

EZ Samlesbury

AMRC Drainage Strategy

Lancashire County Council

Job No: 1023121
Doc Ref: 1023121-RPT-002
Revision: B
Revision Date: 04 November 2019

Project title	Samlesbury	Job Number
Report title	AMRC Drainage Strategy	1023121

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
—	23 October 2019	First Issue
A	01 November 2019	Updated to LCC Planning Comments
B	04 November 2019	Updated to LCC Planning Comments

Document Validation (latest issue)

 Recoverable Signature

04/11/2019

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Executive Summary

The Advanced Manufacturing Research Centre (AMRC) is the fourth building to be developed on the Samlesbury Enterprise Zone (EZ) and will be located on Plot 7.

A site wide drainage strategy was agreed in 2015 and has been implemented in relation to the development delivered to date. The strategy for the drainage of this plot forms part of, and sits within, this overall agreed strategy.

This report outlines the design principles and maintenance requirements for the proposed drainage arrangements.

There are no public sewers to discharge either the surface or foul water into. Therefore, Huntley Brook will be used for both surface water discharge and treated foul water discharge.

The surface water flow rate from the AMRC will be restricted to greenfield runoff rates. The separate gravity surface water drainage will collect flows from the boundary of the AMRC. It will flow northwards parallel with the proposed access road until it discharges into the existing attenuation pond which is located on Huntley Brook and forms part of the existing EZ drainage strategy.

The foul water flows from AMRC will be collected in a separate gravity foul water drainage system at the boundary of the AMRC. It will flow northwards parallel with the proposed access road until it discharges into a foul treatment tank. The treatment tank will carry out primary and secondary treatment on the foul flows. The treated flows will then be discharged into a reed bed which will provide tertiary treatment. After passing through the reed bed the flows will be discharged into the existing attenuation pond. Together the reed bed and treatment plant form a foul water treatment system.

The foul flow from the AMRC is less than 5.0m³ per day. Therefore, an Environment Agency (EA) Standard Discharge Permit will not be required. Instead the EA General Binding Rules will need to be met. However, to ensure a high quality discharge into Huntley Brook, the foul treatment system will still be designed to meet the EA Standard Discharge Permit requirements regardless. The report outlines these requirements in addition to further conditions from Building Control which the treatment system will need to meet.

The foul treatment system will require a management and maintenance system in place which will need to include detailed record keeping. Provided the maintenance is carried out as detailed then the quality of the treated water discharged into Huntley Brook will be within the criteria specified by the EA.

In addition to the foul treatment system, the report will also look at the specific maintenance activities and frequencies required on all the different elements of the proposed drainage strategy such as headwalls and manholes.

Contents

1.0	Introduction	3
1.1	EZ Development	3
1.2	Proposed AMRC Development	3
1.3	Drainage Design Responsibilities	3
2.0	Proposed Surface Water Drainage	4
2.1	Existing Surface Water Drainage	4
2.2	Surface Water Discharge Rate	5
2.3	Surface Water Strategy	5
2.4	Previous Correspondence	5
3.0	Proposed Foul Water Drainage	6
3.1	Existing Foul Water Drainage	6
3.2	Previous Correspondence	6
3.3	Foul Water Discharge Rate	6
3.4	Foul Water Drainage Strategy	6
3.5	Foul Water Treatment System	6
4.0	Maintenance	11
4.1	Maintenance Responsibility	11
4.2	Maintenance Schedule	11
	Appendix A – Proposed Site Layouts	13
	Appendix B – UU Sewer Maps	16
	Appendix C – Proposed Drainage Layout	26
	Appendix D – UU Correspondence	29
	Appendix E – EA Risk Assessment	33

1.0 Introduction

1.1 EZ Development

The EZ development is located off Preston New Road, Samlesbury, PR5 0UP and is centred approximately at eastings and northings 362819, 430939. A drawing showing the plot locations across the EZ development can be found in Appendix A.



Figure 1-1 Site Location Plan (EZ Boundary in red, AMRC Plot 7 location in blue)

1.2 Proposed AMRC Development

The Advanced Manufacturing Research Centre (AMRC) will be located on Plot 7 within the EZ, a proposed site plan can be found in Appendix A. The proposed development has an approximate area of 1.5 ha.

The existing site is predominantly greenfield with the exception of an existing asphalt track which provided access to the BAE runway.

The site is bounded to the east by Huntley Brook and to the south by Preston New Road (A677). To the north and west lies the wider EZ development, which is currently a mixture of undeveloped greenfield space, the existing BAE runway and the recently constructed EZ access road.

1.3 Drainage Design Responsibilities

LCC are managing the wider EZ development and have appointed Cundall to produce the drainage strategy for the site. The proposed surface water drainage arrangements set out here form part of the overall site wide SuDS strategy and link the AMRC building to the approved system.

2.0 Proposed Surface Water Drainage

2.1 Existing Surface Water Drainage

2.1.1 Public Sewers

The United Utilities (UU) sewer maps for the surrounding area can be found in Appendix B. Two 150mm combined sewers are located approximately 1.0km to the east of the development and do not have the capacity to take flows from the site. A 600mm combined sewer is located approximately 1.0km to the south of the development. In addition to the long distance away across private land, this sewer would also require approximately 40.0m of rise to connect to. This confirms that there are no UU sewers within the surrounding area that will be practicable to connect to for this development.

2.1.2 Other Drainage

Huntley Brook is located to the east of the development. This discharges from south to north, into an attenuation basin to the north of the development. Discharge from this basin is restricted by a flow control and the Brook is culverted beneath the existing airfield once it leaves the basin. This culvert flows east to west as it continues across the wider EZ development.

The flow control and attenuation basin have been designed as part of the wider EZ development drainage strategy. The flow control from the basin is restricting flows to greenfield runoff rates of 5.5 l/s/ha which was previously agreed with LCC Lead Local Flood Authority as part of the 2015 site wide (EZ) drainage strategy. The flow control has a flow rate of 440 l/s based on an area of approximately 80.0ha draining through it. This 80.0ha includes the AMRC plot in addition to Plot 8 and the existing area picked up by Huntley Brook, giving flood resilience. The attenuation basin has also been designed to attenuate the flows from these areas.

