



Whyndyke Farm, Blackpool Drainage Strategy

For Cassidy and Ashton

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1. INTRODUCTION

This report has been prepared by Hydrock Consultants Limited on behalf of Cassidy and Ashton for the proposed multi-purpose development at Whyndyke Farm, Blackpool. As part of the Outline Planning Application to be submitted to Blackpool Council and Fylde Council, planning condition 35 is to be addressed.

Condition 35 states the following:

At the same time as the submission of the First Reserved Matters application for a phase or part of a phase of the development hereby permitted a Foul and Surface Water Drainage Strategy for the entire site shall be submitted to the Local Planning Authorities for approval (in consultation with United Utilities PLC and LCC Flood Risk Assessment Team as Lead Local Flood Authority). The strategy to include the following details as a minimum:

2.1 a. unless otherwise agreed in writing, the foul connection point shall be to the 675 mm combined sewer in Clifton Road for the entire site;

b. the details of any additional off-site drainage infrastructure required as a result of the entire development; and

c. any drainage infrastructure connections (foul and surface water) between the different phases of the development. Where drainage infrastructure connects development from different phases, it will be necessary to show how much development will be served by the connecting drainage infrastructure.

d. details of the implementation of the drainage proposed.

2.2. At the same time as the submission of each subsequent Reserved Matters application for a phase or part of a phase, an updated Foul and Surface Water Drainage Strategy shall be submitted to the Local Planning Authorities for approval (in consultation with United Utilities PLC), such Strategy to include as a minimum the details listed above at part 2.1.

2.3. Unless otherwise agreed with the local planning authorities (in consultation with United Utilities PLC), there shall be no foul and surface water connections between phases of development defined by condition 4 other than in accordance with the connections identified and approved under item 2.1.c. The detailed drainage schemes for each phase of development required shall be submitted for approval in accordance with the foul and surface water drainage details approved under this condition.

2.4. No development shall be commenced on any phase or part of any phase of the development hereby permitted unless and until the Foul and Surface Water Drainage Strategy submitted with the relevant Reserved Matters application has been approved in writing by the Local Planning Authorities in consultation with United Utilities PLC.

The surface water drainage strategy has been produced in accordance with the National Planning Policy Framework (NPPF) requirements.

A Flood Risk Assessment (FRA) report has been produced by Mayer Brown Limited, reference H/ALBAP244, dated 28 March 2011 and should be read in conjunction with this drainage strategy.

Infiltration testing has been undertaken by Hydrock, reference TP01-TP12 SOAK and should be read in conjunction with this drainage strategy.

This report should be read in conjunction with the following drawings:

- C18299-HYD-XX-XX-DR-C-0500_Proposed Drainage Strategy

2. SITE INFORMATION

2.1 Location and Setting

The site is known as Whyndyke Farm, which is located off the Preston New Road, FY4 4XQ.

