Appendix 12.1 – Flood Consequence Assessment

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Flood Consequence Assessment and Drainage Strategy
Erlas Park, Wrexham

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1.0 Introduction

1.1 Background

In accordance with Planning Policy Wales (PPW), a flood consequence assessment is required for developments located within Flood Zones C1 and C2. If the proposed development is located in Flood Zone B a Flood Consequence Assessment may be required with the level of detail dependent upon the location and whether the site is outside the extreme flood event extents (1:1000 flood event).

The proposed development is fully within Flood Zone A.

Adept Consulting Engineers Ltd were appointed by Harworth Estates Investments Ltd to carry out a Flood Consequence Assessment (FCA) and Drainage Strategy in support of the proposed development at Erlas Park, Wrexham in support of an outline planning application. The proposed scheme consists of phased residential development for the construction of up to 900 residential dwellings with associated infrastructure (playing fields, open space and SUDs attenuation) with all matters reserved except for detailed means of primary highway access.

1.2 Methodology

The study consisted of data collection and review, desk-based research and consultation with regulatory bodies and third parties in relation to flood risk and drainage.

The Study provides a risk-based assessment of potential flooding to the site caused by various sources, including fluvial, tidal, surface water/pluvial, groundwater, surcharged sewers and other man-made sources. Mitigation measures are identified to address the risk to the site and any potential future risk to other land.

2.0 Limitations of report

This report has been prepared by Adept Consulting Engineers Limited on behalf of Harworth Estates Investments Ltd in accordance with the background and methodology described above in sections 1.1 and 1.2.

Preliminary calculations and a concept drainage design have been undertaken as part of this study. The preliminary calculations and concept design are based on the information and assumptions covered in this report at the time of preparation and provide a concept design for points of connection and general design parameters only.

The report is based on the interpretation and assessment of data provided by third parties. Adept Consulting Engineers Limited cannot guarantee the reliability of the third-party information obtained. The conclusions and findings of the report may change if the third-party data is subsequently amended or updated.

3.0 Executive Summary

SECTION	SUMMARY	
Location	Land off Cefn Road, Erlas Park, Wrexham, LL13 9TT SJ 35608 50760	
Proposed Development	Phased residential development for the construction of up to 900 residential dwellings with associated infrastructure, primary school, playing fields, open space and SUDs constructed on an existing Greenfield site.	
Land use	Farmland with existing sports pitches. Redline boundary area measuring approximately 40.27 Hectares	
Topography	Existing ground generally falls from northwest to southeast. There is a catchment to the northwest of the development which falls from west to northeast with the southwest area of the site falling inwards towards the site from the west and south boundary.	
Site Boundaries	North	Brynestyn Road, bounds the northwest of the proposed site Wrexham Rugby Club adjacent to the remainder of the northern boundary.
	East	Existing Farmland
	South	Existing greenfield and farmland areas. There is also a small commercial area located at the centre of southern boundary.
	West	Cefn Road
Sequential and Exception Tests	Site is located within Flood Zone 1 / Flood Zone A and preferred sequential position. Exception test not required.	
Fluvial (River) flooding	Natural Resources Wales flood map for planning shows the whole development boundary to be outside the fluvial flood risk areas. Fluvial flood risk can therefore be considered 'Very Low'.	
Pluvial (Surface water) flooding	Natural Resources Wales flood map generally shows the development to be outside the pluvial flood risk areas. There are pockets of localised surface water flooding located to the western area of the site with flooding associated with a watercourse also present outside the southeast boundary. Pluvial flood risk can therefore be considered 'Very Low'.	
Flooding from artificial sources (Canals, Reservoirs)	There are no known canals in close proximity to the proposed site. The nearest reservoir is Marchwiel reservoir, located approximately 1.5km from the proposed development. Natural Resources Wales flood map shows flooding from this reservoir however the distance from the site and the extent of the flooding put the development at a 'Very Low' risk of flooding. Flood risk from artificial sources can therefore be considered 'Very Low'.	
Groundwater Flood Risk	The site does not sit within a groundwater source protection zone (SPZ) The risk of groundwater flooding is 'low to moderate'.	
Development Impacts on Flood Risk	Whilst the construction of hard standings and buildings without mitigation will theoretically increase flood risk to downstream properties, this risk can be, and will be, safely managed as demonstrated within this report.	

Flood Risk Mitigation/management	In accordance with recommendations finished floor levels should be set generally 150mm above external levels and floor levels in pluvial surface water flood risk areas set 300mm minimum above existing levels.
Surface Water Management	Early infiltration testing indicates that infiltration may be possible at strategic points across the site. Four large infiltration basins are proposed in this subject to further infiltration testing at the proposed location of the basins and confirmation of groundwater levels. Testing also shows that infiltration methods for the disposal of surface water flows associated with the existing and proposed sports pitches can be considered. Surface water flows will be attenuated in discharge to ground through four infiltration basins sized to accommodate 100-year storm event including 40% for climate change.
Foul Water Management	Foul flows will discharge into the existing Welsh Water combined sewer which runs through the central area of the site. Where possible this will be done via gravity however, due to the site topography there will be a requirement to pump a portion of the development foul effluent. A pump station located to the east of the site will pump flows from approximately 256 units at a rate of 11.85l/s.
Residual Risks	Groundwater remains a low to moderate risk for the development of the site and will need managing through construction
Recommendations for Further work	Infiltration testing and confirmation of groundwater levels recommended at the location of each infiltration basin as well as any proposed soakaway location.
Maintenance	Maintenance of the on-site drainage and attenuation will be the responsibility of the developer or their appointed management company until such time that the drainage is adopted by the appropriate authority. A typical maintenance schedule can be seen in Appendix E.

4.0 Description of the existing site

4.1 Site Location

The site is located off Cefn Road, Erlas Park, Wrexham. The site grid reference is SJ 35608 50760 and the closest postcode is LL13 9TT. The 40.27-hectare site is predominantly greenfield / farmland and is bounded on the east and south by further farmland. There is also a small commercial area located at the center of the southern boundary which consists of container storage, a canoe company and a playground equipment supplier. The northern boundary is partly bounded by Brynestyrn Road, with residential properties opposite the carriageway. The remaining north boundary is enclosed by Wrexham Rugby Club's clubhouse and sports pitches. The western boundary is bounded by Cefn Road, with residential properties opposite the carriageway.

A site location can be seen on the masterplan in Appendix A.

SITE DESCRIPTION	
Total Site Area	Approx 40.27 Ha
Existing Impermeable Area	None
Land use	Farming and recreational sports.
Topography	There is a high point within the central area of the site approx. 82.000m AOD. From here existing ground generally falls from northwest to southeast to a low level of approx. 56.000m AOD. A 5.5Ha catchment to the northwest of the development falls from west to northeast. This land falls from 81.500m down to 77.500m AOD. The southwest area of the site falls inwards towards the centre of this area. 82.000m AOD at the site central highpoint, 80.000m at the southeast boundary and 78.000m. From these points the existing ground falls into the site to multiple low points in the range of 74.000m to 76.000m AOD.
Known Site Constraints	Existing 1050mm diameter Welsh Water combined sewer. Existing 150mm diameter Welsh Water Foul Sewer Various ecological and arboricultural constraints.

A topographical survey can be seen in Appendix B.

4.2 Existing Drainage

The law regarding responsibility for drains and sewers changed on the 1st October 2011. On this date, the Government transferred the majority of drainage pipes that are either outside a property's boundary or are shared with other buildings to the sewage/water companies. However, not all transferred sewers may be shown on the sewer records.

There is a known Welsh Water 1050mm diameter combined sewer which runs through the centre of the development, flowing north to south. This sewer runs from the northwest of the site, entering from Brynestyn Road, running south through land between the development site and Wrexham Rugby Club before turning southwest, running through the site and leaving the site west of Wrexham Container storage.

There is also a known 150mm diameter foul sewer which runs through the northwest section of the site. This foul sewer runs from Thornleigh, flowing across the site into Brynestyn Road.

There are no known surface water sewers located within the development area.

A copy of the existing drainage can be seen in Appendix B.

5.0 Hydrology, hydrogeology and geology

5.1 Hydrology

There are no known watercourses within the development area. The closest named watercourses are Redwither Brook located 672m southeast of the development. There are a number of un-named water courses east of the development with the nearest possible un-named watercourse located southeast of the site, outside of the development boundary. This is picked up as a drain on the Ordinance Survey tile and presence is indicated on the surface water flood maps. This drain / watercourse is located approximately 180m from the development southeast boundary, and 415m from the proposed infiltration basins. This watercourse is a potential point of surface water outfall should infiltration prove unsuitable for the site. An assessment of the existing overland flows has been undertaken which suggests 22.6Ha of the proposed site overland flows make their way into this drain.

A copy of this assessment plan can be seen in Appendix C.

5.2 Hydrogeology

DEFRA's 'Magic' online mapping[1] indicates that the site is not situated within a groundwater Source Protection Zone (SPZ) and is sited approximately 500m west of the SPZ.
The British Geological Survey maps indicate that the hydrogeology for much of the site to be Warwickshire Group, a moderately productive aquifer. The BGS maps also shows that immediately east of the development is Permian Rocks which is a highly productive aquifer.

5.3 Soil

DEFRA's 'Magic' online mapping does not display any soil data for the proposed site, however, indicates that ground east of the site is underlain mainly by a mix of 'slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils' and 'freely draining slightly acid sandy soils'.

5.4 Geology

The British Geological Survey's (BGS) online mapping[2] shows the site's bedrock geology is 'Salop Formation - Mudstone, sandstone and conglomerate. BGS online mapping also shows the superficial geology to be predominantly 'Glaciofluvial Sheet Deposits, Devensian - Sand and gravel'. There is a small section of the site located to the west of the site which is 'Till, Devensian – Diamicton'.

[1] DEFRA (2019), *Magic*
[2] British Geological Survey (2019), *Geology of Britain viewer*

6.0 Proposed development

6.1 Development Outline

The proposed development consists of phased residential development for the construction of up to 900 residential dwellings with associated infrastructure (playing fields, open space and SUDs attenuation with all matters reserved except for detailed means of primary highway access. The indicative masterplan which can be viewed in Appendix A details the position of these features.

6.2 Proposed Surface Water Drainage Strategy

The proposed drainage strategy looks to follow the hierarchical approach being;

- Infiltration
- Discharge to Surface Waters (i.e. watercourse)
- Discharge to a surface water sewer, highway drain or another drainage system
- Discharge to a combined sewer.

Infiltration testing contained within the 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002 completed by Hydrock indicates that infiltration is viable for the site which complies with the first tier of the drainage hierarchy. An extract of this report detailing the infiltration rates can be seen in Appendix B.

The proposed drainage will be designed to drain by gravity into four large infiltration basins strategically located around the boundary of the development and for drainage purposes the development has been split into four catchments. The surface water flows from these housing catchments will benefit from a free discharge into the various basins which have been sized based on an infiltration rate taken from the closets test point. This varies from $3.80x10^{-5}$m/s to $8.88x10^{-6}$ m/s. Further testing is recommended to be completed at the proposed location of each basin which will be used to inform the detailed design. The SuDS features for the development are to be designed in line with 'Statutory Standards for Sustainable Drainage Systems – designing, constructing, operating and maintaining surface water drainage systems' and in accordance with the latest CIRIA guidance, depth of water to not exceed 1.5m depth and 300mm freeboard above the top water level during the 1in100yr +CC storm event is to be provided.

Roadside swales or rain gardens are proposed to all available verge areas next to the highway, this is to offer a level of treatment prior to discharging into the large basins. Private roads and drives could be permeable asphalt or permeable block paving to allow infiltration into the ground and lower reliance on the large primary infiltration basins.

The proposed drainage strategy drawings state the modelled data for each infiltration basin showing the half drain down time and modelled spare capacity within the basin, below the freeboard allowance. The hydraulic calculations appended to this report assume that the only infiltration for the site will be via these basins offering a worst-case assessment for flood risk purposes. However, a further analysis of the basins has been carried out to demonstrate the potential betterment to the half drain down time should all private roads and parking be permeable. This is shown on the drainage strategy drawings.

A new sports pitch is to be provided to the north of Catchment 2. The drainage to this pitch will be designed to National Sports standards which will consist of perforated pipes with stone surround below the sports pitch which will collect the surface water runoff and direct into the drainage network before disposal into the infiltration basin.

A copy of the drainage strategy drawings can be viewed in Appendix C

Further testing is recommended at the specific locations of the proposed infiltration structures to confirm actual infiltration rates and groundwater levels. Should this testing determine that infiltration is no longer viable then the next stage will be to discharge to the nearest watercourse.

This design philosophy has been discussed during early consultation with Wrexham County Borough Council. The council response states that infiltration should be used for the development, but should this not be viable, discharge to the watercourse is acceptable.

A copy of this correspondence can be seen in Appendix D.

6.3 Hydraulic Calculations

The drainage strategy described above in section 6.2 has been hydraulically modelled using Infodrainage. The surface water network for the development has been designed to the hydraulic standards of the Sewer Sector Guidance, these being:

- No surcharge of pipes for the 1 in 2-year storm return period.
- No flooding for the 1 in 30-year storm return period.
- Road, roofs and private hard standing areas have 100% impermeability (run-off coefficient) and full contribute to the flows in the surface water network.

The volumetric run-off values for both the summer and winter simulations have been set to 1.

A copy of the hydraulic results can be seen in Appendix C.

6.4 Foul Drainage

Foul flows will discharge into the existing Welsh Water combined sewer which runs through the central area of the site. Where possible this will be done via gravity however, due to the site topography there will be a requirement to pump a portion of the development foul effluent. Foul drainage will drain to an adoptable pump station located to the east of the site and then be pumped to the WW combined sewer. It is anticipated this pumpstation will service approximately 256 units generating a peak flow rate of 11.85 l/s. This is based on 4000 litres per dwelling per day taken from Sewer Sector Guidance – Codes for Adoption. The remaining 644 units will drain via gravity to the existing Welsh Watr Combined sewer.

Connection into the existing sewer will be subject to agreement with Welsh Water under Section 106 of the Water Industry Act 1991.

Welsh Water have completed a hydraulic capacity assessment on their existing combined sewer. This assessment concluded that there was insufficient capacity to receive new flows, and additional drainage measure would need to be installed to facilitate the development. This assessment considered the implications of connecting 1100 dwellings which is considerably higher than the 900 units proposed for the development. The proposed combined water storage proposed by Welsh Water is to third party land not part of this development. A new hydraulic assessment which considers the actual development buildout number and a proposal to have the attenuation on site is to take place.

A copy of the correspondence with Welsh Water can be seen in Appendix D.

There is also an existing 150mm diameter foul sewer located to the northwest of the development which presents a constraint to the housing in this area. It is proposed to divert this sewer along the western boundary and connect it back into the public sewer located in Brynestyn Road. Diversion of this sewer will be subject to agreement with Welsh Water under Section 185 of the Water Industry Act 1991.

6.5 Sustainable Drainage Systems (SuDS) and Water Quality

Sustainable Drainage Systems (SuDS) have the ability to address four core objectives: water quantity, water quality, amenity and biodiversity. In accordance with the Planning Policy Wales, Statutory Standards for Sustainable Drainage Systems – designing, constructing, operating and maintaining surface water drainage systems' and the SuDS Manual (CIRIA 753), SuDS should be specified wherever possible to manage surface water runoff generated onsite.

Consideration should therefore firstly be given to using sustainable drainage (SuDS) techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands to reduce flood risk by attenuating the rate and quantity of surface water runoff from a site. This approach can also offer other benefits in terms of promoting groundwater recharge, water quality improvement and amenity enhancements. Approved document Part H of the Building Regulations (2015) sets out a hierarchy for the disposal of surface water which encourages a SuDS approach.

The order of priority according to the SuDS Manual, lists that surface water runoff that is not collected for use should follow in this order.

- Infiltration
- Discharge to Surface Waters (i.e. watercourse)
- Discharge to a surface water sewer, highway drain or another drainage system
- Discharge to a combined sewer.

SuDS are widely accepted as an alternative approach to managing rainfall than traditional drainage systems. They help create interesting places to learn, beautiful spaces and places for people and wildlife. It also helps to reduce the risk of waterlogging, local flooding, and water pollution. Developers are encouraged to incorporate SuDS for all developments where possible.

TECHNIQUE	DESCRIPTION	SuDS FEATURE	FEASIBILITY Y / N / M (MAYBE)
Porous and pervious surface materials	Structural surfaces that allow water to penetrate, thus reducing the amount of runoff that is conveyed to the drainage system	Permeable or pervious surfaces	M - Permeable block paving may be suitable for use to private drives and roads.
Infiltration Systems	Elements that facilitate the infiltration of water into the ground. These often include temporary storage areas which allow water to slowly soak into the soil	Infiltration Drain and Basins	Y – Infiltration Basins and Soakaways are proposed within the drainage strategy.
Conveyance Systems	Elements which convey flows to downstream storage	Swales and watercourses	M – Subject to final design levels and available space, swales and/or rain gardens will be used to receive and convey proposed highway drainage.

The surface water discharge train has been assessed in line with the SuDS manual tables 26.2 and 26.3 and scored accordingly. The provisions are detailed below:

LAND USE	POLLUTION HAZARD	TOTAL SUSPENDED SOLIDS (TSS)	METALS	HYDROCARBONS
Individual property driveways, residential carparks, low traffic roads (e.g. cul de sacs, homezones and general access road) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. <300 traffic movements/day	Low	0.5	0.4	0.4

Pollution hazard indices for land use classification taken from CIRA SuDS manual Table 26.2

Type of SuDS Component	TOTAL SUSPENDED SOLIDS (TSS)	METALS	HYDROCARBONS
Infiltration / Detention Basin	0.5	0.5	0.6
Swale / Raingarden	0.5	0.6	0.6
Aggregated Surface water Pollution Mitigation index	**0.75**	**0.8**	**0.9**

Indicative SuDS mitigation indices for discharges to surface water taken from CIRA SuDS manual Table 26.3

From the above tables it can be seen that the proposed SuDS mitigation features will be sufficient to effectively treat surface water runoff from the development prior to connecting into the existing watercourse or infiltrating to ground.

7.0 Flood risk sources and extents

7.1 Summary

A summary of the sources and level of flood risk (negligible, low, medium or high) is given in Table 7.1 below.

SOURCE	RISK LEVEL
Fluvial	Very Low
Tidal - Coastal	Very Low
Surface Water / Pluvial	Very Low
Groundwater	Low to Moderate
Surcharged Sewers	Very Low
Other Man-Made Sources	Very Low

The sources and level of flood risk are demonstrated below.

7.2 Flood Zone Definitions

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Natural Resource Wales Flood Map for Planning (Rivers and Sea), available on NRWs web site, as indicated in the table below.

FLOOD ZONE	DEFINITION
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

7.3 Fluvial

Fluvial flooding is when a river is surcharged and can happen when water exceeds the riverbanks in low lying land. Natural Resources Wales have created Flood Map for Planning using national generalised modelling to identify the level of risk for new developments against fluvial flooding. The model is routinely updated and revised using the results from catchment studies, topographical surveys and hydrological and/or hydraulic modelling as well as previous flood events.

Flood defences can be installed to protect vulnerable areas by forcing the water to overflow into less desirable areas. Whilst flood defences reduce the level of risk, they don't completely remove it as they can be overtopped or fail due to extreme weather or poor maintenance, therefore the Natural Resources Wales website 'Risk of flooding from Rivers and Sea' map does not take into account the presence of any flood defences.

The proposed development is situated in Flood Zone 1

Flood Zone 1 shows land having a less than 1 in 1,000-year annual probability of river flooding (<0.1% AEP), i.e., where flooding from rivers and the sea is very unlikely.

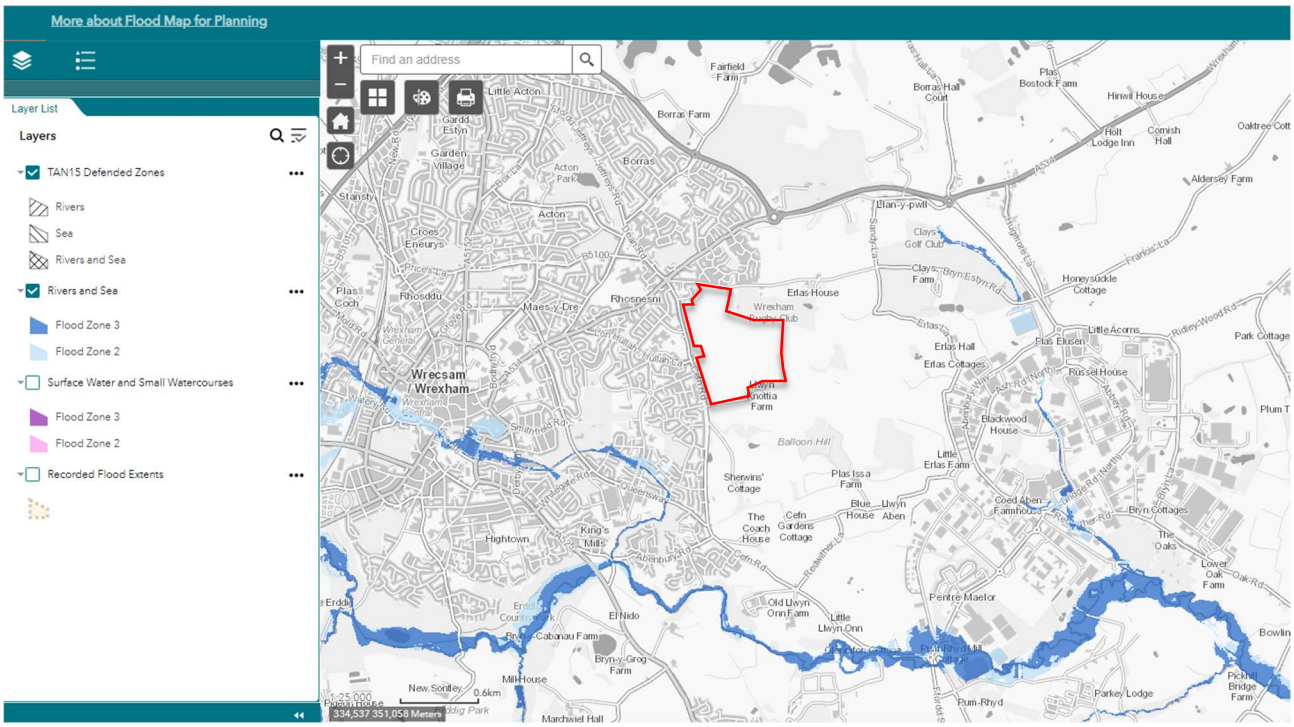


Figure 7-1: Natural Resource Wales Fluvial Flood Risk (January 2024)

7.4 Tidal

Tidal Flooding is the temporary flooding of coastal areas during exceptionally high tides or storm surges. The risk of tidal flooding can happen at any time and is not solely as a result of a rainfall event. The Welsh government guidance 'Flood Consequences Assessments: Climate Change Allowances' Table 3, estimates that there is an increase of sea levels between 0.8m and 1.33m across the country by year 2120.

The site is a considerable distance from the coast, approx. 21km to the River Dee estuary. The River Dee is a tidal river and the NRW flood map indicates flooding caused by the sea occurs 5km east of the proposed development. The risk of tidal flooding is considered to be very low.

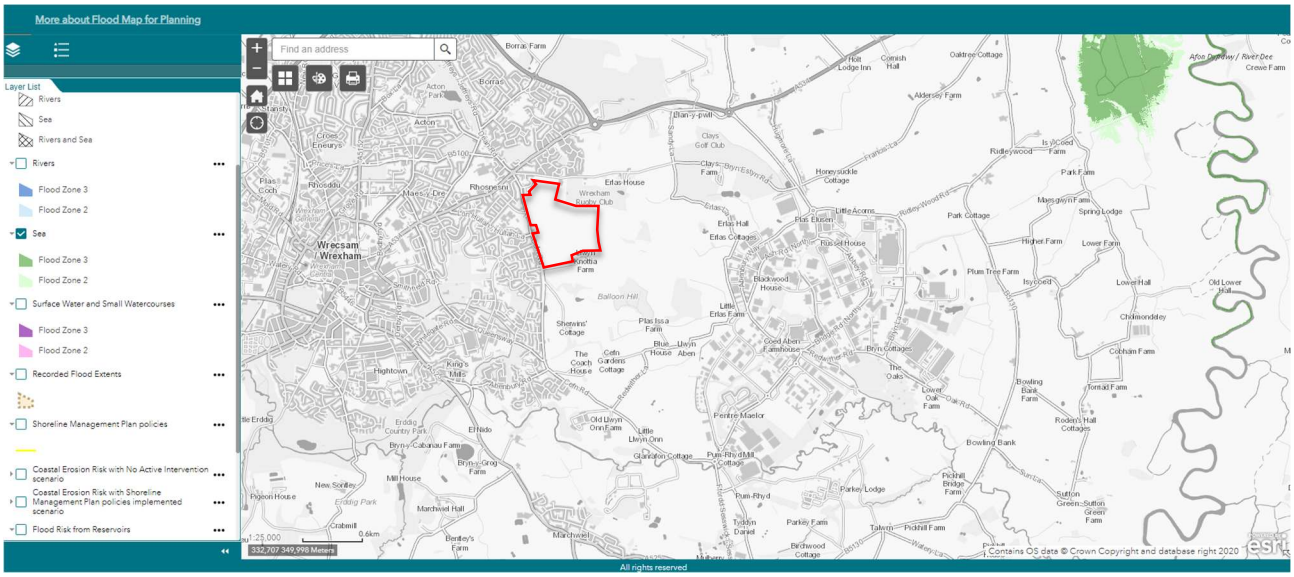


Figure 7-2: Natural Resource Wales Tidal / Sea Flood Risk (January 2024)

7.5 Surface Water / Pluvial

When the infiltration capacity of land or the drainage capacity of a local sewer network is exceeded, excess rainwater flows overland. This water will collect in topographical depressions and at obstructions, which can inundate development in low lying areas. The severity of the rainfall event, the degree of saturation of the soil before the event, the permeability of soils and geology, and the gradient of the surrounding land and it's use; all contribute to and affect the severity of overland flow.

Natural Resources Wales planning flood map for Surface Water can be used to see the approximate areas that would experience surface water flooding from a range of AEP's. Surface water flood risk mapping shows that the site is in general at very low risk of pluvial flooding. There are isolated areas of flooding caused by natural depressions in the existing ground profile.

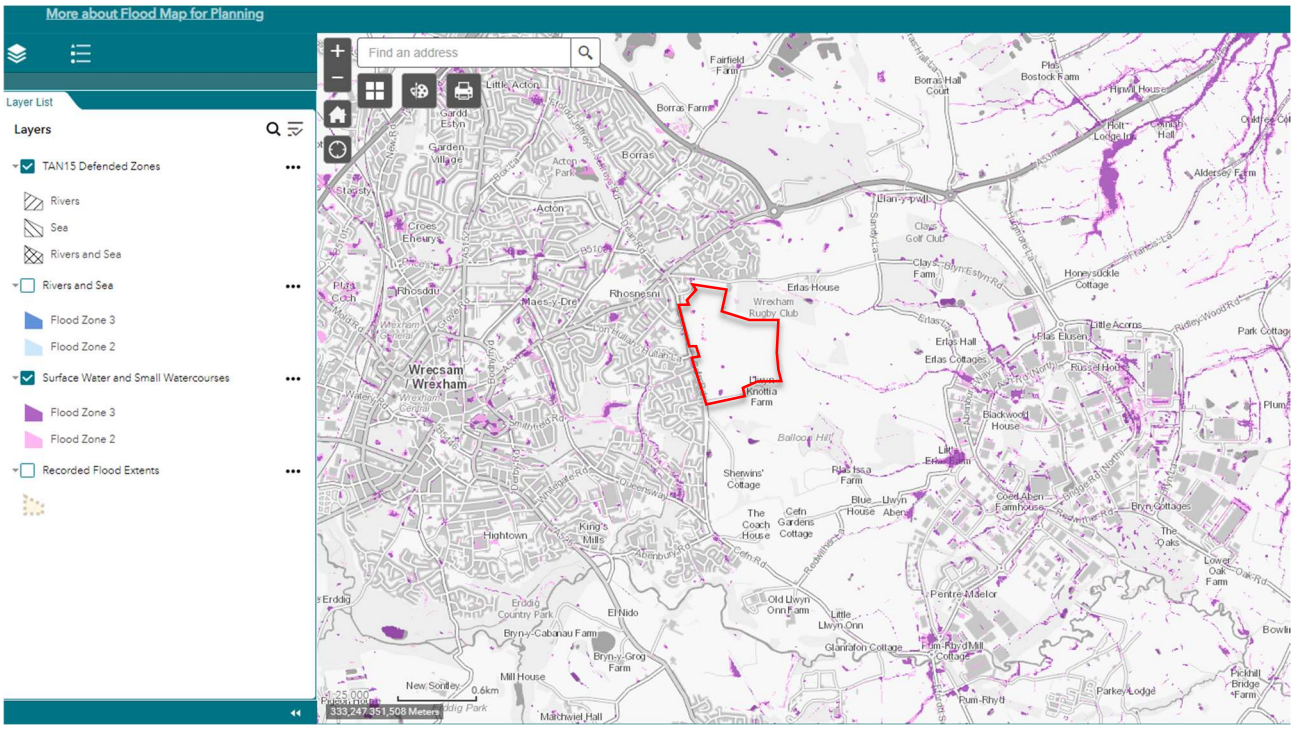


Figure 7-3: Natural Resource Wales Surface Water and Small Watercourse Flood Risk (January 2024)

7.6 Groundwater Flooding

Groundwater flooding can occur when groundwater levels rise above ground surface levels. The underlying geology has a major influence on where this type of flooding takes place; it is most likely to occur in low lying areas underlain by permeable rocks (aquifers).

The site presents a low to moderate risk of groundwater flooding.

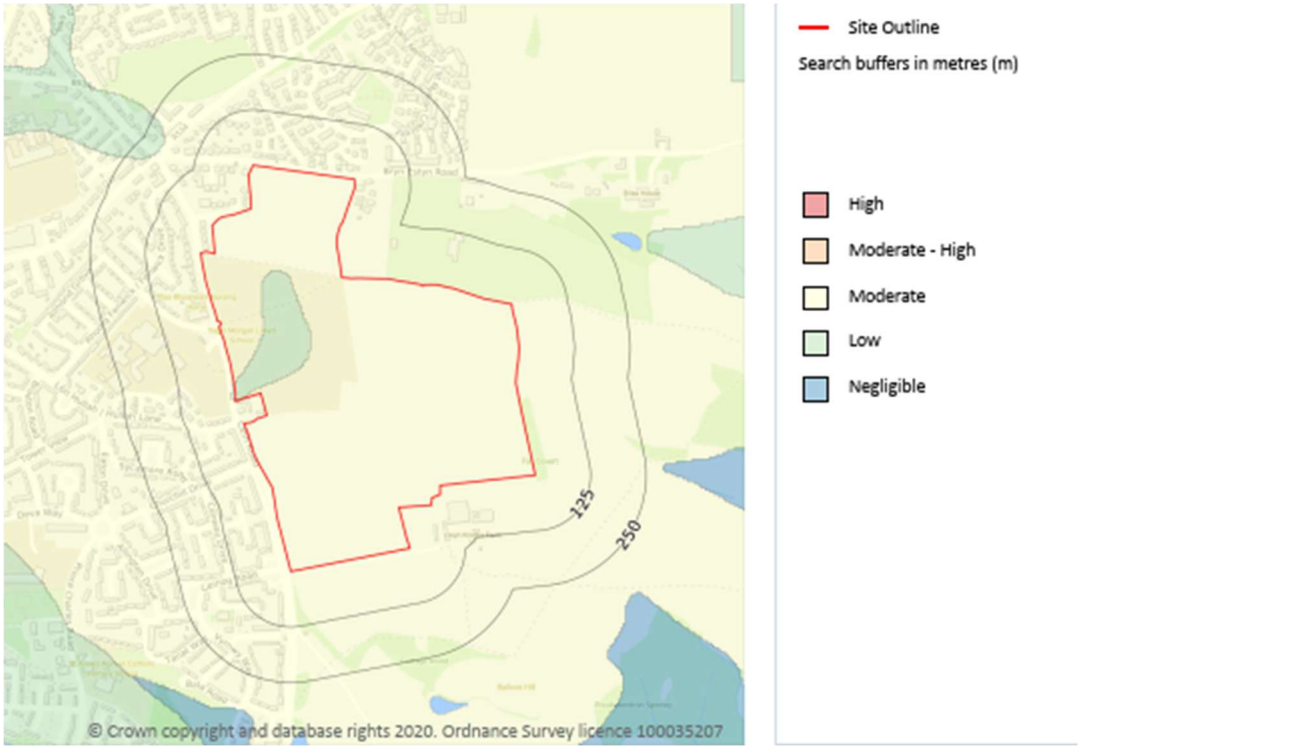


Figure 7-4: Groundwater flood risk map extracted from Hydrock 'Ground Condition Dest Study Report' (January 2024)

7.7 Surcharged Sewers

Sewer and surface water flooding are often interconnected; insufficient drainage capacity in the sewer network can result in extensive surface water flooding and, by the same rationale, large volumes of surface water can overload the public sewers, causing the sewer network to back up, surcharge and ultimately flood.

Adopted sewerage is the responsibility of the statutory sewerage undertaker and therefore beyond the influence of this design.
There is a large 1050mm diameter combined public sewer which runs through the development site, however there are no known flooding issues caused by surcharging of the network.

7.8 Other Man-Made Sources

Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures. The Reservoir Act defines a large reservoir as one that holds over 25,000 cubic metres of water. According to the Natural Resource Wales flood mapping the site is not at risk of reservoir or canal flooding.
There are no known canals in close proximity to the proposed site.
The nearest reservoir is Marchwiel Reservoir, located approximately 1.5km south of the proposed development.
Natural Resources Wales flood map shows flooding from this reservoir however the distance from the site and the extent of the flooding put the development at a 'Very Low' risk of flooding.
Flood risk from artificial sources can therefore be considered 'Very Low'.

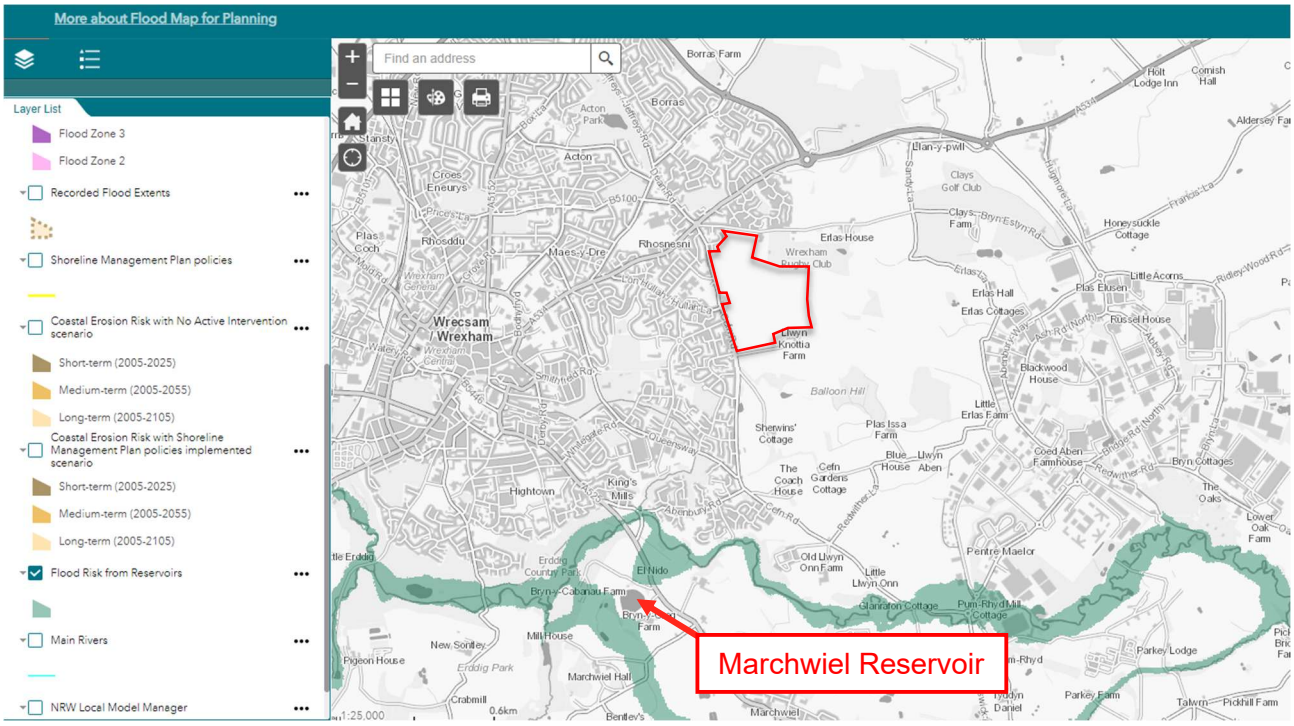


Figure 7-5: Natural Resource Wales Flood Risk from Reservoirs (January 2024)

7.9 Vulnerability

Defining or classifying flood risk vulnerability helps to determine the viability of a new development this also helps to understand if any additional considerations should be taken into account during future drainage strategy designs.

Assessing the vulnerability classifications below the proposed development can be considered

'more vulnerable' and is appropriate within Flood Zone A.

VULNERABILITY CLASSIFICATION	TYPE OF DEVELOPMENT
Essential Infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable	• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable	• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

FLOOD ZONES	**FLOOD RISK VULNERABILITY CLASSIFICATION**				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate.

✗ Development should not be permitted.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.
” * “ In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

The change in classification can be mitigated through the design of the surface water network to be compliant with the criteria set out in codes for adoption, this being;

- No surcharging of pipes for the 1 in 2-year storm return period.
- No flooding of pipes for the 1 in 30-year storm return period
- Roads, roofs and private hard standing areas have 100% impermeability (run-off coefficient) and fully contribute to flows in the surface water networks.

The proposed infiltration basins will be sized to provide attenuation for the 1 in 100-year storm with a 40% allowance for climate change. 300mm freeboard above this top water level.

Finished floor levels for the development can be set 150mm above surrounding ground levels.

7.10 Sequential Test

The Sequential Test aims to steer developments and redevelopments to areas of lower flood risk. The test compares the proposed development site with other available sites, in terms of flood risk, to aid the steering process.

The developed parts of the site all lie within flood zone 1 and is in the most sequentially preferable location.

7.11 Exception Test

As the development passes the sequential test, the exception test is not required.

7.12 Climate Change

Welsh government guidance on climate change allowances indicates that climate change is likely to have an impact on river flows, sea levels, rainfall intensity, wave height and wind speed. Therefore, the risk of flooding is likely to increase in the future.

PARAMETER	2015 - 2039	2040 - 2069	2070 - 2115
Peak Rainfall Intensity	10%	20%	40%
Peak River Flow	25%	40%	70%

The outputs of the UK Climate Projections climate change scenarios are indicative of a shift towards wetter winters over the whole of England by as much as 20% by the 2050's (Murphy et al, 2009). We can infer from this correlation that wetter winters will occur throughout Wales. Shifts in seasonal patterns of rainfall are also expected, with summer and autumn becoming much drier than at present. Snowfall amounts are anticipated to decrease significantly throughout the UK, but the number of rain-days and the average intensity of rainfall are expected to increase.

Adept Consulting Engineers will apply a climate change factor of 40% where required.

7.13 Design Consideration and Flood Mitigation

Finished floor levels to be a minimum of 150mm above external ground levels. The proposed infiltration basins to be designed in accordance with guidance set out in the CIRIA SuDS manual. This includes the provision of a 300mm minimum freeboard above the top water level for the 1:100yr storm plus 40% climate change.

8.0 Communications

Discussions with the Lead Local Flood Authority - Wrexham County Borough Council.
Discussions with Sewerage Undertaker – Welsh Water

A summary of the correspondence is detailed below;

CONSULTEE	DATE	SUMMARY
Wrexham County Borough Council - LLFA	08/01/2024	Pre-Planning – Confirmation of SAB requirements and guidance and preference on drainage philosophy.
Welsh Water	08/02/2024	Pre-Planning – Surface Water not to connect to existing Sewer. Confirmation of Surface Water adoption body.
Welsh Water	12/07/2024	Adept queries and clarification requests relating to Hydraulic Modelling Assessment.
Welsh Water	23/08/2024	Welsh Water confirmation that a further hydraulic assessment will be conducted.

9.0 Conclusions

9.1 Existing Drainage

- There are no existing surface water sewers on site.
- There is an existing 1050mm diameter combined sewer which runs through the proposed development from north to south.
- There is an existing 150mm diameter foul sewer to the northwest of the development running west to east.

9.2 Proposed Drainage Strategy

- Surface water drainage has been split into 4 catchments. Each catchment drains by gravity to its own infiltration basins.
- A new sports pitch will utilise a gravity drainage system designed to national sport standards which drains in the primary infrastructure to catchment 2.
- Proposed infiltration basins and soakaways have been sized based on the test findings within the 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002 completed by Hydrock.
- The existing 150mm diameter foul sewer to the northwest of the development which will be diverted under a S185 agreement under the Water Industry Act 1991.
- Rain Gardens, Swales and permeable paving to be incorporated whenever possible across the site.
- Where possible foul drainage will drain by gravity into the existing 1050mm diameter combined sewer.
- Approximately 256 units generating a peak flow rate of 11.85 l/s will require pumping into the existing combined sewer.
- All connections into the existing public sewer subject to S106 agreement with Welsh Water under the Water Industry Act 1991.
- Welsh Water have confirmed additional drainage measures are required to facilitate the proposed development foul draining into the public sewer.

9.3 Flood Risk

- Fluvial flood risk for the development is 'Very Low'.
- Tidal / coastal flood risk for the development is 'Very Low'.
- Pluvial flood risk for the development is 'Very Low'.
- Groundwater flood risk for the development is 'Low to Moderate'.
- Surcharged sewers present a 'Very Low' flood risk for the development.
- Reservoir flood risk for the development is 'Very Low'.

9.4 Recommendations for further work/investigation and obtaining agreement.

- Infiltration testing at the location of the proposed basins and soakaways to confirm actual infiltration rates.
- Groundwater monitoring at the location of the proposed basins and soakaways to confirm seasonal groundwater levels.

Appendix A

- Proposed Architectural Site Plans

TTE_UD_v2



Aerial image: © Google Earth 2022

TETRA TECH

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KEY

- Site boundary
- KSS2 boundary
- Proposed residential parcel
- Proposed sports pitches
- Proposed public open space
- Retained tree / hedgerow
- Proposed planting
- Indicative proposed SuDS
- Wildlife corridor
- Proposed primary access
- Proposed secondary access
- Proposed spine road with green verge*
- Proposed road network
- Road feature / traffic calming
- Placemaking / gateway feature
- Existing / potential play space
- Pedestrian / cycle link
- Retained Public Right of Way (PRoW)
- Retained / proposed pedestrian / cycle route
- Existing cycle route

Position of link to remaining KSS2 to be determined

Document control

P06	Updated masterplan to reflect drainage strat and T.constraints	25.11.24	EI	AC	AC
P05	Updated masterplan to reflect new drainage strat	12.11.24	EI	AC	AC
P04	Red boundary update	12.03.24	LR	BR	AC
P03	Updated parcels	27.02.24	BR	BR	AC
P02	Updated masterplan based on technical updates	02.02.24	BR	AC	AC
Rev	Description	Date	Dwn	Chk	App

Erlas Park Wrexham
Harworth Group

STRATEGIC MASTERPLAN

TTE Proj No	Drwn | Date	Checked | Date	Appr'd | Date	Scale @ A3	Suitability
B024030	EI | Nov '24	AC | Nov '24	AC | Nov '24	1:5,000	S0

Client Proj No	Originator	Vol/System	Level/Location	Type/Code	Role	Number	Revision
-	TTE	00	XX	DR	UD	40	P06

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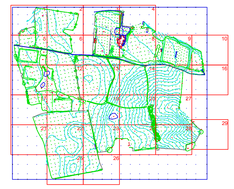
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Appendix B
Existing Services

- Topographical Survey

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BHL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
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CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
CR	CYCLE RACK	RP	REFLECTIVE POST
CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
CUL	CULVERT	RTW	RETAINING WALL
DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

INDUSTRY STANDARD TECHNIQUES HAVE BEEN USED IN THE LOCATION OF UNDERGROUND SERVICES. THE RESULTS ARE NOT INFALLIBLE AND TRIAL EXCAVATIONS MUST BE CARRIED OUT TO CONFIRM SERVICE IDENTIFICATION, POSITION AND DEPTHS.

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ALL REASONABLE EFFORT HAS BEEN MADE IN OBTAINING SEARCHING AVAILABLE RECORDS, HOWEVER THE COMPLETENESS OF UNDERGROUND SERVICE INFORMATION SUPPLIED CANNOT BE GUARANTEED

A Abandoned
AD Acid drain
BT British telecom
TV Cable TV
CA Communications Cable
C Sewer combined
S Sewer surface water
F Sewer foul
D Ducting
E Electric cables
EL Electric Line
FO Fuel line
GA Fuel gauge line
FR Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
W Water (Mains)
Water (General)
U Unidentified
R Rising main
Soil Soil trace
A Alarm cables
CW Chilled water
Chemical pipes
Compressed air pipes
Culvert
Sewer combined overflow
Electric HV cables
Electric pilot cables
Fibre optic
Fibre optic cables
LPG LPG pipes
Oil Oil pipes
Sludge Sludge main
Telemetry Telemetry cables
Vehicle detection loop
Wash Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTROMAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX. DEPTH TO CENTRE (CENTRE)	APPROX. DEPTH TO INVERT (INVERT)	APPROX. DEPTH TO CENTRAL CROWN
CABLE/PIPE OPTIC		

(AC) ASSUMED CONNECTION	Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.
(BAL) BALANCE CUVE	
(BK) BACK DROP PIPE	
C# CABLE DEPTH	Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.
CL CABLE SIZE	
D# DEPTH OF SERVICE (APPROX)	
(E) ELECTRICITY	Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.
(ELT) ELECTRONICALLY TRACED	
(EOT) END OF TRACE	The diagram above describes the depth information in more detail
(I) INVERT LEVEL	
(INVT) INVERT LEVEL	Where the precise position or depths of these features are critical to the design or elsewhere they must be verified by the use of trial excavations.
HV HIGH VOLTAGE	
(M) MANHOLE	
LV LOW VOLTAGE	Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.
(NFI) NO FURTHER INFORMATION	
(NT) NOT TRACEABLE	The CAD layering may contain further information.
PD PIPE DEPTH	
PL POLYETHYLENE	Services shown as Taken From Records (TFR) have not been proved on site.
S# SIZE	
SL SUMP LEVEL	
(UTL) UNABLE TO LIFT	
(UTS) UNABLE TO SURVEY	
(UTT) UNABLE TO TRACE	
WD WAY DUCT	

REV	DESCRIPTION	BY	CHK	APP	DATE
1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

Drawing Title:

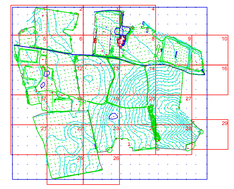
Topographical Survey

Sheet 1 of 29

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Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T001	0

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
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BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
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BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
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SCALE FACTOR: 0.99965274

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AD Acid drain
BT British telecom
CTV Cable TV
CAB Communications Cable
S Sewer combined
SS Sewer surface water
SF Sewer foul
D Ducting
EL Electricity cables
EP Effluent pipes
F Fuel line
FG Fuel gauge line
FV Fuel vent line
G Gas pipes
H Heating pipes
HV High voltage cables
HydM Hydrol Machinery
W Water pipes
U Unidentified
RM Rising main
SM Slow main
AC Aerial cables
CCTV CCTV cables
CH Chemical pipes
CA Compressed air pipes
CUL Culvert
SO Sewer combined overflow
EHV Electric HV cables
ELV Electric LV cables
E Earth cables
FO Fibre optic cables
LPG LPG pipes
OP Oil pipes
SM Sludge main
TM Telemetry cables
TRL Traffic light inductive loop
WM Wash water pipes
End of trace
Group of services representation
TFR Taken from records (Not proven on site)
AR Assumed route
Site services boundary

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APROX. DEPTH TO CENTRE (MIDDLE)	APROX. DEPTH TO INVERT (BASE)	APROX. DEPTH TO EXTERNAL CROWN
CABLE/FIBRE OPTIC		

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
BC	BACK OF CHANNEL
CD	CABLE DEPTH
CT	CAST IRON
DS	DEPTH OF SERVICE (APPROX)
DU	DUCT DEPTH
(ET)	END OF PARTIALLY TRACED
(EoT)	END OF TRACE
H	INVERT DEPTH
HP	HIGH PRESSURE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LP	LOW PRESSURE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PC	PIPE CROWN
PL	POLYETHYLENE
SI	SUMP DEPTH
TC	TOP OF CHANNEL
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(WT)	WATER TIGHT MANHOLE
WD	WAY DUCT

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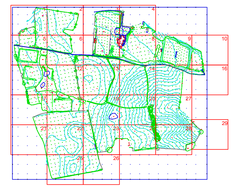
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CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
CR	CYCLE RACK	RP	REFLECTIVE POST
CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
CUL	CULVERT	RTW	RETAINING WALL
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DL	DECK LEVEL	SC	STOP COCK
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DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

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ALL REASONABLE EFFORT HAS BEEN MADE IN OBTAINING SEARCHING AVAILABLE RECORDS, HOWEVER THE COMPLETENESS OF UNDERGROUND SERVICE INFORMATION SUPPLIED CANNOT BE GUARANTEED

A	Abandoned
AD	Acid drain
BT	British telecom
CTV	Communications Cable
C	Sewer combined
SW	Sewer surface water
F	Sewer foul
D	Ducting
ED	Electricity cables
EF	Effluent pipes
FT	Fuel line
FG	Fuel gauge line
FV	Fuel vent line
GAS	Gas pipes
H	Heating pipes
HV	High voltage cables
HM	Hydrol Machinery
W	Water pipes
U	Unidentified
R	Rising main
SD	Star main
TC	Telephone cables
CCTV	CCTV cables
CH	Chemical pipes
AC	Compressed air pipes
CU	Culvert
CO	Sewer combined overflow
EV	Electric HV cables
LV	Electric LV cables
E	Earth cables
FO	Fibre optic cables
LPG	LPG pipes
OP	Oil pipes
SL	Sludge main
TY	Telemetry cables
TV	Television cables loop
WW	Wash water pipes
	End of trace
	Group of services representation
TFR	Taken from records (Not proven on site)
AR	Assumed route
	Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	CAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APROX. DEPTH TO CENTRE CABLE/PIPE OPTIC	APROX. DEPTH TO INVERT	APROX DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
(C)	CABLE CENTRE
CD	CABLE DEPTH
CT	CAST IRON
D	DUCT DEPTH
DS	DEPTH OF SERVICE (APPROX)
DT	DUCT DEPTH
(ET)	ELECTRICALLY TRACED
(EoT)	END OF TRACE
H	INVERT DEPTH
HV	HIGH VOLTAGE
LD	LAND DRAIN
(M)	MEASURED
(NF)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
P	PIPE DEPTH
PL	POLYETHYLENE
SP	SUMP DEPTH
(TL)	TRACED LIVE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VT)	VERIFIED TRACE
WD	WAY DUCT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

To fine the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.

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3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

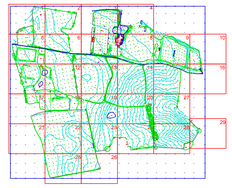
Drawing Title:

Topographical Survey
Sheet 3 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T003	0

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BxL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
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NATIONAL GRID.

SCALE FACTOR: 0.99965274

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- A — Abandoned
- AD — Acid drain
- BT — British telecom
- TV — Cable TV
- C — Communications Cable
- S — Sewer combined
- SW — Sewer surface water
- F — Sewer foul
- CU — Ducting
- E — Electric cables
- EF — Effluent pipes
- F — Fence
- FG — Fuel gauge line
- F — Fuel vent line
- G — Gas pipes
- H — Heating pipes
- TL — Traffic light cables
- VR — Vapour recovery
- W — Water pipes
- U — Unidentified
- R — Rising main
- B — Soar trace
- A — Alarm cables
- CCTV — CCTV cables
- C — Communal cables
- C — Compressed air pipes
- CU — Culvert
- SO — Sewer combined overflow
- HV — Electric HV cables
- LV — Electric phd cables
- EA — Earth cables
- ET — Electric traffic cables
- LPG — LPG pipes
- OP — Oil pipes
- SL — Sludge main
- T — Telemetry cables
- VD — Vehicle detection loop
- W — Wash water pipes
- End of trace
- Group of services representation
- Taken from records (Not proven on site)
- Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION — APPROX DEPTH TO BURIED SERVICE — CABLE/FIBRE OPTIC

GRAVITY DRAIN (TOUR) OBSERVATIONS — APPROX DEPTH TO BURIED SERVICE

GROUND PENETRATING RADAR — APPROX DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(ARC)	ASSUMED ROUTE
CL	CABLE LENGTH
CD	CABLE DEPTH
CI	CAST IRON
D	DIAMETER
E	DEPTH OF SERVICE (APPROX)
DD	DUCT DEPTH
(DUCT)	DUCT GENERALLY TRACED
(EoT)	END OF TRACE
M	INVERT DEPTH
PE	POLYETHYLENE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PVC	PVC PIPE
PE	POLYETHYLENE
M	SUMP DEPTH
(TBR)	TO BE RAISED
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VT)	VISIBLE TRACE
WD	WAY DUCT

Where services are non-metallic or not proven on site, positions are shown from measurements taken & surface features.

Where services run in trench inclination is to the centre or top of the service. Depths to gravity sewers and culverts are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or sitework they must be verified by the use of trial excavations.

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3 SOVEREIGN SQUARE
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LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
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Project:

Cefn Park

Drawing Title:

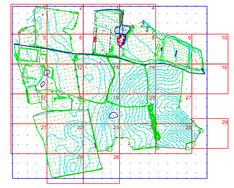
Topographical Survey

Sheet 4 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T004	0

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SURVEY LEGEND

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SCALE FACTOR: 0.99965274

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- End of trace
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- TFR — Taken from records (Not proven on site)
- AR — Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	DIRECTLY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX DEPTH TO SERVICE	APPROX DEPTH TO INVERT	DEPTH TO EXTERNAL CROWN
CABLE/FIBRE OPTIC		

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
CAB	CABLE DEPTH
CI	CAST IRON
CL	CONCRETE LINE
D	DEPTH OF SERVICE (APPROX)
DUCT	DUCT DEPTH
E	ELECTRICALLY TRACED
(EoT)	END OF TRACE
IN	INVERT DEPTH
LP	LOW PRESSURE
HV	HIGH VOLTAGE
LD	LAND DRAIN
MP	MEDIUM PRESSURE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PC	PIPE CLAY
Pe	POLYETHYLENE
SD	SUMP DEPTH
TFR	TAKEN FROM
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VT)	VISIBLE TRACE
WD	WAY-OUT

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TEL: +44 (0)113 278 7111
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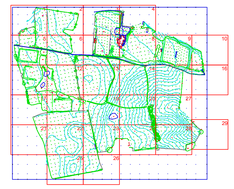
Drawing Title:

Topographical Survey
Sheet 5 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T005	0

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GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

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Abandoned
Acid drain
British telecom
Cable TV
Communications Cable
Sewer combined
Sewer surface water
Sewer foul
Duct
Electric cables
Effluent pipes
Fuel line
Fuel gauge line
Fuel vent line
Gas pipes
Gas pipes cs
Traffic light cables
Vapour recovery
Water pipes
Unidentified
Rising main
Alarm cables
Alarm cables
CCTV cables
Chemical pipes
Compressed air pipes
Culvert
Sewer overbreak overflow
Electric HV cables
Electric plot cables
Earth cables
Fibre optic cables
LPG pipes
Oil pipes
Sludge main
Telemetry cables
Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO CENTRE OF DUCT — CABLE/PIPE OPTIC

GRAVITY DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: APPROX DEPTH TO TOP OF DUCT

(AC)	ASSUMED CONNECTION
BOL	BACK OF KERB
BKL	BACK DROP LEVEL
C#	CABLE DEPTH
CL	COVER LEVEL
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
E	ELECTRIC
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
FL	FLOOR LEVEL
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LP	LOW PRESSURE
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(PD)	PIPE DOUBLE
PI	PIPE DEPTH
Ho	POLYETHYLENE
SL	SOFFIT LEVEL
SL	SURF LEVEL
(UTL)	UNABLE TO LIFT
(UTT)	UNABLE TO TRACE
(UTT)	UNABLE TO TRACE
WD	WAY DUCT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or invert of the service. Where not stated depths are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail

Where the precise position or depths of these features are critical they must be confirmed or elsewhere they must be verified by the use of trial excavations.

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1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

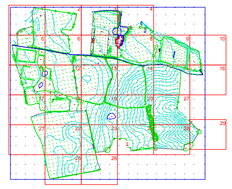
Drawing Title:

Topographical Survey
Sheet 6 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T006	0

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BHL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
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CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
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DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
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NATIONAL GRID.

SCALE FACTOR: 0.99965274

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A	Abandoned
AD	Acid drain
BT	British telecom
C	Cable TV
CM	Communications Cable
S	Sewer combined
SA	Sewer surface water
SF	Sewer foul
D	Ducting
EC	Electricity cables
EP	Effluent pipes
F	Fuel line
FG	Fuel gauge line
FV	Fuel vent line
G	Gas pipes
H	Heating pipes
L	Traffic light cables
TM	Traffic telemetry
W	Water pipes
U	Unidentified
R	Rising main
SR	Scar trees
AC	Aerial cables
C	CCTV cables
CH	Chemical pipes
CA	Compressed air pipes
CU	Culvert
SO	Sewer combined overflow
EV	Electric HV cables
ES	Electric subway cables
E	Earth cables
O	Fibre optic cables
LG	LPG pipes
OP	Oil pipes
SL	Sludge main
T	Telemetry cables
VD	Vehicle detection loop
WW	Waste water pipes
	End of trace
	Group of services representation
	Taken from records (Not proven on site)
	Assumed route
	Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	EQUITY DRAIN VISUAL OBSERVATIONS	GROUND PENETRATING RADAR
APPROX DEPTH TO TOP OF DUCT: CABLE/FIBRE OPTIC	APPROX DEPTH TO INTERNAL CROWN:	APPROX DEPTH TO EXTERNAL CROWN:

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
CD	CABLE DUCT
CE	CABLE DEPTH
CT	CAST IRON
D	DEPTH OF SERVICE (APPROX)
DT	DUCT DEPTH
(DT)	DEPTH INDIRECTLY TRACED
(EoT)	END OF TRACE
H	INVERT DEPTH
HV	HIGH VOLTAGE
LV	LOW VOLTAGE
MP	MOORING PIPE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PE	POLYETHYLENE
PL	POLYTHYLENE
SD	SUMP DEPTH
TP	TELEGRAPH POLE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VIS)	VISIBLE TRACE
WV	WAY-OUT

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Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or sitework they must be verified by the use of trial excavations.

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The CAD layering may contain further information.

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3 SOVEREIGN SQUARE
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LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

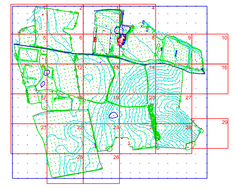
Drawing Title:

Topographical Survey
Sheet 7 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T007	0

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BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
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BRK	BRICKWORK	NB	NOTICE BOARD
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BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
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FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
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G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
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IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
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(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

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- British telecom
- Cable TV
- Communications Cable
- Sewer combined
- Sewer surface water
- Sewer foul
- Gas pipes
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- Effluent pipes
- Fuel line
- Fuel gauge line
- Fuel vent line
- Gas pipes
- Telephone cables
- Traffic light cables
- Vapour recovery
- Water pipes
- Unidentified
- Rising main
- Water mains
- Alarm cables
- CCTV cables
- Chemical pipes
- Compressed air pipes
- Culvert
- Sewer combined overflow
- Electric HV cables
- Electric pilot cables
- Earth cables
- Fibre optic cables
- LPG pipes
- Oil pipes
- Sludge main
- Telemetry cables
- Vehicle detection loop
- Wash water pipes
- End of trace
- Group of services representation
- Taken from records (Not proven on site)
- Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO CENTRE OF CABLE/PIPE OPTIC

GRAVITY DRAIN (VISUAL OBSERVATIONS): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: APPROX DEPTH TO TOP OF FEATURE

(AC)	ASSUMED CONNECTION
BC	BACK OF CHANNEL
BDL	BACK DROP LEVEL
CD	CABLE DEPTH
CL	CABLE LEVEL
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
(ET)	END OF TRACE
(ETT)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
FL	FLOOR LEVEL
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LV	LOW VOLTAGE
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(NT)	NOT TRACEABLE
PD	PIPE DEPTH
PL	POLYETHYLENE
SL	SOFFIT LEVEL
SL	SURF LEVEL
(UTL)	UNABLE TO LIFT
(UTT)	UNABLE TO TRACE
(UTT)	UNABLE TO TRACE
WD	WAY DUCT

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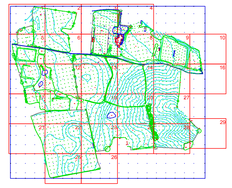
Drawing Title:

Topographical Survey
Sheet 8 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T008	0

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AD AD Acid drain
BT BT British telecom
TV TV Cable TV
CO CO Communications Cable
C C Sewer combined
S S Sewer surface water
F F Sewer foul
D D Ducting
E E Electric cables
EF EF Effluent pipes
FO FO Fuel line
SD SD Land drainage line
FO Fuel/ vent line
G Gas pipes
Heating pipes
TL Traffic light cables
VR Vapour recovery
W Water pipes
Unidentified
Rising main
Soil trace
AC Alarm cables
CCTV cables
Chemical pipes
Compressed air pipes
Culvert
CO Sewer combined overflow
HV Electric HV cables
P Electric pilot cables
Earth cables
Fibre optic cables
Lighting cables
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Telemetry cables
Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
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TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO CENTRE — CABLE/PIPE OPTIC

DEPOT DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: DIRECT DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
BAL	BACK DROP LEVEL
CC	CENTRE OF CAST SIDN
CR	CABLE RISER
DE	DEPTH OF SERVICE (APPROX)
DUCT DEPTH	
(ET)	ELECTRONICALLY TRACED
(EX)	EXISTING
IN	INVERT DEPTH
IL	INVERT LEVEL
LC	LOWER CABLE
LD	LINED DRAIN
LV	LOW VOLTAGE
(MPI)	MAGNETIC INFORMATION
MV	NO PIPES VISIBLE
PI	PIPE DEPTH
RL	RODDING EYE
SI	SUMP DEPTH
SL	SUMP LEVEL
(UL)	UNDER SILLIFT
(UTO)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WATCHDUCT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail

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3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

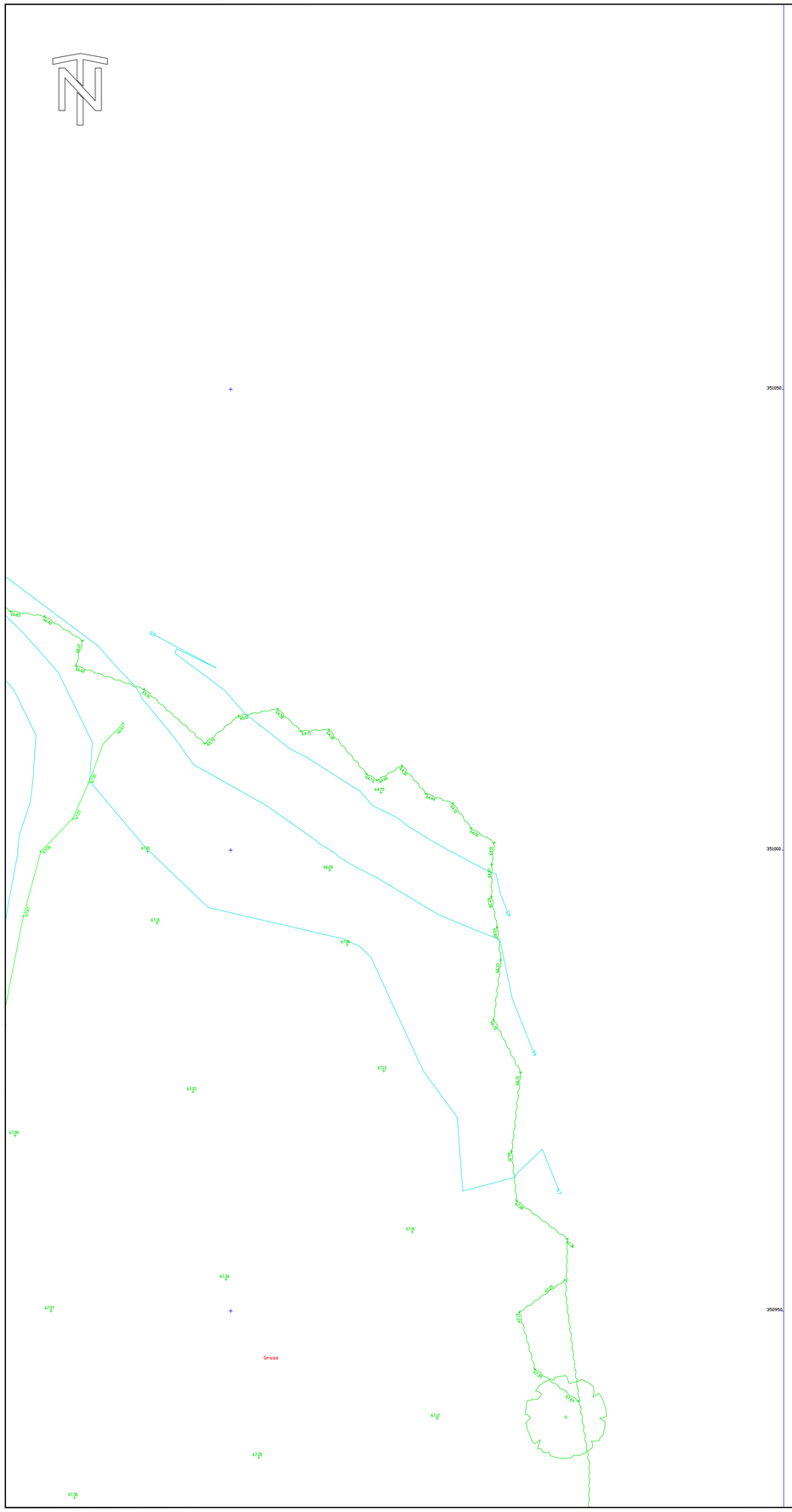
Cefn Park

Drawing Title:

Topographical Survey
Sheet 9 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T009	0



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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BnL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
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CUL	CULVERT	RTW	RETAINING WALL
DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

INDUSTRY STANDARD TECHNIQUES HAVE BEEN USED IN THE LOCATION OF UNDERGROUND SERVICES. THE RESULTS ARE NOT INFALLIBLE AND TRIAL EXCAVATIONS MUST BE CARRIED OUT TO CONFIRM SERVICE IDENTIFICATION, POSITION AND DEPTHS.

PLEASE NOTE THAT NOT ALL BURIED PIPES, CABLES AND CABLE DUCTS CAN BE DETECTED IN TERMS OF THEIR DEPTH, LOCATION, MATERIAL TYPE, GEOLOGY AND LOCATION RELEVANT TO OTHER UTILITIES

ALL REASONABLE EFFORT HAS BEEN MADE IN OBTAINING SEARCHING AVAILABLE RECORDS, HOWEVER THE COMPLETENESS OF UNDERGROUND SERVICE INFORMATION SUPPLIED CANNOT BE GUARANTEED

A — Abandoned
AD — Acid drain
BT — British telecom
TV — Cable TV
C — Communications Cable
C — Sewer combined
S — Sewer surface water
F — Sewer foul
DUCT — Ducting
E — Electric cables
EP — Effluent pipes
FG — Fuel gas
FGP — Fuel gauge line
V — Fuel vent line
GAS — Gas pipes
H — Heating pipes
TL — Traffic light cables
VR — Vapour recovery
W — Water pipes
U — Unidentified
Rising main
Soar trace
ALC — Alarm cables
CCTV — CCTV cables
CP — Control pipes
CA — Compressed air pipes
CULV — Culvert
SCO — Sewer combined overflow
EHV — Electric HV cables
ELP — Electric pilot cables
EA — Earth cables
ELV — Electric LV cables
LPG — LPG pipes
OP — Oil pipes
SM — Sludge main
T — Telemetry cables
VDL — Vehicle detection loop
WP — Wash water pipes
End of trace
Group of services representation
TFR — Taken from records (Not proven on site)
AR — Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO TOP OF DUCT — CABLE+FIBRE OPTIC

GRAVITY DRAIN (TOUR, OBSERVATION): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
CL	CABLE LENGTH
CD	CABLE DEPTH
CI	CAST IRON
D	DIAMETER
d	DEPTH OF SERVICE (APPROX)
DU	DUCT DEPTH
(EST)	ESTIMATED/PARTLY TRACED
(EOT)	END OF TRACE
M	INVERT DEPTH
HV	HIGH VOLTAGE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PE	POLYETHYLENE
PE	POLYETHYLENE
SM	SUMP DEPTH
TOC	TOP OF CABLE
(UTL)	UNABLE TO LIFT
(UTE)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WAY-DUCT

Where services are non-metallic or not proven on site, positions are shown from record drawings & should be treated with caution.

Where services are depth indicated as being to the centre or top of the service. Depths to gravity inverts are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.

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Project:

Cefn Park

Drawing Title:

Topographical Survey
Sheet 10 of 29

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SURVEY LEGEND

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EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
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FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
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NATIONAL GRID.

SCALE FACTOR: 0.99965274

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AD Acid drain
BT British telecom
TV Cable TV
CTV Communications Cable
S Sewer combined
SW Sewer surface water
F Sewer foul
D Ducting
E Electric cables
EF Effluent pipes
FG Fuel gas
FP Fuel gauge line
FV Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
VR Vapour recovery
W Water pipes
U Unidentified
R Rising main
SI Soar trace
A Alarm cables
CCTV CCTV cables
C Compressed air
CA Compressed air pipes
CU Culvert
CO Sewer combined overflow
HV Electric HV cables
P Electric plot cables
EA Earth cables
LV Electric LV cables
LPG LPG pipes
OP Oil pipes
SL Sludge main
T Telemetry cables
VD Vehicle detection loop
WW Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTROMAGNETIC DETECTION: APPROX DEPTH TO TOP OF DUCTION — CABLE/FIBRE OPTIC

GRAVITY DRAIN UTILITY OBSERVATIONS: APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: ±DEPTH DEPTH TO TOP OF DUCTION

(AC)	ASSUMED CONNECTION
(AR)	ASSURED ROUTE
DA	DEPTH ASSUMED
CL	CABLE DEPTH
CI	CAST IRON
DI	DUCTILE IRON
d	DEPTH OF SERVICE (APPROX)
Dd	DUCT DEPTH
(ED)	ELECTRICALLY TRACED
EOT	END OF TRACE
IM/ST	INVERT DEPTH
HDPE	HIGH DENSITY
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PERS VISIBLE
PC	PIPE CLAY
Pe	POLYETHYLENE
Sd	SUMP DEPTH
TD	TOP DEPTH
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UT)	UNABLE TO TRACE
WD	WAY-DEPT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

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Project:

Cefn Park

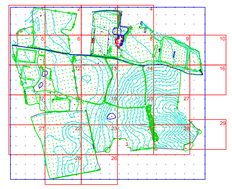
Drawing Title:

Topographical Survey
Sheet 11 of 29

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1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
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FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
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G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

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NATIONAL GRID.