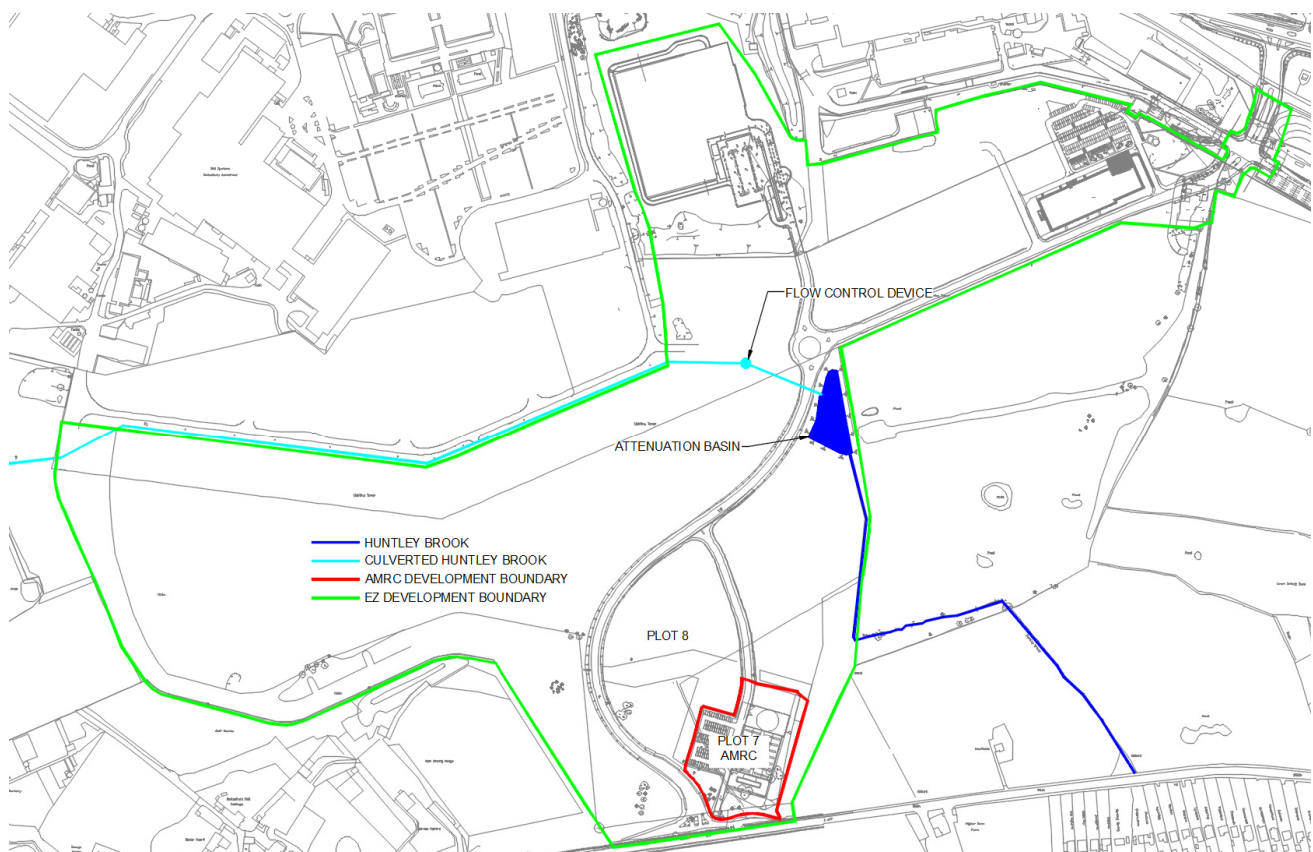


Figure 2-1 Existing Drainage

2.2 Surface Water Discharge Rate

As previously discussed, the drainage within the red boundary of the AMRC development will be designed by the AMRC design team. Flow control devices will be used to restrict the flow from the AMRC into the site wide drainage system to a rate of 5.5 l/s/ha.

2.3 Surface Water Strategy

A new system of drainage will be constructed for the proposed development in accordance with BS EN 752 and Building Regulations Part H. Surface water flows from the AMRC site will be collected north of the red line boundary in a separate gravity surface water drainage system. The surface water drainage will take the flows northwards, following the route of the proposed access road. The drainage will discharge through a head wall, into the existing attenuation basin which provides attenuation for Huntley Brook.

A connection point will be located along the surface water pipework for the optional future connection of Plot 8. Each of these future plots would be restricted to 5.5 l/s/ha prior to entering the site wide drainage. This will ensure that the proposed drainage is always discharging at greenfield runoff rates into the attenuation basin and is keeping to the agreed site wide drainage strategy. A copy of the proposed drainage layout can be found in Appendix C.

2.4 Previous Correspondence

A pre-development enquiry was sent to UU and a response was received in September 2019. With regards to surface water discharge, UU have no comments to make and are satisfied that the surface water can discharge into Huntley Brook. A copy of the UU response can be found in Appendix D.

3.0 Proposed Foul Water Drainage

3.1 Existing Foul Water Drainage

3.1.1 Public Sewers

As discussed in Section 2.1.1, there are no UU sewers within a practicable distance of the AMRC development to connect to.

3.1.2 Other Drainage

The nearest private foul drainage is located approximately 0.6km to the north of the development in the proximity of the BAE Systems buildings north of the EZ boundary. This drainage collects foul flows from the BAE buildings before discharging them to a private pumping station operated by BAE. This private pumping station then discharges the foul flows into the UU sewer system via a rising main.

Having raised the possibility of connecting into this foul drainage with BAE, they have informed us that both the foul drainage and pumping station are already at capacity. Therefore, this is not a feasible discharge option.

3.2 Previous Correspondence

As discussed in Section 2.4, Cundall have received a pre-development enquiry response from UU which can be found in Appendix D. They state that:

'based on the evidence you have provided below; an on-site wastewater package treatment plant would likely be the most feasible option for the management of foul water flows from this site'

3.3 Foul Water Discharge Rate

The internal foul drainage layout for the AMRC is being designed by Arup. They have stated that the total daily discharge volume from the AMRC facility will be 4600 litres.

Flows and Loads – 4, Sizing Criteria, Treatment Capacity for Sewage Treatment Systems, states that the Standard Residential for a domestic dwelling is 150 litres/day. Therefore 4600 litres would be the equivalent of 31 people.

3.4 Foul Water Drainage Strategy

Foul flows from the AMRC site will be collected north of the AMRC red line boundary in a separate gravity foul drain. This drain will follow the access road northwards towards a foul treatment plant located south of the attenuation basin. The foul treatment plant will provide two stages of treatment before discharging the treated water into a reed bed which will provide tertiary treatment. Treated water from the reed bed will discharge into the attenuation basin via an inspection manhole and headwall. A copy of the proposed drainage layout is enclosed in Appendix C.

This strategy is based on all foul flows discharged from the AMRC to the receiving drain being of a quality consistent with that of domestic wastewater. Therefore, any trade effluent should pass through a pre-treatment system that first refines and reuses any process waters or treats the effluent to remove or reduce the load, before it leaves the AMRC site. Also, kitchens should be fitted with grease traps, laundries should be fitted with lint filters, food waste and cooking oils should be diverted to alternative methods of disposals, and hydrocarbon separators are to be used as appropriate. These pre-treatments should be provided and maintained by AMRC where necessary.

3.5 Foul Water Treatment System

The foul treatment plant specified will need to have been designed and tested in accordance with BS EN12566-3:2005 and the British Water Code of Practice for Flows and Loads in addition to being CE approved. The plant will need to

provide the first two (Primary & secondary) stages of foul water treatment. Tertiary treatment will be provided by the reed bed and together the reed bed and plant will form the foul water treatment system.

3.5.1 Treatment Stages

The treatment system will provide 3 stages of treatment. Primary treatment by the tank is the removal of the majority of settleable material, this material is stored in the tank in the form of sludge until it is periodically removed. Secondary treatment by the tank is where aerobic biological processes are used to substantially degrade the biological content of the sewage. A typical treatment tank would leave the treated water with a Biological Oxygen Demand (BOD) value of less than 20 mg/l and a Suspended Solids (SS) of less than 30 mg/l.

Tertiary treatment in the form of a reed bed will continue to remove suspended and dissolved matter beyond what a tank could remove. A typical reed bed will discharge treated water with a BOD value of 1-4 mg/l and an SS value of 2-8 mg/l.

The EA Standard Rules Permit requires that treated discharge into a watercourse has a maximum BOD value of 40 mg/l. Therefore, the treated discharge from the reed bed will be within this limit.

3.5.2 EA Permit

An EA Standard Rules Permit to discharge treated foul water is only required in the event that the package treatment plant in question discharges more than 5.0m³ per day. The foul flow from the AMRC is 4.6m³, therefore the only requirement from the EA is that their General Binding Rules are met.

3.5.3 EA General Binding Rules

The table below outlines the EA General Binding Rules which the foul treatment plant will need to meet and also details how the rules will be met:

EA General Binding Rule	Compliance
Discharge must be less than 5.0m ³ .	The discharge will be 4.6m ³ .
Domestic discharge only.	The AMRC is not a domestic facility but will only discharge domestic waste from areas such as toilets and kitchens. All process waste from the AMC will be collected and disposed of separately.
Discharge must not cause pollution.	The proposed tertiary treatment provided by the reed bed should leave the BOD value of the treated water at approximately 1-4 mg/l. This is within the EA maximum limit of 40 mg/l.
The sewage must receive treatment from a sewage treatment plant.	A sewage plant will be used to provide primary and secondary treatment.
Treatment plant must meet BS EN12566-3:2005.	The proposed treatment plant will meet this requirement.
The plant must be installed and operated to the manufacturer's specification.	The proposed treatment plant will meet this requirement.
Maintenance must be undertaken by a competent person.	A management system will be in place to detail which qualified company is responsible for carrying out maintenance.

Waste sludge must be disposed of by an authorised person.	A management system will be in place to detail which qualified company is responsible for disposing of waste sludge.
If a property is sold, the operator must give the new operator a written notice stating that a small sewage discharge is being carried out and give a description of the wastewater system and its maintenance requirements.	This will be detailed within the management system.
The operator must ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater, inland fresh waters or coastal waters.	This information will be available within the management system.
New discharges must not be within 30 metres of a public foul sewer.	The nearest public sewer is approximately 1.0km away.
The treatment system must have Building Control and Planning Approval.	The foul treatment system is designed to meet the requirements of the planners and Building Control. Formal approvals will be sought following further detailed design.
New discharges must not be in or within: 500 metres of a Special Area of Conservation, Special Protection Area, Ramsar site, biological Site of Special Scientific Interest, freshwater pearl mussel population, designated bathing water, or protected shellfish water; 200 metres of an aquatic local nature reserve; 50 metres of a chalk river or aquatic local wildlife site.	None of these areas are within the minimum distances specified.
The new discharge must be made to a watercourse that normally has flow throughout the year, except during extreme dry periods.	Huntley Brook drains an area of approximately 80ha and normally has flow throughout the year.
For new discharges, any partial drainage field must be installed within 10 metres of the bank side of the watercourse.	No drainage field is proposed for the scheme.
New discharges must not be made to an enclosed lake or pond.	Discharge will be into Huntley brook.

