

Technical design note

Project name	Spring Park Data Centre (Phase 6), Land South of Westwells Road, Corsham		
Design note title	Drainage Strategy		
Document reference	24639-HYD-XX-XX-TN-C-0001		
Author	B Tawton		
Revision	P05		
Date	13 May 2024	Approved	<input type="checkbox"/>

This Technical Note has been produced by Hydrock, for their client Ark Data Centres, in order to support a full planning application for the expansion to the Spring Park Data Centre complex in Corsham, on land to the west of Westwells Road.

The below strategy note should be read in conjunction with the Flood Risk Assessment (FRA) produced by Hydrock (Ref: 24639-HYD-XX-XX-RP-FR-0001).

Introduction:

The proposed development site is approximately 7.37Ha in area, and sits adjacent to the larger Spring Park Data Centre site, which currently comprises 5 previously developed phases.

The proposed development is to comprise the construction of a new data centre building and associated infrastructure (comprising approx. 3.6Ha) on a site to the south of the current complex, to the south of Rowan Lane.

The site boundary also includes land to the south and southwest of the main part of the site. Whilst no built development is proposed in this location, additional landscaping and habitat management and enhancement is proposed here.

Existing Drainage:

The site was previously developed as part of the MOD Corsham site, and as a result, is a partially vegetated brownfield site.

Wessex Water records identify a 225mm diameter foul water sewer running through the site from Rowan Lane (to the north-west of the site) to Moor Green (to the east of the site). The records show no public surface water sewerage within the vicinity of the site.

A private surface water drain is located within the verge of Rowan Lane and Westwells Road, which ultimately discharges to the Spring Lane watercourse.

A topographical survey has confirmed the foul water sewer location shown on Wessex Water records, as described above.

Proposed Drainage Strategy:

The site was previously developed as part of the MOD Corsham site, and as a result, is a partially vegetated brownfield site. The site also contains a former mine, with shafts and access points discovered across the site. An in-depth survey of the mine shafts will be carried out subject to planning approval.

Pre-Development

The site comprises brownfield land and as such, it is expected that surface water permeates into the ground until the saturation point of the soil is met; beyond which water runs off the site, following the natural topography of the land. The topographical survey demonstrates surface water runoff is directed to the north-east via overland flow, in the direction of Westwells Road.

The pre-existing greenfield runoff rates for the site have been calculated based on the site area of 3.6Ha, and are shown below:

ICP SUDS Mean Annual Flood

Input			
Return Period (years)	2	Soil	0.400
Area (ha)	3.594	Urban	0.000
SAAR (mm)	815	Region Number	Region 8
Results l/s			
QBAR Rural	14.6		
QBAR Urban	14.6		
Q2 years	12.9		
Q1 year	11.4		
Q30 years	27.8		
Q100 years	35.4		

Therefore, this equals a Qbar greenfield runoff rate of 4l/s/ha.

Post-Development

In accordance with the Sustainable Drainage Systems (SuDS) hierarchy, rainfall run-off should be catered with in the following preferential order:

1. Collected for re-use (Rainwater harvesting)
2. Infiltrated to ground.
3. Discharged to local watercourses.
4. Discharged to a local surface water sewer network.
5. Discharged to a local combined water sewer network.

As part of the overall strategy for sustainable development on the scheme, it is proposed that, as far as practicable, all rainwater should be collected for re-use as part of the development's cooling system.

Collected rainwater would be stored in below-ground attenuation tanks prior to passing through a filtration & treatment system, for use in the data centre's cooling system. A draw rate for the system is not currently confirmed, but will be established as part of detailed design for the scheme, however it is anticipated that the cooling system will utilise all available runoff generated from a majority of rainfall events, aside from periods of sustained rainfall.

For rainfall events in excess of the draw rate of the data centre's cooling system, or if the rainwater harvesting tank is full, the next preferred option for discharge would be infiltration to ground.

Infiltration testing was carried out as part of a wider site investigation (See Hydrock report ref. 24639-HYD-XX-XX-RP-GE-1002-S2-P02 for further details) to determine the feasibility of soakaway drainage for the scheme. Testing was carried out in general accordance with BRE Digest 365, and the results obtained were in the range of 7.98×10^{-6} – 3.97×10^{-4} m/s.

It should be noted that:

- » In regards to the infiltration testing due to the variable nature of Forest Marble Formation the results may vary upon the final strata presented at construction level. It would be anticipated that a permeability may be highly variable;
- » Geo Environmental testing has not indicated that a significant risk is posed to controlled waters. It is recommended that the attenuation basin is constructed below any Made Ground levels;
- » Groundwater levels have not been established; seepages have been noted in the Forest Marble Formation however no true level established;
- » It may still be a requirement that seasonal groundwater monitoring is undertaken to prove groundwater levels; and
- » Notwithstanding the above should underground mineworkings be present below site it may not be viable to allow for water to infiltrate through the solid geology and into any mineworkings.
- » All testing to date, combined with the above noted points, indicates that infiltration is likely to be a viable destination for surface water runoff from the proposed development.

However, a mine survey will be completed prior to developing the design to ascertain there are no infiltration paths, and in order to confirm the viability of soakaway drainage.

The proposed infiltration strategy will utilise 3 connected concrete ring soakaways surrounded by suitable porous material. When the water level in the SuDS Pond exceeds the design permanent water level, flows will discharge to this soakaway system and allow runoff to percolate into the sub-soils below. Due to the presence of limestone in the sub-soils, the soakaway chambers will be positioned with minimum 10m of separation to each other and any buildings / roads, in order to reduce the risk of dissolution features.