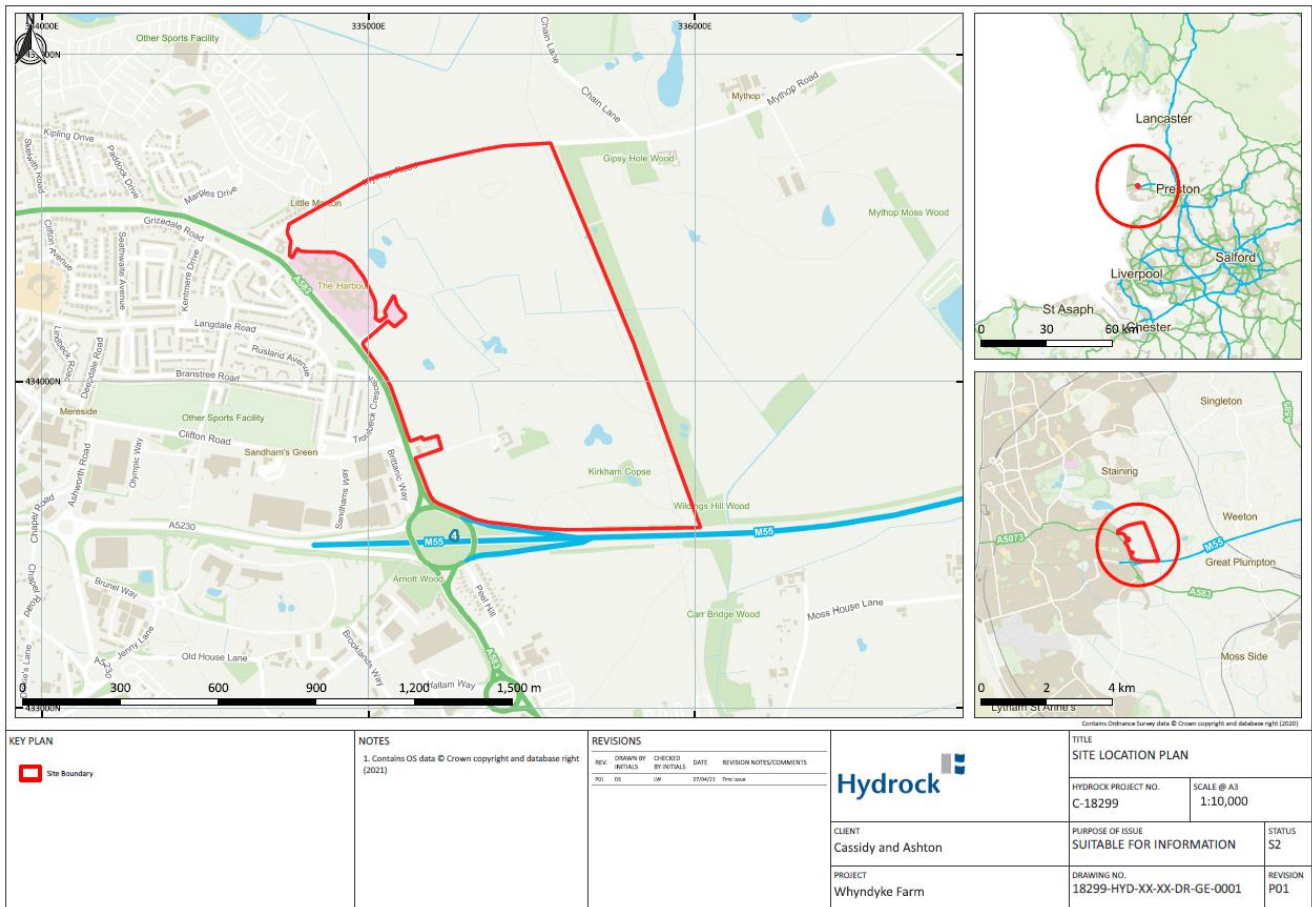
The site is approximately 84.04 hectares and comprises predominantly undeveloped fields with the Windmill Mobile Home Park, Whyndyke Farm and House in the south west and Graham Mobile Home Park in the north west. Various ponds are present across the site and overhead pylons are present in the east of the site close to the eastern extent.

The site location is shown in Figure 1, with the full address and Ordnance Survey grid reference provided in Table 1.

Table 1: Site Referencing Information

Site Referencing Information	
Site Address	Whyndyke Farm, Preston New Road, Blackpool FY4 4XQ
Grid Reference	335213 , 433812 SD352338

Figure 1: Site Location



2.2 Topography

A copy of the topographical survey has been included within the planning submission.

The survey indicates that the site generally falls towards an existing open watercourse running through the site in an eastern direction with levels decreasing from a high of around 19m AOD at the north western boundary to a low of around 4.2m AOD at the eastern boundary.

2.3 Proposed Development

The proposals as revised now seek outline planning permission for the sustainable development of 1,400 residential dwellings, the allocation of 20 ha. of employment land, together with the erection of a new primary school to serve the future population of the site and the local area and two local neighbourhood centres. Associated with these developments will be the provision of an internal road network, with associated access on to the existing highway network, improvements to the existing highway network and the creation of a green network, public open space and habitats

3. SURFACE WATER STRATEGY

3.1 Existing Site Drainage

It has been previously agreed with United Utilities and Blackpool Council correspondence that the proposed discharge location for the proposed foul drainage will be a 675mm diameter combined sewer within Clifton Road unless agreed otherwise. United Utilities sewer records have been obtained (see Appendix A) which indicate a chamber, reference 0701, within Clifton Road to the West of the development. The cover and invert levels provided are below.