3.5.4 EA Standard Rules Permit

Although we are not applying for an EA Standard Rules Permit, a properly constructed and well-maintained treatment system will not pollute. Therefore, the foul treatment system will meet additional EA rules beyond what is required under the General Binding Rules. Specifically, we will follow the EA Generic Risk Assessment which forms part of the Standard Rules Permit.

3.5.4.1 EA Generic Risk Assessment

A copy of the EA Risk Assessment can be found enclosed in Appendix E. The use of a sewage treatment plant providing primary and secondary treatment, the discharge of solely domestic waste and the point of discharge being away from specified protected areas ensures that several of the risks are already managed. The remaining risks will be managed by the use of an effective management system.

3.5.4.2 Management System

A management system will be put in place for the treatment system. This will outline:

- Contact information for the appointment maintenance company
- The maintenance responsibilities of the appointment maintenance company
- The inspection schedule for all elements of the treatment system
- The maintenance schedule for all elements of the treatment system
- Detailed record keeping of all inspections and maintenance carried out

The detailed record of work carried out will help to ensure that maintenance and inspections are taking place as required and will also assist the EA in the event that a pollution event occurs.

3.5.5 Inspection Requirements

As good practice, the following inspections will be carried out as detailed in the EA Standard Rules Permit:

Monitoring Point	Parameter	Limit	Frequency	Method
Discharge point from the sewage treatment plant	Visual appearance	The discharge must so far as is reasonably practicable have no significant adverse visible effect on the receiving water, the bed of the watercourse or any plants or animals within the watercourse	Weekly	Visual
	ATU-BOD	40 milligrams per litre maximum concentration	As deemed necessary by the EA and annually by a qualified company.	Sample Test

As outlined in Section 3.5.1, the proposed foul treatment system has three stages of treatment and as long as it is maintained correctly will leave BOD values of 1-4mg/l. This is well within the EA target of 40mg/l.

3.5.6 Building Control Requirements

The exact requirements of Building Control may change from scheme to scheme. However, their generic requirements for foul treatment plants are that they:

- Are not prejudicial to the health of any person
- Do not contaminate any watercourse
- Have adequate means of access for maintenance
- Have sufficient capacity to enable the breakdown and settlement of solid matter.
- Are sited to prevent overloading of the receiving water
- Are not be constructed in an area at risk of flooding
- Have at least 10m between the plant discharge point and any building or watercourse
- Are type-tested in accordance with BS 7781 or otherwise tested by a notified body
- Will be able to function adequately without power for up to 6 hours or have an uninterruptible power supply.

- Have a durable notice affixed in a suitable place within the building (AMRC) the plant serves outlining any continuing maintenance required to avoid risks to health

An example of the maintenance notice required can be found in Building Control Part H:

'The foul drainage system from this property discharges to a packaged treatment works. Maintenance is required <insert frequency> and should be carried out in accordance with the manufacturer's instructions. The owner is legally responsible to ensure that the system does not caused pollution, a health hazard or a nuisance.'

3.5.7 Reed Bed

The reed bed will provide tertiary treatment that will treat the wastewater beyond the specific requirements of the EA. It will be designed in accordance with the Good Building Guide GBG42 Part 1, Reed Beds: Application and Specification and the GBG42 Part 2, Reed Beds: design, construction and maintenance. In line with these guides the following design principles will be followed for a tertiary treatment bed:

- An area of 1.0m²/person, as discussed in Section 3.3, the discharge from the AMRC is the equivalent of the discharge produced by 31 people. Therefore, a minimum reed bed area of 31m² is required.
- A minimum depth of 0.6m
- A minimum gradient of 1% across the base
- A HDPE lining will be used along the base and sides
- A length to width ratio of 4:1 will be applied

3.5.8 Approval Process

The following steps will be required for the foul water treatment system to be approved by all relevant bodies:

- Approval for the principle of the scheme from South Ribble Borough Council and Ribble Valley Borough Council under the Local Development Order.
- Following approval, a detailed design can be produced. This will have to be approved in principle by Building Control.
- Once Building Control have approved this, the EA will be sent confirmation of the approvals, flow rate calculations and design information to show that we adhere to the EA Binding Principles.

3.5.9 Conclusion

The foul treatment system proposed will go beyond the minimum requirements set by the EA under their General Binding Rules. By using a tertiary treatment system, the BOD values discharging into the watercourse will be well below the 40mg/l maximum set by the EA under their Standard Rules Permit.

To ensure this quality of discharge is maintained, a management plan, including a maintenance schedule and detailed record keeping, will be put into place. A qualified maintenance company will be appointed to carry out the required maintenance on the foul treatment system.

4.0 Maintenance

4.1 Maintenance Responsibility

LCC will be responsible for the provision and maintenance of all SUDS features, flow controls and attenuation upstream of the outfalls to the brook/attenuation basin. LCC are responsible for providing and maintaining headwalls at all outfalls to the brook/attenuation basin.

AMRC will be responsible for maintaining any portions of the existing open water drainage features which reside within their ownership boundary. An 8.0m maintenance buffer strip shall be allocated adjacent to all existing open water drainage features.

LCC will be responsible for appointing a qualified maintenance company to undertake the maintenance and inspection of the foul treatment system and drainage system as a whole.