A geophysical survey was conducted in November 2023 (Refer to Hydrock Technical Note ref: 24639-HYD-XX-XX-TN-GE-1003 for details) in order to provide preliminary indications of where existing mineworkings & other below-ground features are likely to be located, in order to coordinate with historical mapping. As a result of this survey work, proposed soakaway locations have been situated outside of the zone(s) identified to contain below-ground geophysical features.

As infiltration is proposed as the destination for surface water runoff, it is not deemed necessary to consider discharge to a watercourse or sewer at this time.

Water Quality

First Flush

The CIRIA C753 SuDS manual sets out standards of good practice in order to protect the water quality of receiving water courses and ground water. The SuDS manual states that where possible "no runoff should be discharged from the site to receiving surface waters or sewers for the majority of small (eg <5mm rainfall events) rainfall events". This is to capture the "first flush" which contains the most concentrated level of pollutants as a result of pollutant build up on surfaces during dry periods.

Rainwater Harvesting forms a key part of the drainage strategy for the scheme, and will ensure that runoff from the proposed main building roof will be directly captured for re-use, providing full interception at source.

The use of the SuDS Pond and Detention Basin in tandem with a petrol interceptor will ensure that runoff from all other areas of hardstanding will be treated to prevent mobilised pollutants from being transported downstream. The petrol interceptor will assist in removing a majority of the suspended oils and sediment particles from runoff, while the pond and basin will trap pollutants through sediment forebays and via settlement within the permanent water.

Trapped Road Gullies

All road gullies are to be trapped. These will intercept sediment and potential pollutants in the surface water runoff.

SuDS

Each component of the drainage strategy will be assessed for its treatment qualities in addition to its attenuation capabilities.

- » Rainwater Harvesting
 - » As far as is practicable, all runoff from the site will be stored for re-use in the data centre's cooling system.
 - » Runoff from the main building's roof will be captured and directly discharged to the rainwater harvesting tank, before being treated for use in the cooling system. This will ensure that interception is provided for all small rainfall events.
- » SuDS Pond
 - » Provision of a SuDS pond with permanent water level will allow a high level of treatment for runoff, whilst also providing attenuation and amenity / biodiversity benefits.
- » Detention basin
 - » Provision of a detention basin allows an additional area for attenuation upstream of a final flow control, whilst allowing an additional level of treatment through interception, and filtration from low-level vegetation.
- » Petrol interceptor
 - » Use of a petrol interceptor ensures that heavy pollutants from vehicle circulation areas will be treated prior to entering the larger SuDS features as described above.

Water Quality Analysis

A simple index approach is recommended to determine what measures are required to deal with any pollution that may arise. Table 2 and 3 are extracts from chapter 26 of the SuDS manual, identifying the level of pollution hazard and pollution mitigation index respectively. The total pollution hazard indices must be less than or equal to the total SuDS mitigation indices.

Table 2 - Pollution hazard indices for different land use classifications (extract from CIRIA C753 SuDS manual)

<u>Land Use</u>	<u>Pollution Hazard Level</u>	<u>Total Suspended Solids</u>	<u>Metals</u>	<u>Hydrocarbons</u>
<i>Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads /motorways</i>	Medium	0.7	0.6	0.7

Table 3 - Indicative SuDS mitigation indices for discharges to surface waters (extract from CIRIA C753 SuDS manual)

<u>Land Use</u>	<u>Mitigation Indices</u>		
<u>Type of SuDS component</u>			
Access Roads	TSS	Metals	Hydrocarbons
<i>Pond</i>	0.7	0.7	0.5
<i>Infiltration Trench</i>	0.4	0.4	0.4
<i>Mitigation Total Total SuDS mitigation index = mitigation index1 + 0.5 (mitigation index2 + 3)</i>	0.9	0.9	0.7
<u>Type of SuDS component</u>			
Parking areas	TSS	Metals	Hydrocarbons
<i>Pond</i>	0.7	0.7	0.5
<i>Infiltration Trench</i>	0.4	0.4	0.4
<i>Mitigation Total Total SuDS mitigation index = mitigation index1 + 0.5 (mitigation index2 + 3)</i>	0.9	0.9	0.7

Table 3 confirms the total mitigation index of the anticipated SuDS to be implemented on site will be greater than or equal to the pollution hazard index in table 2. The inclusion of multiple SuDS components will therefore be satisfactory for dealing with any potential pollution arising from the development. No other mitigation measures would be required.

Management & Maintenance

All drainage features require regular monitoring and maintenance to ensure they continue to operate correctly and efficiently. Drainage features can be maintained by a range of people, including, but not limited to, property owners, highway authority or management companies. Maintenance operations are categorised under three levels: Regular Maintenance, Occasional Maintenance and Remedial Maintenance.

Regular Maintenance: Consists of basic tasks to be carried out on a frequent and predictable schedule. Inspections and monitoring of the feature should be undertaken during these visits. During the first year of operation these visits should be undertaken monthly and after all major storm events to ensure each drainage feature is operating to its design standard.

Occasional Maintenance: Consists of tasks which are required to be undertaken on a less frequent and predictable basis, such as sediment removal of the ditches.

Remedial Maintenance: These are intermittent tasks required to rectify faults which occur within the drainage feature. These are undertaken as required, but anticipated to be infrequent as long as the best practice guidance during design, construction and maintenance are followed.