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C Communications Cable
C Sewer combined
S Sewer surface water
F Sewer foul
D Ducting
E Electric cables
EP Effluent pipes
F Fuel line
F Fuel gauge line
F Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
VR Vapour recovery
W Water pipes
U Unidentified
R Rising main
S Scar trace
A Alarm cables
CCTV CCTV cables
C Compressed pipes
C Compressed air pipes
Culvert
SO Sewer combined overflow
HV Electric HV cables
T Electric pilot cables
EA Earth cables
LV Electric LV cables
LPG LPG pipes
OP Oil pipes
SL Sludge main
T Telemetry cables
VD Vehicle detection loop
W Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
AR Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO TOP OF SERVICE — CABLE/FIBRE OPTIC

CAVITY DRAIN (TOUR) OBSERVATIONS: APPROX DEPTH TO BOTTOM OF DRAIN

GROUND PENETRATING RADAR: DEPTH TO TOP OF SERVICE; DEPTH TO BOTTOM OF DRAIN

(AC)	ASSUMED CONNECTION
(ARC)	ASSUMED ROUTE
BOT	BOTTOM OF DUCT
CD	CABLE DEPTH
CI	CAST IRON
CO	CONCRETE
d	DEPTH OF SERVICE (APPROX)
DD	DUCT DEPTH
(EST)	ESTIMATED/FULLY TRACED
(EXT)	END OF TRACE
M	INVERT DEPTH
PE	POLYETHYLENE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PVC	POLYVINYL
PE	POLYETHYLENE
SM	SUMP DEPTH
TOP	TOP OF DUCT
(UTL)	UNABLE TO LIFT
(UTE)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WAY-DUCT

Where services are non-metallic or not proven on site, positions are shown from record drawings and are therefore approximate.

Where services are laid in multi-ducting, they may be in the centre or top of the service. Depths to ground level recorded are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

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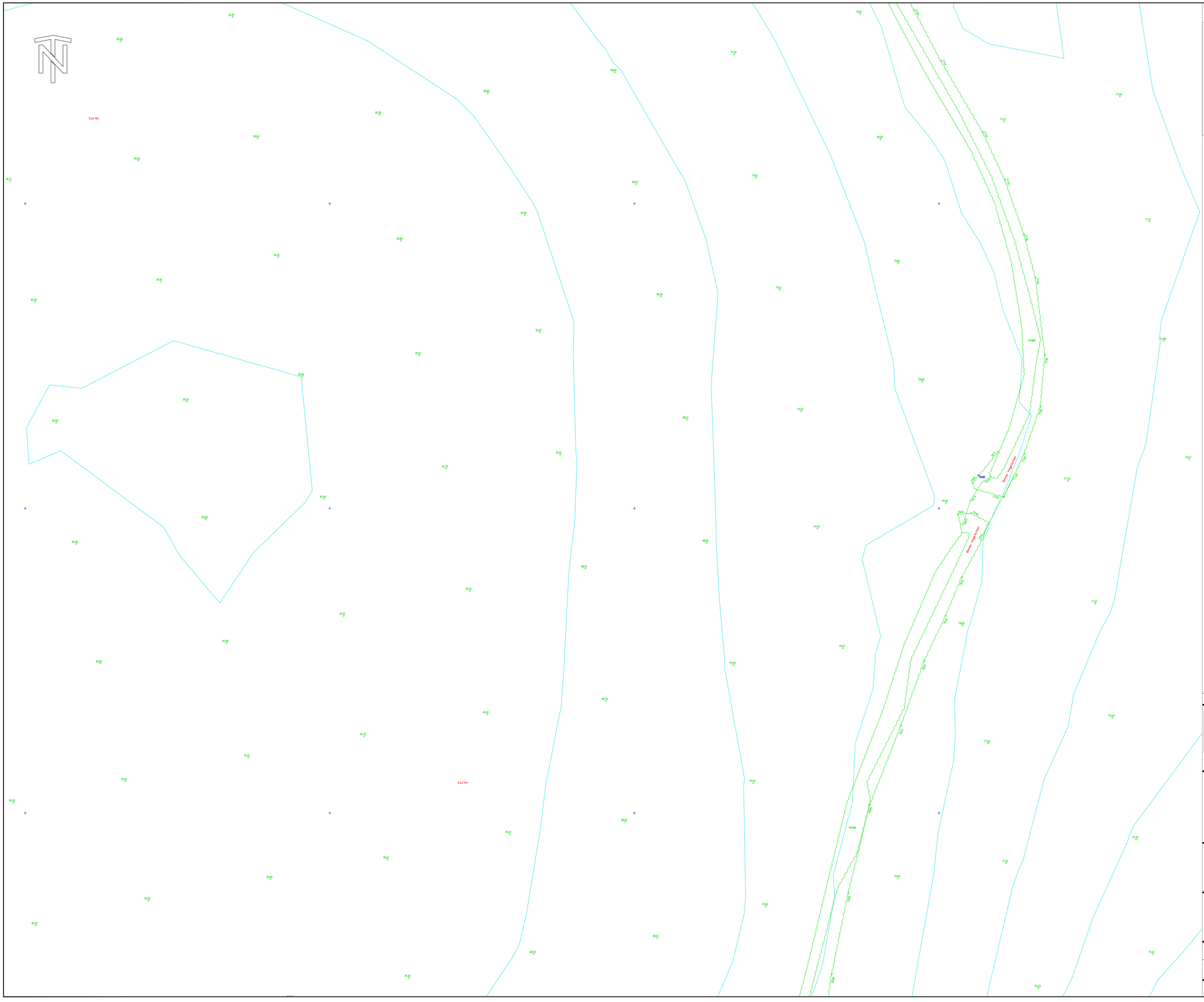
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Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T012	0



DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BxL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
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CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
CUL	CULVERT	RTW	RETAINING WALL
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IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
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NATIONAL GRID.

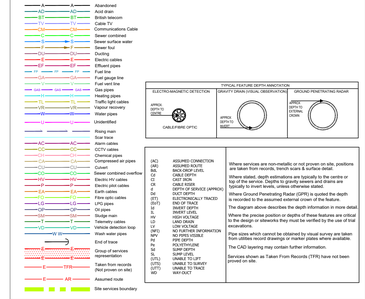
SCALE FACTOR: 0.99965274

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1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

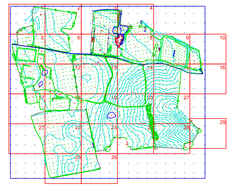
Drawing Title:

Topographical Survey
Sheet 13 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
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SCALE FACTOR: 0.99965274

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A — Abandoned
AD — Acid drain
BT — British telecom
TV — Cable TV
CA — Communications Cable
C — Sewer combined
S — Sewer surface water
F — Sewer foul
D — Ducting
EC — Electric cables
EF — Effluent pipes
F — Fuel line
FV — Fuel gauge line
V — Fuel vent line
G — Gas pipes
H — Heating pipes
HP — High pressure gas
M — Mains pipes
W — Water pipes
U — Unidentified
R — Rising main
B — Slow train
AC — Aerial cables
CC — CCTV cables
CH — Chemical pipes
A — Compressed air pipes
CU — Culvert
SC — Sewer combined overflow
EL — Electric HV cables
LV — Electric LV cables
E — Earth cables
FO — Fibre optic cables
LG — LPG pipes
OP — Oil pipes
S — Sludge main
T — Telemetry cables
WC — Wash water loop
W — Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APROX. DEPTH TO CENTRE CABLE/FIBRE OPTIC	APROX. DEPTH TO INVERT	DIRECT DEPTH TO INTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
CL	CABLE LENGTH
CZ	CABLE DEPTH
CI	CAST IRON
D	DIAMETER
E	DEPTH OF SERVICE (APPROX)
DUCT	DUCT DEPTH
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
H	INVERT DEPTH
HP	HIGH PRESSURE
HV	HIGH VOLTAGE
LD	LAND DRAIN
MP	MAINS PRESSURE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PE	POLYETHYLENE
PL	POLYTHYLENE
SI	SUMP DEPTH
TP	TELEGRAPH POLE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
VC	VITRIFIED CLAYPIPE
WD	WAYDUCT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

At this time the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.

The CAD layering may contain further information.

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TEL: +44 (0)113 278 7111
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Project:

Cefn Park

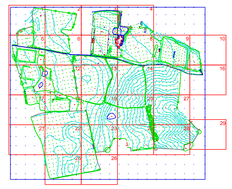
Drawing Title:

Topographical Survey
Sheet 14 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T014	0

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British telecom
Cable TV
Communications Cable
Sewer combined
Sewer surface water
Sewer foul
Ducting
Electricity cables
Effluent pipes
Fuel line
Fuel gauge line
Fuel vent line
Gas pipes
Heating pipes
Traffic light cables
Traffic light recovery
Water pipes
Unidentified
Rising main
Star trace
Street lighting
CCTV cables
Chemical pipes
Compressed air pipes
Culvert
Sewer combined overflow
Electric HV cables
Electric LV cables
Earth cables
Fibre optic cables
LPG pipes
Oil pipes
Sludge main
Telemetry cables
Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO MAGNETIC DETECTION: APPROX DEPTH TO SERVICE — CABLE/FIBRE OPTIC

DIRECT DRAIN LOCATE OBSERVATION: APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: APPROX DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
(BC)	BACK OF CHANNEL
CD	CABLE DEPTH
CI	CAST IRON
CO	CHANGE OF DIRECTION
d	DEPTH OF SERVICE (APPROX)
DT	DUCT DEPTH
(NT)	NOT SATISFACTORILY TRACED
(EoT)	END OF TRACE
H	INVERT DEPTH
HP	HIGH PRESSURE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
OS	OFF SET
Pe	POLYETHYLENE
SI	SUMP DEPTH
TP	TELEGRAPH POLE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WC	WAY-OUT

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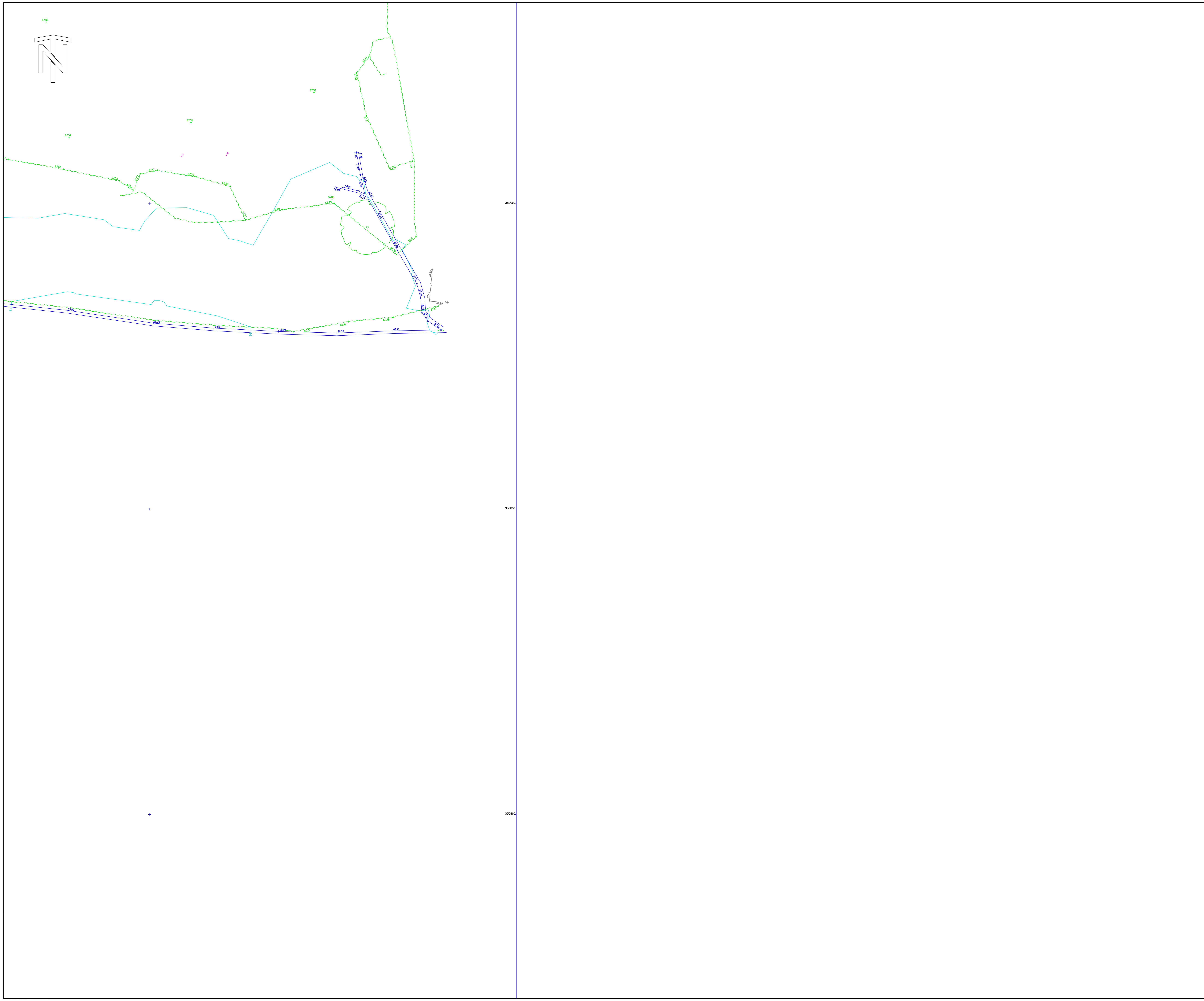
Cefn Park

Drawing Title:

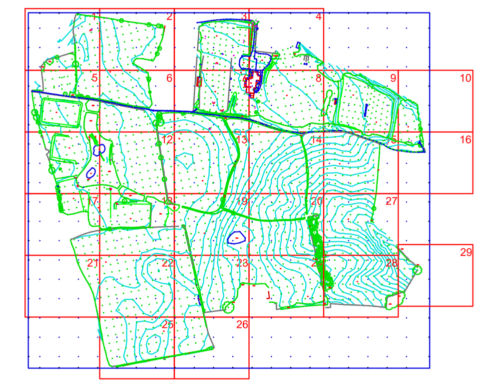
Topographical Survey
Sheet 15 of 29

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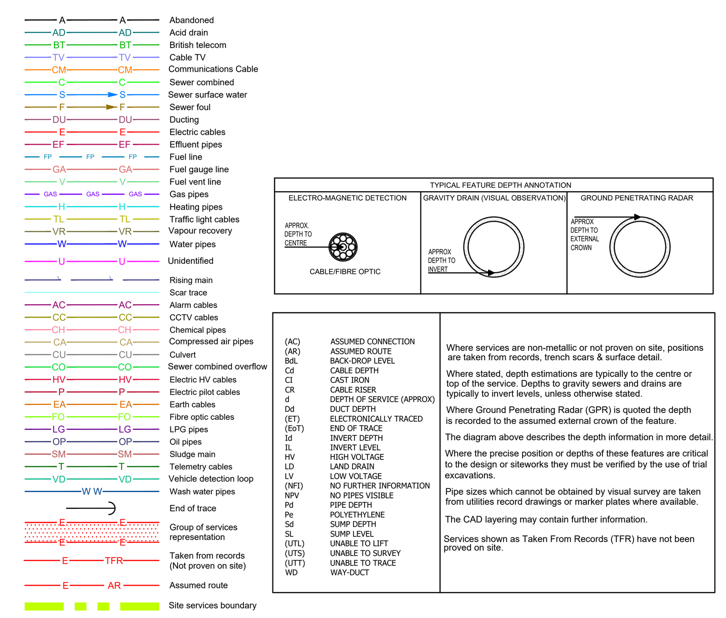
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ALL REASONABLE EFFORT HAS BEEN MADE IN OBTAINING SEARCHING AVAILABLE RECORDS, HOWEVER THE COMPLETENESS OF UNDERGROUND SERVICE INFORMATION SUPPLIED CANNOT BE GUARANTEED



(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
BdL	BACK-DROP LEVEL
Cd	CABLE DEPTH
CI	CAST IRON
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
Dd	DUCT DEPTH
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
Id	INVERT DEPTH
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
Pd	PIPE DEPTH
Pe	POLYETHYLENE
Sd	SUMP DEPTH
SL	SUMP LEVEL
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WAY-DUCT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

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3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

Drawing Title:

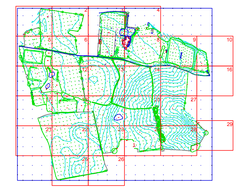
Topographical Survey

Sheet 16 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T016	0

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BdL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
CR	CYCLE RACK	RP	REFLECTIVE POST
CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
CUL	CULVERT	RTW	RETAINING WALL
DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

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A Abandoned
AD Acid drain
BT British telecom
TV Cable TV
C Communications Cable
CC Sewer combined
S Sewer surface water
F Sewer foul
D Ducting
EC Electric cables
EF Effluent pipes
FT Fuel line
FG Fuel gauge line
FV Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
WD Water (recovery)
W Water pipes
U Unidentified
R Rising main
RM Rear trees
SD Soil drains
CCTV CCTV cables
CH Chemical pipes
A Compressed air pipes
CU Culvert
CO Sewer combined overflow
EHV Electric HV cables
E Earth cables
FO Fibre optic cables
LG LPG pipes
OP Oil pipes
SM Sludge main
T Telemetry cables
VD Vehicle detection loop
WW Waste water pipes
End of trace
Group of services representation
TFR Taken from records (Not proven on site)
AR Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO SURFACE — CABLE/FIBRE OPTIC

GRAVITY DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT OF PIPE

GROUND PENETRATING RADAR: APPROX DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
CL	CABLE DEPTH
CI	CAST IRON
CO	CONCRETE
d	DEPTH OF SERVICE (APPROX)
DU	DUCT DEPTH
(EST)	ESTIMATED/FULLY TRACED
(EoT)	END OF TRACE
Iv	INVERT DEPTH
LA	LEAD ASSOC
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PC	PIPE CLAY
Pe	POLYETHYLENE
SI	SUMP DEPTH
ST	STEEL PIPE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
VC	VITRIFIED CLAY
WD	WAY DUCT

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Cefn Park

Drawing Title:

Topographical Survey
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BS	BUS STOP	NP	STREET NAME PLATE
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DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
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ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
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ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
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GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
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HRL	HANDRAIL	WMF	WIRE MESH FENCE
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IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
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BT British telecom
TV Cable TV
C Communications Cable
S Sewer combined
SW Sewer surface water
SF Sewer foul
D Ducting
E Electric cables
EF Effluent pipes
F Fuel line
FG Fuel gauge line
FV Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
VR Vapour recovery
W Water pipes
U Unidentified
R Rising main
SR Soar trace
A Alarm cables
CC CCTV cables
CH Chemical pipes
CA Compressed air pipes
D Drains
SO Sewer combined overflow
HV Electric HV cables
P Electric plot cables
EA Earth cables
O Fibre optic cables
LG LPG pipes
OL Oil pipes
SD Sludge main
T Telemetry cables
VD Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
AIR Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO TOP OF DUCT — CABLE/PIPE OPTIC

GRAVITY DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: APPROX DEPTH TO TOP OF VISION

(AC)	ASSUMED CONNECTION
BC	BACK OF CHANNEL
BAL	BACK DROP LEVEL
CD	CABLE DEPTH
CL	CABLE LEVEL
DE	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
e	ESTIMATED
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
FC	FLOOR CHANNEL
IL	INVERT LEVEL
HV	HIGH VOLTAGE
m	MEASURED
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
OL	OVERHEAD CABLE
PD	PIPE DEPTH
PL	POLYETHYLENE
SL	SOFFIT LEVEL
SL	SUMP LEVEL
(UTL)	UNABLE TO LIFT
(UTT)	UNABLE TO TRACE
(UTT)	UNABLE TO TRACE
WO	WAY-OUT

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Project:

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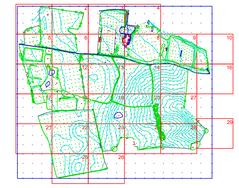
Drawing Title:

Topographical Survey
Sheet 18 of 29

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1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T018	0

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BH	BOREHOLE	MP	MOORING PILE
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CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
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DK	DROP KERB	RWP	RAINWATER PIPE
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FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
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SCALE FACTOR: 0.99965274

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- A — Abandoned
- AD — Acid drain
- BT — British telecom
- TV — Cable TV
- CO — Communications Cable
- S — Sewer combined
- E — Sewer surface water
- F — Sewer foul
- D — Ducting
- EL — Electric cables
- ELP — Electric pipes
- F — Fuel line
- FG — Fuel gauge line
- FW — Fuel vent line
- GAS — Gas pipes
- H — Heating pipes
- TL — Traffic light cables
- W — Water chemistry
- W — Water pipework
- U — Unidentified
- R — Rising main
- SW — Scar trace
- ALC — Alarm cables
- C — Cathodic pipes
- C — Chemical pipes
- CA — Compressed air pipes
- CO — Culvert
- SO — Sewer combined overflow
- EHV — Electric HV cables
- EL — Electric pilot cables
- F — Fibre optics
- FOC — Fibre optic cables
- LPG — LPG pipes
- OIL — Oil pipes
- SM — Sludge main
- T — Telemetry cables
- VDC — Vehicle detection loop
- W — Wash water pipes
- End of trace
- Group of services representation
- Taken from records (Not proven on site)
- AR — Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTROMAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX. DEPTH TO CENTRE OF PIPE	APPROX. DEPTH TO INVERT	APPROX. DEPTH TO TOP OF EXTERNAL CROWN
CABLE/FIBRE OPTIC		

(AC)	ASSUMED CONNECTION
(BC)	BURIED CHAMBER
(BK)	BACK DROP PIPE
CD	CABLE DEPTH
CL	CABLE LEVEL
CW	CABLE WIDTH
D	DEPTH OF SERVICE (APPROX)
DE	DEPTH ERROR
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
IL	INVERT LEVEL
(IL)	INVERT LEVEL
HV	HIGH VOLTAGE
LV	LOW VOLTAGE
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(NT)	NOT TRACEABLE
PD	PIPE DEPTH
Po	POLYETHYLENE
Pr	PROTECTIVE
SL	SURF LEVEL
(UTL)	UNABLE TO LIFT
(UTQ)	UNABLE TO QUERY
(UTT)	UNABLE TO TRACE
WD	WAY DUCT

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Project:

Cefn Park

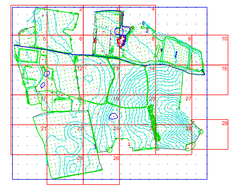
Drawing Title:

Topographical Survey
Sheet 19 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T019	0

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
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IWF	INTERWOVEN FENCE		
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KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

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- E — Electric cables
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- FO — Fuel line
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- GAS — Gas pipes
- H — Heating pipes
- TL — Traffic light cables
- W — Water chemistry
- WAT — Water pipes
- U — Unidentified
- R — Rising main
- SR — Soil trace
- AC — Alarm cables
- CW — Chilled water
- CA — Chemical pipes
- A — Compressed air pipes
- G — Culvert
- SO — Sewer combined overflow
- EV — Electric HV cables
- EL — Electric pilot cables
- FA — Fibre optic
- FOA — Fibre optic cables
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- OP — Oil pipes
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- VD — Vehicle detection loop
- WW — Wash water pipes
- End of trace
- Group of services representation
- Taken from records (Not proven on site)
- Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX DEPTH TO TOP OF SERVICE	APPROX DEPTH TO INVERT	APPROX DEPTH TO TOP OF FICTIONAL CROWN
CABLE/FIBRE OPTIC		

(AC)	ASSUMED CONNECTION
(AD)	ASSUMED DUCTS
(BK)	BACK DROP PIPE
CD	CABLE DEPTH
CS	CABLE SIZE
DS	DUCT SIZES
DI	DEPTH OF SERVICE (APPROX)
(E)	ELECTRIC
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
(F)	FOUL WATER
IL	INVERT LEVEL
HV	HIGH VOLTAGE
(I)	INVISIBLE
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(O)	OVERHEAD CABLE
PD	PIPE DEPTH
Pe	POLYETHYLENE
(S)	SURFACE WATER
SL	SURF LEVEL
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WAY DUCT

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TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

Drawing Title:

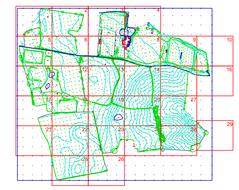
Topographical Survey

Sheet 20 of 29

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(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

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F — Fuel gauge line
F — Fuel vent line
G — Gas pipes
H — Heating pipes
TL — Traffic light cables
VR — Vapour recovery
W — Water pipes
? — Unidentified
Rising main
Scar trace
Alarm cables
CCTV cables
Cathodic protection
Compressed air pipes
Culvert
Sewer combined overflow
Electric HV cables
Electric pilot cables
Earth cables
Electric service cables
LPG pipes
Oil pipes
Sludge main
Telemetry cables
Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION — APPROX DEPTH TO CENTRE OF SERVICE — CABLE/FIBRE OPTIC

CAVITY DRAIN (TOUCH, OBSERVATION) — APPROX DEPTH TO BASE

GROUND PENETRATING RADAR — ABOUT APPROX DEPTH TO INTERNAL CROWN

(AC)	ASSUMED CONNECTION
(ARC)	ASSUMED ROUTE
BRK	BRICK DRAIN
CA	CABLE DEPTH
CI	CAST IRON
CO	CONCRETE
D	DEPTH OF SERVICE (APPROX)
DD	DUCT DEPTH
(DT)	DEPTH ESTIMATELY TRACED
(EoT)	END OF TRACE
IM	INVERT DEPTH
HV	HIGH VOLTAGE
HV	HIGH VOLTAGE
LD	LAND DRAIN
PE	POLYETHYLENE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PVC	PVC PIPE
PE	POLYETHYLENE
SM	SUMP DEPTH
TRS	TRACE SEEN
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VT)	VISIBLE TRACE
WD	WAY DUCT

Where services are non-metallic or not proven on site, positions are shown from records and are subject to inaccuracy.

Where services are shown in such carriageways they centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.

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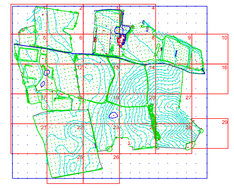
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Topographical Survey
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- End of trace
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- Taken from records (Not proven on site)
- AR — Assumed route
- Site services boundary

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ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO CENTRE OF CABLE/PIPE (DPTH) — CABLE/PIPE (DPTH)

GRAVITY DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT (DPTH)

GROUND PENETRATING RADAR: APPROX DEPTH TO TOP OF FEATURE (DPTH)

(AC)	ASSUMED CONNECTION
(BC)	BACK OF CHANNEL
(BL)	BACK DROP LEVEL
(C)	CABLE DEPTH
(CL)	CABLE LEVEL
(CR)	CABLE RISER
(D)	DEPTH OF SERVICE (APPROX)
(E)	ELECTRICITY
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
(F)	FOUL WATER
(IL)	INVERT LEVEL
(HV)	HIGH VOLTAGE
(LV)	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(NT)	NOT TRACEABLE
(P)	PIPE DEPTH
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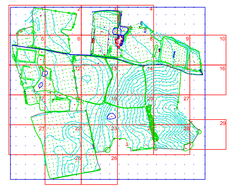
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CONC	CONCRETE	PRF	POST & RAIL FENCE
CP	SECURITY CAMERA POST	PTM	PARKING TICKET MACHINE
CPL	COPING LEVEL	PV	VERTICAL PIPE
CPT	CABLE PIT COVER	RE	RODDING EYE COVER
CR	CYCLE RACK	RP	REFLECTIVE POST
CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
CUL	CULVERT	RTW	RETAINING WALL
DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

INDUSTRY STANDARD TECHNIQUES HAVE BEEN USED IN THE LOCATION OF UNDERGROUND SERVICES. THE RESULTS ARE NOT INFALLIBLE AND TRIAL EXCAVATIONS MUST BE CARRIED OUT TO CONFIRM SERVICE IDENTIFICATION, POSITION AND DEPTHS.

PLEASE NOTE THAT NOT ALL BURIED PIPES, CABLES AND CABLE DUCTS CAN BE DETECTED IN TERMS OF THEIR DEPTH, LOCATION, MATERIAL TYPE, GEOLOGY AND LOCATION RELEVANT TO OTHER UTILITIES

ALL REASONABLE EFFORT HAS BEEN MADE IN OBTAINING SEARCHING AVAILABLE RECORDS, HOWEVER THE COMPLETENESS OF UNDERGROUND SERVICE INFORMATION SUPPLIED CANNOT BE GUARANTEED

A Abandoned
AD Acid drain
BT British telecom
TV Cable TV
C Communications Cable
C Sewer combined
S Sewer surface water
S Sewer foul
CU Ducting
E Electric cables
EF Effluent pipes
F Fuel pipes
GF Fuel gauge line
V Fuel vent line
G Gas pipes
H Heating pipes
TL Traffic light cables
VR Vapour recovery
W Water pipes
U Unidentified
R Rising main
T Soar trace
A Alarm cables
CC CCTV cables
CA Compressed air pipes
CU Culvert
CO Sewer combined overflow
HV Electric HV cables
P Electric plot cables
EA Earth cables
LV Electric LV cables
LPG LPG pipes
OP Oil pipes
SR Sludge main
T Telemetry cables
VD Vehicle detection loop
W Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTROMAGNETIC DETECTION: APPROX DEPTH TO TOP OF DUCT — CABLE/FIBRE OPTIC

GRAVITY DRAIN CIRCULAR OBSERVATIONS: APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: ø300 DEPTH TO TOP OF DUCT

(AC)	ASSUMED CONNECTION
(ABS)	ASSUMED SOUTH
BA	BRICK ARCH LEVEL
CL	CABLE DEPTH
CI	CAST IRON
D	DEPTH OF SERVICE (APPROX)
DI	DUCT DEPTH
(EXT)	END OF VISUALLY TRACED
EOT	END OF TRACE
IS	INVERT DEPTH
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PERS VISIBLE
OS	ON SITE
Pe	POLYETHYLENE
Sd	SUMP DEPTH
TP	TEST PIT
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(VET)	VISIBLE TO TRACE
WD	WAY-DEPT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or top of duct/cable unless otherwise stated. Invert depths are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.

The CAD layering may contain further information.

Services shown as Taken From Records (TFR) have not been proved on site.

REV	DESCRIPTION	BY	CHK	APP	DATE
1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

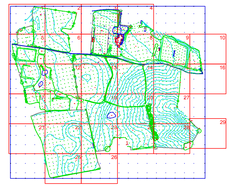
Drawing Title:

Topographical Survey
Sheet 23 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T023	0

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS



SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BxL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
CONC	CONCRETE	PRF	POST & RAIL FENCE
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FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
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G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

INDUSTRY STANDARD TECHNIQUES HAVE BEEN USED IN THE LOCATION OF UNDERGROUND SERVICES. THE RESULTS ARE NOT INFALLIBLE AND TRIAL EXCAVATIONS MUST BE CARRIED OUT TO CONFIRM SERVICE IDENTIFICATION, POSITION AND DEPTHS.

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Abandoned
Acid drain
British telecom
Cable TV
Communications Cable
Sewer combined
Sewer surface water
Sewer foul
Ducting
Electric cables
Effluent pipes
Fuel pipes
Fuel gauge line
Fuel vent line
Gas pipes
Heating pipes
Traffic light cables
Vapour recovery
Water pipes
Unidentified
Rising main
Scar trace
Alarm cables
CCTV cables
Cathodic cables
Compressed air pipes
Culvert
Sewer combined overflow
Electric HV cables
Electric pilot cables
Earth cables
Electric service cables
LPG pipes
Oil pipes
Sludge main
Telemetry cables
Vehicle detection loop
Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTROMAGNETIC DETECTION — APPROX DEPTH TO CENTRE OF CABLE/FIBRE OPTIC

GRAVITY DRAIN (TRIAL DEMONSTRATION) — APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR — DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(ARC)	ASSUMED ROUTE
BC	BACK OF CABLE
CD	CABLE DEPTH
CI	CAST IRON
DI	DUCTILE IRON
d	DEPTH OF SERVICE (APPROX)
DD	DUCT DEPTH
(DT)	DEPTH ESTIMATED/ TRACED
(EoT)	END OF TRACE
IM	INVERT DEPTH
HP	HIGH PRESSURE
HV	HIGH VOLTAGE
LD	LAND DRAIN
LP	LOW PRESSURE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
PC	PIPE CLAY
Pe	POLYETHYLENE
SM	SUMP DEPTH
TP	TELEGRAPH POLE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UT)	UNABLE TO TRACE
WD	WAY DUCT

Where services are non-metallic or not proven on site, positions are shown as their approximate centre line between surface features.

Where services are much obstructed or buried they centre or top of the services. Depths to gravity invaerts and crowns are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or sitewoks they must be verified by the use of trial excavations.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.

The CAD layering may contain further information.

Services shown as Taken From Records (TFR) have not been proved on site.

REV	DESCRIPTION	BY	CHK	APP	DATE
1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

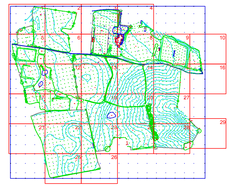
Drawing Title:

Topographical Survey
Sheet 24 of 29

Scale @ A0	Drawn Date	Checked Date	Approved Date
1:200	IS 18/11/20	DH 18/11/20	GP 18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T024	0

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BxL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
BOL	BOLLARD	MS	MILE STONE
BRK	BRICKWORK	NB	NOTICE BOARD
BS	BUS STOP	NP	STREET NAME PLATE
BM	BENCH MARK	NRA	NATIONAL RIVERS AUTHORITY
BW	BRICK WALL	OGC	OVERGROUND CONDUIT
BWF	BARBED WIRE FENCE	OHG	OVERHEAD GANTRY
CB	CONTROL BOX	OSR	OPEN STEEL RAILINGS
CIF	CORRUGATED IRON FENCE	P	POST
CL	COVER LEVEL	PB	PILLAR BOX
CLF	CHAIN LINK FENCE	PM	PARKING METER
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CR	CYCLE RACK	RP	REFLECTIVE POST
CTV	CABLE T.V. MANHOLE	RS	ROAD SIGN
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DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
DR	DRAIN	SL	SOFFIT LEVEL
DWB	DOG WASTE BIN	SMH	SURFACE WATER MANHOLE
EA	ENVIRONMENT AGENCY	SMP	SHEET METAL PILING
EB	ELECTRICITY BOX	SP	SIGN POST
ECF	ELECTRIC CABLE FENCE	STU	TREE STUMP
ECP	ELECTRICITY CABLE PIT	SV	SLUICE VALVE
EMH	ELECTRICITY MANHOLE	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	SWF	SHEEP WIRE FENCE
ER	EARTHING ROD	TBM	TEMPORARY BENCH MARK
ETL	ELECTRICITY TRANSMISSION LINE	TCB/TCP	TELEPHONE CALL BOX/POST
FB	FOOTBRIDGE	TC	TELECOM CABINET
FH	FIRE HYDRANT	TEL	TELECOM MANHOLE
FHM	FIRE HYDRANT MARKER	THL	THRESHOLD LEVEL
FL	FLOOR LEVEL	TL	TRAFFIC LIGHT
FP	FENCE POST	TLB	TRAFFIC LIGHT BOX
FWM	FOUL WATER MANHOLE	TP	TELEGRAPH POLE
G	GULLY	TRS	TIMBER RUBBING STRIP
GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

ALL LEVELS RELATE TO ORDNANCE DATUM NEWLYN.

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A	A	Abandoned	
AD	AD	Acid drain	
BT	BT	British telecom	
TV	TV	Cable TV	
CA	CA	Communications Cable	
C	C	Sewer combined	
S	S	Sewer surface water	
SF	SF	Sewer foul	
D	D	Ditch	
E	E	Electric cables	
EF	EF	Effluent pipes	
FF	FF	Fuel line	
GA	GA	Fuel gauge line	
FV	FV	Fuel vent line	
GAS	GAS	Gas pipes	
TL	TL	Traffic light cables	
VR	VR	Vapour recovery	
W	W	Water pipes	
U	U	Unidentified	
R	R	Rising main	
AL	AL	Alarm cables	
AC	AC	Alarm cables	
CC	CC	CCTV cables	
CH	CH	Chemical pipes	
CA	CA	Compressed air pipes	
CU	CU	Culvert	
SO	SO	Sewer combined overflow	
HV	HV	Electric HV cables	
EP	EP	Electric pilot cables	
EA	EA	Earth cables	
FO	FO	Fibre optic cables	
LG	LG	LPG pipes	
OP	OP	Oil pipes	
SB	SB	Sludge main	
TC	TC	Telecom cables	
VD	VD	Vehicle detection loop	
WW	WW	Wash water pipes	
		End of trace	
C	C	Group of services representation	
TR	TR	Taken from records (Not proven on site)	
AR	AR	Assumed route	
		Site services boundary	

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX DEPTH TO CENTRE OF DUCTS	APPROX DEPTH TO INVERT	APPROX DEPTH TO TOP OF DUCTS

CABLE/FIBRE OPTIC

(AC)	ASSUMED CONNECTION	Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.
BOL	BACK OF LEVEL	
BXL	BACK DROP LEVEL	
C#	CABLE DEPTH	Where stated, depth estimations are typically to the centre or invert of the feature. Where stated, depths to invert levels are typically to invert levels, unless otherwise stated.
CL	CABLE ICON	
D	DEPTH OF SERVICE (APPROX)	
E	ELECTRIC	Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.
(ET)	ELECTRONICALLY TRACED	
(EoT)	END OF TRACE	The diagram above describes the depth information in more detail
FL	FLOOR LEVEL	
IL	INVERT LEVEL	Where the precise position or depths of these features are critical to your proposals or stewards they must be verified by the use of trial excavations.
HV	HIGH VOLTAGE	
LV	LOW VOLTAGE	
(NFI)	NO FURTHER INFORMATION	Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.
PB	PULL BOX/CABLE	
PD	PIPE DEPTH	The CAD layering may contain further information.
PL	POLYETHYLENE	
SL	SOFFIT LEVEL	Services shown as Taken From Records (TFR) have not been proved on site.
SUR	SURFACE LEVEL	
(UTL)	UNABLE TO LIFT	
(UTT)	UNABLE TO TRACE	
WD	WAY DUCT	

REV	DESCRIPTION	BY	CHK	APP	DATE
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3 SOVEREIGN SQUARE
SOVEREIGN STREET
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TEL: +44 (0)113 278 7111
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Project:

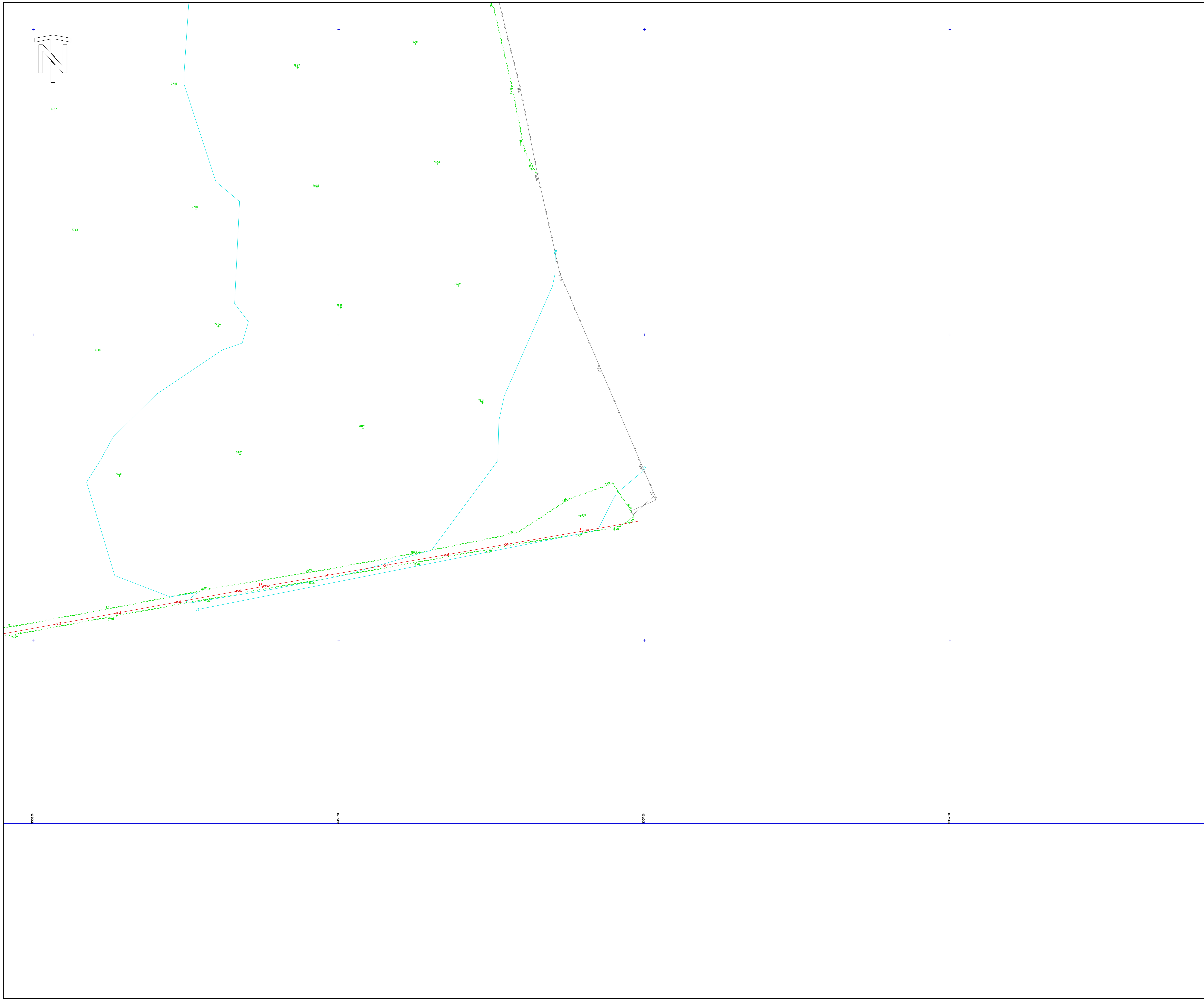
Cefn Park

Drawing Title:

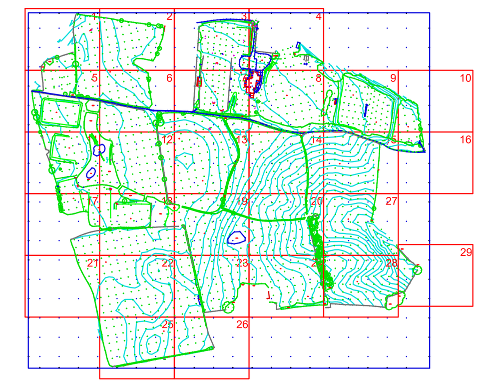
Topographical Survey
Sheet 25 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T025	0



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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BeL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
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GL	GROUND LIGHT	TSR	TUBULAR STEEL RAILINGS
GP	GATE POST	WB	WASTE BIN
GM	GAS MARKER	WL	WATER LEVEL/WATER LINE
GV	GAS VALVE	WM	WATER METER
HRL	HANDRAIL	WMF	WIRE MESH FENCE
IC	INSPECTION CHAMBER	WP	WOODEN POST
IL	INVERT LEVEL	WPR	WOODEN POST & RAIL FENCE
IRF	IRON RAILING FENCE	WV	WATER VALVE
IWF	INTERWOVEN FENCE		
JO	JUNCTION BOX		
KO	KERB OUTLET		
LDR	LADDER		
LFB	LIFEBUOY		

(Abbreviations apply to survey data only)

NATIONAL GRID.

SCALE FACTOR: 0.99965274

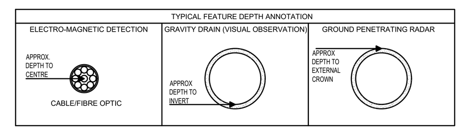
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TV	Cable TV
CM	Communications Cable
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S	Sewer surface water
F	Sewer foul
DU	Ducting
E	Electric cables
EF	Effluent pipes
FP	Fuel line
GA	Fuel gauge line
V	Fuel vent line
GAS	Gas pipes
H	Heating pipes
TL	Traffic light cables
VR	Vapour recovery
W	Water pipes
U	Unidentified
	Rising main
	Scar trace
AC	Alarm cables
CC	CCTV cables
CH	Chemical pipes
CA	Compressed air pipes
CU	Culvert
CO	Sewer combined overflow
HV	Electric HV cables
P	Electric pilot cables
EA	Earth cables
FO	Fibre optic cables
LG	LPG pipes
OP	Oil pipes
SM	Sludge main
T	Telemetry cables
VD	Vehicle detection loop
W W	Wash water pipes
	End of trace
E	Group of services representation
E TFR	Taken from records (Not proven on site)
E AR	Assumed route
	Site services boundary



(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
BdL	BACK-DROP LEVEL
Cd	CABLE DEPTH
CI	CAST IRON
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
Dd	DUCT DEPTH
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
Id	INVERT DEPTH
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
Pd	PIPE DEPTH
Pe	POLYETHYLENE
Sd	SUMP DEPTH
SL	SUMP LEVEL
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UTT)	UNABLE TO TRACE
WD	WAY-DUCT

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TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

Drawing Title:

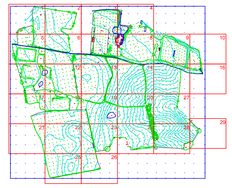
Topographical Survey

Sheet 26 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T026	0

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SURVEY LEGEND

AB	AIR BRICK	LP	LAMP POST
AV	AIR VALVE	MB	MOORING BOLLARD
BOL	BOLLARD	MF	MISCELLANEOUS FENCING
BB	BELISHA BEACON	MH	MANHOLE
BxL	BUILDING HEIGHT	MKR	MARKER
BH	BOREHOLE	MP	MOORING PILE
BL	BUILDING EAVES LEVEL	MRF	METAL RAILING FENCE
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BRK	BRICKWORK	NB	NOTICE BOARD
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CL	COVER LEVEL	PB	PILLAR BOX
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CONC	CONCRETE	PRF	POST & RAIL FENCE
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CUL	CULVERT	RTW	RETAINING WALL
DK	DROP KERB	RWP	RAINWATER PIPE
DL	DECK LEVEL	SC	STOP COCK
DP	DOWNPIPE	SDP	STAND PIPE
DPC	DAMP PROOF COURSE	SK	SOAKAWAY
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- Soar trace
- AC — Alarm cables
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- CA — Compressed air pipes
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- SO — Sewer combined overflow
- HV — Electric HV cables
- P — Electric plot cables
- EA — Earth cables
- FO — Fibre optic cables
- LPG — LPG pipes
- OIL — Oil pipes
- SD — Sludge main
- T — Telemetry cables
- VD — Vehicle detection loop
- W — Wash water pipes
- End of trace
- A — Group of services representation
- TER — Taken from records (Not proven on site)
- AR — Assumed route
- Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APROX. DEPTH TO BOTTOM OF DUCT	APROX. DEPTH TO INVERT	APROX. DEPTH TO BOTTOM OF DUCT
CABLE/PIPE (OPTIC)		

(AD)	ASSUMED CONNECTION
(BC)	BACK OF CHANNEL
BAL	BACK DROP LEVEL
CD	CABLE DEPTH
CL	CABLE LEVEL
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
(ET)	END OF TRACE
(ELT)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
IC	INSPECTION CHAMBER
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LV	LOW VOLTAGE
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(OT)	OUT OF TRACE DOUBLE
PD	PIPE DEPTH
PL	POLYETHYLENE
SL	SOFFIT LEVEL
SL	SUMP LEVEL
(UTL)	UNABLE TO LIFT
(UTT)	UNABLE TO TRACE
(UTT)	UNABLE TO TRACE
WD	WAY-DUCT

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TEL: +44 (0)113 278 7111
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Project:

Cefn Park

Drawing Title:

Topographical Survey
Sheet 27 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T027	0

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WP — Wash water pipes
End of trace
Group of services representation
Taken from records (Not proven on site)
AR — Assumed route
Site services boundary

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION: APPROX DEPTH TO CENTRE — CABLE+FIBRE OPTIC

GRAVITY DRAIN (VISUAL OBSERVATION): APPROX DEPTH TO INVERT

GROUND PENETRATING RADAR: APPROX DEPTH TO EXTERNAL CROWN

(AC)	ASSUMED CONNECTION
(AR)	ASSUMED ROUTE
BC	BOTTOM OF CABLE
CD	CABLE DEPTH
CI	CAST IRON
DI	DUCTILE IRON
E	DEPTH OF SERVICE (APPROX)
DU	DUCT DEPTH
(ET)	ENDS EXPLICITLY TRACED
(OT)	END OF TRACE
M	INVERT DEPTH
PC	PIPE CROWN
HV	HIGH VOLTAGE
LD	LAND DRAIN
LV	LOW VOLTAGE
(NF)	NO FURTHER INFORMATION
NPV	NO PIPES VISIBLE
OC	ON CENTRE
PE	POLYETHYLENE
SM	SUMP DEPTH
TC	TOP OF CABLE
(UTL)	UNABLE TO LIFT
(UTS)	UNABLE TO SURVEY
(UT)	UNABLE TO TRACE
WD	WAY DUCT

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TYPICAL FEATURE DEPTH ANNOTATION

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APROX. DEPTH TO BOTTOM OF DUCT	APROX. DEPTH TO INVERT	APROX. DEPTH TO BOTTOM OF DUCT

CABLE/PIPE (OPTIC)

(AC)	ASSUMED CONNECTION
(BC)	BACK OF CHANNEL
BAL	BACK DROP LEVEL
CD	CABLE DEPTH
CL	CABLE LEVEL
CR	CABLE RISER
d	DEPTH OF SERVICE (APPROX)
e	ESTIMATED
(ET)	ELECTRONICALLY TRACED
(EoT)	END OF TRACE
(I)	INFERRED LINE
IL	INVERT LEVEL
HV	HIGH VOLTAGE
LC	LAMP COLUMN
LV	LOW VOLTAGE
(NFI)	NO FURTHER INFORMATION
(P)	PIPE OR CABLE
PV	PIPE DEPTH
PL	POLYETHYLENE
SL	SOFFIT LEVEL
SL	SUMP LEVEL
(UTL)	UNABLE TO LIFT
(UTT)	UNABLE TO TRACE
(UTT)	UNABLE TO TRACE
WO	WAY-OUT

Where services are non-metallic or not proven on site, positions are taken from records, trench scars & surface detail.

Where stated, depth estimations are typically to the centre or bottom of the service. Depths to drainage runs are typically to invert levels, unless otherwise stated.

Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.

The diagram above describes the depth information in more detail.

Where the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.

The CAD layering may contain further information.

Services shown as Taken From Records (TFR) have not been proved on site.

REV	DESCRIPTION	BY	CHK	APP	DATE
1	Survey extended on sheets 14, 15, 20 & 27 to 29	GP	CM	GP	04/01/2024

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 275 0623

Project:

Cefn Park

Drawing Title:

Topographical Survey
Sheet 29 of 29

Scale @ A0	Drawn	Date	Checked	Date	Approved	Date
1:200	IS	18/11/20	DH	18/11/20	GP	18/11/20

Project No.	Office	Type	Drawing No.	Revision
B024030	001		B024030_CP_T029	0

- Existing Drainage

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N

PLAN GRID NORTH

File Name: S24076-CCTV.dwg

BRYN ESTYN ROAD
ED Bdy
HAWKSTONE
Redstock Cottage
Garden Cottage
Brentwood
Home Farm
Old Bungalow Garage
Rugby Club
Mast
Mast
Mast
Bryn E
Busin
Track
Track
Pond
Dwr
CR
Buried Manhole MH98 *Approximate location
Buried Manhole MH2 *Approximate location
Unable to trace line due to no access on land
150
1070
CCTV = Mainly over this length
351200N
351100N
351000N
350900N
359500E
359600E
359700E
359800E

LEGEND

AV	AIR VALVE	BT	
BT	BT INSPECTION COVER	BT STAT. RECORD	
CB	CONTROL BOX	CABLE DUCT	
CBP	CATHODIC PROT. POST		
COM	COMMUNICATIONS COVER	CABLE TV	
CTV	CABLE TV COVER	CABLE TV STAT. RECORD	
DC	DRAINAGE CHANNEL	CCTV	
DP	DOWN PIPE	CCTV STAT RECORD	
EB	ELEC. BOX	ELEC. DUCT	
EIC	ELEC. INSPECTION COVER	TELECOMS STAT. RECORD	
EM	ELEC. METER	EARTH ROD STRIP	
ER	EARTH ROD	ELECTRIC STAT. RECORD	
EP	ELECTRICITY POLE	ELECTRIC	
FCL	FENCE CROSSING LEVEL	ELECTRIC STAT. RECORD	
FH	FIRE HYDRANT	FIBRE OPTICS	
G	GULLY	FIBRE OPTIC STAT. RECORD	
GLT	GROUND LIGHT	FUEL LINE	
GSC	GAS TAP	FUEL LINE STAT. RECORD	
GSV	GAS VALVE	GAS MAIN LINE	
H	HYDRANT COVER	GAS MAIN STAT. RECORD	
IL	INVERT LEVEL	MAINS WATER	
LP	LAMP OUTLET	MAINS WATER STAT. RECORD	
M	MANHOLE	SEWER CW	
MW	MARKER	SEWER CW STAT. RECORD	
OP	OUTFALL PIPE	SEWER FW	
P	POST	SEWER FW STAT. RECORD	
PP	PETROL PUMP	SEWER SW	
RE	RODDING EYE	SEWER SW STAT. RECORD	
SMP	SOIL VENT PIPE	TRAFFIC SIGNAL CABLE	
SOF	SOFFIT LEVEL		
SV	STOP VALVE	UNIDENTIFIED TRACE	
TB	TELEPHONE CALL BOX	UNIDENTIFIED DUCT	
TL	TRAFFIC LIGHT	UNIDENTIFIED PIPE	
TLB	TRAFFIC LIGHT BOX	WORKS LIT SERVICE CABLE	
TP	TELEGRAPH POLE	SURVEY BOUNDARY	
WV	WATER VALVE	SURVEY BOUNDARY	
WT	WATER TROUGH	OUTSIDE THE SURVEY	
WST	WATER STOP TAP		
WSV	WATER STOP VALVE		

QUALITY LEVEL

EOT	END OF TRACE
EOA	END OF SURVEY AREA
UTL	UNABLE TO LIFT
UTS	UNABLE TO SCADE
UTT	UNABLE TO TRACE
S/L	SIGNAL LOSS
BLK	BLOCKED
NCL	NO CONNECTIVITY (DYE CONTACT)
SOL	SHORTCUT HOLE
TOP	TOP OF PAVEMENT
TOP	TOP OF PIPE
MH	MANHOLE
FTR	FITTING FROM RECORDS

A – Verification
B1 – Horizontal/Vertical location using multiple techniques
B2 – Horizontal/Vertical location using a single technique
B3 – Horizontal location using a single technique
B4 – Assumed route
C – Site Reconnaissance
D – Desktop utility records search

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

This Underground Utilities survey was conducted in compliance with the BSI PAS128:2014 standards.
Services linetypes display text indicating first an abbreviation of the services' function (e.g. ELEC, GAS, CTV, CAB) followed by the Quality Level to which that service was located (eg. B4 = Assumed route).

Quality Level descriptions shown in the above legend are for reference purposes only and are not intended as detailed descriptions.
For detailed descriptions of Quality Levels please consult the BSI PAS 128:2014 standard document.

Lines annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar and should be considered as Quality Level B3. The nature of these anomalies could not be determine by non-invasive means. GPR lines that were identifiable as a service are shown as their respective service.

DISCLAIMER:

At SEP we use skilled and experienced staff, modern up to date techniques and top of the range electromagnetic and radar technology to locate and trace sub-surface utilities. However the performance of the equipment employed in non-invasive surveys can be adversely affected by factors outside the control of SEP. Therefore SEP cannot guarantee that all utilities present on site have been located. It is the responsibility of the Client to consult regional authority records and undertake trial digs where appropriate.

Where similar services run in close proximity it may be impossible to separately trace individual services as this trace signal can experience interference. In such cases, services will be shown as a single, annotated line. The displayed depth will refer to the shallowest detected utility.

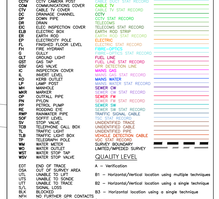
Successful tracing of non-conductive materials may be limited. Drainage gullies are due tested where possible to prove connectivity but it is not always possible to introduce the sonde due to narrow pipe sizes and/or accumulated silt.

Depth information of underground services/features are generally accurate to within +/- 10% (i.e. a pipe at 2m deep may be accurate to +/-200mm) but this cannot be guaranteed. Depths shown usually refer to the top of the service. Gravity sewer and drain depths are usually to invert (base of drainage channel) unless otherwise stated.

Some above ground features may have been obscured at time of survey. It is not always possible to operate the Ground Penetrating Radar in areas including, but not limited to, dense vegetation, rubble, debris and/or rough/uneven ground.

Existing record information that was made available to SEP by the Client or by the statutory utility provider should be regarded only as an indication and cannot be guaranteed.

Excavation in the vicinity of services shown should be carried out with due diligence (Ref. HSG47).



0 5m 10m 20m 30m 40m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Hydrock Consultants Limited
Northern Assurance Buildings
9-21 Princess Street
Albert Square
Manchester
M2 4DN

Project Title
CCTV Drainage Survey at:
Cefn Park
Wrexham
LL13 9TT

Surveyed	Drawn	Checked
K.Donaghy	K.Donaghy	SEP

Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Dec 22	S24076-CCTV	01	A0	--

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PLAN GRID NORTH

File Name: 524076-CCTV.dwg

LEGEND

AV	AIR VALVE	BT	
BT	BT INSPECTION COVER	BT STAT. RECORD	
CB	CONTROL BOX	CABLE DUCT	
CBP	CONTROL BOX POST		
COM	COMMUNICATIONS COVER	CABLE TV	
CTV	CABLE TV COVER	CABLE TV STAT. RECORD	
DC	DRAIN CHANNEL	COMM	
DP	DOWN PIPE	COMM STAT. RECORD	
EP	ELEC. POST	ELEC DUCT	
EIC	ELEC. INSPECTION COVER	TELECOMS STAT. RECORD	
EM	ELECTRIC METER	EARTH ROD STRIP	
ER	EARTH ROD	ELECTRIC OVERHEAD CABLES	
EP	ELECTRICITY POLE	ELECTRIC	
FCL	FENCE CORNER LEVEL	ELECTRIC STAT. RECORD	
FH	FIRE HYDRANT	FIBRE OPTICS	
G	GULLY	FIBRE OPTIC STAT. RECORD	
GLT	GROUND LIGHT	FUEL LINE	
GST	GAS TAP	FUEL LINE STAT. RECORD	
GSV	GAS VALVE	GAS/OIL MAIN LINE	
IC	INSPECTION COVER	GAS/OIL STAT. RECORD	
IL	INVERT LEVEL	MAINS WATER	
LP	LAMP OUTLET	MAINS WATER STAT. RECORD	
MH	MANHOLE	SEWER CW	
MW	MARKER POST	SEWER CW STAT. RECORD	
OP	OUTFALL PIPE	SEWER FW	
PC	PEDESTAL	SEWER FW STAT. RECORD	
PP	PETROL PUMP	SEWER SW	
RE	RODDING EYE	SEWER SW STAT. RECORD	
SWP	SOIL VENT PIPE	TRAFFIC SIGNAL CABLE	
SOF	SOFFIT LEVEL		
SV	STOP VALVE	UNIDENTIFIED TRACE	
TB	TELEPHONE CALL BOX	UNIDENTIFIED DUCT	
TL	TRAFFIC LIGHT	UNIDENTIFIED PIPE	
TLB	TRAFFIC LIGHT BOX	WORKS LIT SERVICE CABLE	
TP	TELEPHONE POST	WORKS LIT DUCT	
WC	WATER METER	SURVEY BOUNDARY	
WM	WATER METER	1000mm 1500 2000 3000mm	
WST	WATER STOP TAP		
WSV	WATER STOP VALVE		

QUALITY LEVEL

A – Verification

B1 – Horizontal/Vertical location using multiple techniques

B2 – Horizontal/Vertical location using a single technique

B3 – Horizontal location using a single technique

B4 – Assumed route

C – Site Reconnaissance

D – Desktop utility records search

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

This Underground Utilities survey was conducted in compliance with the BSI PAS128:2014 standards.
Services linetypes display text indicating first an abbreviation of the services' function (e.g. TEL, ELEC, GAS etc.) and followed by the Quality Level to which that service was located (eg. B4 = Assumed route).

Quality Level descriptions shown in the above legend are for reference purposes only and are not intended as detailed descriptions.
For more detailed descriptions of the Levels please consult the BSI PAS 128:2014 standard document.

Lines annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar and should be considered as Quality Level B3. The nature of these anomalies could not be determine by non-invasive means. GPR lines that were identifiable as a service are shown as their respective service.

DISCLAIMER:

All SEP we use skilled and experienced staff, modern up to date techniques and top of the range electromagnetic and radar technology to locate and trace sub-surface utilities. However the performance of the equipment employed in non-invasive surveys can be adversely affected by factors outside the control of SEP. Therefore SEP cannot guarantee that all utilities present on site have been located. It is the responsibility of the Client to consult regional authority records and undertake trial digs where appropriate.

Where similar services run in close proximity it may be impossible to separately trace individual services as the trace signal can experience interference. In such cases, services will be shown as a single, annotated line. The displayed depth will refer to the shallowest detected utility.

Successful tracing of non-conductive materials may be limited. Drainage gullies are also tested where possible to prove connectivity but it is not always possible to introduce the sonde due to narrow pipe sizes and/or accumulated silt.

Depth information of underground services/features are generally accurate to within +/- 10%. I.e. a pipe or 3m deep may be accurate to +/-300mm) but this cannot be guaranteed. Depths shown usually refer to the top of the service. Gravity sewer and drain depths are usually to invert (base of drainage channel) unless otherwise stated.

Some above ground features may have been obscured at time of survey. It is not always possible to operate the Ground Penetrating Radar in areas including, but not limited to, dense vegetation, rubble, debris and/or rough/uneven ground.

Existing record information that was made available to SEP by the Client or by the statutory utility provider should be regarded only as an indication and cannot be guaranteed.

Excavation in the vicinity of services shown should be carried out with due diligence (Ref. HSG47).



0 5m 10m 20m 30m 40m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Hydrock Consultants Limited
Northern Assurance Buildings
9-21 Princess Street
Albert Square
Manchester
M2 4DN

Project Title
CCTV Drainage Survey at:
Cefn Park
Wrexham
LL13 9TT

Surveyed	Drawn	Checked
K.Donaghy	K.Donaghy	SEP

Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Dec 22	524076-CCTV	02	A0	-

- Existing Infiltration Testing

Table 4.4: Infiltration test results

Stratum	Location	Depth to base of pit (m bgl)**	Test depth (m bgl)	Dominant lithology at test depth	Infiltration rate (m/s)			
					Run 1	Run 2	Run 3	Range (run 3)
Glaciofluvial deposits	TP101	1.9	1.73	Sand	1.14×10^{-5}	8.35×10^{-6}	8.90×10^{-6}	3.87×10^{-6} – 5.84×10^{-5}***
	TP102	1.6	1.6	Very silty clay	Slow infiltration (70% at 27 hours)			
	TP103	1.5	1.36	Slightly silty sand	1.77×10^{-5}	6.81×10^{-6}	5.55×10^{-6}	
	TP104	1.6	1.36	Clayey very silty sand	Slow infiltration (48% at 6 hours)			
	TP105	1.7	1.67	Slightly silty sand	1.81×10^{-5}	1.03×10^{-5}	8.88×10^{-6}	
	TP106	2.2	2.14	Very silty sand	Slow infiltration (64% at 24 hours)			
	TP107	2	1.6	Slightly silty sand	5.79×10^{-5}	2.58×10^{-5}	2.66×10^{-5}	
	TP108	2.5	1.43	Silty sand	9.30×10^{-6}	7.97×10^{-6}	6.59×10^{-6}	
	TP109	1.5	1.47	Slightly silty gravelly sand	3.45×10^{-5}	1.95×10^{-5}	*1.29×10^{-5} **	
	TP110	1.4	1.4	Sand and gravel	6.61×10^{-5}	5.56×10^{-5}	4.70×10^{-5}	
	TP111	1.9	1.9	Slightly clayey very gravelly sand	1.31×10^{-5}	5.12×10^{-5}	8.34×10^{-6}	
	TP112	2	1.9	Gravelly sand	1.53×10^{-4}	6.79×10^{-5}	5.84×10^{-5}	
	TP113	2	1.61	Sand	1.14×10^{-5}	7.95×10^{-6}	7.54×10^{-6}	
	TP114	1.5	1.4	Gravelly sand	7.31×10^{-5}	5.66×10^{-5}	4.35×10^{-5}	
	TP115	1.8	1.7	Gravelly sand	1.33×10^{-4}	6.42×10^{-6}	4.26×10^{-5}	
	TP116	2.1	1.94	Gravelly sand	2.13×10^{-5}	5.97×10^{-6}	5.18×10^{-6}	
	TP117	1.3	1.3	Slightly clayey slightly gravelly sand	1.37×10^{-5}	3.87×10^{-6}	-	
	TP118	1.4	1.34	Gravelly sand	1.48×10^{-4}	4.79×10^{-5}	3.60×10^{-5}	

*Final reading extrapolated to get to 75%.

- Test not undertaken due to time constraints

** Where depth to the base of pit and test depth differ, this is due to trial pit collapse.

***Where less than three tests were possible in a particular location the results provided should be considered indicative only and should not be used for design purposes. If infiltration is critical to the development of the site, multi-day infiltration testing should be undertaken. This only affected TP117.

4.2.3 *Infiltration rate testing summary*

Recorded infiltration rates within this stratum for the 3rd run (i.e the representative test run for design purposes) were between 3.87×10^{-6} and 5.84×10^{-5} m/s.

Infiltration tests undertaken within TP102, TP104 and TP106, where lithology was recorded as a clay or including a significant clay content had low infiltration rates such that the tests could not be completed.

Appendix C
Drainage

- Proposed Drainage Plan



General Notes:

1. This drawing to be read in accordance with all other relevant Adept drawings, third party drawings, specification and other supporting documentation.
2. All given dimensions are as follows.
   A. Level, coordinates and chainages in meters.
   B. Pipe diameter, trench widths and Manhole details in millimeters.
3. All works adhere to all relevant CDM Regulations, project related CDM Documentation and health & safety Risk Assessments.
4. Architects layout taken from 'Tetra Tech' drawing '784-B024030 Cefn Park 131224'.
5. Topo Information Taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
6. Existing drainage taken from 'Hydrock' Drawing 'C17232-HYD-XX-XX-M3-C-0505_P02_Existing Drainage'.
7. Existing utilities taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
8. Infiltration rates taken from 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002' completed by Hydrock
9. Manhole and pipe sizes shown are indicative only based on a high level hydraulic assessment and subject to further detailed design.
10. Drainage positions are based on the 'Tetra Tech' Illustrative Masterplan and are subject to changed following detailed design.
11. Existing drainage has been interpolated using historic survey information. All existing drainage to be located on site and depths confirmed to inform future detailed design and coordination.

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

KEY

- Catchment 1 Drainage Boundary
- Existing Foul Drainage
- Existing Foul Drainage Abandoned
- Existing Combined Sewer
- Existing Combined Sewer Easement
- Proposed Foul Sewer Easement
- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Proposed Foul Water Diversion
- Future Surface Water Drainage
- Future Foul Water Drainage
- Potential Permeable Paving
- Potential Swale / Raingarden
- Potential SUDs Outlet Pipe

Basis of Design

The foul and surface water drainage design is based on a fully adoptable design to the standards of Sewage Sector Guidance - Codes for Adoption and CIRIA SuDS manual.
The intention is to have all Foul drainage adopted by Welsh Water under a S104 agreement and surface water by the SuDS approval Body under a SAB application.

Foul Water Drainage

Where possible foul drainage will discharge unrestricted into the existing WW combined sewer. Depth of the combined sewer to be confirmed at each connection to inform the detail design and coordination.

There will be two new saddle connection made onto the exisitng WW Combined sewer.

It is estimated that the Southern Parcel has 115 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 5.32l/s.

It is estimated that the Northern Parcel has 41 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 1.90l/s.

Surface Water Drainage

The discharge point for surface water flows is to ground via an infiltration basins located at the eastern boundary.
The surface water drainage has been designed to drain by gravity with a free discharge into the basin. The basin have been sized based on an infiltration rate of 8.34×10^{-6} and will provide an attenuation volume of $3,295m^3$.
The attenuation volume is based on providing a maximum water depth of 1.5m and 0.3m freeboard during the 1:100yr storm plus a 40% allowance for climate change & 10% Urban Creep to the proposed plots.

Assumptions

Cover levels have been set using existing site levels and are subject to change following receipt of development / final plot levels.

Catchment 1 when fully built out has been assumed to have an impermeable area of 2.68Ha.

This drawing is for preliminary discussion, planning and costing purposes only and is subject to further detailed design.

Date	Description	By	Chk	Rev
17.01.24	Latest Architectural Layout added	BHB	TT	P2
03.07.24	Initial Issue	BHB	TT	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS
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Tel: 0113 239 4518 (Head Office)
Originating Office: Leeds
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ
Tel: 0113 239 4518

Project: Erlas Park, Wrexham

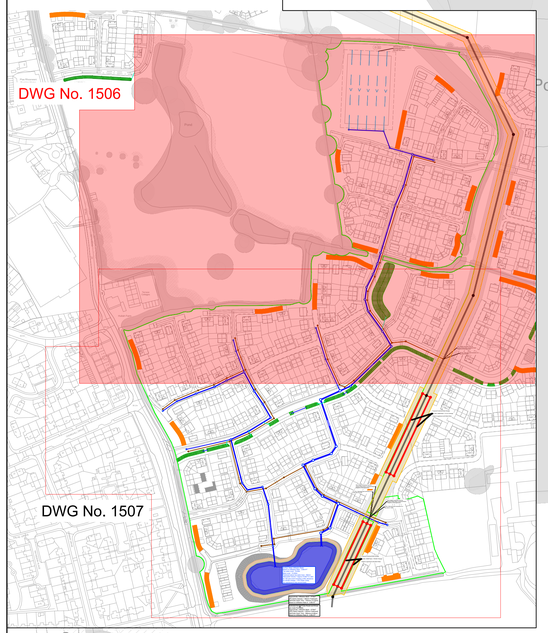
Title: Proposed Drainage Strategy - Catchment 1

Client: Harworth

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:500	BHB	TT	RP	JUL 24

Status	Purpose	Adept Ref
S2	Preliminary	00.23152

Project Number	Originator	Volume	Level	Type	Role	Dng. No.	Rev.
ERLP-ACE-00-ZZ-DR-C-1505							P2



General Notes:

1. This drawing to be read in accordance with all other relevant Adept drawings, third party drawings, specification and other supporting documentation.
2. All given dimensions are as follows.
   A. Level, coordinates and chainages in meters.
   B. Pipe diameter, trench widths and Manhole details in millimeters.
3. All works adhere to all relevant CDM Regulations, project related CDM Documentation and health & safety Risk Assessments.
4. Architects layout taken from 'Tetra Tech' drawing '784-B024030 Cefn Park 131224'.
5. Topo Information Taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
6. Existing drainage taken from 'Hydrock' Drawing 'C17232-HYD-XX-XX-M3-C-0505_P02_Existing Drainage'.
7. Existing utilities taken from 'Tetra Tech' Drawing "784-B024030-TS-01A Cefn Park Topographical Survey".
8. Initration rates taken from 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002' completed by Hydrock
9. Manhole and pipe sizes shown are indicative only based on a high level hydraulic assessment and subject to further detailed design.
10. Drainage positions are based on the 'Tetra Tech' Illustrative Masterplan and are subject to changed following detailed design.
11. Existing drainage has been interpolated using historic survey information. All existing drainage to be located on site and depths confirmed to inform future detailed design and coordination.