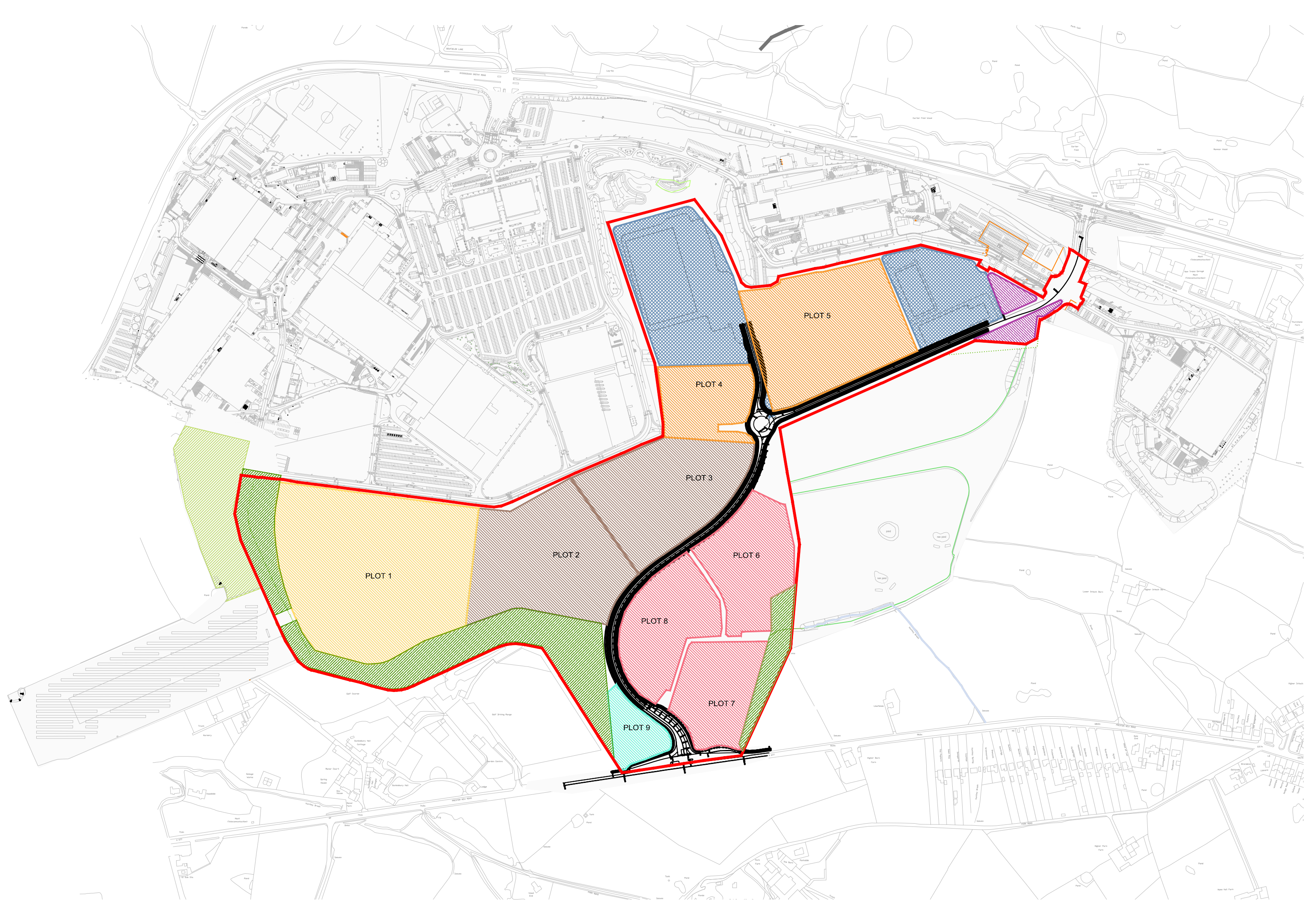
4.2 Maintenance Schedule

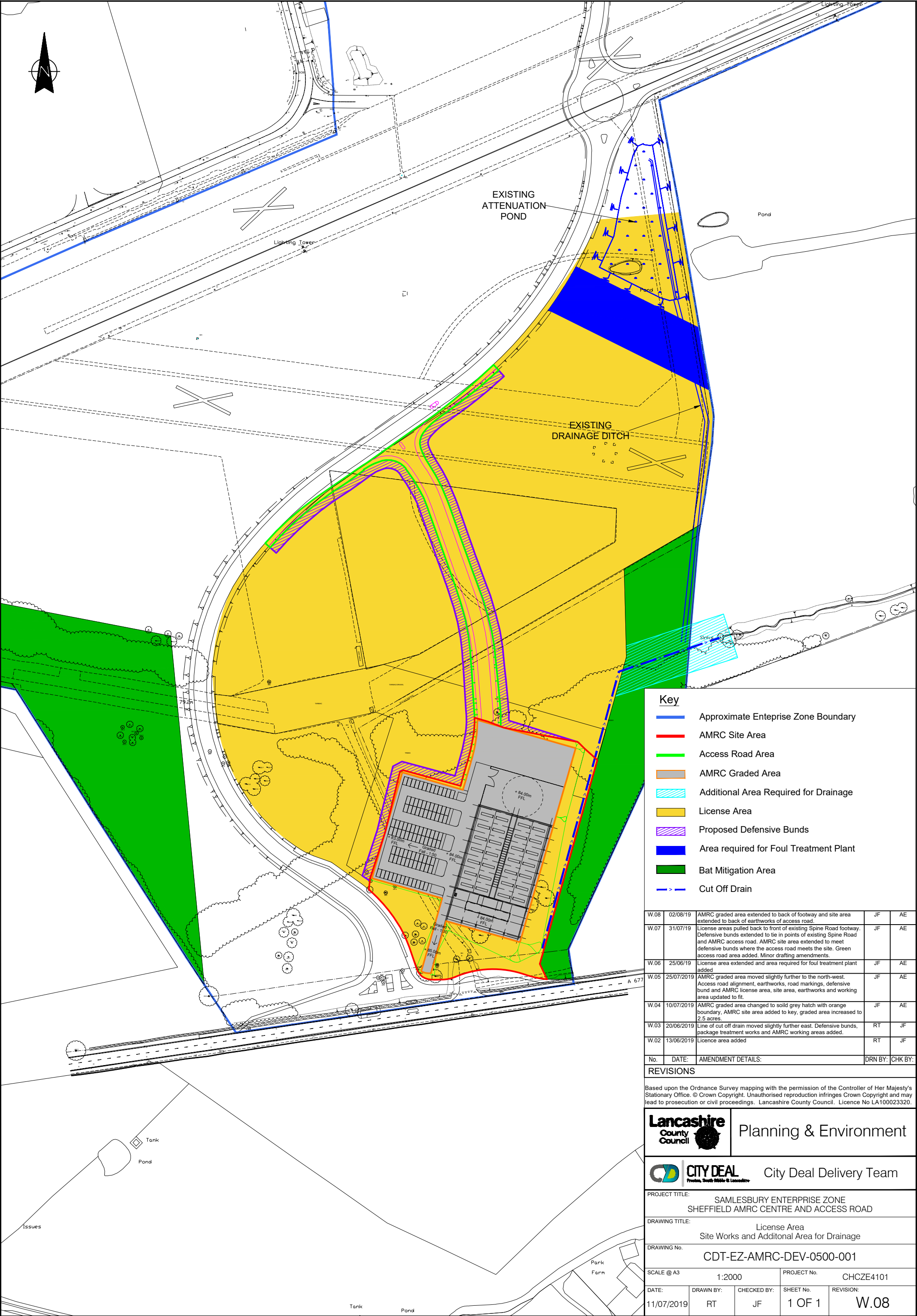
This maintenance schedule covers all drainage items within the sitewide designed drainage. AMRC will need to have their own maintenance schedule in place to cover any additional drainage features within the red line boundary of the AMRC. This may include attenuation features; SuDS features and flow control devices.

	Maintenance Activity	Frequency of activity (months)				
		1	3	6	12	A/R
	Manholes (General)					
1	Check cover is not damaged and fits securely			X		
2	Check inlet and outlet are free flowing and not obstructed			X		
3	Check security of fitting for all manhole ironmongery			X		
4	Check benching for scour or build-up of debris			X		
5	Check joints in construction for damage or inflow				X	
6	Record maintenance inspection in log book			X		
	Gullies & drainage channels					
7	Check grating is undamaged and fits securely	X				
8	Inspect internal gully/sump chamber, remove debris from traps and check outfall is clear and free flowing			X		
9	Record maintenance inspection in log book	X				
	Conveyance Pipes					
10	Carry out flow test between manholes to ensure free flow of system				X	
11	Jetting and clearance of blockages, debris or silt					X
12	Inspection by CCTV – should problem arise as a result of the flow test					X
13	Cutting of growth into pipe					X
14	Record maintenance inspection in log book				X	
	Inlets/Outlets					
15	Inspect inlets and outlets for blockages and clear if required	X				
16	Remove litter, debris and growth	X				

17	Repair/rehabilitation inlet/outlet					X
18	Record maintenance inspection in log book	X				
	Headwalls					
19	Inspect inlets and outlets for blockages and clear if required	X				
20	Remove litter, debris and growth	X				
21	Repair/rehabilitation inlet/outlet					X
22	Record maintenance inspection in log book	X				
	Watercourses					
23	Remove litter, debris and overgrown plant life					X
24	Record maintenance inspection in log book					X
	Culverts					
25	Inspect culverts for blockages and clear if required	X				
26	Remove litter, debris and growth	X				
27	Repair/rehabilitation culvert					X
28	Record maintenance inspection in log book	X				
	Reed Bed					
29	Remove all weeds and re-plant reeds if bare patches have formed			X		
30	Remove all dead reeds and plant material from the surface (October)				X	
31	Cut back reeds as required (after the first 2 years growth)				X	
32	Inspect the gravel bed for preferential pathways being created by the flow. Dig up and relay the gravel bed if necessary.				X	
33	Inspect the gravel bed for clogging up. Dig up and relay the gravel bed if necessary.				X	
34	Record maintenance inspection in log book			X		
	Packaged Treatment Plant					
35	Carry out the treatment plant maintenance & inspection schedule as detailed in the manufacturer's specification					X
36	Inspect the outlet for pollution as required by the EA	Weekly				
38	Take a sample of the treated discharge to ensure the BOD value is 40mg/l or less.				X	
37	Record maintenance inspection in log book				X	

Appendix A – Proposed Site Layouts





- Key**
- Approximate Enterprise Zone Boundary
 - AMRC Site Area
 - Access Road Area
 - AMRC Graded Area
 - Additional Area Required for Drainage
 - License Area
 - Proposed Defensive Bunds
 - Area required for Foul Treatment Plant
 - Bat Mitigation Area
 - Cut Off Drain

W.08	02/08/19	AMRC graded area extended to back of footway and site area extended to back of earthworks of access road.	JF	AE
W.07	31/07/19	License areas pulled back to front of existing Spine Road footway. Defensive bunds extended to tie in points of existing Spine Road and AMRC access road. AMRC site area extended to meet defensive bunds where the access road meets the site. Green access road area added. Minor drafting amendments.	JF	AE
W.06	25/06/19	License area extended and area required for foul treatment plant added	JF	AE
W.05	25/07/2019	AMRC graded area moved slightly further to the north-west. Access road alignment, earthworks, road markings, defensive bund and AMRC license area, site area, earthworks and working area updated to fit.	JF	AE
W.04	10/07/2019	AMRC graded area changed to solid grey hatch with orange boundary. AMRC site area added to key, graded area increased to 2.5 acres.	JF	AE
W.03	20/06/2019	Line of cut off drain moved slightly further east. Defensive bunds, package treatment works and AMRC working areas added.	RT	JF
W.02	13/06/2019	License area added	RT	JF
No.	DATE:	AMENDMENT DETAILS:	DRN BY:	CHK BY:

REVISIONS

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Planning & Environment



City Deal Delivery Team

PROJECT TITLE:

SABLESBURY ENTERPRISE ZONE
SHEFFIELD AMRC CENTRE AND ACCESS ROAD

DRAWING TITLE:

License Area
Site Works and Additional Area for Drainage

DRAWING No.