Table 1 (below summarises the recommended maintenance activities required for a typical detention basin to be included in the proposed drainage scheme.

Table 1 - Drainage components operation and maintenance activities (extract from CIRIA C753 SuDS manual)

<u>Operation and maintenance activity</u>	Drainage component			
	Pond	Detention Basin	Petrol Interceptor	Infiltration Chambers
<i>Regular maintenance</i>				
<i>Inspection</i>	X	X	X	X
<i>Litter and debris removal</i>	X	X	X	X
<i>Grass cutting</i>	X	X	NA	O
<i>Weed and invasive plant control</i>	O	O	NA	NA
<i>Shrub management (including pruning)</i>	O	O	NA	NA

<i>Bank vegetation management</i>	X	O	NA	NA
<i>Aquatic vegetation management</i>	X	O	NA	NA
Occasional maintenance				
<i>Sediment management</i>	X	X	X	X
<i>Vegetation replacement</i>	O	O	NA	NA
<i>Vacuum sweeping and brushing</i>	NA	NA	O	NA
Remedial maintenance				
<i>Structure rehabilitation / repair</i>	O	O	O	O

Key

X - Will be required

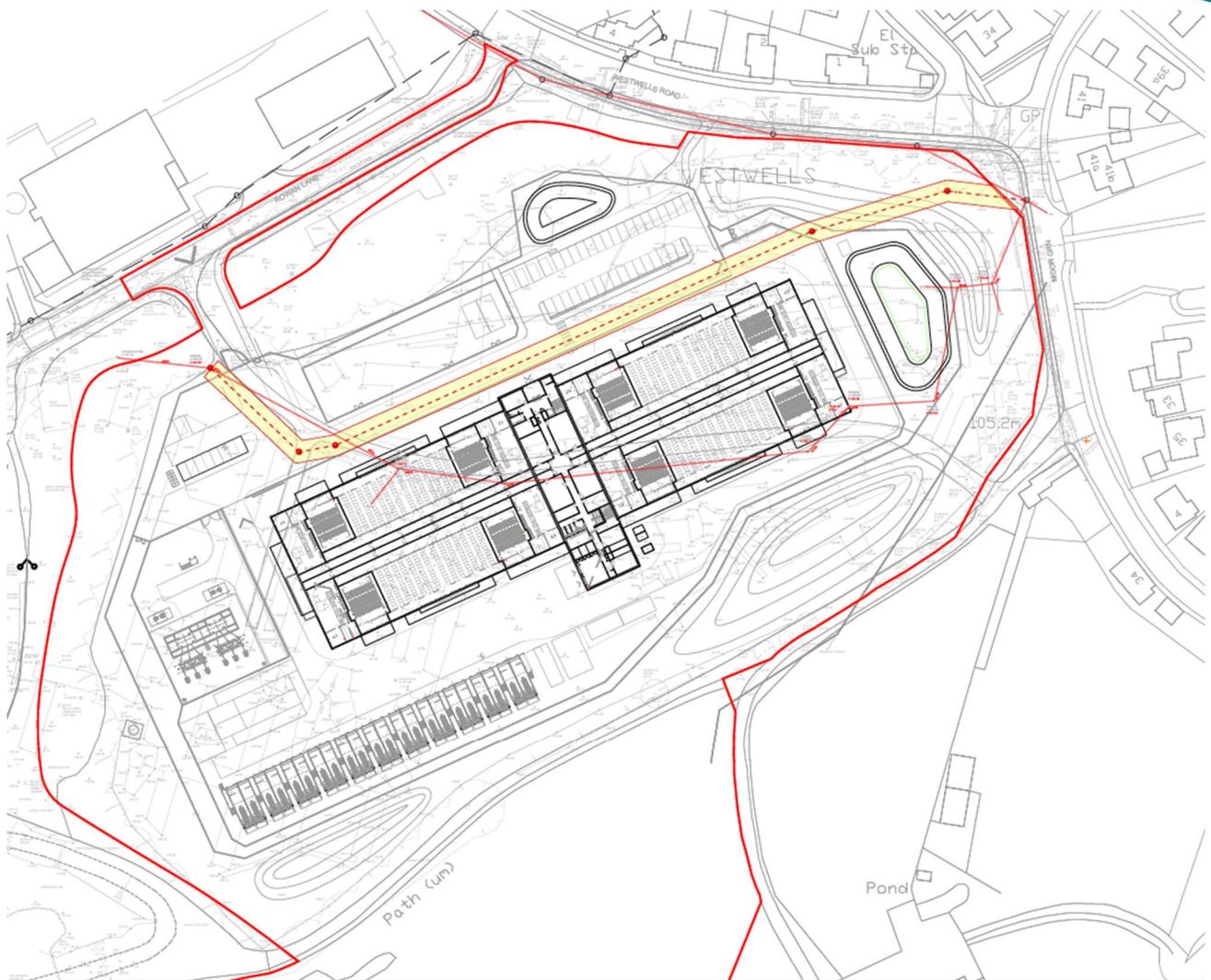
O- May be required

Proposed Foul Water Drainage Strategy

As noted previously, an existing foul water sewer currently runs through the application site from west to east. This is proposed for diversion as part of the development, with the new route to run through the site's access road.