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

KEY

- Catchment 3 Drainage Boundary
- Existing Foul Drainage
- Existing Foul Drainage Abandoned
- Existing Combined Sewer
- Existing Combined Sewer Easement
- Proposed Foul Sewer Easement
- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Proposed Foul Rising Main
- Proposed Combined Water Storage
- Future Surface Water Drainage
- Future Foul Water Drainage
- Potential Permeable Paving
- Potential Soakaway
- Potential Swale / Raingarden
- Potential SUDs Outlet Pipe

Basis of Design

The foul and surface water drainage design is based on a fully adoptable design to the standards of Sewage Sector Guidance - Codes for Adoption and CIRIA SuDS manual.
The intention is to have all Foul drainage adopted, foul drainage by Welsh Water under a S104 agreement and surface water by the SuDS approval Body under a SAB application.

Foul Water Drainage

Where possible foul drainage will discharge unrestricted into the existing WW combined sewer. Depth of the combined sewer to be confirmed at each connection to inform the detail design and coordination.

There will be two new saddle connection made onto the exisitng WW Combined sewer.

It is estimated that the Southern Parcel has 234 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 10.83l/s.

It is estimated that the Northern Parcel has 202 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 9.35l/s.

Surface Water Drainage

The discharge point for surface water flows is to ground via an infiltration basins located at the eastern boundary.
The surface water drainage has been designed to drain by gravity with a free discharge into the basin. The basin have been sized based on an infiltration rate of 3.80×10^{-5} and will provide an attenuation volume of $4,735m^3$
The attenuation volume is based on providing a maximum water depth of 1.5m and 0.3m freeboard during the 1:100yr storm plus a 40% allowance for climate change & 10% Urban Creep to the proposed plots.

Assumptions

Cover levels have been set using existing site levels and are subject to change following receipt of development / final plot levels.

Catchment 2 when fully built out has been assumed to have an impermeable area of 7.52Ha.

This drawing is for preliminary discussion, planning and costing purposes only and is subject to further detailed design.

Date	Description	By	Chk	Rev
17.01.24	Drainage design revised to latest Architectural layout	BHB	TT	P2
04.07.24	Initial Issue	BHB	TT	P1

ADEPT
CIVIL AND STRUCTURAL CONSULTING ENGINEERS
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Email: inbox@adeptcsce.com
Tel: 0113 239 4518 (Head Office)
Originating Office: Leeds
1912 Mills, Sunny Bank Mills, Farsley, Leeds, LS28 5UJ
Tel: 0113 239 4518

Project
Erlas Park, Wrexham

Title
Proposed Drainage Strategy - Catchment 2 - Sheet 1 Of 2

Client
Harworth

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:500	BHB	TT	RP	JUL 24

Status	Purpose	Adept Ref
S2	Preliminary	00.23152

Project Number	Originator	Volume	Level	Type	Role	Orig No.	Rev.
ERLP-ACE-00-ZZ-DR-C-1506							P2

For continuation refer to "ERLP-ACE-00-ZZ-DR-C-1506"



General Notes:

1. This drawing to be read in accordance with all other relevant Adept drawings, third party drawings, specification and other supporting documentation.
2. All given dimensions are as follows.
   A. Level, coordinates and chainages in meters.
   B. Pipe diameter, trench widths and Manhole details in millimeters.
3. All works adhere to all relevant CDM Regulations, project related CDM Documentation and health & safety Risk Assessments.
4. Architects layout taken from 'Tetra Tech' drawing '784-B024030 Cefn Park 131224'.
5. Topo Information Taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
6. Existing drainage taken from 'Hydrock' Drawing 'C17232-HYD-XX-XX-M3-C-0505_P02_Existing Drainage'.
7. Existing utilities taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
8. Infiltration rates taken from 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002' completed by Hydrock
9. Manhole and pipe sizes shown are indicative only based on a high level hydraulic assessment and subject to further detailed design.
10. Drainage positions are based on the 'Tetra Tech' Illustrative Masterplan and are subject to changed following detailed design.
11. Existing drainage has been interpolated using historic survey information. All existing drainage to be located on site and depths confirmed to inform future detailed design and coordination.

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

KEY

- Catchment 3 Drainage Boundary
- Existing Foul Drainage
- Existing Foul Drainage Abandoned
- Existing Combined Sewer
- Existing Combined Sewer Easement
- Proposed Foul Sewer Easement
- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Proposed Foul Rising Main
- Proposed Combined Water Storage
- Future Surface Water Drainage
- Future Foul Water Drainage
- Potential Permeable Paving
- Potential Soakaway
- Potential Swale / Raingarden
- Potential SUDs Outlet Pipe

Basis of Design

The foul and surface water drainage design is based on a fully adoptable design to the standards of Sewage Sector Guidance - Codes for Adoption and CIRIA SuDS manual.
The intention is to have all Foul drainage adopted, foul drainage by Welsh Water under a S104 agreement and surface water by the SuDS approval Body under a SAB application.

Foul Water Drainage

Where possible foul drainage will discharge unrestricted into the existing WW combined sewer. Depth of the combined sewer to be confirmed at each connection to inform the detail design and coordination.

There will be two new saddle connection made onto the exisitng WW Combined sewer.

It is estimated that the Southern Parcel has 234 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 10.83l/s.

It is estimated that the Northern Parcel has 202 units which will drain via gravity to the East of the development and discharged into the WW combined sewer at a peak flow of 9.35l/s.

Surface Water Drainage

The discharge point for surface water flows is to ground via an infiltration basins located at the eastern boundary.
The surface water drainage has been designed to drain by gravity with a free discharge into the basin. The basin have been sized based on an infiltration rate of 3.80×10^{-6} and will provide an attenuation volume of 4,735m³.
The attenuation volume is based on providing a maximum water depth of 1.5m and 0.3m freeboard during the 1:100yr storm plus a 40% allowance for climate change & 10% Urban Creep to the proposed plots.

Assumptions

Cover levels have been set using existing site levels and are subject to change following receipt of development / final plot levels.

Catchment 2 when fully built out has been assumed to have an impermeable area of 7.52Ha.

This drawing is for preliminary discussion, planning and costing purposes only and is subject to further detailed design.

Date	Description	By	Chk	Rev
17.01.24	Drainage design revised to latest Architectural layout	BHB	TT	P2
04.07.24	Initial Issue	BHB	TT	P1

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Tel: 0113 239 4518

Project
Erlas Park, Wrexham

Title
Proposed Drainage Strategy - Catchment 2 - Sheet 2 Of 2

Client
Harworth

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:500	BHB	TT	RP	JUL 24

Status	Purpose	Adept Ref
S2	Preliminary	00.23152

Project Number	Originator	Volume	Level	Type	Role	Org./No.	Rev.
ERLP-ACE-00-ZZ-DR-C-1507							P2



General Notes:

1. This drawing to be read in accordance with all other relevant Adept drawings, third party drawings, specification and other supporting documentation.
2. All given dimensions are as follows.
A. Level, coordinates and chainages in meters.
B. Pipe diameter, trench widths and Manhole details in millimeters.
3. All works adhere to all relevant CDM Regulations, project related CDM Documentation and health & safety Risk Assessments.
4. Architects layout taken from 'Tetra Tech' drawing '784-B024030 Cefn Park 131224'.
5. Topo Information Taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
6. Existing drainage taken from 'Hydrock' Drawing 'C17232-HYD-XX-XX-M3-C-0505_P02_Existing Drainage'.
7. Existing utilities taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
8. Infiltration rates taken from 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002' completed by Hydrock
9. Manhole and pipe sizes shown are indicative only based on a high level hydraulic assessment and subject to further detailed design.
10. Drainage positions are based on the 'Tetra Tech' Illustrative Masterplan and are subject to changed following detailed design.
11. Existing drainage has been interpolated using historic survey information. All existing drainage to be located on site and depths confirmed to inform future detailed design and coordination.

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

KEY

- Catchment 3 Drainage Boundary
- Existing Foul Drainage
- Existing Foul Drainage Abandoned
- Existing Combined Sewer
- Existing Combined Sewer Easement
- Proposed Foul Sewer Easement
- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Proposed Foul Rising Main
- Proposed Combined Water Storage
- Future Surface Water Drainage
- Future Foul Water Drainage
- Potential Permeable Paving
- Potential Soakaway
- Potential Swale / Raingarden
- Potential SUDs Outlet Pipe

Basis of Design

The foul and surface water drainage design is based on a fully adoptable design to the standards of Sewage Sector Guidance - Codes for Adoption and CIRIA SuDS manual.
The intention is to have all Foul drainage adopted, foul drainage by Welsh Water under a S104 agreement and surface water by the SuDS approval Body under a SAB application.

Foul Water Drainage

The foul water drainage will be drained via gravity into a pump station at a peak flow of 6.25l/s for catchment 3.
Depth of the combined sewer to be confirmed at each connection to inform the detail design and coordination.

It is estimated that 135 units will drain via gravity to the East of the development into a Pump station at a peak flow of 6.25l/s for catchment 3. The estimated 121 units at a peak flow of 5.60l/s will also drain via gravity into a Pump station from Catchment 4.

These two catchments will then be pumped back to the the West of the development and discharged into the WW combined sewer at a peak flow of 11.85 l/s

Surface Water Drainage

The discharge point for surface water flows is to ground via an infiltration basins located at the eastern boundary.
The surface water drainage has been designed to drain by gravity with a free discharge into the basin. The basin have been sized based on an infiltration rate of 5.55×10^{-6} and will provide an attenuation volume of $2,497m^3$.
The attenuation volume is based on providing a maximum water depth of 1.5m and 0.3m freeboard during the 1:100yr storm plus a 40% allowance for climate change & 10% Urban Creep to the proposed plots.

Assumptions

Cover levels have been set using existing site levels and are subject to change following receipt of development / final plot levels.

Catchment 3 when fully built out has been assumed to have an impermeable area of 2.40Ha.

This drawing is for preliminary discussion, planning and costing purposes only and is subject to further detailed design.

Date	Description	By	Chk	Rev
17.01.24	Drainage design revised to latest Architectural layout	BHB	TT	P2
04.07.24	Initial Issue	BHB	TT	P1

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Project
Erlas Park, Wrexham

Title
Proposed Drainage Strategy - Catchment 3

Client
Harworth

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:500	BHB	TT	RP	JUL 24

Status	Purpose	Adept Ref
S2	Preliminary	00.23152

Project Number	Originator	Volume	Level	Type	Role	Drg No.	Rev.
ERLP-ACE-00-ZZ-DR-C-1508							P2



General Notes:

1. This drawing to be read in accordance with all other relevant Adept drawings, third party drawings, specification and other supporting documentation.
2. All given dimensions are as follows.
   A. Level, coordinates and chainages in meters.
   B. Pipe diameter, trench widths and Manhole details in millimeters.
3. All works adhere to all relevant CDM Regulations, project related CDM Documentation and health & safety Risk Assessments.
4. Architects layout taken from 'Tetra Tech' drawing '784-B024030 Cefn Park 131224'.
5. Topo Information Taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
6. Existing drainage taken from 'Hydrock' Drawing 'C17232-HYD-XX-XX-M3-C-0505_P02_Existing Drainage'.
7. Existing utilities taken from 'Tetra Tech' Drawing '784-B024030-TS-01A Cefn Park Topographical Survey'.
8. Infiltration rates taken from 'Infiltration Testing Report 17177-HYD-XX-XX-RP-GE-002' completed by Hydrock
9. Manhole and pipe sizes shown are indicative only based on a high level hydraulic assessment and subject to further detailed design.
10. Drainage positions are based on the 'Tetra Tech' illustrative Masterplan and are subject to changed following detailed design.
11. Existing drainage has been interpolated using historic survey information. All existing drainage to be located on site and depths confirmed to inform future detailed design and coordination.

Do Not Scale

DESIGN REVIEW

Design review by:	**	Checked by:	**

Residual hazards:

Health, Safety & Environmental Notes

NOTES

KEY

- Catchment 4 Drainage Boundary
- Existing Foul Drainage
- Existing Foul Drainage Abandoned
- Existing Combined Sewer
- Existing Combined Sewer Easement
- Proposed Foul Sewer Easement
- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Proposed Foul Water Diversion
- Future Surface Water Drainage
- Future Foul Water Drainage
- Potential Permeable Paving
- Potential Swale / Raingarden
- Potential SUDs Outlet Pipe

Basis of Design

The foul and surface water drainage design is based on a fully adoptable design to the standards of Sewage Sector Guidance - Codes for Adoption and CIRIA SuDS manual.
The intention is to have foul drainage adopted by Welsh Water under a S104 agreement and surface water by the SuDS approval Body under a SAB application.

Foul Water Drainage

The foul water drainage will be drained via gravity into a pump station at a restricted rate of 5.60l/s for catchment 4.
Depth of the combined sewer to be confirmed at each connection to inform the detail design and coordination.

It is estimated that 121 units will drain via gravity to the East into a Pump station at a restricted rate of 5.60l/s for catchment 4 and pumped back to the the West of the development and discharged into the WW combined sewer at a peak flow of 11.85 l/s.

Surface Water Drainage

The discharge point for surface water flows is to ground via an infiltration basins located at the eastern boundary.
The surface water drainage has been designed to drain by gravity with a free discharge into the basin. The basin have been sized based on an infiltration rate of $8.88x10^{-6}$ and will provide an attenuation volume of $2,743m^3$.
The attenuation volume is based on providing a maximum water depth of 1.5m and 0.3m freeboard during the 1:100yr storm plus a 40% allowance for climate change & 10% Urban Creep to the proposed plots.

Assumptions

Cover levels have been set using existing site levels and are subject to change following receipt of development / final plot levels.

Catchment 4 when fully built out has been assumed to have an impermeable area of 2.32Ha.

Approximate Infiltration Basin - $2743m^3$
(32% Spare Capacity + 300mm Freeboard)
Half Drain Down Time - 2498mins (41.63hrs)
Based on Infiltration Rate of - $8.88x10^{-6}$

Estimated that IF Private Roads and Drives are made Permeable
Approximate Infiltration Basin - $2743m^3$
(47% Spare Capacity + 300mm Freeboard)
Half Drain Down Time - 1935mins (32.25hrs)
Based on Infiltration Rate of - $8.88x10^{-6}$

This drawing is for preliminary discussion, planning and costing purposes only and is subject to further detailed design.

Date	Description	By	Chk	Rev
17.01.24	Drainage design revised to latest Architectural layout	BHB	TT	P2
03.07.24	Initial Issue	BHB	TT	P1

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Project
Erlas Park, Wrexham

Title
Proposed Drainage Strategy - Catchment 4

Client
Harworth

Scale @ A0	Initial author	Initial checker	Approver	Initial Date
1:500	BHB	TT	RP	JUL 24

Status	Purpose	Adept Ref
S2	Preliminary	00.23152

Project Number	Originator	Volume	Level	Type	Role	Org. No.	Rev.
ERLP-ACE-00-ZZ-DR-C-1509							P2

- Drainage Calculations

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Network (Catchment 1)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW03	Outlet	2.000	Free Discharge
SW02	Outlet	1.001	Free Discharge
SW05	Outlet	1.003	Free Discharge
SW06	Outlet	3.000	Free Discharge
SW04	Outlet	1.002	Free Discharge
SW07	Outlet	1.004	Free Discharge
SW08	Outlet	1.005	Free Discharge
SW01	Outlet	1.000	Free Discharge
SW20	Outlet	8.000	Free Discharge
SW09	Outlet	1.006	Free Discharge
SW19	Outlet	7.000	Free Discharge
SW10	Outlet	4.000	Free Discharge
SW21	Outlet	7.001	Free Discharge
SW22	Outlet	7.002	Free Discharge
SW12	Outlet	5.000	Free Discharge
SW13	Outlet	1.007	Free Discharge
SW11	Outlet	4.001	Free Discharge
SW14	Outlet	1.008	Free Discharge
SW23	Outlet	7.003	Free Discharge
SW25	Outlet	7.004	Free Discharge
SW24	Outlet	9.000	Free Discharge
SW26	Outlet	7.005	Free Discharge
SW15	Outlet	1.009	Free Discharge
SW17	Outlet	1.010	Free Discharge
SW16	Outlet	6.000	Free Discharge
SW18	Outlet	1.011	Free Discharge

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Network (Catchment 1)	Company Address:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	77.400
Depth (m)	1.500
Base Level (m)	75.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.487
Total Volume (m³)	3924.718

Depth (m)	Area (m²)	Volume (m³)
0.000	2157.195	0.000
1.500	3104.417	3924.718

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	1.011
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	7.005
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.03
Safety Factor	2.0
Perimeter	Circular
Length (m)	86.588
Friction Scheme	Manning's n
n	0.033

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Network (Catchment 1)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	23.255	Pipe	200.476		0.6	450	80.797	79.147
1.001	32.121	Pipe	199.509		0.6	450	80.999	79.031
1.002	14.046	Pipe	200.657		0.6	450	80.975	78.870
1.003	10.460	Pipe	197.357		0.6	450	80.992	78.800
1.004	11.283	Pipe	201.488		0.6	450	80.951	78.747
1.005	33.381	Pipe	45.541		0.6	450	80.926	78.691
1.006	20.473	Pipe	45.597		0.6	450	80.390	77.958
1.007	16.316	Pipe	45.574		0.6	525	79.842	77.434
1.008	32.935	Pipe	45.554		0.6	525	79.408	77.076
1.009	11.950	Pipe	45.435		0.6	525	78.563	76.353
1.010	22.912	Pipe	200.979		0.6	525	78.330	76.090
2.000	17.736	Pipe	150.303		0.6	300	81.252	79.138
3.000	7.598	Pipe	148.987		0.6	300	80.975	78.948
7.000	14.183	Pipe	52.724		0.6	300	79.971	78.291
7.001	13.179	Pipe	52.740		0.6	375	79.935	77.947
4.000	29.679	Pipe	59.958		0.6	300	79.959	78.459
4.001	19.284	Pipe	63.225		0.6	300	79.735	77.964
8.000	14.399	Pipe	149.925		0.6	300	80.405	78.118
5.000	9.175	Pipe	150.415		0.6	300	79.923	77.720
6.000	14.890	Pipe	150.402		0.6	300	78.106	76.414
7.002	21.486	Pipe	52.740		0.6	375	79.929	77.697
7.003	35.314	Pipe	52.723		0.6	375	79.335	77.290
7.004	20.719	Pipe	44.305		0.6	375	78.755	76.620
9.000	15.181	Pipe	149.925		0.6	300	78.730	76.796
1.011	16.573	Pipe	218.061		0.6	525	78.060	75.976
7.005	13.043	Pipe	51.682		0.6	375	78.608	76.152

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	80.999	79.031		None
1.001	80.975	78.870		Levels
1.002	80.992	78.800		None
1.003	80.951	78.747		None
1.004	80.926	78.691		None
1.005	80.390	77.958		Levels
1.006	79.842	77.509		Levels
1.007	79.408	77.076		None
1.008	78.563	76.353		None
1.009	78.330	76.090		Levels
1.010	78.060	75.976		None
2.000	80.975	79.020		Levels
3.000	80.951	78.897		Levels
7.000	79.935	78.022		Levels
7.001	79.929	77.697		None
4.000	79.735	77.964		None
4.001	79.842	77.659		Levels
8.000	79.935	78.022		Levels
5.000	79.842	77.659		Levels
6.000	78.330	76.315		Levels
7.002	79.335	77.290		None
7.003	78.755	76.620		Levels
7.004	78.608	76.152		None
9.000	78.755	76.695		Levels
1.011	77.400	75.900		None
7.005	77.400	75.900		None

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	4156.557	100	0	100	4156.557
Catchment Area (1)	SW03		Time of Concentration	215.618	100	0	100	215.618
Catchment Area (2)	SW19		Time of Concentration	316.818	100	0	100	316.818
Catchment Area (3)	SW19		Time of Concentration	30.076	100	0	100	30.076
Catchment Area (4)	SW19		Time of Concentration	61.621	100	0	100	61.621
Catchment Area (5)	SW19		Time of Concentration	51.424	100	0	100	51.424
Catchment Area (6)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (7)	SW19		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (8)	SW21		Time of Concentration	60.331	100	0	100	60.331
Catchment Area (9)	SW23		Time of Concentration	29.755	100	0	100	29.755
Catchment Area (10)	SW24		Time of Concentration	70.034	100	0	100	70.034
Catchment Area (11)	SW24		Time of Concentration	142.200	100	0	100	142.200
Catchment Area (12)	SW25		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (13)	SW25		Time of Concentration	28.591	100	0	100	28.591
Catchment Area (14)	SW25		Time of Concentration	23.879	100	0	100	23.879
Catchment Area (15)	SW25		Time of Concentration	51.800	100	0	100	51.800
Catchment Area (16)	SW20		Time of Concentration	25.523	100	0	100	25.523
Catchment Area (17)	SW20		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (18)	SW20		Time of Concentration	56.684	100	0	100	56.684
Catchment Area (19)	SW20		Time of Concentration	50.338	100	0	100	50.338
Catchment Area (20)	SW20		Time of Concentration	25.883	100	0	100	25.883
Catchment Area (21)	SW20		Time of Concentration	30.239	100	0	100	30.239
Catchment Area (22)	SW20		Time of Concentration	30.567	100	0	100	30.567
Catchment Area (23)	SW20		Time of Concentration	61.114	100	0	100	61.114
Catchment Area (24)	SW10		Time of Concentration	57.036	100	0	100	57.036
Catchment Area (25)	SW23		Time of Concentration	22.859	100	0	100	22.859
Catchment Area (26)	SW23		Time of Concentration	28.451	100	0	100	28.451
Catchment Area (27)	SW06		Time of Concentration	24.929	100	0	100	24.929
Catchment Area (28)	SW06		Time of Concentration	28.091	100	0	100	28.091
Catchment Area (29)	SW06		Time of Concentration	54.812	100	0	100	54.812
Catchment Area (30)	SW06		Time of Concentration	54.362	100	0	100	54.362
Catchment Area (31)	SW06		Time of Concentration	28.233	100	0	100	28.233
Catchment Area (32)	SW17		Time of Concentration	157.856	100	0	100	157.856

Catchment Area (33)	SW15		Time of Concentration	60.897	100	0	100	60.897
Catchment Area (34)	SW15		Time of Concentration	61.056	100	0	100	61.056
Catchment Area (35)	SW11		Time of Concentration	71.914	100	0	100	71.914
Catchment Area (36)	SW11		Time of Concentration	50.234	100	0	100	50.234
Catchment Area (37)	SW11		Time of Concentration	56.997	100	0	100	56.997
Catchment Area (38)	SW10		Time of Concentration	47.417	100	0	100	47.417
Catchment Area (39)	SW09		Time of Concentration	24.975	100	0	100	24.975
Catchment Area (40)	SW09		Time of Concentration	30.056	100	0	100	30.056
Catchment Area (41)	SW11		Time of Concentration	34.653	100	0	100	34.653
Catchment Area (42)	SW09		Time of Concentration	60.406	100	0	100	60.406
Catchment Area (43)	SW09		Time of Concentration	62.026	100	0	100	62.026
Catchment Area (44)	SW12		Time of Concentration	27.190	100	0	100	27.190
Catchment Area (45)	SW12		Time of Concentration	54.303	100	0	100	54.303
Catchment Area (46)	SW12		Time of Concentration	433.262	100	0	100	433.262
Catchment Area (47)	SW12		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (48)	SW12		Time of Concentration	24.874	100	0	100	24.874
Catchment Area (49)	SW12		Time of Concentration	145.358	100	0	100	145.358
Catchment Area (50)	SW12		Time of Concentration	33.855	100	0	100	33.855
Catchment Area (51)	SW12		Time of Concentration	59.656	100	0	100	59.656
Catchment Area (52)	SW03		Time of Concentration	331.546	100	0	100	331.546
Catchment Area (53)	SW03		Time of Concentration	26.073	100	0	100	26.073
Catchment Area (54)	SW03		Time of Concentration	30.177	100	0	100	30.177
Catchment Area (55)	SW03		Time of Concentration	24.159	100	0	100	24.159
Catchment Area (56)	SW03		Time of Concentration	52.253	100	0	100	52.253
Catchment Area (57)	SW03		Time of Concentration	253.936	100	0	100	253.936
Catchment Area (58)	SW16		Time of Concentration	29.182	100	0	100	29.182
Catchment Area (59)	SW16		Time of Concentration	33.914	100	0	100	33.914
Catchment Area (60)	SW16		Time of Concentration	23.003	100	0	100	23.003
Catchment Area (61)	SW16		Time of Concentration	321.169	100	0	100	321.169
Catchment Area (62)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (63)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (64)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (65)	SW05		Time of Concentration	24.974	100	0	100	24.974
Catchment Area (66)	SW01		Time of Concentration	322.189	100	0	100	322.189
Catchment Area (67)	SW01		Time of Concentration	30.513	100	0	100	30.513

Catchment Area (68)	SW01		Time of Concentration	77.553	100	0	100	77.553
Catchment Area (69)	SW01		Time of Concentration	61.627	100	0	100	61.627
Catchment Area (70)	SW01		Time of Concentration	34.686	100	0	100	34.686
Catchment Area (71)	SW01		Time of Concentration	29.633	100	0	100	29.633
Catchment Area (72)	SW01		Time of Concentration	70.308	100	0	100	70.308
Catchment Area (73)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (74)	SW01		Time of Concentration	52.674	100	0	100	52.674
Catchment Area (75)	SW01		Time of Concentration	25.241	100	0	100	25.241
Catchment Area (76)	SW01		Time of Concentration	25.205	100	0	100	25.205
Catchment Area (77)	SW01		Time of Concentration	240.532	100	0	100	240.532
Catchment Area (78)	SW19		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (79)	SW01		Time of Concentration	60.526	100	0	100	60.526
Catchment Area (80)	SW01		Time of Concentration	58.657	100	0	100	58.657
Catchment Area (81)	SW15		Time of Concentration	35.115	100	0	100	35.115
Catchment Area (82)	SW15		Time of Concentration	68.934	100	0	100	68.934
Catchment Area (83)	SW15		Time of Concentration	31.384	100	0	100	31.384
Catchment Area (84)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (85)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (86)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (87)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (88)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (89)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (90)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (91)	SW03		Time of Concentration	114.187	100	0	100	114.187
Catchment Area (92)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (94)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (95)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (96)	SW03		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (97)	SW01		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (98)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (99)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (100)	SW01		Time of Concentration	57.908	100	0	100	57.908
Catchment Area (101)	SW01		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (102)	SW01		Time of Concentration	147.345	100	0	100	147.345

Catchment Area (103)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (104)	SW01		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (105)	SW01		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (106)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (107)	SW01		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (108)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (109)	SW01		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (110)	SW01		Time of Concentration	146.974	100	0	100	146.974
Catchment Area (111)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (112)	SW01		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (113)	SW01		Time of Concentration	57.715	100	0	100	57.715
Catchment Area (114)	SW05		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (115)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (116)	SW05		Time of Concentration	108.866	100	0	100	108.866
Catchment Area (117)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (118)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (119)	SW19		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (120)	SW19		Time of Concentration	98.184	100	0	100	98.184
Catchment Area (121)	SW19		Time of Concentration	98.258	100	0	100	98.258
Catchment Area (122)	SW19		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (123)	SW20		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (124)	SW20		Time of Concentration	99.809	100	0	100	99.809
Catchment Area (125)	SW20		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (126)	SW20		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (127)	SW19		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (128)	SW24		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (129)	SW24		Time of Concentration	99.821	100	0	100	99.821
Catchment Area (130)	SW24		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (131)	SW21		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (132)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (133)	SW20		Time of Concentration	107.044	100	0	100	107.044
Catchment Area (134)	SW20		Time of Concentration	99.409	100	0	100	99.409
Catchment Area (135)	SW20		Time of Concentration	70.176	100	0	100	70.176
Catchment Area (136)	SW20		Time of Concentration	107.004	100	0	100	107.004
Catchment Area (137)	SW06		Time of Concentration	90.464	100	0	100	90.464

Catchment Area (138)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (139)	SW06		Time of Concentration	99.823	100	0	100	99.823
Catchment Area (140)	SW06		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (141)	SW06		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (142)	SW09		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (143)	SW11		Time of Concentration	57.830	100	0	100	57.830
Catchment Area (144)	SW11		Time of Concentration	108.852	100	0	100	108.852
Catchment Area (145)	SW11		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (146)	SW10		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (147)	SW25		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (148)	SW23		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (149)	SW11		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (150)	SW17		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (151)	SW17		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (152)	SW15		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (153)	SW11		Time of Concentration	107.023	100	0	100	107.023
Catchment Area (154)	SW16		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (155)	SW15		Time of Concentration	112.476	100	0	100	112.476
Catchment Area (156)	SW15		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (157)	SW15		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (158)	SW12		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (159)	SW09		Time of Concentration	98.187	100	0	100	98.187
Catchment Area (160)	SW12		Time of Concentration	108.926	100	0	100	108.926
Catchment Area (161)	SW12		Time of Concentration	112.793	100	0	100	112.793
Catchment Area (162)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (163)	SW12		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (164)	SW16		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (165)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (166)	SW16		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (167)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (168)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (169)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (170)	SW12		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (171)	SW12		Time of Concentration	112.044	100	0	100	112.044
Catchment Area (172)	SW12		Time of Concentration	70.235	100	0	100	70.235

Catchment Area (173)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (174)	SW12		Time of Concentration	57.922	100	0	100	57.922
Catchment Area (175)	SW12		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (176)	SW25		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (177)	SW03		Time of Concentration	120.725	100	0	100	120.725
Catchment Area (178)	SW03		Time of Concentration	101.425	100	0	100	101.425
Catchment Area (179)	SW16		Time of Concentration	288.526	100	0	100	288.526
Catchment Area (180)	SW17		Time of Concentration	84.104	100	0	100	84.104
Catchment Area (181)	SW14		Time of Concentration	286.752	100	0	100	286.752
Catchment Area (182)	SW14		Time of Concentration	54.557	100	0	100	54.557
Catchment Area (183)	SW19		Time of Concentration	90.128	100	0	100	90.128
Catchment Area (184)	SW19		Time of Concentration	61.979	100	0	100	61.979
Catchment Area (185)	SW19		Time of Concentration	192.246	100	0	100	192.246
Catchment Area (186)	SW19		Time of Concentration	122.309	100	0	100	122.309
Catchment Area (187)	SW20		Time of Concentration	233.365	100	0	100	233.365
Catchment Area (188)	SW20		Time of Concentration	98.102	100	0	100	98.102
Catchment Area (189)	SW21		Time of Concentration	127.973	100	0	100	127.973
Catchment Area (190)	SW24		Time of Concentration	100.553	100	0	100	100.553
Catchment Area (191)	SW25		Time of Concentration	74.748	100	0	100	74.748
Catchment Area (192)	SW25		Time of Concentration	178.590	100	0	100	178.590
Catchment Area (193)	SW23		Time of Concentration	183.387	100	0	100	183.387
Catchment Area (194)	SW22		Time of Concentration	143.431	100	0	100	143.431
Catchment Area (195)	SW10		Time of Concentration	210.323	100	0	100	210.323
Catchment Area (196)	SW13		Time of Concentration	148.136	100	0	100	148.136
Catchment Area (197)	SW01		Time of Concentration	285.683	100	0	100	285.683
Catchment Area (198)	SW01		Time of Concentration	140.355	100	0	100	140.355
Catchment Area (199)	SW01		Time of Concentration	98.939	100	0	100	98.939
Catchment Area (200)	SW01		Time of Concentration	88.706	100	0	100	88.706
Catchment Area (201)	SW01		Time of Concentration	205.339	100	0	100	205.339
Catchment Area (202)	SW01		Time of Concentration	177.806	100	0	100	177.806
Catchment Area (203)	SW01		Time of Concentration	324.436	100	0	100	324.436
Catchment Area (204)	SW01		Time of Concentration	89.692	100	0	100	89.692
Catchment Area (205)	SW01		Time of Concentration	166.517	100	0	100	166.517
Catchment Area (206)	SW01		Time of Concentration	169.147	100	0	100	169.147
Catchment Area (207)	SW01		Time of Concentration	57.840	100	0	100	57.840

Catchment Area (208)	SW01		Time of Concentration	34.102	100	0	100	34.102
Catchment Area (209)	SW02		Time of Concentration	223.721	100	0	100	223.721
Catchment Area (210)	SW03		Time of Concentration	111.757	100	0	100	111.757
Catchment Area (211)	SW03		Time of Concentration	114.814	100	0	100	114.814
Catchment Area (212)	SW03		Time of Concentration	177.390	100	0	100	177.390
Catchment Area (213)	SW06		Time of Concentration	73.476	100	0	100	73.476
Catchment Area (214)	SW06		Time of Concentration	68.292	100	0	100	68.292
Catchment Area (215)	SW06		Time of Concentration	152.182	100	0	100	152.182
Catchment Area (216)	SW12		Time of Concentration	48.073	100	0	100	48.073
Catchment Area (217)	SW12		Time of Concentration	71.924	100	0	100	71.924
Catchment Area (218)	SW12		Time of Concentration	125.496	100	0	100	125.496
Catchment Area (219)	SW04		Time of Concentration	373.087	100	0	100	373.087
Catchment Area (220)	SW06		Time of Concentration	63.264	100	0	100	63.264
Catchment Area (221)	SW07		Time of Concentration	71.848	100	0	100	71.848
Catchment Area (222)	SW08		Time of Concentration	100.096	100	0	100	100.096
Catchment Area (223)	SW08		Time of Concentration	241.452	100	0	100	241.452
Catchment Area (224)	SW09		Time of Concentration	191.879	100	0	100	191.879
Catchment Area (225)	SW13		Time of Concentration	78.859	100	0	100	78.859
Catchment Area (226)	SW12		Time of Concentration	78.502	100	0	100	78.502
Catchment Area (227)	SW12		Time of Concentration	150.934	100	0	100	150.934
Catchment Area (228)	SW12		Time of Concentration	42.738	100	0	100	42.738
Catchment Area (229)	SW12		Time of Concentration	61.430	100	0	100	61.430
Catchment Area (230)	SW20		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (231)	SW24		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (232)	SW10		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (233)	SW06		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (234)	SW03		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (235)	SW01		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (236)	SW12		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (237)	SW16		Time of Concentration	96.390	100	0	100	96.390
TOTAL		**0.0**		**26829.239**				**26829.239**

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.320
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW03	FSR: 2 years: +0 %: 15 mins: Winter	81.252	79.138	79.292	0.154	42.3	0.174	0.000	40.7	19.620	OK
SW02	FSR: 2 years: +0 %: 15 mins: Winter	80.999	79.031	79.209	0.178	73.0	0.314	0.000	68.5	34.753	OK
SW05	FSR: 2 years: +0 %: 15 mins: Winter	80.992	78.800	79.063	0.263	115.7	0.465	0.000	112.3	60.040	OK
SW06	FSR: 2 years: +0 %: 15 mins: Winter	80.975	78.948	79.043	0.095	16.5	0.107	0.000	16.1	7.636	OK
SW04	FSR: 2 years: +0 %: 15 mins: Winter	80.975	78.870	79.136	0.266	114.9	0.470	0.000	108.9	56.930	OK
SW07	FSR: 2 years: +0 %: 15 mins: Winter	80.951	78.747	78.988	0.241	129.4	0.426	0.000	126.5	68.129	OK
SW08	FSR: 2 years: +0 %: 15 mins: Winter	80.926	78.691	78.860	0.169	131.7	0.298	0.000	128.4	70.500	OK
SW01	FSR: 2 years: +0 %: 15 mins: Winter	80.797	79.147	79.334	0.187	71.5	0.330	0.000	69.6	33.235	OK
SW20	FSR: 2 years: +0 %: 15 mins: Winter	80.405	78.118	78.228	0.110	23.3	0.070	0.000	22.6	10.820	OK
SW09	FSR: 2 years: +0 %: 15 mins: Winter	80.390	77.958	78.136	0.178	136.6	0.315	0.000	130.9	74.199	OK
SW19	FSR: 2 years: +0 %: 15 mins: Winter	79.971	78.291	78.379	0.088	25.8	0.056	0.000	25.3	11.970	OK
SW10	FSR: 2 years: +0 %: 15 mins: Winter	79.959	78.459	78.507	0.048	8.4	0.055	0.000	8.2	3.909	OK
SW21	FSR: 2 years: +0 %: 15 mins: Winter	79.935	77.947	78.068	0.121	52.2	0.077	0.000	51.7	24.811	OK
SW22	FSR: 2 years: +0 %: 15 mins: Winter	79.929	77.697	77.815	0.118	53.9	0.075	0.000	52.7	25.809	OK
SW12	FSR: 2 years: +0 %: 15 mins: Winter	79.923	77.720	77.867	0.147	37.0	0.166	0.000	36.2	17.181	OK
SW13	FSR: 2 years: +0 %: 15 mins: Winter	79.842	77.434	77.642	0.208	187.6	0.530	0.000	185.1	101.429	OK
SW11	FSR: 2 years: +0 %: 15 mins: Winter	79.735	77.964	78.038	0.074	18.1	0.083	0.000	17.0	8.497	OK
SW14	FSR: 2 years: +0 %: 15 mins: Winter	79.408	77.076	77.270	0.194	190.3	0.342	0.000	185.4	103.754	OK
SW23	FSR: 2 years: +0 %: 15 mins: Winter	79.335	77.290	77.408	0.118	58.4	0.075	0.000	56.6	28.441	OK
SW25	FSR: 2 years: +0 %: 15 mins: Winter	78.755	76.620	76.755	0.135	75.2	0.086	0.000	72.9	37.270	OK
SW24	FSR: 2 years: +0 %: 15 mins: Winter	78.730	76.796	76.863	0.067	9.5	0.043	0.000	9.1	4.396	OK
SW26	FSR: 2 years: +0 %: 15 mins: Winter	78.608	76.152	76.298	0.146	72.9	0.093	0.000	71.5	37.286	OK
SW15	FSR: 2 years: +0 %: 15 mins: Winter	78.563	76.353	76.597	0.244	194.7	0.430	0.000	187.0	108.032	OK
SW17	FSR: 2 years: +0 %: 15 mins: Winter	78.330	76.090	76.422	0.332	214.5	0.844	0.000	205.3	120.997	OK
SW16	FSR: 2 years: +0 %: 15 mins: Winter	78.106	76.414	76.521	0.107	22.0	0.121	0.000	21.3	10.134	OK
SW18	FSR: 2 years: +0 %: 15 mins: Winter	78.060	75.976	76.271	0.295	205.3	0.522	0.000	198.2	120.907	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 2 years: +0 %: 480 mins: Winter	76.092	76.092	0.192	0.192	57.2	425.817	0.000	489.325	0.0	0.000	89.150	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	80.797	79.334	0.182	33.235	1.2	0.31	69.6	OK
1.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW02	SW04	80.999	79.209	0.222	34.753	0.9	0.3	68.5	OK
1.002	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	80.975	79.136	0.264	56.930	1.1	0.48	108.9	OK
1.003	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW05	SW07	80.992	79.063	0.252	60.040	1.2	0.49	112.3	OK
1.004	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW07	SW08	80.951	78.988	0.205	68.129	1.8	0.56	126.5	OK
1.005	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW08	SW09	80.926	78.860	0.174	70.500	2.3	0.27	128.4	OK
1.006	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW09	SW13	80.390	78.136	0.169	74.199	2.4	0.27	130.9	OK
1.007	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW13	SW14	79.842	77.642	0.201	101.429	2.4	0.26	185.1	OK
1.008	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	79.408	77.270	0.219	103.754	2.2	0.26	185.4	OK
1.009	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW15	SW17	78.563	76.597	0.288	108.032	1.5	0.26	187.0	OK
1.010	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW17	SW18	78.330	76.422	0.314	120.997	1.5	0.6	205.3	OK
2.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW03	SW04	81.252	79.292	0.147	19.620	1.2	0.45	40.7	OK
3.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW06	SW07	80.975	79.043	0.093	7.636	0.9	0.18	16.1	OK
7.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW19	SW21	79.971	78.379	0.085	11.970	1.5	0.16	25.3	OK
7.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	79.935	78.068	0.119	24.811	1.7	0.19	51.7	OK
4.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	79.959	78.507	0.061	3.909	0.8	0.06	8.2	OK
4.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW11	SW13	79.735	78.038	0.072	8.497	1.3	0.12	17.0	OK
8.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW20	SW21	80.405	78.228	0.106	10.820	1.0	0.25	22.6	OK
5.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	79.923	77.867	0.139	17.181	1.1	0.4	36.2	OK

6.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW16	SW17	78.106	76.521	0.107	10.134	0.9	0.23	21.3	OK
7.002	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW22	SW23	79.929	77.815	0.118	25.809	1.8	0.19	52.7	OK
7.003	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW23	SW25	79.335	77.408	0.126	28.441	1.7	0.2	56.6	OK
7.004	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW25	SW26	78.755	76.755	0.140	37.270	1.9	0.24	72.9	OK
9.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW24	SW25	78.730	76.863	0.066	4.396	0.8	0.1	9.1	OK
1.011	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW18	Pond	78.060	76.271	0.185	120.907	2.9	0.61	198.2	OK
7.005	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW26	Pond	78.608	76.298	0.110	37.286	2.6	0.26	71.5	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Network (Catchment 1)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW03	Outlet	2.000	Free Discharge
SW02	Outlet	1.001	Free Discharge
SW05	Outlet	1.003	Free Discharge
SW06	Outlet	3.000	Free Discharge
SW04	Outlet	1.002	Free Discharge
SW07	Outlet	1.004	Free Discharge
SW08	Outlet	1.005	Free Discharge
SW01	Outlet	1.000	Free Discharge
SW20	Outlet	8.000	Free Discharge
SW09	Outlet	1.006	Free Discharge
SW19	Outlet	7.000	Free Discharge
SW10	Outlet	4.000	Free Discharge
SW21	Outlet	7.001	Free Discharge
SW22	Outlet	7.002	Free Discharge
SW12	Outlet	5.000	Free Discharge
SW13	Outlet	1.007	Free Discharge
SW11	Outlet	4.001	Free Discharge
SW14	Outlet	1.008	Free Discharge
SW23	Outlet	7.003	Free Discharge
SW25	Outlet	7.004	Free Discharge
SW24	Outlet	9.000	Free Discharge
SW26	Outlet	7.005	Free Discharge
SW15	Outlet	1.009	Free Discharge
SW17	Outlet	1.010	Free Discharge
SW16	Outlet	6.000	Free Discharge
SW18	Outlet	1.011	Free Discharge

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Network (Catchment 1)	Company Address:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	77.400
Depth (m)	1.500
Base Level (m)	75.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.487
Total Volume (m³)	3924.718

Depth (m)	Area (m²)	Volume (m³)
0.000	2157.195	0.000
1.500	3104.417	3924.718

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	1.011
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	7.005
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.03
Safety Factor	2.0
Perimeter	Circular
Length (m)	86.588
Friction Scheme	Manning's n
n	0.033

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Network (Catchment 1)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	23.255	Pipe	200.476		0.6	450	80.797	79.147
1.001	32.121	Pipe	199.509		0.6	450	80.999	79.031
1.002	14.046	Pipe	200.657		0.6	450	80.975	78.870
1.003	10.460	Pipe	197.357		0.6	450	80.992	78.800
1.004	11.283	Pipe	201.488		0.6	450	80.951	78.747
1.005	33.381	Pipe	45.541		0.6	450	80.926	78.691
1.006	20.473	Pipe	45.597		0.6	450	80.390	77.958
1.007	16.316	Pipe	45.574		0.6	525	79.842	77.434
1.008	32.935	Pipe	45.554		0.6	525	79.408	77.076
1.009	11.950	Pipe	45.435		0.6	525	78.563	76.353
1.010	22.912	Pipe	200.979		0.6	525	78.330	76.090
2.000	17.736	Pipe	150.303		0.6	300	81.252	79.138
3.000	7.598	Pipe	148.987		0.6	300	80.975	78.948
7.000	14.183	Pipe	52.724		0.6	300	79.971	78.291
7.001	13.179	Pipe	52.740		0.6	375	79.935	77.947
4.000	29.679	Pipe	59.958		0.6	300	79.959	78.459
4.001	19.284	Pipe	63.225		0.6	300	79.735	77.964
8.000	14.399	Pipe	149.925		0.6	300	80.405	78.118
5.000	9.175	Pipe	150.415		0.6	300	79.923	77.720
6.000	14.890	Pipe	150.402		0.6	300	78.106	76.414
7.002	21.486	Pipe	52.740		0.6	375	79.929	77.697
7.003	35.314	Pipe	52.723		0.6	375	79.335	77.290
7.004	20.719	Pipe	44.305		0.6	375	78.755	76.620
9.000	15.181	Pipe	149.925		0.6	300	78.730	76.796
1.011	16.573	Pipe	218.061		0.6	525	78.060	75.976
7.005	13.043	Pipe	51.682		0.6	375	78.608	76.152

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	80.999	79.031		None
1.001	80.975	78.870		Levels
1.002	80.992	78.800		None
1.003	80.951	78.747		None
1.004	80.926	78.691		None
1.005	80.390	77.958		Levels
1.006	79.842	77.509		Levels
1.007	79.408	77.076		None
1.008	78.563	76.353		None
1.009	78.330	76.090		Levels
1.010	78.060	75.976		None
2.000	80.975	79.020		Levels
3.000	80.951	78.897		Levels
7.000	79.935	78.022		Levels
7.001	79.929	77.697		None
4.000	79.735	77.964		None
4.001	79.842	77.659		Levels
8.000	79.935	78.022		Levels
5.000	79.842	77.659		Levels
6.000	78.330	76.315		Levels
7.002	79.335	77.290		None
7.003	78.755	76.620		Levels
7.004	78.608	76.152		None
9.000	78.755	76.695		Levels
1.011	77.400	75.900		None
7.005	77.400	75.900		None

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	4156.557	100	0	100	4156.557
Catchment Area (1)	SW03		Time of Concentration	215.618	100	0	100	215.618
Catchment Area (2)	SW19		Time of Concentration	316.818	100	0	100	316.818
Catchment Area (3)	SW19		Time of Concentration	30.076	100	0	100	30.076
Catchment Area (4)	SW19		Time of Concentration	61.621	100	0	100	61.621
Catchment Area (5)	SW19		Time of Concentration	51.424	100	0	100	51.424
Catchment Area (6)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (7)	SW19		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (8)	SW21		Time of Concentration	60.331	100	0	100	60.331
Catchment Area (9)	SW23		Time of Concentration	29.755	100	0	100	29.755
Catchment Area (10)	SW24		Time of Concentration	70.034	100	0	100	70.034
Catchment Area (11)	SW24		Time of Concentration	142.200	100	0	100	142.200
Catchment Area (12)	SW25		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (13)	SW25		Time of Concentration	28.591	100	0	100	28.591
Catchment Area (14)	SW25		Time of Concentration	23.879	100	0	100	23.879
Catchment Area (15)	SW25		Time of Concentration	51.800	100	0	100	51.800
Catchment Area (16)	SW20		Time of Concentration	25.523	100	0	100	25.523
Catchment Area (17)	SW20		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (18)	SW20		Time of Concentration	56.684	100	0	100	56.684
Catchment Area (19)	SW20		Time of Concentration	50.338	100	0	100	50.338
Catchment Area (20)	SW20		Time of Concentration	25.883	100	0	100	25.883
Catchment Area (21)	SW20		Time of Concentration	30.239	100	0	100	30.239
Catchment Area (22)	SW20		Time of Concentration	30.567	100	0	100	30.567
Catchment Area (23)	SW20		Time of Concentration	61.114	100	0	100	61.114
Catchment Area (24)	SW10		Time of Concentration	57.036	100	0	100	57.036
Catchment Area (25)	SW23		Time of Concentration	22.859	100	0	100	22.859
Catchment Area (26)	SW23		Time of Concentration	28.451	100	0	100	28.451
Catchment Area (27)	SW06		Time of Concentration	24.929	100	0	100	24.929
Catchment Area (28)	SW06		Time of Concentration	28.091	100	0	100	28.091
Catchment Area (29)	SW06		Time of Concentration	54.812	100	0	100	54.812
Catchment Area (30)	SW06		Time of Concentration	54.362	100	0	100	54.362
Catchment Area (31)	SW06		Time of Concentration	28.233	100	0	100	28.233
Catchment Area (32)	SW17		Time of Concentration	157.856	100	0	100	157.856

Catchment Area (33)	SW15		Time of Concentration	60.897	100	0	100	60.897
Catchment Area (34)	SW15		Time of Concentration	61.056	100	0	100	61.056
Catchment Area (35)	SW11		Time of Concentration	71.914	100	0	100	71.914
Catchment Area (36)	SW11		Time of Concentration	50.234	100	0	100	50.234
Catchment Area (37)	SW11		Time of Concentration	56.997	100	0	100	56.997
Catchment Area (38)	SW10		Time of Concentration	47.417	100	0	100	47.417
Catchment Area (39)	SW09		Time of Concentration	24.975	100	0	100	24.975
Catchment Area (40)	SW09		Time of Concentration	30.056	100	0	100	30.056
Catchment Area (41)	SW11		Time of Concentration	34.653	100	0	100	34.653
Catchment Area (42)	SW09		Time of Concentration	60.406	100	0	100	60.406
Catchment Area (43)	SW09		Time of Concentration	62.026	100	0	100	62.026
Catchment Area (44)	SW12		Time of Concentration	27.190	100	0	100	27.190
Catchment Area (45)	SW12		Time of Concentration	54.303	100	0	100	54.303
Catchment Area (46)	SW12		Time of Concentration	433.262	100	0	100	433.262
Catchment Area (47)	SW12		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (48)	SW12		Time of Concentration	24.874	100	0	100	24.874
Catchment Area (49)	SW12		Time of Concentration	145.358	100	0	100	145.358
Catchment Area (50)	SW12		Time of Concentration	33.855	100	0	100	33.855
Catchment Area (51)	SW12		Time of Concentration	59.656	100	0	100	59.656
Catchment Area (52)	SW03		Time of Concentration	331.546	100	0	100	331.546
Catchment Area (53)	SW03		Time of Concentration	26.073	100	0	100	26.073
Catchment Area (54)	SW03		Time of Concentration	30.177	100	0	100	30.177
Catchment Area (55)	SW03		Time of Concentration	24.159	100	0	100	24.159
Catchment Area (56)	SW03		Time of Concentration	52.253	100	0	100	52.253
Catchment Area (57)	SW03		Time of Concentration	253.936	100	0	100	253.936
Catchment Area (58)	SW16		Time of Concentration	29.182	100	0	100	29.182
Catchment Area (59)	SW16		Time of Concentration	33.914	100	0	100	33.914
Catchment Area (60)	SW16		Time of Concentration	23.003	100	0	100	23.003
Catchment Area (61)	SW16		Time of Concentration	321.169	100	0	100	321.169
Catchment Area (62)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (63)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (64)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (65)	SW05		Time of Concentration	24.974	100	0	100	24.974
Catchment Area (66)	SW01		Time of Concentration	322.189	100	0	100	322.189
Catchment Area (67)	SW01		Time of Concentration	30.513	100	0	100	30.513

Catchment Area (68)	SW01		Time of Concentration	77.553	100	0	100	77.553
Catchment Area (69)	SW01		Time of Concentration	61.627	100	0	100	61.627
Catchment Area (70)	SW01		Time of Concentration	34.686	100	0	100	34.686
Catchment Area (71)	SW01		Time of Concentration	29.633	100	0	100	29.633
Catchment Area (72)	SW01		Time of Concentration	70.308	100	0	100	70.308
Catchment Area (73)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (74)	SW01		Time of Concentration	52.674	100	0	100	52.674
Catchment Area (75)	SW01		Time of Concentration	25.241	100	0	100	25.241
Catchment Area (76)	SW01		Time of Concentration	25.205	100	0	100	25.205
Catchment Area (77)	SW01		Time of Concentration	240.532	100	0	100	240.532
Catchment Area (78)	SW19		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (79)	SW01		Time of Concentration	60.526	100	0	100	60.526
Catchment Area (80)	SW01		Time of Concentration	58.657	100	0	100	58.657
Catchment Area (81)	SW15		Time of Concentration	35.115	100	0	100	35.115
Catchment Area (82)	SW15		Time of Concentration	68.934	100	0	100	68.934
Catchment Area (83)	SW15		Time of Concentration	31.384	100	0	100	31.384
Catchment Area (84)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (85)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (86)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (87)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (88)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (89)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (90)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (91)	SW03		Time of Concentration	114.187	100	0	100	114.187
Catchment Area (92)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (94)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (95)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (96)	SW03		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (97)	SW01		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (98)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (99)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (100)	SW01		Time of Concentration	57.908	100	0	100	57.908
Catchment Area (101)	SW01		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (102)	SW01		Time of Concentration	147.345	100	0	100	147.345

Catchment Area (103)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (104)	SW01		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (105)	SW01		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (106)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (107)	SW01		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (108)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (109)	SW01		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (110)	SW01		Time of Concentration	146.974	100	0	100	146.974
Catchment Area (111)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (112)	SW01		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (113)	SW01		Time of Concentration	57.715	100	0	100	57.715
Catchment Area (114)	SW05		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (115)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (116)	SW05		Time of Concentration	108.866	100	0	100	108.866
Catchment Area (117)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (118)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (119)	SW19		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (120)	SW19		Time of Concentration	98.184	100	0	100	98.184
Catchment Area (121)	SW19		Time of Concentration	98.258	100	0	100	98.258
Catchment Area (122)	SW19		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (123)	SW20		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (124)	SW20		Time of Concentration	99.809	100	0	100	99.809
Catchment Area (125)	SW20		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (126)	SW20		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (127)	SW19		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (128)	SW24		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (129)	SW24		Time of Concentration	99.821	100	0	100	99.821
Catchment Area (130)	SW24		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (131)	SW21		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (132)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (133)	SW20		Time of Concentration	107.044	100	0	100	107.044
Catchment Area (134)	SW20		Time of Concentration	99.409	100	0	100	99.409
Catchment Area (135)	SW20		Time of Concentration	70.176	100	0	100	70.176
Catchment Area (136)	SW20		Time of Concentration	107.004	100	0	100	107.004
Catchment Area (137)	SW06		Time of Concentration	90.464	100	0	100	90.464

Catchment Area (138)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (139)	SW06		Time of Concentration	99.823	100	0	100	99.823
Catchment Area (140)	SW06		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (141)	SW06		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (142)	SW09		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (143)	SW11		Time of Concentration	57.830	100	0	100	57.830
Catchment Area (144)	SW11		Time of Concentration	108.852	100	0	100	108.852
Catchment Area (145)	SW11		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (146)	SW10		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (147)	SW25		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (148)	SW23		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (149)	SW11		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (150)	SW17		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (151)	SW17		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (152)	SW15		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (153)	SW11		Time of Concentration	107.023	100	0	100	107.023
Catchment Area (154)	SW16		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (155)	SW15		Time of Concentration	112.476	100	0	100	112.476
Catchment Area (156)	SW15		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (157)	SW15		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (158)	SW12		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (159)	SW09		Time of Concentration	98.187	100	0	100	98.187
Catchment Area (160)	SW12		Time of Concentration	108.926	100	0	100	108.926
Catchment Area (161)	SW12		Time of Concentration	112.793	100	0	100	112.793
Catchment Area (162)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (163)	SW12		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (164)	SW16		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (165)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (166)	SW16		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (167)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (168)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (169)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (170)	SW12		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (171)	SW12		Time of Concentration	112.044	100	0	100	112.044
Catchment Area (172)	SW12		Time of Concentration	70.235	100	0	100	70.235

Catchment Area (173)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (174)	SW12		Time of Concentration	57.922	100	0	100	57.922
Catchment Area (175)	SW12		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (176)	SW25		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (177)	SW03		Time of Concentration	120.725	100	0	100	120.725
Catchment Area (178)	SW03		Time of Concentration	101.425	100	0	100	101.425
Catchment Area (179)	SW16		Time of Concentration	288.526	100	0	100	288.526
Catchment Area (180)	SW17		Time of Concentration	84.104	100	0	100	84.104
Catchment Area (181)	SW14		Time of Concentration	286.752	100	0	100	286.752
Catchment Area (182)	SW14		Time of Concentration	54.557	100	0	100	54.557
Catchment Area (183)	SW19		Time of Concentration	90.128	100	0	100	90.128
Catchment Area (184)	SW19		Time of Concentration	61.979	100	0	100	61.979
Catchment Area (185)	SW19		Time of Concentration	192.246	100	0	100	192.246
Catchment Area (186)	SW19		Time of Concentration	122.309	100	0	100	122.309
Catchment Area (187)	SW20		Time of Concentration	233.365	100	0	100	233.365
Catchment Area (188)	SW20		Time of Concentration	98.102	100	0	100	98.102
Catchment Area (189)	SW21		Time of Concentration	127.973	100	0	100	127.973
Catchment Area (190)	SW24		Time of Concentration	100.553	100	0	100	100.553
Catchment Area (191)	SW25		Time of Concentration	74.748	100	0	100	74.748
Catchment Area (192)	SW25		Time of Concentration	178.590	100	0	100	178.590
Catchment Area (193)	SW23		Time of Concentration	183.387	100	0	100	183.387
Catchment Area (194)	SW22		Time of Concentration	143.431	100	0	100	143.431
Catchment Area (195)	SW10		Time of Concentration	210.323	100	0	100	210.323
Catchment Area (196)	SW13		Time of Concentration	148.136	100	0	100	148.136
Catchment Area (197)	SW01		Time of Concentration	285.683	100	0	100	285.683
Catchment Area (198)	SW01		Time of Concentration	140.355	100	0	100	140.355
Catchment Area (199)	SW01		Time of Concentration	98.939	100	0	100	98.939
Catchment Area (200)	SW01		Time of Concentration	88.706	100	0	100	88.706
Catchment Area (201)	SW01		Time of Concentration	205.339	100	0	100	205.339
Catchment Area (202)	SW01		Time of Concentration	177.806	100	0	100	177.806
Catchment Area (203)	SW01		Time of Concentration	324.436	100	0	100	324.436
Catchment Area (204)	SW01		Time of Concentration	89.692	100	0	100	89.692
Catchment Area (205)	SW01		Time of Concentration	166.517	100	0	100	166.517
Catchment Area (206)	SW01		Time of Concentration	169.147	100	0	100	169.147
Catchment Area (207)	SW01		Time of Concentration	57.840	100	0	100	57.840

Catchment Area (208)	SW01		Time of Concentration	34.102	100	0	100	34.102
Catchment Area (209)	SW02		Time of Concentration	223.721	100	0	100	223.721
Catchment Area (210)	SW03		Time of Concentration	111.757	100	0	100	111.757
Catchment Area (211)	SW03		Time of Concentration	114.814	100	0	100	114.814
Catchment Area (212)	SW03		Time of Concentration	177.390	100	0	100	177.390
Catchment Area (213)	SW06		Time of Concentration	73.476	100	0	100	73.476
Catchment Area (214)	SW06		Time of Concentration	68.292	100	0	100	68.292
Catchment Area (215)	SW06		Time of Concentration	152.182	100	0	100	152.182
Catchment Area (216)	SW12		Time of Concentration	48.073	100	0	100	48.073
Catchment Area (217)	SW12		Time of Concentration	71.924	100	0	100	71.924
Catchment Area (218)	SW12		Time of Concentration	125.496	100	0	100	125.496
Catchment Area (219)	SW04		Time of Concentration	373.087	100	0	100	373.087
Catchment Area (220)	SW06		Time of Concentration	63.264	100	0	100	63.264
Catchment Area (221)	SW07		Time of Concentration	71.848	100	0	100	71.848
Catchment Area (222)	SW08		Time of Concentration	100.096	100	0	100	100.096
Catchment Area (223)	SW08		Time of Concentration	241.452	100	0	100	241.452
Catchment Area (224)	SW09		Time of Concentration	191.879	100	0	100	191.879
Catchment Area (225)	SW13		Time of Concentration	78.859	100	0	100	78.859
Catchment Area (226)	SW12		Time of Concentration	78.502	100	0	100	78.502
Catchment Area (227)	SW12		Time of Concentration	150.934	100	0	100	150.934
Catchment Area (228)	SW12		Time of Concentration	42.738	100	0	100	42.738
Catchment Area (229)	SW12		Time of Concentration	61.430	100	0	100	61.430
Catchment Area (230)	SW20		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (231)	SW24		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (232)	SW10		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (233)	SW06		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (234)	SW03		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (235)	SW01		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (236)	SW12		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (237)	SW16		Time of Concentration	96.390	100	0	100	96.390
TOTAL		**0.0**		**26829.239**				**26829.239**

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.320
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
30.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW03	FSR: 30 years: +0 %: 15 mins: Winter	81.252	79.138	79.405	0.267	79.9	0.302	0.000	77.0	36.822	OK
SW02	FSR: 30 years: +0 %: 15 mins: Winter	80.999	79.031	79.343	0.312	137.7	0.551	0.000	121.4	65.640	OK
SW05	FSR: 30 years: +0 %: 15 mins: Winter	80.992	78.800	79.209	0.409	211.9	0.722	0.000	207.5	113.359	OK
SW06	FSR: 30 years: +0 %: 15 mins: Winter	80.975	78.948	79.114	0.166	31.3	0.188	0.000	30.1	14.438	OK
SW04	FSR: 30 years: +0 %: 15 mins: Winter	80.975	78.870	79.303	0.433	209.1	0.765	0.000	199.0	107.462	OK
SW07	FSR: 30 years: +0 %: 15 mins: Winter	80.951	78.747	79.101	0.354	239.6	0.626	0.000	235.2	128.698	OK
SW08	FSR: 30 years: +0 %: 15 mins: Winter	80.926	78.691	78.939	0.248	245.0	0.439	0.000	240.0	133.191	OK
SW01	FSR: 30 years: +0 %: 15 mins: Winter	80.797	79.147	79.436	0.289	135.4	0.511	0.000	131.3	62.735	OK
SW20	FSR: 30 years: +0 %: 15 mins: Winter	80.405	78.118	78.278	0.160	44.0	0.101	0.000	42.8	20.397	OK
SW09	FSR: 30 years: +0 %: 15 mins: Winter	80.390	77.958	78.225	0.267	255.3	0.471	0.000	248.4	140.385	OK
SW19	FSR: 30 years: +0 %: 15 mins: Winter	79.971	78.291	78.418	0.127	48.8	0.081	0.000	47.9	22.609	OK
SW10	FSR: 30 years: +0 %: 15 mins: Winter	79.959	78.459	78.525	0.066	16.0	0.075	0.000	15.5	7.389	OK
SW21	FSR: 30 years: +0 %: 15 mins: Winter	79.935	77.947	78.125	0.177	99.0	0.113	0.000	98.1	46.814	OK
SW22	FSR: 30 years: +0 %: 15 mins: Winter	79.929	77.697	77.869	0.172	102.2	0.109	0.000	100.2	48.700	OK
SW12	FSR: 30 years: +0 %: 15 mins: Winter	79.923	77.720	77.943	0.223	70.1	0.252	0.000	68.5	32.461	OK
SW13	FSR: 30 years: +0 %: 15 mins: Winter	79.842	77.434	77.749	0.315	355.9	0.801	0.000	349.1	191.710	OK
SW11	FSR: 30 years: +0 %: 15 mins: Winter	79.735	77.964	78.069	0.105	34.3	0.119	0.000	32.6	16.029	OK
SW14	FSR: 30 years: +0 %: 15 mins: Winter	79.408	77.076	77.370	0.294	358.8	0.520	0.000	349.8	196.116	OK
SW23	FSR: 30 years: +0 %: 15 mins: Winter	79.335	77.290	77.462	0.172	111.0	0.109	0.000	107.9	53.682	OK
SW25	FSR: 30 years: +0 %: 15 mins: Winter	78.755	76.620	76.821	0.201	143.6	0.128	0.000	138.7	70.343	OK
SW24	FSR: 30 years: +0 %: 15 mins: Winter	78.730	76.796	76.892	0.096	18.0	0.061	0.000	17.7	8.298	OK
SW26	FSR: 30 years: +0 %: 15 mins: Winter	78.608	76.152	76.364	0.212	138.7	0.135	0.000	136.2	70.370	OK
SW15	FSR: 30 years: +0 %: 15 mins: Winter	78.563	76.353	76.758	0.405	367.5	0.716	0.000	347.8	204.277	OK
SW17	FSR: 30 years: +0 %: 15 mins: Winter	78.330	76.090	76.667	0.577	395.5	1.470	0.000	384.2	228.850	Surcharged
SW16	FSR: 30 years: +0 %: 15 mins: Winter	78.106	76.414	76.689	0.275	41.6	0.311	0.000	36.0	19.172	OK
SW18	FSR: 30 years: +0 %: 15 mins: Winter	78.060	75.976	76.416	0.440	384.2	0.778	0.000	400.4	228.250	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 30 years: +0 %: 960 mins: Winter	76.310	76.310	0.410	0.410	61.9	933.239	0.000	1001.309	0.0	0.000	76.222	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	80.797	79.436	0.301	62.735	1.2	0.58	131.3	OK
1.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW02	SW04	80.999	79.343	0.373	65.640	0.9	0.53	121.4	OK
1.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	80.975	79.303	0.421	107.462	1.3	0.87	199.0	OK
1.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW05	SW07	80.992	79.209	0.381	113.359	1.4	0.9	207.5	OK
1.004	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW07	SW08	80.951	79.101	0.301	128.698	2.1	1.04	235.2	OK
1.005	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW08	SW09	80.926	78.939	0.258	133.191	2.5	0.5	240.0	OK
1.006	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW09	SW13	80.390	78.225	0.253	140.385	2.7	0.52	248.4	OK
1.007	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW13	SW14	79.842	77.749	0.305	191.710	2.7	0.49	349.1	OK
1.008	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	79.408	77.370	0.350	196.116	2.3	0.49	349.8	OK
1.009	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW15	SW17	78.563	76.758	0.491	204.277	1.7	0.48	347.8	OK
1.010	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW17	SW18	78.330	76.667	0.509	228.850	1.8	1.13	384.2	Surcharged
2.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW03	SW04	81.252	79.405	0.275	36.822	1.1	0.85	77.0	OK
3.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW06	SW07	80.975	79.114	0.185	14.438	0.8	0.33	30.1	OK
7.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW19	SW21	79.971	78.418	0.121	22.609	1.8	0.31	47.9	OK

7.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	79.935	78.125	0.175	46.814	1.9	0.36	98.1	OK
4.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	79.959	78.525	0.086	7.389	0.9	0.11	15.5	OK
4.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW11	SW13	79.735	78.069	0.102	16.029	1.5	0.23	32.6	OK
8.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW20	SW21	80.405	78.278	0.152	20.397	1.2	0.47	42.8	OK
5.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	79.923	77.943	0.208	32.461	1.3	0.76	68.5	OK
6.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW16	SW17	78.106	76.689	0.300	19.172	0.8	0.4	36.0	OK
7.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW22	SW23	79.929	77.869	0.172	48.700	2.0	0.36	100.2	OK
7.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW23	SW25	79.335	77.462	0.186	53.682	2.0	0.39	107.9	OK
7.004	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW25	SW26	78.755	76.821	0.206	70.343	2.2	0.46	138.7	OK
9.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW24	SW25	78.730	76.892	0.111	8.298	0.7	0.19	17.7	OK
1.011	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW18	Pond	78.060	76.416	0.277	228.250	3.5	1.22	400.4	OK
7.005	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW26	Pond	78.608	76.364	0.162	70.370	3.0	0.49	136.2	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Network (Catchment 1)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW03	Outlet	2.000	Free Discharge
SW02	Outlet	1.001	Free Discharge
SW05	Outlet	1.003	Free Discharge
SW06	Outlet	3.000	Free Discharge
SW04	Outlet	1.002	Free Discharge
SW07	Outlet	1.004	Free Discharge
SW08	Outlet	1.005	Free Discharge
SW01	Outlet	1.000	Free Discharge
SW20	Outlet	8.000	Free Discharge
SW09	Outlet	1.006	Free Discharge
SW19	Outlet	7.000	Free Discharge
SW10	Outlet	4.000	Free Discharge
SW21	Outlet	7.001	Free Discharge
SW22	Outlet	7.002	Free Discharge
SW12	Outlet	5.000	Free Discharge
SW13	Outlet	1.007	Free Discharge
SW11	Outlet	4.001	Free Discharge
SW14	Outlet	1.008	Free Discharge
SW23	Outlet	7.003	Free Discharge
SW25	Outlet	7.004	Free Discharge
SW24	Outlet	9.000	Free Discharge
SW26	Outlet	7.005	Free Discharge
SW15	Outlet	1.009	Free Discharge
SW17	Outlet	1.010	Free Discharge
SW16	Outlet	6.000	Free Discharge
SW18	Outlet	1.011	Free Discharge

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Network (Catchment 1)	Company Address:		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	77.400
Depth (m)	1.500
Base Level (m)	75.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.487
Total Volume (m³)	3924.718

Depth (m)	Area (m²)	Volume (m³)
0.000	2157.195	0.000
1.500	3104.417	3924.718

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	1.011
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	7.005
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.03
Safety Factor	2.0
Perimeter	Circular
Length (m)	86.588
Friction Scheme	Manning's n
n	0.033

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Network (Catchment 1)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	23.255	Pipe	200.476		0.6	450	80.797	79.147
1.001	32.121	Pipe	199.509		0.6	450	80.999	79.031
1.002	14.046	Pipe	200.657		0.6	450	80.975	78.870
1.003	10.460	Pipe	197.357		0.6	450	80.992	78.800
1.004	11.283	Pipe	201.488		0.6	450	80.951	78.747
1.005	33.381	Pipe	45.541		0.6	450	80.926	78.691
1.006	20.473	Pipe	45.597		0.6	450	80.390	77.958
1.007	16.316	Pipe	45.574		0.6	525	79.842	77.434
1.008	32.935	Pipe	45.554		0.6	525	79.408	77.076
1.009	11.950	Pipe	45.435		0.6	525	78.563	76.353
1.010	22.912	Pipe	200.979		0.6	525	78.330	76.090
2.000	17.736	Pipe	150.303		0.6	300	81.252	79.138
3.000	7.598	Pipe	148.987		0.6	300	80.975	78.948
7.000	14.183	Pipe	52.724		0.6	300	79.971	78.291
7.001	13.179	Pipe	52.740		0.6	375	79.935	77.947
4.000	29.679	Pipe	59.958		0.6	300	79.959	78.459
4.001	19.284	Pipe	63.225		0.6	300	79.735	77.964
8.000	14.399	Pipe	149.925		0.6	300	80.405	78.118
5.000	9.175	Pipe	150.415		0.6	300	79.923	77.720
6.000	14.890	Pipe	150.402		0.6	300	78.106	76.414
7.002	21.486	Pipe	52.740		0.6	375	79.929	77.697
7.003	35.314	Pipe	52.723		0.6	375	79.335	77.290
7.004	20.719	Pipe	44.305		0.6	375	78.755	76.620
9.000	15.181	Pipe	149.925		0.6	300	78.730	76.796
1.011	16.573	Pipe	218.061		0.6	525	78.060	75.976
7.005	13.043	Pipe	51.682		0.6	375	78.608	76.152