CDT-EZ-AMRC-DEV-0500-001

SCALE @ A3

1:2000

PROJECT No.

CHCZE4101

DATE:

11/07/2019

DRAWN BY:

RT

CHECKED BY:

JF

SHEET No.

1 OF 1

REVISION:

W.08

Appendix B – UU Sewer Maps

**Cundall Consulting Engineers
10th Floor, Portland Tower
Portland Street
Manchester**

M1 3AH

FAO: Luke Steedman

Dear Sirs

Location: Preston New Road Lancashire Samlesbury PR5 0UP

I acknowledge with thanks your request dated 25/09/15 for information on the location of our services.

Please find enclosed plans showing the approximate position of our apparatus known to be in the vicinity of this site. The enclosed plans are being provided to you subject to the United Utilities Terms and Conditions - Wastewater & Water Distribution Plans which are shown overleaf.

I also attach United Utilities' General Condition and Information sheets regarding United Utilities wastewater network and water distribution apparatus, which details contact numbers for additional services (i.e. new supplies, connections, diversions) which we are unable to deal with at this office. You should ensure that the Condition and Information sheets are made available to anyone carrying out any works which may affect our apparatus.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please telephone us on 0370 7510101.

Yours Faithfully,



Sue McManus
Operations Manager
Property Searches

United Utilities Water Limited

Property Searches
Ground Floor Grasmere House
Lingley Mere Business Park
Great Sankey
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WA5 3LP

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Telephone 0370 751 0101

Property.searches@uu plc.co.uk

Your Ref: 1012080
Our Ref: 14/ 1143182
Date: 30/9/2015

TERMS AND CONDITIONS - WASTERWATER & WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

1. This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
2. This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
3. In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
4. The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
5. The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
6. This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
7. No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
8. If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
9. This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.



Refno	Cover	Func	Invert	Size	xSize	yShape	Matl	Length	Grad	Refno	Cover	Func	Invert	Size	xSize	yShape	Matl	Length	Grad
-------	-------	------	--------	------	-------	--------	------	--------	------	-------	-------	------	--------	------	-------	--------	------	--------	------

WASTE WATER SYMBLOGY				
Foul	Surface	Combined	Overflow	Manhole
				Manhole, Side Entry
				MainSewer, Public
				MainSewer, Private
				MainSewer, S104
				Rising Main, Public
				Rising Main, Private
				Rising Main, S104
				Highway Drain, Private
				Sludge Main, Public
				Sludge Main, Private
				Sludge Main, S104
ABANDONED PIPE				
				MainSewer
				Rising Main
				Highway Drain
				Sludge Main
Foul	Surface	Combined		WW Site Termination
				Air Valve
				Cascade
				Non Return Valve
				Extent of Survey
				Flow Meter
				Gulley
				Hatch Box
				Head of System
				Hydrobrake / Vortex
				Inlet
				Inspection Chamber
				Bifurcation
				Catchpit
				Contaminated Surface Water
				WW Pumping Station
				Sludge Pumping Station
				Sewer Overflow
				T Junction/Saddle
				LampHole
				OilInterceptor
				PenStock
				Pump
				RoddingEye
				Soakaway
				Summit
				Valve
				Valve Chamber
				Washout Chamber
				DropShaft
				WW Treatment Works
				Septic Tank
				Vent Column
				Network Storage Tank
				Orifice Plate
				Vortex Chamber
				Penstock Chamber
				Blind Manhole
Foul	Surface	Combined	Overflow	Screen Chamber
				Discharge Point
				Outfall
				Control Kiosk
				Unspecified

LEGEND			
MANHOLE FUNCTION			
FO	Foul		
SW	Surface Water		
CO	Combined		
OV	Overflow		
SEWER SHAPE			
CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		
SEWER MATERIAL			
AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available.
The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded.
United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown.
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OS Sheet No: SD6230NE
Scale: 1: 1250 Date: 30/09/2015
0 Nodes
Sheet 1 of 1



SEWER RECORDS

Printed By: Property Searches

OS Sheet No: SD6230NE

Scale: 1: 1250 Date: 30/09/2015



MANHOLE FUNCTION	
FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow
SEWER SHAPE	
CI	Circular
TR	Trapezoidal
EG	Egg
AR	Arch
OV	Oval
BA	Barrel
FT	Flat Top
HO	HorseShoe
RE	Rectangular
UN	Unspecified
SQ	Square
SEWER MATERIAL	
AC	Asbestos Cement
DI	Ductile Iron
BR	Brick
PVC	Polyvinyl Chloride
PE	Polyethylene
CI	Cast Iron
RP	Reinforced Plastic Matrix
SI	Spun Iron
CO	Concrete
ST	Steel
CSB	Concrete Segment Bolted
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PP	Polypropylene
CC	Concrete Box Culverted
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GRC	Glass Reinforced Concrete
MAR	Masonry, Random
GRP	Glass Reinforced Plastic
U	Unspecified

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OS Sheet No: SD6230NW
Scale: 1: 1250 Date: 30/09/2015
0 Nodes
Sheet 1 of 1



SEWER RECORDS



MANHOLE FUNCTION			
FO	Foul		
SW	Surface Water		
CO	Combined		
OV	Overflow		
SEWER SHAPE			
CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		
SEWER MATERIAL			
AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culvert	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded.

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0 Nodes
Sheet 1 of 1

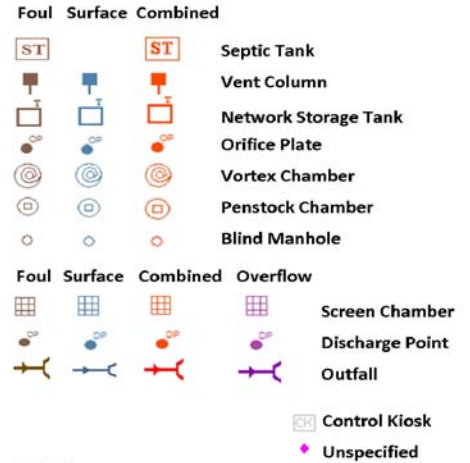
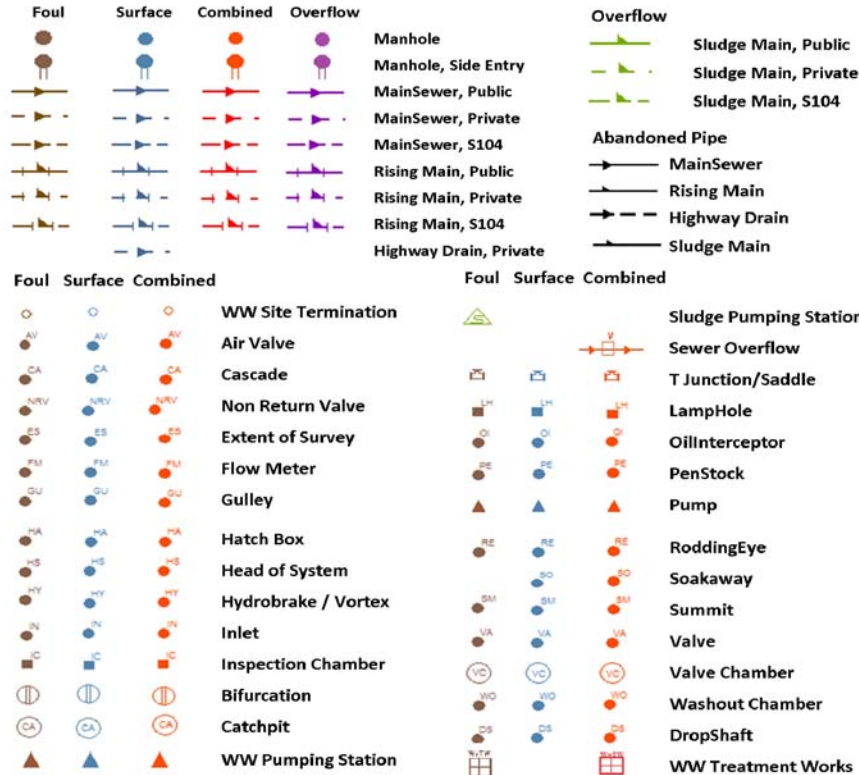