A pre-development enquiry has been lodged with Wessex Water and no major barrier to diversion of the sewer has been identified by them. Wessex Water advise in their response (Ref: ST86NE/218) that there is sufficient capacity for "domestic type foul flows only".

An extract of the proposed foul sewer diversion route is shown below.



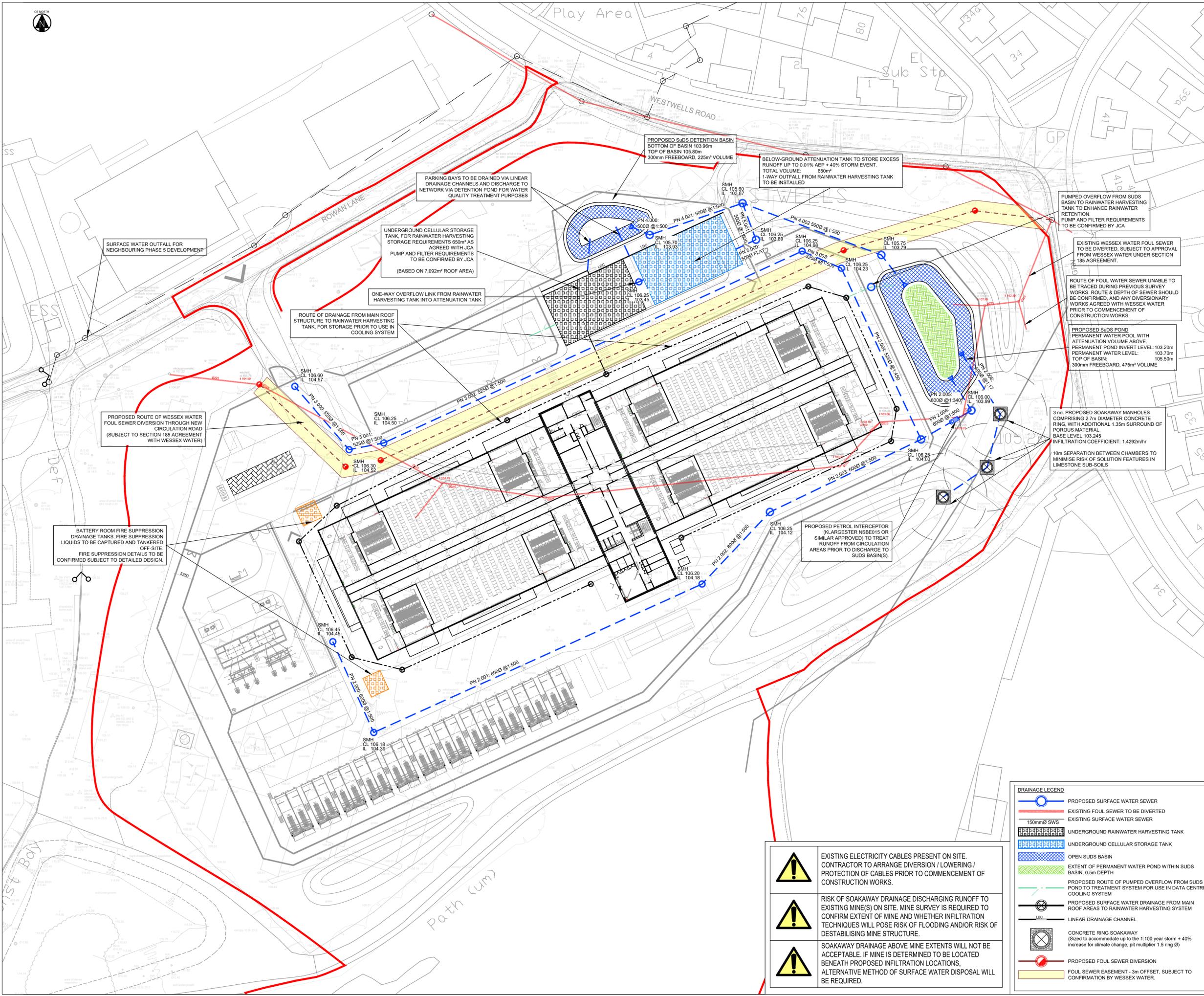
Conclusions

This technical note has considered the surface and foul water drainage strategy for the development site.

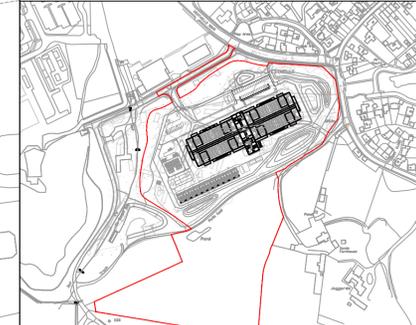
The surface water drainage strategy has been designed in accordance with local and national planning policy, and generally follows the NPPF drainage hierarchy, with priority given to re-use of rainwater on-site. It is proposed that excess runoff would discharge to ground via a series of soakaway manhole chambers, subject to confirmation that infiltration is appropriate for the location, based on the results of any future mine survey(s), however all works undertaken to date suggest that the proposed infiltration strategy is feasible.

A foul sewer currently passes through the development site, and it is proposed that this is diverted to facilitate the proposed buildings & infrastructure, with foul flows from the site to discharge to the diverted sewer.

APPENDIX A - Drainage Strategy Plan (Drawing no. 24639-HYD-XX-XX-DR-C-2200)



General Drainage Notes:
 1. Do not scale from this drawing.
 2. This drawing is illustrative only.
 3. Proposed drainage strategy is subject to approval from Wessex Water and the Lead Local Flood Authority.