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	80.999	79.031		None
1.001	80.975	78.870		Levels
1.002	80.992	78.800		None
1.003	80.951	78.747		None
1.004	80.926	78.691		None
1.005	80.390	77.958		Levels
1.006	79.842	77.509		Levels
1.007	79.408	77.076		None
1.008	78.563	76.353		None
1.009	78.330	76.090		Levels
1.010	78.060	75.976		None
2.000	80.975	79.020		Levels
3.000	80.951	78.897		Levels
7.000	79.935	78.022		Levels
7.001	79.929	77.697		None
4.000	79.735	77.964		None
4.001	79.842	77.659		Levels
8.000	79.935	78.022		Levels
5.000	79.842	77.659		Levels
6.000	78.330	76.315		Levels
7.002	79.335	77.290		None
7.003	78.755	76.620		Levels
7.004	78.608	76.152		None
9.000	78.755	76.695		Levels
1.011	77.400	75.900		None
7.005	77.400	75.900		None

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	4156.557	100	0	100	4156.557
Catchment Area (1)	SW03		Time of Concentration	215.618	100	0	100	215.618
Catchment Area (2)	SW19		Time of Concentration	316.818	100	0	100	316.818
Catchment Area (3)	SW19		Time of Concentration	30.076	100	0	100	30.076
Catchment Area (4)	SW19		Time of Concentration	61.621	100	0	100	61.621
Catchment Area (5)	SW19		Time of Concentration	51.424	100	0	100	51.424
Catchment Area (6)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (7)	SW19		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (8)	SW21		Time of Concentration	60.331	100	0	100	60.331
Catchment Area (9)	SW23		Time of Concentration	29.755	100	0	100	29.755
Catchment Area (10)	SW24		Time of Concentration	70.034	100	0	100	70.034
Catchment Area (11)	SW24		Time of Concentration	142.200	100	0	100	142.200
Catchment Area (12)	SW25		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (13)	SW25		Time of Concentration	28.591	100	0	100	28.591
Catchment Area (14)	SW25		Time of Concentration	23.879	100	0	100	23.879
Catchment Area (15)	SW25		Time of Concentration	51.800	100	0	100	51.800
Catchment Area (16)	SW20		Time of Concentration	25.523	100	0	100	25.523
Catchment Area (17)	SW20		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (18)	SW20		Time of Concentration	56.684	100	0	100	56.684
Catchment Area (19)	SW20		Time of Concentration	50.338	100	0	100	50.338
Catchment Area (20)	SW20		Time of Concentration	25.883	100	0	100	25.883
Catchment Area (21)	SW20		Time of Concentration	30.239	100	0	100	30.239
Catchment Area (22)	SW20		Time of Concentration	30.567	100	0	100	30.567
Catchment Area (23)	SW20		Time of Concentration	61.114	100	0	100	61.114
Catchment Area (24)	SW10		Time of Concentration	57.036	100	0	100	57.036
Catchment Area (25)	SW23		Time of Concentration	22.859	100	0	100	22.859
Catchment Area (26)	SW23		Time of Concentration	28.451	100	0	100	28.451
Catchment Area (27)	SW06		Time of Concentration	24.929	100	0	100	24.929
Catchment Area (28)	SW06		Time of Concentration	28.091	100	0	100	28.091
Catchment Area (29)	SW06		Time of Concentration	54.812	100	0	100	54.812
Catchment Area (30)	SW06		Time of Concentration	54.362	100	0	100	54.362
Catchment Area (31)	SW06		Time of Concentration	28.233	100	0	100	28.233
Catchment Area (32)	SW17		Time of Concentration	157.856	100	0	100	157.856

Catchment Area (33)	SW15		Time of Concentration	60.897	100	0	100	60.897
Catchment Area (34)	SW15		Time of Concentration	61.056	100	0	100	61.056
Catchment Area (35)	SW11		Time of Concentration	71.914	100	0	100	71.914
Catchment Area (36)	SW11		Time of Concentration	50.234	100	0	100	50.234
Catchment Area (37)	SW11		Time of Concentration	56.997	100	0	100	56.997
Catchment Area (38)	SW10		Time of Concentration	47.417	100	0	100	47.417
Catchment Area (39)	SW09		Time of Concentration	24.975	100	0	100	24.975
Catchment Area (40)	SW09		Time of Concentration	30.056	100	0	100	30.056
Catchment Area (41)	SW11		Time of Concentration	34.653	100	0	100	34.653
Catchment Area (42)	SW09		Time of Concentration	60.406	100	0	100	60.406
Catchment Area (43)	SW09		Time of Concentration	62.026	100	0	100	62.026
Catchment Area (44)	SW12		Time of Concentration	27.190	100	0	100	27.190
Catchment Area (45)	SW12		Time of Concentration	54.303	100	0	100	54.303
Catchment Area (46)	SW12		Time of Concentration	433.262	100	0	100	433.262
Catchment Area (47)	SW12		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (48)	SW12		Time of Concentration	24.874	100	0	100	24.874
Catchment Area (49)	SW12		Time of Concentration	145.358	100	0	100	145.358
Catchment Area (50)	SW12		Time of Concentration	33.855	100	0	100	33.855
Catchment Area (51)	SW12		Time of Concentration	59.656	100	0	100	59.656
Catchment Area (52)	SW03		Time of Concentration	331.546	100	0	100	331.546
Catchment Area (53)	SW03		Time of Concentration	26.073	100	0	100	26.073
Catchment Area (54)	SW03		Time of Concentration	30.177	100	0	100	30.177
Catchment Area (55)	SW03		Time of Concentration	24.159	100	0	100	24.159
Catchment Area (56)	SW03		Time of Concentration	52.253	100	0	100	52.253
Catchment Area (57)	SW03		Time of Concentration	253.936	100	0	100	253.936
Catchment Area (58)	SW16		Time of Concentration	29.182	100	0	100	29.182
Catchment Area (59)	SW16		Time of Concentration	33.914	100	0	100	33.914
Catchment Area (60)	SW16		Time of Concentration	23.003	100	0	100	23.003
Catchment Area (61)	SW16		Time of Concentration	321.169	100	0	100	321.169
Catchment Area (62)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (63)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (64)	SW05		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (65)	SW05		Time of Concentration	24.974	100	0	100	24.974
Catchment Area (66)	SW01		Time of Concentration	322.189	100	0	100	322.189
Catchment Area (67)	SW01		Time of Concentration	30.513	100	0	100	30.513

Catchment Area (68)	SW01		Time of Concentration	77.553	100	0	100	77.553
Catchment Area (69)	SW01		Time of Concentration	61.627	100	0	100	61.627
Catchment Area (70)	SW01		Time of Concentration	34.686	100	0	100	34.686
Catchment Area (71)	SW01		Time of Concentration	29.633	100	0	100	29.633
Catchment Area (72)	SW01		Time of Concentration	70.308	100	0	100	70.308
Catchment Area (73)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (74)	SW01		Time of Concentration	52.674	100	0	100	52.674
Catchment Area (75)	SW01		Time of Concentration	25.241	100	0	100	25.241
Catchment Area (76)	SW01		Time of Concentration	25.205	100	0	100	25.205
Catchment Area (77)	SW01		Time of Concentration	240.532	100	0	100	240.532
Catchment Area (78)	SW19		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (79)	SW01		Time of Concentration	60.526	100	0	100	60.526
Catchment Area (80)	SW01		Time of Concentration	58.657	100	0	100	58.657
Catchment Area (81)	SW15		Time of Concentration	35.115	100	0	100	35.115
Catchment Area (82)	SW15		Time of Concentration	68.934	100	0	100	68.934
Catchment Area (83)	SW15		Time of Concentration	31.384	100	0	100	31.384
Catchment Area (84)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (85)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (86)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (87)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (88)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (89)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (90)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (91)	SW03		Time of Concentration	114.187	100	0	100	114.187
Catchment Area (92)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (94)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (95)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (96)	SW03		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (97)	SW01		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (98)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (99)	SW01		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (100)	SW01		Time of Concentration	57.908	100	0	100	57.908
Catchment Area (101)	SW01		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (102)	SW01		Time of Concentration	147.345	100	0	100	147.345

Catchment Area (103)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (104)	SW01		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (105)	SW01		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (106)	SW01		Time of Concentration	114.176	100	0	100	114.176
Catchment Area (107)	SW01		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (108)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (109)	SW01		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (110)	SW01		Time of Concentration	146.974	100	0	100	146.974
Catchment Area (111)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (112)	SW01		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (113)	SW01		Time of Concentration	57.715	100	0	100	57.715
Catchment Area (114)	SW05		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (115)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (116)	SW05		Time of Concentration	108.866	100	0	100	108.866
Catchment Area (117)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (118)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (119)	SW19		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (120)	SW19		Time of Concentration	98.184	100	0	100	98.184
Catchment Area (121)	SW19		Time of Concentration	98.258	100	0	100	98.258
Catchment Area (122)	SW19		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (123)	SW20		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (124)	SW20		Time of Concentration	99.809	100	0	100	99.809
Catchment Area (125)	SW20		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (126)	SW20		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (127)	SW19		Time of Concentration	114.166	100	0	100	114.166
Catchment Area (128)	SW24		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (129)	SW24		Time of Concentration	99.821	100	0	100	99.821
Catchment Area (130)	SW24		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (131)	SW21		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (132)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (133)	SW20		Time of Concentration	107.044	100	0	100	107.044
Catchment Area (134)	SW20		Time of Concentration	99.409	100	0	100	99.409
Catchment Area (135)	SW20		Time of Concentration	70.176	100	0	100	70.176
Catchment Area (136)	SW20		Time of Concentration	107.004	100	0	100	107.004
Catchment Area (137)	SW06		Time of Concentration	90.464	100	0	100	90.464

Catchment Area (138)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (139)	SW06		Time of Concentration	99.823	100	0	100	99.823
Catchment Area (140)	SW06		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (141)	SW06		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (142)	SW09		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (143)	SW11		Time of Concentration	57.830	100	0	100	57.830
Catchment Area (144)	SW11		Time of Concentration	108.852	100	0	100	108.852
Catchment Area (145)	SW11		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (146)	SW10		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (147)	SW25		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (148)	SW23		Time of Concentration	114.164	100	0	100	114.164
Catchment Area (149)	SW11		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (150)	SW17		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (151)	SW17		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (152)	SW15		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (153)	SW11		Time of Concentration	107.023	100	0	100	107.023
Catchment Area (154)	SW16		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (155)	SW15		Time of Concentration	112.476	100	0	100	112.476
Catchment Area (156)	SW15		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (157)	SW15		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (158)	SW12		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (159)	SW09		Time of Concentration	98.187	100	0	100	98.187
Catchment Area (160)	SW12		Time of Concentration	108.926	100	0	100	108.926
Catchment Area (161)	SW12		Time of Concentration	112.793	100	0	100	112.793
Catchment Area (162)	SW12		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (163)	SW12		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (164)	SW16		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (165)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (166)	SW16		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (167)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (168)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (169)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (170)	SW12		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (171)	SW12		Time of Concentration	112.044	100	0	100	112.044
Catchment Area (172)	SW12		Time of Concentration	70.235	100	0	100	70.235

Catchment Area (173)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (174)	SW12		Time of Concentration	57.922	100	0	100	57.922
Catchment Area (175)	SW12		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (176)	SW25		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (177)	SW03		Time of Concentration	120.725	100	0	100	120.725
Catchment Area (178)	SW03		Time of Concentration	101.425	100	0	100	101.425
Catchment Area (179)	SW16		Time of Concentration	288.526	100	0	100	288.526
Catchment Area (180)	SW17		Time of Concentration	84.104	100	0	100	84.104
Catchment Area (181)	SW14		Time of Concentration	286.752	100	0	100	286.752
Catchment Area (182)	SW14		Time of Concentration	54.557	100	0	100	54.557
Catchment Area (183)	SW19		Time of Concentration	90.128	100	0	100	90.128
Catchment Area (184)	SW19		Time of Concentration	61.979	100	0	100	61.979
Catchment Area (185)	SW19		Time of Concentration	192.246	100	0	100	192.246
Catchment Area (186)	SW19		Time of Concentration	122.309	100	0	100	122.309
Catchment Area (187)	SW20		Time of Concentration	233.365	100	0	100	233.365
Catchment Area (188)	SW20		Time of Concentration	98.102	100	0	100	98.102
Catchment Area (189)	SW21		Time of Concentration	127.973	100	0	100	127.973
Catchment Area (190)	SW24		Time of Concentration	100.553	100	0	100	100.553
Catchment Area (191)	SW25		Time of Concentration	74.748	100	0	100	74.748
Catchment Area (192)	SW25		Time of Concentration	178.590	100	0	100	178.590
Catchment Area (193)	SW23		Time of Concentration	183.387	100	0	100	183.387
Catchment Area (194)	SW22		Time of Concentration	143.431	100	0	100	143.431
Catchment Area (195)	SW10		Time of Concentration	210.323	100	0	100	210.323
Catchment Area (196)	SW13		Time of Concentration	148.136	100	0	100	148.136
Catchment Area (197)	SW01		Time of Concentration	285.683	100	0	100	285.683
Catchment Area (198)	SW01		Time of Concentration	140.355	100	0	100	140.355
Catchment Area (199)	SW01		Time of Concentration	98.939	100	0	100	98.939
Catchment Area (200)	SW01		Time of Concentration	88.706	100	0	100	88.706
Catchment Area (201)	SW01		Time of Concentration	205.339	100	0	100	205.339
Catchment Area (202)	SW01		Time of Concentration	177.806	100	0	100	177.806
Catchment Area (203)	SW01		Time of Concentration	324.436	100	0	100	324.436
Catchment Area (204)	SW01		Time of Concentration	89.692	100	0	100	89.692
Catchment Area (205)	SW01		Time of Concentration	166.517	100	0	100	166.517
Catchment Area (206)	SW01		Time of Concentration	169.147	100	0	100	169.147
Catchment Area (207)	SW01		Time of Concentration	57.840	100	0	100	57.840

Catchment Area (208)	SW01		Time of Concentration	34.102	100	0	100	34.102
Catchment Area (209)	SW02		Time of Concentration	223.721	100	0	100	223.721
Catchment Area (210)	SW03		Time of Concentration	111.757	100	0	100	111.757
Catchment Area (211)	SW03		Time of Concentration	114.814	100	0	100	114.814
Catchment Area (212)	SW03		Time of Concentration	177.390	100	0	100	177.390
Catchment Area (213)	SW06		Time of Concentration	73.476	100	0	100	73.476
Catchment Area (214)	SW06		Time of Concentration	68.292	100	0	100	68.292
Catchment Area (215)	SW06		Time of Concentration	152.182	100	0	100	152.182
Catchment Area (216)	SW12		Time of Concentration	48.073	100	0	100	48.073
Catchment Area (217)	SW12		Time of Concentration	71.924	100	0	100	71.924
Catchment Area (218)	SW12		Time of Concentration	125.496	100	0	100	125.496
Catchment Area (219)	SW04		Time of Concentration	373.087	100	0	100	373.087
Catchment Area (220)	SW06		Time of Concentration	63.264	100	0	100	63.264
Catchment Area (221)	SW07		Time of Concentration	71.848	100	0	100	71.848
Catchment Area (222)	SW08		Time of Concentration	100.096	100	0	100	100.096
Catchment Area (223)	SW08		Time of Concentration	241.452	100	0	100	241.452
Catchment Area (224)	SW09		Time of Concentration	191.879	100	0	100	191.879
Catchment Area (225)	SW13		Time of Concentration	78.859	100	0	100	78.859
Catchment Area (226)	SW12		Time of Concentration	78.502	100	0	100	78.502
Catchment Area (227)	SW12		Time of Concentration	150.934	100	0	100	150.934
Catchment Area (228)	SW12		Time of Concentration	42.738	100	0	100	42.738
Catchment Area (229)	SW12		Time of Concentration	61.430	100	0	100	61.430
Catchment Area (230)	SW20		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (231)	SW24		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (232)	SW10		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (233)	SW06		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (234)	SW03		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (235)	SW01		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (236)	SW12		Time of Concentration	96.390	100	0	100	96.390
Catchment Area (237)	SW16		Time of Concentration	96.390	100	0	100	96.390
TOTAL		**0.0**		**26829.239**				**26829.239**

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.320
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW03	FSR: 100 years: +40 %: 15 mins: Winter	81.252	79.138	80.513	1.375	144.3	1.555	0.000	132.9	66.532	Surcharged
SW02	FSR: 100 years: +40 %: 15 mins: Winter	80.999	79.031	80.390	1.359	241.1	2.401	0.000	224.6	118.509	Surcharged
SW05	FSR: 100 years: +40 %: 15 mins: Winter	80.992	78.800	79.919	1.119	378.7	1.977	0.000	358.4	204.779	Surcharged
SW06	FSR: 100 years: +40 %: 15 mins: Winter	80.975	78.948	79.700	0.752	56.4	0.850	0.000	39.2	26.076	Surcharged
SW04	FSR: 100 years: +40 %: 15 mins: Winter	80.975	78.870	80.198	1.328	376.7	2.347	0.000	355.6	194.078	Surcharged
SW07	FSR: 100 years: +40 %: 15 mins: Winter	80.951	78.747	79.670	0.923	401.3	1.631	0.000	381.0	232.466	Surcharged
SW08	FSR: 100 years: +40 %: 15 mins: Winter	80.926	78.691	79.367	0.676	398.6	1.195	0.000	383.3	240.459	Surcharged
SW01	FSR: 100 years: +40 %: 15 mins: Winter	80.797	79.147	80.557	1.410	244.4	2.492	0.000	229.6	113.148	Flood Risk
SW20	FSR: 100 years: +40 %: 15 mins: Winter	80.405	78.118	78.361	0.243	79.5	0.154	0.000	77.2	36.817	OK
SW09	FSR: 100 years: +40 %: 15 mins: Winter	80.390	77.958	78.763	0.805	411.0	1.423	0.000	395.1	253.580	Surcharged
SW19	FSR: 100 years: +40 %: 15 mins: Winter	79.971	78.291	78.479	0.188	88.0	0.120	0.000	87.1	40.779	OK
SW10	FSR: 100 years: +40 %: 15 mins: Winter	79.959	78.459	78.547	0.088	28.8	0.099	0.000	28.9	13.314	OK
SW21	FSR: 100 years: +40 %: 15 mins: Winter	79.935	77.947	78.216	0.269	179.1	0.171	0.000	176.9	84.469	OK
SW22	FSR: 100 years: +40 %: 15 mins: Winter	79.929	77.697	77.955	0.258	184.3	0.164	0.000	180.8	87.877	OK
SW12	FSR: 100 years: +40 %: 15 mins: Winter	79.923	77.720	78.483	0.763	126.5	0.863	0.000	121.2	58.394	Surcharged
SW13	FSR: 100 years: +40 %: 15 mins: Winter	79.842	77.434	78.302	0.868	528.0	2.209	0.000	505.2	346.531	Surcharged
SW11	FSR: 100 years: +40 %: 15 mins: Winter	79.735	77.964	78.336	0.372	67.9	0.421	0.000	45.3	29.023	Surcharged
SW14	FSR: 100 years: +40 %: 15 mins: Winter	79.408	77.076	77.988	0.912	522.8	1.611	0.000	516.3	354.395	Surcharged
SW23	FSR: 100 years: +40 %: 15 mins: Winter	79.335	77.290	77.550	0.260	200.3	0.165	0.000	194.6	96.874	OK
SW25	FSR: 100 years: +40 %: 15 mins: Winter	78.755	76.620	76.940	0.320	257.0	0.203	0.000	247.5	126.971	OK

SW24	FSR: 100 years: +40 %: 15 mins: Winter	78.730	76.796	76.955	0.159	32.4	0.101	0.000	29.8	14.984	OK
SW26	FSR: 100 years: +40 %: 1440 mins: Winter	78.608	76.152	76.744	0.591	16.2	0.376	0.000	16.0	550.546	Surcharged
SW15	FSR: 100 years: +40 %: 15 mins: Winter	78.563	76.353	77.480	1.127	548.3	1.991	0.000	541.8	369.517	Surcharged
SW17	FSR: 100 years: +40 %: 15 mins: Winter	78.330	76.090	77.177	1.087	632.9	2.766	0.000	623.2	413.433	Surcharged
SW16	FSR: 100 years: +40 %: 15 mins: Winter	78.106	76.414	77.263	0.849	75.1	0.960	0.000	70.0	34.670	Surcharged
SW18	FSR: 100 years: +40 %: 1440 mins: Winter	78.060	75.976	76.744	0.768	52.6	1.357	0.000	52.2	1790.872	Surcharged

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 100 years: +40 %: 1440 mins: Winter	76.743	76.743	0.843	0.843	80.9	2030.271	0.000	1519.466	0.0	0.083	48.270	OK

Project:	Date: 19/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Network (Catchment 1)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01	SW02	80.797	80.557	0.450	113.148	1.4	1.01	229.6	Flood Risk
1.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW02	SW04	80.999	80.390	0.450	118.509	1.4	0.98	224.6	Surcharged
1.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW04	SW05	80.975	80.198	0.450	194.078	2.2	1.56	355.6	Surcharged
1.003	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW05	SW07	80.992	79.750	0.450	182.857	2.3	1.58	361.9	Surcharged
1.004	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW07	SW08	80.951	79.483	0.450	207.580	2.6	1.81	410.7	Surcharged
1.005	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW08	SW09	80.926	79.102	0.450	214.686	2.6	0.83	398.8	OK
1.006	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW09	SW13	80.390	78.763	0.450	253.580	2.5	0.82	395.1	Surcharged
1.007	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW13	SW14	79.842	78.302	0.525	346.474	2.3	0.7	505.2	Surcharged
1.008	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW14	SW15	79.408	77.988	0.525	354.395	2.4	0.72	516.3	Surcharged
1.009	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW15	SW17	78.563	77.480	0.525	369.517	2.5	0.75	541.8	Surcharged
1.010	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW17	SW18	78.330	77.177	0.525	413.433	2.9	1.83	623.2	Surcharged
2.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW03	SW04	81.252	80.513	0.300	66.532	1.9	1.47	132.9	Surcharged
3.000	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW06	SW07	80.975	79.513	0.300	23.272	0.8	0.55	50.3	Surcharged
7.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW19	SW21	79.971	78.479	0.191	40.779	1.8	0.57	87.1	OK

7.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW21	SW22	79.935	78.216	0.263	84.469	2.1	0.64	176.9	OK
4.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW10	SW11	79.959	78.547	0.230	13.314	0.8	0.2	28.9	OK
4.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW11	SW13	79.735	78.336	0.300	28.966	1.3	0.32	45.3	Surch arged
8.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW20	SW21	80.405	78.361	0.227	36.817	1.3	0.85	77.2	OK
5.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW12	SW13	79.923	78.483	0.300	58.394	1.7	1.34	121.2	Surch arged
6.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW16	SW17	78.106	77.263	0.300	34.670	1.0	0.77	70.0	Surch arged
7.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW22	SW23	79.929	77.955	0.259	87.877	2.2	0.65	180.8	OK
7.003	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW23	SW25	79.335	77.550	0.290	96.874	2.1	0.7	194.6	OK
7.004	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW25	SW26	78.755	76.940	0.318	126.971	2.5	0.82	247.5	OK
9.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW24	SW25	78.730	76.955	0.202	14.984	0.8	0.33	29.8	OK
1.011	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW18	Pond	78.060	76.593	0.404	411.566	3.6	1.88	617.0	Surch arged
7.005	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW26	Pond	78.608	76.470	0.238	126.927	3.3	0.87	243.6	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 2 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	Pipe45	Free Discharge
SW03	Outlet	Pipe46	Free Discharge
SW02	Outlet	Pipe45 (1)	Free Discharge
SW04	Outlet	Pipe47	Free Discharge
SW06	Outlet	Pipe48	Free Discharge
SW05	Outlet	Pipe47 (2)	Free Discharge
SW07	Outlet	Pipe48 (1)	Free Discharge
SW23	Outlet	Pipe62	Free Discharge
SW08	Outlet	Pipe49	Free Discharge
SW29	Outlet	Pipe65	Free Discharge
SW27	Outlet	Pipe64	Free Discharge
SW28	Outlet	Pipe64 (1)	Free Discharge
SW40	Outlet	Pipe73	Free Discharge
SW30	Outlet	Pipe65 (2)	Free Discharge
SW43	Outlet	Pipe74	Free Discharge
SW39	Outlet	Pipe72	Free Discharge
SW42	Outlet	Pipe73 (1)	Free Discharge
SW41	Outlet	Pipe73 (2)	Free Discharge
SW09	Outlet	Pipe50	Free Discharge
SW31	Outlet	Pipe65 (1)	Free Discharge
SW33	Outlet	Pipe66 (1)	Free Discharge
SW32	Outlet	Pipe66	Free Discharge
SW10	Outlet	Pipe51	Free Discharge
SW44	Outlet	Pipe118	Free Discharge
SW17	Outlet	Pipe57	Free Discharge
SW34	Outlet	Pipe67	Free Discharge
SW16	Outlet	Pipe56 (1)	Free Discharge
SW24	Outlet	Pipe63	Free Discharge
SW18	Outlet	Pipe58	Free Discharge
SW15	Outlet	Pipe56	Free Discharge
SW35	Outlet	Pipe68	Free Discharge
SW36	Outlet	Pipe69	Free Discharge
SW14	Outlet	Pipe55	Free Discharge
SW37	Outlet	Pipe70	Free Discharge
SW38	Outlet	Pipe71	Free Discharge
SW19	Outlet	Pipe58 (1)	Free Discharge
SW11	Outlet	Pipe52	Free Discharge
SW25	Outlet	Pipe75	Free Discharge
SW26	Outlet	Pipe75 (1)	Free Discharge
SW12	Outlet	Pipe53	Free Discharge
SW20	Outlet	Pipe59	Free Discharge
SW13	Outlet	Pipe54	Free Discharge
SW21	Outlet	Pipe60	Free Discharge
SW22	Outlet	Pipe61	Free Discharge
SW45	Outlet	Pipe71 (1)	Free Discharge
SW01a	Outlet	Pipe (1)	Free Discharge
SW01c	Outlet	Pipe (2)	Free Discharge
SW01d	Outlet	Pipe	Free Discharge
SW46	Outlet	Pipe46 (1)	Free Discharge
SW01b	Outlet	Pipe (3)	Free Discharge

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 2 - SW Network	Company Address:		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	75.846
Depth (m)	1.500
Base Level (m)	74.346
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.343
Total Volume (m³)	4734.997

Depth (m)	Area (m²)	Volume (m³)
0.000	2671.00	0.000
1.500	3668.66	4734.997

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe61
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe71 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (570)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.1368
Safety Factor	2.0
Perimeter	Circular
Length (m)	118.923
Friction Scheme	Manning's n
n	0.033

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe45	38.334	Pipe	399.315		0.6	600	81.831	76.937
Pipe47	12.668	Pipe	395.889		0.6	750	81.184	76.455
Pipe48	14.345	Pipe	398.466		0.6	750	81.175	76.381
Pipe49	28.974	Pipe	396.904		0.6	750	80.906	76.311
Pipe50	20.132	Pipe	402.647		0.6	750	80.176	76.238
Pipe51	65.954	Pipe	82.649		0.6	750	80.000	76.188
Pipe52	13.121	Pipe	132.535		0.6	750	78.250	75.390
Pipe53	24.651	Pipe	503.076		0.6	900	77.555	75.141
Pipe54	56.660	Pipe	501.420		0.6	1050	76.991	74.942
Pipe55	10.242	Pipe	512.087		0.6	1050	78.697	74.829
Pipe56	22.201	Pipe	504.568		0.6	1050	79.087	74.809
Pipe57	30.599	Pipe	501.627		0.6	1050	79.806	74.739
Pipe58	12.013	Pipe	500.534		0.6	1050	79.108	74.678
Pipe59	29.584	Pipe	501.430		0.6	1050	77.132	74.613
Pipe60	11.919	Pipe	496.616		0.6	1050	76.983	74.554
Pipe62	37.598	Pipe	12.001		0.6	300	81.000	79.499
Pipe63	40.227	Pipe	64.363		0.6	300	79.652	76.366
Pipe64	13.378	Pipe	38.555		0.6	300	80.769	79.269
Pipe65	24.684	Pipe	160.288		0.6	600	80.791	77.854
Pipe66	29.731	Pipe	154.848		0.6	600	80.031	77.472
Pipe67	52.105	Pipe	105.690		0.6	600	79.695	77.136
Pipe68	9.793	Pipe	98.917		0.6	600	78.796	76.643
Pipe69	17.830	Pipe	106.576		0.6	600	78.743	76.544
Pipe70	21.247	Pipe	104.153		0.6	600	78.686	76.377
Pipe72	19.747	Pipe	158.896		0.6	225	80.311	78.886
Pipe73	23.956	Pipe	159.704		0.6	450	80.487	78.536
Pipe74	22.438	Pipe	158.015		0.6	450	80.434	78.146
Pipe75	10.817	Pipe	18.149		0.6	450	78.094	76.752
Pipe75 (1)	51.011	Pipe	54.095		0.6	450	77.940	76.156
Pipe58 (1)	20.303	Pipe	495.189		0.6	1050	78.379	74.654
Pipe64 (1)	26.026	Pipe	33.888		0.6	300	80.677	78.922
Pipe65 (1)	17.990	Pipe	159.206		0.6	600	80.174	77.585
Pipe65 (2)	18.007	Pipe	156.586		0.6	600	80.437	77.700
Pipe73 (1)	15.595	Pipe	159.137		0.6	450	80.236	78.244
Pipe45 (1)	23.695	Pipe	401.615		0.6	600	81.800	76.841
Pipe47 (2)	16.981	Pipe	404.307		0.6	750	81.136	76.423
Pipe48 (1)	13.647	Pipe	401.390		0.6	750	81.062	76.345
Pipe66 (1)	22.674	Pipe	157.457		0.6	600	80.085	77.280
Pipe118	52.451	Pipe	53.358		0.6	300	79.919	78.419
Pipe73 (2)	22.541	Pipe	158.737		0.6	450	80.179	78.386
Pipe56 (1)	12.854	Pipe	494.386		0.6	1050	79.685	74.765
Pipe61	15.031	Pipe	501.047		0.6	1050	76.759	74.530
Pipe71	48.362	Pipe	97.308		0.6	600	78.617	76.173
Pipe71 (1)	23.773	Pipe	32.566		0.6	600	77.719	75.676
Pipe	25.144	Pipe	399.109		0.6	600	82.329	77.000
Pipe (2)	27.025	Pipe	200.187		0.6	300	82.042	78.695
Pipe46	57.519	Pipe	399.437		0.6	600	81.831	76.782
Pipe46 (1)	13.314	Pipe	403.442		0.6	600	81.321	76.638
Pipe (1)	40.235	Pipe	200.174		0.6	300	81.750	79.000
Pipe (3)	20.733	Pipe	199.355		0.6	300	81.217	78.799

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
Pipe45	81.800	76.841		All
Pipe47	81.136	76.423		All
Pipe48	81.062	76.345		All
Pipe49	80.176	76.238		All
Pipe50	80.000	76.188		All
Pipe51	78.250	75.390		All
Pipe52	77.555	75.291		Levels
Pipe53	76.991	75.092		All
Pipe54	78.697	74.829		All
Pipe55	79.087	74.809		All
Pipe56	79.685	74.765		All
Pipe57	79.108	74.678		All
Pipe58	78.379	74.654		All
Pipe59	76.983	74.554		All
Pipe60	76.759	74.530		All
Pipe62	79.652	76.366		All
Pipe63	77.555	75.741		All
Pipe64	80.677	78.922		All
Pipe65	80.437	77.700		All
Pipe66	80.085	77.280		All
Pipe67	78.796	76.643		All
Pipe68	78.743	76.544		All
Pipe69	78.686	76.377		All
Pipe70	78.617	76.173		All
Pipe72	80.487	78.761		All
Pipe73	80.179	78.386		All
Pipe74	80.791	78.004		All
Pipe75	77.940	76.156		All
Pipe75 (1)	77.132	75.213		All
Pipe58 (1)	77.132	74.613		All
Pipe64 (1)	80.791	78.154		All
Pipe65 (1)	80.031	77.472		All
Pipe65 (2)	80.174	77.585		All
Pipe73 (1)	80.434	78.146		All
Pipe45 (1)	81.831	76.782		All
Pipe47 (2)	81.175	76.381		All
Pipe48 (1)	80.906	76.311		All
Pipe66 (1)	79.695	77.136		All
Pipe118	79.695	77.436		All
Pipe73 (2)	80.236	78.244		All
Pipe56 (1)	79.806	74.739		All
Pipe61	75.846	74.500		All
Pipe71	77.719	75.676		All
Pipe71 (1)	75.846	74.946		All
Pipe	81.831	76.937		None
Pipe (2)	81.831	78.560		Levels
Pipe46	81.321	76.638		All
Pipe46 (1)	81.184	76.605		All
Pipe (1)	81.217	78.799		None
Pipe (3)	82.042	78.695		None

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	SW01		Time of Concentration	76.623	100	0	100	76.623
Catchment Area (1)	SW01		Time of Concentration	184.604	100	0	100	184.604
Catchment Area (2)	SW01		Time of Concentration	29.702	100	0	100	29.702
Catchment Area (3)	SW01		Time of Concentration	26.593	100	0	100	26.593
Catchment Area (4)	SW01		Time of Concentration	25.362	100	0	100	25.362
Catchment Area (5)	SW01		Time of Concentration	52.264	100	0	100	52.264
Catchment Area (6)	SW01		Time of Concentration	24.408	100	0	100	24.408
Catchment Area (7)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (8)	SW02		Time of Concentration	60.835	100	0	100	60.835
Catchment Area (9)	SW03		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (10)	SW03		Time of Concentration	30.907	100	0	100	30.907
Catchment Area (11)	SW03		Time of Concentration	26.046	100	0	100	26.046
Catchment Area (12)	SW03		Time of Concentration	30.325	100	0	100	30.325
Catchment Area (13)	SW03		Time of Concentration	24.481	100	0	100	24.481
Catchment Area (14)	SW03		Time of Concentration	51.026	100	0	100	51.026
Catchment Area (15)	SW03		Time of Concentration	26.467	100	0	100	26.467
Catchment Area (16)	SW03		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (17)	SW04		Time of Concentration	221.435	100	0	100	221.435
Catchment Area (18)	SW01		Time of Concentration	77.006	100	0	100	77.006
Catchment Area (19)	SW04		Time of Concentration	56.262	100	0	100	56.262
Catchment Area (20)	SW03		Time of Concentration	25.060	100	0	100	25.060
Catchment Area (21)	SW03		Time of Concentration	50.400	100	0	100	50.400
Catchment Area (22)	SW03		Time of Concentration	50.540	100	0	100	50.540
Catchment Area (23)	SW03		Time of Concentration	43.516	100	0	100	43.516
Catchment Area (24)	SW03		Time of Concentration	253.178	100	0	100	253.178
Catchment Area (25)	SW01d		Time of Concentration	29.872	100	0	100	29.872
Catchment Area (26)	SW01d		Time of Concentration	48.576	100	0	100	48.576
Catchment Area (27)	SW01d		Time of Concentration	47.149	100	0	100	47.149
Catchment Area (28)	SW01d		Time of Concentration	27.143	100	0	100	27.143
Catchment Area (29)	SW04		Time of Concentration	28.484	100	0	100	28.484
Catchment Area (30)	SW04		Time of Concentration	22.527	100	0	100	22.527
Catchment Area (31)	SW04		Time of Concentration	133.114	100	0	100	133.114
Catchment Area (32)	SW09		Time of Concentration	178.825	100	0	100	178.825

Catchment Area (33)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (34)	SW09		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (35)	SW09		Time of Concentration	32.568	100	0	100	32.568
Catchment Area (36)	SW09		Time of Concentration	55.402	100	0	100	55.402
Catchment Area (37)	SW09		Time of Concentration	26.760	100	0	100	26.760
Catchment Area (38)	SW10		Time of Concentration	67.245	100	0	100	67.245
Catchment Area (39)	SW10		Time of Concentration	59.922	100	0	100	59.922
Catchment Area (40)	SW10		Time of Concentration	61.864	100	0	100	61.864
Catchment Area (41)	SW10		Time of Concentration	32.486	100	0	100	32.486
Catchment Area (42)	SW10		Time of Concentration	30.050	100	0	100	30.050
Catchment Area (43)	SW10		Time of Concentration	29.923	100	0	100	29.923
Catchment Area (44)	SW03		Time of Concentration	264.740	100	0	100	264.740
Catchment Area (45)	SW03		Time of Concentration	50.197	100	0	100	50.197
Catchment Area (46)	SW03		Time of Concentration	25.272	100	0	100	25.272
Catchment Area (47)	SW03		Time of Concentration	50.342	100	0	100	50.342
Catchment Area (48)	SW03		Time of Concentration	30.121	100	0	100	30.121
Catchment Area (49)	SW41		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (50)	SW39		Time of Concentration	288.262	100	0	100	288.262
Catchment Area (51)	SW41		Time of Concentration	30.158	100	0	100	30.158
Catchment Area (52)	SW41		Time of Concentration	32.412	100	0	100	32.412
Catchment Area (53)	SW41		Time of Concentration	50.265	100	0	100	50.265
Catchment Area (54)	SW41		Time of Concentration	50.168	100	0	100	50.168
Catchment Area (55)	SW41		Time of Concentration	62.392	100	0	100	62.392
Catchment Area (56)	SW39		Time of Concentration	60.820	100	0	100	60.820
Catchment Area (57)	SW39		Time of Concentration	58.443	100	0	100	58.443
Catchment Area (58)	SW40		Time of Concentration	31.144	100	0	100	31.144
Catchment Area (59)	SW41		Time of Concentration	67.164	100	0	100	67.164
Catchment Area (60)	SW41		Time of Concentration	29.264	100	0	100	29.264
Catchment Area (61)	SW41		Time of Concentration	53.075	100	0	100	53.075
Catchment Area (62)	SW41		Time of Concentration	60.710	100	0	100	60.710
Catchment Area (63)	SW41		Time of Concentration	56.492	100	0	100	56.492
Catchment Area (64)	SW41		Time of Concentration	30.065	100	0	100	30.065
Catchment Area (65)	SW27		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (66)	SW27		Time of Concentration	297.368	100	0	100	297.368
Catchment Area (67)	SW41		Time of Concentration	59.639	100	0	100	59.639

Catchment Area (68)	SW42		Time of Concentration	30.095	100	0	100	30.095
Catchment Area (69)	SW42		Time of Concentration	26.624	100	0	100	26.624
Catchment Area (70)	SW43		Time of Concentration	30.437	100	0	100	30.437
Catchment Area (71)	SW43		Time of Concentration	52.709	100	0	100	52.709
Catchment Area (72)	SW43		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (73)	SW43		Time of Concentration	60.851	100	0	100	60.851
Catchment Area (74)	SW29		Time of Concentration	62.610	100	0	100	62.610
Catchment Area (75)	SW29		Time of Concentration	30.405	100	0	100	30.405
Catchment Area (76)	SW28		Time of Concentration	50.520	100	0	100	50.520
Catchment Area (77)	SW28		Time of Concentration	52.672	100	0	100	52.672
Catchment Area (78)	SW11		Time of Concentration	394.565	100	0	100	394.565
Catchment Area (79)	SW27		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (80)	SW27		Time of Concentration	50.863	100	0	100	50.863
Catchment Area (81)	SW28		Time of Concentration	30.115	100	0	100	30.115
Catchment Area (82)	SW28		Time of Concentration	31.034	100	0	100	31.034
Catchment Area (83)	SW29		Time of Concentration	25.377	100	0	100	25.377
Catchment Area (84)	SW29		Time of Concentration	63.000	100	0	100	63.000
Catchment Area (85)	SW29		Time of Concentration	60.439	100	0	100	60.439
Catchment Area (86)	SW29		Time of Concentration	25.891	100	0	100	25.891
Catchment Area (87)	SW29		Time of Concentration	51.983	100	0	100	51.983
Catchment Area (88)	SW29		Time of Concentration	29.145	100	0	100	29.145
Catchment Area (89)	SW23		Time of Concentration	25.855	100	0	100	25.855
Catchment Area (90)	SW23		Time of Concentration	53.232	100	0	100	53.232
Catchment Area (91)	SW23		Time of Concentration	30.583	100	0	100	30.583
Catchment Area (92)	SW23		Time of Concentration	279.685	100	0	100	279.685
Catchment Area (93)	SW23		Time of Concentration	24.787	100	0	100	24.787
Catchment Area (94)	SW23		Time of Concentration	30.530	100	0	100	30.530
Catchment Area (95)	SW08		Time of Concentration	43.399	100	0	100	43.399
Catchment Area (96)	SW07		Time of Concentration	30.081	100	0	100	30.081
Catchment Area (97)	SW07		Time of Concentration	77.459	100	0	100	77.459
Catchment Area (98)	SW06		Time of Concentration	31.181	100	0	100	31.181
Catchment Area (99)	SW05		Time of Concentration	265.547	100	0	100	265.547
Catchment Area (100)	SW04		Time of Concentration	142.722	100	0	100	142.722
Catchment Area (101)	SW03		Time of Concentration	31.204	100	0	100	31.204
Catchment Area (102)	SW04		Time of Concentration	30.174	100	0	100	30.174

Catchment Area (103)	SW02		Time of Concentration	65.583	100	0	100	65.583
Catchment Area (104)	SW02		Time of Concentration	60.485	100	0	100	60.485
Catchment Area (105)	SW11		Time of Concentration	62.799	100	0	100	62.799
Catchment Area (106)	SW11		Time of Concentration	59.573	100	0	100	59.573
Catchment Area (107)	SW11		Time of Concentration	49.221	100	0	100	49.221
Catchment Area (108)	SW11		Time of Concentration	29.978	100	0	100	29.978
Catchment Area (109)	SW11		Time of Concentration	24.813	100	0	100	24.813
Catchment Area (110)	SW11		Time of Concentration	23.391	100	0	100	23.391
Catchment Area (111)	SW11		Time of Concentration	52.303	100	0	100	52.303
Catchment Area (112)	SW23		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (113)	SW23		Time of Concentration	63.113	100	0	100	63.113
Catchment Area (114)	SW09		Time of Concentration	49.774	100	0	100	49.774
Catchment Area (115)	SW09		Time of Concentration	32.972	100	0	100	32.972
Catchment Area (116)	SW10		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (117)	SW11		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (118)	SW11		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (119)	SW11		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (120)	SW11		Time of Concentration	29.944	100	0	100	29.944
Catchment Area (121)	SW12		Time of Concentration	62.044	100	0	100	62.044
Catchment Area (122)	SW12		Time of Concentration	61.149	100	0	100	61.149
Catchment Area (123)	SW24		Time of Concentration	30.164	100	0	100	30.164
Catchment Area (124)	SW29		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (125)	SW29		Time of Concentration	24.388	100	0	100	24.388
Catchment Area (126)	SW29		Time of Concentration	25.152	100	0	100	25.152
Catchment Area (127)	SW29		Time of Concentration	50.176	100	0	100	50.176
Catchment Area (128)	SW29		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (129)	SW29		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (130)	SW31		Time of Concentration	59.919	100	0	100	59.919
Catchment Area (131)	SW31		Time of Concentration	31.219	100	0	100	31.219
Catchment Area (132)	SW31		Time of Concentration	27.331	100	0	100	27.331
Catchment Area (133)	SW13		Time of Concentration	30.207	100	0	100	30.207
Catchment Area (134)	SW13		Time of Concentration	52.516	100	0	100	52.516
Catchment Area (135)	SW13		Time of Concentration	27.134	100	0	100	27.134
Catchment Area (136)	SW13		Time of Concentration	30.116	100	0	100	30.116
Catchment Area (137)	SW13		Time of Concentration	50.553	100	0	100	50.553

Catchment Area (138)	SW44		Time of Concentration	261.548	100	0	100	261.548
Catchment Area (139)	SW34		Time of Concentration	24.840	100	0	100	24.840
Catchment Area (140)	SW34		Time of Concentration	24.983	100	0	100	24.983
Catchment Area (141)	SW34		Time of Concentration	30.332	100	0	100	30.332
Catchment Area (142)	SW34		Time of Concentration	52.343	100	0	100	52.343
Catchment Area (143)	SW34		Time of Concentration	30.439	100	0	100	30.439
Catchment Area (144)	SW33		Time of Concentration	25.460	100	0	100	25.460
Catchment Area (145)	SW33		Time of Concentration	29.225	100	0	100	29.225
Catchment Area (146)	SW33		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (147)	SW31		Time of Concentration	61.280	100	0	100	61.280
Catchment Area (148)	SW44		Time of Concentration	515.126	100	0	100	515.126
Catchment Area (149)	SW36		Time of Concentration	60.018	100	0	100	60.018
Catchment Area (150)	SW36		Time of Concentration	60.390	100	0	100	60.390
Catchment Area (151)	SW36		Time of Concentration	29.589	100	0	100	29.589
Catchment Area (152)	SW35		Time of Concentration	50.362	100	0	100	50.362
Catchment Area (153)	SW35		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (154)	SW35		Time of Concentration	24.993	100	0	100	24.993
Catchment Area (155)	SW35		Time of Concentration	68.653	100	0	100	68.653
Catchment Area (156)	SW35		Time of Concentration	29.450	100	0	100	29.450
Catchment Area (157)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (158)	SW35		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (159)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (160)	SW37		Time of Concentration	50.530	100	0	100	50.530
Catchment Area (161)	SW36		Time of Concentration	35.293	100	0	100	35.293
Catchment Area (162)	SW36		Time of Concentration	60.650	100	0	100	60.650
Catchment Area (163)	SW36		Time of Concentration	52.120	100	0	100	52.120
Catchment Area (164)	SW45		Time of Concentration	219.191	100	0	100	219.191
Catchment Area (165)	SW45		Time of Concentration	30.143	100	0	100	30.143
Catchment Area (166)	SW45		Time of Concentration	53.797	100	0	100	53.797
Catchment Area (167)	SW45		Time of Concentration	26.206	100	0	100	26.206
Catchment Area (168)	SW45		Time of Concentration	52.629	100	0	100	52.629
Catchment Area (169)	SW45		Time of Concentration	30.291	100	0	100	30.291
Catchment Area (170)	SW38		Time of Concentration	32.573	100	0	100	32.573
Catchment Area (171)	SW38		Time of Concentration	52.761	100	0	100	52.761
Catchment Area (172)	SW38		Time of Concentration	32.351	100	0	100	32.351

Catchment Area (173)	SW45		Time of Concentration	30.023	100	0	100	30.023
Catchment Area (174)	SW45		Time of Concentration	25.333	100	0	100	25.333
Catchment Area (175)	SW45		Time of Concentration	24.176	100	0	100	24.176
Catchment Area (176)	SW45		Time of Concentration	29.897	100	0	100	29.897
Catchment Area (177)	SW45		Time of Concentration	24.938	100	0	100	24.938
Catchment Area (178)	SW45		Time of Concentration	61.161	100	0	100	61.161
Catchment Area (179)	SW21		Time of Concentration	64.155	100	0	100	64.155
Catchment Area (180)	SW19		Time of Concentration	51.017	100	0	100	51.017
Catchment Area (181)	SW18		Time of Concentration	27.649	100	0	100	27.649
Catchment Area (182)	SW18		Time of Concentration	32.542	100	0	100	32.542
Catchment Area (183)	SW17		Time of Concentration	25.592	100	0	100	25.592
Catchment Area (184)	SW17		Time of Concentration	49.953	100	0	100	49.953
Catchment Area (185)	SW17		Time of Concentration	30.484	100	0	100	30.484
Catchment Area (186)	SW18		Time of Concentration	31.183	100	0	100	31.183
Catchment Area (187)	SW19		Time of Concentration	49.979	100	0	100	49.979
Catchment Area (188)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (189)	SW20		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (190)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (191)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (192)	SW14		Time of Concentration	171.731	100	0	100	171.731
Catchment Area (193)	SW33		Time of Concentration	31.681	100	0	100	31.681
Catchment Area (194)	SW33		Time of Concentration	77.993	100	0	100	77.993
Catchment Area (195)	SW33		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (196)	SW32		Time of Concentration	29.955	100	0	100	29.955
Catchment Area (197)	SW32		Time of Concentration	51.072	100	0	100	51.072
Catchment Area (198)	SW32		Time of Concentration	52.346	100	0	100	52.346
Catchment Area (199)	SW32		Time of Concentration	31.993	100	0	100	31.993
Catchment Area (200)	SW14		Time of Concentration	59.729	100	0	100	59.729
Catchment Area (201)	SW14		Time of Concentration	29.240	100	0	100	29.240
Catchment Area (202)	SW14		Time of Concentration	52.062	100	0	100	52.062
Catchment Area (203)	SW14		Time of Concentration	24.958	100	0	100	24.958
Catchment Area (204)	SW14		Time of Concentration	58.128	100	0	100	58.128
Catchment Area (205)	SW14		Time of Concentration	32.708	100	0	100	32.708
Catchment Area (206)	SW14		Time of Concentration	60.299	100	0	100	60.299
Catchment Area (207)	SW14		Time of Concentration	236.434	100	0	100	236.434

Catchment Area (208)	SW14		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (209)	SW14		Time of Concentration	24.251	100	0	100	24.251
Catchment Area (210)	SW14		Time of Concentration	31.022	100	0	100	31.022
Catchment Area (211)	SW15		Time of Concentration	28.077	100	0	100	28.077
Catchment Area (212)	SW17		Time of Concentration	59.178	100	0	100	59.178
Catchment Area (213)	SW17		Time of Concentration	25.166	100	0	100	25.166
Catchment Area (214)	SW17		Time of Concentration	30.019	100	0	100	30.019
Catchment Area (215)	SW17		Time of Concentration	25.112	100	0	100	25.112
Catchment Area (216)	SW17		Time of Concentration	30.278	100	0	100	30.278
Catchment Area (217)	SW16		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (218)	SW16		Time of Concentration	49.958	100	0	100	49.958
Catchment Area (219)	SW16		Time of Concentration	30.347	100	0	100	30.347
Catchment Area (220)	SW14		Time of Concentration	29.864	100	0	100	29.864
Catchment Area (221)	SW26		Time of Concentration	292.378	100	0	100	292.378
Catchment Area (222)	SW25		Time of Concentration	235.618	100	0	100	235.618
Catchment Area (223)	SW25		Time of Concentration	49.989	100	0	100	49.989
Catchment Area (224)	SW25		Time of Concentration	24.890	100	0	100	24.890
Catchment Area (225)	SW25		Time of Concentration	29.932	100	0	100	29.932
Catchment Area (226)	SW25		Time of Concentration	28.508	100	0	100	28.508
Catchment Area (227)	SW25		Time of Concentration	74.095	100	0	100	74.095
Catchment Area (228)	SW25		Time of Concentration	59.946	100	0	100	59.946
Catchment Area (229)	SW25		Time of Concentration	25.474	100	0	100	25.474
Catchment Area (230)	SW25		Time of Concentration	44.801	100	0	100	44.801
Catchment Area (231)	SW25		Time of Concentration	25.993	100	0	100	25.993
Catchment Area (232)	SW11		Time of Concentration	30.458	100	0	100	30.458
Catchment Area (233)	SW15		Time of Concentration	29.961	100	0	100	29.961
Catchment Area (234)	SW24		Time of Concentration	61.701	100	0	100	61.701
Catchment Area (235)	SW09		Time of Concentration	30.321	100	0	100	30.321
Catchment Area (236)	SW09		Time of Concentration	63.712	100	0	100	63.712
Catchment Area (237)	SW05		Time of Concentration	29.988	100	0	100	29.988
Catchment Area (238)	SW05		Time of Concentration	29.862	100	0	100	29.862
Catchment Area (239)	SW05		Time of Concentration	44.613	100	0	100	44.613
Catchment Area (240)	SW05		Time of Concentration	29.651	100	0	100	29.651
Catchment Area (241)	SW04		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (242)	SW04		Time of Concentration	51.834	100	0	100	51.834

Catchment Area (243)	SW04		Time of Concentration	23.040	100	0	100	23.040
Catchment Area (244)	SW04		Time of Concentration	30.852	100	0	100	30.852
Catchment Area (245)	SW45		Time of Concentration	335.860	100	0	100	335.860
Catchment Area (246)	SW01d		Time of Concentration	32.976	100	0	100	32.976
Catchment Area (247)	SW39		Time of Concentration	107.790	100	0	100	107.790
Catchment Area (248)	SW41		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (249)	SW39		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (250)	SW39		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (251)	SW39		Time of Concentration	98.325	100	0	100	98.325
Catchment Area (252)	SW40		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (253)	SW41		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (254)	SW41		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (255)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (256)	SW41		Time of Concentration	107.021	100	0	100	107.021
Catchment Area (257)	SW41		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (258)	SW41		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (259)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (260)	SW27		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (261)	SW28		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (262)	SW28		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (263)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (264)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (265)	SW28		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (266)	SW43		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (267)	SW43		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (268)	SW29		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (269)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (270)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (271)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (272)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (273)	SW03		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (274)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (275)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (276)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (277)	SW01		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (278)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (279)	SW02		Time of Concentration	107.018	100	0	100	107.018
Catchment Area (280)	SW01d		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (281)	SW01d		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (282)	SW02		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (283)	SW03		Time of Concentration	106.519	100	0	100	106.519
Catchment Area (284)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (285)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (286)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (287)	SW03		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (288)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (289)	SW03		Time of Concentration	113.964	100	0	100	113.964
Catchment Area (290)	SW03		Time of Concentration	62.105	100	0	100	62.105
Catchment Area (291)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (292)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (293)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (294)	SW04		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (295)	SW04		Time of Concentration	155.919	100	0	100	155.919
Catchment Area (296)	SW04		Time of Concentration	64.882	100	0	100	64.882
Catchment Area (297)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (298)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (299)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (300)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (301)	SW04		Time of Concentration	98.081	100	0	100	98.081
Catchment Area (302)	SW04		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (303)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (304)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (305)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (306)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (307)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (308)	SW03		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (309)	SW03		Time of Concentration	113.989	100	0	100	113.989
Catchment Area (310)	SW45		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (311)	SW45		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (312)	SW45		Time of Concentration	97.104	100	0	100	97.104

Catchment Area (313)	SW45		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (314)	SW45		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (315)	SW45		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (316)	SW36		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (317)	SW36		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (318)	SW36		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (319)	SW45		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (320)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (321)	SW45		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (322)	SW38		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (323)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (324)	SW38		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (325)	SW17		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (326)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (327)	SW21		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (328)	SW22		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (329)	SW20		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (330)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (331)	SW19		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (332)	SW18		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (333)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (334)	SW15		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (335)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (336)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (337)	SW14		Time of Concentration	107.041	100	0	100	107.041
Catchment Area (338)	SW14		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (339)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (340)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (341)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (342)	SW14		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (343)	SW14		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (344)	SW27		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (345)	SW27		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (346)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (347)	SW23		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (348)	SW23		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (349)	SW23		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (350)	SW29		Time of Concentration	196.460	100	0	100	196.460
Catchment Area (351)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (352)	SW29		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (353)	SW24		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (354)	SW24		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (355)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (356)	SW13		Time of Concentration	146.982	100	0	100	146.982
Catchment Area (357)	SW13		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (358)	SW31		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (359)	SW31		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (360)	SW31		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (361)	SW29		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (362)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (363)	SW40		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (364)	SW42		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (365)	SW42		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (366)	SW43		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (367)	SW29		Time of Concentration	113.605	100	0	100	113.605
Catchment Area (368)	SW44		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (369)	SW44		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (370)	SW44		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (371)	SW34		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (372)	SW34		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (373)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (374)	SW33		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (375)	SW44		Time of Concentration	410.698	100	0	100	410.698
Catchment Area (376)	SW36		Time of Concentration	113.760	100	0	100	113.760
Catchment Area (377)	SW36		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (378)	SW36		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (379)	SW35		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (380)	SW35		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (381)	SW35		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (382)	SW35		Time of Concentration	144.769	100	0	100	144.769

Catchment Area (383)	SW35		Time of Concentration	107.012	100	0	100	107.012
Catchment Area (384)	SW17		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (385)	SW17		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (386)	SW16		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (387)	SW16		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (388)	SW35		Time of Concentration	113.621	100	0	100	113.621
Catchment Area (389)	SW14		Time of Concentration	57.926	100	0	100	57.926
Catchment Area (390)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (391)	SW13		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (392)	SW32		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (393)	SW32		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (394)	SW32		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (395)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (396)	SW25		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (397)	SW25		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (398)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (399)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (400)	SW25		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (401)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (402)	SW26		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (403)	SW25		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (404)	SW26		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (405)	SW25		Time of Concentration	149.709	100	0	100	149.709
Catchment Area (406)	SW25		Time of Concentration	205.242	100	0	100	205.242
Catchment Area (407)	SW25		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (408)	SW25		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (409)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (410)	SW11		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (411)	SW11		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (412)	SW11		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (413)	SW14		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (414)	SW11		Time of Concentration	107.034	100	0	100	107.034
Catchment Area (415)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (416)	SW11		Time of Concentration	156.129	100	0	100	156.129
Catchment Area (417)	SW11		Time of Concentration	57.898	100	0	100	57.898

Catchment Area (418)	SW11		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (419)	SW10		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (420)	SW10		Time of Concentration	243.207	100	0	100	243.207
Catchment Area (421)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (422)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (423)	SW05		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (424)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (425)	SW07		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (426)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (427)	SW08		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (428)	SW23		Time of Concentration	169.869	100	0	100	169.869
Catchment Area (429)	SW23		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (430)	SW23		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (431)	SW09		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (432)	SW23		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (433)	SW24		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (434)	SW24		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (435)	SW12		Time of Concentration	114.177	100	0	100	114.177
Catchment Area (436)	SW11		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (437)	SW10		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (438)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (439)	SW09		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (440)	SW09		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (441)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (442)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (443)	SW10		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (444)	SW10		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (445)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (446)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (447)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (448)	SW09		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (449)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (450)	SW01d		Time of Concentration	75.656	100	0	100	75.656
Catchment Area (451)	SW14		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (452)	SW45		Time of Concentration	123.948	100	0	100	123.948

Catchment Area (453)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (454)	SW45		Time of Concentration	113.691	100	0	100	113.691
Catchment Area (455)	SW45		Time of Concentration	85.134	100	0	100	85.134
Catchment Area (456)	SW45		Time of Concentration	209.239	100	0	100	209.239
Catchment Area (457)	SW45		Time of Concentration	148.005	100	0	100	148.005
Catchment Area (458)	SW45		Time of Concentration	142.480	100	0	100	142.480
Catchment Area (459)	SW45		Time of Concentration	127.815	100	0	100	127.815
Catchment Area (460)	SW45		Time of Concentration	506.425	100	0	100	506.425
Catchment Area (461)	SW25		Time of Concentration	164.380	100	0	100	164.380
Catchment Area (462)	SW25		Time of Concentration	85.329	100	0	100	85.329
Catchment Area (463)	SW25		Time of Concentration	423.232	100	0	100	423.232
Catchment Area (464)	SW36		Time of Concentration	606.328	100	0	100	606.328
Catchment Area (465)	SW36		Time of Concentration	92.130	100	0	100	92.130
Catchment Area (466)	SW36		Time of Concentration	97.396	100	0	100	97.396
Catchment Area (467)	SW45		Time of Concentration	296.019	100	0	100	296.019
Catchment Area (468)	SW38		Time of Concentration	172.501	100	0	100	172.501
Catchment Area (469)	SW35		Time of Concentration	418.347	100	0	100	418.347
Catchment Area (470)	SW36		Time of Concentration	64.944	100	0	100	64.944
Catchment Area (471)	SW36		Time of Concentration	151.556	100	0	100	151.556
Catchment Area (472)	SW37		Time of Concentration	64.746	100	0	100	64.746
Catchment Area (473)	SW37		Time of Concentration	178.126	100	0	100	178.126
Catchment Area (474)	SW18		Time of Concentration	213.222	100	0	100	213.222
Catchment Area (475)	SW18		Time of Concentration	108.014	100	0	100	108.014
Catchment Area (476)	SW19		Time of Concentration	146.934	100	0	100	146.934
Catchment Area (477)	SW22		Time of Concentration	110.794	100	0	100	110.794
Catchment Area (478)	SW21		Time of Concentration	77.153	100	0	100	77.153
Catchment Area (479)	SW21		Time of Concentration	59.340	100	0	100	59.340
Catchment Area (480)	SW17		Time of Concentration	361.454	100	0	100	361.454
Catchment Area (481)	SW17		Time of Concentration	169.216	100	0	100	169.216
Catchment Area (482)	SW41		Time of Concentration	136.044	100	0	100	136.044
Catchment Area (483)	SW41		Time of Concentration	68.334	100	0	100	68.334
Catchment Area (484)	SW41		Time of Concentration	269.855	100	0	100	269.855
Catchment Area (485)	SW41		Time of Concentration	145.445	100	0	100	145.445
Catchment Area (486)	SW39		Time of Concentration	232.494	100	0	100	232.494
Catchment Area (487)	SW39		Time of Concentration	94.648	100	0	100	94.648

Catchment Area (488)	SW39		Time of Concentration	76.995	100	0	100	76.995
Catchment Area (489)	SW40		Time of Concentration	138.219	100	0	100	138.219
Catchment Area (490)	SW41		Time of Concentration	136.376	100	0	100	136.376
Catchment Area (491)	SW41		Time of Concentration	118.947	100	0	100	118.947
Catchment Area (492)	SW41		Time of Concentration	118.295	100	0	100	118.295
Catchment Area (493)	SW43		Time of Concentration	318.665	100	0	100	318.665
Catchment Area (494)	SW27		Time of Concentration	167.121	100	0	100	167.121
Catchment Area (495)	SW27		Time of Concentration	144.172	100	0	100	144.172
Catchment Area (496)	SW27		Time of Concentration	194.327	100	0	100	194.327
Catchment Area (497)	SW28		Time of Concentration	117.596	100	0	100	117.596
Catchment Area (498)	SW29		Time of Concentration	144.850	100	0	100	144.850
Catchment Area (499)	SW29		Time of Concentration	151.486	100	0	100	151.486
Catchment Area (500)	SW30		Time of Concentration	457.524	100	0	100	457.524
Catchment Area (501)	SW29		Time of Concentration	193.350	100	0	100	193.350
Catchment Area (502)	SW29		Time of Concentration	347.032	100	0	100	347.032
Catchment Area (503)	SW23		Time of Concentration	161.169	100	0	100	161.169
Catchment Area (504)	SW23		Time of Concentration	159.379	100	0	100	159.379
Catchment Area (505)	SW11		Time of Concentration	296.217	100	0	100	296.217
Catchment Area (506)	SW11		Time of Concentration	414.722	100	0	100	414.722
Catchment Area (507)	SW14		Time of Concentration	98.300	100	0	100	98.300
Catchment Area (508)	SW14		Time of Concentration	82.994	100	0	100	82.994
Catchment Area (509)	SW14		Time of Concentration	219.557	100	0	100	219.557
Catchment Area (510)	SW14		Time of Concentration	123.578	100	0	100	123.578
Catchment Area (511)	SW26		Time of Concentration	513.879	100	0	100	513.879
Catchment Area (512)	SW09		Time of Concentration	242.053	100	0	100	242.053
Catchment Area (513)	SW09		Time of Concentration	87.245	100	0	100	87.245
Catchment Area (514)	SW09		Time of Concentration	74.692	100	0	100	74.692
Catchment Area (515)	SW09		Time of Concentration	67.474	100	0	100	67.474
Catchment Area (516)	SW09		Time of Concentration	58.760	100	0	100	58.760
Catchment Area (517)	SW03		Time of Concentration	54.611	100	0	100	54.611
Catchment Area (518)	SW03		Time of Concentration	67.747	100	0	100	67.747
Catchment Area (519)	SW03		Time of Concentration	98.406	100	0	100	98.406
Catchment Area (520)	SW03		Time of Concentration	254.868	100	0	100	254.868
Catchment Area (521)	SW01		Time of Concentration	68.688	100	0	100	68.688
Catchment Area (522)	SW01		Time of Concentration	246.513	100	0	100	246.513

Catchment Area (523)	SW01		Time of Concentration	379.981	100	0	100	379.981
Catchment Area (524)	SW01		Time of Concentration	613.702	100	0	100	613.702
Catchment Area (525)	SW01d		Time of Concentration	171.503	100	0	100	171.503
Catchment Area (526)	SW01d		Time of Concentration	301.255	100	0	100	301.255
Catchment Area (527)	SW02		Time of Concentration	237.349	100	0	100	237.349
Catchment Area (528)	SW03		Time of Concentration	75.207	100	0	100	75.207
Catchment Area (529)	SW03		Time of Concentration	80.023	100	0	100	80.023
Catchment Area (530)	SW03		Time of Concentration	473.285	100	0	100	473.285
Catchment Area (531)	SW03		Time of Concentration	32.211	100	0	100	32.211
Catchment Area (532)	SW03		Time of Concentration	294.202	100	0	100	294.202
Catchment Area (533)	SW04		Time of Concentration	170.286	100	0	100	170.286
Catchment Area (534)	SW15		Time of Concentration	255.357	100	0	100	255.357
Catchment Area (535)	SW15		Time of Concentration	67.115	100	0	100	67.115
Catchment Area (536)	SW13		Time of Concentration	225.371	100	0	100	225.371
Catchment Area (537)	SW14		Time of Concentration	417.373	100	0	100	417.373
Catchment Area (538)	SW44		Time of Concentration	1255.314	100	0	100	1255.314
Catchment Area (539)	SW34		Time of Concentration	408.940	100	0	100	408.940
Catchment Area (540)	SW33		Time of Concentration	411.195	100	0	100	411.195
Catchment Area (541)	SW32		Time of Concentration	580.449	100	0	100	580.449
Catchment Area (542)	SW13		Time of Concentration	347.217	100	0	100	347.217
Catchment Area (543)	SW13		Time of Concentration	277.965	100	0	100	277.965
Catchment Area (544)	SW24		Time of Concentration	75.441	100	0	100	75.441
Catchment Area (545)	SW24		Time of Concentration	197.138	100	0	100	197.138
Catchment Area (546)	SW12		Time of Concentration	114.721	100	0	100	114.721
Catchment Area (547)	SW12		Time of Concentration	100.206	100	0	100	100.206
Catchment Area (548)	SW11		Time of Concentration	215.747	100	0	100	215.747
Catchment Area (549)	SW08		Time of Concentration	190.588	100	0	100	190.588
Catchment Area (550)	SW04		Time of Concentration	331.687	100	0	100	331.687
Catchment Area (551)	SW04		Time of Concentration	161.558	100	0	100	161.558
Catchment Area (552)	SW05		Time of Concentration	208.624	100	0	100	208.624
Catchment Area (553)	SW06		Time of Concentration	124.655	100	0	100	124.655
Catchment Area (554)	SW07		Time of Concentration	78.139	100	0	100	78.139
Catchment Area (555)	SW08		Time of Concentration	233.148	100	0	100	233.148
Catchment Area (556)	SW09		Time of Concentration	159.166	100	0	100	159.166
Catchment Area (557)	SW25		Time of Concentration	134.527	100	0	100	134.527

Catchment Area (558)	SW25		Time of Concentration	196.083	100	0	100	196.083
Catchment Area (559)	SW25		Time of Concentration	107.920	100	0	100	107.920
Catchment Area (560)	SW10		Time of Concentration	198.320	100	0	100	198.320
Catchment Area (561)	SW10		Time of Concentration	191.819	100	0	100	191.819
Catchment Area (562)	SW11		Time of Concentration	587.958	100	0	100	587.958
Catchment Area (563)	SW11		Time of Concentration	361.560	100	0	100	361.560
Catchment Area (564)	SW10		Time of Concentration	129.131	100	0	100	129.131
Catchment Area (565)	SW10		Time of Concentration	152.915	100	0	100	152.915
Catchment Area (566)	SW10		Time of Concentration	667.984	100	0	100	667.984
Catchment Area (567)	SW10		Time of Concentration	222.394	100	0	100	222.394
Catchment Area (568)	SW02		Time of Concentration	246.147	100	0	100	246.147
Catchment Area (569)	SW45		Time of Concentration	65.342	100	0	100	65.342
Catchment Area (570)	Pond		Time of Concentration	5078.287	100	0	100	5078.287
Catchment Area (571)	SW01		Time of Concentration	35.094	100	0	100	35.094
Catchment Area (572)	SW01		Time of Concentration	30.984	100	0	100	30.984
Catchment Area (574)	SW01d		Time of Concentration	246.703	100	0	100	246.703
Catchment Area (575)	SW01d		Time of Concentration	86.380	100	0	100	86.380
Catchment Area (576)	SW01d		Time of Concentration	96.551	100	0	100	96.551
Catchment Area (577)	SW01d		Time of Concentration	28.890	100	0	100	28.890
Catchment Area (578)	SW01d		Time of Concentration	66.509	100	0	100	66.509
Catchment Area (579)	SW01d		Time of Concentration	50.074	100	0	100	50.074
Catchment Area (580)	SW01d		Time of Concentration	73.475	100	0	100	73.475
Catchment Area (581)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (582)	SW01d		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (583)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (584)	SW01d		Time of Concentration	128.085	100	0	100	128.085
Catchment Area (585)	SW01d		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (586)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (587)	SW01		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (588)	SW01		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (589)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (590)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (591)	SW01		Time of Concentration	188.942	100	0	100	188.942
Catchment Area (592)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (593)	SW01d		Time of Concentration	57.903	100	0	100	57.903

Catchment Area (594)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (595)	SW01d		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (596)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (597)	SW01d		Time of Concentration	113.969	100	0	100	113.969
Catchment Area (598)	SW01d		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (599)	SW01d		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (600)	SW01a		Time of Concentration	5421.048	100	0	100	5421.048
Catchment Area (601)	SW01		Time of Concentration	216.061	100	0	100	216.061
Catchment Area (602)	SW01d		Time of Concentration	722.897	100	0	100	722.897
TOTAL		**0.0**		**75209.711**				**75209.711**

