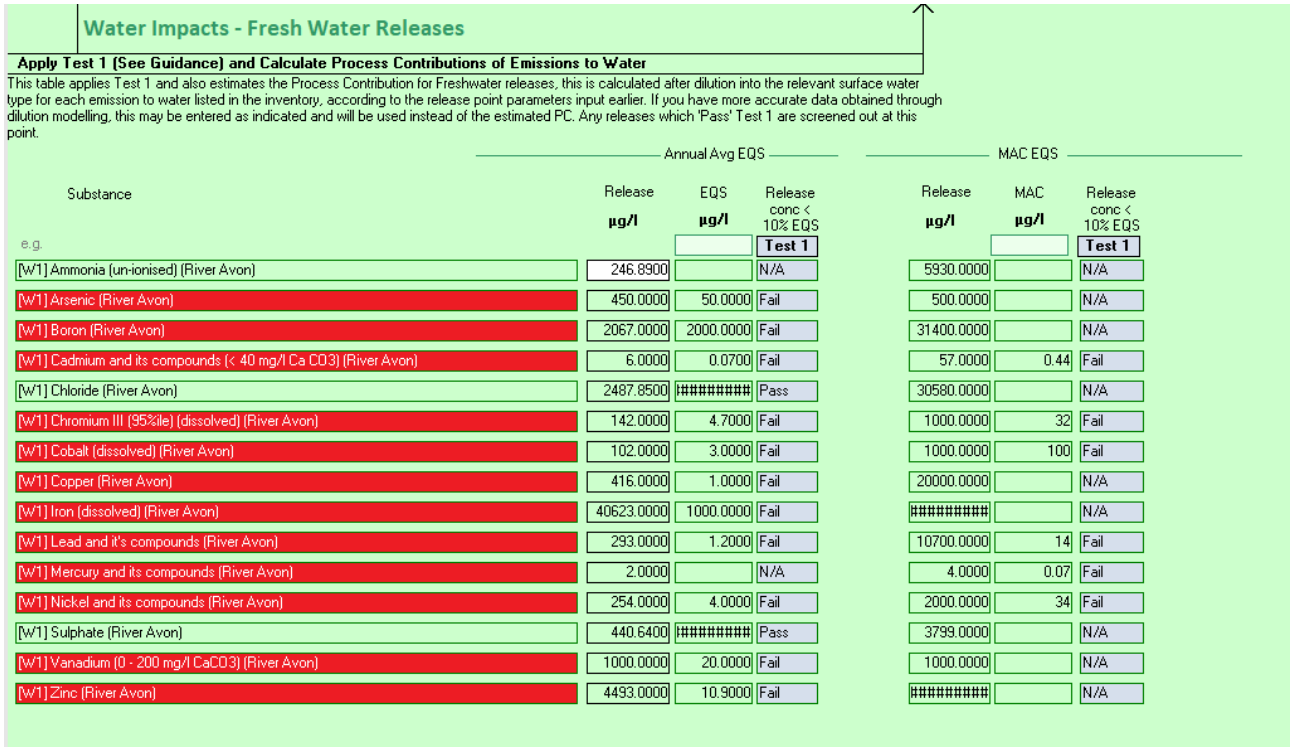
4.4.6 Emissions Screening

Test 1 Emissions Screening

4.4.1 The following parameters exceeds 10% of the EQS and are assessed further by Test 2.

- Boron
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Mercury
- Nickel
- Vanadium
- Zinc
- Arsenic

Figure 4-3 – Test 1 Additional EWC Codes



Water Impacts - Fresh Water Releases

Apply Test 1 (See Guidance) and Calculate Process Contributions of Emissions to Water

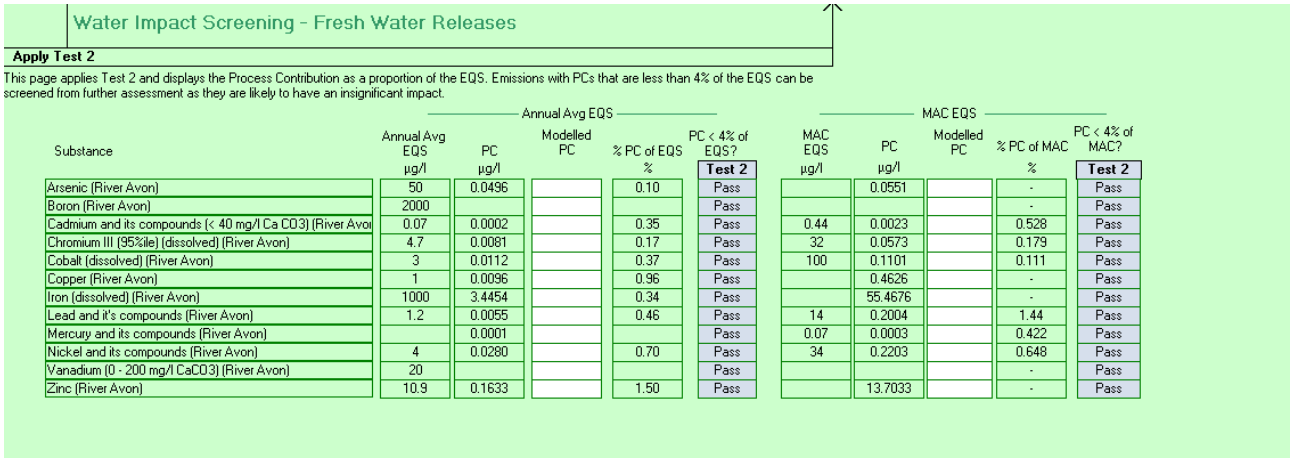
This table applies Test 1 and also estimates the Process Contribution for Freshwater releases, this is calculated after dilution into the relevant surface water type for each emission to water listed in the inventory, according to the release point parameters input earlier. If you have more accurate data obtained through dilution modelling, this may be entered as indicated and will be used instead of the estimated PC. Any releases which 'Pass' Test 1 are screened out at this point.