SITE LOCATION EXTRACT
 SCALE 1:5000 @ A1

REVISIONS

Rev	Date	Description	By	Ckd	App
P09	13/05/24	Updated to suit latest site layout.	BCT	IAC	-
P08	05/12/23	Soakaway pit locations adjusted.	BCT	GH	-
P07	29/08/23	Strategy updated to utilise infiltration drainage.	BCT	GH	-
P06	05/05/23	Issued for comment	BCT	GH	-
P05	19/04/23	Updated to suit latest site layout	BCT	GH	-
P04	03/04/23	Eastern basin moved south west closer to the road	DN	GH	-
P03	23/03/23	Updated to suit latest site layout	BCT	GH	-
P02	20/03/23	Updated to suit latest site layout	BCT	GH	-
P01	01/11/22	First Issue.	GH	GH	-

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CLIENT
ARK DATA CENTRES LIMITED

PROJECT
LAND SOUTH OF SPRING PARK, CORSHAM

TITLE
PRELIMINARY DRAINAGE STRATEGY

HYDROCK PROJECT NO. C-24639-C	SCALE @ A1 1 : 500	STATUS S2
STATUS DESCRIPTION INFORMATION	DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 24639-HYD-XX-XX-DR-C-2200	REVISION P09

DRAINAGE LEGEND

- PROPOSED SURFACE WATER SEWER
- EXISTING FOUL SEWER TO BE DIVERTED
- EXISTING SURFACE WATER SEWER
- 150mmØ SWS
- UNDERGROUND RAINWATER HARVESTING TANK
- UNDERGROUND CELLULAR STORAGE TANK
- OPEN SUDS BASIN
- EXTENT OF PERMANENT WATER POND WITHIN SUDS BASIN, 0.5m DEPTH
- PROPOSED ROUTE OF PUMPED OVERFLOW FROM SUDS POND TO TREATMENT SYSTEM FOR USE IN DATA CENTRE COOLING SYSTEM
- PROPOSED SURFACE WATER DRAINAGE FROM MAIN ROOF AREAS TO RAINWATER HARVESTING SYSTEM
- LINEAR DRAINAGE CHANNEL
- CONCRETE RING SOAKAWAY (Sized to accommodate up to the 1:100 year storm + 40% increase for climate change, pit multiplier 1.5 ring Ø)
- PROPOSED FOUL SEWER DIVERSION
- FOUL SEWER EASEMENT - 3m OFFSET, SUBJECT TO CONFIRMATION BY WESSEX WATER.

- EXISTING ELECTRICITY CABLES PRESENT ON SITE. CONTRACTOR TO ARRANGE DIVERSION / LOWERING / PROTECTION OF CABLES PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.
- RISK OF SOAKAWAY DRAINAGE DISCHARGING RUNOFF TO EXISTING MINE(S) ON SITE. MINE SURVEY IS REQUIRED TO CONFIRM EXTENT OF MINE AND WHETHER INFILTRATION TECHNIQUES WILL POSE RISK OF FLOODING AND/OR RISK OF DESTABILISING MINE STRUCTURE.
- SOAKAWAY DRAINAGE ABOVE MINE EXTENTS WILL NOT BE ACCEPTABLE. IF MINE IS DETERMINED TO BE LOCATED BENEATH PROPOSED INFILTRATION LOCATIONS, ALTERNATIVE METHOD OF SURFACE WATER DISPOSAL WILL BE REQUIRED.

APPENDIX B - *MicroDrainage Simulation Results*

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.800	Add Flow / Climate Change (%)	0
Ratio R	0.364	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	8.419	0.144	58.5	0.000	4.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	28.826	0.058	500.0	0.574	4.00	0.0	0.600	o	600	Pipe/Conduit	
2.001	104.396	0.209	500.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
2.002	28.675	0.057	500.0	0.027	0.00	0.0	0.600	o	600	Pipe/Conduit	
2.003	48.565	0.097	500.0	0.071	0.00	0.0	0.600	o	600	Pipe/Conduit	
3.000	25.202	0.050	504.0	0.000	4.00	0.0	0.600	o	525	Pipe/Conduit	
3.001	9.782	0.020	489.1	0.203	0.00	0.0	0.600	o	525	Pipe/Conduit	
3.002	133.335	0.247	540.5	0.294	0.00	0.0	0.600	o	525	Pipe/Conduit	
3.003	11.773	0.024	500.0	0.028	0.00	0.0	0.600	o	525	Pipe/Conduit	
3.004	55.522	0.123	452.6	0.035	0.00	0.0	0.600	o	525	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	4.08	103.900	0.000	0.0	0.0	0.0	1.71	68.1	0.0
2.000	50.00	4.44	104.450	0.574	0.0	0.0	0.0	1.08	306.0	77.7
2.001	50.00	6.05	104.392	0.574	0.0	0.0	0.0	1.08	306.0	77.7
2.002	50.00	6.49	104.184	0.601	0.0	0.0	0.0	1.08	306.0	81.4
2.003	50.00	7.24	104.126	0.672	0.0	0.0	0.0	1.08	306.0	91.0
3.000	50.00	4.42	104.568	0.000	0.0	0.0	0.0	0.99	214.5	0.0
3.001	50.00	4.59	104.518	0.203	0.0	0.0	0.0	1.01	217.8	27.5
3.002	50.00	6.91	104.498	0.497	0.0	0.0	0.0	0.96	207.0	67.3
3.003	50.00	7.11	104.251	0.525	0.0	0.0	0.0	0.99	215.4	71.1
3.004	50.00	7.99	104.227	0.560	0.0	0.0	0.0	1.05	226.5	75.8