Table 2: Existing Combined Manhole Information

	0701 (UU Manhole Reference)
Cover Level	14.470m
Invert Level	0.0m (Unknown)
Depth	(Unknown)
Outfall Pipe Diameter	675mm

A CCTV survey will be required to confirm the exact level and location information of this combined sewer prior to detailed design; however, it is likely that the sewer will not be of sufficient depth to allow for a gravity fed foul connection.

As the site is currently undeveloped, no surface water drainage infrastructure is thought to be present within the site boundary, with the ground levels generally directing greenfield run-off towards the existing watercourses running through the site.

3.2 Existing Discharge Rates

As previously agreed, due to the existing sites undeveloped status surface water run-off from the proposed development will be restricted to Greenfield rates to ensure flood risk downstream is not exacerbated. The Flood Risk Assessment undertaken by Mayer Brown has determined that the existing QBar Greenfield rate for the development as 6.3 l/s/Ha.

3.3 Proposed Site Discharge

To satisfy the requirements stated within Planning Condition 40:

The development hereby permitted shall be carried out in accordance with the approved Flood Risk Assessment (FRA) for Whyndyke Farm, Blackpool (reference H/ALBANP244; DATED 28 March 2011; Issue 1) and subject to the following requirements;

- a. Surface water run-off from the site shall be attenuated up to a 1 in 100-year critical storm event (plus 30% allowance for climate change)
- b. The discharge rate for surface water shall be limited to that it will not exceed the run-off rate from the undeveloped site or 6.3 litres per second per hectare; whichever is lowest.

The current site proposals have been split into various plot areas. The table below summarises the proposed run off rates that are to be achieved within the varying storm events, based on an assumed impermeable area of 80% of the total plot area as put forwards within the Flood Risk Assessment;

Table 3: Proposed Discharge Rates

	Total Area (Ha)	Assumed 80% Impermeable Area (Ha)	Peak Run-Off (At 6.3 l/s/Ha)
Plot 01	3.372	2.698	16.99
Plot 02	6.886	5.509	34.71
Plot 03 + Community Use	5.006	4.005	25.23
Plot 04	3.529	2.823	17.79
Plot 05	2.976	2.381	15.00
Plot 06 + Primary School	4.149	3.319	20.91
Plot 07 + Mixed Use	2.201	1.761	11.09
Plot 08 + Mixed Use	3.946	3.157	19.89
Plot 09	1.591	1.273	8.02
Plot 10	1.509	1.207	7.61
Commercial Plot 01	7.333	5.866	36.96
Commercial Plot 02	11.864	9.491	59.79
Total	54.362	43.490	273.98

The Flood Risk Assessment undertaken by Mayer Brown indicates that finished floor levels for the developments should be set at 600mm above the 100-year flood level. For the purpose of determining cover levels for this drainage exercise each plot will be levelled following the gradients of the existing ground profile. Attenuation ponds have been located within low areas of each plot. Surface water run-off is to be collected via rainwater pipes, channels, porous paving and road gullies and will utilise attenuation ponds and swales before out falling to the existing watercourse running through the site. Below ground attenuation may be required where the layout does not permit the use of ponds.

In order to limit discharge from the site to the discharge rates specified in Table 3, attenuation storing a total of 27,836m³ storage will be provided to serve the full site in attenuation ponds, or below ground attenuation tanks where ponds may not be feasible.

The surface water drainage attenuation has been determined using Quick Storage Estimate within MicroDrainage for the 1 in 100year critical storm event plus 30% climate change allowance. The volumes for each plot are indicated within Table 4 below:

Table 4: Quick Storage Estimate - Attenuation Volumes

	Minimum Volume (m ³)	Maximum Volume (m ³)	Average Volume (m ³)
Plot 01	1,421	2,033	1,727
Plot 02	2,901	4,152	3,527
Plot 03 + Community Use	2,109	3,018	2,564
Plot 04	1,486	2,127	1,807
Plot 05	1,254	1,794	1,524
Plot 06 + Primary School	1,748	2,501	2,125
Plot 07 + Mixed Use	927	1,327	1,127
Plot 08 + Mixed Use	1,662	2,379	2,021
Plot 09	671	960	816
Plot 10	636	910	773
Commercial Plot 01	3,088	4,419	3,754
Commercial Plot 02	4,997	7,152	6,075
Total	22,900	32,772	27,836