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 2 years: +0 %: 15 mins: Winter	81.831	76.937	77.221	0.284	139.5	0.722	0.000	126.9	85.497	OK
SW03	FSR: 2 years: +0 %: 15 mins: Winter	81.831	76.782	77.112	0.330	194.6	0.840	0.000	176.0	123.108	OK
SW02	FSR: 2 years: +0 %: 15 mins: Winter	81.800	76.841	77.150	0.309	140.2	0.785	0.000	125.4	91.340	OK
SW04	FSR: 2 years: +0 %: 30 mins: Winter	81.184	76.455	76.818	0.363	191.0	0.923	0.000	190.4	188.292	OK
SW06	FSR: 2 years: +0 %: 30 mins: Winter	81.175	76.381	76.737	0.356	201.2	0.906	0.000	199.9	199.288	OK
SW05	FSR: 2 years: +0 %: 30 mins: Winter	81.136	76.423	76.782	0.359	200.8	0.914	0.000	199.6	197.904	OK
SW07	FSR: 2 years: +0 %: 30 mins: Winter	81.062	76.345	76.690	0.345	203.3	0.879	0.000	202.2	202.354	OK
SW23	FSR: 2 years: +0 %: 15 mins: Winter	81.000	79.499	79.554	0.055	24.6	0.062	0.000	24.2	11.381	OK
SW08	FSR: 2 years: +0 %: 30 mins: Winter	80.906	76.311	76.636	0.325	208.5	0.827	0.000	207.1	207.984	OK
SW29	FSR: 2 years: +0 %: 15 mins: Winter	80.791	77.854	78.082	0.228	135.3	0.581	0.000	131.5	68.723	OK
SW27	FSR: 2 years: +0 %: 15 mins: Winter	80.769	79.269	79.345	0.076	23.7	0.135	0.000	23.4	10.978	OK
SW28	FSR: 2 years: +0 %: 15 mins: Winter	80.677	78.922	79.007	0.085	32.5	0.151	0.000	31.2	15.205	OK
SW40	FSR: 2 years: +0 %: 15 mins: Winter	80.487	78.536	78.625	0.089	23.3	0.100	0.000	22.6	11.213	OK
SW30	FSR: 2 years: +0 %: 15 mins: Winter	80.437	77.700	77.934	0.234	138.5	0.596	0.000	132.1	71.879	OK
SW43	FSR: 2 years: +0 %: 15 mins: Winter	80.434	78.146	78.320	0.174	74.3	0.308	0.000	70.0	37.767	OK
SW39	FSR: 2 years: +0 %: 15 mins: Winter	80.311	78.886	78.996	0.110	18.9	0.125	0.000	17.9	8.725	OK
SW42	FSR: 2 years: +0 %: 15 mins: Winter	80.236	78.244	78.416	0.172	64.8	0.303	0.000	62.0	32.106	OK
SW41	FSR: 2 years: +0 %: 15 mins: Winter	80.179	78.386	78.549	0.163	62.7	0.289	0.000	59.7	29.791	OK
SW09	FSR: 2 years: +0 %: 30 mins: Winter	80.176	76.238	76.535	0.297	227.3	0.756	0.000	226.0	226.505	OK
SW31	FSR: 2 years: +0 %: 15 mins: Winter	80.174	77.585	77.821	0.236	140.1	0.601	0.000	134.3	75.492	OK
SW33	FSR: 2 years: +0 %: 15 mins: Winter	80.085	77.280	77.524	0.244	158.7	0.620	0.000	150.0	90.010	OK
SW32	FSR: 2 years: +0 %: 15 mins: Winter	80.031	77.472	77.707	0.235	150.4	0.597	0.000	142.9	82.856	OK
SW10	FSR: 2 years: +0 %: 30 mins: Winter	80.000	76.188	76.411	0.223	255.3	0.568	0.000	253.6	253.404	OK
SW44	FSR: 2 years: +0 %: 15 mins: Winter	79.919	78.419	78.525	0.106	41.2	0.120	0.000	38.7	19.040	OK
SW17	FSR: 2 years: +0 %: 15 mins: Winter	79.806	74.739	75.212	0.473	367.0	2.140	0.000	373.0	268.834	OK
SW34	FSR: 2 years: +0 %: 15 mins: Winter	79.695	77.136	77.372	0.236	201.6	0.600	0.000	189.9	114.891	OK
SW16	FSR: 2 years: +0 %: 15 mins: Winter	79.685	74.765	75.247	0.482	355.8	2.181	0.000	361.6	261.239	OK
SW24	FSR: 2 years: +0 %: 15 mins: Winter	79.652	76.366	76.469	0.103	35.8	0.117	0.000	33.0	16.715	OK
SW18	FSR: 2 years: +0 %: 15 mins: Winter	79.108	74.678	75.166	0.488	375.6	2.208	0.000	380.4	271.300	OK
SW15	FSR: 2 years: +0 %: 15 mins: Winter	79.087	74.809	75.284	0.475	348.0	2.149	0.000	354.5	260.513	OK

SW35	FSR: 2 years: +0 %: 15 mins: Winter	78.796	76.643	76.927	0.284	211.2	0.723	0.000	197.4	124.558	OK
SW36	FSR: 2 years: +0 %: 15 mins: Winter	78.743	76.544	76.826	0.281	228.0	0.716	0.000	221.2	138.649	OK
SW14	FSR: 2 years: +0 %: 15 mins: Winter	78.697	74.829	75.314	0.485	332.7	2.193	0.000	346.0	258.266	OK
SW37	FSR: 2 years: +0 %: 15 mins: Winter	78.686	76.377	76.646	0.269	225.7	0.684	0.000	217.1	140.599	OK
SW38	FSR: 2 years: +0 %: 15 mins: Winter	78.617	76.173	76.420	0.247	224.4	0.628	0.000	211.8	143.725	OK
SW19	FSR: 2 years: +0 %: 15 mins: Winter	78.379	74.654	75.128	0.474	382.6	2.142	0.000	386.0	273.449	OK
SW11	FSR: 2 years: +0 %: 30 mins: Winter	78.250	75.390	75.696	0.306	291.4	0.778	0.000	288.8	288.177	OK
SW25	FSR: 2 years: +0 %: 15 mins: Winter	78.094	76.752	76.825	0.073	42.9	0.129	0.000	42.5	19.851	OK
SW26	FSR: 2 years: +0 %: 15 mins: Winter	77.940	76.156	76.265	0.109	57.6	0.193	0.000	54.0	26.804	OK
SW12	FSR: 2 years: +0 %: 30 mins: Winter	77.555	75.141	75.521	0.380	318.3	1.718	0.000	316.0	315.147	OK
SW20	FSR: 2 years: +0 %: 15 mins: Winter	77.132	74.613	75.079	0.466	407.4	2.666	0.000	412.0	299.592	OK
SW13	FSR: 2 years: +0 %: 15 mins: Winter	76.991	74.942	75.370	0.428	307.0	1.937	0.000	320.3	239.236	OK
SW21	FSR: 2 years: +0 %: 15 mins: Winter	76.983	74.554	75.008	0.454	413.2	2.056	0.000	415.6	299.429	OK
SW22	FSR: 2 years: +0 %: 15 mins: Winter	76.759	74.530	74.944	0.414	416.3	1.875	0.000	418.0	298.586	OK
SW45	FSR: 2 years: +0 %: 15 mins: Winter	77.719	75.676	75.885	0.209	269.9	0.532	0.000	255.8	170.488	OK
SW01a	FSR: 2 years: +0 %: 30 mins: Winter	81.750	79.000	79.197	0.197	55.3	0.223	0.000	54.2	51.113	OK
SW01c	FSR: 2 years: +0 %: 15 mins: Winter	82.042	78.695	78.888	0.193	52.5	0.218	0.000	52.5	38.069	OK
SW01d	FSR: 2 years: +0 %: 15 mins: Winter	82.329	77.000	77.236	0.236	51.2	0.416	0.000	46.1	23.747	OK
SW46	FSR: 2 years: +0 %: 30 mins: Winter	81.321	76.638	76.944	0.306	168.3	0.780	0.000	166.3	165.537	OK
SW01b	FSR: 2 years: +0 %: 30 mins: Winter	81.217	78.799	78.998	0.199	54.2	0.226	0.000	52.6	51.100	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 2 years: +0 %: 240 mins: Winter	74.655	74.655	0.309	0.309	250.7	855.059	0.000	1331.439	0.0	0.000	81.942	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe45	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	81.831	77.221	0.296	85.497	0.9	0.37	126.9	OK
Pipe47	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW04	SW05	81.184	76.818	0.361	188.292	0.9	0.31	190.4	OK
Pipe48	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW06	SW07	81.175	76.737	0.351	199.288	1.0	0.32	199.9	OK
Pipe49	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW08	SW09	80.906	76.636	0.311	207.984	1.2	0.34	207.1	OK
Pipe50	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW09	SW10	80.176	76.535	0.260	226.505	1.7	0.37	226.0	OK
Pipe51	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW10	SW11	80.000	76.411	0.264	253.404	1.8	0.19	253.6	OK
Pipe52	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW11	SW12	78.250	75.696	0.285	288.177	1.9	0.27	288.8	OK
Pipe53	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW12	SW13	77.555	75.521	0.352	315.147	1.4	0.36	316.0	OK
Pipe54	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW13	SW14	76.991	75.354	0.439	328.725	0.9	0.24	324.1	OK
Pipe55	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	78.697	75.314	0.480	258.266	1.0	0.26	346.0	OK
Pipe56	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW15	SW16	79.087	75.284	0.479	260.513	1.0	0.27	354.5	OK
Pipe57	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW17	SW18	79.806	75.212	0.481	268.834	1.0	0.28	373.0	OK
Pipe58	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW18	SW19	79.108	75.166	0.481	271.300	1.0	0.29	380.4	OK
Pipe59	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW20	SW21	77.132	75.079	0.460	299.592	1.1	0.31	412.0	OK
Pipe60	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	76.983	75.008	0.434	299.429	1.2	0.31	415.6	OK
Pipe62	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW23	SW24	81.000	79.554	0.079	11.381	1.6	0.08	24.2	OK
Pipe63	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW24	SW12	79.652	76.469	0.101	16.715	1.6	0.24	33.0	OK
Pipe64	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW27	SW28	80.769	79.345	0.081	10.978	1.5	0.13	23.4	OK
Pipe65	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW29	SW30	80.791	78.082	0.231	68.723	1.3	0.24	131.5	OK

Pipe66	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW32	SW33	80.031	77.707	0.239	82.856	1.4	0.26	142.9	OK
Pipe67	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW34	SW35	79.695	77.372	0.260	114.891	1.6	0.28	189.9	OK
Pipe68	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW35	SW36	78.796	76.927	0.283	124.558	1.5	0.29	197.4	OK
Pipe69	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW36	SW37	78.743	76.826	0.275	138.649	1.8	0.33	221.2	OK
Pipe70	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW37	SW38	78.686	76.646	0.258	140.599	1.9	0.32	217.1	OK
Pipe72	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW39	SW40	80.311	78.996	0.107	8.725	1.0	0.44	17.9	OK
Pipe73	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW40	SW41	80.487	78.625	0.126	11.213	0.6	0.09	22.6	OK
Pipe74	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW43	SW29	80.434	78.320	0.167	37.767	1.3	0.27	70.0	OK
Pipe75	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW25	SW26	78.094	76.825	0.091	19.851	1.8	0.06	42.5	OK
Pipe75 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW26	SW20	77.940	76.265	0.108	26.804	1.8	0.12	54.0	OK
Pipe58 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW19	SW20	78.379	75.128	0.470	273.449	1.0	0.29	386.0	OK
Pipe64 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW28	SW29	80.677	79.007	0.083	15.205	1.9	0.16	31.2	OK
Pipe65 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW31	SW32	80.174	77.821	0.235	75.492	1.3	0.25	134.3	OK
Pipe65 (2)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW30	SW31	80.437	77.934	0.235	71.879	1.3	0.24	132.1	OK
Pipe73 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW42	SW43	80.236	78.416	0.173	32.106	1.1	0.24	62.0	OK
Pipe45 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW02	SW03	81.800	77.150	0.319	91.340	0.8	0.37	125.4	OK
Pipe47 (2)	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW05	SW06	81.136	76.782	0.358	197.904	1.0	0.33	199.6	OK
Pipe48 (1)	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW07	SW08	81.062	76.690	0.335	202.354	1.1	0.33	202.2	OK
Pipe66 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW33	SW34	80.085	77.524	0.240	90.010	1.4	0.27	150.0	OK
Pipe118	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW44	SW34	79.919	78.525	0.105	19.040	1.8	0.25	38.7	OK
Pipe73 (2)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW41	SW42	80.179	78.549	0.168	29.791	1.1	0.23	59.7	OK
Pipe56 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW16	SW17	79.685	75.247	0.478	261.239	1.0	0.27	361.6	OK
Pipe61	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW22	Pond	76.759	74.944	0.386	298.586	1.4	0.31	418.0	OK

Pipe71	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW38	SW45	78.617	76.420	0.228	143.725	2.2	0.3	211.8	OK
Pipe71 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW45	Pond	77.719	75.885	0.198	170.488	3.1	0.21	255.8	OK
Pipe	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01d	SW01	82.329	77.236	0.260	23.747	0.4	0.13	46.1	OK
Pipe (2)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01c	SW01	82.042	78.888	0.185	38.069	1.1	0.67	52.5	OK
Pipe46	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW03	SW46	81.831	77.112	0.315	123.108	1.2	0.51	176.0	OK
Pipe46 (1)	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW46	SW04	81.321	76.944	0.284	165.537	1.3	0.49	166.3	OK
Pipe (1)	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW01a	SW01b	81.750	79.197	0.198	51.113	1.1	0.69	54.2	OK
Pipe (3)	FSR: 2 years: +0 %: 30 mins: Winter	Pipe	SW01b	SW01c	81.217	78.998	0.195	51.100	1.1	0.67	52.6	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 2 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	Pipe45	Free Discharge
SW03	Outlet	Pipe46	Free Discharge
SW02	Outlet	Pipe45 (1)	Free Discharge
SW04	Outlet	Pipe47	Free Discharge
SW06	Outlet	Pipe48	Free Discharge
SW05	Outlet	Pipe47 (2)	Free Discharge
SW07	Outlet	Pipe48 (1)	Free Discharge
SW23	Outlet	Pipe62	Free Discharge
SW08	Outlet	Pipe49	Free Discharge
SW29	Outlet	Pipe65	Free Discharge
SW27	Outlet	Pipe64	Free Discharge
SW28	Outlet	Pipe64 (1)	Free Discharge
SW40	Outlet	Pipe73	Free Discharge
SW30	Outlet	Pipe65 (2)	Free Discharge
SW43	Outlet	Pipe74	Free Discharge
SW39	Outlet	Pipe72	Free Discharge
SW42	Outlet	Pipe73 (1)	Free Discharge
SW41	Outlet	Pipe73 (2)	Free Discharge
SW09	Outlet	Pipe50	Free Discharge
SW31	Outlet	Pipe65 (1)	Free Discharge
SW33	Outlet	Pipe66 (1)	Free Discharge
SW32	Outlet	Pipe66	Free Discharge
SW10	Outlet	Pipe51	Free Discharge
SW44	Outlet	Pipe118	Free Discharge
SW17	Outlet	Pipe57	Free Discharge
SW34	Outlet	Pipe67	Free Discharge
SW16	Outlet	Pipe56 (1)	Free Discharge
SW24	Outlet	Pipe63	Free Discharge
SW18	Outlet	Pipe58	Free Discharge
SW15	Outlet	Pipe56	Free Discharge
SW35	Outlet	Pipe68	Free Discharge
SW36	Outlet	Pipe69	Free Discharge
SW14	Outlet	Pipe55	Free Discharge
SW37	Outlet	Pipe70	Free Discharge
SW38	Outlet	Pipe71	Free Discharge
SW19	Outlet	Pipe58 (1)	Free Discharge
SW11	Outlet	Pipe52	Free Discharge
SW25	Outlet	Pipe75	Free Discharge
SW26	Outlet	Pipe75 (1)	Free Discharge
SW12	Outlet	Pipe53	Free Discharge
SW20	Outlet	Pipe59	Free Discharge
SW13	Outlet	Pipe54	Free Discharge
SW21	Outlet	Pipe60	Free Discharge
SW22	Outlet	Pipe61	Free Discharge
SW45	Outlet	Pipe71 (1)	Free Discharge
SW01a	Outlet	Pipe (1)	Free Discharge
SW01c	Outlet	Pipe (2)	Free Discharge
SW01d	Outlet	Pipe	Free Discharge
SW46	Outlet	Pipe46 (1)	Free Discharge
SW01b	Outlet	Pipe (3)	Free Discharge

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 2 - SW Network	Company Address:		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	75.846
Depth (m)	1.500
Base Level (m)	74.346
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.343
Total Volume (m³)	4734.997

Depth (m)	Area (m²)	Volume (m³)
0.000	2671.00	0.000
1.500	3668.66	4734.997

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe61
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe71 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (570)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.1368
Safety Factor	2.0
Perimeter	Circular
Length (m)	118.923
Friction Scheme	Manning's n
n	0.033

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe45	38.334	Pipe	399.315		0.6	600	81.831	76.937
Pipe47	12.668	Pipe	395.889		0.6	750	81.184	76.455
Pipe48	14.345	Pipe	398.466		0.6	750	81.175	76.381
Pipe49	28.974	Pipe	396.904		0.6	750	80.906	76.311
Pipe50	20.132	Pipe	402.647		0.6	750	80.176	76.238
Pipe51	65.954	Pipe	82.649		0.6	750	80.000	76.188
Pipe52	13.121	Pipe	132.535		0.6	750	78.250	75.390
Pipe53	24.651	Pipe	503.076		0.6	900	77.555	75.141
Pipe54	56.660	Pipe	501.420		0.6	1050	76.991	74.942
Pipe55	10.242	Pipe	512.087		0.6	1050	78.697	74.829
Pipe56	22.201	Pipe	504.568		0.6	1050	79.087	74.809
Pipe57	30.599	Pipe	501.627		0.6	1050	79.806	74.739
Pipe58	12.013	Pipe	500.534		0.6	1050	79.108	74.678
Pipe59	29.584	Pipe	501.430		0.6	1050	77.132	74.613
Pipe60	11.919	Pipe	496.616		0.6	1050	76.983	74.554
Pipe62	37.598	Pipe	12.001		0.6	300	81.000	79.499
Pipe63	40.227	Pipe	64.363		0.6	300	79.652	76.366
Pipe64	13.378	Pipe	38.555		0.6	300	80.769	79.269
Pipe65	24.684	Pipe	160.288		0.6	600	80.791	77.854
Pipe66	29.731	Pipe	154.848		0.6	600	80.031	77.472
Pipe67	52.105	Pipe	105.690		0.6	600	79.695	77.136
Pipe68	9.793	Pipe	98.917		0.6	600	78.796	76.643
Pipe69	17.830	Pipe	106.576		0.6	600	78.743	76.544
Pipe70	21.247	Pipe	104.153		0.6	600	78.686	76.377
Pipe72	19.747	Pipe	158.896		0.6	225	80.311	78.886
Pipe73	23.956	Pipe	159.704		0.6	450	80.487	78.536
Pipe74	22.438	Pipe	158.015		0.6	450	80.434	78.146
Pipe75	10.817	Pipe	18.149		0.6	450	78.094	76.752
Pipe75 (1)	51.011	Pipe	54.095		0.6	450	77.940	76.156
Pipe58 (1)	20.303	Pipe	495.189		0.6	1050	78.379	74.654
Pipe64 (1)	26.026	Pipe	33.888		0.6	300	80.677	78.922
Pipe65 (1)	17.990	Pipe	159.206		0.6	600	80.174	77.585
Pipe65 (2)	18.007	Pipe	156.586		0.6	600	80.437	77.700
Pipe73 (1)	15.595	Pipe	159.137		0.6	450	80.236	78.244
Pipe45 (1)	23.695	Pipe	401.615		0.6	600	81.800	76.841
Pipe47 (2)	16.981	Pipe	404.307		0.6	750	81.136	76.423
Pipe48 (1)	13.647	Pipe	401.390		0.6	750	81.062	76.345
Pipe66 (1)	22.674	Pipe	157.457		0.6	600	80.085	77.280
Pipe118	52.451	Pipe	53.358		0.6	300	79.919	78.419
Pipe73 (2)	22.541	Pipe	158.737		0.6	450	80.179	78.386
Pipe56 (1)	12.854	Pipe	494.386		0.6	1050	79.685	74.765
Pipe61	15.031	Pipe	501.047		0.6	1050	76.759	74.530
Pipe71	48.362	Pipe	97.308		0.6	600	78.617	76.173
Pipe71 (1)	23.773	Pipe	32.566		0.6	600	77.719	75.676
Pipe	25.144	Pipe	399.109		0.6	600	82.329	77.000
Pipe (2)	27.025	Pipe	200.187		0.6	300	82.042	78.695
Pipe46	57.519	Pipe	399.437		0.6	600	81.831	76.782
Pipe46 (1)	13.314	Pipe	403.442		0.6	600	81.321	76.638
Pipe (1)	40.235	Pipe	200.174		0.6	300	81.750	79.000
Pipe (3)	20.733	Pipe	199.355		0.6	300	81.217	78.799

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
Pipe45	81.800	76.841		All
Pipe47	81.136	76.423		All
Pipe48	81.062	76.345		All
Pipe49	80.176	76.238		All
Pipe50	80.000	76.188		All
Pipe51	78.250	75.390		All
Pipe52	77.555	75.291		Levels
Pipe53	76.991	75.092		All
Pipe54	78.697	74.829		All
Pipe55	79.087	74.809		All
Pipe56	79.685	74.765		All
Pipe57	79.108	74.678		All
Pipe58	78.379	74.654		All
Pipe59	76.983	74.554		All
Pipe60	76.759	74.530		All
Pipe62	79.652	76.366		All
Pipe63	77.555	75.741		All
Pipe64	80.677	78.922		All
Pipe65	80.437	77.700		All
Pipe66	80.085	77.280		All
Pipe67	78.796	76.643		All
Pipe68	78.743	76.544		All
Pipe69	78.686	76.377		All
Pipe70	78.617	76.173		All
Pipe72	80.487	78.761		All
Pipe73	80.179	78.386		All
Pipe74	80.791	78.004		All
Pipe75	77.940	76.156		All
Pipe75 (1)	77.132	75.213		All
Pipe58 (1)	77.132	74.613		All
Pipe64 (1)	80.791	78.154		All
Pipe65 (1)	80.031	77.472		All
Pipe65 (2)	80.174	77.585		All
Pipe73 (1)	80.434	78.146		All
Pipe45 (1)	81.831	76.782		All
Pipe47 (2)	81.175	76.381		All
Pipe48 (1)	80.906	76.311		All
Pipe66 (1)	79.695	77.136		All
Pipe118	79.695	77.436		All
Pipe73 (2)	80.236	78.244		All
Pipe56 (1)	79.806	74.739		All
Pipe61	75.846	74.500		All
Pipe71	77.719	75.676		All
Pipe71 (1)	75.846	74.946		All
Pipe	81.831	76.937		None
Pipe (2)	81.831	78.560		Levels
Pipe46	81.321	76.638		All
Pipe46 (1)	81.184	76.605		All
Pipe (1)	81.217	78.799		None
Pipe (3)	82.042	78.695		None

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	SW01		Time of Concentration	76.623	100	0	100	76.623
Catchment Area (1)	SW01		Time of Concentration	184.604	100	0	100	184.604
Catchment Area (2)	SW01		Time of Concentration	29.702	100	0	100	29.702
Catchment Area (3)	SW01		Time of Concentration	26.593	100	0	100	26.593
Catchment Area (4)	SW01		Time of Concentration	25.362	100	0	100	25.362
Catchment Area (5)	SW01		Time of Concentration	52.264	100	0	100	52.264
Catchment Area (6)	SW01		Time of Concentration	24.408	100	0	100	24.408
Catchment Area (7)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (8)	SW02		Time of Concentration	60.835	100	0	100	60.835
Catchment Area (9)	SW03		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (10)	SW03		Time of Concentration	30.907	100	0	100	30.907
Catchment Area (11)	SW03		Time of Concentration	26.046	100	0	100	26.046
Catchment Area (12)	SW03		Time of Concentration	30.325	100	0	100	30.325
Catchment Area (13)	SW03		Time of Concentration	24.481	100	0	100	24.481
Catchment Area (14)	SW03		Time of Concentration	51.026	100	0	100	51.026
Catchment Area (15)	SW03		Time of Concentration	26.467	100	0	100	26.467
Catchment Area (16)	SW03		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (17)	SW04		Time of Concentration	221.435	100	0	100	221.435
Catchment Area (18)	SW01		Time of Concentration	77.006	100	0	100	77.006
Catchment Area (19)	SW04		Time of Concentration	56.262	100	0	100	56.262
Catchment Area (20)	SW03		Time of Concentration	25.060	100	0	100	25.060
Catchment Area (21)	SW03		Time of Concentration	50.400	100	0	100	50.400
Catchment Area (22)	SW03		Time of Concentration	50.540	100	0	100	50.540
Catchment Area (23)	SW03		Time of Concentration	43.516	100	0	100	43.516
Catchment Area (24)	SW03		Time of Concentration	253.178	100	0	100	253.178
Catchment Area (25)	SW01d		Time of Concentration	29.872	100	0	100	29.872
Catchment Area (26)	SW01d		Time of Concentration	48.576	100	0	100	48.576
Catchment Area (27)	SW01d		Time of Concentration	47.149	100	0	100	47.149
Catchment Area (28)	SW01d		Time of Concentration	27.143	100	0	100	27.143
Catchment Area (29)	SW04		Time of Concentration	28.484	100	0	100	28.484
Catchment Area (30)	SW04		Time of Concentration	22.527	100	0	100	22.527
Catchment Area (31)	SW04		Time of Concentration	133.114	100	0	100	133.114
Catchment Area (32)	SW09		Time of Concentration	178.825	100	0	100	178.825

Catchment Area (33)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (34)	SW09		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (35)	SW09		Time of Concentration	32.568	100	0	100	32.568
Catchment Area (36)	SW09		Time of Concentration	55.402	100	0	100	55.402
Catchment Area (37)	SW09		Time of Concentration	26.760	100	0	100	26.760
Catchment Area (38)	SW10		Time of Concentration	67.245	100	0	100	67.245
Catchment Area (39)	SW10		Time of Concentration	59.922	100	0	100	59.922
Catchment Area (40)	SW10		Time of Concentration	61.864	100	0	100	61.864
Catchment Area (41)	SW10		Time of Concentration	32.486	100	0	100	32.486
Catchment Area (42)	SW10		Time of Concentration	30.050	100	0	100	30.050
Catchment Area (43)	SW10		Time of Concentration	29.923	100	0	100	29.923
Catchment Area (44)	SW03		Time of Concentration	264.740	100	0	100	264.740
Catchment Area (45)	SW03		Time of Concentration	50.197	100	0	100	50.197
Catchment Area (46)	SW03		Time of Concentration	25.272	100	0	100	25.272
Catchment Area (47)	SW03		Time of Concentration	50.342	100	0	100	50.342
Catchment Area (48)	SW03		Time of Concentration	30.121	100	0	100	30.121
Catchment Area (49)	SW41		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (50)	SW39		Time of Concentration	288.262	100	0	100	288.262
Catchment Area (51)	SW41		Time of Concentration	30.158	100	0	100	30.158
Catchment Area (52)	SW41		Time of Concentration	32.412	100	0	100	32.412
Catchment Area (53)	SW41		Time of Concentration	50.265	100	0	100	50.265
Catchment Area (54)	SW41		Time of Concentration	50.168	100	0	100	50.168
Catchment Area (55)	SW41		Time of Concentration	62.392	100	0	100	62.392
Catchment Area (56)	SW39		Time of Concentration	60.820	100	0	100	60.820
Catchment Area (57)	SW39		Time of Concentration	58.443	100	0	100	58.443
Catchment Area (58)	SW40		Time of Concentration	31.144	100	0	100	31.144
Catchment Area (59)	SW41		Time of Concentration	67.164	100	0	100	67.164
Catchment Area (60)	SW41		Time of Concentration	29.264	100	0	100	29.264
Catchment Area (61)	SW41		Time of Concentration	53.075	100	0	100	53.075
Catchment Area (62)	SW41		Time of Concentration	60.710	100	0	100	60.710
Catchment Area (63)	SW41		Time of Concentration	56.492	100	0	100	56.492
Catchment Area (64)	SW41		Time of Concentration	30.065	100	0	100	30.065
Catchment Area (65)	SW27		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (66)	SW27		Time of Concentration	297.368	100	0	100	297.368
Catchment Area (67)	SW41		Time of Concentration	59.639	100	0	100	59.639

Catchment Area (68)	SW42		Time of Concentration	30.095	100	0	100	30.095
Catchment Area (69)	SW42		Time of Concentration	26.624	100	0	100	26.624
Catchment Area (70)	SW43		Time of Concentration	30.437	100	0	100	30.437
Catchment Area (71)	SW43		Time of Concentration	52.709	100	0	100	52.709
Catchment Area (72)	SW43		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (73)	SW43		Time of Concentration	60.851	100	0	100	60.851
Catchment Area (74)	SW29		Time of Concentration	62.610	100	0	100	62.610
Catchment Area (75)	SW29		Time of Concentration	30.405	100	0	100	30.405
Catchment Area (76)	SW28		Time of Concentration	50.520	100	0	100	50.520
Catchment Area (77)	SW28		Time of Concentration	52.672	100	0	100	52.672
Catchment Area (78)	SW11		Time of Concentration	394.565	100	0	100	394.565
Catchment Area (79)	SW27		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (80)	SW27		Time of Concentration	50.863	100	0	100	50.863
Catchment Area (81)	SW28		Time of Concentration	30.115	100	0	100	30.115
Catchment Area (82)	SW28		Time of Concentration	31.034	100	0	100	31.034
Catchment Area (83)	SW29		Time of Concentration	25.377	100	0	100	25.377
Catchment Area (84)	SW29		Time of Concentration	63.000	100	0	100	63.000
Catchment Area (85)	SW29		Time of Concentration	60.439	100	0	100	60.439
Catchment Area (86)	SW29		Time of Concentration	25.891	100	0	100	25.891
Catchment Area (87)	SW29		Time of Concentration	51.983	100	0	100	51.983
Catchment Area (88)	SW29		Time of Concentration	29.145	100	0	100	29.145
Catchment Area (89)	SW23		Time of Concentration	25.855	100	0	100	25.855
Catchment Area (90)	SW23		Time of Concentration	53.232	100	0	100	53.232
Catchment Area (91)	SW23		Time of Concentration	30.583	100	0	100	30.583
Catchment Area (92)	SW23		Time of Concentration	279.685	100	0	100	279.685
Catchment Area (93)	SW23		Time of Concentration	24.787	100	0	100	24.787
Catchment Area (94)	SW23		Time of Concentration	30.530	100	0	100	30.530
Catchment Area (95)	SW08		Time of Concentration	43.399	100	0	100	43.399
Catchment Area (96)	SW07		Time of Concentration	30.081	100	0	100	30.081
Catchment Area (97)	SW07		Time of Concentration	77.459	100	0	100	77.459
Catchment Area (98)	SW06		Time of Concentration	31.181	100	0	100	31.181
Catchment Area (99)	SW05		Time of Concentration	265.547	100	0	100	265.547
Catchment Area (100)	SW04		Time of Concentration	142.722	100	0	100	142.722
Catchment Area (101)	SW03		Time of Concentration	31.204	100	0	100	31.204
Catchment Area (102)	SW04		Time of Concentration	30.174	100	0	100	30.174

Catchment Area (103)	SW02		Time of Concentration	65.583	100	0	100	65.583
Catchment Area (104)	SW02		Time of Concentration	60.485	100	0	100	60.485
Catchment Area (105)	SW11		Time of Concentration	62.799	100	0	100	62.799
Catchment Area (106)	SW11		Time of Concentration	59.573	100	0	100	59.573
Catchment Area (107)	SW11		Time of Concentration	49.221	100	0	100	49.221
Catchment Area (108)	SW11		Time of Concentration	29.978	100	0	100	29.978
Catchment Area (109)	SW11		Time of Concentration	24.813	100	0	100	24.813
Catchment Area (110)	SW11		Time of Concentration	23.391	100	0	100	23.391
Catchment Area (111)	SW11		Time of Concentration	52.303	100	0	100	52.303
Catchment Area (112)	SW23		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (113)	SW23		Time of Concentration	63.113	100	0	100	63.113
Catchment Area (114)	SW09		Time of Concentration	49.774	100	0	100	49.774
Catchment Area (115)	SW09		Time of Concentration	32.972	100	0	100	32.972
Catchment Area (116)	SW10		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (117)	SW11		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (118)	SW11		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (119)	SW11		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (120)	SW11		Time of Concentration	29.944	100	0	100	29.944
Catchment Area (121)	SW12		Time of Concentration	62.044	100	0	100	62.044
Catchment Area (122)	SW12		Time of Concentration	61.149	100	0	100	61.149
Catchment Area (123)	SW24		Time of Concentration	30.164	100	0	100	30.164
Catchment Area (124)	SW29		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (125)	SW29		Time of Concentration	24.388	100	0	100	24.388
Catchment Area (126)	SW29		Time of Concentration	25.152	100	0	100	25.152
Catchment Area (127)	SW29		Time of Concentration	50.176	100	0	100	50.176
Catchment Area (128)	SW29		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (129)	SW29		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (130)	SW31		Time of Concentration	59.919	100	0	100	59.919
Catchment Area (131)	SW31		Time of Concentration	31.219	100	0	100	31.219
Catchment Area (132)	SW31		Time of Concentration	27.331	100	0	100	27.331
Catchment Area (133)	SW13		Time of Concentration	30.207	100	0	100	30.207
Catchment Area (134)	SW13		Time of Concentration	52.516	100	0	100	52.516
Catchment Area (135)	SW13		Time of Concentration	27.134	100	0	100	27.134
Catchment Area (136)	SW13		Time of Concentration	30.116	100	0	100	30.116
Catchment Area (137)	SW13		Time of Concentration	50.553	100	0	100	50.553

Catchment Area (138)	SW44		Time of Concentration	261.548	100	0	100	261.548
Catchment Area (139)	SW34		Time of Concentration	24.840	100	0	100	24.840
Catchment Area (140)	SW34		Time of Concentration	24.983	100	0	100	24.983
Catchment Area (141)	SW34		Time of Concentration	30.332	100	0	100	30.332
Catchment Area (142)	SW34		Time of Concentration	52.343	100	0	100	52.343
Catchment Area (143)	SW34		Time of Concentration	30.439	100	0	100	30.439
Catchment Area (144)	SW33		Time of Concentration	25.460	100	0	100	25.460
Catchment Area (145)	SW33		Time of Concentration	29.225	100	0	100	29.225
Catchment Area (146)	SW33		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (147)	SW31		Time of Concentration	61.280	100	0	100	61.280
Catchment Area (148)	SW44		Time of Concentration	515.126	100	0	100	515.126
Catchment Area (149)	SW36		Time of Concentration	60.018	100	0	100	60.018
Catchment Area (150)	SW36		Time of Concentration	60.390	100	0	100	60.390
Catchment Area (151)	SW36		Time of Concentration	29.589	100	0	100	29.589
Catchment Area (152)	SW35		Time of Concentration	50.362	100	0	100	50.362
Catchment Area (153)	SW35		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (154)	SW35		Time of Concentration	24.993	100	0	100	24.993
Catchment Area (155)	SW35		Time of Concentration	68.653	100	0	100	68.653
Catchment Area (156)	SW35		Time of Concentration	29.450	100	0	100	29.450
Catchment Area (157)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (158)	SW35		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (159)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (160)	SW37		Time of Concentration	50.530	100	0	100	50.530
Catchment Area (161)	SW36		Time of Concentration	35.293	100	0	100	35.293
Catchment Area (162)	SW36		Time of Concentration	60.650	100	0	100	60.650
Catchment Area (163)	SW36		Time of Concentration	52.120	100	0	100	52.120
Catchment Area (164)	SW45		Time of Concentration	219.191	100	0	100	219.191
Catchment Area (165)	SW45		Time of Concentration	30.143	100	0	100	30.143
Catchment Area (166)	SW45		Time of Concentration	53.797	100	0	100	53.797
Catchment Area (167)	SW45		Time of Concentration	26.206	100	0	100	26.206
Catchment Area (168)	SW45		Time of Concentration	52.629	100	0	100	52.629
Catchment Area (169)	SW45		Time of Concentration	30.291	100	0	100	30.291
Catchment Area (170)	SW38		Time of Concentration	32.573	100	0	100	32.573
Catchment Area (171)	SW38		Time of Concentration	52.761	100	0	100	52.761
Catchment Area (172)	SW38		Time of Concentration	32.351	100	0	100	32.351

Catchment Area (173)	SW45		Time of Concentration	30.023	100	0	100	30.023
Catchment Area (174)	SW45		Time of Concentration	25.333	100	0	100	25.333
Catchment Area (175)	SW45		Time of Concentration	24.176	100	0	100	24.176
Catchment Area (176)	SW45		Time of Concentration	29.897	100	0	100	29.897
Catchment Area (177)	SW45		Time of Concentration	24.938	100	0	100	24.938
Catchment Area (178)	SW45		Time of Concentration	61.161	100	0	100	61.161
Catchment Area (179)	SW21		Time of Concentration	64.155	100	0	100	64.155
Catchment Area (180)	SW19		Time of Concentration	51.017	100	0	100	51.017
Catchment Area (181)	SW18		Time of Concentration	27.649	100	0	100	27.649
Catchment Area (182)	SW18		Time of Concentration	32.542	100	0	100	32.542
Catchment Area (183)	SW17		Time of Concentration	25.592	100	0	100	25.592
Catchment Area (184)	SW17		Time of Concentration	49.953	100	0	100	49.953
Catchment Area (185)	SW17		Time of Concentration	30.484	100	0	100	30.484
Catchment Area (186)	SW18		Time of Concentration	31.183	100	0	100	31.183
Catchment Area (187)	SW19		Time of Concentration	49.979	100	0	100	49.979
Catchment Area (188)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (189)	SW20		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (190)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (191)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (192)	SW14		Time of Concentration	171.731	100	0	100	171.731
Catchment Area (193)	SW33		Time of Concentration	31.681	100	0	100	31.681
Catchment Area (194)	SW33		Time of Concentration	77.993	100	0	100	77.993
Catchment Area (195)	SW33		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (196)	SW32		Time of Concentration	29.955	100	0	100	29.955
Catchment Area (197)	SW32		Time of Concentration	51.072	100	0	100	51.072
Catchment Area (198)	SW32		Time of Concentration	52.346	100	0	100	52.346
Catchment Area (199)	SW32		Time of Concentration	31.993	100	0	100	31.993
Catchment Area (200)	SW14		Time of Concentration	59.729	100	0	100	59.729
Catchment Area (201)	SW14		Time of Concentration	29.240	100	0	100	29.240
Catchment Area (202)	SW14		Time of Concentration	52.062	100	0	100	52.062
Catchment Area (203)	SW14		Time of Concentration	24.958	100	0	100	24.958
Catchment Area (204)	SW14		Time of Concentration	58.128	100	0	100	58.128
Catchment Area (205)	SW14		Time of Concentration	32.708	100	0	100	32.708
Catchment Area (206)	SW14		Time of Concentration	60.299	100	0	100	60.299
Catchment Area (207)	SW14		Time of Concentration	236.434	100	0	100	236.434

Catchment Area (208)	SW14		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (209)	SW14		Time of Concentration	24.251	100	0	100	24.251
Catchment Area (210)	SW14		Time of Concentration	31.022	100	0	100	31.022
Catchment Area (211)	SW15		Time of Concentration	28.077	100	0	100	28.077
Catchment Area (212)	SW17		Time of Concentration	59.178	100	0	100	59.178
Catchment Area (213)	SW17		Time of Concentration	25.166	100	0	100	25.166
Catchment Area (214)	SW17		Time of Concentration	30.019	100	0	100	30.019
Catchment Area (215)	SW17		Time of Concentration	25.112	100	0	100	25.112
Catchment Area (216)	SW17		Time of Concentration	30.278	100	0	100	30.278
Catchment Area (217)	SW16		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (218)	SW16		Time of Concentration	49.958	100	0	100	49.958
Catchment Area (219)	SW16		Time of Concentration	30.347	100	0	100	30.347
Catchment Area (220)	SW14		Time of Concentration	29.864	100	0	100	29.864
Catchment Area (221)	SW26		Time of Concentration	292.378	100	0	100	292.378
Catchment Area (222)	SW25		Time of Concentration	235.618	100	0	100	235.618
Catchment Area (223)	SW25		Time of Concentration	49.989	100	0	100	49.989
Catchment Area (224)	SW25		Time of Concentration	24.890	100	0	100	24.890
Catchment Area (225)	SW25		Time of Concentration	29.932	100	0	100	29.932
Catchment Area (226)	SW25		Time of Concentration	28.508	100	0	100	28.508
Catchment Area (227)	SW25		Time of Concentration	74.095	100	0	100	74.095
Catchment Area (228)	SW25		Time of Concentration	59.946	100	0	100	59.946
Catchment Area (229)	SW25		Time of Concentration	25.474	100	0	100	25.474
Catchment Area (230)	SW25		Time of Concentration	44.801	100	0	100	44.801
Catchment Area (231)	SW25		Time of Concentration	25.993	100	0	100	25.993
Catchment Area (232)	SW11		Time of Concentration	30.458	100	0	100	30.458
Catchment Area (233)	SW15		Time of Concentration	29.961	100	0	100	29.961
Catchment Area (234)	SW24		Time of Concentration	61.701	100	0	100	61.701
Catchment Area (235)	SW09		Time of Concentration	30.321	100	0	100	30.321
Catchment Area (236)	SW09		Time of Concentration	63.712	100	0	100	63.712
Catchment Area (237)	SW05		Time of Concentration	29.988	100	0	100	29.988
Catchment Area (238)	SW05		Time of Concentration	29.862	100	0	100	29.862
Catchment Area (239)	SW05		Time of Concentration	44.613	100	0	100	44.613
Catchment Area (240)	SW05		Time of Concentration	29.651	100	0	100	29.651
Catchment Area (241)	SW04		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (242)	SW04		Time of Concentration	51.834	100	0	100	51.834

Catchment Area (243)	SW04		Time of Concentration	23.040	100	0	100	23.040
Catchment Area (244)	SW04		Time of Concentration	30.852	100	0	100	30.852
Catchment Area (245)	SW45		Time of Concentration	335.860	100	0	100	335.860
Catchment Area (246)	SW01d		Time of Concentration	32.976	100	0	100	32.976
Catchment Area (247)	SW39		Time of Concentration	107.790	100	0	100	107.790
Catchment Area (248)	SW41		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (249)	SW39		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (250)	SW39		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (251)	SW39		Time of Concentration	98.325	100	0	100	98.325
Catchment Area (252)	SW40		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (253)	SW41		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (254)	SW41		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (255)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (256)	SW41		Time of Concentration	107.021	100	0	100	107.021
Catchment Area (257)	SW41		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (258)	SW41		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (259)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (260)	SW27		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (261)	SW28		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (262)	SW28		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (263)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (264)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (265)	SW28		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (266)	SW43		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (267)	SW43		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (268)	SW29		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (269)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (270)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (271)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (272)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (273)	SW03		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (274)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (275)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (276)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (277)	SW01		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (278)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (279)	SW02		Time of Concentration	107.018	100	0	100	107.018
Catchment Area (280)	SW01d		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (281)	SW01d		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (282)	SW02		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (283)	SW03		Time of Concentration	106.519	100	0	100	106.519
Catchment Area (284)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (285)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (286)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (287)	SW03		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (288)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (289)	SW03		Time of Concentration	113.964	100	0	100	113.964
Catchment Area (290)	SW03		Time of Concentration	62.105	100	0	100	62.105
Catchment Area (291)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (292)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (293)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (294)	SW04		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (295)	SW04		Time of Concentration	155.919	100	0	100	155.919
Catchment Area (296)	SW04		Time of Concentration	64.882	100	0	100	64.882
Catchment Area (297)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (298)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (299)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (300)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (301)	SW04		Time of Concentration	98.081	100	0	100	98.081
Catchment Area (302)	SW04		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (303)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (304)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (305)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (306)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (307)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (308)	SW03		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (309)	SW03		Time of Concentration	113.989	100	0	100	113.989
Catchment Area (310)	SW45		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (311)	SW45		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (312)	SW45		Time of Concentration	97.104	100	0	100	97.104

Catchment Area (313)	SW45		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (314)	SW45		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (315)	SW45		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (316)	SW36		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (317)	SW36		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (318)	SW36		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (319)	SW45		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (320)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (321)	SW45		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (322)	SW38		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (323)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (324)	SW38		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (325)	SW17		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (326)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (327)	SW21		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (328)	SW22		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (329)	SW20		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (330)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (331)	SW19		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (332)	SW18		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (333)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (334)	SW15		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (335)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (336)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (337)	SW14		Time of Concentration	107.041	100	0	100	107.041
Catchment Area (338)	SW14		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (339)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (340)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (341)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (342)	SW14		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (343)	SW14		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (344)	SW27		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (345)	SW27		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (346)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (347)	SW23		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (348)	SW23		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (349)	SW23		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (350)	SW29		Time of Concentration	196.460	100	0	100	196.460
Catchment Area (351)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (352)	SW29		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (353)	SW24		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (354)	SW24		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (355)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (356)	SW13		Time of Concentration	146.982	100	0	100	146.982
Catchment Area (357)	SW13		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (358)	SW31		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (359)	SW31		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (360)	SW31		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (361)	SW29		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (362)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (363)	SW40		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (364)	SW42		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (365)	SW42		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (366)	SW43		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (367)	SW29		Time of Concentration	113.605	100	0	100	113.605
Catchment Area (368)	SW44		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (369)	SW44		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (370)	SW44		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (371)	SW34		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (372)	SW34		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (373)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (374)	SW33		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (375)	SW44		Time of Concentration	410.698	100	0	100	410.698
Catchment Area (376)	SW36		Time of Concentration	113.760	100	0	100	113.760
Catchment Area (377)	SW36		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (378)	SW36		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (379)	SW35		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (380)	SW35		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (381)	SW35		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (382)	SW35		Time of Concentration	144.769	100	0	100	144.769

Catchment Area (383)	SW35		Time of Concentration	107.012	100	0	100	107.012
Catchment Area (384)	SW17		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (385)	SW17		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (386)	SW16		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (387)	SW16		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (388)	SW35		Time of Concentration	113.621	100	0	100	113.621
Catchment Area (389)	SW14		Time of Concentration	57.926	100	0	100	57.926
Catchment Area (390)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (391)	SW13		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (392)	SW32		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (393)	SW32		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (394)	SW32		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (395)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (396)	SW25		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (397)	SW25		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (398)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (399)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (400)	SW25		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (401)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (402)	SW26		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (403)	SW25		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (404)	SW26		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (405)	SW25		Time of Concentration	149.709	100	0	100	149.709
Catchment Area (406)	SW25		Time of Concentration	205.242	100	0	100	205.242
Catchment Area (407)	SW25		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (408)	SW25		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (409)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (410)	SW11		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (411)	SW11		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (412)	SW11		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (413)	SW14		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (414)	SW11		Time of Concentration	107.034	100	0	100	107.034
Catchment Area (415)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (416)	SW11		Time of Concentration	156.129	100	0	100	156.129
Catchment Area (417)	SW11		Time of Concentration	57.898	100	0	100	57.898

Catchment Area (418)	SW11		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (419)	SW10		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (420)	SW10		Time of Concentration	243.207	100	0	100	243.207
Catchment Area (421)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (422)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (423)	SW05		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (424)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (425)	SW07		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (426)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (427)	SW08		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (428)	SW23		Time of Concentration	169.869	100	0	100	169.869
Catchment Area (429)	SW23		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (430)	SW23		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (431)	SW09		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (432)	SW23		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (433)	SW24		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (434)	SW24		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (435)	SW12		Time of Concentration	114.177	100	0	100	114.177
Catchment Area (436)	SW11		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (437)	SW10		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (438)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (439)	SW09		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (440)	SW09		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (441)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (442)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (443)	SW10		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (444)	SW10		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (445)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (446)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (447)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (448)	SW09		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (449)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (450)	SW01d		Time of Concentration	75.656	100	0	100	75.656
Catchment Area (451)	SW14		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (452)	SW45		Time of Concentration	123.948	100	0	100	123.948

Catchment Area (453)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (454)	SW45		Time of Concentration	113.691	100	0	100	113.691
Catchment Area (455)	SW45		Time of Concentration	85.134	100	0	100	85.134
Catchment Area (456)	SW45		Time of Concentration	209.239	100	0	100	209.239
Catchment Area (457)	SW45		Time of Concentration	148.005	100	0	100	148.005
Catchment Area (458)	SW45		Time of Concentration	142.480	100	0	100	142.480
Catchment Area (459)	SW45		Time of Concentration	127.815	100	0	100	127.815
Catchment Area (460)	SW45		Time of Concentration	506.425	100	0	100	506.425
Catchment Area (461)	SW25		Time of Concentration	164.380	100	0	100	164.380
Catchment Area (462)	SW25		Time of Concentration	85.329	100	0	100	85.329
Catchment Area (463)	SW25		Time of Concentration	423.232	100	0	100	423.232
Catchment Area (464)	SW36		Time of Concentration	606.328	100	0	100	606.328
Catchment Area (465)	SW36		Time of Concentration	92.130	100	0	100	92.130
Catchment Area (466)	SW36		Time of Concentration	97.396	100	0	100	97.396
Catchment Area (467)	SW45		Time of Concentration	296.019	100	0	100	296.019
Catchment Area (468)	SW38		Time of Concentration	172.501	100	0	100	172.501
Catchment Area (469)	SW35		Time of Concentration	418.347	100	0	100	418.347
Catchment Area (470)	SW36		Time of Concentration	64.944	100	0	100	64.944
Catchment Area (471)	SW36		Time of Concentration	151.556	100	0	100	151.556
Catchment Area (472)	SW37		Time of Concentration	64.746	100	0	100	64.746
Catchment Area (473)	SW37		Time of Concentration	178.126	100	0	100	178.126
Catchment Area (474)	SW18		Time of Concentration	213.222	100	0	100	213.222
Catchment Area (475)	SW18		Time of Concentration	108.014	100	0	100	108.014
Catchment Area (476)	SW19		Time of Concentration	146.934	100	0	100	146.934
Catchment Area (477)	SW22		Time of Concentration	110.794	100	0	100	110.794
Catchment Area (478)	SW21		Time of Concentration	77.153	100	0	100	77.153
Catchment Area (479)	SW21		Time of Concentration	59.340	100	0	100	59.340
Catchment Area (480)	SW17		Time of Concentration	361.454	100	0	100	361.454
Catchment Area (481)	SW17		Time of Concentration	169.216	100	0	100	169.216
Catchment Area (482)	SW41		Time of Concentration	136.044	100	0	100	136.044
Catchment Area (483)	SW41		Time of Concentration	68.334	100	0	100	68.334
Catchment Area (484)	SW41		Time of Concentration	269.855	100	0	100	269.855
Catchment Area (485)	SW41		Time of Concentration	145.445	100	0	100	145.445
Catchment Area (486)	SW39		Time of Concentration	232.494	100	0	100	232.494
Catchment Area (487)	SW39		Time of Concentration	94.648	100	0	100	94.648

Catchment Area (488)	SW39		Time of Concentration	76.995	100	0	100	76.995
Catchment Area (489)	SW40		Time of Concentration	138.219	100	0	100	138.219
Catchment Area (490)	SW41		Time of Concentration	136.376	100	0	100	136.376
Catchment Area (491)	SW41		Time of Concentration	118.947	100	0	100	118.947
Catchment Area (492)	SW41		Time of Concentration	118.295	100	0	100	118.295
Catchment Area (493)	SW43		Time of Concentration	318.665	100	0	100	318.665
Catchment Area (494)	SW27		Time of Concentration	167.121	100	0	100	167.121
Catchment Area (495)	SW27		Time of Concentration	144.172	100	0	100	144.172
Catchment Area (496)	SW27		Time of Concentration	194.327	100	0	100	194.327
Catchment Area (497)	SW28		Time of Concentration	117.596	100	0	100	117.596
Catchment Area (498)	SW29		Time of Concentration	144.850	100	0	100	144.850
Catchment Area (499)	SW29		Time of Concentration	151.486	100	0	100	151.486
Catchment Area (500)	SW30		Time of Concentration	457.524	100	0	100	457.524
Catchment Area (501)	SW29		Time of Concentration	193.350	100	0	100	193.350
Catchment Area (502)	SW29		Time of Concentration	347.032	100	0	100	347.032
Catchment Area (503)	SW23		Time of Concentration	161.169	100	0	100	161.169
Catchment Area (504)	SW23		Time of Concentration	159.379	100	0	100	159.379
Catchment Area (505)	SW11		Time of Concentration	296.217	100	0	100	296.217
Catchment Area (506)	SW11		Time of Concentration	414.722	100	0	100	414.722
Catchment Area (507)	SW14		Time of Concentration	98.300	100	0	100	98.300
Catchment Area (508)	SW14		Time of Concentration	82.994	100	0	100	82.994
Catchment Area (509)	SW14		Time of Concentration	219.557	100	0	100	219.557
Catchment Area (510)	SW14		Time of Concentration	123.578	100	0	100	123.578
Catchment Area (511)	SW26		Time of Concentration	513.879	100	0	100	513.879
Catchment Area (512)	SW09		Time of Concentration	242.053	100	0	100	242.053
Catchment Area (513)	SW09		Time of Concentration	87.245	100	0	100	87.245
Catchment Area (514)	SW09		Time of Concentration	74.692	100	0	100	74.692
Catchment Area (515)	SW09		Time of Concentration	67.474	100	0	100	67.474
Catchment Area (516)	SW09		Time of Concentration	58.760	100	0	100	58.760
Catchment Area (517)	SW03		Time of Concentration	54.611	100	0	100	54.611
Catchment Area (518)	SW03		Time of Concentration	67.747	100	0	100	67.747
Catchment Area (519)	SW03		Time of Concentration	98.406	100	0	100	98.406
Catchment Area (520)	SW03		Time of Concentration	254.868	100	0	100	254.868
Catchment Area (521)	SW01		Time of Concentration	68.688	100	0	100	68.688
Catchment Area (522)	SW01		Time of Concentration	246.513	100	0	100	246.513

Catchment Area (523)	SW01		Time of Concentration	379.981	100	0	100	379.981
Catchment Area (524)	SW01		Time of Concentration	613.702	100	0	100	613.702
Catchment Area (525)	SW01d		Time of Concentration	171.503	100	0	100	171.503
Catchment Area (526)	SW01d		Time of Concentration	301.255	100	0	100	301.255
Catchment Area (527)	SW02		Time of Concentration	237.349	100	0	100	237.349
Catchment Area (528)	SW03		Time of Concentration	75.207	100	0	100	75.207
Catchment Area (529)	SW03		Time of Concentration	80.023	100	0	100	80.023
Catchment Area (530)	SW03		Time of Concentration	473.285	100	0	100	473.285
Catchment Area (531)	SW03		Time of Concentration	32.211	100	0	100	32.211
Catchment Area (532)	SW03		Time of Concentration	294.202	100	0	100	294.202
Catchment Area (533)	SW04		Time of Concentration	170.286	100	0	100	170.286
Catchment Area (534)	SW15		Time of Concentration	255.357	100	0	100	255.357
Catchment Area (535)	SW15		Time of Concentration	67.115	100	0	100	67.115
Catchment Area (536)	SW13		Time of Concentration	225.371	100	0	100	225.371
Catchment Area (537)	SW14		Time of Concentration	417.373	100	0	100	417.373
Catchment Area (538)	SW44		Time of Concentration	1255.314	100	0	100	1255.314
Catchment Area (539)	SW34		Time of Concentration	408.940	100	0	100	408.940
Catchment Area (540)	SW33		Time of Concentration	411.195	100	0	100	411.195
Catchment Area (541)	SW32		Time of Concentration	580.449	100	0	100	580.449
Catchment Area (542)	SW13		Time of Concentration	347.217	100	0	100	347.217
Catchment Area (543)	SW13		Time of Concentration	277.965	100	0	100	277.965
Catchment Area (544)	SW24		Time of Concentration	75.441	100	0	100	75.441
Catchment Area (545)	SW24		Time of Concentration	197.138	100	0	100	197.138
Catchment Area (546)	SW12		Time of Concentration	114.721	100	0	100	114.721
Catchment Area (547)	SW12		Time of Concentration	100.206	100	0	100	100.206
Catchment Area (548)	SW11		Time of Concentration	215.747	100	0	100	215.747
Catchment Area (549)	SW08		Time of Concentration	190.588	100	0	100	190.588
Catchment Area (550)	SW04		Time of Concentration	331.687	100	0	100	331.687
Catchment Area (551)	SW04		Time of Concentration	161.558	100	0	100	161.558
Catchment Area (552)	SW05		Time of Concentration	208.624	100	0	100	208.624
Catchment Area (553)	SW06		Time of Concentration	124.655	100	0	100	124.655
Catchment Area (554)	SW07		Time of Concentration	78.139	100	0	100	78.139
Catchment Area (555)	SW08		Time of Concentration	233.148	100	0	100	233.148
Catchment Area (556)	SW09		Time of Concentration	159.166	100	0	100	159.166
Catchment Area (557)	SW25		Time of Concentration	134.527	100	0	100	134.527

Catchment Area (558)	SW25		Time of Concentration	196.083	100	0	100	196.083
Catchment Area (559)	SW25		Time of Concentration	107.920	100	0	100	107.920
Catchment Area (560)	SW10		Time of Concentration	198.320	100	0	100	198.320
Catchment Area (561)	SW10		Time of Concentration	191.819	100	0	100	191.819
Catchment Area (562)	SW11		Time of Concentration	587.958	100	0	100	587.958
Catchment Area (563)	SW11		Time of Concentration	361.560	100	0	100	361.560
Catchment Area (564)	SW10		Time of Concentration	129.131	100	0	100	129.131
Catchment Area (565)	SW10		Time of Concentration	152.915	100	0	100	152.915
Catchment Area (566)	SW10		Time of Concentration	667.984	100	0	100	667.984
Catchment Area (567)	SW10		Time of Concentration	222.394	100	0	100	222.394
Catchment Area (568)	SW02		Time of Concentration	246.147	100	0	100	246.147
Catchment Area (569)	SW45		Time of Concentration	65.342	100	0	100	65.342
Catchment Area (570)	Pond		Time of Concentration	5078.287	100	0	100	5078.287
Catchment Area (571)	SW01		Time of Concentration	35.094	100	0	100	35.094
Catchment Area (572)	SW01		Time of Concentration	30.984	100	0	100	30.984
Catchment Area (574)	SW01d		Time of Concentration	246.703	100	0	100	246.703
Catchment Area (575)	SW01d		Time of Concentration	86.380	100	0	100	86.380
Catchment Area (576)	SW01d		Time of Concentration	96.551	100	0	100	96.551
Catchment Area (577)	SW01d		Time of Concentration	28.890	100	0	100	28.890
Catchment Area (578)	SW01d		Time of Concentration	66.509	100	0	100	66.509
Catchment Area (579)	SW01d		Time of Concentration	50.074	100	0	100	50.074
Catchment Area (580)	SW01d		Time of Concentration	73.475	100	0	100	73.475
Catchment Area (581)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (582)	SW01d		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (583)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (584)	SW01d		Time of Concentration	128.085	100	0	100	128.085
Catchment Area (585)	SW01d		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (586)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (587)	SW01		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (588)	SW01		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (589)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (590)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (591)	SW01		Time of Concentration	188.942	100	0	100	188.942
Catchment Area (592)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (593)	SW01d		Time of Concentration	57.903	100	0	100	57.903

Catchment Area (594)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (595)	SW01d		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (596)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (597)	SW01d		Time of Concentration	113.969	100	0	100	113.969
Catchment Area (598)	SW01d		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (599)	SW01d		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (600)	SW01a		Time of Concentration	5421.048	100	0	100	5421.048
Catchment Area (601)	SW01		Time of Concentration	216.061	100	0	100	216.061
Catchment Area (602)	SW01d		Time of Concentration	722.897	100	0	100	722.897
TOTAL		**0.0**		**75209.711**				**75209.711**

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 30 years: +0 %: 15 mins: Winter	81.831	76.937	77.401	0.464	260.1	1.182	0.000	232.7	161.637	OK
SW03	FSR: 30 years: +0 %: 15 mins: Winter	81.831	76.782	77.299	0.517	364.4	1.316	0.000	336.3	232.984	OK
SW02	FSR: 30 years: +0 %: 15 mins: Winter	81.800	76.841	77.344	0.503	257.9	1.279	0.000	233.7	172.901	OK
SW04	FSR: 30 years: +0 %: 30 mins: Winter	81.184	76.455	77.015	0.560	361.4	1.424	0.000	359.8	358.812	OK
SW06	FSR: 30 years: +0 %: 30 mins: Winter	81.175	76.381	76.917	0.536	380.6	1.363	0.000	378.4	379.856	OK
SW05	FSR: 30 years: +0 %: 30 mins: Winter	81.136	76.423	76.972	0.549	379.8	1.397	0.000	377.6	377.146	OK
SW07	FSR: 30 years: +0 %: 30 mins: Winter	81.062	76.345	76.858	0.513	384.9	1.306	0.000	383.0	385.756	OK
SW23	FSR: 30 years: +0 %: 15 mins: Winter	81.000	79.499	79.575	0.076	46.4	0.086	0.000	45.8	21.477	OK
SW08	FSR: 30 years: +0 %: 30 mins: Winter	80.906	76.311	76.788	0.477	394.9	1.214	0.000	392.4	396.566	OK
SW29	FSR: 30 years: +0 %: 15 mins: Winter	80.791	77.854	78.200	0.346	258.4	0.882	0.000	251.9	129.759	OK
SW27	FSR: 30 years: +0 %: 15 mins: Winter	80.769	79.269	79.379	0.110	44.8	0.194	0.000	44.2	20.720	OK
SW28	FSR: 30 years: +0 %: 15 mins: Winter	80.677	78.922	79.044	0.122	61.5	0.216	0.000	59.4	28.705	OK
SW40	FSR: 30 years: +0 %: 15 mins: Winter	80.487	78.536	78.659	0.123	44.0	0.139	0.000	43.0	21.162	OK
SW30	FSR: 30 years: +0 %: 15 mins: Winter	80.437	77.700	78.059	0.359	265.1	0.913	0.000	254.0	135.771	OK
SW43	FSR: 30 years: +0 %: 15 mins: Winter	80.434	78.146	78.404	0.258	141.6	0.456	0.000	134.6	71.292	OK
SW39	FSR: 30 years: +0 %: 15 mins: Winter	80.311	78.886	79.056	0.170	35.6	0.193	0.000	33.8	16.470	OK
SW42	FSR: 30 years: +0 %: 15 mins: Winter	80.236	78.244	78.502	0.258	123.2	0.456	0.000	118.3	60.577	OK
SW41	FSR: 30 years: +0 %: 15 mins: Winter	80.179	78.386	78.630	0.244	118.7	0.430	0.000	113.6	56.193	OK
SW09	FSR: 30 years: +0 %: 30 mins: Winter	80.176	76.238	76.665	0.427	430.9	1.085	0.000	428.6	431.938	OK
SW31	FSR: 30 years: +0 %: 15 mins: Winter	80.174	77.585	77.947	0.362	269.0	0.922	0.000	259.1	142.638	OK
SW33	FSR: 30 years: +0 %: 15 mins: Winter	80.085	77.280	77.657	0.377	306.6	0.960	0.000	292.1	170.209	OK
SW32	FSR: 30 years: +0 %: 15 mins: Winter	80.031	77.472	77.831	0.359	289.4	0.913	0.000	276.9	156.607	OK
SW10	FSR: 30 years: +0 %: 30 mins: Winter	80.000	76.188	76.519	0.331	484.4	0.842	0.000	481.3	483.231	OK
SW44	FSR: 30 years: +0 %: 15 mins: Winter	79.919	78.419	78.574	0.155	77.7	0.175	0.000	73.6	35.955	OK
SW17	FSR: 30 years: +0 %: 15 mins: Winter	79.806	74.739	75.457	0.718	676.6	3.250	0.000	689.9	514.734	OK
SW34	FSR: 30 years: +0 %: 15 mins: Winter	79.695	77.136	77.502	0.366	390.0	0.932	0.000	372.2	217.284	OK
SW16	FSR: 30 years: +0 %: 15 mins: Winter	79.685	74.765	75.497	0.732	654.4	3.312	0.000	666.4	499.541	OK
SW24	FSR: 30 years: +0 %: 15 mins: Winter	79.652	76.366	76.517	0.151	67.7	0.170	0.000	63.1	31.571	OK
SW18	FSR: 30 years: +0 %: 15 mins: Winter	79.108	74.678	75.403	0.725	694.7	3.281	0.000	706.5	520.475	OK
SW15	FSR: 30 years: +0 %: 15 mins: Winter	79.087	74.809	75.538	0.729	639.6	3.299	0.000	652.0	497.337	OK

SW35	FSR: 30 years: +0 %: 15 mins: Winter	78.796	76.643	77.106	0.463	412.4	1.178	0.000	387.2	235.689	OK
SW36	FSR: 30 years: +0 %: 15 mins: Winter	78.743	76.544	76.993	0.448	445.0	1.141	0.000	432.8	262.330	OK
SW14	FSR: 30 years: +0 %: 15 mins: Winter	78.697	74.829	75.571	0.742	621.9	3.357	0.000	635.8	492.448	OK
SW37	FSR: 30 years: +0 %: 15 mins: Winter	78.686	76.377	76.796	0.419	441.2	1.067	0.000	426.7	266.104	OK
SW38	FSR: 30 years: +0 %: 15 mins: Winter	78.617	76.173	76.550	0.377	440.5	0.960	0.000	419.0	272.207	OK
SW19	FSR: 30 years: +0 %: 15 mins: Winter	78.379	74.654	75.356	0.702	710.7	3.175	0.000	719.7	525.455	OK
SW11	FSR: 30 years: +0 %: 30 mins: Winter	78.250	75.390	75.864	0.474	553.3	1.207	0.000	545.8	549.266	OK
SW25	FSR: 30 years: +0 %: 15 mins: Winter	78.094	76.752	76.857	0.105	81.0	0.186	0.000	80.4	37.460	OK
SW26	FSR: 30 years: +0 %: 15 mins: Winter	77.940	76.156	76.311	0.155	108.8	0.274	0.000	103.1	50.599	OK
SW12	FSR: 30 years: +0 %: 30 mins: Winter	77.555	75.141	75.723	0.582	601.9	2.635	0.000	596.6	599.245	OK
SW20	FSR: 30 years: +0 %: 15 mins: Winter	77.132	74.613	75.295	0.682	758.8	3.904	0.000	771.9	576.084	OK
SW13	FSR: 30 years: +0 %: 15 mins: Winter	76.991	74.942	75.620	0.678	593.7	3.067	0.000	587.8	455.392	OK
SW21	FSR: 30 years: +0 %: 15 mins: Winter	76.983	74.554	75.205	0.651	774.2	2.945	0.000	783.4	577.076	OK
SW22	FSR: 30 years: +0 %: 15 mins: Winter	76.759	74.530	75.116	0.586	784.7	2.653	0.000	792.8	576.536	OK
SW45	FSR: 30 years: +0 %: 15 mins: Winter	77.719	75.676	75.994	0.318	528.9	0.809	0.000	505.7	322.840	OK
SW01a	FSR: 30 years: +0 %: 30 mins: Winter	81.750	79.000	79.698	0.698	105.2	0.790	0.000	102.1	97.228	Surcharged
SW01c	FSR: 30 years: +0 %: 15 mins: Winter	82.042	78.695	79.093	0.398	99.1	0.450	0.000	99.1	71.980	Surcharged
SW01d	FSR: 30 years: +0 %: 15 mins: Winter	82.329	77.000	77.413	0.413	96.8	0.729	0.000	84.1	44.814	OK
SW46	FSR: 30 years: +0 %: 30 mins: Winter	81.321	76.638	77.114	0.476	318.2	1.211	0.000	314.4	315.451	OK
SW01b	FSR: 30 years: +0 %: 30 mins: Winter	81.217	78.799	79.306	0.507	102.1	0.574	0.000	100.0	97.244	Surcharged

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 30 years: +0 %: 360 mins: Winter	75.030	75.030	0.684	0.684	349.8	1973.163	0.000	2078.656	0.0	0.000	58.328	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe45	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	81.831	77.401	0.483	161.637	1.0	0.68	232.7	OK
Pipe47	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	81.184	77.002	0.540	264.107	1.1	0.59	364.4	OK
Pipe48	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW06	SW07	81.175	76.917	0.524	379.856	1.1	0.61	378.4	OK
Pipe49	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW08	SW09	80.906	76.788	0.452	396.566	1.4	0.64	392.4	OK
Pipe50	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW09	SW10	80.176	76.665	0.379	431.938	1.9	0.7	428.6	OK
Pipe51	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW10	SW11	80.000	76.519	0.403	483.231	2.0	0.35	481.3	OK
Pipe52	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW11	SW12	78.250	75.864	0.453	549.266	2.0	0.51	545.8	OK
Pipe53	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW12	SW13	77.555	75.723	0.551	599.245	1.5	0.67	596.6	OK
Pipe54	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW13	SW14	76.991	75.611	0.697	626.297	1.0	0.46	610.1	OK
Pipe55	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW14	SW15	78.697	75.554	0.717	679.329	1.0	0.5	654.1	OK
Pipe56	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW15	SW16	79.087	75.517	0.707	687.643	1.1	0.5	655.0	OK
Pipe57	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW17	SW18	79.806	75.457	0.722	514.734	1.1	0.52	689.9	OK
Pipe58	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW18	SW19	79.108	75.403	0.714	520.475	1.1	0.53	706.5	OK
Pipe59	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW20	SW21	77.132	75.295	0.666	576.084	1.3	0.58	771.9	OK

Pipe60	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	76.983	75.205	0.619	577.076	1.5	0.59	783.4	OK
Pipe62	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW23	SW24	81.000	79.575	0.113	21.477	1.9	0.14	45.8	OK
Pipe63	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW24	SW12	79.652	76.517	0.146	31.571	1.8	0.45	63.1	OK
Pipe64	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW27	SW28	80.769	79.379	0.116	20.720	1.8	0.25	44.2	OK
Pipe65	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW29	SW30	80.791	78.200	0.353	129.759	1.5	0.46	251.9	OK
Pipe66	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW32	SW33	80.031	77.831	0.368	156.607	1.5	0.5	276.9	OK
Pipe67	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW34	SW35	79.695	77.502	0.415	217.284	1.8	0.56	372.2	OK
Pipe68	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW35	SW36	78.796	77.106	0.456	235.689	1.7	0.56	387.2	OK
Pipe69	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW36	SW37	78.743	76.993	0.434	262.330	2.0	0.65	432.8	OK
Pipe70	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW37	SW38	78.686	76.796	0.398	266.104	2.1	0.63	426.7	OK
Pipe72	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW39	SW40	80.311	79.056	0.162	16.470	1.1	0.82	33.8	OK
Pipe73	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW40	SW41	80.487	78.659	0.183	21.162	0.7	0.17	43.0	OK
Pipe74	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW43	SW29	80.434	78.404	0.244	71.292	1.5	0.52	134.6	OK
Pipe75	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW25	SW26	78.094	76.857	0.130	37.460	2.1	0.11	80.4	OK
Pipe75 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW26	SW20	77.940	76.311	0.151	50.599	2.2	0.23	103.1	OK
Pipe58 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW19	SW20	78.379	75.356	0.692	525.455	1.2	0.54	719.7	OK
Pipe64 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW28	SW29	80.677	79.044	0.118	28.705	2.3	0.31	59.4	OK

Pipe65 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW31	SW32	80.174	77.947	0.361	142.638	1.5	0.48	259.1	OK
Pipe65 (2)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW30	SW31	80.437	78.059	0.361	135.771	1.4	0.46	254.0	OK
Pipe73 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW42	SW43	80.236	78.502	0.258	60.577	1.3	0.46	118.3	OK
Pipe45 (1)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW02	SW03	81.800	77.337	0.501	234.014	0.9	0.69	234.2	OK
Pipe47 (2)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW05	SW06	81.136	76.972	0.542	377.146	1.1	0.62	377.6	OK
Pipe48 (1)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW07	SW08	81.062	76.858	0.495	385.756	1.2	0.62	383.0	OK
Pipe66 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW33	SW34	80.085	77.657	0.372	170.209	1.6	0.53	292.1	OK
Pipe118	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW44	SW34	79.919	78.574	0.150	35.955	2.1	0.48	73.6	OK
Pipe73 (2)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW41	SW42	80.179	78.630	0.251	56.193	1.2	0.44	113.6	OK
Pipe56 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW16	SW17	79.685	75.497	0.725	499.541	1.1	0.5	666.4	OK
Pipe61	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW22	Pond	76.759	75.116	0.543	576.536	1.8	0.6	792.8	OK
Pipe71	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW38	SW45	78.617	76.550	0.348	272.207	2.5	0.6	419.0	OK
Pipe71 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW45	Pond	77.719	75.994	0.294	322.840	3.7	0.42	505.7	OK
Pipe	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01d	SW01	82.329	77.413	0.439	44.814	0.4	0.25	84.1	OK
Pipe (2)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01c	SW01	82.042	79.093	0.300	71.980	1.4	1.27	99.1	Surcharged
Pipe46	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW03	SW46	81.831	77.299	0.491	232.984	1.4	0.98	336.3	OK
Pipe46 (1)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW46	SW04	81.321	77.114	0.443	315.451	1.4	0.92	314.4	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