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.004	16.847	0.034	500.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
2.005	10.570	0.031	340.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
4.000	6.467	0.013	500.0	0.000	4.00	0.0	0.600	o	500	Pipe/Conduit	
4.001	28.434	0.057	500.0	0.000	0.00	0.0	0.600	o	500	Pipe/Conduit	
5.000	36.040	0.072	500.0	0.709	4.00	0.0	0.600	o	500	Pipe/Conduit	
5.001	11.249	0.022	500.0	0.000	0.00	0.0	0.600	o	500	Pipe/Conduit	
4.002	41.768	0.084	500.0	0.000	0.00	0.0	0.600	o	500	Pipe/Conduit	
4.003	42.771	0.086	500.0	0.000	0.00	0.0	0.600	o	500	Pipe/Conduit	
2.006	7.647	0.455	16.8	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
2.007	3.690	0.006	615.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.004	50.00	8.25	104.029	1.232	0.0	0.0	0.0	1.08	306.0	166.8
2.005	50.00	8.38	103.995	1.232	0.0	0.0	0.0	1.31	371.8	166.8
4.000	50.00	4.11	103.940	0.000	0.0	0.0	0.0	0.96	189.4	0.0
4.001	50.00	4.60	103.927	0.000	0.0	0.0	0.0	0.96	189.4	0.0
5.000	50.00	4.62	103.964	0.709	0.0	0.0	0.0	0.96	189.4	96.0
5.001	50.00	4.82	103.892	0.709	0.0	0.0	0.0	0.96	189.4	96.0
4.002	50.00	5.54	103.870	0.709	0.0	0.0	0.0	0.96	189.4	96.0
4.003	50.00	6.28	103.786	0.709	0.0	0.0	0.0	0.96	189.4	96.0
2.006	50.00	8.41	103.700	1.941	0.0	0.0	0.0	5.96	1685.0	262.8
2.007	50.00	8.47	103.245	1.941	0.0	0.0	0.0	0.97	275.6	262.8

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.000		106.300	103.756	0.000	0	0

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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2.007		105.600	103.239	0.000	1200	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.800	Storm Duration (mins)	30
Ratio R	0.364		

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Online Controls for Storm

Weir Manhole: 18, DS/PN: 2.007, Volume (m³): 5.9

Discharge Coef 0.544 Width (m) 1.200 Invert Level (m) 105.600

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Storage Structures for Storm

Tank or Pond Manhole: 14, DS/PN: 4.000

Invert Level (m) 103.940

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	67.2	1.300	251.0	1.301	0.0

Cellular Storage Manhole: 11, DS/PN: 5.000

Invert Level (m) 103.964 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	400.0	400.0	1.601	0.0	498.4
1.600	400.0	498.4			

Tank or Pond Manhole: 6, DS/PN: 2.006

Invert Level (m) 103.700

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	277.0	1.500	701.0	1.501	0.0

Lined Soakaway Manhole: 18, DS/PN: 2.007

Infiltration Coefficient Base (m/hr) 0.00000 Ring Diameter (m) 2.70
Infiltration Coefficient Side (m/hr) 1.42920 Pit Multiplier 1.5
Safety Factor 2.0 Number Required 3
Porosity 0.30 Cap Volume Depth (m) 0.000
Invert Level (m) 103.245 Cap Infiltration Depth (m) 1.400

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	21	103.928	-0.197	0.000	0.04		2.0	OK
2.000	1	105.276	0.226	0.000	1.47		364.4	SURCHARGED
2.001	2	105.243	0.250	0.000	1.11		317.8	SURCHARGED
2.002	2	105.176	0.392	0.000	1.11		274.9	SURCHARGED
2.003	3	105.114	0.388	0.000	1.03		274.9	SURCHARGED
3.000	4	105.435	0.342	0.000	0.02		3.0	SURCHARGED
3.001	5	105.436	0.393	0.000	1.12		125.2	SURCHARGED
3.002	6	105.413	0.390	0.000	1.28		253.6	SURCHARGED
3.003	7	105.200	0.424	0.000	2.01		232.1	SURCHARGED
3.004	8	105.152	0.400	0.000	1.07		218.7	SURCHARGED
2.004	4	105.008	0.379	0.000	2.67		487.0	SURCHARGED
2.005	5	104.975	0.380	0.000	0.31		68.5	SURCHARGED
4.000	14	104.975	0.535	0.000	0.05		6.7	SURCHARGED
4.001	15	104.975	0.548	0.000	0.03		4.1	SURCHARGED
5.000	11	104.978	0.514	0.000	0.12	745	19.0	SURCHARGED
5.001	11	104.976	0.584	0.000	0.16	2.0	16.2	SURCHARGED
4.002	16	104.975	0.605	0.000	0.04		7.1	SURCHARGED
4.003	16	104.975	0.689	0.000	0.04		6.9	SURCHARGED

PN	US/MH Name	Level Exceeded
1.000	21	
2.000	1	
2.001	2	
2.002	2	
2.003	3	
3.000	4	
3.001	5	
3.002	6	
3.003	7	
3.004	8	
2.004	4	
2.005	5	
4.000	14	
4.001	15	
5.000	11	
5.001	11	
4.002	16	
4.003	16	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
2.006	6	600 Winter	100	+40%	100/15 Summer				104.974
2.007	18	600 Winter	100	+40%	100/15 Summer				104.979