The proposed drainage MicroDrainage calculations can be found within Appendix D

3.4 Volume Control

With regards to DEFRA's Non-Statutory technical Standards for SUDS Design Part S6 due to the lack of infiltration potential it is considered not reasonably practical to limit the volume discharge to the existing volume discharged during a 1 in 100-year 6hr event. In compliance with S6 and in mitigation of additional discharged volume we are to discharge at a rate of QBAR which will thereby not adversely affect flood risk.

3.5 Hierarchy of Drainage Discharge

A hierarchy for the preferred discharge of surface water states that surface water runoff should be disposed of has been stated as the following:

Surface water runoff not collected for use must be discharged to one or more of the following in the order of priority shown:

1. into the ground (infiltration).
2. to a surface water body.
3. to a surface water sewer, highway drain or other drain.
4. to combined sewer:

The feasibility of each discharge method is outlined below:

1. Soakaway testing has been undertaken at various locations across the site. A summary of the findings of these investigations are as follows:

Table 5: Soakaway Testing Findings Summary

Location	Strata	Notes
TP01	Till - clay with sand bands	No soakage – slumping of trial pit and rise in water level.
TP02	Till - clay with sand bands	No soakage – slumping of trial pit and rise in water level. Seepage observed in trial pit.
TP03	Till - clay with sand bands	No soakage – slumping of trial pit and rise in water level. Slight seepage at 0.5m bgl observed.
TP04	Till - clay	No soakage (slight rise in water levels). Stable hole. Slight seepage at 0.6m bgl observed.
TP05	Till - clay with sand bands	No soakage. Stable hole.
TP06	Till - clay	No soakage. Stable hole. Slight seepage at 0.6m bgl.
TP07	Till - clay	No soakage. Stable hole.
TP08	Peat	No soakage – slumping of trial pit and rise in water level.
TP09	Till - clay	No soakage. Stable hole. Slight rise in water levels over test. Seepage recorded from land drain at 0.6m bgl.
TP10	Till - clay with sand bands	Stable hole. Slight soakage rates (<25% in 3 hours).
TP11	Peat	No soakage – minor collapsing of pit and minor rise in water levels.
TP12	Till - Sand	No soakage – minor collapsing of pit and minor rise in water levels. Slight seepage at 0.5m bgl.

- a. The trial pits recorded either Till (in the form of clays with variable amounts of sand bands), or a very organic clay interpreted as being peat.
- b. The majority of locations either recorded no soakage, or water ingress from sand bands causing water levels to rise which eventually caused collapse of the sides of trial pits.
- c. A single location (TP10) recorded a small amount of soakage over the duration of the test; however, the soakage percentage was too small to permit calculation of soakage rates. Given that all other locations recorded either no soakage, or shallow groundwater levels causing collapse of the trial pits, Hydrock does not consider it likely that this location would be suitable for soakaway drainage.

Given the above, the site is not considered suitable for soakaway drainage due to either low permeability strata being present and/or a relatively shallow groundwater table within any sand bands present in the Till or Peat.

2. An existing watercourse is known to run through the site following the general site topography and flows in a south eastern direction. The ordinary watercourse ultimately discharges into the main river located to the south east of the site. It is proposed to discharge surface water run off to this watercourse restricted to a greenfield run off rate. Consent to discharge will be required from the Environment Agency prior to starting any works on site.
3. United Utilities Sewer records have been obtained, which indicate no existing surface water sewers within the vicinity of the site.
4. The sewer records indicate a 675mm diameter sewer within Clifton Road. Whilst drainage of the surface water run-off to a combined sewer will not be accepted, it has been previously agreed with United Utilities and Blackpool Council correspondence that this will be the preferred discharge location for the proposed foul drainage. A CCTV survey should be undertaken to confirm the exact location and levels of the existing sewer.