Pipe (1)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW01a	SW01b	81.750	79.698	0.300	97.228	1.4	1.3	102.1	Surcharged
Pipe (3)	FSR: 30 years: +0 %: 30 mins: Winter	Pipe	SW01b	SW01c	81.217	79.306	0.300	97.244	1.4	1.27	100.0	Surcharged

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 2 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	Pipe45	Free Discharge
SW03	Outlet	Pipe46	Free Discharge
SW02	Outlet	Pipe45 (1)	Free Discharge
SW04	Outlet	Pipe47	Free Discharge
SW06	Outlet	Pipe48	Free Discharge
SW05	Outlet	Pipe47 (2)	Free Discharge
SW07	Outlet	Pipe48 (1)	Free Discharge
SW23	Outlet	Pipe62	Free Discharge
SW08	Outlet	Pipe49	Free Discharge
SW29	Outlet	Pipe65	Free Discharge
SW27	Outlet	Pipe64	Free Discharge
SW28	Outlet	Pipe64 (1)	Free Discharge
SW40	Outlet	Pipe73	Free Discharge
SW30	Outlet	Pipe65 (2)	Free Discharge
SW43	Outlet	Pipe74	Free Discharge
SW39	Outlet	Pipe72	Free Discharge
SW42	Outlet	Pipe73 (1)	Free Discharge
SW41	Outlet	Pipe73 (2)	Free Discharge
SW09	Outlet	Pipe50	Free Discharge
SW31	Outlet	Pipe65 (1)	Free Discharge
SW33	Outlet	Pipe66 (1)	Free Discharge
SW32	Outlet	Pipe66	Free Discharge
SW10	Outlet	Pipe51	Free Discharge
SW44	Outlet	Pipe118	Free Discharge
SW17	Outlet	Pipe57	Free Discharge
SW34	Outlet	Pipe67	Free Discharge
SW16	Outlet	Pipe56 (1)	Free Discharge
SW24	Outlet	Pipe63	Free Discharge
SW18	Outlet	Pipe58	Free Discharge
SW15	Outlet	Pipe56	Free Discharge
SW35	Outlet	Pipe68	Free Discharge
SW36	Outlet	Pipe69	Free Discharge
SW14	Outlet	Pipe55	Free Discharge
SW37	Outlet	Pipe70	Free Discharge
SW38	Outlet	Pipe71	Free Discharge
SW19	Outlet	Pipe58 (1)	Free Discharge
SW11	Outlet	Pipe52	Free Discharge
SW25	Outlet	Pipe75	Free Discharge
SW26	Outlet	Pipe75 (1)	Free Discharge
SW12	Outlet	Pipe53	Free Discharge
SW20	Outlet	Pipe59	Free Discharge
SW13	Outlet	Pipe54	Free Discharge
SW21	Outlet	Pipe60	Free Discharge
SW22	Outlet	Pipe61	Free Discharge
SW45	Outlet	Pipe71 (1)	Free Discharge
SW01a	Outlet	Pipe (1)	Free Discharge
SW01c	Outlet	Pipe (2)	Free Discharge
SW01d	Outlet	Pipe	Free Discharge
SW46	Outlet	Pipe46 (1)	Free Discharge
SW01b	Outlet	Pipe (3)	Free Discharge

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 2 - SW Network	Company Address:		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	75.846
Depth (m)	1.500
Base Level (m)	74.346
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.343
Total Volume (m³)	4734.997

Depth (m)	Area (m²)	Volume (m³)
0.000	2671.00	0.000
1.500	3668.66	4734.997

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe61
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe71 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (570)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.1368
Safety Factor	2.0
Perimeter	Circular
Length (m)	118.923
Friction Scheme	Manning's n
n	0.033

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe45	38.334	Pipe	399.315		0.6	600	81.831	76.937
Pipe47	12.668	Pipe	395.889		0.6	750	81.184	76.455
Pipe48	14.345	Pipe	398.466		0.6	750	81.175	76.381
Pipe49	28.974	Pipe	396.904		0.6	750	80.906	76.311
Pipe50	20.132	Pipe	402.647		0.6	750	80.176	76.238
Pipe51	65.954	Pipe	82.649		0.6	750	80.000	76.188
Pipe52	13.121	Pipe	132.535		0.6	750	78.250	75.390
Pipe53	24.651	Pipe	503.076		0.6	900	77.555	75.141
Pipe54	56.660	Pipe	501.420		0.6	1050	76.991	74.942
Pipe55	10.242	Pipe	512.087		0.6	1050	78.697	74.829
Pipe56	22.201	Pipe	504.568		0.6	1050	79.087	74.809
Pipe57	30.599	Pipe	501.627		0.6	1050	79.806	74.739
Pipe58	12.013	Pipe	500.534		0.6	1050	79.108	74.678
Pipe59	29.584	Pipe	501.430		0.6	1050	77.132	74.613
Pipe60	11.919	Pipe	496.616		0.6	1050	76.983	74.554
Pipe62	37.598	Pipe	12.001		0.6	300	81.000	79.499
Pipe63	40.227	Pipe	64.363		0.6	300	79.652	76.366
Pipe64	13.378	Pipe	38.555		0.6	300	80.769	79.269
Pipe65	24.684	Pipe	160.288		0.6	600	80.791	77.854
Pipe66	29.731	Pipe	154.848		0.6	600	80.031	77.472
Pipe67	52.105	Pipe	105.690		0.6	600	79.695	77.136
Pipe68	9.793	Pipe	98.917		0.6	600	78.796	76.643
Pipe69	17.830	Pipe	106.576		0.6	600	78.743	76.544
Pipe70	21.247	Pipe	104.153		0.6	600	78.686	76.377
Pipe72	19.747	Pipe	158.896		0.6	225	80.311	78.886
Pipe73	23.956	Pipe	159.704		0.6	450	80.487	78.536
Pipe74	22.438	Pipe	158.015		0.6	450	80.434	78.146
Pipe75	10.817	Pipe	18.149		0.6	450	78.094	76.752
Pipe75 (1)	51.011	Pipe	54.095		0.6	450	77.940	76.156
Pipe58 (1)	20.303	Pipe	495.189		0.6	1050	78.379	74.654
Pipe64 (1)	26.026	Pipe	33.888		0.6	300	80.677	78.922
Pipe65 (1)	17.990	Pipe	159.206		0.6	600	80.174	77.585
Pipe65 (2)	18.007	Pipe	156.586		0.6	600	80.437	77.700
Pipe73 (1)	15.595	Pipe	159.137		0.6	450	80.236	78.244
Pipe45 (1)	23.695	Pipe	401.615		0.6	600	81.800	76.841
Pipe47 (2)	16.981	Pipe	404.307		0.6	750	81.136	76.423
Pipe48 (1)	13.647	Pipe	401.390		0.6	750	81.062	76.345
Pipe66 (1)	22.674	Pipe	157.457		0.6	600	80.085	77.280
Pipe118	52.451	Pipe	53.358		0.6	300	79.919	78.419
Pipe73 (2)	22.541	Pipe	158.737		0.6	450	80.179	78.386
Pipe56 (1)	12.854	Pipe	494.386		0.6	1050	79.685	74.765
Pipe61	15.031	Pipe	501.047		0.6	1050	76.759	74.530
Pipe71	48.362	Pipe	97.308		0.6	600	78.617	76.173
Pipe71 (1)	23.773	Pipe	32.566		0.6	600	77.719	75.676
Pipe	25.144	Pipe	399.109		0.6	600	82.329	77.000
Pipe (2)	27.025	Pipe	200.187		0.6	300	82.042	78.695
Pipe46	57.519	Pipe	399.437		0.6	600	81.831	76.782
Pipe46 (1)	13.314	Pipe	403.442		0.6	600	81.321	76.638
Pipe (1)	40.235	Pipe	200.174		0.6	300	81.750	79.000
Pipe (3)	20.733	Pipe	199.355		0.6	300	81.217	78.799

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 2 - SW Network	Company Address:		

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
Pipe45	81.800	76.841		All
Pipe47	81.136	76.423		All
Pipe48	81.062	76.345		All
Pipe49	80.176	76.238		All
Pipe50	80.000	76.188		All
Pipe51	78.250	75.390		All
Pipe52	77.555	75.291		Levels
Pipe53	76.991	75.092		All
Pipe54	78.697	74.829		All
Pipe55	79.087	74.809		All
Pipe56	79.685	74.765		All
Pipe57	79.108	74.678		All
Pipe58	78.379	74.654		All
Pipe59	76.983	74.554		All
Pipe60	76.759	74.530		All
Pipe62	79.652	76.366		All
Pipe63	77.555	75.741		All
Pipe64	80.677	78.922		All
Pipe65	80.437	77.700		All
Pipe66	80.085	77.280		All
Pipe67	78.796	76.643		All
Pipe68	78.743	76.544		All
Pipe69	78.686	76.377		All
Pipe70	78.617	76.173		All
Pipe72	80.487	78.761		All
Pipe73	80.179	78.386		All
Pipe74	80.791	78.004		All
Pipe75	77.940	76.156		All
Pipe75 (1)	77.132	75.213		All
Pipe58 (1)	77.132	74.613		All
Pipe64 (1)	80.791	78.154		All
Pipe65 (1)	80.031	77.472		All
Pipe65 (2)	80.174	77.585		All
Pipe73 (1)	80.434	78.146		All
Pipe45 (1)	81.831	76.782		All
Pipe47 (2)	81.175	76.381		All
Pipe48 (1)	80.906	76.311		All
Pipe66 (1)	79.695	77.136		All
Pipe118	79.695	77.436		All
Pipe73 (2)	80.236	78.244		All
Pipe56 (1)	79.806	74.739		All
Pipe61	75.846	74.500		All
Pipe71	77.719	75.676		All
Pipe71 (1)	75.846	74.946		All
Pipe	81.831	76.937		None
Pipe (2)	81.831	78.560		Levels
Pipe46	81.321	76.638		All
Pipe46 (1)	81.184	76.605		All
Pipe (1)	81.217	78.799		None
Pipe (3)	82.042	78.695		None

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	SW01		Time of Concentration	76.623	100	0	100	76.623
Catchment Area (1)	SW01		Time of Concentration	184.604	100	0	100	184.604
Catchment Area (2)	SW01		Time of Concentration	29.702	100	0	100	29.702
Catchment Area (3)	SW01		Time of Concentration	26.593	100	0	100	26.593
Catchment Area (4)	SW01		Time of Concentration	25.362	100	0	100	25.362
Catchment Area (5)	SW01		Time of Concentration	52.264	100	0	100	52.264
Catchment Area (6)	SW01		Time of Concentration	24.408	100	0	100	24.408
Catchment Area (7)	SW01		Time of Concentration	30.196	100	0	100	30.196
Catchment Area (8)	SW02		Time of Concentration	60.835	100	0	100	60.835
Catchment Area (9)	SW03		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (10)	SW03		Time of Concentration	30.907	100	0	100	30.907
Catchment Area (11)	SW03		Time of Concentration	26.046	100	0	100	26.046
Catchment Area (12)	SW03		Time of Concentration	30.325	100	0	100	30.325
Catchment Area (13)	SW03		Time of Concentration	24.481	100	0	100	24.481
Catchment Area (14)	SW03		Time of Concentration	51.026	100	0	100	51.026
Catchment Area (15)	SW03		Time of Concentration	26.467	100	0	100	26.467
Catchment Area (16)	SW03		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (17)	SW04		Time of Concentration	221.435	100	0	100	221.435
Catchment Area (18)	SW01		Time of Concentration	77.006	100	0	100	77.006
Catchment Area (19)	SW04		Time of Concentration	56.262	100	0	100	56.262
Catchment Area (20)	SW03		Time of Concentration	25.060	100	0	100	25.060
Catchment Area (21)	SW03		Time of Concentration	50.400	100	0	100	50.400
Catchment Area (22)	SW03		Time of Concentration	50.540	100	0	100	50.540
Catchment Area (23)	SW03		Time of Concentration	43.516	100	0	100	43.516
Catchment Area (24)	SW03		Time of Concentration	253.178	100	0	100	253.178
Catchment Area (25)	SW01d		Time of Concentration	29.872	100	0	100	29.872
Catchment Area (26)	SW01d		Time of Concentration	48.576	100	0	100	48.576
Catchment Area (27)	SW01d		Time of Concentration	47.149	100	0	100	47.149
Catchment Area (28)	SW01d		Time of Concentration	27.143	100	0	100	27.143
Catchment Area (29)	SW04		Time of Concentration	28.484	100	0	100	28.484
Catchment Area (30)	SW04		Time of Concentration	22.527	100	0	100	22.527
Catchment Area (31)	SW04		Time of Concentration	133.114	100	0	100	133.114
Catchment Area (32)	SW09		Time of Concentration	178.825	100	0	100	178.825

Catchment Area (33)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (34)	SW09		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (35)	SW09		Time of Concentration	32.568	100	0	100	32.568
Catchment Area (36)	SW09		Time of Concentration	55.402	100	0	100	55.402
Catchment Area (37)	SW09		Time of Concentration	26.760	100	0	100	26.760
Catchment Area (38)	SW10		Time of Concentration	67.245	100	0	100	67.245
Catchment Area (39)	SW10		Time of Concentration	59.922	100	0	100	59.922
Catchment Area (40)	SW10		Time of Concentration	61.864	100	0	100	61.864
Catchment Area (41)	SW10		Time of Concentration	32.486	100	0	100	32.486
Catchment Area (42)	SW10		Time of Concentration	30.050	100	0	100	30.050
Catchment Area (43)	SW10		Time of Concentration	29.923	100	0	100	29.923
Catchment Area (44)	SW03		Time of Concentration	264.740	100	0	100	264.740
Catchment Area (45)	SW03		Time of Concentration	50.197	100	0	100	50.197
Catchment Area (46)	SW03		Time of Concentration	25.272	100	0	100	25.272
Catchment Area (47)	SW03		Time of Concentration	50.342	100	0	100	50.342
Catchment Area (48)	SW03		Time of Concentration	30.121	100	0	100	30.121
Catchment Area (49)	SW41		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (50)	SW39		Time of Concentration	288.262	100	0	100	288.262
Catchment Area (51)	SW41		Time of Concentration	30.158	100	0	100	30.158
Catchment Area (52)	SW41		Time of Concentration	32.412	100	0	100	32.412
Catchment Area (53)	SW41		Time of Concentration	50.265	100	0	100	50.265
Catchment Area (54)	SW41		Time of Concentration	50.168	100	0	100	50.168
Catchment Area (55)	SW41		Time of Concentration	62.392	100	0	100	62.392
Catchment Area (56)	SW39		Time of Concentration	60.820	100	0	100	60.820
Catchment Area (57)	SW39		Time of Concentration	58.443	100	0	100	58.443
Catchment Area (58)	SW40		Time of Concentration	31.144	100	0	100	31.144
Catchment Area (59)	SW41		Time of Concentration	67.164	100	0	100	67.164
Catchment Area (60)	SW41		Time of Concentration	29.264	100	0	100	29.264
Catchment Area (61)	SW41		Time of Concentration	53.075	100	0	100	53.075
Catchment Area (62)	SW41		Time of Concentration	60.710	100	0	100	60.710
Catchment Area (63)	SW41		Time of Concentration	56.492	100	0	100	56.492
Catchment Area (64)	SW41		Time of Concentration	30.065	100	0	100	30.065
Catchment Area (65)	SW27		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (66)	SW27		Time of Concentration	297.368	100	0	100	297.368
Catchment Area (67)	SW41		Time of Concentration	59.639	100	0	100	59.639

Catchment Area (68)	SW42		Time of Concentration	30.095	100	0	100	30.095
Catchment Area (69)	SW42		Time of Concentration	26.624	100	0	100	26.624
Catchment Area (70)	SW43		Time of Concentration	30.437	100	0	100	30.437
Catchment Area (71)	SW43		Time of Concentration	52.709	100	0	100	52.709
Catchment Area (72)	SW43		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (73)	SW43		Time of Concentration	60.851	100	0	100	60.851
Catchment Area (74)	SW29		Time of Concentration	62.610	100	0	100	62.610
Catchment Area (75)	SW29		Time of Concentration	30.405	100	0	100	30.405
Catchment Area (76)	SW28		Time of Concentration	50.520	100	0	100	50.520
Catchment Area (77)	SW28		Time of Concentration	52.672	100	0	100	52.672
Catchment Area (78)	SW11		Time of Concentration	394.565	100	0	100	394.565
Catchment Area (79)	SW27		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (80)	SW27		Time of Concentration	50.863	100	0	100	50.863
Catchment Area (81)	SW28		Time of Concentration	30.115	100	0	100	30.115
Catchment Area (82)	SW28		Time of Concentration	31.034	100	0	100	31.034
Catchment Area (83)	SW29		Time of Concentration	25.377	100	0	100	25.377
Catchment Area (84)	SW29		Time of Concentration	63.000	100	0	100	63.000
Catchment Area (85)	SW29		Time of Concentration	60.439	100	0	100	60.439
Catchment Area (86)	SW29		Time of Concentration	25.891	100	0	100	25.891
Catchment Area (87)	SW29		Time of Concentration	51.983	100	0	100	51.983
Catchment Area (88)	SW29		Time of Concentration	29.145	100	0	100	29.145
Catchment Area (89)	SW23		Time of Concentration	25.855	100	0	100	25.855
Catchment Area (90)	SW23		Time of Concentration	53.232	100	0	100	53.232
Catchment Area (91)	SW23		Time of Concentration	30.583	100	0	100	30.583
Catchment Area (92)	SW23		Time of Concentration	279.685	100	0	100	279.685
Catchment Area (93)	SW23		Time of Concentration	24.787	100	0	100	24.787
Catchment Area (94)	SW23		Time of Concentration	30.530	100	0	100	30.530
Catchment Area (95)	SW08		Time of Concentration	43.399	100	0	100	43.399
Catchment Area (96)	SW07		Time of Concentration	30.081	100	0	100	30.081
Catchment Area (97)	SW07		Time of Concentration	77.459	100	0	100	77.459
Catchment Area (98)	SW06		Time of Concentration	31.181	100	0	100	31.181
Catchment Area (99)	SW05		Time of Concentration	265.547	100	0	100	265.547
Catchment Area (100)	SW04		Time of Concentration	142.722	100	0	100	142.722
Catchment Area (101)	SW03		Time of Concentration	31.204	100	0	100	31.204
Catchment Area (102)	SW04		Time of Concentration	30.174	100	0	100	30.174

Catchment Area (103)	SW02		Time of Concentration	65.583	100	0	100	65.583
Catchment Area (104)	SW02		Time of Concentration	60.485	100	0	100	60.485
Catchment Area (105)	SW11		Time of Concentration	62.799	100	0	100	62.799
Catchment Area (106)	SW11		Time of Concentration	59.573	100	0	100	59.573
Catchment Area (107)	SW11		Time of Concentration	49.221	100	0	100	49.221
Catchment Area (108)	SW11		Time of Concentration	29.978	100	0	100	29.978
Catchment Area (109)	SW11		Time of Concentration	24.813	100	0	100	24.813
Catchment Area (110)	SW11		Time of Concentration	23.391	100	0	100	23.391
Catchment Area (111)	SW11		Time of Concentration	52.303	100	0	100	52.303
Catchment Area (112)	SW23		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (113)	SW23		Time of Concentration	63.113	100	0	100	63.113
Catchment Area (114)	SW09		Time of Concentration	49.774	100	0	100	49.774
Catchment Area (115)	SW09		Time of Concentration	32.972	100	0	100	32.972
Catchment Area (116)	SW10		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (117)	SW11		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (118)	SW11		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (119)	SW11		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (120)	SW11		Time of Concentration	29.944	100	0	100	29.944
Catchment Area (121)	SW12		Time of Concentration	62.044	100	0	100	62.044
Catchment Area (122)	SW12		Time of Concentration	61.149	100	0	100	61.149
Catchment Area (123)	SW24		Time of Concentration	30.164	100	0	100	30.164
Catchment Area (124)	SW29		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (125)	SW29		Time of Concentration	24.388	100	0	100	24.388
Catchment Area (126)	SW29		Time of Concentration	25.152	100	0	100	25.152
Catchment Area (127)	SW29		Time of Concentration	50.176	100	0	100	50.176
Catchment Area (128)	SW29		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (129)	SW29		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (130)	SW31		Time of Concentration	59.919	100	0	100	59.919
Catchment Area (131)	SW31		Time of Concentration	31.219	100	0	100	31.219
Catchment Area (132)	SW31		Time of Concentration	27.331	100	0	100	27.331
Catchment Area (133)	SW13		Time of Concentration	30.207	100	0	100	30.207
Catchment Area (134)	SW13		Time of Concentration	52.516	100	0	100	52.516
Catchment Area (135)	SW13		Time of Concentration	27.134	100	0	100	27.134
Catchment Area (136)	SW13		Time of Concentration	30.116	100	0	100	30.116
Catchment Area (137)	SW13		Time of Concentration	50.553	100	0	100	50.553

Catchment Area (138)	SW44		Time of Concentration	261.548	100	0	100	261.548
Catchment Area (139)	SW34		Time of Concentration	24.840	100	0	100	24.840
Catchment Area (140)	SW34		Time of Concentration	24.983	100	0	100	24.983
Catchment Area (141)	SW34		Time of Concentration	30.332	100	0	100	30.332
Catchment Area (142)	SW34		Time of Concentration	52.343	100	0	100	52.343
Catchment Area (143)	SW34		Time of Concentration	30.439	100	0	100	30.439
Catchment Area (144)	SW33		Time of Concentration	25.460	100	0	100	25.460
Catchment Area (145)	SW33		Time of Concentration	29.225	100	0	100	29.225
Catchment Area (146)	SW33		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (147)	SW31		Time of Concentration	61.280	100	0	100	61.280
Catchment Area (148)	SW44		Time of Concentration	515.126	100	0	100	515.126
Catchment Area (149)	SW36		Time of Concentration	60.018	100	0	100	60.018
Catchment Area (150)	SW36		Time of Concentration	60.390	100	0	100	60.390
Catchment Area (151)	SW36		Time of Concentration	29.589	100	0	100	29.589
Catchment Area (152)	SW35		Time of Concentration	50.362	100	0	100	50.362
Catchment Area (153)	SW35		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (154)	SW35		Time of Concentration	24.993	100	0	100	24.993
Catchment Area (155)	SW35		Time of Concentration	68.653	100	0	100	68.653
Catchment Area (156)	SW35		Time of Concentration	29.450	100	0	100	29.450
Catchment Area (157)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (158)	SW35		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (159)	SW35		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (160)	SW37		Time of Concentration	50.530	100	0	100	50.530
Catchment Area (161)	SW36		Time of Concentration	35.293	100	0	100	35.293
Catchment Area (162)	SW36		Time of Concentration	60.650	100	0	100	60.650
Catchment Area (163)	SW36		Time of Concentration	52.120	100	0	100	52.120
Catchment Area (164)	SW45		Time of Concentration	219.191	100	0	100	219.191
Catchment Area (165)	SW45		Time of Concentration	30.143	100	0	100	30.143
Catchment Area (166)	SW45		Time of Concentration	53.797	100	0	100	53.797
Catchment Area (167)	SW45		Time of Concentration	26.206	100	0	100	26.206
Catchment Area (168)	SW45		Time of Concentration	52.629	100	0	100	52.629
Catchment Area (169)	SW45		Time of Concentration	30.291	100	0	100	30.291
Catchment Area (170)	SW38		Time of Concentration	32.573	100	0	100	32.573
Catchment Area (171)	SW38		Time of Concentration	52.761	100	0	100	52.761
Catchment Area (172)	SW38		Time of Concentration	32.351	100	0	100	32.351

Catchment Area (173)	SW45		Time of Concentration	30.023	100	0	100	30.023
Catchment Area (174)	SW45		Time of Concentration	25.333	100	0	100	25.333
Catchment Area (175)	SW45		Time of Concentration	24.176	100	0	100	24.176
Catchment Area (176)	SW45		Time of Concentration	29.897	100	0	100	29.897
Catchment Area (177)	SW45		Time of Concentration	24.938	100	0	100	24.938
Catchment Area (178)	SW45		Time of Concentration	61.161	100	0	100	61.161
Catchment Area (179)	SW21		Time of Concentration	64.155	100	0	100	64.155
Catchment Area (180)	SW19		Time of Concentration	51.017	100	0	100	51.017
Catchment Area (181)	SW18		Time of Concentration	27.649	100	0	100	27.649
Catchment Area (182)	SW18		Time of Concentration	32.542	100	0	100	32.542
Catchment Area (183)	SW17		Time of Concentration	25.592	100	0	100	25.592
Catchment Area (184)	SW17		Time of Concentration	49.953	100	0	100	49.953
Catchment Area (185)	SW17		Time of Concentration	30.484	100	0	100	30.484
Catchment Area (186)	SW18		Time of Concentration	31.183	100	0	100	31.183
Catchment Area (187)	SW19		Time of Concentration	49.979	100	0	100	49.979
Catchment Area (188)	SW19		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (189)	SW20		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (190)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (191)	SW20		Time of Concentration	34.019	100	0	100	34.019
Catchment Area (192)	SW14		Time of Concentration	171.731	100	0	100	171.731
Catchment Area (193)	SW33		Time of Concentration	31.681	100	0	100	31.681
Catchment Area (194)	SW33		Time of Concentration	77.993	100	0	100	77.993
Catchment Area (195)	SW33		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (196)	SW32		Time of Concentration	29.955	100	0	100	29.955
Catchment Area (197)	SW32		Time of Concentration	51.072	100	0	100	51.072
Catchment Area (198)	SW32		Time of Concentration	52.346	100	0	100	52.346
Catchment Area (199)	SW32		Time of Concentration	31.993	100	0	100	31.993
Catchment Area (200)	SW14		Time of Concentration	59.729	100	0	100	59.729
Catchment Area (201)	SW14		Time of Concentration	29.240	100	0	100	29.240
Catchment Area (202)	SW14		Time of Concentration	52.062	100	0	100	52.062
Catchment Area (203)	SW14		Time of Concentration	24.958	100	0	100	24.958
Catchment Area (204)	SW14		Time of Concentration	58.128	100	0	100	58.128
Catchment Area (205)	SW14		Time of Concentration	32.708	100	0	100	32.708
Catchment Area (206)	SW14		Time of Concentration	60.299	100	0	100	60.299
Catchment Area (207)	SW14		Time of Concentration	236.434	100	0	100	236.434

Catchment Area (208)	SW14		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (209)	SW14		Time of Concentration	24.251	100	0	100	24.251
Catchment Area (210)	SW14		Time of Concentration	31.022	100	0	100	31.022
Catchment Area (211)	SW15		Time of Concentration	28.077	100	0	100	28.077
Catchment Area (212)	SW17		Time of Concentration	59.178	100	0	100	59.178
Catchment Area (213)	SW17		Time of Concentration	25.166	100	0	100	25.166
Catchment Area (214)	SW17		Time of Concentration	30.019	100	0	100	30.019
Catchment Area (215)	SW17		Time of Concentration	25.112	100	0	100	25.112
Catchment Area (216)	SW17		Time of Concentration	30.278	100	0	100	30.278
Catchment Area (217)	SW16		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (218)	SW16		Time of Concentration	49.958	100	0	100	49.958
Catchment Area (219)	SW16		Time of Concentration	30.347	100	0	100	30.347
Catchment Area (220)	SW14		Time of Concentration	29.864	100	0	100	29.864
Catchment Area (221)	SW26		Time of Concentration	292.378	100	0	100	292.378
Catchment Area (222)	SW25		Time of Concentration	235.618	100	0	100	235.618
Catchment Area (223)	SW25		Time of Concentration	49.989	100	0	100	49.989
Catchment Area (224)	SW25		Time of Concentration	24.890	100	0	100	24.890
Catchment Area (225)	SW25		Time of Concentration	29.932	100	0	100	29.932
Catchment Area (226)	SW25		Time of Concentration	28.508	100	0	100	28.508
Catchment Area (227)	SW25		Time of Concentration	74.095	100	0	100	74.095
Catchment Area (228)	SW25		Time of Concentration	59.946	100	0	100	59.946
Catchment Area (229)	SW25		Time of Concentration	25.474	100	0	100	25.474
Catchment Area (230)	SW25		Time of Concentration	44.801	100	0	100	44.801
Catchment Area (231)	SW25		Time of Concentration	25.993	100	0	100	25.993
Catchment Area (232)	SW11		Time of Concentration	30.458	100	0	100	30.458
Catchment Area (233)	SW15		Time of Concentration	29.961	100	0	100	29.961
Catchment Area (234)	SW24		Time of Concentration	61.701	100	0	100	61.701
Catchment Area (235)	SW09		Time of Concentration	30.321	100	0	100	30.321
Catchment Area (236)	SW09		Time of Concentration	63.712	100	0	100	63.712
Catchment Area (237)	SW05		Time of Concentration	29.988	100	0	100	29.988
Catchment Area (238)	SW05		Time of Concentration	29.862	100	0	100	29.862
Catchment Area (239)	SW05		Time of Concentration	44.613	100	0	100	44.613
Catchment Area (240)	SW05		Time of Concentration	29.651	100	0	100	29.651
Catchment Area (241)	SW04		Time of Concentration	25.088	100	0	100	25.088
Catchment Area (242)	SW04		Time of Concentration	51.834	100	0	100	51.834

Catchment Area (243)	SW04		Time of Concentration	23.040	100	0	100	23.040
Catchment Area (244)	SW04		Time of Concentration	30.852	100	0	100	30.852
Catchment Area (245)	SW45		Time of Concentration	335.860	100	0	100	335.860
Catchment Area (246)	SW01d		Time of Concentration	32.976	100	0	100	32.976
Catchment Area (247)	SW39		Time of Concentration	107.790	100	0	100	107.790
Catchment Area (248)	SW41		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (249)	SW39		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (250)	SW39		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (251)	SW39		Time of Concentration	98.325	100	0	100	98.325
Catchment Area (252)	SW40		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (253)	SW41		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (254)	SW41		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (255)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (256)	SW41		Time of Concentration	107.021	100	0	100	107.021
Catchment Area (257)	SW41		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (258)	SW41		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (259)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (260)	SW27		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (261)	SW28		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (262)	SW28		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (263)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (264)	SW41		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (265)	SW28		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (266)	SW43		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (267)	SW43		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (268)	SW29		Time of Concentration	107.036	100	0	100	107.036
Catchment Area (269)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (270)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (271)	SW01		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (272)	SW01		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (273)	SW03		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (274)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (275)	SW03		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (276)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (277)	SW01		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (278)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (279)	SW02		Time of Concentration	107.018	100	0	100	107.018
Catchment Area (280)	SW01d		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (281)	SW01d		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (282)	SW02		Time of Concentration	97.713	100	0	100	97.713
Catchment Area (283)	SW03		Time of Concentration	106.519	100	0	100	106.519
Catchment Area (284)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (285)	SW03		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (286)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (287)	SW03		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (288)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (289)	SW03		Time of Concentration	113.964	100	0	100	113.964
Catchment Area (290)	SW03		Time of Concentration	62.105	100	0	100	62.105
Catchment Area (291)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (292)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (293)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (294)	SW04		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (295)	SW04		Time of Concentration	155.919	100	0	100	155.919
Catchment Area (296)	SW04		Time of Concentration	64.882	100	0	100	64.882
Catchment Area (297)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (298)	SW03		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (299)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (300)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (301)	SW04		Time of Concentration	98.081	100	0	100	98.081
Catchment Area (302)	SW04		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (303)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (304)	SW03		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (305)	SW03		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (306)	SW03		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (307)	SW03		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (308)	SW03		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (309)	SW03		Time of Concentration	113.989	100	0	100	113.989
Catchment Area (310)	SW45		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (311)	SW45		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (312)	SW45		Time of Concentration	97.104	100	0	100	97.104

Catchment Area (313)	SW45		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (314)	SW45		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (315)	SW45		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (316)	SW36		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (317)	SW36		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (318)	SW36		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (319)	SW45		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (320)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (321)	SW45		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (322)	SW38		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (323)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (324)	SW38		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (325)	SW17		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (326)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (327)	SW21		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (328)	SW22		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (329)	SW20		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (330)	SW19		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (331)	SW19		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (332)	SW18		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (333)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (334)	SW15		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (335)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (336)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (337)	SW14		Time of Concentration	107.041	100	0	100	107.041
Catchment Area (338)	SW14		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (339)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (340)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (341)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (342)	SW14		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (343)	SW14		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (344)	SW27		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (345)	SW27		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (346)	SW27		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (347)	SW23		Time of Concentration	81.051	100	0	100	81.051

Catchment Area (348)	SW23		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (349)	SW23		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (350)	SW29		Time of Concentration	196.460	100	0	100	196.460
Catchment Area (351)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (352)	SW29		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (353)	SW24		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (354)	SW24		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (355)	SW12		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (356)	SW13		Time of Concentration	146.982	100	0	100	146.982
Catchment Area (357)	SW13		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (358)	SW31		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (359)	SW31		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (360)	SW31		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (361)	SW29		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (362)	SW29		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (363)	SW40		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (364)	SW42		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (365)	SW42		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (366)	SW43		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (367)	SW29		Time of Concentration	113.605	100	0	100	113.605
Catchment Area (368)	SW44		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (369)	SW44		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (370)	SW44		Time of Concentration	57.921	100	0	100	57.921
Catchment Area (371)	SW34		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (372)	SW34		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (373)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (374)	SW33		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (375)	SW44		Time of Concentration	410.698	100	0	100	410.698
Catchment Area (376)	SW36		Time of Concentration	113.760	100	0	100	113.760
Catchment Area (377)	SW36		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (378)	SW36		Time of Concentration	114.160	100	0	100	114.160
Catchment Area (379)	SW35		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (380)	SW35		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (381)	SW35		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (382)	SW35		Time of Concentration	144.769	100	0	100	144.769

Catchment Area (383)	SW35		Time of Concentration	107.012	100	0	100	107.012
Catchment Area (384)	SW17		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (385)	SW17		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (386)	SW16		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (387)	SW16		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (388)	SW35		Time of Concentration	113.621	100	0	100	113.621
Catchment Area (389)	SW14		Time of Concentration	57.926	100	0	100	57.926
Catchment Area (390)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (391)	SW13		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (392)	SW32		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (393)	SW32		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (394)	SW32		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (395)	SW33		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (396)	SW25		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (397)	SW25		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (398)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (399)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (400)	SW25		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (401)	SW25		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (402)	SW26		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (403)	SW25		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (404)	SW26		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (405)	SW25		Time of Concentration	149.709	100	0	100	149.709
Catchment Area (406)	SW25		Time of Concentration	205.242	100	0	100	205.242
Catchment Area (407)	SW25		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (408)	SW25		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (409)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (410)	SW11		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (411)	SW11		Time of Concentration	161.977	100	0	100	161.977
Catchment Area (412)	SW11		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (413)	SW14		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (414)	SW11		Time of Concentration	107.034	100	0	100	107.034
Catchment Area (415)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (416)	SW11		Time of Concentration	156.129	100	0	100	156.129
Catchment Area (417)	SW11		Time of Concentration	57.898	100	0	100	57.898

Catchment Area (418)	SW11		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (419)	SW10		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (420)	SW10		Time of Concentration	243.207	100	0	100	243.207
Catchment Area (421)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (422)	SW05		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (423)	SW05		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (424)	SW05		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (425)	SW07		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (426)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (427)	SW08		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (428)	SW23		Time of Concentration	169.869	100	0	100	169.869
Catchment Area (429)	SW23		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (430)	SW23		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (431)	SW09		Time of Concentration	99.816	100	0	100	99.816
Catchment Area (432)	SW23		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (433)	SW24		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (434)	SW24		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (435)	SW12		Time of Concentration	114.177	100	0	100	114.177
Catchment Area (436)	SW11		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (437)	SW10		Time of Concentration	57.900	100	0	100	57.900
Catchment Area (438)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (439)	SW09		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (440)	SW09		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (441)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (442)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (443)	SW10		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (444)	SW10		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (445)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (446)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (447)	SW10		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (448)	SW09		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (449)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (450)	SW01d		Time of Concentration	75.656	100	0	100	75.656
Catchment Area (451)	SW14		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (452)	SW45		Time of Concentration	123.948	100	0	100	123.948

Catchment Area (453)	SW45		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (454)	SW45		Time of Concentration	113.691	100	0	100	113.691
Catchment Area (455)	SW45		Time of Concentration	85.134	100	0	100	85.134
Catchment Area (456)	SW45		Time of Concentration	209.239	100	0	100	209.239
Catchment Area (457)	SW45		Time of Concentration	148.005	100	0	100	148.005
Catchment Area (458)	SW45		Time of Concentration	142.480	100	0	100	142.480
Catchment Area (459)	SW45		Time of Concentration	127.815	100	0	100	127.815
Catchment Area (460)	SW45		Time of Concentration	506.425	100	0	100	506.425
Catchment Area (461)	SW25		Time of Concentration	164.380	100	0	100	164.380
Catchment Area (462)	SW25		Time of Concentration	85.329	100	0	100	85.329
Catchment Area (463)	SW25		Time of Concentration	423.232	100	0	100	423.232
Catchment Area (464)	SW36		Time of Concentration	606.328	100	0	100	606.328
Catchment Area (465)	SW36		Time of Concentration	92.130	100	0	100	92.130
Catchment Area (466)	SW36		Time of Concentration	97.396	100	0	100	97.396
Catchment Area (467)	SW45		Time of Concentration	296.019	100	0	100	296.019
Catchment Area (468)	SW38		Time of Concentration	172.501	100	0	100	172.501
Catchment Area (469)	SW35		Time of Concentration	418.347	100	0	100	418.347
Catchment Area (470)	SW36		Time of Concentration	64.944	100	0	100	64.944
Catchment Area (471)	SW36		Time of Concentration	151.556	100	0	100	151.556
Catchment Area (472)	SW37		Time of Concentration	64.746	100	0	100	64.746
Catchment Area (473)	SW37		Time of Concentration	178.126	100	0	100	178.126
Catchment Area (474)	SW18		Time of Concentration	213.222	100	0	100	213.222
Catchment Area (475)	SW18		Time of Concentration	108.014	100	0	100	108.014
Catchment Area (476)	SW19		Time of Concentration	146.934	100	0	100	146.934
Catchment Area (477)	SW22		Time of Concentration	110.794	100	0	100	110.794
Catchment Area (478)	SW21		Time of Concentration	77.153	100	0	100	77.153
Catchment Area (479)	SW21		Time of Concentration	59.340	100	0	100	59.340
Catchment Area (480)	SW17		Time of Concentration	361.454	100	0	100	361.454
Catchment Area (481)	SW17		Time of Concentration	169.216	100	0	100	169.216
Catchment Area (482)	SW41		Time of Concentration	136.044	100	0	100	136.044
Catchment Area (483)	SW41		Time of Concentration	68.334	100	0	100	68.334
Catchment Area (484)	SW41		Time of Concentration	269.855	100	0	100	269.855
Catchment Area (485)	SW41		Time of Concentration	145.445	100	0	100	145.445
Catchment Area (486)	SW39		Time of Concentration	232.494	100	0	100	232.494
Catchment Area (487)	SW39		Time of Concentration	94.648	100	0	100	94.648

Catchment Area (488)	SW39		Time of Concentration	76.995	100	0	100	76.995
Catchment Area (489)	SW40		Time of Concentration	138.219	100	0	100	138.219
Catchment Area (490)	SW41		Time of Concentration	136.376	100	0	100	136.376
Catchment Area (491)	SW41		Time of Concentration	118.947	100	0	100	118.947
Catchment Area (492)	SW41		Time of Concentration	118.295	100	0	100	118.295
Catchment Area (493)	SW43		Time of Concentration	318.665	100	0	100	318.665
Catchment Area (494)	SW27		Time of Concentration	167.121	100	0	100	167.121
Catchment Area (495)	SW27		Time of Concentration	144.172	100	0	100	144.172
Catchment Area (496)	SW27		Time of Concentration	194.327	100	0	100	194.327
Catchment Area (497)	SW28		Time of Concentration	117.596	100	0	100	117.596
Catchment Area (498)	SW29		Time of Concentration	144.850	100	0	100	144.850
Catchment Area (499)	SW29		Time of Concentration	151.486	100	0	100	151.486
Catchment Area (500)	SW30		Time of Concentration	457.524	100	0	100	457.524
Catchment Area (501)	SW29		Time of Concentration	193.350	100	0	100	193.350
Catchment Area (502)	SW29		Time of Concentration	347.032	100	0	100	347.032
Catchment Area (503)	SW23		Time of Concentration	161.169	100	0	100	161.169
Catchment Area (504)	SW23		Time of Concentration	159.379	100	0	100	159.379
Catchment Area (505)	SW11		Time of Concentration	296.217	100	0	100	296.217
Catchment Area (506)	SW11		Time of Concentration	414.722	100	0	100	414.722
Catchment Area (507)	SW14		Time of Concentration	98.300	100	0	100	98.300
Catchment Area (508)	SW14		Time of Concentration	82.994	100	0	100	82.994
Catchment Area (509)	SW14		Time of Concentration	219.557	100	0	100	219.557
Catchment Area (510)	SW14		Time of Concentration	123.578	100	0	100	123.578
Catchment Area (511)	SW26		Time of Concentration	513.879	100	0	100	513.879
Catchment Area (512)	SW09		Time of Concentration	242.053	100	0	100	242.053
Catchment Area (513)	SW09		Time of Concentration	87.245	100	0	100	87.245
Catchment Area (514)	SW09		Time of Concentration	74.692	100	0	100	74.692
Catchment Area (515)	SW09		Time of Concentration	67.474	100	0	100	67.474
Catchment Area (516)	SW09		Time of Concentration	58.760	100	0	100	58.760
Catchment Area (517)	SW03		Time of Concentration	54.611	100	0	100	54.611
Catchment Area (518)	SW03		Time of Concentration	67.747	100	0	100	67.747
Catchment Area (519)	SW03		Time of Concentration	98.406	100	0	100	98.406
Catchment Area (520)	SW03		Time of Concentration	254.868	100	0	100	254.868
Catchment Area (521)	SW01		Time of Concentration	68.688	100	0	100	68.688
Catchment Area (522)	SW01		Time of Concentration	246.513	100	0	100	246.513

Catchment Area (523)	SW01		Time of Concentration	379.981	100	0	100	379.981
Catchment Area (524)	SW01		Time of Concentration	613.702	100	0	100	613.702
Catchment Area (525)	SW01d		Time of Concentration	171.503	100	0	100	171.503
Catchment Area (526)	SW01d		Time of Concentration	301.255	100	0	100	301.255
Catchment Area (527)	SW02		Time of Concentration	237.349	100	0	100	237.349
Catchment Area (528)	SW03		Time of Concentration	75.207	100	0	100	75.207
Catchment Area (529)	SW03		Time of Concentration	80.023	100	0	100	80.023
Catchment Area (530)	SW03		Time of Concentration	473.285	100	0	100	473.285
Catchment Area (531)	SW03		Time of Concentration	32.211	100	0	100	32.211
Catchment Area (532)	SW03		Time of Concentration	294.202	100	0	100	294.202
Catchment Area (533)	SW04		Time of Concentration	170.286	100	0	100	170.286
Catchment Area (534)	SW15		Time of Concentration	255.357	100	0	100	255.357
Catchment Area (535)	SW15		Time of Concentration	67.115	100	0	100	67.115
Catchment Area (536)	SW13		Time of Concentration	225.371	100	0	100	225.371
Catchment Area (537)	SW14		Time of Concentration	417.373	100	0	100	417.373
Catchment Area (538)	SW44		Time of Concentration	1255.314	100	0	100	1255.314
Catchment Area (539)	SW34		Time of Concentration	408.940	100	0	100	408.940
Catchment Area (540)	SW33		Time of Concentration	411.195	100	0	100	411.195
Catchment Area (541)	SW32		Time of Concentration	580.449	100	0	100	580.449
Catchment Area (542)	SW13		Time of Concentration	347.217	100	0	100	347.217
Catchment Area (543)	SW13		Time of Concentration	277.965	100	0	100	277.965
Catchment Area (544)	SW24		Time of Concentration	75.441	100	0	100	75.441
Catchment Area (545)	SW24		Time of Concentration	197.138	100	0	100	197.138
Catchment Area (546)	SW12		Time of Concentration	114.721	100	0	100	114.721
Catchment Area (547)	SW12		Time of Concentration	100.206	100	0	100	100.206
Catchment Area (548)	SW11		Time of Concentration	215.747	100	0	100	215.747
Catchment Area (549)	SW08		Time of Concentration	190.588	100	0	100	190.588
Catchment Area (550)	SW04		Time of Concentration	331.687	100	0	100	331.687
Catchment Area (551)	SW04		Time of Concentration	161.558	100	0	100	161.558
Catchment Area (552)	SW05		Time of Concentration	208.624	100	0	100	208.624
Catchment Area (553)	SW06		Time of Concentration	124.655	100	0	100	124.655
Catchment Area (554)	SW07		Time of Concentration	78.139	100	0	100	78.139
Catchment Area (555)	SW08		Time of Concentration	233.148	100	0	100	233.148
Catchment Area (556)	SW09		Time of Concentration	159.166	100	0	100	159.166
Catchment Area (557)	SW25		Time of Concentration	134.527	100	0	100	134.527

Catchment Area (558)	SW25		Time of Concentration	196.083	100	0	100	196.083
Catchment Area (559)	SW25		Time of Concentration	107.920	100	0	100	107.920
Catchment Area (560)	SW10		Time of Concentration	198.320	100	0	100	198.320
Catchment Area (561)	SW10		Time of Concentration	191.819	100	0	100	191.819
Catchment Area (562)	SW11		Time of Concentration	587.958	100	0	100	587.958
Catchment Area (563)	SW11		Time of Concentration	361.560	100	0	100	361.560
Catchment Area (564)	SW10		Time of Concentration	129.131	100	0	100	129.131
Catchment Area (565)	SW10		Time of Concentration	152.915	100	0	100	152.915
Catchment Area (566)	SW10		Time of Concentration	667.984	100	0	100	667.984
Catchment Area (567)	SW10		Time of Concentration	222.394	100	0	100	222.394
Catchment Area (568)	SW02		Time of Concentration	246.147	100	0	100	246.147
Catchment Area (569)	SW45		Time of Concentration	65.342	100	0	100	65.342
Catchment Area (570)	Pond		Time of Concentration	5078.287	100	0	100	5078.287
Catchment Area (571)	SW01		Time of Concentration	35.094	100	0	100	35.094
Catchment Area (572)	SW01		Time of Concentration	30.984	100	0	100	30.984
Catchment Area (574)	SW01d		Time of Concentration	246.703	100	0	100	246.703
Catchment Area (575)	SW01d		Time of Concentration	86.380	100	0	100	86.380
Catchment Area (576)	SW01d		Time of Concentration	96.551	100	0	100	96.551
Catchment Area (577)	SW01d		Time of Concentration	28.890	100	0	100	28.890
Catchment Area (578)	SW01d		Time of Concentration	66.509	100	0	100	66.509
Catchment Area (579)	SW01d		Time of Concentration	50.074	100	0	100	50.074
Catchment Area (580)	SW01d		Time of Concentration	73.475	100	0	100	73.475
Catchment Area (581)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (582)	SW01d		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (583)	SW01d		Time of Concentration	57.906	100	0	100	57.906
Catchment Area (584)	SW01d		Time of Concentration	128.085	100	0	100	128.085
Catchment Area (585)	SW01d		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (586)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (587)	SW01		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (588)	SW01		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (589)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (590)	SW01		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (591)	SW01		Time of Concentration	188.942	100	0	100	188.942
Catchment Area (592)	SW01		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (593)	SW01d		Time of Concentration	57.903	100	0	100	57.903

Catchment Area (594)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (595)	SW01d		Time of Concentration	94.471	100	0	100	94.471
Catchment Area (596)	SW01d		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (597)	SW01d		Time of Concentration	113.969	100	0	100	113.969
Catchment Area (598)	SW01d		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (599)	SW01d		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (600)	SW01a		Time of Concentration	5421.048	100	0	100	5421.048
Catchment Area (601)	SW01		Time of Concentration	216.061	100	0	100	216.061
Catchment Area (602)	SW01d		Time of Concentration	722.897	100	0	100	722.897
TOTAL		**0.0**		**75209.711**				**75209.711**

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 100 years: +40 %: 15 mins: Winter	81.831	76.937	78.982	2.045	473.8	5.206	0.000	438.1	292.010	Surcharged
SW03	FSR: 100 years: +40 %: 15 mins: Winter	81.831	76.782	78.596	1.814	686.2	4.616	0.000	654.9	421.116	Surcharged
SW02	FSR: 100 years: +40 %: 15 mins: Winter	81.800	76.841	78.764	1.923	483.5	4.894	0.000	450.3	312.618	Surcharged
SW04	FSR: 100 years: +40 %: 30 mins: Winter	81.184	76.455	77.699	1.244	660.3	3.166	0.000	653.5	654.759	Surcharged
SW06	FSR: 100 years: +40 %: 30 mins: Winter	81.175	76.381	77.501	1.120	688.4	2.850	0.000	681.7	693.268	Surcharged
SW05	FSR: 100 years: +40 %: 30 mins: Winter	81.136	76.423	77.610	1.187	689.8	3.021	0.000	682.9	688.241	Surcharged
SW07	FSR: 100 years: +40 %: 30 mins: Winter	81.062	76.345	77.401	1.056	693.5	2.686	0.000	686.9	704.089	Surcharged
SW23	FSR: 100 years: +40 %: 15 mins: Winter	81.000	79.499	79.603	0.104	83.8	0.117	0.000	82.9	38.757	OK
SW08	FSR: 100 years: +40 %: 30 mins: Winter	80.906	76.311	77.301	0.990	708.6	2.520	0.000	701.0	723.931	Surcharged
SW29	FSR: 100 years: +40 %: 15 mins: Winter	80.791	77.854	78.653	0.799	408.5	2.033	0.000	347.2	234.378	Surcharged
SW27	FSR: 100 years: +40 %: 15 mins: Winter	80.769	79.269	79.428	0.159	80.8	0.282	0.000	79.9	37.386	OK
SW28	FSR: 100 years: +40 %: 15 mins: Summer	80.677	78.922	79.089	0.167	105.6	0.295	0.000	103.8	45.905	OK
SW40	FSR: 100 years: +40 %: 15 mins: Winter	80.487	78.536	78.798	0.262	80.3	0.296	0.000	72.5	38.308	OK
SW30	FSR: 100 years: +40 %: 15 mins: Winter	80.437	77.700	78.470	0.770	371.0	1.960	0.000	347.1	245.356	Surcharged
SW43	FSR: 100 years: +40 %: 15 mins: Winter	80.434	78.146	78.636	0.490	237.9	0.867	0.000	200.3	128.755	Surcharged
SW39	FSR: 100 years: +40 %: 15 mins: Winter	80.311	78.886	79.310	0.425	64.3	0.480	0.000	62.0	29.576	Surcharged
SW42	FSR: 100 years: +40 %: 15 mins: Winter	80.236	78.244	78.674	0.430	214.3	0.759	0.000	195.9	109.419	OK
SW41	FSR: 100 years: +40 %: 15 mins: Winter	80.179	78.386	78.774	0.388	209.2	0.686	0.000	197.0	101.473	OK
SW09	FSR: 100 years: +40 %: 30 mins: Winter	80.176	76.238	77.150	0.912	771.1	2.320	0.000	762.5	788.523	Surcharged
SW31	FSR: 100 years: +40 %: 15 mins: Winter	80.174	77.585	78.434	0.849	354.5	2.161	0.000	375.3	257.865	Surcharged

SW33	FSR: 100 years: +40 %: 15 mins: Winter	80.085	77.280	78.221	0.941	428.1	2.396	0.000	449.7	307.916	Surcharged
SW32	FSR: 100 years: +40 %: 15 mins: Winter	80.031	77.472	78.353	0.881	396.4	2.243	0.000	413.5	283.234	Surcharged
SW10	FSR: 100 years: +40 %: 30 mins: Winter	80.000	76.188	77.002	0.814	864.2	2.072	0.000	852.5	881.926	Surcharged
SW44	FSR: 100 years: +40 %: 15 mins: Winter	79.919	78.419	78.703	0.284	140.3	0.322	0.000	118.3	63.610	OK
SW17	FSR: 100 years: +40 %: 30 mins: Winter	79.806	74.739	75.933	1.194	1270.5	5.402	0.000	1265.4	1283.725	Surcharged
SW34	FSR: 100 years: +40 %: 15 mins: Winter	79.695	77.136	78.096	0.960	558.7	2.442	0.000	541.7	393.006	Surcharged
SW16	FSR: 100 years: +40 %: 30 mins: Winter	79.685	74.765	76.003	1.238	1229.5	5.602	0.000	1224.6	1248.754	Surcharged
SW24	FSR: 100 years: +40 %: 15 mins: Winter	79.652	76.366	76.597	0.231	122.4	0.262	0.000	117.5	55.859	OK
SW18	FSR: 100 years: +40 %: 30 mins: Winter	79.108	74.678	75.826	1.148	1287.5	5.192	0.000	1283.0	1295.146	Surcharged
SW15	FSR: 100 years: +40 %: 30 mins: Winter	79.087	74.809	76.088	1.279	1223.7	5.786	0.000	1218.7	1244.595	Surcharged
SW35	FSR: 100 years: +40 %: 15 mins: Winter	78.796	76.643	77.669	1.026	614.2	2.610	0.000	600.9	426.353	Surcharged
SW36	FSR: 100 years: +40 %: 15 mins: Winter	78.743	76.544	77.481	0.936	705.2	2.383	0.000	694.5	474.503	Surcharged
SW14	FSR: 100 years: +40 %: 30 mins: Winter	78.697	74.829	76.151	1.322	1213.5	5.982	0.000	1206.8	1233.505	Surcharged
SW37	FSR: 100 years: +40 %: 15 mins: Winter	78.686	76.377	77.154	0.777	709.7	1.977	0.000	702.0	481.443	Surcharged
SW38	FSR: 100 years: +40 %: 15 mins: Winter	78.617	76.173	76.792	0.619	726.9	1.576	0.000	679.2	492.860	Surcharged
SW19	FSR: 100 years: +40 %: 30 mins: Winter	78.379	74.654	75.749	1.095	1301.8	4.952	0.000	1298.1	1304.800	Surcharged
SW11	FSR: 100 years: +40 %: 30 mins: Winter	78.250	75.390	76.607	1.217	983.8	3.096	0.000	978.7	1002.886	Surcharged
SW25	FSR: 100 years: +40 %: 15 mins: Winter	78.094	76.752	76.903	0.151	146.2	0.267	0.000	145.2	67.626	OK
SW26	FSR: 100 years: +40 %: 15 mins: Winter	77.940	76.156	76.376	0.220	196.5	0.388	0.000	187.2	89.504	OK
SW12	FSR: 100 years: +40 %: 30 mins: Winter	77.555	75.141	76.405	1.264	1070.3	5.720	0.000	1064.1	1095.072	Surcharged
SW20	FSR: 100 years: +40 %: 480 mins: Winter	77.132	74.613	75.723	1.110	298.9	6.354	0.000	295.3	3446.501	Surcharged
SW13	FSR: 100 years: +40 %: 30 mins: Winter	76.991	74.942	76.269	1.327	1115.7	6.005	0.000	1107.6	1142.925	Surcharged
SW21	FSR: 100 years: +40 %: 480 mins: Winter	76.983	74.554	75.723	1.169	297.3	5.287	0.000	293.9	3451.590	Surcharged

SW22	FSR: 100 years: +40 %: 480 mins: Winter	76.759	74.530	75.723	1.193	295.1	5.396	0.000	292.7	3450.106	Surcharged
SW45	FSR: 100 years: +40 %: 15 mins: Winter	77.719	75.676	76.143	0.467	877.4	1.188	0.000	862.1	584.229	OK
SW01a	FSR: 100 years: +40 %: 30 mins: Winter	81.750	79.000	81.517	2.517	192.0	2.847	0.000	185.9	177.345	Flood Risk
SW01c	FSR: 100 years: +40 %: 15 mins: Winter	82.042	78.695	79.726	1.031	181.9	1.166	0.000	182.7	130.064	Surcharged
SW01d	FSR: 100 years: +40 %: 15 mins: Winter	82.329	77.000	79.002	2.002	174.7	3.538	0.000	152.1	80.853	Surcharged
SW46	FSR: 100 years: +40 %: 15 mins: Winter	81.321	76.638	77.926	1.288	654.9	3.277	0.000	631.7	420.461	Surcharged
SW01b	FSR: 100 years: +40 %: 15 mins: Winter	81.217	78.799	80.386	1.587	180.6	1.795	0.000	181.9	130.107	Surcharged

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 100 years: +40 %: 480 mins: Winter	75.723	75.723	1.377	1.377	495.8	4287.997	0.000	2825.956	0.0	0.000	9.440	OK

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe45	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01	SW02	81.831	78.982	0.600	292.010	1.5	1.28	438.1	Surcharged
Pipe47	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW04	SW05	81.184	77.684	0.750	478.206	1.7	1.19	737.1	Surcharged
Pipe48	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW06	SW07	81.175	77.424	0.750	505.548	1.7	1.23	757.4	Surcharged
Pipe49	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW08	SW09	80.906	77.168	0.750	526.796	1.7	1.24	768.9	Surcharged
Pipe50	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW09	SW10	80.176	76.982	0.680	573.338	2.2	1.37	841.3	OK
Pipe51	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW10	SW11	80.000	76.804	0.750	640.717	2.2	0.71	959.4	OK
Pipe52	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW11	SW12	78.250	76.429	0.750	728.451	2.4	1	1074.2	Surcharged
Pipe53	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW12	SW13	77.555	76.252	0.900	793.011	1.8	1.26	1117.6	Surcharged
Pipe54	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW13	SW14	76.991	76.269	1.050	1142.925	1.3	0.83	1107.6	Surcharged
Pipe55	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW14	SW15	78.697	76.151	1.050	1233.505	1.4	0.92	1206.8	Surcharged
Pipe56	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW15	SW16	79.087	76.088	1.050	1244.595	1.4	0.92	1218.7	Surcharged
Pipe57	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW17	SW18	79.806	75.933	1.050	1283.725	1.5	0.95	1265.4	Surcharged
Pipe58	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW18	SW19	79.108	75.826	1.050	1295.146	1.5	0.97	1283.0	Surcharged
Pipe59	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW20	SW21	77.132	75.650	0.993	1424.450	1.7	1.08	1432.9	OK

Pipe60	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW21	SW22	76.983	75.502	0.890	1421.972	1.8	1.08	1437.5	OK
Pipe62	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW23	SW24	81.000	79.603	0.167	38.757	2.0	0.26	82.9	OK
Pipe63	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW24	SW12	79.652	76.597	0.300	55.859	1.7	0.85	117.5	OK
Pipe64	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW27	SW28	80.769	79.428	0.163	37.386	2.0	0.45	79.9	OK
Pipe65	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW29	SW30	80.791	78.389	0.548	209.271	1.5	0.76	415.1	OK
Pipe66	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW32	SW33	80.031	78.353	0.600	283.234	1.5	0.75	413.5	Surcharged
Pipe67	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW34	SW35	79.695	77.972	0.600	535.983	1.9	0.81	544.8	Surcharged
Pipe68	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW35	SW36	78.796	77.669	0.600	426.353	2.1	0.87	600.9	Surcharged
Pipe69	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW36	SW37	78.743	77.481	0.600	474.503	2.5	1.04	694.5	Surcharged
Pipe70	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW37	SW38	78.686	77.154	0.600	481.443	2.5	1.04	702.0	Surcharged
Pipe72	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW39	SW40	80.311	79.310	0.225	29.576	1.6	1.51	62.0	Surcharged
Pipe73	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW40	SW41	80.487	78.798	0.325	38.298	0.6	0.28	72.5	OK
Pipe74	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW43	SW29	80.434	78.547	0.393	114.952	1.6	0.87	223.4	OK
Pipe75	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW25	SW26	78.094	76.903	0.185	67.626	2.3	0.19	145.2	OK
Pipe75 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW26	SW20	77.940	76.376	0.252	89.504	2.5	0.43	187.2	OK
Pipe58 (1)	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW19	SW20	78.379	75.749	1.050	1304.800	1.5	0.97	1298.1	Surcharged
Pipe64 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW28	SW29	80.677	79.089	0.300	51.438	1.9	0.59	112.6	OK

Pipe65 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW31	SW32	80.174	78.434	0.600	257.865	1.3	0.69	375.3	Surcharged
Pipe65 (2)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW30	SW31	80.437	78.261	0.600	219.057	1.4	0.72	395.0	OK
Pipe73 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW42	SW43	80.236	78.674	0.450	109.419	1.2	0.77	195.9	OK
Pipe45 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW02	SW03	81.800	78.764	0.600	312.618	1.6	1.32	450.3	Surcharged
Pipe47 (2)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW05	SW06	81.136	77.567	0.750	502.345	1.7	1.26	769.7	Surcharged
Pipe48 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW07	SW08	81.062	77.295	0.750	512.979	1.7	1.23	756.6	Surcharged
Pipe66 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW33	SW34	80.085	78.221	0.600	307.916	1.6	0.82	449.7	Surcharged
Pipe118	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW44	SW34	79.919	78.641	0.300	56.667	1.8	0.84	128.7	OK
Pipe73 (2)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW41	SW42	80.179	78.774	0.409	101.462	1.3	0.77	197.0	OK
Pipe56 (1)	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW16	SW17	79.685	76.003	1.050	1248.754	1.4	0.92	1224.6	Surcharged
Pipe61	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW22	Pond	76.759	75.362	0.757	1414.561	2.2	1.08	1437.0	OK
Pipe71	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW38	SW45	78.617	76.739	0.505	672.548	2.8	0.98	686.1	OK
Pipe71 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW45	Pond	77.719	76.143	0.420	584.229	4.1	0.71	862.1	OK
Pipe	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01d	SW01	82.329	79.002	0.600	80.853	0.5	0.44	152.1	Surcharged
Pipe (2)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01c	SW01	82.042	79.726	0.300	130.064	2.6	2.33	182.7	Surcharged
Pipe46	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW03	SW46	81.831	78.596	0.600	421.116	2.3	1.91	654.9	Surcharged
Pipe46 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW46	SW04	81.321	77.926	0.600	420.461	2.2	1.85	631.7	Surcharged

Project:	Date: 02/07/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 2 - SW Network	Company Address:		

Pipe (1)	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW01a	SW01b	81.750	81.517	0.300	177.345	2.6	2.37	185.9	Flood Risk
Pipe (3)	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW01b	SW01c	81.217	80.383	0.300	177.391	2.6	2.32	182.2	Surch arged

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 3 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW08	Outlet	Pipe80	Free Discharge
SW01	Outlet	Pipe103	Free Discharge
SW09	Outlet	Pipe81	Free Discharge
SW10	Outlet	Pipe	Free Discharge
SW02	Outlet	Pipe104	Free Discharge
SW03	Outlet	Pipe105	Free Discharge
SW04	Outlet	Pipe76	Free Discharge
SW05	Outlet	Pipe77	Free Discharge
SW18	Outlet	Pipe83	Free Discharge
SW17	Outlet	Pipe79	Free Discharge
SW06	Outlet	Pipe78	Free Discharge
SW15	Outlet	Pipe84	Free Discharge
SW16	Outlet	Pipe85	Free Discharge
SW07	Outlet	Pipe78 (1)	Free Discharge
SW11	Outlet	Pipe (3)	Free Discharge
SW12	Outlet	Pipe (4)	Free Discharge
SW13	Outlet	Pipe (5)	Free Discharge
SW14	Outlet	Pipe (6)	Free Discharge
SW19	Outlet	Pipe (1) (1)	Orifice
	Diameter (m)	0.090	
	Coefficient of Discharge	0.600	
	Invert Level (m)	70.768	
SW20	Outlet	Pipe84 (1)	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		

Pond (2)

Type : Pond

Dimensions

Exceedance Level (m)	65.200
Depth (m)	1.500
Base Level (m)	63.700
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.001
Total Volume (m³)	2496.584

Depth (m)	Area (m²)	Volume (m³)
0.000	1350.00	0.000
1.500	2000.00	2496.584

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe78 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Perimeter	Circular
Length (m)	80.277
Friction Scheme	Manning's n
n	0.033

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		



Soakaway

Type : Soakaway

Dimensions

Exceedance Level (m)	72.548
Depth (m)	2.150
Base Level (m)	70.398
Freeboard (mm)	0
Soakaway Shape	Rectangular
Diameter / Width (m)	10.000
Length (m)	15.000
Porosity (%)	95
Ineffective Storage Depth (m)	0.150
Number of Soakaways	1
Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Total Volume (m³)	285.000

Inlets

Inlet

Incoming Item(s)	Catchment Area (182)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Incoming Item(s)	Catchment Area (185) Catchment Area (187) Catchment Area (186) Catchment Area (189)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Incoming Item(s)	Catchment Area (184) Catchment Area (183)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 3 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe76	40.392	Pipe	18.901		0.6	225	73.530	72.104
Pipe77	27.632	Pipe	217.577		0.6	300	72.978	69.892
Pipe78	51.280	Pipe	21.564		0.6	300	72.147	69.765
Pipe79	62.646	Pipe	74.490		0.6	300	72.233	70.733
Pipe80	63.901	Pipe	34.081		0.6	225	77.517	76.167
Pipe81	6.766	Pipe	38.442		0.6	300	75.717	74.142
Pipe85	27.093	Pipe	33.994		0.6	450	69.591	66.542
Pipe103	37.648	Pipe	99.863		0.6	225	75.879	73.732
Pipe104	13.330	Pipe	32.513		0.6	225	74.808	73.355
Pipe105	16.107	Pipe	19.152		0.6	225	74.372	72.945
Pipe78 (1)	41.670	Pipe	34.870		0.6	450	69.325	65.745
Pipe (2)	12.675	Pipe	5.105		0.6	150	72.548	72.398
Pipe83	48.752	Pipe	128.974		0.6	300	72.571	71.000
Pipe	21.889	Pipe	190.343		0.6	300	75.542	73.966
Pipe (3)	7.376	Pipe	99.678		0.6	300	75.491	73.851
Pipe (4)	76.135	Pipe	51.970		0.6	300	75.290	72.087
Pipe (5)	33.194	Pipe	99.982		0.6	300	72.826	70.622
Pipe (6)	28.855	Pipe	57.825		0.6	450	72.114	70.140
Pipe (1) (1)	8.790	Pipe	8.996		0.6	300	71.251	70.768
Pipe84	31.825	Pipe	14.201		0.6	450	71.082	69.641
Pipe84 (1)	29.150	Pipe	33.974		0.6	450	70.340	67.400

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)
Pipe76	72.978	69.967		All	
Pipe77	72.147	69.765		All	
Pipe78	69.325	67.387		All	
Pipe79	72.978	69.892		All	
Pipe80	75.717	74.292		All	
Pipe81	75.542	73.966		All	
Pipe85	69.325	65.745		All	
Pipe103	74.808	73.355		All	
Pipe104	74.372	72.945		All	
Pipe105	73.530	72.104		All	
Pipe78 (1)	65.200	64.550		All	
Pipe (2)	72.147	69.915		All	
Pipe83	72.826	70.622		All	
Pipe	75.491	73.851		All	
Pipe (3)	75.290	73.777		All	
Pipe (4)	72.826	70.622		All	
Pipe (5)	72.114	70.290		All	
Pipe (6)	71.082	69.641		All	
Pipe (1) (1)	71.082	69.791		All	11.2
Pipe84	70.340	67.400		All	
Pipe84 (1)	69.591	66.542		All	

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area (1)	Pond (2)		Time of Concentration	2992.791	100	0	100	2992.791
Catchment Area (2)	SW07		Time of Concentration	69.395	100	0	100	69.395
Catchment Area (3)	SW09		Time of Concentration	187.985	100	0	100	187.985
Catchment Area (4)	SW13		Time of Concentration	383.512	100	0	100	383.512
Catchment Area (5)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (6)	SW09		Time of Concentration	49.744	100	0	100	49.744
Catchment Area (7)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (8)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (9)	SW09		Time of Concentration	49.950	100	0	100	49.950
Catchment Area (10)	SW08		Time of Concentration	171.455	100	0	100	171.455
Catchment Area (11)	SW08		Time of Concentration	22.003	100	0	100	22.003
Catchment Area (12)	SW08		Time of Concentration	50.828	100	0	100	50.828
Catchment Area (13)	SW12		Time of Concentration	287.334	100	0	100	287.334
Catchment Area (14)	SW12		Time of Concentration	49.521	100	0	100	49.521
Catchment Area (15)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (16)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (17)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (18)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (19)	SW13		Time of Concentration	49.587	100	0	100	49.587
Catchment Area (20)	SW13		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (21)	SW13		Time of Concentration	49.904	100	0	100	49.904
Catchment Area (22)	SW04		Time of Concentration	192.726	100	0	100	192.726
Catchment Area (23)	SW01		Time of Concentration	319.304	100	0	100	319.304
Catchment Area (24)	SW02		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (25)	SW02		Time of Concentration	59.592	100	0	100	59.592
Catchment Area (26)	SW04		Time of Concentration	58.922	100	0	100	58.922
Catchment Area (27)	SW04		Time of Concentration	65.394	100	0	100	65.394
Catchment Area (28)	SW18		Time of Concentration	29.314	100	0	100	29.314
Catchment Area (29)	SW18		Time of Concentration	26.618	100	0	100	26.618
Catchment Area (30)	SW18		Time of Concentration	28.198	100	0	100	28.198
Catchment Area (31)	SW18		Time of Concentration	52.966	100	0	100	52.966
Catchment Area (32)	SW18		Time of Concentration	28.580	100	0	100	28.580
Catchment Area (33)	SW15		Time of Concentration	72.606	100	0	100	72.606

Catchment Area (34)	SW15		Time of Concentration	59.532	100	0	100	59.532
Catchment Area (35)	SW16		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (36)	SW16		Time of Concentration	25.035	100	0	100	25.035
Catchment Area (37)	SW16		Time of Concentration	32.325	100	0	100	32.325
Catchment Area (38)	SW16		Time of Concentration	49.826	100	0	100	49.826
Catchment Area (39)	SW16		Time of Concentration	61.027	100	0	100	61.027
Catchment Area (40)	SW07		Time of Concentration	30.028	100	0	100	30.028
Catchment Area (41)	SW07		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (42)	SW07		Time of Concentration	32.478	100	0	100	32.478
Catchment Area (43)	SW16		Time of Concentration	50.154	100	0	100	50.154
Catchment Area (44)	SW16		Time of Concentration	25.247	100	0	100	25.247
Catchment Area (45)	SW16		Time of Concentration	50.714	100	0	100	50.714
Catchment Area (46)	SW16		Time of Concentration	50.280	100	0	100	50.280
Catchment Area (47)	SW16		Time of Concentration	28.888	100	0	100	28.888
Catchment Area (48)	SW19		Time of Concentration	28.878	100	0	100	28.878
Catchment Area (49)	SW19		Time of Concentration	52.330	100	0	100	52.330
Catchment Area (50)	SW15		Time of Concentration	336.128	100	0	100	336.128
Catchment Area (51)	SW02		Time of Concentration	60.213	100	0	100	60.213
Catchment Area (52)	SW04		Time of Concentration	30.260	100	0	100	30.260
Catchment Area (53)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (54)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (55)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (56)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (57)	SW05		Time of Concentration	52.900	100	0	100	52.900
Catchment Area (58)	SW05		Time of Concentration	29.990	100	0	100	29.990
Catchment Area (59)	SW05		Time of Concentration	25.147	100	0	100	25.147
Catchment Area (60)	SW05		Time of Concentration	30.440	100	0	100	30.440
Catchment Area (61)	SW17		Time of Concentration	377.629	100	0	100	377.629
Catchment Area (62)	SW01		Time of Concentration	64.271	100	0	100	64.271
Catchment Area (63)	SW01		Time of Concentration	49.776	100	0	100	49.776
Catchment Area (64)	SW01		Time of Concentration	32.360	100	0	100	32.360
Catchment Area (65)	SW01		Time of Concentration	29.296	100	0	100	29.296
Catchment Area (66)	SW01		Time of Concentration	29.316	100	0	100	29.316
Catchment Area (67)	SW01		Time of Concentration	31.834	100	0	100	31.834
Catchment Area (68)	SW10		Time of Concentration	71.045	100	0	100	71.045