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
2.006	6	0.674	0.000	0.03		23.4	SURCHARGED	
2.007	18	1.135	0.000	0.00	1403	0.0	SURCHARGED	

APPENDIX C - Wessex Water Pre-development enquiry response

Response to: BrynTawton@hydrock.com (Developer Response)			
Planning Ref:	N/A	Email:	Planning.liaison@wessexwater.co.uk
Proposal:	Foul and Surface Water Capacity Check - Spring Park Data Centre Campus	Our Ref:	ST86NE/ 218
Location:	Spring Park Data Centre, Corsham	Date:	23 March 2023

Existing Services

There are numerous existing Wessex Water assets within the proposed site boundary: -

375mm diameter public foul sewer

225mm diameter public foul sewer

150mm diameter public foul sewer

Further to this, our records indicate that there is a private 225mm diameter surface water sewer along the western boundary.

In accordance with Wessex Water Policy, there must be no buildings within a minimum of 3m either side of the public foul sewers and no tree planting within a minimum of 6m. This includes no surface water attenuation features and associated earthworks in the easement strip, changes in ground levels resulting in additional loading or excavation can lead to instability in the pipe. The foul sewers must not run through enclosed private areas, they must be within a 6m (3m either side) open access easement strip or roads. Wessex Water require unrestricted access to maintain and repair our apparatus.

Measurements are given for a pipeline depth of between 900mm and 2000mm. The stand-off distance may increase for a strategic water main due to material, size, depth and pressure.

The proposed layout shown on the Preliminary Drainage Strategy document ref 24639-HYD-XX-XX-DR-C-2200, Rev P02, dated 20/03/2023, submitted with the enquiry indicates a conflict between the proposed layout and the existing public foul sewers. However, it is noted that you intend to divert the existing foul sewer. Application for a sewer diversion (at the developers cost) can be permitted but the developer must prove satisfactory hydraulic conditions and that there will be no loss in capacity within the diverted sewer, all new sewers must be constructed to the standards set down in the Design and Construction Guidance (DCG) (formally Sewers for Adoption Guidance). Early consultation with our Sewer Protection Team is advised.

Public sewer diversions must be undertaken wholly within land under the applicant's ownership or with consent of the third-party landowner.

For more information on sewer diversion and the process of application please see our website [Waste water services \(wessexwater.co.uk\)](http://wessexwater.co.uk)

You will need to agree protection arrangements for the existing public foul sewers which cross the site (easement details as shown above). Any damage to our apparatus by third parties will result in a compensation claim.

All apparatus must be accurately located on site and marked on deposited drawings.

A map showing all known Wessex Water Assets within the area of the proposed site is attached at the bottom of this response. Additional maps can be obtained from our website [Mapping enquiries \(wessexwater.co.uk\)](https://www.wessexwater.co.uk/mapping-enquiries)

Foul Drainage

Wessex Water has capacity to accommodate domestic type foul flows only in the public foul sewer, connection to the existing network will need be agreed.

The point of connection to the public network is by application and agreement with Wessex Water and subject to satisfactory engineering proposals constructed to current adoptable standards. The developer should contact the local development team development.north@wessexwater.co.uk to agree proposals for the Section 104 adoption, should the application wish to offer the onsite foul drainage network for adoption, or Section 106 connection and submit details for technical review prior to construction.

Please Note: No surface water runoff, groundwater or land drainage will be accepted into the foul sewer either directly or indirectly.

Surface Water Drainage

We note you are proposing to reuse surface water runoff as much as possible with excess volumes being stored on site via a system of SuDS with a proposed outfall to the existing surface water sewer on Westwells Road.

Wessex Water does not have any surface water sewers within the vicinity of the site, the existing surface water sewer system in Westwells Road is not a Wessex Water Asset and therefore not a public sewer, as such we are not able to agree a connection to this network.