It is proposed to comply with Level 2.

The Proposed Drainage Layout can be found in Appendix B.

3.6 Suitability for Infiltration

Infiltration testing has been undertaken on site. Soakaways are considered unsuitable for the site based on the low permeability of the natural soils as stated above. The results of the soakaway assessment can be found in Appendix C.

3.7 Suitability of SuDS Features

Whilst the suitability of various SuDS features will be reviewed and incorporated during detailed design of the various phases, the following SuDS features have been considered and Table 6 below states which features could be incorporated and which have been excluded and reasons for their exclusion.

Table 6: Suitability of SuDS Features

SuDS Feature	Incorporated within design	Reasoning
Green Roofs / BluRoofs	No	Greenroof/BluRoof systems have been excluded from this scheme due to the residential housing nature of the development and roof space available
Attenuation Pond (Above Ground)	Yes	Attenuation ponds will be provided to attenuate site flows prior to discharge.
Rainwater Harvesting	No	Rainwater harvesting is not effective for this type of development where there are a limited number of uses for harvested water
Infiltration Methods	No	Infiltration was ruled out due to the low permeability of the existing ground strata.
Raingardens/Bio-retention areas	No	Excluded due to the nature of the development and ground conditions
Filter strips and swales	Yes	There is sufficient opportunity to incorporate swales into the scheme and should be utilised during detailed design.
Porous Paving	Yes	Lined porous paving may be suitable for larger external areas of parking within the commercial plots.
Below ground attenuation systems / Oversized Pipework	Yes	Below ground attenuation may be required within plots where limited space is available to incorporate ponds.

3.8 Water Quality

The surface water run-off from external areas shall be collected by means of external gullies and drainage channels, which shall have sumps for the removal of silts. The surface water from the external areas trafficked by heavy goods vehicles shall pass through swales and Class 1 full retention separators before entering attenuation tanks and ponds.

The surface water from the roof and external areas not trafficked by vehicles shall pass directly into the attenuation tanks and ponds.

The use of swales and the attenuation ponds shall allow settling out of suspended solids prior to discharge from site.

Further silt retention shall be provided within the site by the use of catch pits.

3.9 Whole Life Maintenance of the Network

To enable the water treatment process to occur as intended the drainage network shall require maintenance. The maintenance strategy and responsibilities are as set out in Table 7 below.

Table 7: Maintenance of the Network

Component to be maintained	Actions	Frequency	Responsibility of:
Site wide external areas	Site to be generally kept free from litter and debris which may enter the drainage system.	On-going	Management Company / Council
Attenuation Ponds and Swales	Remove litter/ debris	As required	Management Company / Council
	Cut grass/remove unwanted plants	Monthly	
	Inspect inlet/ outlet/ structures	Monthly	
	Inspect silt accumulation within catch pit chambers	Annually	
	Inspect for poor water quality Inspect for silt build up throughout pond and remove if necessary	Monthly As required	
	Repair erosion/ replant/ repair inlets, outlets	As required	
General network inc. pipes/ manholes/ catchpits	Manholes covers to be lifted and inspected for sediment build up, remove as required	Yearly	United Utilities

4. FOUL WATER DRAINAGE

Planning Condition 35 states the following:

2.1 a. unless otherwise agreed in writing, the foul connection point shall be to the 675 mm combined sewer in Clifton Road for the entire site;

It has been previously agreed with United Utilities and Blackpool Council correspondence that the proposed discharge location for the proposed foul drainage will be a 675mm diameter combined sewer within Clifton Road unless agreed otherwise. United Utilities sewer records have been obtained (see Appendix A) which indicate a chamber, reference 0701, within Clifton Road to the West of the development. The cover and invert levels provided are below.

Table 2: Existing Combined Manhole Information

	0701 (UU Manhole Reference)
Cover Level	14.470m
Invert Level	0.0m (Unknown)
Depth	(Unknown)
Outfall Pipe Diameter	675mm

A CCTV survey will be required to confirm the exact level and location information of this combined sewer prior to detailed design; however, it is likely that the sewer will not be of sufficient depth to allow for a gravity fed foul connection due the topography of the site and large distance to the outfall. Therefore, foul drainage will require a number of pumping stations.