Catchment Area (69)	SW06		Time of Concentration	60.449	100	0	100	60.449
Catchment Area (70)	SW07		Time of Concentration	29.954	100	0	100	29.954
Catchment Area (71)	SW05		Time of Concentration	59.883	100	0	100	59.883
Catchment Area (72)	SW05		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (73)	SW07		Time of Concentration	49.868	100	0	100	49.868
Catchment Area (74)	SW07		Time of Concentration	29.925	100	0	100	29.925
Catchment Area (75)	SW07		Time of Concentration	24.964	100	0	100	24.964
Catchment Area (76)	SW07		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (77)	SW07		Time of Concentration	24.907	100	0	100	24.907
Catchment Area (78)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (79)	SW17		Time of Concentration	64.789	100	0	100	64.789
Catchment Area (80)	SW17		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (81)	SW17		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (82)	SW17		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (83)	SW17		Time of Concentration	282.356	100	0	100	282.356
Catchment Area (84)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (85)	SW08		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (86)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (87)	SW09		Time of Concentration	97.109	100	0	100	97.109
Catchment Area (88)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (89)	SW09		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (90)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (91)	SW11		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW08		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (94)	SW08		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (95)	SW08		Time of Concentration	224.847	100	0	100	224.847
Catchment Area (96)	SW09		Time of Concentration	63.853	100	0	100	63.853
Catchment Area (97)	SW01		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (98)	SW02		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (99)	SW01		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (100)	SW01		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (101)	SW12		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (102)	SW12		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (103)	SW13		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (104)	SW13		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW13		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (106)	SW13		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (107)	SW13		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (108)	SW04		Time of Concentration	107.039	100	0	100	107.039
Catchment Area (109)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (110)	SW04		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (111)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (112)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (113)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (114)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (115)	SW16		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (116)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (117)	SW18		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (118)	SW16		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (119)	SW06		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (120)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (121)	SW07		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (122)	SW19		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (123)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (124)	SW15		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (125)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (126)	SW15		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (127)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (128)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (129)	SW16		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (130)	SW07		Time of Concentration	112.330	100	0	100	112.330
Catchment Area (131)	SW01		Time of Concentration	114.186	100	0	100	114.186
Catchment Area (132)	SW04		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (133)	SW05		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (134)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (135)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (136)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (137)	SW01		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (138)	SW01		Time of Concentration	127.982	100	0	100	127.982

Catchment Area (139)	SW01		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (140)	SW05		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (141)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (142)	SW17		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (143)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (144)	SW17		Time of Concentration	114.159	100	0	100	114.159
Catchment Area (145)	SW05		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (146)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (147)	SW06		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (148)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (149)	SW17		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (150)	SW17		Time of Concentration	149.677	100	0	100	149.677
Catchment Area (151)	SW17		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (152)	SW07		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (153)	SW07		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (154)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (155)	SW08		Time of Concentration	61.008	100	0	100	61.008
Catchment Area (156)	SW08		Time of Concentration	109.472	100	0	100	109.472
Catchment Area (157)	SW08		Time of Concentration	86.763	100	0	100	86.763
Catchment Area (158)	SW08		Time of Concentration	101.661	100	0	100	101.661
Catchment Area (159)	SW09		Time of Concentration	133.676	100	0	100	133.676
Catchment Area (160)	SW09		Time of Concentration	182.250	100	0	100	182.250
Catchment Area (161)	SW09		Time of Concentration	46.189	100	0	100	46.189
Catchment Area (162)	SW10		Time of Concentration	35.938	100	0	100	35.938
Catchment Area (163)	SW11		Time of Concentration	112.253	100	0	100	112.253
Catchment Area (164)			Time of Concentration	71.966	100	0	100	71.966
Catchment Area (165)	SW11		Time of Concentration	42.697	100	0	100	42.697
Catchment Area (166)	SW12		Time of Concentration	487.938	100	0	100	487.938
Catchment Area (167)	SW13		Time of Concentration	159.380	100	0	100	159.380
Catchment Area (168)	SW18		Time of Concentration	111.400	100	0	100	111.400
Catchment Area (169)	SW06		Time of Concentration	388.453	100	0	100	388.453
Catchment Area (170)	SW06		Time of Concentration	185.242	100	0	100	185.242
Catchment Area (171)	SW14		Time of Concentration	222.580	100	0	100	222.580
Catchment Area (172)	SW15		Time of Concentration	81.589	100	0	100	81.589
Catchment Area (173)	SW15		Time of Concentration	35.625	100	0	100	35.625

Catchment Area (174)	SW15		Time of Concentration	307.649	100	0	100	307.649
Catchment Area (175)	SW16		Time of Concentration	172.940	100	0	100	172.940
Catchment Area (176)	SW07		Time of Concentration	115.793	100	0	100	115.793
Catchment Area (177)	SW07		Time of Concentration	184.412	100	0	100	184.412
Catchment Area (178)	SW07		Time of Concentration	221.828	100	0	100	221.828
Catchment Area (179)	SW17		Time of Concentration	77.552	100	0	100	77.552
Catchment Area (180)	SW01		Time of Concentration	226.667	100	0	100	226.667
Catchment Area (181)	SW01		Time of Concentration	227.765	100	0	100	227.765
Catchment Area (182)	Soakaway		Time of Concentration	942.346	100	0	100	942.346
Catchment Area (183)	Soakaway		Time of Concentration	348.976	100	0	100	348.976
Catchment Area (184)	Soakaway		Time of Concentration	135.077	100	0	100	135.077
Catchment Area (185)	Soakaway		Time of Concentration	144.708	100	0	100	144.708
Catchment Area (186)	Soakaway		Time of Concentration	672.395	100	0	100	672.395
Catchment Area (187)	Soakaway		Time of Concentration	386.986	100	0	100	386.986
Catchment Area (188)	SW17		Time of Concentration	208.056	100	0	100	208.056
Catchment Area (189)	Soakaway		Time of Concentration	604.743	100	0	100	604.743
TOTAL		**0.0**		**24062.880**				**24062.880**

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000
30.0	0.000
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW08	FSR: 2 years: +0 %: 15 mins: Winter	77.517	76.167	76.235	0.068	18.7	0.077	0.000	17.3	8.658	OK
SW01	FSR: 2 years: +0 %: 15 mins: Winter	75.879	73.732	73.856	0.124	28.5	0.140	0.000	27.5	13.242	OK
SW09	FSR: 2 years: +0 %: 15 mins: Winter	75.717	74.142	74.250	0.108	35.3	0.122	0.000	34.9	16.988	OK
SW10	FSR: 2 years: +0 %: 15 mins: Winter	75.542	73.966	74.120	0.154	38.2	0.174	0.000	36.9	18.534	OK
SW02	FSR: 2 years: +0 %: 15 mins: Winter	74.808	73.355	73.453	0.098	31.3	0.110	0.000	30.2	14.965	OK
SW03	FSR: 2 years: +0 %: 15 mins: Winter	74.372	72.945	73.024	0.079	30.2	0.089	0.000	29.7	14.956	OK
SW04	FSR: 2 years: +0 %: 15 mins: Winter	73.530	72.104	72.196	0.092	42.7	0.104	0.000	41.7	20.934	OK
SW05	FSR: 2 years: +0 %: 15 mins: Winter	72.978	69.892	70.134	0.242	85.3	0.615	0.000	77.5	41.730	OK
SW18	FSR: 2 years: +0 %: 15 mins: Winter	72.571	71.000	71.055	0.055	8.2	0.062	0.000	7.6	3.809	OK
SW17	FSR: 2 years: +0 %: 15 mins: Winter	72.233	70.733	70.825	0.092	28.9	0.234	0.000	27.5	13.411	OK
SW06	FSR: 2 years: +0 %: 15 mins: Winter	72.147	69.765	69.894	0.129	90.7	0.328	0.000	85.6	47.797	OK
SW15	FSR: 2 years: +0 %: 15 mins: Winter	71.082	69.641	69.743	0.102	100.0	0.180	0.000	97.8	56.328	OK
SW16	FSR: 2 years: +0 %: 15 mins: Winter	69.591	66.542	66.680	0.138	112.4	0.244	0.000	108.8	64.513	OK
SW07	FSR: 2 years: +0 %: 15 mins: Winter	69.325	65.745	65.953	0.208	220.4	0.530	0.000	208.9	124.219	OK
SW11	FSR: 2 years: +0 %: 15 mins: Winter	75.491	73.851	73.993	0.142	41.8	0.161	0.000	40.2	20.804	OK
SW12	FSR: 2 years: +0 %: 15 mins: Winter	75.290	72.087	72.209	0.122	55.8	0.138	0.000	53.4	27.996	OK
SW13	FSR: 2 years: +0 %: 15 mins: Winter	72.826	70.622	70.810	0.188	82.3	0.332	0.000	69.9	41.517	OK
SW14	FSR: 2 years: +0 %: 15 mins: Winter	72.114	70.140	70.275	0.135	73.2	0.153	0.000	71.6	43.039	OK
SW19	FSR: 2 years: +0 %: 15 mins: Winter	71.251	70.768	70.845	0.077	2.9	0.087	0.000	2.7	1.327	OK
SW20	FSR: 2 years: +0 %: 15 mins: Winter	70.340	67.400	67.532	0.132	97.8	0.232	0.000	94.4	56.260	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond (2)	FSR: 2 years: +0 %: 960 mins: Winter	64.003	64.003	0.303	0.303	27.4	427.009	0.000	416.918	0.0	0.000	82.896	OK
Soakaway	FSR: 2 years: +0 %: 1440 mins: Winter	70.932	70.932	0.534	0.534	3.2	76.063	0.000	71.217	0.0	0.000	73.311	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe76	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	73.530	72.196	0.129	20.934	1.8	0.35	41.7	OK
Pipe77	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW05	SW06	72.978	70.134	0.185	41.730	1.7	1.03	77.5	OK
Pipe78	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW06	SW07	72.147	69.894	0.126	47.797	3.0	0.36	85.6	OK
Pipe79	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW17	SW05	72.233	70.825	0.167	13.411	0.7	0.21	27.5	OK
Pipe80	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW08	SW09	77.517	76.235	0.068	8.658	1.7	0.19	17.3	OK
Pipe81	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW09	SW10	75.717	74.250	0.131	16.988	1.2	0.19	34.9	OK
Pipe85	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW16	SW07	69.591	66.680	0.173	64.513	1.9	0.2	108.8	OK
Pipe103	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	75.879	73.856	0.111	13.242	1.4	0.53	27.5	OK
Pipe104	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW02	SW03	74.808	73.453	0.088	14.965	2.1	0.33	30.2	OK
Pipe105	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW03	SW04	74.372	73.024	0.085	14.956	2.2	0.25	29.7	OK
Pipe78 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW07	Pond (2)	69.325	65.953	0.200	124.219	3.1	0.38	208.9	OK
Pipe (2)	FSR: 2 years: +0 %: 15 mins: Summer	Pipe	Soakaway	SW06	72.548	70.537	0.000	0.000	0.0	0	0.0	OK
Pipe83	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW18	SW13	72.571	71.055	0.121	3.809	0.3	0.08	7.6	OK
Pipe	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	75.542	74.120	0.148	18.534	1.1	0.46	36.9	OK
Pipe (3)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW11	SW12	75.491	73.993	0.133	20.804	1.3	0.36	40.2	OK
Pipe (4)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	75.290	72.209	0.155	27.996	1.5	0.35	53.4	OK
Pipe (5)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW13	SW14	72.826	70.810	0.180	41.517	1.6	0.63	69.9	OK
Pipe (6)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	72.114	70.275	0.118	43.039	2.1	0.17	71.6	OK
Pipe (1) (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW19	SW15	71.251	70.845	0.018	1.322	1.5	0.01	2.6	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Pipe84	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW15	SW20	71.082	69.743	0.117	56.328	3.0	0.11	97.8	OK
Pipe84 (1)	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW20	SW16	70.340	67.532	0.135	56.260	2.4	0.17	94.4	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 3 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW08	Outlet	Pipe80	Free Discharge
SW01	Outlet	Pipe103	Free Discharge
SW09	Outlet	Pipe81	Free Discharge
SW10	Outlet	Pipe	Free Discharge
SW02	Outlet	Pipe104	Free Discharge
SW03	Outlet	Pipe105	Free Discharge
SW04	Outlet	Pipe76	Free Discharge
SW05	Outlet	Pipe77	Free Discharge
SW18	Outlet	Pipe83	Free Discharge
SW17	Outlet	Pipe79	Free Discharge
SW06	Outlet	Pipe78	Free Discharge
SW15	Outlet	Pipe84	Free Discharge
SW16	Outlet	Pipe85	Free Discharge
SW07	Outlet	Pipe78 (1)	Free Discharge
SW11	Outlet	Pipe (3)	Free Discharge
SW12	Outlet	Pipe (4)	Free Discharge
SW13	Outlet	Pipe (5)	Free Discharge
SW14	Outlet	Pipe (6)	Free Discharge
SW19	Outlet	Pipe (1) (1)	Orifice
	Diameter (m)	0.090	
	Coefficient of Discharge	0.600	
	Invert Level (m)	70.768	
SW20	Outlet	Pipe84 (1)	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		

Pond (2)

Type : Pond

Dimensions

Exceedance Level (m)	65.200
Depth (m)	1.500
Base Level (m)	63.700
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.001
Total Volume (m³)	2496.584

Depth (m)	Area (m²)	Volume (m³)
0.000	1350.00	0.000
1.500	2000.00	2496.584

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe78 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Perimeter	Circular
Length (m)	80.277
Friction Scheme	Manning's n
n	0.033

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		



Soakaway

Type : Soakaway

Dimensions

Exceedance Level (m)	72.548
Depth (m)	2.150
Base Level (m)	70.398
Freeboard (mm)	0
Soakaway Shape	Rectangular
Diameter / Width (m)	10.000
Length (m)	15.000
Porosity (%)	95
Ineffective Storage Depth (m)	0.150
Number of Soakaways	1
Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Total Volume (m³)	285.000

Inlets

Inlet

Incoming Item(s)	Catchment Area (182)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Incoming Item(s)	Catchment Area (185) Catchment Area (187) Catchment Area (186) Catchment Area (189)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Incoming Item(s)	Catchment Area (184) Catchment Area (183)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 3 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe76	40.392	Pipe	18.901		0.6	225	73.530	72.104
Pipe77	27.632	Pipe	217.577		0.6	300	72.978	69.892
Pipe78	51.280	Pipe	21.564		0.6	300	72.147	69.765
Pipe79	62.646	Pipe	74.490		0.6	300	72.233	70.733
Pipe80	63.901	Pipe	34.081		0.6	225	77.517	76.167
Pipe81	6.766	Pipe	38.442		0.6	300	75.717	74.142
Pipe85	27.093	Pipe	33.994		0.6	450	69.591	66.542
Pipe103	37.648	Pipe	99.863		0.6	225	75.879	73.732
Pipe104	13.330	Pipe	32.513		0.6	225	74.808	73.355
Pipe105	16.107	Pipe	19.152		0.6	225	74.372	72.945
Pipe78 (1)	41.670	Pipe	34.870		0.6	450	69.325	65.745
Pipe (2)	12.675	Pipe	5.105		0.6	150	72.548	72.398
Pipe83	48.752	Pipe	128.974		0.6	300	72.571	71.000
Pipe	21.889	Pipe	190.343		0.6	300	75.542	73.966
Pipe (3)	7.376	Pipe	99.678		0.6	300	75.491	73.851
Pipe (4)	76.135	Pipe	51.970		0.6	300	75.290	72.087
Pipe (5)	33.194	Pipe	99.982		0.6	300	72.826	70.622
Pipe (6)	28.855	Pipe	57.825		0.6	450	72.114	70.140
Pipe (1) (1)	8.790	Pipe	8.996		0.6	300	71.251	70.768
Pipe84	31.825	Pipe	14.201		0.6	450	71.082	69.641
Pipe84 (1)	29.150	Pipe	33.974		0.6	450	70.340	67.400

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)
Pipe76	72.978	69.967		All	
Pipe77	72.147	69.765		All	
Pipe78	69.325	67.387		All	
Pipe79	72.978	69.892		All	
Pipe80	75.717	74.292		All	
Pipe81	75.542	73.966		All	
Pipe85	69.325	65.745		All	
Pipe103	74.808	73.355		All	
Pipe104	74.372	72.945		All	
Pipe105	73.530	72.104		All	
Pipe78 (1)	65.200	64.550		All	
Pipe (2)	72.147	69.915		All	
Pipe83	72.826	70.622		All	
Pipe	75.491	73.851		All	
Pipe (3)	75.290	73.777		All	
Pipe (4)	72.826	70.622		All	
Pipe (5)	72.114	70.290		All	
Pipe (6)	71.082	69.641		All	
Pipe (1) (1)	71.082	69.791		All	11.2
Pipe84	70.340	67.400		All	
Pipe84 (1)	69.591	66.542		All	

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area (1)	Pond (2)		Time of Concentration	2992.791	100	0	100	2992.791
Catchment Area (2)	SW07		Time of Concentration	69.395	100	0	100	69.395
Catchment Area (3)	SW09		Time of Concentration	187.985	100	0	100	187.985
Catchment Area (4)	SW13		Time of Concentration	383.512	100	0	100	383.512
Catchment Area (5)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (6)	SW09		Time of Concentration	49.744	100	0	100	49.744
Catchment Area (7)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (8)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (9)	SW09		Time of Concentration	49.950	100	0	100	49.950
Catchment Area (10)	SW08		Time of Concentration	171.455	100	0	100	171.455
Catchment Area (11)	SW08		Time of Concentration	22.003	100	0	100	22.003
Catchment Area (12)	SW08		Time of Concentration	50.828	100	0	100	50.828
Catchment Area (13)	SW12		Time of Concentration	287.334	100	0	100	287.334
Catchment Area (14)	SW12		Time of Concentration	49.521	100	0	100	49.521
Catchment Area (15)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (16)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (17)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (18)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (19)	SW13		Time of Concentration	49.587	100	0	100	49.587
Catchment Area (20)	SW13		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (21)	SW13		Time of Concentration	49.904	100	0	100	49.904
Catchment Area (22)	SW04		Time of Concentration	192.726	100	0	100	192.726
Catchment Area (23)	SW01		Time of Concentration	319.304	100	0	100	319.304
Catchment Area (24)	SW02		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (25)	SW02		Time of Concentration	59.592	100	0	100	59.592
Catchment Area (26)	SW04		Time of Concentration	58.922	100	0	100	58.922
Catchment Area (27)	SW04		Time of Concentration	65.394	100	0	100	65.394
Catchment Area (28)	SW18		Time of Concentration	29.314	100	0	100	29.314
Catchment Area (29)	SW18		Time of Concentration	26.618	100	0	100	26.618
Catchment Area (30)	SW18		Time of Concentration	28.198	100	0	100	28.198
Catchment Area (31)	SW18		Time of Concentration	52.966	100	0	100	52.966
Catchment Area (32)	SW18		Time of Concentration	28.580	100	0	100	28.580
Catchment Area (33)	SW15		Time of Concentration	72.606	100	0	100	72.606

Catchment Area (34)	SW15		Time of Concentration	59.532	100	0	100	59.532
Catchment Area (35)	SW16		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (36)	SW16		Time of Concentration	25.035	100	0	100	25.035
Catchment Area (37)	SW16		Time of Concentration	32.325	100	0	100	32.325
Catchment Area (38)	SW16		Time of Concentration	49.826	100	0	100	49.826
Catchment Area (39)	SW16		Time of Concentration	61.027	100	0	100	61.027
Catchment Area (40)	SW07		Time of Concentration	30.028	100	0	100	30.028
Catchment Area (41)	SW07		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (42)	SW07		Time of Concentration	32.478	100	0	100	32.478
Catchment Area (43)	SW16		Time of Concentration	50.154	100	0	100	50.154
Catchment Area (44)	SW16		Time of Concentration	25.247	100	0	100	25.247
Catchment Area (45)	SW16		Time of Concentration	50.714	100	0	100	50.714
Catchment Area (46)	SW16		Time of Concentration	50.280	100	0	100	50.280
Catchment Area (47)	SW16		Time of Concentration	28.888	100	0	100	28.888
Catchment Area (48)	SW19		Time of Concentration	28.878	100	0	100	28.878
Catchment Area (49)	SW19		Time of Concentration	52.330	100	0	100	52.330
Catchment Area (50)	SW15		Time of Concentration	336.128	100	0	100	336.128
Catchment Area (51)	SW02		Time of Concentration	60.213	100	0	100	60.213
Catchment Area (52)	SW04		Time of Concentration	30.260	100	0	100	30.260
Catchment Area (53)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (54)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (55)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (56)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (57)	SW05		Time of Concentration	52.900	100	0	100	52.900
Catchment Area (58)	SW05		Time of Concentration	29.990	100	0	100	29.990
Catchment Area (59)	SW05		Time of Concentration	25.147	100	0	100	25.147
Catchment Area (60)	SW05		Time of Concentration	30.440	100	0	100	30.440
Catchment Area (61)	SW17		Time of Concentration	377.629	100	0	100	377.629
Catchment Area (62)	SW01		Time of Concentration	64.271	100	0	100	64.271
Catchment Area (63)	SW01		Time of Concentration	49.776	100	0	100	49.776
Catchment Area (64)	SW01		Time of Concentration	32.360	100	0	100	32.360
Catchment Area (65)	SW01		Time of Concentration	29.296	100	0	100	29.296
Catchment Area (66)	SW01		Time of Concentration	29.316	100	0	100	29.316
Catchment Area (67)	SW01		Time of Concentration	31.834	100	0	100	31.834
Catchment Area (68)	SW10		Time of Concentration	71.045	100	0	100	71.045

Catchment Area (69)	SW06		Time of Concentration	60.449	100	0	100	60.449
Catchment Area (70)	SW07		Time of Concentration	29.954	100	0	100	29.954
Catchment Area (71)	SW05		Time of Concentration	59.883	100	0	100	59.883
Catchment Area (72)	SW05		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (73)	SW07		Time of Concentration	49.868	100	0	100	49.868
Catchment Area (74)	SW07		Time of Concentration	29.925	100	0	100	29.925
Catchment Area (75)	SW07		Time of Concentration	24.964	100	0	100	24.964
Catchment Area (76)	SW07		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (77)	SW07		Time of Concentration	24.907	100	0	100	24.907
Catchment Area (78)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (79)	SW17		Time of Concentration	64.789	100	0	100	64.789
Catchment Area (80)	SW17		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (81)	SW17		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (82)	SW17		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (83)	SW17		Time of Concentration	282.356	100	0	100	282.356
Catchment Area (84)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (85)	SW08		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (86)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (87)	SW09		Time of Concentration	97.109	100	0	100	97.109
Catchment Area (88)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (89)	SW09		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (90)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (91)	SW11		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW08		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (94)	SW08		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (95)	SW08		Time of Concentration	224.847	100	0	100	224.847
Catchment Area (96)	SW09		Time of Concentration	63.853	100	0	100	63.853
Catchment Area (97)	SW01		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (98)	SW02		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (99)	SW01		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (100)	SW01		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (101)	SW12		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (102)	SW12		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (103)	SW13		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (104)	SW13		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW13		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (106)	SW13		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (107)	SW13		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (108)	SW04		Time of Concentration	107.039	100	0	100	107.039
Catchment Area (109)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (110)	SW04		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (111)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (112)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (113)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (114)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (115)	SW16		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (116)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (117)	SW18		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (118)	SW16		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (119)	SW06		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (120)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (121)	SW07		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (122)	SW19		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (123)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (124)	SW15		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (125)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (126)	SW15		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (127)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (128)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (129)	SW16		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (130)	SW07		Time of Concentration	112.330	100	0	100	112.330
Catchment Area (131)	SW01		Time of Concentration	114.186	100	0	100	114.186
Catchment Area (132)	SW04		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (133)	SW05		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (134)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (135)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (136)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (137)	SW01		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (138)	SW01		Time of Concentration	127.982	100	0	100	127.982

Catchment Area (139)	SW01		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (140)	SW05		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (141)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (142)	SW17		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (143)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (144)	SW17		Time of Concentration	114.159	100	0	100	114.159
Catchment Area (145)	SW05		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (146)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (147)	SW06		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (148)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (149)	SW17		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (150)	SW17		Time of Concentration	149.677	100	0	100	149.677
Catchment Area (151)	SW17		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (152)	SW07		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (153)	SW07		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (154)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (155)	SW08		Time of Concentration	61.008	100	0	100	61.008
Catchment Area (156)	SW08		Time of Concentration	109.472	100	0	100	109.472
Catchment Area (157)	SW08		Time of Concentration	86.763	100	0	100	86.763
Catchment Area (158)	SW08		Time of Concentration	101.661	100	0	100	101.661
Catchment Area (159)	SW09		Time of Concentration	133.676	100	0	100	133.676
Catchment Area (160)	SW09		Time of Concentration	182.250	100	0	100	182.250
Catchment Area (161)	SW09		Time of Concentration	46.189	100	0	100	46.189
Catchment Area (162)	SW10		Time of Concentration	35.938	100	0	100	35.938
Catchment Area (163)	SW11		Time of Concentration	112.253	100	0	100	112.253
Catchment Area (164)			Time of Concentration	71.966	100	0	100	71.966
Catchment Area (165)	SW11		Time of Concentration	42.697	100	0	100	42.697
Catchment Area (166)	SW12		Time of Concentration	487.938	100	0	100	487.938
Catchment Area (167)	SW13		Time of Concentration	159.380	100	0	100	159.380
Catchment Area (168)	SW18		Time of Concentration	111.400	100	0	100	111.400
Catchment Area (169)	SW06		Time of Concentration	388.453	100	0	100	388.453
Catchment Area (170)	SW06		Time of Concentration	185.242	100	0	100	185.242
Catchment Area (171)	SW14		Time of Concentration	222.580	100	0	100	222.580
Catchment Area (172)	SW15		Time of Concentration	81.589	100	0	100	81.589
Catchment Area (173)	SW15		Time of Concentration	35.625	100	0	100	35.625

Catchment Area (174)	SW15		Time of Concentration	307.649	100	0	100	307.649
Catchment Area (175)	SW16		Time of Concentration	172.940	100	0	100	172.940
Catchment Area (176)	SW07		Time of Concentration	115.793	100	0	100	115.793
Catchment Area (177)	SW07		Time of Concentration	184.412	100	0	100	184.412
Catchment Area (178)	SW07		Time of Concentration	221.828	100	0	100	221.828
Catchment Area (179)	SW17		Time of Concentration	77.552	100	0	100	77.552
Catchment Area (180)	SW01		Time of Concentration	226.667	100	0	100	226.667
Catchment Area (181)	SW01		Time of Concentration	227.765	100	0	100	227.765
Catchment Area (182)	Soakaway		Time of Concentration	942.346	100	0	100	942.346
Catchment Area (183)	Soakaway		Time of Concentration	348.976	100	0	100	348.976
Catchment Area (184)	Soakaway		Time of Concentration	135.077	100	0	100	135.077
Catchment Area (185)	Soakaway		Time of Concentration	144.708	100	0	100	144.708
Catchment Area (186)	Soakaway		Time of Concentration	672.395	100	0	100	672.395
Catchment Area (187)	Soakaway		Time of Concentration	386.986	100	0	100	386.986
Catchment Area (188)	SW17		Time of Concentration	208.056	100	0	100	208.056
Catchment Area (189)	Soakaway		Time of Concentration	604.743	100	0	100	604.743
TOTAL		**0.0**		**24062.880**				**24062.880**

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000
30.0	0.000
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW08	FSR: 30 years: +0 %: 15 mins: Winter	77.517	76.167	76.264	0.097	35.3	0.110	0.000	33.1	16.344	OK
SW01	FSR: 30 years: +0 %: 15 mins: Winter	75.879	73.732	73.934	0.202	53.9	0.229	0.000	51.4	25.015	OK
SW09	FSR: 30 years: +0 %: 15 mins: Winter	75.717	74.142	74.313	0.171	67.0	0.194	0.000	66.4	32.087	OK
SW10	FSR: 30 years: +0 %: 15 mins: Winter	75.542	73.966	74.209	0.243	72.8	0.275	0.000	70.2	35.018	OK
SW02	FSR: 30 years: +0 %: 15 mins: Winter	74.808	73.355	73.501	0.146	58.4	0.165	0.000	56.9	28.279	OK
SW03	FSR: 30 years: +0 %: 15 mins: Winter	74.372	72.945	73.060	0.115	56.9	0.130	0.000	56.1	28.268	OK
SW04	FSR: 30 years: +0 %: 15 mins: Winter	73.530	72.104	72.240	0.136	80.7	0.153	0.000	79.5	39.546	OK
SW05	FSR: 30 years: +0 %: 15 mins: Winter	72.978	69.892	70.709	0.817	163.0	2.080	0.000	147.4	79.050	Surcharged
SW18	FSR: 30 years: +0 %: 15 mins: Winter	72.571	71.000	71.076	0.076	15.4	0.086	0.000	14.6	7.438	OK
SW17	FSR: 30 years: +0 %: 15 mins: Winter	72.233	70.733	70.867	0.134	54.6	0.342	0.000	53.0	25.220	OK
SW06	FSR: 30 years: +0 %: 15 mins: Winter	72.147	69.765	69.958	0.193	172.4	0.491	0.000	160.9	90.558	OK
SW15	FSR: 30 years: +0 %: 15 mins: Winter	71.082	69.641	69.779	0.138	176.5	0.244	0.000	173.6	106.564	OK
SW16	FSR: 30 years: +0 %: 15 mins: Winter	69.591	66.542	66.744	0.202	205.0	0.356	0.000	201.9	122.116	OK
SW07	FSR: 30 years: +0 %: 15 mins: Winter	69.325	65.745	66.063	0.318	412.0	0.810	0.000	391.1	235.284	OK
SW11	FSR: 30 years: +0 %: 15 mins: Winter	75.491	73.851	74.066	0.215	79.5	0.244	0.000	77.0	39.319	OK
SW12	FSR: 30 years: +0 %: 15 mins: Winter	75.290	72.087	72.268	0.181	106.3	0.204	0.000	101.9	52.726	OK
SW13	FSR: 30 years: +0 %: 15 mins: Winter	72.826	70.622	71.047	0.425	156.9	0.752	0.000	120.8	78.818	Surcharged
SW14	FSR: 30 years: +0 %: 15 mins: Winter	72.114	70.140	70.322	0.182	127.1	0.206	0.000	122.8	81.491	OK
SW19	FSR: 30 years: +0 %: 15 mins: Winter	71.251	70.768	70.898	0.130	5.4	0.147	0.000	4.9	2.499	OK
SW20	FSR: 30 years: +0 %: 15 mins: Winter	70.340	67.400	67.583	0.183	173.6	0.324	0.000	171.1	106.498	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond (2)	FSR: 30 years: +0 %: 1440 mins: Winter	64.314	64.314	0.614	0.614	35.4	904.213	0.000	632.842	0.0	0.000	63.782	OK
Soakaway	FSR: 30 years: +0 %: 1440 mins: Winter	71.472	71.472	1.074	1.074	5.5	153.007	0.000	71.514	0.0	0.000	46.313	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe76	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	73.530	72.240	0.225	39.546	2.0	0.66	79.5	OK
Pipe77	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW05	SW06	72.978	70.709	0.300	79.050	2.1	1.96	147.4	Surcharged
Pipe78	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW06	SW07	72.147	69.958	0.186	90.558	3.5	0.67	160.9	OK
Pipe79	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW17	SW05	72.233	70.867	0.300	25.220	0.8	0.41	53.0	OK
Pipe80	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW08	SW09	77.517	76.264	0.096	16.344	2.0	0.37	33.1	OK
Pipe81	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW09	SW10	75.717	74.313	0.207	32.087	1.3	0.37	66.4	OK
Pipe85	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW16	SW07	69.591	66.744	0.260	122.116	2.1	0.36	201.9	OK
Pipe103	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01	SW02	75.879	73.934	0.174	25.015	1.6	0.99	51.4	OK
Pipe104	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW02	SW03	74.808	73.501	0.131	28.279	2.4	0.62	56.9	OK
Pipe105	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW03	SW04	74.372	73.060	0.125	28.268	2.5	0.47	56.1	OK
Pipe78 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW07	Pond (2)	69.325	66.063	0.299	235.284	3.5	0.71	391.1	OK
Pipe (2)	FSR: 30 years: +0 %: 15 mins: Summer	Pipe	Soakaway	SW06	72.548	70.664	0.015	0.000	0.0	0	0.0	OK
Pipe83	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW18	SW13	72.571	71.076	0.250	7.204	0.3	0.15	14.6	OK
Pipe	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	75.542	74.209	0.229	35.018	1.2	0.87	70.2	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Pipe (3)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW11	SW12	75.491	74.066	0.199	39.319	1.5	0.69	77.0	OK
Pipe (4)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	75.290	72.268	0.300	52.726	1.4	0.66	101.9	OK
Pipe (5)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW13	SW14	72.826	71.047	0.300	78.584	1.7	1.09	120.8	Surch arged
Pipe (6)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	72.114	70.322	0.160	81.491	2.5	0.29	122.8	OK
Pipe (1) (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW19	SW15	71.251	70.898	0.024	2.495	1.8	0.01	4.9	OK
Pipe84	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW15	SW20	71.082	69.779	0.161	106.564	3.4	0.2	173.6	OK
Pipe84 (1)	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW20	SW16	70.340	67.583	0.192	106.498	2.6	0.31	171.1	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Catchment 3 - SW Network	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW08	Outlet	Pipe80	Free Discharge
SW01	Outlet	Pipe103	Free Discharge
SW09	Outlet	Pipe81	Free Discharge
SW10	Outlet	Pipe	Free Discharge
SW02	Outlet	Pipe104	Free Discharge
SW03	Outlet	Pipe105	Free Discharge
SW04	Outlet	Pipe76	Free Discharge
SW05	Outlet	Pipe77	Free Discharge
SW18	Outlet	Pipe83	Free Discharge
SW17	Outlet	Pipe79	Free Discharge
SW06	Outlet	Pipe78	Free Discharge
SW15	Outlet	Pipe84	Free Discharge
SW16	Outlet	Pipe85	Free Discharge
SW07	Outlet	Pipe78 (1)	Free Discharge
SW11	Outlet	Pipe (3)	Free Discharge
SW12	Outlet	Pipe (4)	Free Discharge
SW13	Outlet	Pipe (5)	Free Discharge
SW14	Outlet	Pipe (6)	Free Discharge
SW19	Outlet	Pipe (1) (1)	Orifice
	Diameter (m)	0.090	
	Coefficient of Discharge	0.600	
	Invert Level (m)	70.768	
SW20	Outlet	Pipe84 (1)	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		

Pond (2)

Type : Pond

Dimensions

Exceedance Level (m)	65.200
Depth (m)	1.500
Base Level (m)	63.700
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.001
Total Volume (m³)	2496.584

Depth (m)	Area (m²)	Volume (m³)
0.000	1350.00	0.000
1.500	2000.00	2496.584

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe78 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Perimeter	Circular
Length (m)	80.277
Friction Scheme	Manning's n
n	0.033

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Catchment 3 - SW Network	Company Address:		



Soakaway

Type : Soakaway

Dimensions

Exceedance Level (m)	72.548
Depth (m)	2.150
Base Level (m)	70.398
Freeboard (mm)	0
Soakaway Shape	Rectangular
Diameter / Width (m)	10.000
Length (m)	15.000
Porosity (%)	95
Ineffective Storage Depth (m)	0.150
Number of Soakaways	1
Base Infiltration Rate (m/hr)	0.02
Safety Factor	2.0
Total Volume (m³)	285.000

Inlets

Inlet

Incoming Item(s)	Catchment Area (182)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Incoming Item(s)	Catchment Area (185) Catchment Area (187) Catchment Area (186) Catchment Area (189)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Incoming Item(s)	Catchment Area (184) Catchment Area (183)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Catchment 3 - SW Network	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe76	40.392	Pipe	18.901		0.6	225	73.530	72.104
Pipe77	27.632	Pipe	217.577		0.6	300	72.978	69.892
Pipe78	51.280	Pipe	21.564		0.6	300	72.147	69.765
Pipe79	62.646	Pipe	74.490		0.6	300	72.233	70.733
Pipe80	63.901	Pipe	34.081		0.6	225	77.517	76.167
Pipe81	6.766	Pipe	38.442		0.6	300	75.717	74.142
Pipe85	27.093	Pipe	33.994		0.6	450	69.591	66.542
Pipe103	37.648	Pipe	99.863		0.6	225	75.879	73.732
Pipe104	13.330	Pipe	32.513		0.6	225	74.808	73.355
Pipe105	16.107	Pipe	19.152		0.6	225	74.372	72.945
Pipe78 (1)	41.670	Pipe	34.870		0.6	450	69.325	65.745
Pipe (2)	12.675	Pipe	5.105		0.6	150	72.548	72.398
Pipe83	48.752	Pipe	128.974		0.6	300	72.571	71.000
Pipe	21.889	Pipe	190.343		0.6	300	75.542	73.966
Pipe (3)	7.376	Pipe	99.678		0.6	300	75.491	73.851
Pipe (4)	76.135	Pipe	51.970		0.6	300	75.290	72.087
Pipe (5)	33.194	Pipe	99.982		0.6	300	72.826	70.622
Pipe (6)	28.855	Pipe	57.825		0.6	450	72.114	70.140
Pipe (1) (1)	8.790	Pipe	8.996		0.6	300	71.251	70.768
Pipe84	31.825	Pipe	14.201		0.6	450	71.082	69.641
Pipe84 (1)	29.150	Pipe	33.974		0.6	450	70.340	67.400

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)
Pipe76	72.978	69.967		All	
Pipe77	72.147	69.765		All	
Pipe78	69.325	67.387		All	
Pipe79	72.978	69.892		All	
Pipe80	75.717	74.292		All	
Pipe81	75.542	73.966		All	
Pipe85	69.325	65.745		All	
Pipe103	74.808	73.355		All	
Pipe104	74.372	72.945		All	
Pipe105	73.530	72.104		All	
Pipe78 (1)	65.200	64.550		All	
Pipe (2)	72.147	69.915		All	
Pipe83	72.826	70.622		All	
Pipe	75.491	73.851		All	
Pipe (3)	75.290	73.777		All	
Pipe (4)	72.826	70.622		All	
Pipe (5)	72.114	70.290		All	
Pipe (6)	71.082	69.641		All	
Pipe (1) (1)	71.082	69.791		All	11.2
Pipe84	70.340	67.400		All	
Pipe84 (1)	69.591	66.542		All	

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area (1)	Pond (2)		Time of Concentration	2992.791	100	0	100	2992.791
Catchment Area (2)	SW07		Time of Concentration	69.395	100	0	100	69.395
Catchment Area (3)	SW09		Time of Concentration	187.985	100	0	100	187.985
Catchment Area (4)	SW13		Time of Concentration	383.512	100	0	100	383.512
Catchment Area (5)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (6)	SW09		Time of Concentration	49.744	100	0	100	49.744
Catchment Area (7)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (8)	SW09		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (9)	SW09		Time of Concentration	49.950	100	0	100	49.950
Catchment Area (10)	SW08		Time of Concentration	171.455	100	0	100	171.455
Catchment Area (11)	SW08		Time of Concentration	22.003	100	0	100	22.003
Catchment Area (12)	SW08		Time of Concentration	50.828	100	0	100	50.828
Catchment Area (13)	SW12		Time of Concentration	287.334	100	0	100	287.334
Catchment Area (14)	SW12		Time of Concentration	49.521	100	0	100	49.521
Catchment Area (15)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (16)	SW13		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (17)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (18)	SW13		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (19)	SW13		Time of Concentration	49.587	100	0	100	49.587
Catchment Area (20)	SW13		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (21)	SW13		Time of Concentration	49.904	100	0	100	49.904
Catchment Area (22)	SW04		Time of Concentration	192.726	100	0	100	192.726
Catchment Area (23)	SW01		Time of Concentration	319.304	100	0	100	319.304
Catchment Area (24)	SW02		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (25)	SW02		Time of Concentration	59.592	100	0	100	59.592
Catchment Area (26)	SW04		Time of Concentration	58.922	100	0	100	58.922
Catchment Area (27)	SW04		Time of Concentration	65.394	100	0	100	65.394
Catchment Area (28)	SW18		Time of Concentration	29.314	100	0	100	29.314
Catchment Area (29)	SW18		Time of Concentration	26.618	100	0	100	26.618
Catchment Area (30)	SW18		Time of Concentration	28.198	100	0	100	28.198
Catchment Area (31)	SW18		Time of Concentration	52.966	100	0	100	52.966
Catchment Area (32)	SW18		Time of Concentration	28.580	100	0	100	28.580
Catchment Area (33)	SW15		Time of Concentration	72.606	100	0	100	72.606

Catchment Area (34)	SW15		Time of Concentration	59.532	100	0	100	59.532
Catchment Area (35)	SW16		Time of Concentration	30.025	100	0	100	30.025
Catchment Area (36)	SW16		Time of Concentration	25.035	100	0	100	25.035
Catchment Area (37)	SW16		Time of Concentration	32.325	100	0	100	32.325
Catchment Area (38)	SW16		Time of Concentration	49.826	100	0	100	49.826
Catchment Area (39)	SW16		Time of Concentration	61.027	100	0	100	61.027
Catchment Area (40)	SW07		Time of Concentration	30.028	100	0	100	30.028
Catchment Area (41)	SW07		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (42)	SW07		Time of Concentration	32.478	100	0	100	32.478
Catchment Area (43)	SW16		Time of Concentration	50.154	100	0	100	50.154
Catchment Area (44)	SW16		Time of Concentration	25.247	100	0	100	25.247
Catchment Area (45)	SW16		Time of Concentration	50.714	100	0	100	50.714
Catchment Area (46)	SW16		Time of Concentration	50.280	100	0	100	50.280
Catchment Area (47)	SW16		Time of Concentration	28.888	100	0	100	28.888
Catchment Area (48)	SW19		Time of Concentration	28.878	100	0	100	28.878
Catchment Area (49)	SW19		Time of Concentration	52.330	100	0	100	52.330
Catchment Area (50)	SW15		Time of Concentration	336.128	100	0	100	336.128
Catchment Area (51)	SW02		Time of Concentration	60.213	100	0	100	60.213
Catchment Area (52)	SW04		Time of Concentration	30.260	100	0	100	30.260
Catchment Area (53)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (54)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (55)	SW05		Time of Concentration	52.109	100	0	100	52.109
Catchment Area (56)	SW05		Time of Concentration	26.509	100	0	100	26.509
Catchment Area (57)	SW05		Time of Concentration	52.900	100	0	100	52.900
Catchment Area (58)	SW05		Time of Concentration	29.990	100	0	100	29.990
Catchment Area (59)	SW05		Time of Concentration	25.147	100	0	100	25.147
Catchment Area (60)	SW05		Time of Concentration	30.440	100	0	100	30.440
Catchment Area (61)	SW17		Time of Concentration	377.629	100	0	100	377.629
Catchment Area (62)	SW01		Time of Concentration	64.271	100	0	100	64.271
Catchment Area (63)	SW01		Time of Concentration	49.776	100	0	100	49.776
Catchment Area (64)	SW01		Time of Concentration	32.360	100	0	100	32.360
Catchment Area (65)	SW01		Time of Concentration	29.296	100	0	100	29.296
Catchment Area (66)	SW01		Time of Concentration	29.316	100	0	100	29.316
Catchment Area (67)	SW01		Time of Concentration	31.834	100	0	100	31.834
Catchment Area (68)	SW10		Time of Concentration	71.045	100	0	100	71.045

Catchment Area (69)	SW06		Time of Concentration	60.449	100	0	100	60.449
Catchment Area (70)	SW07		Time of Concentration	29.954	100	0	100	29.954
Catchment Area (71)	SW05		Time of Concentration	59.883	100	0	100	59.883
Catchment Area (72)	SW05		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (73)	SW07		Time of Concentration	49.868	100	0	100	49.868
Catchment Area (74)	SW07		Time of Concentration	29.925	100	0	100	29.925
Catchment Area (75)	SW07		Time of Concentration	24.964	100	0	100	24.964
Catchment Area (76)	SW07		Time of Concentration	29.929	100	0	100	29.929
Catchment Area (77)	SW07		Time of Concentration	24.907	100	0	100	24.907
Catchment Area (78)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (79)	SW17		Time of Concentration	64.789	100	0	100	64.789
Catchment Area (80)	SW17		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (81)	SW17		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (82)	SW17		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (83)	SW17		Time of Concentration	282.356	100	0	100	282.356
Catchment Area (84)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (85)	SW08		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (86)	SW08		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (87)	SW09		Time of Concentration	97.109	100	0	100	97.109
Catchment Area (88)	SW09		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (89)	SW09		Time of Concentration	156.127	100	0	100	156.127
Catchment Area (90)	SW10		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (91)	SW11		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW11		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (93)	SW08		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (94)	SW08		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (95)	SW08		Time of Concentration	224.847	100	0	100	224.847
Catchment Area (96)	SW09		Time of Concentration	63.853	100	0	100	63.853
Catchment Area (97)	SW01		Time of Concentration	57.924	100	0	100	57.924
Catchment Area (98)	SW02		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (99)	SW01		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (100)	SW01		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (101)	SW12		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (102)	SW12		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (103)	SW13		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (104)	SW13		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW13		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (106)	SW13		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (107)	SW13		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (108)	SW04		Time of Concentration	107.039	100	0	100	107.039
Catchment Area (109)	SW04		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (110)	SW04		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (111)	SW04		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (112)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (113)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (114)	SW15		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (115)	SW16		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (116)	SW18		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (117)	SW18		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (118)	SW16		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (119)	SW06		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (120)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (121)	SW07		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (122)	SW19		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (123)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (124)	SW15		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (125)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (126)	SW15		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (127)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (128)	SW16		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (129)	SW16		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (130)	SW07		Time of Concentration	112.330	100	0	100	112.330
Catchment Area (131)	SW01		Time of Concentration	114.186	100	0	100	114.186
Catchment Area (132)	SW04		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (133)	SW05		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (134)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (135)	SW05		Time of Concentration	147.415	100	0	100	147.415
Catchment Area (136)	SW01		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (137)	SW01		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (138)	SW01		Time of Concentration	127.982	100	0	100	127.982

Catchment Area (139)	SW01		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (140)	SW05		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (141)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (142)	SW17		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (143)	SW17		Time of Concentration	81.051	100	0	100	81.051
Catchment Area (144)	SW17		Time of Concentration	114.159	100	0	100	114.159
Catchment Area (145)	SW05		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (146)	SW07		Time of Concentration	99.785	100	0	100	99.785
Catchment Area (147)	SW06		Time of Concentration	114.158	100	0	100	114.158
Catchment Area (148)	SW05		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (149)	SW17		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (150)	SW17		Time of Concentration	149.677	100	0	100	149.677
Catchment Area (151)	SW17		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (152)	SW07		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (153)	SW07		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (154)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (155)	SW08		Time of Concentration	61.008	100	0	100	61.008
Catchment Area (156)	SW08		Time of Concentration	109.472	100	0	100	109.472
Catchment Area (157)	SW08		Time of Concentration	86.763	100	0	100	86.763
Catchment Area (158)	SW08		Time of Concentration	101.661	100	0	100	101.661
Catchment Area (159)	SW09		Time of Concentration	133.676	100	0	100	133.676
Catchment Area (160)	SW09		Time of Concentration	182.250	100	0	100	182.250
Catchment Area (161)	SW09		Time of Concentration	46.189	100	0	100	46.189
Catchment Area (162)	SW10		Time of Concentration	35.938	100	0	100	35.938
Catchment Area (163)	SW11		Time of Concentration	112.253	100	0	100	112.253
Catchment Area (164)			Time of Concentration	71.966	100	0	100	71.966
Catchment Area (165)	SW11		Time of Concentration	42.697	100	0	100	42.697
Catchment Area (166)	SW12		Time of Concentration	487.938	100	0	100	487.938
Catchment Area (167)	SW13		Time of Concentration	159.380	100	0	100	159.380
Catchment Area (168)	SW18		Time of Concentration	111.400	100	0	100	111.400
Catchment Area (169)	SW06		Time of Concentration	388.453	100	0	100	388.453
Catchment Area (170)	SW06		Time of Concentration	185.242	100	0	100	185.242
Catchment Area (171)	SW14		Time of Concentration	222.580	100	0	100	222.580
Catchment Area (172)	SW15		Time of Concentration	81.589	100	0	100	81.589
Catchment Area (173)	SW15		Time of Concentration	35.625	100	0	100	35.625

Catchment Area (174)	SW15		Time of Concentration	307.649	100	0	100	307.649
Catchment Area (175)	SW16		Time of Concentration	172.940	100	0	100	172.940
Catchment Area (176)	SW07		Time of Concentration	115.793	100	0	100	115.793
Catchment Area (177)	SW07		Time of Concentration	184.412	100	0	100	184.412
Catchment Area (178)	SW07		Time of Concentration	221.828	100	0	100	221.828
Catchment Area (179)	SW17		Time of Concentration	77.552	100	0	100	77.552
Catchment Area (180)	SW01		Time of Concentration	226.667	100	0	100	226.667
Catchment Area (181)	SW01		Time of Concentration	227.765	100	0	100	227.765
Catchment Area (182)	Soakaway		Time of Concentration	942.346	100	0	100	942.346
Catchment Area (183)	Soakaway		Time of Concentration	348.976	100	0	100	348.976
Catchment Area (184)	Soakaway		Time of Concentration	135.077	100	0	100	135.077
Catchment Area (185)	Soakaway		Time of Concentration	144.708	100	0	100	144.708
Catchment Area (186)	Soakaway		Time of Concentration	672.395	100	0	100	672.395
Catchment Area (187)	Soakaway		Time of Concentration	386.986	100	0	100	386.986
Catchment Area (188)	SW17		Time of Concentration	208.056	100	0	100	208.056
Catchment Area (189)	Soakaway		Time of Concentration	604.743	100	0	100	604.743
TOTAL		**0.0**		**24062.880**				**24062.880**

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000
30.0	0.000
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW08	FSR: 100 years: +40 %: 15 mins: Winter	77.517	76.167	76.308	0.141	63.5	0.159	0.000	62.3	29.291	OK
SW01	FSR: 100 years: +40 %: 15 mins: Winter	75.879	73.732	74.983	1.251	97.0	1.415	0.000	82.7	45.034	Surcharged
SW09	FSR: 100 years: +40 %: 15 mins: Winter	75.717	74.142	74.757	0.615	123.4	0.696	0.000	114.9	58.057	Surcharged
SW10	FSR: 100 years: +40 %: 15 mins: Winter	75.542	73.966	74.616	0.650	126.3	0.735	0.000	120.5	63.352	Surcharged
SW02	FSR: 100 years: +40 %: 15 mins: Winter	74.808	73.355	73.992	0.637	95.4	0.721	0.000	83.8	51.078	Surcharged
SW03	FSR: 100 years: +40 %: 15 mins: Winter	74.372	72.945	73.550	0.605	83.8	0.684	0.000	81.0	51.112	Surcharged
SW04	FSR: 100 years: +40 %: 15 mins: Winter	73.530	72.104	73.166	1.062	117.5	1.201	0.000	107.0	71.580	Surcharged
SW05	FSR: 100 years: +40 %: 15 mins: Winter	72.978	69.892	71.475	1.583	242.4	4.028	0.000	222.7	143.041	Surcharged
SW18	FSR: 100 years: +40 %: 15 mins: Winter	72.571	71.000	72.286	1.286	27.7	1.454	0.000	18.7	13.741	Flood Risk
SW17	FSR: 100 years: +40 %: 15 mins: Winter	72.233	70.733	71.823	1.090	98.1	2.774	0.000	80.5	45.637	Surcharged
SW06	FSR: 100 years: +40 %: 15 mins: Winter	72.147	69.765	70.203	0.438	267.7	1.115	0.000	232.9	163.978	Surcharged
SW15	FSR: 100 years: +40 %: 15 mins: Winter	71.082	69.641	69.845	0.204	337.7	0.361	0.000	330.2	192.940	OK
SW16	FSR: 100 years: +40 %: 15 mins: Winter	69.591	66.542	67.436	0.894	385.3	1.580	0.000	361.6	221.408	Surcharged
SW07	FSR: 100 years: +40 %: 15 mins: Winter	69.325	65.745	66.954	1.209	682.9	3.077	0.000	620.1	426.660	Surcharged
SW11	FSR: 100 years: +40 %: 15 mins: Winter	75.491	73.851	74.272	0.421	137.3	0.476	0.000	134.6	71.164	Surcharged
SW12	FSR: 100 years: +40 %: 15 mins: Winter	75.290	72.087	73.904	1.817	187.3	2.056	0.000	163.1	95.469	Surcharged
SW13	FSR: 100 years: +40 %: 15 mins: Winter	72.826	70.622	72.263	1.641	253.2	2.899	0.000	233.9	143.039	Surcharged
SW14	FSR: 100 years: +40 %: 15 mins: Winter	72.114	70.140	70.414	0.274	245.4	0.310	0.000	241.6	147.683	OK
SW19	FSR: 100 years: +40 %: 15 mins: Winter	71.251	70.768	71.057	0.289	9.7	0.327	0.000	8.3	4.516	Flood Risk
SW20	FSR: 100 years: +40 %: 15 mins: Summer	70.340	67.400	67.665	0.265	309.3	0.469	0.000	301.3	172.125	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond (2)	FSR: 100 years: +40 %: 1440 mins: Winter	64.857	64.857	1.157	1.157	62.6	1838.380	0.000	637.164	0.0	0.000	26.364	OK
Soakaway	FSR: 100 years: +40 %: 1440 mins: Winter	72.411	72.411	2.013	2.013	9.8	286.953	0.000	71.714	1.3	11.967	-0.685	OK

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Pipe76	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW04	SW05	73.530	73.166	0.225	71.580	2.7	0.89	107.0	Surcharged
Pipe77	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW05	SW06	72.978	71.475	0.300	143.041	3.1	2.97	222.7	Surcharged
Pipe78	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW06	SW07	72.147	70.203	0.300	163.978	3.3	0.97	232.9	Surcharged
Pipe79	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW17	SW05	72.233	71.823	0.300	45.637	1.1	0.62	80.5	Surcharged
Pipe80	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW08	SW09	77.517	76.308	0.225	29.291	1.9	0.7	62.3	OK
Pipe81	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW09	SW10	75.717	74.757	0.300	58.057	1.6	0.64	114.9	Surcharged
Pipe85	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW16	SW07	69.591	67.436	0.450	221.408	2.3	0.65	361.6	Surcharged
Pipe103	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01	SW02	75.879	74.983	0.225	45.034	2.1	1.59	82.7	Surcharged
Pipe104	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW02	SW03	74.808	73.992	0.225	51.078	2.1	0.92	83.8	Surcharged
Pipe105	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW03	SW04	74.372	73.550	0.225	51.112	2.1	0.68	81.0	Surcharged
Pipe78 (1)	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW07	Pond (2)	69.325	66.873	0.450	581.064	3.9	1.13	620.7	Surcharged
Pipe (2)	FSR: 100 years: +40 %: 1440 mins: Winter	Pipe	Soakaway	SW06	72.548	72.411	0.013	11.967	1.7	0.02	1.3	OK
Pipe83	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW18	SW13	72.571	72.088	0.300	11.709	0.5	0.39	38.2	Surcharged
Pipe	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW10	SW11	75.542	74.616	0.300	63.352	1.7	1.5	120.5	Surcharged

Project:	Date: 27/06/2024		
	Designed by: Billy.Humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Catchment 3 - SW Network	Company Address:		

Pipe (3)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW11	SW12	75.491	74.272	0.300	71.164	1.9	1.21	134.6	Surcharged
Pipe (4)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW12	SW13	75.290	73.904	0.300	95.469	2.3	1.06	163.1	Surcharged
Pipe (5)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW13	SW14	72.826	72.263	0.300	142.393	3.3	2.1	233.9	Surcharged
Pipe (6)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW14	SW15	72.114	70.414	0.239	147.683	2.8	0.57	241.6	OK
Pipe (1) (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW19	SW15	71.251	71.057	0.043	4.510	1.7	0.02	8.3	Flood Risk
Pipe84	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW15	SW20	71.082	69.845	0.229	192.940	4.1	0.38	330.2	OK
Pipe84 (1)	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW20	SW16	70.340	67.653	0.450	192.881	2.2	0.58	324.4	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	1.000	Free Discharge
SW04	Outlet	3.000	Free Discharge
SW03	Outlet	1.001	Free Discharge
SW05	Outlet	1.002	Free Discharge
SW02	Outlet	2.000	Free Discharge
SW07	Outlet	5.000	Free Discharge
SW06	Outlet	1.003	Free Discharge
SW08	Outlet	1.004	Free Discharge
SW17	Outlet	9.000	Free Discharge
SW14	Outlet	8.000	Free Discharge
SW09	Outlet	6.000	Free Discharge
SW15	Outlet	1.005	Free Discharge
SW18	Outlet	10.000	Free Discharge
SW19	Outlet	9.001	Free Discharge
SW13	Outlet	6.003	Free Discharge
SW12	Outlet	6.002	Free Discharge
SW11	Outlet	6.001	Free Discharge
SW20	Outlet	9.002	Free Discharge
SW10	Outlet	7.000	Free Discharge
SW16	Outlet	1.006	Free Discharge
SW21	Outlet	11.000	Free Discharge
SW22	Outlet	9.003	Free Discharge
SW23	Outlet	9.004	Free Discharge

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Netowrk (Catchment 4)	Company Address:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	67.400
Depth (m)	1.500
Base Level (m)	65.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.776
Total Volume (m³)	2743.395

Depth (m)	Area (m²)	Volume (m³)
0.000	1417.393	0.000
1.500	2274.060	2743.395

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.006
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	9.004
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.032
Safety Factor	2.0
Perimeter	Circular
Length (m)	93.003
Friction Scheme	Manning's n
n	0.033

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	26.838	Pipe	22.089		0.6	225	76.225	74.800
1.001	16.616	Pipe	135.069		0.6	300	75.802	73.510
1.002	39.038	Pipe	21.385		0.6	300	75.369	73.387
1.003	21.399	Pipe	28.032		0.6	300	73.672	71.561
1.004	60.135	Pipe	29.578		0.6	450	73.060	70.648
1.005	56.606	Pipe	43.413		0.6	450	72.000	68.615
6.000	11.337	Pipe	15.878		0.6	225	72.214	70.789
6.001	12.713	Pipe	40.104		0.6	300	71.516	70.000
6.002	22.293	Pipe	40.096		0.6	300	71.376	69.683
6.003	14.496	Pipe	40.045		0.6	300	71.874	69.127
8.000	7.827	Pipe	7.441		0.6	300	72.298	69.817
5.000	11.667	Pipe	137.017		0.6	300	73.830	70.883
3.000	14.868	Pipe	134.804		0.6	300	76.024	73.497
2.000	16.613	Pipe	134.953		0.6	300	75.133	73.633
7.000	8.810	Pipe	135.538		0.6	300	71.241	70.065
9.000	13.520	Pipe	12.815		0.6	225	72.854	71.429
9.001	12.267	Pipe	12.947		0.6	300	71.799	70.299
9.002	33.239	Pipe	20.000		0.6	300	70.942	69.352
9.003	24.939	Pipe	20.000		0.6	300	69.287	67.690
10.000	7.479	Pipe	134.953		0.6	225	71.921	70.429
11.000	10.221	Pipe	67.614		0.6	225	69.652	67.841
1.006	17.300	Pipe	12.260		0.6	450	70.129	67.311
9.004	9.987	Pipe	18.406		0.6	300	68.163	66.443

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	75.802	73.585		Levels
1.001	75.369	73.387		None
1.002	73.672	71.561		None
1.003	73.060	70.798		Levels
1.004	72.000	68.615		None
1.005	70.129	67.311		None
6.000	71.516	70.075		Levels
6.001	71.376	69.683		None
6.002	71.874	69.127		None
6.003	72.000	68.765		Levels
8.000	72.000	68.765		Levels
5.000	73.060	70.798		Levels
3.000	75.369	73.387		None
2.000	75.802	73.510		None
7.000	71.516	70.000		None
9.000	71.799	70.374		Levels
9.001	70.942	69.352		None
9.002	69.287	67.690		None
9.003	68.163	66.443		None
10.000	71.799	70.374		Levels
11.000	69.287	67.690		None
1.006	67.400	65.900		None
9.004	67.400	65.900		None

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	3234.714	100	0	100	3234.714
Catchment Area (1)	SW21		Time of Concentration	65.151	100	0	100	65.151
Catchment Area (2)	SW21		Time of Concentration	52.357	100	0	100	52.357
Catchment Area (3)	SW21		Time of Concentration	26.621	100	0	100	26.621
Catchment Area (4)	SW21		Time of Concentration	62.162	100	0	100	62.162
Catchment Area (5)	SW20		Time of Concentration	59.916	100	0	100	59.916
Catchment Area (6)	SW20		Time of Concentration	26.572	100	0	100	26.572
Catchment Area (7)	SW18		Time of Concentration	45.079	100	0	100	45.079
Catchment Area (8)	SW17		Time of Concentration	205.587	100	0	100	205.587
Catchment Area (9)	SW18		Time of Concentration	25.011	100	0	100	25.011
Catchment Area (10)	SW18		Time of Concentration	47.752	100	0	100	47.752
Catchment Area (11)	SW04		Time of Concentration	48.900	100	0	100	48.900
Catchment Area (12)	SW04		Time of Concentration	50.418	100	0	100	50.418
Catchment Area (13)	SW18		Time of Concentration	75.000	100	0	100	75.000
Catchment Area (14)	SW06		Time of Concentration	59.950	100	0	100	59.950
Catchment Area (15)	SW06		Time of Concentration	29.975	100	0	100	29.975
Catchment Area (16)	SW06		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (17)	SW06		Time of Concentration	49.485	100	0	100	49.485
Catchment Area (18)	SW03		Time of Concentration	25.003	100	0	100	25.003
Catchment Area (19)	SW03		Time of Concentration	50.134	100	0	100	50.134
Catchment Area (20)	SW03		Time of Concentration	30.380	100	0	100	30.380
Catchment Area (21)	SW05		Time of Concentration	50.124	100	0	100	50.124
Catchment Area (22)	SW04		Time of Concentration	58.426	100	0	100	58.426
Catchment Area (23)	SW04		Time of Concentration	25.158	100	0	100	25.158
Catchment Area (24)	SW04		Time of Concentration	58.622	100	0	100	58.622
Catchment Area (25)	SW04		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (26)	SW04		Time of Concentration	26.398	100	0	100	26.398
Catchment Area (27)	SW04		Time of Concentration	234.662	100	0	100	234.662
Catchment Area (28)	SW07		Time of Concentration	49.975	100	0	100	49.975
Catchment Area (29)	SW07		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (30)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (31)	SW07		Time of Concentration	30.014	100	0	100	30.014
Catchment Area (32)	SW08		Time of Concentration	30.181	100	0	100	30.181

Catchment Area (33)	SW08		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (34)	SW14		Time of Concentration	225.870	100	0	100	225.870
Catchment Area (35)	SW14		Time of Concentration	29.851	100	0	100	29.851
Catchment Area (36)	SW07		Time of Concentration	59.450	100	0	100	59.450
Catchment Area (37)	SW07		Time of Concentration	58.168	100	0	100	58.168
Catchment Area (38)	SW15		Time of Concentration	60.627	100	0	100	60.627
Catchment Area (39)	SW14		Time of Concentration	62.758	100	0	100	62.758
Catchment Area (40)	SW14		Time of Concentration	31.429	100	0	100	31.429
Catchment Area (41)	SW15		Time of Concentration	29.646	100	0	100	29.646
Catchment Area (42)	SW14		Time of Concentration	29.377	100	0	100	29.377
Catchment Area (43)	SW14		Time of Concentration	52.140	100	0	100	52.140
Catchment Area (44)	SW14		Time of Concentration	50.235	100	0	100	50.235
Catchment Area (45)	SW14		Time of Concentration	30.063	100	0	100	30.063
Catchment Area (46)	SW14		Time of Concentration	281.452	100	0	100	281.452
Catchment Area (47)	SW09		Time of Concentration	306.368	100	0	100	306.368
Catchment Area (48)	SW12		Time of Concentration	29.971	100	0	100	29.971
Catchment Area (49)	SW12		Time of Concentration	24.806	100	0	100	24.806
Catchment Area (50)	SW12		Time of Concentration	60.280	100	0	100	60.280
Catchment Area (51)	SW10		Time of Concentration	24.998	100	0	100	24.998
Catchment Area (52)	SW10		Time of Concentration	63.987	100	0	100	63.987
Catchment Area (53)	SW10		Time of Concentration	31.574	100	0	100	31.574
Catchment Area (54)	SW16		Time of Concentration	24.401	100	0	100	24.401
Catchment Area (55)	SW16		Time of Concentration	30.152	100	0	100	30.152
Catchment Area (56)	SW13		Time of Concentration	32.909	100	0	100	32.909
Catchment Area (57)	SW13		Time of Concentration	32.365	100	0	100	32.365
Catchment Area (58)	SW16		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (59)	SW21		Time of Concentration	60.243	100	0	100	60.243
Catchment Area (60)	SW21		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (61)	SW21		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (62)	SW21		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (63)	SW15		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (64)	SW15		Time of Concentration	59.561	100	0	100	59.561
Catchment Area (65)	SW14		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (66)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (67)	SW09		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (68)	SW12		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (69)	SW12		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (70)	SW12		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (71)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (72)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (73)	SW14		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (74)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (75)	SW14		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (76)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (77)	SW14		Time of Concentration	107.019	100	0	100	107.019
Catchment Area (78)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (79)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (80)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (81)	SW15		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (82)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (83)	SW04		Time of Concentration	254.357	100	0	100	254.357
Catchment Area (84)	SW04		Time of Concentration	239.229	100	0	100	239.229
Catchment Area (85)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (86)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (87)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (88)	SW05		Time of Concentration	114.184	100	0	100	114.184
Catchment Area (89)	SW04		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (90)	SW04		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (91)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW04		Time of Concentration	106.452	100	0	100	106.452
Catchment Area (93)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (94)	SW04		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (95)	SW04		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (96)	SW04		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (97)	SW08		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (98)	SW08		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (99)	SW07		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (100)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (101)	SW02		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (102)	SW02		Time of Concentration	112.516	100	0	100	112.516

Catchment Area (103)	SW17		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (104)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW02		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (106)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (107)	SW18		Time of Concentration	65.169	100	0	100	65.169
Catchment Area (108)	SW18		Time of Concentration	155.776	100	0	100	155.776
Catchment Area (109)	SW20		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (110)	SW18		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (111)	SW06		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (112)	SW06		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (113)	SW21		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (114)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (115)	SW21		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (116)	SW21		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (117)	SW04		Time of Concentration	49.998	100	0	100	49.998
Catchment Area (118)	SW21		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (119)	SW21		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (120)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (121)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (122)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (123)	SW15		Time of Concentration	107.029	100	0	100	107.029
Catchment Area (124)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (125)	SW16		Time of Concentration	49.115	100	0	100	49.115
Catchment Area (126)	SW13		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (127)	SW10		Time of Concentration	106.986	100	0	100	106.986
Catchment Area (128)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (129)	SW07		Time of Concentration	278.399	100	0	100	278.399
Catchment Area (130)	SW07		Time of Concentration	420.980	100	0	100	420.980
Catchment Area (131)	SW07		Time of Concentration	210.875	100	0	100	210.875
Catchment Area (132)	SW04		Time of Concentration	466.677	100	0	100	466.677
Catchment Area (133)	SW04		Time of Concentration	187.990	100	0	100	187.990
Catchment Area (134)	SW04		Time of Concentration	107.305	100	0	100	107.305
Catchment Area (135)	SW04		Time of Concentration	76.794	100	0	100	76.794
Catchment Area (136)	SW04		Time of Concentration	135.893	100	0	100	135.893
Catchment Area (137)	SW04		Time of Concentration	124.792	100	0	100	124.792

Catchment Area (138)	SW04		Time of Concentration	204.258	100	0	100	204.258
Catchment Area (139)	SW01		Time of Concentration	289.245	100	0	100	289.245
Catchment Area (140)	SW02		Time of Concentration	412.533	100	0	100	412.533
Catchment Area (141)	SW18		Time of Concentration	40.272	100	0	100	40.272
Catchment Area (142)	SW18		Time of Concentration	135.900	100	0	100	135.900
Catchment Area (143)	SW18		Time of Concentration	68.553	100	0	100	68.553
Catchment Area (144)	SW17		Time of Concentration	73.356	100	0	100	73.356
Catchment Area (145)	SW19		Time of Concentration	133.069	100	0	100	133.069
Catchment Area (146)	SW20		Time of Concentration	95.335	100	0	100	95.335
Catchment Area (147)	SW20		Time of Concentration	28.248	100	0	100	28.248
Catchment Area (148)	SW21		Time of Concentration	257.088	100	0	100	257.088
Catchment Area (149)	SW21		Time of Concentration	124.642	100	0	100	124.642
Catchment Area (150)	SW22		Time of Concentration	133.976	100	0	100	133.976
Catchment Area (151)	SW14		Time of Concentration	80.753	100	0	100	80.753
Catchment Area (152)	SW14		Time of Concentration	88.027	100	0	100	88.027
Catchment Area (153)	SW14		Time of Concentration	325.292	100	0	100	325.292
Catchment Area (154)	SW14		Time of Concentration	104.068	100	0	100	104.068
Catchment Area (155)	SW14		Time of Concentration	56.353	100	0	100	56.353
Catchment Area (156)	SW05		Time of Concentration	747.065	100	0	100	747.065
Catchment Area (157)	SW06		Time of Concentration	192.222	100	0	100	192.222
Catchment Area (158)	SW08		Time of Concentration	407.669	100	0	100	407.669
Catchment Area (159)	SW08		Time of Concentration	613.428	100	0	100	613.428
Catchment Area (160)	SW08		Time of Concentration	95.691	100	0	100	95.691
Catchment Area (161)	SW11		Time of Concentration	750.230	100	0	100	750.230
Catchment Area (162)	SW09		Time of Concentration	226.513	100	0	100	226.513
Catchment Area (163)	SW13		Time of Concentration	172.672	100	0	100	172.672
Catchment Area (164)	SW13		Time of Concentration	63.172	100	0	100	63.172
Catchment Area (165)	SW18		Time of Concentration	162.700	100	0	100	162.700
Catchment Area (166)	SW10		Time of Concentration	291.590	100	0	100	291.590
Catchment Area (167)	SW15		Time of Concentration	377.939	100	0	100	377.939
Catchment Area (168)	SW09		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (169)	SW10		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (170)	SW14		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (171)	SW07		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (172)	SW04		Time of Concentration	67.550	100	0	100	67.550