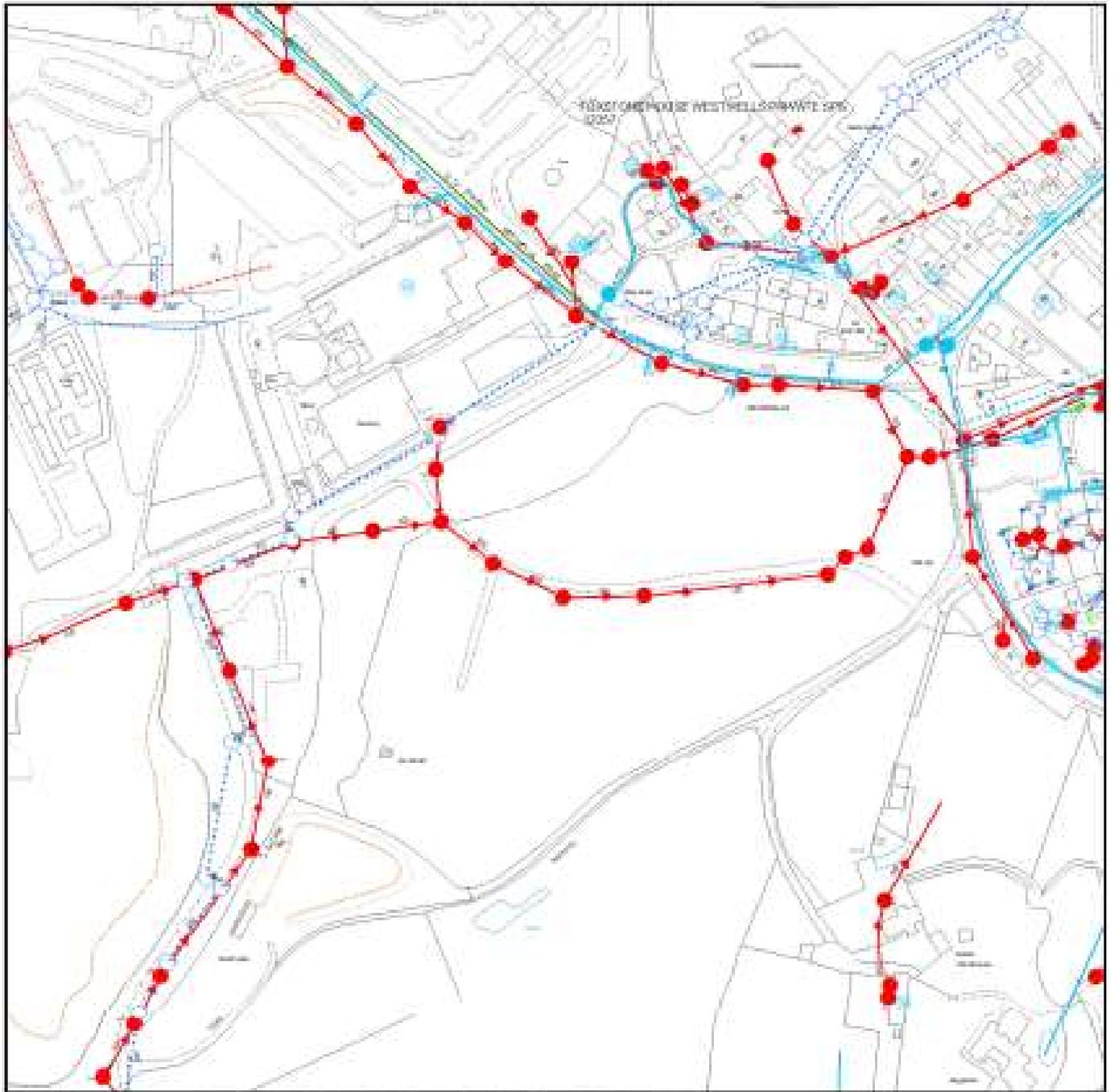
We do not have details of the owner but believe this MOD sewer and can advise that the MOD/private surface water sewer systems between Westwells Road and Spring Lane do not communicate downstream with a public sewer, the private / MOD surface water sewer network outfalls to a watercourse and, therefore, was not eligible for transfer under the 2011 private sewers transfer.

If you it is the intention to offer onsite surface water drainage for adoption, and the surface water strategy, promotes discharge to the private surface water sewer, then for Wessex Water to be able to consider entering in to a S104 agreement for proposed surface water sewers on a site, the developer will have to demonstrate that they have the appropriate permissions and discharge consents from the owner of the pipe/highway drain/culverted watercourse they intend to discharge to. Wessex Water require proof from the developer that they can provide a legal deed of consent from the owner of the receiving surface water system before we will consider the eligibility of any elements of the surface water systems for formal adoption.

Water Infrastructure

Wessex Water has previously modelled water supplies for the proposed development site. The current water supply network is insufficient to meet the supply demands they have proposed. Significant off site reinforcement will be required to meet the demands. As this is a commercial development any off-site reinforcement works necessary to serve commercial developments including any design work **is not funded through our infrastructure charging arrangements**. The liability for these costs lies wholly with the developer.

ST86NE/ 218 ASSET MAP



Represented from the Database Survey map by permission on behalf of the Controller of the Mayor's Auxiliary Office & Green Engineering - © Wessex Water 2023

WATER MAINS	SEWERS	PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
<ul style="list-style-type: none"> Distribution Main Washout Main Raw Water Main Abandoned Main Private Main 	<ul style="list-style-type: none"> Foul Surface Combined Abandoned 				<ul style="list-style-type: none"> Rising Mains Standby Rising Mains Effluent Disposal Overflow Siphon 	<ul style="list-style-type: none"> Private Rising Mains Converted Watercourse Highway Drain Use Unknown Status Unknown
SITES <ul style="list-style-type: none"> Source Reservoir Pump Treatment Works 	STRUCTURES <ul style="list-style-type: none"> Manhole - Foul Manhole - Surface Manhole - Combined Outfall Inlet Lamphole Bifurcation - Foul Bifurcation - Surface Bifurcation - Combined Combined Sewage Overflow 				OTHER STRUCTURES <ul style="list-style-type: none"> Pumping Station - Surface Pumping Stn - Foul/Combined Gully Went Column Catchpit Flushing Chamber Soakaway Non Return Valve Washout Air Valve Manhole 	OTHER STRUCTURES <ul style="list-style-type: none"> Attenuation Tank Storage Tank Chamber Tunnel Interceptor
FITTINGS <ul style="list-style-type: none"> Valve - Open Valve - Closed Fire Hydrant Pressure Reducing Valve Meter 						

Wessex Water
YTL GROUP

Date: 02/02/2023, 09:27:13
Scale: 1:2,500
Centre: 385,230, 168,770