Design and Construction Guidance for foul and surface water sewers, Sewerage Sector Guidance Appendix C: Section B3.1 states that the peak design flow rates for dwellings should be designed for "4000 litres per dwelling per day."

It is understood that the development planning approval is being sought for up to 1,401 residential units. $1,401 \text{ units} = 1,401 \times 4,000 \text{ l/day} \div 86,400 = 64.9 \text{ l/s}$.

This is broken down between the various plots as per Table 8 below:

Table 8: Residential Flows per Plot

	Units	Peak Flow (at 4,000l/day) (l/s)
Plot 01	132	6.1
Plot 02	272	12.6
Plot 03 + Community Use	161	7.5
Plot 04	140	6.5
Plot 05	120	5.6
Plot 06 + Primary School	130	6.0
Plot 07 + Mixed Use	75	3.5
Plot 08 + Mixed Use	175	8.1
Plot 09	56	2.6
Plot 10	52	2.4
NC Plot 01	56	2.6
NC Plot 02	32	1.5
Total	1401	64.9

Employment numbers for the proposed commercial plots are yet to be confirmed. In absence of these figures foul flows have been calculated as per Design and Construction Guidance for foul and surface water sewers, Sewerage Sector Guidance Appendix C: Section B3.1 - 2.b:

The trade effluent design flow should be based on a metered discharge from premises similar to that proposed, or assumed as 0.5 litres per second per hectare for normal industry and 1 litre per second per hectare for wet industry. Where the proportion of wet industry is unknown, an average flow of 0.7 litres per second per hectare should be used.

As the proportion of wet industry is unknown, the following flows for the commercial units have been based upon 0.7 l/s/Ha:

Table 9: Commercial Units Flows

	Area (Ha)	Peak Flow (at 0.7 l/s/Ha)
Commercial Plot 01	7.333	5.1
Commercial Plot 02	11.864	8.3
Total	19.197	13.4

Occupancy Figures for the proposed primary school have been confirmed by the client as approximately 180 students, and an allowance for 20 staff has been made, resulting in a total occupancy of 200.

Based on an industrial flow rate for a Non-residential school with canteen of 90(l/p/d) taken from British Water Flows and Loads – 4, the total volume per day is:

$$90 \times 200 = 18,000 \text{ (l)}.$$

This volume is likely to be over an 8-hour period. The peak rate is therefore

$$18,000(\text{l})/8\text{hrs} = 0.625(\text{l/s}).$$

Using a peaking factor of 6DWF the peak rate is 3.75(l/s).

A Community Hall is proposed adjacent to the eastern edge of main parkland / sports field open space. The building extents has been confirmed by the client as being approximately 400m². The building regulations Approved Document B, Table D1: Floor Space Factors indicates the occupant capacity of a building or space for a Committee room, common room, conference room, dining room, licensed betting office (public area), lounge or bar (other than in (1) above), meeting room, reading room, restaurant, staff room or waiting room as being 1 person per 1m² of floor space, resulting in a maximum occupancy of 400 people.

Based on an industrial flow rate for a Local community sports club of 40(l/p/d) taken from British Water Flows and Loads – 4, the total volume per day is:

$$40 \times 400 = 16,000 \text{ (l)}.$$

This volume is likely to be over an 8-hour period. The peak rate is therefore

$$16,000(\text{l})/8\text{hrs} = 0.556(\text{l/s}).$$

Using a peaking factor of 6DWF the peak rate is 3.33(l/s).

Two local neighbourhood centres have been proposed; however, the occupancy is currently unknown and therefore the resulting foul flows are to be confirmed.

The total peak foul flow resulting from the 1400 residential dwellings, 20 hectares of Class B2 general industrial/ Class B8 storage and distribution, primary school and community hall comes to a maximum of 85.38 l/s. Additional flow will be generated from the proposed neighbourhood. The above occupancies and employee figures are assumed and approximate only. Variances in occupancy will affect expected flow rates.

A 375mm Dia foul pipe laid at a gradient of 1 in 150 (self cleansing), with a roughness coefficient of 1.5mm (Ks) has a capacity of 144.4 l/s, and can therefore accommodate the development proposals.