SEWER RECORDS

Scale: 1: 1250 Date: 30/09/2015

Printed By: Property Searches

WASTE WATER SYMBOLOGY



Legend	
MANHOLE FUNCTION	SEWER SHAPE
FO Foul	CI Circular
SW Surface Water	EG Egg
CO Combined	OV Oval
OV Overflow	FT Flat Top
	RE Rectangular
	SQ Square
	TR Trapezoidal
	AR Arch
	BA Barrel
	HO HorseShoe
	UN Unspecified
SEWER MATERIAL	
AC Asbestos Cement	DI Ductile Iron
BR Brick	VC Vitrified Clay
CO Concrete	PP Polypropylene
CSB Concrete Segment	PF Pitched Fibre
CSU Concrete Segment	MA Masonry, Coursed
CC Concrete Box Culverted	MA Masonry, Random
PSC Plastic / Steel	RP Reinforced Plastic
GR Glass Reinforced	CI Cast Iron
GRP Glass Reinforced	SI Spun Iron
PVC Polyvinyl Chloride	ST Steel
PE Polyethylene	U Unspecified

CLEAN WATER SYMBOLOGY

PIPE WORK



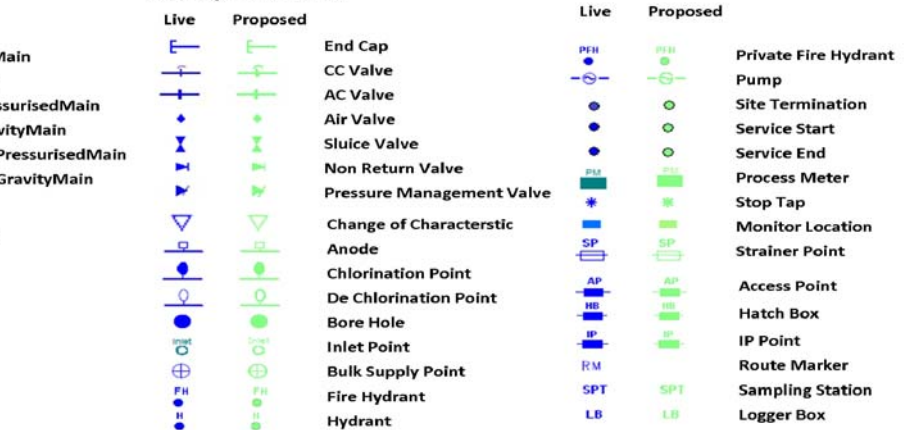
ABANDONED PIPE



PROPERTY TYPES



NODES/FURNITURES



Legend	
MATERIAL TYPES	LINING TYPES
AC ASBESTOS CEMENT	CL CEMENT LINING
CI CAST IRON	TB TAR OR BITUMEN
CU COPPER	ERL EPOXY RESIN
CO CONCRETE	
DI DUCTILE IRON	INSERTION TYPES
GI GALVANISED IRON	DD DIE DRAWN
GR GREY IRON	DR DIRECTIONAL DRILLING
OT OTHERS	MO MOLING
PB LEAD	PI PIPELINE
PV UPVC	SL SLIP LINED
SI SPUN IRON	
ST STEEL	
UN UNKNOWN	
PE POLYETHYLENE	

Conditions and Information regarding wastewater network

These general conditions and precautions apply to the wastewater network of United Utilities

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1 United Utilities provides the approximate locations of its sewers according to its records. These records are not necessarily accurate or complete nor do they normally show the positions of every sewer culvert or drain, private connections from properties to the public sewers or the particulars of any private system. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated. The records do indicate the position of the nearest known public sewer from which the likely length of private connections can be estimated together with the need for any off site drainage rights or easements.

2 Special requirements relative to our sewers may be indicated. United Utilities employees or its contractors will visit any site at reasonable notice to assist in the location of its underground sewers and advise any precautions that may be required to obviate any damage. To arrange a visit or for further information regarding new supplies, connections, diversions, costing, or any notification required under these General Conditions, please call us on **0345 602 0406**.

3 Where public sewers are within a site which is to be developed and do not take any drainage from outside the area, they are from an operational viewpoint redundant. The developer must identify all redundant sewers affected by the development and apply to United Utilities in writing for these sewers to be formally closed. The developer shall bear all related costs of the physical abandonment work.

4 Public sewers within the site that are still live outside the area will be subject to a "Restricted Building zone". This would normally be a surface area equivalent to the depth of the sewer measured from the centre line of the sewer on either side. No construction will be permitted within that zone. The developer should also note that deep and wide rooted trees must not be planted in close proximity to live sewers. Access to public sewers must be maintained at all times and no interference to manholes will be permitted during construction work.

5. Where there is a public sewer along the line of a proposed development/building, arrangements shall be made by the developer at his cost to divert the sewer around the development. Where this is not possible and as a last resort, a "Building Over Agreement" will need to be completed under section 18 of the Building Act 1984. The developer shall design building foundations to ensure that no additional loading is transferred to the sewer and submit such details both to the Local Authority's Building Control Officer and to United Utilities for approval/acceptance. United Utilities on a rechargeable basis would normally undertake all aspects of design work associated with the diversion of any part of the operational wastewater network. For further advice please email wastewaterdeveloperservices@uuplc.co.uk
6. Where there is a non-main river watercourse/culvert passing through the site, the landowner has the responsibility of a riparian owner for the watercourse/culvert and is responsible for the maintenance of the fabric of the culvert and for all works involved in maintaining the unrestricted flow through it. Building over the watercourse/culvert is not recommended. The developer must contact the local authority before any works are carried out on the watercourse/culvert. Where it is necessary to discharge surface water from the site into the watercourse/culvert the developer shall make an assessment of the available capacity of the watercourse/culvert (based on a 1 in 50 year event) and ensure that the additional flow to be discharged into the watercourse/culvert will not cause any flooding. In appropriate cases, flooding may be prevented by on-site storage. The developer shall submit the relevant details required to substantiate his development proposals. Details of any outfall proposed shall also be submitted to the Environment Agency, PO Box 12, Richard Fairclough House, Knutsford Road, Warrington, Cheshire, WA4 1HT for their approval.
7. Where there is a main river watercourse/culvert passing through the site, the developer shall submit all proposals affecting the river to the Environment Agency at the address stated in paragraph 6 for approval/acceptance.

8. Your attention is drawn also to the following:

Private drains or sewers which may be within the site.

On 1 October 2011 all privately owned sewers and lateral drains which communicate with (that is drain to) an existing public sewer as at 1 July 2011 will become the responsibility of the sewerage undertaker. This includes private sewers upstream of pumping stations that have yet to transfer, but excludes lengths of sewer or drain that are the subject of an on-going appeal or which have been excluded from transfer as a result of an appeal or which are on or under land opted-out by a Crown body. The transfer specifically excludes sewers and lateral drains owned by a railway undertaker. Sewers upstream of such assets, however, are transferred. Such assets may not be recorded on the public sewer record currently as it was not a requirement to keep records of previously private sewers and drains.

Applications to make connections to the public sewer.

The developer must write to United Utilities requesting an application form that must be duly completed and returned. No works on the public sewer shall be carried out until a letter of consent is received from United Utilities.

Sewers for adoption If an agreement for the adoption of sewers under Section 104 of the Water Industry Act 1991 is being contemplated, a submission in accordance with "Sewers for Adoption", Seventh Edition, published by the Water Research Centre (2001) Plc, Henley Road, Medmenham, PO Box 16, Marlow, Buckinghamshire, SL7 2HD will be required, taking into consideration any departures from the general guide stipulated by United Utilities.

Further consultation with United Utilities.

Developers wishing to seek advice or clarification regarding sewer record information provided should contact United Utilities to arrange an appointment. A consultation fee may be charged, details of which will be made available at the time of making an appointment.

9. Combined sewers, foul sewers, surface water sewers, and pumped mains. These are shown separately in a range of colours or markings to distinguish them on our drawings, which are extracts from the statutory regional sewer map. A legend and key is provided on each extract for general use, although not all types of sewer will be shown on every extract.

Combined sewers shown coloured red carries both surface water and foul sewage, especially in areas where there is no separate surface water sewerage system.

Foul sewers coloured brown may also carry surface water and there may be no separate surface water system indicated in the immediate area. Both combined and foul sewers carry wastewater to our treatment works before it can safely be returned to the environment.