Catchment Area (173)	SW02		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (174)	SW01		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (175)	SW17		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (176)	SW21		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (177)	SW18		Time of Concentration	67.550	100	0	100	67.550
TOTAL		**0.0**		**23199.114**				**23199.114**

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 2 years: +0 %: 15 mins: Winter	76.225	74.800	74.833	0.033	5.4	0.038	0.000	5.2	2.509	OK
SW04	FSR: 2 years: +0 %: 15 mins: Winter	76.024	73.497	73.659	0.162	49.2	0.183	0.000	48.4	22.812	OK
SW03	FSR: 2 years: +0 %: 15 mins: Winter	75.802	73.510	73.617	0.108	23.3	0.154	0.000	22.3	11.038	OK
SW05	FSR: 2 years: +0 %: 15 mins: Winter	75.369	73.387	73.509	0.122	84.6	0.175	0.000	82.5	40.243	OK
SW02	FSR: 2 years: +0 %: 15 mins: Winter	75.133	73.633	73.705	0.072	12.4	0.081	0.000	12.1	5.735	OK
SW07	FSR: 2 years: +0 %: 15 mins: Winter	73.830	70.883	70.998	0.115	26.0	0.130	0.000	25.3	12.041	OK
SW06	FSR: 2 years: +0 %: 15 mins: Winter	73.672	71.561	71.711	0.150	93.3	0.169	0.000	89.9	45.237	OK
SW08	FSR: 2 years: +0 %: 15 mins: Winter	73.060	70.648	70.792	0.144	135.9	0.254	0.000	132.9	66.859	OK
SW17	FSR: 2 years: +0 %: 15 mins: Winter	72.854	71.429	71.465	0.036	7.7	0.023	0.000	7.6	3.562	OK
SW14	FSR: 2 years: +0 %: 15 mins: Winter	72.298	69.817	69.882	0.065	38.6	0.073	0.000	38.5	17.861	OK
SW09	FSR: 2 years: +0 %: 15 mins: Winter	72.214	70.789	70.834	0.045	10.6	0.050	0.000	10.5	4.932	OK
SW15	FSR: 2 years: +0 %: 15 mins: Winter	72.000	68.615	68.845	0.230	230.2	0.586	0.000	218.6	113.334	OK
SW18	FSR: 2 years: +0 %: 15 mins: Winter	71.921	70.429	70.525	0.096	14.5	0.061	0.000	14.2	6.722	OK
SW19	FSR: 2 years: +0 %: 15 mins: Winter	71.799	70.299	70.356	0.057	23.8	0.036	0.000	23.6	11.221	OK
SW13	FSR: 2 years: +0 %: 15 mins: Winter	71.874	69.127	69.236	0.109	43.9	0.123	0.000	42.4	21.141	OK
SW12	FSR: 2 years: +0 %: 15 mins: Winter	71.376	69.683	69.781	0.098	38.5	0.110	0.000	37.6	18.264	OK
SW11	FSR: 2 years: +0 %: 15 mins: Winter	71.516	70.000	70.092	0.092	32.3	0.132	0.000	31.7	15.130	OK
SW20	FSR: 2 years: +0 %: 15 mins: Winter	70.942	69.352	69.419	0.068	28.8	0.043	0.000	28.2	13.603	OK
SW10	FSR: 2 years: +0 %: 15 mins: Winter	71.241	70.065	70.138	0.073	10.6	0.083	0.000	10.4	4.920	OK
SW16	FSR: 2 years: +0 %: 15 mins: Winter	70.129	67.311	67.484	0.173	221.6	0.110	0.000	217.1	114.715	OK
SW21	FSR: 2 years: +0 %: 15 mins: Winter	69.652	67.841	67.946	0.105	23.9	0.067	0.000	23.6	11.095	OK
SW22	FSR: 2 years: +0 %: 15 mins: Winter	69.287	67.690	67.787	0.097	53.9	0.062	0.000	52.5	25.628	OK
SW23	FSR: 2 years: +0 %: 15 mins: Winter	68.163	66.443	66.542	0.100	52.5	0.063	0.000	51.7	25.635	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 2 years: +0 %: 480 mins: Winter	66.168	66.168	0.268	0.268	49.3	398.293	0.000	346.318	0.0	0.000	85.482	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW01	SW03	76.225	74.833	0.033	2.509	1.4	0.05	5.2	OK
1.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW03	SW05	75.802	73.617	0.115	11.038	0.9	0.23	22.3	OK
1.002	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW05	SW06	75.369	73.509	0.136	40.243	2.7	0.34	82.5	OK
1.003	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW06	SW08	73.672	71.711	0.143	45.237	2.7	0.43	89.9	OK
1.004	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW08	SW15	73.060	70.792	0.187	66.859	2.1	0.22	132.9	OK
1.005	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW15	SW16	72.000	68.845	0.201	113.334	3.2	0.44	218.6	OK
6.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW09	SW11	72.214	70.834	0.044	4.932	1.9	0.08	10.5	OK
6.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW11	SW12	71.516	70.092	0.095	15.130	1.6	0.18	31.7	OK
6.002	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	71.376	69.781	0.103	18.264	1.7	0.21	37.6	OK
6.003	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW13	SW15	71.874	69.236	0.104	21.141	1.9	0.24	42.4	OK
8.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	72.298	69.882	0.073	17.861	2.9	0.09	38.5	OK
5.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW07	SW08	73.830	70.998	0.110	12.041	1.1	0.27	25.3	OK
3.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	76.024	73.659	0.142	22.812	1.5	0.51	48.4	OK
2.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW02	SW03	75.133	73.705	0.090	5.735	0.7	0.13	12.1	OK
7.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	71.241	70.138	0.083	4.920	0.7	0.11	10.4	OK
9.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW17	SW19	72.854	71.465	0.035	3.562	1.9	0.05	7.6	OK
9.001	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW19	SW20	71.799	70.356	0.062	11.221	2.2	0.08	23.6	OK
9.002	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW20	SW22	70.942	69.419	0.082	13.603	1.8	0.11	28.2	OK
9.003	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW22	SW23	69.287	67.787	0.098	25.628	2.6	0.21	52.5	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

10.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW18	SW19	71.921	70.525	0.091	6.722	0.9	0.32	14.2	OK
11.000	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	69.652	67.946	0.101	11.095	1.4	0.37	23.6	OK
1.006	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW16	Pond	70.129	67.484	0.137	114.715	5.3	0.23	217.1	OK
9.004	FSR: 2 years: +0 %: 15 mins: Winter	Pipe	SW23	Pond	68.163	66.542	0.100	25.635	2.5	0.2	51.7	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	1.000	Free Discharge
SW04	Outlet	3.000	Free Discharge
SW03	Outlet	1.001	Free Discharge
SW05	Outlet	1.002	Free Discharge
SW02	Outlet	2.000	Free Discharge
SW07	Outlet	5.000	Free Discharge
SW06	Outlet	1.003	Free Discharge
SW08	Outlet	1.004	Free Discharge
SW17	Outlet	9.000	Free Discharge
SW14	Outlet	8.000	Free Discharge
SW09	Outlet	6.000	Free Discharge
SW15	Outlet	1.005	Free Discharge
SW18	Outlet	10.000	Free Discharge
SW19	Outlet	9.001	Free Discharge
SW13	Outlet	6.003	Free Discharge
SW12	Outlet	6.002	Free Discharge
SW11	Outlet	6.001	Free Discharge
SW20	Outlet	9.002	Free Discharge
SW10	Outlet	7.000	Free Discharge
SW16	Outlet	1.006	Free Discharge
SW21	Outlet	11.000	Free Discharge
SW22	Outlet	9.003	Free Discharge
SW23	Outlet	9.004	Free Discharge

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Netowrk (Catchment 4)	Company Address:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	67.400
Depth (m)	1.500
Base Level (m)	65.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.776
Total Volume (m³)	2743.395

Depth (m)	Area (m²)	Volume (m³)
0.000	1417.393	0.000
1.500	2274.060	2743.395

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.006
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	9.004
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.032
Safety Factor	2.0
Perimeter	Circular
Length (m)	93.003
Friction Scheme	Manning's n
n	0.033

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	26.838	Pipe	22.089		0.6	225	76.225	74.800
1.001	16.616	Pipe	135.069		0.6	300	75.802	73.510
1.002	39.038	Pipe	21.385		0.6	300	75.369	73.387
1.003	21.399	Pipe	28.032		0.6	300	73.672	71.561
1.004	60.135	Pipe	29.578		0.6	450	73.060	70.648
1.005	56.606	Pipe	43.413		0.6	450	72.000	68.615
6.000	11.337	Pipe	15.878		0.6	225	72.214	70.789
6.001	12.713	Pipe	40.104		0.6	300	71.516	70.000
6.002	22.293	Pipe	40.096		0.6	300	71.376	69.683
6.003	14.496	Pipe	40.045		0.6	300	71.874	69.127
8.000	7.827	Pipe	7.441		0.6	300	72.298	69.817
5.000	11.667	Pipe	137.017		0.6	300	73.830	70.883
3.000	14.868	Pipe	134.804		0.6	300	76.024	73.497
2.000	16.613	Pipe	134.953		0.6	300	75.133	73.633
7.000	8.810	Pipe	135.538		0.6	300	71.241	70.065
9.000	13.520	Pipe	12.815		0.6	225	72.854	71.429
9.001	12.267	Pipe	12.947		0.6	300	71.799	70.299
9.002	33.239	Pipe	20.000		0.6	300	70.942	69.352
9.003	24.939	Pipe	20.000		0.6	300	69.287	67.690
10.000	7.479	Pipe	134.953		0.6	225	71.921	70.429
11.000	10.221	Pipe	67.614		0.6	225	69.652	67.841
1.006	17.300	Pipe	12.260		0.6	450	70.129	67.311
9.004	9.987	Pipe	18.406		0.6	300	68.163	66.443

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	75.802	73.585		Levels
1.001	75.369	73.387		None
1.002	73.672	71.561		None
1.003	73.060	70.798		Levels
1.004	72.000	68.615		None
1.005	70.129	67.311		None
6.000	71.516	70.075		Levels
6.001	71.376	69.683		None
6.002	71.874	69.127		None
6.003	72.000	68.765		Levels
8.000	72.000	68.765		Levels
5.000	73.060	70.798		Levels
3.000	75.369	73.387		None
2.000	75.802	73.510		None
7.000	71.516	70.000		None
9.000	71.799	70.374		Levels
9.001	70.942	69.352		None
9.002	69.287	67.690		None
9.003	68.163	66.443		None
10.000	71.799	70.374		Levels
11.000	69.287	67.690		None
1.006	67.400	65.900		None
9.004	67.400	65.900		None

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	3234.714	100	0	100	3234.714
Catchment Area (1)	SW21		Time of Concentration	65.151	100	0	100	65.151
Catchment Area (2)	SW21		Time of Concentration	52.357	100	0	100	52.357
Catchment Area (3)	SW21		Time of Concentration	26.621	100	0	100	26.621
Catchment Area (4)	SW21		Time of Concentration	62.162	100	0	100	62.162
Catchment Area (5)	SW20		Time of Concentration	59.916	100	0	100	59.916
Catchment Area (6)	SW20		Time of Concentration	26.572	100	0	100	26.572
Catchment Area (7)	SW18		Time of Concentration	45.079	100	0	100	45.079
Catchment Area (8)	SW17		Time of Concentration	205.587	100	0	100	205.587
Catchment Area (9)	SW18		Time of Concentration	25.011	100	0	100	25.011
Catchment Area (10)	SW18		Time of Concentration	47.752	100	0	100	47.752
Catchment Area (11)	SW04		Time of Concentration	48.900	100	0	100	48.900
Catchment Area (12)	SW04		Time of Concentration	50.418	100	0	100	50.418
Catchment Area (13)	SW18		Time of Concentration	75.000	100	0	100	75.000
Catchment Area (14)	SW06		Time of Concentration	59.950	100	0	100	59.950
Catchment Area (15)	SW06		Time of Concentration	29.975	100	0	100	29.975
Catchment Area (16)	SW06		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (17)	SW06		Time of Concentration	49.485	100	0	100	49.485
Catchment Area (18)	SW03		Time of Concentration	25.003	100	0	100	25.003
Catchment Area (19)	SW03		Time of Concentration	50.134	100	0	100	50.134
Catchment Area (20)	SW03		Time of Concentration	30.380	100	0	100	30.380
Catchment Area (21)	SW05		Time of Concentration	50.124	100	0	100	50.124
Catchment Area (22)	SW04		Time of Concentration	58.426	100	0	100	58.426
Catchment Area (23)	SW04		Time of Concentration	25.158	100	0	100	25.158
Catchment Area (24)	SW04		Time of Concentration	58.622	100	0	100	58.622
Catchment Area (25)	SW04		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (26)	SW04		Time of Concentration	26.398	100	0	100	26.398
Catchment Area (27)	SW04		Time of Concentration	234.662	100	0	100	234.662
Catchment Area (28)	SW07		Time of Concentration	49.975	100	0	100	49.975
Catchment Area (29)	SW07		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (30)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (31)	SW07		Time of Concentration	30.014	100	0	100	30.014
Catchment Area (32)	SW08		Time of Concentration	30.181	100	0	100	30.181

Catchment Area (33)	SW08		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (34)	SW14		Time of Concentration	225.870	100	0	100	225.870
Catchment Area (35)	SW14		Time of Concentration	29.851	100	0	100	29.851
Catchment Area (36)	SW07		Time of Concentration	59.450	100	0	100	59.450
Catchment Area (37)	SW07		Time of Concentration	58.168	100	0	100	58.168
Catchment Area (38)	SW15		Time of Concentration	60.627	100	0	100	60.627
Catchment Area (39)	SW14		Time of Concentration	62.758	100	0	100	62.758
Catchment Area (40)	SW14		Time of Concentration	31.429	100	0	100	31.429
Catchment Area (41)	SW15		Time of Concentration	29.646	100	0	100	29.646
Catchment Area (42)	SW14		Time of Concentration	29.377	100	0	100	29.377
Catchment Area (43)	SW14		Time of Concentration	52.140	100	0	100	52.140
Catchment Area (44)	SW14		Time of Concentration	50.235	100	0	100	50.235
Catchment Area (45)	SW14		Time of Concentration	30.063	100	0	100	30.063
Catchment Area (46)	SW14		Time of Concentration	281.452	100	0	100	281.452
Catchment Area (47)	SW09		Time of Concentration	306.368	100	0	100	306.368
Catchment Area (48)	SW12		Time of Concentration	29.971	100	0	100	29.971
Catchment Area (49)	SW12		Time of Concentration	24.806	100	0	100	24.806
Catchment Area (50)	SW12		Time of Concentration	60.280	100	0	100	60.280
Catchment Area (51)	SW10		Time of Concentration	24.998	100	0	100	24.998
Catchment Area (52)	SW10		Time of Concentration	63.987	100	0	100	63.987
Catchment Area (53)	SW10		Time of Concentration	31.574	100	0	100	31.574
Catchment Area (54)	SW16		Time of Concentration	24.401	100	0	100	24.401
Catchment Area (55)	SW16		Time of Concentration	30.152	100	0	100	30.152
Catchment Area (56)	SW13		Time of Concentration	32.909	100	0	100	32.909
Catchment Area (57)	SW13		Time of Concentration	32.365	100	0	100	32.365
Catchment Area (58)	SW16		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (59)	SW21		Time of Concentration	60.243	100	0	100	60.243
Catchment Area (60)	SW21		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (61)	SW21		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (62)	SW21		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (63)	SW15		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (64)	SW15		Time of Concentration	59.561	100	0	100	59.561
Catchment Area (65)	SW14		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (66)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (67)	SW09		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (68)	SW12		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (69)	SW12		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (70)	SW12		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (71)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (72)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (73)	SW14		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (74)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (75)	SW14		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (76)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (77)	SW14		Time of Concentration	107.019	100	0	100	107.019
Catchment Area (78)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (79)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (80)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (81)	SW15		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (82)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (83)	SW04		Time of Concentration	254.357	100	0	100	254.357
Catchment Area (84)	SW04		Time of Concentration	239.229	100	0	100	239.229
Catchment Area (85)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (86)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (87)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (88)	SW05		Time of Concentration	114.184	100	0	100	114.184
Catchment Area (89)	SW04		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (90)	SW04		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (91)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW04		Time of Concentration	106.452	100	0	100	106.452
Catchment Area (93)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (94)	SW04		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (95)	SW04		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (96)	SW04		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (97)	SW08		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (98)	SW08		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (99)	SW07		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (100)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (101)	SW02		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (102)	SW02		Time of Concentration	112.516	100	0	100	112.516

Catchment Area (103)	SW17		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (104)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW02		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (106)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (107)	SW18		Time of Concentration	65.169	100	0	100	65.169
Catchment Area (108)	SW18		Time of Concentration	155.776	100	0	100	155.776
Catchment Area (109)	SW20		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (110)	SW18		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (111)	SW06		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (112)	SW06		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (113)	SW21		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (114)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (115)	SW21		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (116)	SW21		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (117)	SW04		Time of Concentration	49.998	100	0	100	49.998
Catchment Area (118)	SW21		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (119)	SW21		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (120)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (121)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (122)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (123)	SW15		Time of Concentration	107.029	100	0	100	107.029
Catchment Area (124)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (125)	SW16		Time of Concentration	49.115	100	0	100	49.115
Catchment Area (126)	SW13		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (127)	SW10		Time of Concentration	106.986	100	0	100	106.986
Catchment Area (128)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (129)	SW07		Time of Concentration	278.399	100	0	100	278.399
Catchment Area (130)	SW07		Time of Concentration	420.980	100	0	100	420.980
Catchment Area (131)	SW07		Time of Concentration	210.875	100	0	100	210.875
Catchment Area (132)	SW04		Time of Concentration	466.677	100	0	100	466.677
Catchment Area (133)	SW04		Time of Concentration	187.990	100	0	100	187.990
Catchment Area (134)	SW04		Time of Concentration	107.305	100	0	100	107.305
Catchment Area (135)	SW04		Time of Concentration	76.794	100	0	100	76.794
Catchment Area (136)	SW04		Time of Concentration	135.893	100	0	100	135.893
Catchment Area (137)	SW04		Time of Concentration	124.792	100	0	100	124.792

Catchment Area (138)	SW04		Time of Concentration	204.258	100	0	100	204.258
Catchment Area (139)	SW01		Time of Concentration	289.245	100	0	100	289.245
Catchment Area (140)	SW02		Time of Concentration	412.533	100	0	100	412.533
Catchment Area (141)	SW18		Time of Concentration	40.272	100	0	100	40.272
Catchment Area (142)	SW18		Time of Concentration	135.900	100	0	100	135.900
Catchment Area (143)	SW18		Time of Concentration	68.553	100	0	100	68.553
Catchment Area (144)	SW17		Time of Concentration	73.356	100	0	100	73.356
Catchment Area (145)	SW19		Time of Concentration	133.069	100	0	100	133.069
Catchment Area (146)	SW20		Time of Concentration	95.335	100	0	100	95.335
Catchment Area (147)	SW20		Time of Concentration	28.248	100	0	100	28.248
Catchment Area (148)	SW21		Time of Concentration	257.088	100	0	100	257.088
Catchment Area (149)	SW21		Time of Concentration	124.642	100	0	100	124.642
Catchment Area (150)	SW22		Time of Concentration	133.976	100	0	100	133.976
Catchment Area (151)	SW14		Time of Concentration	80.753	100	0	100	80.753
Catchment Area (152)	SW14		Time of Concentration	88.027	100	0	100	88.027
Catchment Area (153)	SW14		Time of Concentration	325.292	100	0	100	325.292
Catchment Area (154)	SW14		Time of Concentration	104.068	100	0	100	104.068
Catchment Area (155)	SW14		Time of Concentration	56.353	100	0	100	56.353
Catchment Area (156)	SW05		Time of Concentration	747.065	100	0	100	747.065
Catchment Area (157)	SW06		Time of Concentration	192.222	100	0	100	192.222
Catchment Area (158)	SW08		Time of Concentration	407.669	100	0	100	407.669
Catchment Area (159)	SW08		Time of Concentration	613.428	100	0	100	613.428
Catchment Area (160)	SW08		Time of Concentration	95.691	100	0	100	95.691
Catchment Area (161)	SW11		Time of Concentration	750.230	100	0	100	750.230
Catchment Area (162)	SW09		Time of Concentration	226.513	100	0	100	226.513
Catchment Area (163)	SW13		Time of Concentration	172.672	100	0	100	172.672
Catchment Area (164)	SW13		Time of Concentration	63.172	100	0	100	63.172
Catchment Area (165)	SW18		Time of Concentration	162.700	100	0	100	162.700
Catchment Area (166)	SW10		Time of Concentration	291.590	100	0	100	291.590
Catchment Area (167)	SW15		Time of Concentration	377.939	100	0	100	377.939
Catchment Area (168)	SW09		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (169)	SW10		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (170)	SW14		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (171)	SW07		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (172)	SW04		Time of Concentration	67.550	100	0	100	67.550

Catchment Area (173)	SW02		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (174)	SW01		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (175)	SW17		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (176)	SW21		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (177)	SW18		Time of Concentration	67.550	100	0	100	67.550
TOTAL		**0.0**		**23199.114**				**23199.114**

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
30.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 30 years: +0 %: 15 mins: Winter	76.225	74.800	74.846	0.046	10.2	0.052	0.000	10.0	4.733	OK
SW04	FSR: 30 years: +0 %: 15 mins: Winter	76.024	73.497	73.745	0.248	92.9	0.280	0.000	91.5	43.080	OK
SW03	FSR: 30 years: +0 %: 15 mins: Winter	75.802	73.510	73.668	0.159	44.3	0.227	0.000	42.1	20.854	OK
SW05	FSR: 30 years: +0 %: 15 mins: Winter	75.369	73.387	73.568	0.181	159.7	0.259	0.000	156.3	76.021	OK
SW02	FSR: 30 years: +0 %: 15 mins: Winter	75.133	73.633	73.737	0.104	23.4	0.117	0.000	22.8	10.829	OK
SW07	FSR: 30 years: +0 %: 15 mins: Winter	73.830	70.883	71.051	0.168	49.1	0.190	0.000	47.9	22.744	OK
SW06	FSR: 30 years: +0 %: 15 mins: Winter	73.672	71.561	71.800	0.238	176.8	0.270	0.000	170.1	85.481	OK
SW08	FSR: 30 years: +0 %: 15 mins: Winter	73.060	70.648	70.853	0.205	257.1	0.362	0.000	252.6	126.340	OK
SW17	FSR: 30 years: +0 %: 15 mins: Winter	72.854	71.429	71.478	0.049	14.5	0.031	0.000	14.3	6.730	OK
SW14	FSR: 30 years: +0 %: 15 mins: Winter	72.298	69.817	69.904	0.087	72.8	0.099	0.000	72.5	33.696	OK
SW09	FSR: 30 years: +0 %: 15 mins: Winter	72.214	70.789	70.852	0.063	20.1	0.071	0.000	19.9	9.311	OK
SW15	FSR: 30 years: +0 %: 15 mins: Winter	72.000	68.615	68.979	0.364	437.0	0.926	0.000	413.6	214.177	OK
SW18	FSR: 30 years: +0 %: 15 mins: Winter	71.921	70.429	70.571	0.141	27.4	0.090	0.000	26.9	12.684	OK
SW19	FSR: 30 years: +0 %: 15 mins: Winter	71.799	70.299	70.379	0.080	45.0	0.051	0.000	44.8	21.179	OK
SW13	FSR: 30 years: +0 %: 15 mins: Winter	71.874	69.127	69.290	0.163	83.1	0.185	0.000	80.9	39.903	OK
SW12	FSR: 30 years: +0 %: 15 mins: Winter	71.376	69.683	69.825	0.142	72.7	0.161	0.000	71.3	34.489	OK
SW11	FSR: 30 years: +0 %: 15 mins: Winter	71.516	70.000	70.135	0.135	61.1	0.193	0.000	59.9	28.570	OK
SW20	FSR: 30 years: +0 %: 15 mins: Winter	70.942	69.352	69.446	0.094	54.5	0.060	0.000	53.6	25.672	OK
SW10	FSR: 30 years: +0 %: 15 mins: Winter	71.241	70.065	70.173	0.108	20.1	0.122	0.000	19.6	9.285	OK
SW16	FSR: 30 years: +0 %: 15 mins: Winter	70.129	67.311	67.567	0.255	419.2	0.162	0.000	412.0	216.808	OK
SW21	FSR: 30 years: +0 %: 15 mins: Winter	69.652	67.841	68.001	0.160	45.2	0.102	0.000	44.7	20.931	OK
SW22	FSR: 30 years: +0 %: 15 mins: Winter	69.287	67.690	67.830	0.140	102.1	0.089	0.000	99.8	48.370	OK
SW23	FSR: 30 years: +0 %: 15 mins: Winter	68.163	66.443	66.590	0.148	99.8	0.094	0.000	98.4	48.383	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 30 years: +0 %: 960 mins: Winter	66.460	66.460	0.560	0.560	53.4	875.621	0.000	704.979	0.0	0.000	68.083	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW01	SW03	76.225	74.846	0.065	4.733	1.2	0.09	10.0	OK
1.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW03	SW05	75.802	73.668	0.170	20.854	1.0	0.44	42.1	OK
1.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW05	SW06	75.369	73.568	0.210	76.021	3.0	0.65	156.3	OK
1.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW06	SW08	73.672	71.800	0.221	85.481	3.0	0.81	170.1	OK
1.004	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW08	SW15	73.060	70.853	0.284	126.340	2.4	0.42	252.6	OK
1.005	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW15	SW16	72.000	68.979	0.310	214.177	3.5	0.84	413.6	OK
6.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW09	SW11	72.214	70.852	0.061	9.311	2.3	0.15	19.9	OK
6.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW11	SW12	71.516	70.135	0.138	28.570	1.9	0.34	59.9	OK
6.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW12	SW13	71.376	69.825	0.153	34.489	2.0	0.41	71.3	OK
6.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW13	SW15	71.874	69.290	0.189	39.903	1.8	0.46	80.9	OK
8.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW14	SW15	72.298	69.904	0.151	33.696	2.9	0.18	72.5	OK
5.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW07	SW08	73.830	71.051	0.159	22.744	1.3	0.5	47.9	OK
3.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW04	SW05	76.024	73.745	0.215	43.080	1.7	0.96	91.5	OK
2.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW02	SW03	75.133	73.737	0.131	10.829	0.8	0.24	22.8	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

7.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW10	SW11	71.241	70.173	0.121	9.285	0.7	0.21	19.6	OK
9.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW17	SW19	72.854	71.478	0.048	6.730	2.3	0.1	14.3	OK
9.001	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW19	SW20	71.799	70.379	0.087	21.179	2.6	0.14	44.8	OK
9.002	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW20	SW22	70.942	69.446	0.117	25.672	2.1	0.21	53.6	OK
9.003	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW22	SW23	69.287	67.830	0.144	48.370	3.0	0.4	99.8	OK
10.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW18	SW19	71.921	70.571	0.133	12.684	1.1	0.6	26.9	OK
11.000	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW21	SW22	69.652	68.001	0.150	20.931	1.6	0.71	44.7	OK
1.006	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW16	Pond	70.129	67.567	0.202	216.808	6.0	0.44	412.0	OK
9.004	FSR: 30 years: +0 %: 15 mins: Winter	Pipe	SW23	Pond	68.163	66.590	0.148	48.383	2.8	0.38	98.4	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	1.000	Free Discharge
SW04	Outlet	3.000	Free Discharge
SW03	Outlet	1.001	Free Discharge
SW05	Outlet	1.002	Free Discharge
SW02	Outlet	2.000	Free Discharge
SW07	Outlet	5.000	Free Discharge
SW06	Outlet	1.003	Free Discharge
SW08	Outlet	1.004	Free Discharge
SW17	Outlet	9.000	Free Discharge
SW14	Outlet	8.000	Free Discharge
SW09	Outlet	6.000	Free Discharge
SW15	Outlet	1.005	Free Discharge
SW18	Outlet	10.000	Free Discharge
SW19	Outlet	9.001	Free Discharge
SW13	Outlet	6.003	Free Discharge
SW12	Outlet	6.002	Free Discharge
SW11	Outlet	6.001	Free Discharge
SW20	Outlet	9.002	Free Discharge
SW10	Outlet	7.000	Free Discharge
SW16	Outlet	1.006	Free Discharge
SW21	Outlet	11.000	Free Discharge
SW22	Outlet	9.003	Free Discharge
SW23	Outlet	9.004	Free Discharge

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: SW Netowrk (Catchment 4)	Company Address:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	67.400
Depth (m)	1.500
Base Level (m)	65.900
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.776
Total Volume (m³)	2743.395

Depth (m)	Area (m²)	Volume (m³)
0.000	1417.393	0.000
1.500	2274.060	2743.395

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.006
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	9.004
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Catchment Area
Bypass Destination	(None)
Capacity Type	No Restriction

Advanced

Base Infiltration Rate (m/hr)	0.032
Safety Factor	2.0
Perimeter	Circular
Length (m)	93.003
Friction Scheme	Manning's n
n	0.033

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	26.838	Pipe	22.089		0.6	225	76.225	74.800
1.001	16.616	Pipe	135.069		0.6	300	75.802	73.510
1.002	39.038	Pipe	21.385		0.6	300	75.369	73.387
1.003	21.399	Pipe	28.032		0.6	300	73.672	71.561
1.004	60.135	Pipe	29.578		0.6	450	73.060	70.648
1.005	56.606	Pipe	43.413		0.6	450	72.000	68.615
6.000	11.337	Pipe	15.878		0.6	225	72.214	70.789
6.001	12.713	Pipe	40.104		0.6	300	71.516	70.000
6.002	22.293	Pipe	40.096		0.6	300	71.376	69.683
6.003	14.496	Pipe	40.045		0.6	300	71.874	69.127
8.000	7.827	Pipe	7.441		0.6	300	72.298	69.817
5.000	11.667	Pipe	137.017		0.6	300	73.830	70.883
3.000	14.868	Pipe	134.804		0.6	300	76.024	73.497
2.000	16.613	Pipe	134.953		0.6	300	75.133	73.633
7.000	8.810	Pipe	135.538		0.6	300	71.241	70.065
9.000	13.520	Pipe	12.815		0.6	225	72.854	71.429
9.001	12.267	Pipe	12.947		0.6	300	71.799	70.299
9.002	33.239	Pipe	20.000		0.6	300	70.942	69.352
9.003	24.939	Pipe	20.000		0.6	300	69.287	67.690
10.000	7.479	Pipe	134.953		0.6	225	71.921	70.429
11.000	10.221	Pipe	67.614		0.6	225	69.652	67.841
1.006	17.300	Pipe	12.260		0.6	450	70.129	67.311
9.004	9.987	Pipe	18.406		0.6	300	68.163	66.443

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock
1.000	75.802	73.585		Levels
1.001	75.369	73.387		None
1.002	73.672	71.561		None
1.003	73.060	70.798		Levels
1.004	72.000	68.615		None
1.005	70.129	67.311		None
6.000	71.516	70.075		Levels
6.001	71.376	69.683		None
6.002	71.874	69.127		None
6.003	72.000	68.765		Levels
8.000	72.000	68.765		Levels
5.000	73.060	70.798		Levels
3.000	75.369	73.387		None
2.000	75.802	73.510		None
7.000	71.516	70.000		None
9.000	71.799	70.374		Levels
9.001	70.942	69.352		None
9.002	69.287	67.690		None
9.003	68.163	66.443		None
10.000	71.799	70.374		Levels
11.000	69.287	67.690		None
1.006	67.400	65.900		None
9.004	67.400	65.900		None

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (m²)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (m²)
Catchment Area	Pond		Time of Concentration	3234.714	100	0	100	3234.714
Catchment Area (1)	SW21		Time of Concentration	65.151	100	0	100	65.151
Catchment Area (2)	SW21		Time of Concentration	52.357	100	0	100	52.357
Catchment Area (3)	SW21		Time of Concentration	26.621	100	0	100	26.621
Catchment Area (4)	SW21		Time of Concentration	62.162	100	0	100	62.162
Catchment Area (5)	SW20		Time of Concentration	59.916	100	0	100	59.916
Catchment Area (6)	SW20		Time of Concentration	26.572	100	0	100	26.572
Catchment Area (7)	SW18		Time of Concentration	45.079	100	0	100	45.079
Catchment Area (8)	SW17		Time of Concentration	205.587	100	0	100	205.587
Catchment Area (9)	SW18		Time of Concentration	25.011	100	0	100	25.011
Catchment Area (10)	SW18		Time of Concentration	47.752	100	0	100	47.752
Catchment Area (11)	SW04		Time of Concentration	48.900	100	0	100	48.900
Catchment Area (12)	SW04		Time of Concentration	50.418	100	0	100	50.418
Catchment Area (13)	SW18		Time of Concentration	75.000	100	0	100	75.000
Catchment Area (14)	SW06		Time of Concentration	59.950	100	0	100	59.950
Catchment Area (15)	SW06		Time of Concentration	29.975	100	0	100	29.975
Catchment Area (16)	SW06		Time of Concentration	24.997	100	0	100	24.997
Catchment Area (17)	SW06		Time of Concentration	49.485	100	0	100	49.485
Catchment Area (18)	SW03		Time of Concentration	25.003	100	0	100	25.003
Catchment Area (19)	SW03		Time of Concentration	50.134	100	0	100	50.134
Catchment Area (20)	SW03		Time of Concentration	30.380	100	0	100	30.380
Catchment Area (21)	SW05		Time of Concentration	50.124	100	0	100	50.124
Catchment Area (22)	SW04		Time of Concentration	58.426	100	0	100	58.426
Catchment Area (23)	SW04		Time of Concentration	25.158	100	0	100	25.158
Catchment Area (24)	SW04		Time of Concentration	58.622	100	0	100	58.622
Catchment Area (25)	SW04		Time of Concentration	25.000	100	0	100	25.000
Catchment Area (26)	SW04		Time of Concentration	26.398	100	0	100	26.398
Catchment Area (27)	SW04		Time of Concentration	234.662	100	0	100	234.662
Catchment Area (28)	SW07		Time of Concentration	49.975	100	0	100	49.975
Catchment Area (29)	SW07		Time of Concentration	30.088	100	0	100	30.088
Catchment Area (30)	SW07		Time of Concentration	50.000	100	0	100	50.000
Catchment Area (31)	SW07		Time of Concentration	30.014	100	0	100	30.014
Catchment Area (32)	SW08		Time of Concentration	30.181	100	0	100	30.181

Catchment Area (33)	SW08		Time of Concentration	60.333	100	0	100	60.333
Catchment Area (34)	SW14		Time of Concentration	225.870	100	0	100	225.870
Catchment Area (35)	SW14		Time of Concentration	29.851	100	0	100	29.851
Catchment Area (36)	SW07		Time of Concentration	59.450	100	0	100	59.450
Catchment Area (37)	SW07		Time of Concentration	58.168	100	0	100	58.168
Catchment Area (38)	SW15		Time of Concentration	60.627	100	0	100	60.627
Catchment Area (39)	SW14		Time of Concentration	62.758	100	0	100	62.758
Catchment Area (40)	SW14		Time of Concentration	31.429	100	0	100	31.429
Catchment Area (41)	SW15		Time of Concentration	29.646	100	0	100	29.646
Catchment Area (42)	SW14		Time of Concentration	29.377	100	0	100	29.377
Catchment Area (43)	SW14		Time of Concentration	52.140	100	0	100	52.140
Catchment Area (44)	SW14		Time of Concentration	50.235	100	0	100	50.235
Catchment Area (45)	SW14		Time of Concentration	30.063	100	0	100	30.063
Catchment Area (46)	SW14		Time of Concentration	281.452	100	0	100	281.452
Catchment Area (47)	SW09		Time of Concentration	306.368	100	0	100	306.368
Catchment Area (48)	SW12		Time of Concentration	29.971	100	0	100	29.971
Catchment Area (49)	SW12		Time of Concentration	24.806	100	0	100	24.806
Catchment Area (50)	SW12		Time of Concentration	60.280	100	0	100	60.280
Catchment Area (51)	SW10		Time of Concentration	24.998	100	0	100	24.998
Catchment Area (52)	SW10		Time of Concentration	63.987	100	0	100	63.987
Catchment Area (53)	SW10		Time of Concentration	31.574	100	0	100	31.574
Catchment Area (54)	SW16		Time of Concentration	24.401	100	0	100	24.401
Catchment Area (55)	SW16		Time of Concentration	30.152	100	0	100	30.152
Catchment Area (56)	SW13		Time of Concentration	32.909	100	0	100	32.909
Catchment Area (57)	SW13		Time of Concentration	32.365	100	0	100	32.365
Catchment Area (58)	SW16		Time of Concentration	29.987	100	0	100	29.987
Catchment Area (59)	SW21		Time of Concentration	60.243	100	0	100	60.243
Catchment Area (60)	SW21		Time of Concentration	30.230	100	0	100	30.230
Catchment Area (61)	SW21		Time of Concentration	49.999	100	0	100	49.999
Catchment Area (62)	SW21		Time of Concentration	30.000	100	0	100	30.000
Catchment Area (63)	SW15		Time of Concentration	60.000	100	0	100	60.000
Catchment Area (64)	SW15		Time of Concentration	59.561	100	0	100	59.561
Catchment Area (65)	SW14		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (66)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (67)	SW09		Time of Concentration	99.785	100	0	100	99.785

Catchment Area (68)	SW12		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (69)	SW12		Time of Concentration	146.984	100	0	100	146.984
Catchment Area (70)	SW12		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (71)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (72)	SW14		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (73)	SW14		Time of Concentration	90.464	100	0	100	90.464
Catchment Area (74)	SW14		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (75)	SW14		Time of Concentration	90.502	100	0	100	90.502
Catchment Area (76)	SW14		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (77)	SW14		Time of Concentration	107.019	100	0	100	107.019
Catchment Area (78)	SW07		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (79)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (80)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (81)	SW15		Time of Concentration	57.919	100	0	100	57.919
Catchment Area (82)	SW14		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (83)	SW04		Time of Concentration	254.357	100	0	100	254.357
Catchment Area (84)	SW04		Time of Concentration	239.229	100	0	100	239.229
Catchment Area (85)	SW03		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (86)	SW03		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (87)	SW03		Time of Concentration	70.235	100	0	100	70.235
Catchment Area (88)	SW05		Time of Concentration	114.184	100	0	100	114.184
Catchment Area (89)	SW04		Time of Concentration	55.281	100	0	100	55.281
Catchment Area (90)	SW04		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (91)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (92)	SW04		Time of Concentration	106.452	100	0	100	106.452
Catchment Area (93)	SW04		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (94)	SW04		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (95)	SW04		Time of Concentration	147.345	100	0	100	147.345
Catchment Area (96)	SW04		Time of Concentration	114.156	100	0	100	114.156
Catchment Area (97)	SW08		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (98)	SW08		Time of Concentration	57.898	100	0	100	57.898
Catchment Area (99)	SW07		Time of Concentration	143.023	100	0	100	143.023
Catchment Area (100)	SW07		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (101)	SW02		Time of Concentration	123.948	100	0	100	123.948
Catchment Area (102)	SW02		Time of Concentration	112.516	100	0	100	112.516

Catchment Area (103)	SW17		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (104)	SW17		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (105)	SW02		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (106)	SW06		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (107)	SW18		Time of Concentration	65.169	100	0	100	65.169
Catchment Area (108)	SW18		Time of Concentration	155.776	100	0	100	155.776
Catchment Area (109)	SW20		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (110)	SW18		Time of Concentration	65.189	100	0	100	65.189
Catchment Area (111)	SW06		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (112)	SW06		Time of Concentration	145.656	100	0	100	145.656
Catchment Area (113)	SW21		Time of Concentration	107.015	100	0	100	107.015
Catchment Area (114)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (115)	SW21		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (116)	SW21		Time of Concentration	113.970	100	0	100	113.970
Catchment Area (117)	SW04		Time of Concentration	49.998	100	0	100	49.998
Catchment Area (118)	SW21		Time of Concentration	107.013	100	0	100	107.013
Catchment Area (119)	SW21		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (120)	SW21		Time of Concentration	97.104	100	0	100	97.104
Catchment Area (121)	SW15		Time of Concentration	127.982	100	0	100	127.982
Catchment Area (122)	SW15		Time of Concentration	98.230	100	0	100	98.230
Catchment Area (123)	SW15		Time of Concentration	107.029	100	0	100	107.029
Catchment Area (124)	SW16		Time of Concentration	61.974	100	0	100	61.974
Catchment Area (125)	SW16		Time of Concentration	49.115	100	0	100	49.115
Catchment Area (126)	SW13		Time of Concentration	108.861	100	0	100	108.861
Catchment Area (127)	SW10		Time of Concentration	106.986	100	0	100	106.986
Catchment Area (128)	SW10		Time of Concentration	112.516	100	0	100	112.516
Catchment Area (129)	SW07		Time of Concentration	278.399	100	0	100	278.399
Catchment Area (130)	SW07		Time of Concentration	420.980	100	0	100	420.980
Catchment Area (131)	SW07		Time of Concentration	210.875	100	0	100	210.875
Catchment Area (132)	SW04		Time of Concentration	466.677	100	0	100	466.677
Catchment Area (133)	SW04		Time of Concentration	187.990	100	0	100	187.990
Catchment Area (134)	SW04		Time of Concentration	107.305	100	0	100	107.305
Catchment Area (135)	SW04		Time of Concentration	76.794	100	0	100	76.794
Catchment Area (136)	SW04		Time of Concentration	135.893	100	0	100	135.893
Catchment Area (137)	SW04		Time of Concentration	124.792	100	0	100	124.792

Catchment Area (138)	SW04		Time of Concentration	204.258	100	0	100	204.258
Catchment Area (139)	SW01		Time of Concentration	289.245	100	0	100	289.245
Catchment Area (140)	SW02		Time of Concentration	412.533	100	0	100	412.533
Catchment Area (141)	SW18		Time of Concentration	40.272	100	0	100	40.272
Catchment Area (142)	SW18		Time of Concentration	135.900	100	0	100	135.900
Catchment Area (143)	SW18		Time of Concentration	68.553	100	0	100	68.553
Catchment Area (144)	SW17		Time of Concentration	73.356	100	0	100	73.356
Catchment Area (145)	SW19		Time of Concentration	133.069	100	0	100	133.069
Catchment Area (146)	SW20		Time of Concentration	95.335	100	0	100	95.335
Catchment Area (147)	SW20		Time of Concentration	28.248	100	0	100	28.248
Catchment Area (148)	SW21		Time of Concentration	257.088	100	0	100	257.088
Catchment Area (149)	SW21		Time of Concentration	124.642	100	0	100	124.642
Catchment Area (150)	SW22		Time of Concentration	133.976	100	0	100	133.976
Catchment Area (151)	SW14		Time of Concentration	80.753	100	0	100	80.753
Catchment Area (152)	SW14		Time of Concentration	88.027	100	0	100	88.027
Catchment Area (153)	SW14		Time of Concentration	325.292	100	0	100	325.292
Catchment Area (154)	SW14		Time of Concentration	104.068	100	0	100	104.068
Catchment Area (155)	SW14		Time of Concentration	56.353	100	0	100	56.353
Catchment Area (156)	SW05		Time of Concentration	747.065	100	0	100	747.065
Catchment Area (157)	SW06		Time of Concentration	192.222	100	0	100	192.222
Catchment Area (158)	SW08		Time of Concentration	407.669	100	0	100	407.669
Catchment Area (159)	SW08		Time of Concentration	613.428	100	0	100	613.428
Catchment Area (160)	SW08		Time of Concentration	95.691	100	0	100	95.691
Catchment Area (161)	SW11		Time of Concentration	750.230	100	0	100	750.230
Catchment Area (162)	SW09		Time of Concentration	226.513	100	0	100	226.513
Catchment Area (163)	SW13		Time of Concentration	172.672	100	0	100	172.672
Catchment Area (164)	SW13		Time of Concentration	63.172	100	0	100	63.172
Catchment Area (165)	SW18		Time of Concentration	162.700	100	0	100	162.700
Catchment Area (166)	SW10		Time of Concentration	291.590	100	0	100	291.590
Catchment Area (167)	SW15		Time of Concentration	377.939	100	0	100	377.939
Catchment Area (168)	SW09		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (169)	SW10		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (170)	SW14		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (171)	SW07		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (172)	SW04		Time of Concentration	67.550	100	0	100	67.550

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

Catchment Area (173)	SW02		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (174)	SW01		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (175)	SW17		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (176)	SW21		Time of Concentration	67.550	100	0	100	67.550
Catchment Area (177)	SW18		Time of Concentration	67.550	100	0	100	67.550
TOTAL		**0.0**		**23199.114**				**23199.114**

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.324
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FSR: 100 years: +40 %: 15 mins: Winter	76.225	74.800	74.860	0.060	18.5	0.068	0.000	18.3	8.535	OK
SW04	FSR: 100 years: +40 %: 15 mins: Winter	76.024	73.497	74.652	1.155	167.8	1.307	0.000	149.9	77.705	Surcharged
SW03	FSR: 100 years: +40 %: 15 mins: Winter	75.802	73.510	74.313	0.803	67.6	1.150	0.000	46.3	37.844	Surcharged
SW05	FSR: 100 years: +40 %: 15 mins: Winter	75.369	73.387	74.275	0.888	243.4	1.271	0.000	224.1	137.325	Surcharged
SW02	FSR: 100 years: +40 %: 15 mins: Winter	75.133	73.633	74.330	0.697	42.2	0.788	0.000	28.6	19.616	Surcharged
SW07	FSR: 100 years: +40 %: 15 mins: Winter	73.830	70.883	71.147	0.264	88.7	0.299	0.000	86.0	40.934	OK
SW06	FSR: 100 years: +40 %: 15 mins: Winter	73.672	71.561	72.504	0.943	261.1	1.066	0.000	253.0	154.567	Surcharged
SW08	FSR: 100 years: +40 %: 15 mins: Winter	73.060	70.648	71.057	0.409	409.6	0.723	0.000	348.0	228.085	OK
SW17	FSR: 100 years: +40 %: 15 mins: Winter	72.854	71.429	71.497	0.068	26.2	0.043	0.000	25.9	12.169	OK
SW14	FSR: 100 years: +40 %: 15 mins: Winter	72.298	69.817	70.492	0.676	131.4	0.764	0.000	123.6	60.872	Surcharged
SW09	FSR: 100 years: +40 %: 15 mins: Winter	72.214	70.789	70.869	0.080	36.3	0.091	0.000	35.0	16.776	OK
SW15	FSR: 100 years: +40 %: 15 mins: Winter	72.000	68.615	70.324	1.709	630.1	4.351	0.000	614.1	387.636	Surcharged
SW18	FSR: 100 years: +40 %: 15 mins: Winter	71.921	70.429	70.673	0.243	49.4	0.155	0.000	48.6	22.886	Surcharged
SW19	FSR: 100 years: +40 %: 15 mins: Winter	71.799	70.299	70.412	0.113	81.4	0.072	0.000	81.0	38.244	OK
SW13	FSR: 100 years: +40 %: 15 mins: Winter	71.874	69.127	70.503	1.376	110.3	1.556	0.000	127.9	72.266	Surcharged
SW12	FSR: 100 years: +40 %: 15 mins: Winter	71.376	69.683	70.705	1.022	105.0	1.156	0.000	89.0	62.434	Surcharged
SW11	FSR: 100 years: +40 %: 15 mins: Winter	71.516	70.000	70.826	0.826	94.6	1.182	0.000	81.9	51.747	Surcharged
SW20	FSR: 100 years: +40 %: 15 mins: Winter	70.942	69.352	69.482	0.130	98.5	0.083	0.000	97.1	46.361	OK
SW10	FSR: 100 years: +40 %: 15 mins: Winter	71.241	70.065	70.828	0.763	36.2	0.863	0.000	20.7	16.897	Surcharged
SW16	FSR: 100 years: +40 %: 15 mins: Winter	70.129	67.311	67.654	0.343	624.2	0.218	0.000	620.8	392.319	OK

SW21	FSR: 100 years: +40 %: 15 mins: Winter	69.652	67.841	68.244	0.403	81.6	0.256	0.000	79.7	37.794	Surcharged
SW22	FSR: 100 years: +40 %: 15 mins: Winter	69.287	67.690	67.898	0.209	183.8	0.133	0.000	179.7	87.356	OK
SW23	FSR: 100 years: +40 %: 1440 mins: Winter	68.163	66.443	66.993	0.550	11.0	0.350	0.000	11.0	373.679	Surcharged

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 100 years: +40 %: 1440 mins: Winter	66.993	66.993	1.093	1.093	69.9	1870.690	0.000	1067.167	0.0	0.000	31.811	OK

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW01	SW03	76.225	74.860	0.225	8.535	1.4	0.16	18.3	OK
1.001	FSR: 100 years: +40 %: 30 mins: Winter	Pipe	SW03	SW05	75.802	73.701	0.204	51.381	1.1	0.58	55.7	OK
1.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW05	SW06	75.369	74.275	0.300	137.325	3.2	0.93	224.1	Surcharged
1.003	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW06	SW08	73.672	72.504	0.300	154.567	3.6	1.2	253.0	Surcharged
1.004	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW08	SW15	73.060	70.938	0.450	203.572	2.3	0.61	364.1	OK
1.005	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW15	SW16	72.000	70.324	0.450	387.636	3.9	1.25	614.1	Surcharged
6.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW09	SW11	72.214	70.869	0.225	16.776	1.9	0.27	35.0	OK
6.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW11	SW12	71.516	70.826	0.300	51.674	1.6	0.47	81.9	Surcharged
6.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW12	SW13	71.376	70.705	0.300	62.434	1.7	0.51	89.0	Surcharged
6.003	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW13	SW15	71.874	70.503	0.300	72.266	1.9	0.73	127.9	Surcharged
8.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW14	SW15	72.298	70.492	0.300	60.872	3.3	0.3	123.6	Surcharged
5.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW07	SW08	73.830	71.147	0.261	40.934	1.3	0.91	86.0	OK
3.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW04	SW05	76.024	74.652	0.300	77.705	2.1	1.57	149.9	Surcharged
2.000	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW02	SW03	75.133	74.085	0.300	17.504	0.6	0.3	28.9	Surcharged

Project:	Date: 24/06/2024		
	Designed by: billy.humphreys	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: SW Netowrk (Catchment 4)	Company Address:		

7.000	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	SW10	SW11	71.241	70.518	0.300	15.017	0.6	0.29	27.7	Surcharged
9.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW17	SW19	72.854	71.497	0.066	12.169	2.7	0.18	25.9	OK
9.001	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW19	SW20	71.799	70.412	0.122	38.244	3.0	0.26	81.0	OK
9.002	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW20	SW22	70.942	69.482	0.169	46.361	2.4	0.39	97.1	OK
9.003	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW22	SW23	69.287	67.898	0.218	87.356	3.3	0.72	179.7	OK
10.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW18	SW19	71.921	70.673	0.213	22.886	1.2	1.09	48.6	Surcharged
11.000	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW21	SW22	69.652	68.244	0.225	37.794	2.0	1.26	79.7	Surcharged
1.006	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW16	Pond	70.129	67.654	0.291	392.319	6.2	0.67	620.8	OK
9.004	FSR: 100 years: +40 %: 15 mins: Winter	Pipe	SW23	Pond	68.163	66.670	0.214	87.356	3.3	0.68	177.1	OK

Appendix D
Communication

- Wrexham County Borough Council (LLFA)

Tommy Thompson

From:	Cathryn Hughes <Cathryn.Hughes@wrexham.gov.uk>
Sent:	08 January 2024 16:22
To:	Tommy Thompson
Cc:	Darren Williams; Clare Whiting; Kevin Edwards; SAB
Subject:	FW: LLFA Drainage Consultation - Erlas Park
Attachments:	Greenfield Runofff Rate.docx; 784-B024030-TTE-00-XX-DR-UD-40-P01-Strategic masterplan - Preferred option.pdf; ERLP-ACE-00-00-DR-C-0002 - Existing Greenfield Catchment Area.pdf

Dear Mr Thompson,
I have been passed your email by Darren Williams, Chief Officer for the Environment and Technical Department at Wrexham Council. Thank you for reaching out to discuss your drainage proposal so early in your design. At this stage, with the information provided, I do not feel able to provide an agreement in principle to this design, but there are a number of comments that I wish to make which are outlined below.

I believe that infiltration would be a suitable method for surface water management on this site as conditions at other sites in the area allow for this. However, I would like to see a multiple step SuDS train within the development rather than a reliance on three main SuDS ponds. This would be to meet the biodiversity, water quality and amenity elements of the SAB application. The infiltration basins themselves, whilst on topographical gradient, should not be too much of an issue as long as an exceedance flow path can be provided within the red line boundary of the planning permission.

A discharge to watercourse would be acceptable if you can provide evidence as to why infiltration was not possible. The statutory guidance notes that there should be 1 m clearance between the base of infiltration structures and the water table throughout the year, so I would recommend carrying out 12 months of tests to be submitted with the SAB application. If it were to be found that the development must discharge to watercourse, the surface water would ideally go through some sort of treatment within SuDS features before it entered the watercourse. This could be achieved by reed beds in a swale system for example.

Thank you for outlining your plans for foul sewerage on the site. I should note that Wrexham Council LLFA would object to on-site wastewater treatment unless sufficient dilution could be achieved throughout the year. This would be on grounds of water quality.

I would be happy to provide a further judgement on the drainage strategy when it becomes available. In addition, when you are ready to start the SAB application process, please email the team at SAB@wrexham.gov.uk.

Kind regards,

Cathryn Hughes
Swyddog Llifogydd
Flood Officer

BSc (Hons) Earth and Environmental Science, MSc Sustainable Water Management.

01978 729639 or 07789 745497
Cyngor Bwrdeistref Sirol Wrecsam, Adran Amgylchedd a Thechnegol, De Ffordd yr Abaty, Ystad Ddiwydiannol Wrecsam, Wrecsam LL13 9PW
Wrexham County Borough Council, Environment & Technical Department, Abbey Road South, Wrexham Industrial Estate, Wrexham LL13 9PW
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facebook.com/cyngorwrecsam | facebook.com/wrexhamcouncil

From: Clare Whiting <Clare.Whiting@wrexham.gov.uk>
Sent: 08 January 2024 12:27
To: Kevin Edwards <Kevin.Edwards@wrexham.gov.uk>; Cathryn Hughes <Cathryn.Hughes@wrexham.gov.uk>
Subject: FW: LLFA Drainage Consultation - Erlas Park

Kev/Cathryn

Can you respond and copy us in, please.

Thanks
Clare

Clare Whiting
Ysgrifenyddes i Darren Williams, Prif Swyddog Amgylchedd a Thechnegol/
Secretary to Darren Williams, Chief Officer Environment & Technical

01978 729701
Cyngor Bwrdeistref Sirol Wrecsam, Adran Amgylchedd a Thechnegol, De Ffordd yr Abaty, Ystad Ddiwydiannol Wrecsam, Wrecsam LL13 9PW
Wrexham County Borough Council, Environment & Technical Department, Abbey Road South, Wrexham Industrial Estate, Wrexham LL13 9PW
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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: 05 January 2024 16:46
To: Darren Williams <Darren.Williams@wrexham.gov.uk>
Subject: LLFA Drainage Consultation - Erlas Park

Good afternoon Darren,

Apologies if you are not the right person to send this to, I was looking through the Council website but struggled to find an appropriate email for contacting the council regarding proposed drainage matters for planning.
If this is not your area can you please pass this email onto someone within the councils drainage / water team.

I am in the process of developing a drainage strategy for a new development off Cefn Road. The proposed site is roughly 49.44 hectares, greenfield and it's estimated that when built out the development will have an impermeable are of 16.5a. The development will consist of 900 new houses, several sports pitches and a new school and I would like to get the drainage principles agreed prior to our planning submission. Draft copy of the strategic masterplan attached for information.

The sports pitches will be given new land drainage and discharged to ground via soakaway.

It is intended for the remaining surface water drainage to drain via a gravity system to two large infiltration basins located along the eastern site boundary. These basins have been sized using an infiltration rate derived from a nearby test location. Further testing is proposed at the basin locations to firm up the basin design and confirm ground water levels prior to submitting to the SAB for approval.

My concern is that the only viable location for the basins is to an area where the topography is quite steep, which means as we cut the new basins into the hillside, the base on the north side will be approximately 3-4m below existing ground levels. The basins have been designed to provide 300mm freeboard above the 100 year +CC storm and infiltrate to ground. Should groundwater be higher than expected or, at the depth noted above infiltration rates are not favourable, we would like to discharge to a nearby watercourse at a greenfield runoff rate.
We have used the ICP SuDS tool within InfoDrainage to estimate runoff rates which has confirmed that QBAR for the site is 5.6l/s. Print out attached for your information.

I have used site topographical information and lidar information to assess the existing catchment which drains to the existing watercourse which is approximately 22.6 hectares. PDF attached for reference showing the existing catchment, drain location and proposed basins.
Subject to confirmation of the watercourse / drain suitability and as noted above, confirmation of infiltration rates and groundwater levels at the proposed basin locations we would like to attenuate the surface water flows discharge into the watercourse at a rate of 126l/s.

The foul drainage has not yet been finalised; we are in discussions with Welsh Water regarding this. There is an existing 1050dia combined sewer which runs through the site, this is believed to be at capacity and WW are currently undertaking a capacity assessment.
Should there be no spare capacity within the combined sewer then an option which is being considered as an alternative is to provide a new on-site treatment works. This would treat the effluent and discharge the treated flows into either a drainage field or the same watercourse as the surface water.

The site is not located within a Groundwater Source Protection Zone (SPZ) and located within Flood Zone 1.

Can you please confirm if this will be acceptable to Wrexham Council acting as the lead Local Flood Authority for this area and let me know if you have any comments?

Please do not hesitate to contact me if you require anything further or would like to discuss any of the above.

Regards,

Tommy Thompson **IEng, MICE**
Associate Civil Engineer
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- Welsh Water

Tommy Thompson

Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

---

From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: 01 August 2024 15:52
To: Tommy Thompson <tommy.thompson@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

Thank you for the below queries, and apologies I'd not got in touch to advise receipt of these. I have consulted numerous colleagues and have the below comments in red. Apologies I've not yet had a response on points 2 and 3, in regards to point 3 I have asked our design engineers for their feedback on this. I will advise further once I have more clarity on these points however hopefully the below responses will be of use in the meantime.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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---

From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Friday, July 12, 2024 2:57 PM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Good afternoon Jake,

Thank you for sending this through, I have some queries which you can hopefully assist with.

- The modelling shows the existing network floods at 2,609 nodes with 441 having flooding greater than 25m3 but doesn't seem to have ever been reported. The existing model suggests 11,025m3 of flooding ? (Puts some doubt into the accuracy of their existing model?). The model has undergone dry weather, storm flow and historical verification to understand the validity of the model prior to undertaking the hydraulic detriment assessment. This ultimately compares model predictions against observed data i.e. flow survey data, telemetry, historical data sets, reported flooding etc. The DWF and Storm verification plots are contained in the rear of the report which observes model predictions against observed data.

- They've run the future sims assuming 1,100 units. However, we notified Welsh Water in December last year, before the modelling work had started that it had been reduced to 900 total. Whilst this does not fix the existing flooding issues it reduces the population by nearly a 5th. (2,750 down to 2,250) Less flows so the solutions should be reduced slightly in terms of scale and cost.

- Report requires additional online storage of 385m3 to be provided with the design solutions proposed requiring additional land purchase. Proposed location is outside our development boundary. Could a design be achieved to deliver this extra storage on plot, next to the existing combined sewer rather than being outside the development boundary. We had allowed for a 21m easement to the existing sewer (10times the pipe diameter) following further consultation with WW this was reduced to 12m. So there is potentially 4m of space either side of the sewer over the length through the development to fit additional storage.

- Is this additional storage solely for our development or is it intended to assist in in the wider WW flooding issues? Modellers are tasked with providing options to provide a zero-detriment outcome to return system performance to existing levels.

Regards,

Tommy Thompson **IEng, MICE**
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Tommy Thompson

From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: 08 February 2024 14:21
To: Tommy Thompson
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

I understand that this proposal will be subject to a SAB application who would be the body to adopt the surface water network.

The following link should provide you with some useful guidance, you can also find a copy of our leaflet regarding the proximity of SuDS to our assets at the following link under "Want to know more?" – https://developers.dwrcymru.com/en/help-advice/regulation-to-be-aware-of/sustainable-drainage-systems.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Thursday, February 8, 2024 2:01 PM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Hi Jake,

Thanks for this.

For clarity we are not proposing to connect SW flows into the existing combined sewer.
New Surface Water sewers are proposed on-plot which will be put forward for S104 adoption.

The current strategy is to drain the site to two large infiltration basins located to the east of the development.
To trying the reduce the size of these basins and to be compliant with various elements of the SAB, SuDS will be required throughout the development.
My query is regarding new SuDS discharging into a New S104 SW sewer and adoption of the infiltration / attenuation basins.

In this instance what are Welsh Waters restrictions regarding the use of SuDS.
Will WW accept new S104 sewers discharging into an adoptable infiltration basin, or will this basin need to outfall to a nearby watercourse?

Regards,

Tommy Thompson IEng, MICE
Associate Civil Engineer
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From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: Thursday, February 8, 2024 1:51 PM
To: Tommy Thompson <tommy.thompson@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

Thank you for the below, I can confirm that the network surrounding this site is predominantly combined, we therefore wouldn't be in a position to accept surface water flows into this network. For context we are actively seeking to remove surface water from our network, this is due to the impact it has on inundating sewers downstream which can no longer cope with additional surface water being added. With regards to adoption, we wouldn't be in a position to adopt these as they wouldn't be communicating with the public sewerage network.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Tuesday, February 6, 2024 2:17 PM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Good afternoon Jake,

I trust you're keeping well.

We are in the process of finalising the drainage strategy for the site and to be compliant with the biodiversity, water quality and amenity elements of the SAB application, the LLFA have requested multiple SuDS be used across the site to create the treatment train.

Do Welsh Water have any restrictions on the discharge of surface water flows from SuDS features into the WW network (New or existing)?
Will WW adopt any of the SUDS features or does this need to be done by a third party? If so which SuDS type do WW consider to be adoptable?

Regards,

Tommy Thompson **IEng, MICE**
Associate Civil Engineer
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From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: Thursday, January 4, 2024 12:16 PM
To: Tommy Thompson <tommy.thompson@adeptcsce.com>
Cc: Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

I would agree that the results of the HMA would be required to consider this. I'm not involved in designing the solutions myself, however in theory if a rising main that distance were to be proposed, this is where the financial comparison mentioned below would take place.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Wednesday, January 3, 2024 12:30 PM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Cc: Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Hi Jake,

Thank you for the confirmation below.

Although hypothetical for now until we have the results of the capacity assessment on the existing 1050 combined sewer.

For clarity, if following assessment the existing sewer it's deemed there is no available capacity, does the below suggest pumping to the Five Fords WWTW located 2.14km south (As the crow fly's), 3.35km following roads, is the preferred WW solution for the foul drainage?

Regards,

Tommy Thompson **IEng, MICE**
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From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: Wednesday, January 3, 2024 10:31 AM
To: Tommy Thompson <tommy.thompson@adeptcsce.com>
Cc: Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

Thank you for the below and happy new year to you to.

I have asked our adoption engineers of your below query who have advised the following:

The companies position on this is that we must centralise treatment wherever we can.

Our guidance requires us to consider the whole life cost of the Treatment Works against more cost effective option like gravity to an existing public sewer or pumped solution. The Works need to be designed to accommodate flows from all existing properties in the developed area (this may be defined by the Local Plan) as well as any planned future growth. A pumped solution would need to be investigated in the first instance. Only in circumstances where its technically not possible or where there is a financial case for building a new Works over a pumped system would we start to consider a Works.

I trust the above makes sense however please let me know if you have any queries following this.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Wednesday, January 3, 2024 8:40 AM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Cc: Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Good morning Jake,

Happy New Year.

The final numbers for the first phase have not been fixed yet and the current masterplan shows a total of 900 units to be developed across the whole site.

Further to this Wrexham council have approved the scheme which is now a formal allocation within their Local Development Plan, and I am looking at options for the disposal of the foul drainage.

Based on 4000litres per day it is anticipated that the 900 units will generate a peak foul flow of approximately 41.67l/s.
Ideally this will drain primarily via gravity into the existing 1050dia Welsh Water combined sewer which splits the site, with catchment along the eastern boundary requiring pumping. However, I accept this will be dictated by the findings of the capacity assessment currently being undertaken by yourselves and by timescales for any improvement works needed to the WW network to facilitate the development.

I am also looking into the feasibility of providing an on-site foul treatment works to service the development. Due to the size of the development, package treatment plants are not suitable so a larger rotary system will need to be employed.
Is this something WW would consider for adoption and if so, can you confirm any specific requirements which will be needed by yourselves to allow adoption of the treatment works?

Happy to set up a meeting or to discuss this over the phone.

Regards,

Tommy Thompson **IEng, MICE**
Associate Civil Engineer

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From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: Tuesday, December 19, 2023 9:51 AM
To: Tommy Thompson <tommy.thompson@adeptcsce.com>
Cc: Neil Brown <neil.brown@adeptcsce.com>; Andrew Laird <andrew.laird@adeptcsce.com>; Michael Brown <MBrown@harworthgroup.com>; Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Tommy,

Thank you for this, initially it was a first phase of 425 units, with a total of 1100 units. Are you now proposing a total of 900 units in one phase?

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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From: Tommy Thompson <tommy.thompson@adeptcsce.com>
Sent: Monday, December 18, 2023 4:33 PM
To: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Cc: Neil Brown <neil.brown@adeptcsce.com>; Andrew Laird <andrew.laird@adeptcsce.com>; Michael Brown <MBrown@harworthgroup.com>; Richard Parker <richard.parker@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

******** External Mail ********
Good afternoon Jake,

Thank you for the update on this.

For your information, the strategy and phasing for the site has been updated.
We now intend to bring forward 900 units for the development, I believe when Welsh Water were commissioned with doing the capacity assessment if was based on a first phase of 400 units.
While I don't believe this change in strategy will alter the assessment of the existing network being done by yourselves, I thought I would provide an update as a courtesy so Welsh Water are aware of our intentions for the site.

Please let me know if you have any queries or need any further information.

Regards,

Tommy Thompson **IEng, MICE**
Associate Civil Engineer
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From: Jake MacMillan <Jake.MacMillan@dwrcymru.com>
Sent: Friday, December 15, 2023 12:28 PM
To: Andrew Laird <andrew.laird@adeptcsce.com>; Michael Brown <MBrown@harworthgroup.com>; Richard Parker <richard.parker@adeptcsce.com>
Cc: Neil Brown <neil.brown@adeptcsce.com>; Tommy Thompson <tommy.thompson@adeptcsce.com>
Subject: RE: [Hydrock: 17232-SMAN] Cefn Park, Wrexham - Pre Planning Enquiry Response

Hi Andrew,

Thanks for touching base, in terms of surveys on this one I'm told that these are ongoing as expected, I will put a note in to our modellers to check everything is up to date and let you know when I hear back.

Best regards,

Jake MacMillan
Development Planning Officer | Developer Services
Dŵr Cymru Welsh Water

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Appendix E
Maintenance

Drainage Asset Maintenance Schedule

Surface Foul

Maintenance Activity	Drainage Component	Required Action	Typical Frequency
Visual Inspection	Gully Sump unit Catch pit / silt trap Attenuation structures Channel drain Outlet chamber Flow control chamber Swale Soakaway Pond and wetland Bioretention	Inspect for sediment and debris Inspect inlets and outlets for blockage (where applicable)	Monthly for first year and twice yearly thereafter, after severe storm
	Pipework		Twice yearly
	Full retention interceptor Bypass interceptor Forecourt interceptor		Twice yearly or after severe storm as a minimum, refer to manufacturer guidance. Forecourt interceptor requires emptying after fuel spillage
Monitoring	Attenuation structures	Check attenuation inspection points to ensure emptying is occurring (little to no water should be present after consecutive days of dry weather)	Twice yearly, once after heavy rainfall and once after consecutive dry weather
	Soakaway	Check to ensure emptying is occurring	Annually
	Bioretention	Check operation of underdrains by inspection of flows after rain	Annually
Litter and Debris Removal	Pond and wetland Manhole	Remove all litter and debris	Twice yearly or after severe storm

Litter and Debris Removal - Continued	Pervious paving Swale Soakaway Bioretention All sump units (gullies, channel drains and catch pits) Access chambers and pre-treatment devices Flow control chamber Gutters & leaf guards		Twice yearly (spring, start of winter), or as required
Grass Cutting	Pond and wetland Swale	Grass should be cut to retain grass height within specified design range (typically 75-150mm)	Monthly (during growing season), or as required
Jet Wash	Pipework	High pressure jet-wash any pipe work which has silt accumulation. Care must be taken that any silts within the pipework are not unnecessarily flushed into the attenuation structures (use of bungs and jet-vac of chamber prior to removal of bungs)	Twice yearly, or as required
	Attenuation structures	High pressure jet-wash all perforated pipework and or access points. All water to be jet vac to remove any suspended silts within the water	Five yearly, or as required
Sweeping	Pervious paving	Pervious surfaces need to be regularly cleaned of silt and sediment to preserve their infiltration capacity	Yearly, often less where inspections indicate that it is not required
Silt and Rubber Cleaning	Pervious paving	Jet wash if visible signs of silt and rubber build up. Further maintenance options include locally removing block and geotextile, removing the silt/rubber and replacing as before	Paving to be inspected every spring (when dry)
Repair/Reinstate – Remedial Actions	Soakaway	Remove and reconstruct soakaway and/or replace or clean void fill if	As required

		Bioretention	performance deteriorates or failure occurs Infill any holes in or remove and replace filter medium	As required
	Vegetation Management	Pond and wetland	Build-up of dead vegetation from previous seasons should be removed to reduce organic silt accumulation	Convenient intervals e.g., every three years at the end of landscape contract periods
		Bioretention	Emergent vegetation may need to be harvested to maintain flood volumes Assess plants for disease infection, poor growth, invasive species etc., and replace as necessary.	Every two – ten years, or as required Quarterly inspection, replacement as required
	Sediment Management and Removal	ALL SUDS	Sediment accumulation should be monitored as part of the inspection regime, rate of sediment accumulation noted	Appropriate frequencies determined upon inspection
	Inspection	Pipework Manhole	Check if functioning correctly	Once site is fully operational: twice yearly for 1st year, annually after
		Pumping station/rising main	Impellers will need inspecting and cleaning as required – refer to manufacturer guidance	Refer to manufacturer guidance
		Grease trap	Monthly inspection with removal of grease as required	Monthly
	Sediment Removal	Washdown separator	Inspect for build-up of sediment and remove as required. Refer to manufacturer guidance	Quarterly for 1st year, twice yearly after. Refer to manufacturer guidance

Additional notes:

- Any defects (broken/misaligned pipes, root infestation, damage to soakaways, missing parts, etc.) that are identified during inspections/maintenance should be reported back to the property/site owner so that the remedial actions can be undertaken promptly to repair these defects.
- SuDS maintenance based on CIRIA 2015 Chapter 32 where further information can also be found.
- Refer to manufacturer guidance for maintenance schedules of all propriety treatment systems.