As the agreed point of connection is a 675mm combined public sewer, off-site drainage works will be required to undertake this connection, as indicated on the Proposed Drainage Layout within Appendix D.

A Pre-Development Enquiry will be submitted to United Utilities to confirm allowable discharge rates and connection into the public sewer.

5. CONCLUSIONS

In summary the surface water drainage for each plot is proposed to be restricted to a QBar greenfield run-off rate of 6.3l/s, with individual attenuation provided to accommodate the 1 in 100-year critical climate change event plus a 30% allowance for climate change. The surface water run-off will then discharge into the existing watercourse running through the site towards the eastern boundary.

Proposed foul drainage is to pass through a number of pumping stations before discharging into the existing 675mm diameter United Utilities combined sewer within Clifton Road to the West of the site. A Pre-Development Enquiry will be submitted to United Utilities to confirm allowable discharge rates and connection into the public sewer.

Hydrock Consultants Limited

Appendix A - United Utilities Sewer Records

Reference	Title
	United Utilities Sewer Records

Refno	Cover	Func	Ir
1700	14.01	CO	1R 95
1701	14.01	CO	1R 95
1702	14.01	CO	1R 95
1703	14.01	CO	1R 95
1704	14.01	CO	1R 95
1705	14.01	CO	1R 95
1706	14.01	CO	1R 95
1707	14.01	CO	1R 95
1708	14.01	CO	1R 95
1709	14.01	CO	1R 95
1710	14.01	CO	1R 95
1711	14.01	CO	1R 95
1712	14.01	CO	1R 95
1713	14.01	CO	1R 95
1714	14.01	CO	1R 95
1715	14.01	CO	1R 95
1716	14.01	CO	1R 95
1717	14.01	CO	1R 95
1718	14.01	CO	1R 95
1719	14.01	CO	1R 95
1720	14.01	CO	1R 95
1721	14.01	CO	1R 95
1722	14.01	CO	1R 95
1723	14.01	CO	1R 95
1724	14.01	CO	1R 95
1725	14.01	CO	1R 95
1726	14.01	CO	1R 95
1727	14.01	CO	1R 95
1728	14.01	CO	1R 95
1729	14.01	CO	1R 95
1730	14.01	CO	1R 95
1731	14.01	CO	1R 95
1732	14.01	CO	1R 95
1733	14.01	CO	1R 95
1734	14.01	CO	1R 95
1735	14.01	CO	1R 95
1736	14.01	CO	1R 95
1737	14.01	CO	1R 95
1738	14.01	CO	1R 95
1739	14.01	CO	1R 95
1740	14.01	CO	1R 95
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1742	14.01	CO	1R 95
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1796	14.01	CO	1R 95
1797	14.01	CO	1R 95
1798	14.01	CO	1R 95
1799	14.01	CO	1R 95
1800	14.01	CO	1R 95
1801	14.01	CO	1R 95
1802	14.01	CO	1R 95
1803	14.01	CO	1R 95
1804	14.01	CO	1R 95
1805	14.01	CO	1R 95
1806	14.01	CO	1R 95
1807	14.01	CO	1R 95
1808	14.01	CO	1R 95
1809	14.01	CO	1R 95
1810	14.01	CO	1R 95
1811	14.01	CO	1R 95
1812	14.01	CO	1R 95
1813	14.01	CO	1R 95
1814	14.01	CO	1R 95
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1816	14.01	CO	1R 95
1817	14.01	CO	1R 95
1818	14.01	CO	1R 95
1819	14.01	CO	1R 95
1820	14.01	CO	1R 95
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1822	14.01	CO	1R 95
1823	14.01	CO	1R 95
1824	14.01	CO	1R 95
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1828	14.01	CO	1R 95
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1832	14.01	CO	1R 95
1833	14.01	CO	1R 95
1834	14.01	CO	1R 95
1835	14.01	CO	1R 95
1836	14.01	CO	1R 95
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1865	14.01	CO	1R 95
1866	14.01	CO	1R 95
1867	14.01	CO	1R 95
1868	14.01	CO	1R 95
1869	14.01	CO	1R 95
1870	14.01	CO	1R 95
1871	14.01	CO	1R 95
1872	14.01	CO	1R 95
1873	14.01	CO	1R 95
1874	14.01	CO	1R 95
1875	14.01	CO	1R 95
1876	14.01	CO	1R 95
1877	14.01	CO	1R 95
1878	14.01	CO	1R 95
1879	14.01	CO	1R 95
1880	14.01	CO	1R 95
1881	14.01	CO	1R 95
1882	14.01	CO	1R 95
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1885	14.01	CO	1R 95
1886	14.01	CO	1R 95
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1888	14.01	CO	1R 95
1889	14.01	CO	1R 95
1890	14.01	CO	1R 95
1891	14.01	CO	1R 95
1892	14.01	CO	1R 95
1893	14.01	CO	1R 95
1894	14.01	CO	1R 95
1895	14.01	CO	1R 95
1896	14.01	CO	1R 95
1897	14.01	CO	1R 95
1898	14.01	CO	1R 95
1899	14.01	CO	1R 95
1900	14.01	CO	1R 95