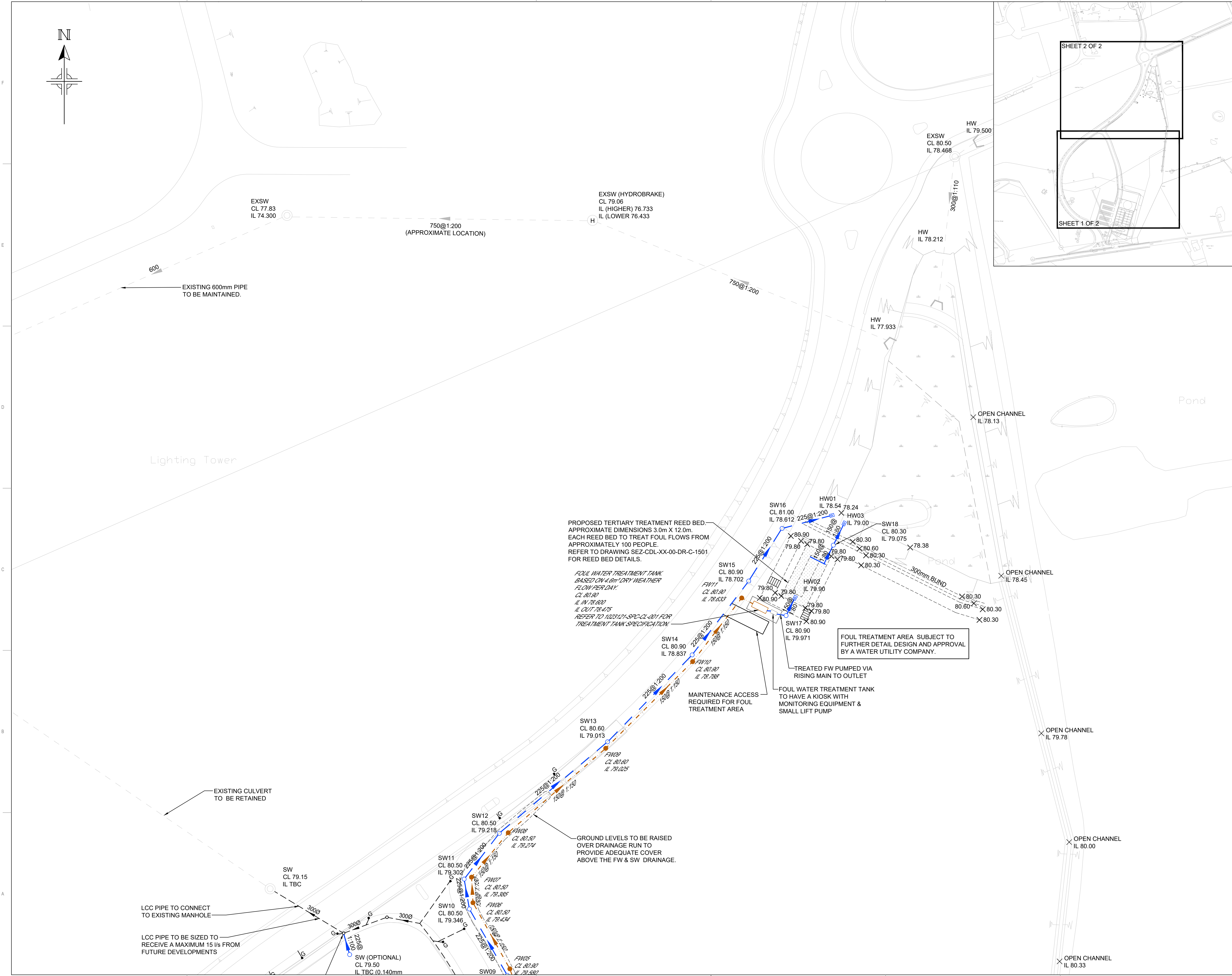
Surface water sewers coloured blue on our drawings are intended only to carry uncontaminated surface water (e.g. rainfall from roofs, etc) and they usually discharge into local watercourses. It is important for the protection of the environment and water quality that only uncontaminated surface water is connected to the surface water sewers. Improper connections to surface water sewers from sink wastes, washing machines and other domestic use of water can cause significant pollution of watercourses.

Pumped mains, rising mains and sludge mains will all be subject to pumping pressures and are neither suitable nor available for making new connections.

Highway drains, when included, show as blue and black dashed lines. Highway drains are not assets belonging to United Utilities and are the responsibility of local authorities.

1. For information regarding future proposals for construction of company apparatus please write to United Utilities, PO Box 453, Warrington, WA5 3QN.
2. For information regarding easements, deeds, grants or wayleaves please write to United Utilities Property Solutions, Coniston Buildings, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3UU
Tel: 01925 731 365

Appendix C – Proposed Drainage Layout



1023121

A1

Based on:
Architects Drg No.
Structural Drg No.
Survey Drg No.
Other Drg No.
Other Drg No.

Rev
Rev
Rev
Rev
Rev

NOTES:

1. TO BE READ IN CONJUNCTION WITH ALL RELEVANT CUNDALL DRAWINGS & LCC DRAWINGS

2. THIS DRAWING IS SUBJECT TO CHANGE DEPENDING ON FURTHER DEVELOPMENT OF THE G.A., SITE LAYOUT AND INDIVIDUAL PLOT DESIGN DEVELOPMENT.

3. BASED ON THE CITY DEAL DELIVERY TEAM LICENSED AREA SITE WORKS AND ADDITIONAL AREA FOR DRAINAGE DRAWING CDT -EZ-AMRC-DEV-0500-001-REV W.08.

4. ALL MANHOLE AND PIPE POSITIONS ARE APPROXIMATE.

5. FOUL TREATMENT STRATEGY SUBJECT TO CHANGE FOLLOWING CORRESPONDENCE WITH RELEVANT LOCAL AUTHORITIES.

6. AMRC SURFACE WATER FLOW RATE TO BE LIMITED TO 5.5l/s/ha FOR FULL PLOT AREA INCLUDING LANDSCAPED AREAS.

7. AMRC SURFACE WATER LAYOUT BY OTHERS AND CURRENTLY UNKNOWN.

8. AMRC FOUL DRAINAGE LAYOUT BY OTHERS AND CURRENTLY UNKNOWN.

9. HIGHWAY LEVELS AND DRAINAGE DESIGNED BY LCC.

10. ALL MANHOLES TO BE 1200Ø UNLESS NOTIFIED OTHERWISE

KEY

PROPOSED SURFACE WATER PIPE AND MANHOLE

PROPOSED FOUL WATER PIPE AND MANHOLE

PROPOSED LCC HIGHWAYS PIPE AND MANHOLE

EXISTING SURFACE WATER PIPE AND MANHOLE

EXISTING FLOW CONTROL

PROPOSED LCC GULLY

PROPOSED BACKDROP

PROPOSED HEADWALL

EXISTING HEADWALL

PROPOSED REED BED

PROPOSED LEVEL (BY OTHERS)

PROPOSED LEVEL (BY CUNDALL)

PROPOSED EARTHWORKS FEATURE

A

01.11.19

DRAINAGE MOUND UPDATED

RB

MH

DB

-

23.10.19

FIRST ISSUE

RB

MH

DB

Issue

Date

Description

By

Chkd

Verfd

Project

SAMLESBURY ENTERPRISE ZONE

Client

LANCASHIRE COUNTY COUNCIL

Title

AMRC DRAINAGE STRATEGY
SHEET 2 OF 2

Drawing Status

PRELIMINARY

Project No.

1023121

Scale

1:500

CUNDALL

10th Floor, Manchester One
53 Portland Street
Manchester, M1 3AH
Tel: +44 (0)161 244 5660

Website: www.cundall.com

Drawing No.

SEZ-CDL-XX-00-DR-C-0711

Appendix D – UU Correspondence

Brown, Richard

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 30 September 2019 11:54
To: Brown, Richard; Wastewater Developer Services
Cc: Perry, Graham
Subject: RE: Plot 7, Samlesbury Enterprise Zone Ref: 4200028143

Good Morning,

We have carried out an assessment of your application which is based on the information provided. This pre-development advice will be valid for 12 months.

Foul

The foul water flows emanating from this site (Plot 7) are shown to drain northwards before being treated and discharging into an existing open drainage network. United Utilities have no objection to the proposed drainage strategy provided on AMRC Drainage Strategy Drawing Refs: SEZ-CDL-XX-00-DR-C-0710 and SEZ-CDL-XX-00-DR-C-0711 by Cundall. In light of previous information we have on record for the wider development, there may be objections to the proposed strategy by the Environment Agency. The advice previously provided by United Utilities within the enquiry Ref: 4200020912 was that the alternative solution to an on-site treatment option would be to drain to the existing 600mm diameter combined system in the fields south of Preston New Road. This advice still stands and therefore, based on the evidence you have provided below, an on-site wastewater package treatment plant would likely be the most feasible option for the management of foul water flows from this site.