Substance	Annual Avg EQS: Release µg/l	Annual Avg EQS: EQS µg/l	Annual Avg EQS: Release conc < 10% EQS Test 1	MAC EQS: Release µg/l	MAC EQS: MAC µg/l	MAC EQS: Release conc < 10% EQS Test 1
e.g.						
[W1] Ammonia (un-ionised) (River Avon)	246.8900		N/A	5930.0000		N/A
[W1] Arsenic (River Avon)	450.0000	50.0000	Fail	500.0000		N/A
[W1] Boron (River Avon)	2067.0000	2000.0000	Fail	31400.0000		N/A
[W1] Cadmium and its compounds (< 40 mg/l Ca CO3) (River Avon)	6.0000	0.0700	Fail	57.0000	0.44	Fail
[W1] Chloride (River Avon)	2487.8500	##########	Pass	30580.0000		N/A
[W1] Chromium III (95%ile) (dissolved) (River Avon)	142.0000	4.7000	Fail	1000.0000	32	Fail
[W1] Cobalt (dissolved) (River Avon)	102.0000	3.0000	Fail	1000.0000	100	Fail
[W1] Copper (River Avon)	416.0000	1.0000	Fail	20000.0000		N/A
[W1] Iron (dissolved) (River Avon)	40623.0000	1000.0000	Fail	##########		N/A
[W1] Lead and it's compounds (River Avon)	293.0000	1.2000	Fail	10700.0000	14	Fail
[W1] Mercury and its compounds (River Avon)	2.0000		N/A	4.0000	0.07	Fail
[W1] Nickel and its compounds (River Avon)	254.0000	4.0000	Fail	2000.0000	34	Fail
[W1] Sulphate (River Avon)	440.6400	##########	Pass	3799.0000		N/A
[W1] Vanadium (0 - 200 mg/l CaCO3) (River Avon)	1000.0000	20.0000	Fail	1000.0000		N/A
[W1] Zinc (River Avon)	4493.0000	10.9000	Fail	##########		N/A

Test 2 Emissions Screening

4.4.2 The results of the Test 2 indicates all parameters pass Test 2 and are screened out as insignificant.

Figure 4-4 Test 2 Additional EWC Codes



Water Impact Screening - Fresh Water Releases

Apply Test 2

This page applies Test 2 and displays the Process Contribution as a proportion of the EQS. Emissions with PCs that are less than 4% of the EQS can be screened from further assessment as they are likely to have an insignificant impact.

Substance	Annual Avg EQS: Annual Avg EQS µg/l	Annual Avg EQS: PC µg/l	Annual Avg EQS: Modelled PC	Annual Avg EQS: % PC of EQS %	Annual Avg EQS: PC < 4% of EQS? Test 2	MAC EQS: MAC EQS µg/l	MAC EQS: PC µg/l	MAC EQS: Modelled PC	MAC EQS: % PC of MAC %	MAC EQS: PC < 4% of MAC? Test 2
Arsenic (River Avon)	50	0.0496		0.10	Pass		0.0551		-	Pass
Boron (River Avon)	2000				Pass				-	Pass
Cadmium and its compounds (< 40 mg/l Ca CO3) (River Avo	0.07	0.0002		0.35	Pass	0.44	0.0023		0.528	Pass
Chromium III (95%ile) (dissolved) (River Avon)	4.7	0.0081		0.17	Pass	32	0.0573		0.179	Pass
Cobalt (dissolved) (River Avon)	3	0.0112		0.37	Pass	100	0.1101		0.111	Pass
Copper (River Avon)	1	0.0096		0.96	Pass		0.4626		-	Pass
Iron (dissolved) (River Avon)	1000	3.4454		0.34	Pass		55.4676		-	Pass
Lead and it's compounds (River Avon)	1.2	0.0055		0.46	Pass	14	0.2004		1.44	Pass
Mercury and its compounds (River Avon)		0.0001			Pass	0.07	0.0003		0.422	Pass
Nickel and its compounds (River Avon)	4	0.0280		0.70	Pass	34	0.2203		0.648	Pass
Vanadium (0 - 200 mg/l CaCO3) (River Avon)	20				Pass				-	Pass
Zinc (River Avon)	10.9	0.1633		1.50	Pass		13.7033		-	Pass

Test 3 Emissions Screening

4.4.3 The Test 3 is not required as all substances pass Test 2.

5 CONCLUSIONS

5.1.1 The Environmental Risk Assessment (ERA) report has been undertaken to assess the likelihood of risk from amenity and accidents associated with the operation of the Christchurch Treatment Centre.

5.1.2 The results of the ERA have shown that with the proposed management plans in place, the risk of odour, noise and vibration, fugitive emissions and accidents range from ‘very low’ to ‘medium’.

5.1.3 The results of the H1 assessment indicates risks to surface water quality associated with the discharge activity are screened out as insignificant.

APPENDICES

Appendix A

Pre-application Conservation Screening Report

Appendix B

H1 Assessment

Appendix C
Leachate Analysis

Appendix D

Additional EWC Codes Analysis Summary