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Appendix B - Topographical Survey

Reference	Title
Whyndyke farm final	Topographical Survey

Coordinate Table	
Station	Coordinates
1	1000.00 1000.00
2	1000.00 1000.00
3	1000.00 1000.00
4	1000.00 1000.00
5	1000.00 1000.00
6	1000.00 1000.00
7	1000.00 1000.00
8	1000.00 1000.00
9	1000.00 1000.00
10	1000.00 1000.00
11	1000.00 1000.00
12	1000.00 1000.00
13	1000.00 1000.00
14	1000.00 1000.00
15	1000.00 1000.00
16	1000.00 1000.00
17	1000.00 1000.00
18	1000.00 1000.00
19	1000.00 1000.00
20	1000.00 1000.00
21	1000.00 1000.00
22	1000.00 1000.00
23	1000.00 1000.00
24	1000.00 1000.00
25	1000.00 1000.00
26	1000.00 1000.00
27	1000.00 1000.00
28	1000.00 1000.00
29	1000.00 1000.00
30	1000.00 1000.00
31	1000.00 1000.00
32	1000.00 1000.00
33	1000.00 1000.00
34	1000.00 1000.00
35	1000.00 1000.00
36	1000.00 1000.00
37	1000.00 1000.00
38	1000.00 1000.00
39	1000.00 1000.00
40	1000.00 1000.00
41	1000.00 1000.00
42	1000.00 1000.00
43	1000.00 1000.00
44	1000.00 1000.00
45	1000.00 1000.00
46	1000.00 1000.00
47	1000.00 1000.00
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49	1000.00 1000.00
50	1000.00 1000.00
51	1000.00 1000.00
52	1000.00 1000.00
53	1000.00 1000.00
54	1000.00 1000.00
55	1000.00 1000.00
56	1000.00 1000.00
57	1000.00 1000.00
58	1000.00 1000.00
59	1000.00 1000.00
60	1000.00 1000.00
61	1000.00 1000.00
62	1000.00 1000.00
63	1000.00 1000.00
64	1000.00 1000.00
65	1000.00 1000.00
66	1000.00 1000.00
67	1000.00 1000.00
68	1000.00 1000.00
69	1000.00 1000.00
70	1000.00 1000.00
71	1000.00 1000.00
72	1000.00 1000.00
73	1000.00 1000.00
74	1000.00 1000.00
75	1000.00 1000.00
76	1000.00 1000.00
77	1000.00 1000.00
78	1000.00 1000.00
79	1000.00 1000.00
80	1000.00 1000.00
81	1000.00 1000.00
82	1000.00 1000.00
83	1000.00 1000.00
84	1000.00 1000.00
85	1000.00 1000.00
86	1000.00 1000.00
87	1000.00 1000.00
88	1000.00 1000.00
89	1000.00 1000.00
90	1000.00 1000.00
91	1000.00 1000.00
92	1000.00 1000.00
93	1000.00 1000.00
94	1000.00 1000.00
95	1000.00 1000.00
96	1000.00 1000.00
97	1000.00 1000.00
98	1000.00 1000.00
99	1000.00 1000.00
100	1000.00 1000.00