Surface Water

The surface water flows generated from this site should drain in line with the drainage hierarchy. The plans, (referenced above), suggest that surface water will connect into the site wide drainage infrastructure and have no interaction with United Utilities infrastructure. Therefore United Utilities have no further comments and have no objections to the proposed surface water drainage proposals. For the avoidance of any doubt, no surface water emanating from the proposed site will be allowed to communicate with United Utilities apparatus.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

<https://www.unitedutilities.com/builders-developers/wastewater-services-and-connections/sewer-connections/>

Sewer Adoption Agreement

You may wish to offer the proposed new sewers for adoption. United Utilities assess adoption application based on Sewers adoption 6th Edition and for any pumping stations our company addenda document. Please refer to link below to obtain further guidance and application pack:

<https://www.unitedutilities.com/builders-developers/wastewater-services-and-connections/sewer-adoptions/>

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

Please note, if you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements of Sewers for adoption and United Utilities Asset Standards. The proposed design should give consideration to long term operability and give United Utilities a cost effective proposal for the life of the assets. Therefore, further to this enquiry should you wish to progress a Section 104 agreement, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 agreement, has been assessed and accepted in writing by United Utilities. Any works carried out prior to the technical assessment being approved is done entirely at the developers own risk and could be subject to change.

If I can be of any further assistance please don't hesitate to contact us further.

Kind regards,

Robert Brenton
Developer Engineer
Developer Services and Planning
Network Delivery
United Utilities

T: 01925 537400
unitedutilities.com

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From: Brown, Richard [mailto:r.brown@cundall.com]
Sent: 16 September 2019 11:47
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Cc: Perry, Graham <Graham.Perry@uuplc.co.uk>
Subject: Plot 7, Samlesbury Enterprise Zone

Good Morning,

Please find attached the pre-development enquiry for Plot 7 located within the Samelesbury Enterprise Zone development. A separate enquiry is being made as Plot 7 is will be the first plot developed and it is anticipated to be at least a couple of years before any other plots are developed. The site wide Samlesbury Enterprise Zone development has previously been submitted as its own pre-development enquiry to Graham Perry (Ref. 4200020912).

I have attached drainage layout drawings for further information but in summary:

- Surface water from Plot 7 will connect to the site-wide drainage infrastructure, which will remain in control of Lancashire County Council, and have no interaction with UU infrastructure.
- Foul water from Plot 7 will be treated in a wastewater package treatment plant. The treated water will subsequently discharge into the site wide surface water network. The treated flow rate will be less than 5.0m³ per day so this discharge will be agreed with the EA under their 'general binding rules'. One element of these rules is that there must be no public sewer within 30m of any part of the building. We do not believe there are any suitable sewers to connect to, as outlined below.

Based on the previous development enquiry to UU (Ref. 4200020912) the nearest sewer to connect to is the 600mm combined sewer in the fields south of Preston New Road, we do not believe this is a feasible discharge option as:

- The sewer is located approximately 1.0km from the site boundary and would involve approximately 40m of rise across private land.

- The most realistic location for a foul pumping station on the finalised Enterprise Zone development is the lowest point in the north west corner of the development. Once this is factored in it brings the rising main length to approximately 1.9km with approximately 55m of rise.
- Plot 7 is being developed as a single plot and no funding in place to be able to undertake an infrastructure project of the scale required to reach the combined sewer.

Please could you confirm your acceptance of this strategy? If you require any further information, please don't hesitate to contact myself.

Regards,

Richard Brown
Engineer
Cundall

10th Floor, Manchester One, Portland Street, Manchester M1 3LD, United Kingdom
D +44 161 200 1244
T +44 161 244 5660

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EMGateway3.uuplc.co.uk made the following annotations

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www.unitedutilities.com/subsidiaries

Appendix E – EA Risk Assessment

Generic risk assessment for standard rules set number SR2010No3 v3.0

Activity type:	Water discharge activity: secondary treated sewage discharges with flow limit between 5 and 20 m3/day
Location:	Applies to all potential locations
Location of environmentally sensitive sites (kilometre / m):	Greater than 1kilometre or 100 metres (see below)
Risk assessment carried out by:	Environment Agency
Date:	31 May 2013

The scope of the standard permit is defined by the following risk criteria:

Parameter 1	Permitted activities - the discharge is solely secondary treated domestic sewage containing no trade effluent
Parameter 2	The total daily flow of the discharge calculated by the method specified in "Flows and Loads 3" shall be greater than 5 m3/d but not greater than 20 m3/d
Parameter 3	The discharge shall only be made to a watercourse that normally contains water throughout the year
Parameter 4	The sewage must have received secondary treatment at a treatment plant designed and constructed to meet the requirements of BS 12566 and sized in accordance with "Flows and Loads 3"
Parameter 5	The discharge cannot reasonably, at the time it is first made, be made to an existing foul sewer
Parameter 6	The discharge shall not be made into ponds or lakes or freshwater within 1 kilometre upstream from the nearest boundary of an identified bathing water, a designated shellfish water, European Site, Ramsar site, Site of Special Scientific Interest (SSSI), Local Nature Reserve or any body of water identified as containing a Protected Species or within 100 metres from a Local Wildlife site. Only sites that are water-based and linked to the receiving water downstream of the discharge point are included in the rule.

Abbreviations: SR - Standard rule

"Flows and loads 3" Flows and Loads 3 - Sizing Criteria, Treatment Capacity for Small Wastewater Treatment Systems (Package Plants)

Data and information				Judgement				Action (by permitting)	
Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).
Local human population	odour	Unpleasant smell around plant	Living or visiting near a malfunctioning plant	Low	Low	Low	Serious smell only likely from modern plant of adequate capacity when it is seriously malfunctioning	SR - activities shall be managed and operated in accordance with a management system (will include inspection and maintenance).	Very low
	discharge of visible solids	Visible pollution of receiving water	malfunctioning plant discharge to water	Low	Low	Low	Excessive solids only likely from modern plant when it is seriously malfunctioning		

	bacteria and viruses	illness	swimming in water close downstream or consuming shellfish from close downstream	Medium	High	High	swimming or eating uncooked shellfish from sewage affected water is a potential health risk. Sewage can cause Directive failure	SR - the discharge must not be made within 1kilometre upstream from an identified bathing water or a designated shellfish water.	Low
Chemical and biological quality of the receiving water	organic matter	Removes oxygen from water, can become completely anoxic. Can damage plants and animals	In the discharge to water	Medium	Medium	Medium	Deoxygenation of water is one of the most severe potential effects of excessive organic discharge load	SR (permitted activities) - • Prior to the discharge, the sewage must have received secondary treatment at a treatment plant designed and constructed to meet the requirements of BS 12566 (or equivalent); or for discharges over 9m3/day an equivalent standard, and sized in accordance with "Flows and Loads 3"	Low
	suspended solids	Excess blankets bed of water. Can damage plants and animals	In the discharge to water	Low	Medium	Medium	Suspended solids from treated sewage is rarely sufficient to cause a problem unless the plant malfunctions	As above and SR - activities shall be managed and operated in accordance with a management system (will include inspection and maintenance).	Low
	ammonia	Removes oxygen from water, can be directly toxic. Can damage plants and animals	In the discharge to water	Low	Medium	Medium	Ammonia from treated sewage is rarely sufficient to cause a problem unless the plant malfunctions	As above. Design according to Flows and Loads 3 should ensure sufficient nitrification (Oxidation to Nitrate and Nitrite) is normally achieved	Low
	toxic substances	Directly toxic to plants and animals	In the discharge to water	Low	Medium	Medium	Domestic sewage does not normally contain significant concentrations of toxic substances	SR (permitted activities) - the sewage must be solely domestic in origin	Low
	phosphorus	Excess stimulates plant growth. Can change plant ecology or promote algal blooms	In the discharge to water	Low	Low	Low	All sewage contains phosphorus, but small treated discharges rarely have any appreciable effect on their own	No action possible or needed as load of phosphorus from the permitted activity will be small.	Very low
Protected sites/species	pollutants and nutrients in the discharge	Adversely affect the plants and animals of interest in the site	In the discharge to water	Low	Medium	Medium	Substances in treated sewage will alter the water chemistry to some extent and this may be large enough to adversely affect a conservation site or species that relies on surface water	SR - discharges shall not be made within 1kilometre or 100 metres upstream from specified nature conservation sites and protected species that could be affected. Outside of that distance the effect of the discharge will not be detectable and therefore there is no potential for detrimental impact	Low

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