

7888 Black Horse Site, Rhostyllen, Wrexham

Discharge of Drainage Planning Condition

Planning Ref: ESC P/2016/0809

Outline Planning Application for Residential Development (3 No. Dwellings)

Condition 4:

No Land drainage run-off or surface water shall be permitted to discharge or connect to the public sewerage system, either directly or indirectly, and foul and surface water shall be drained separately from the site

Condition 7:

No part of the development shall commence until a scheme for the comprehensive and integrated drainage of the site indicating how foul water, surface water and land drainage will be dealt with has been submitted to and approved in writing by the Local Planning Authority. The scheme as approved shall be implemented in accordance with a timescale to be agreed as part of the submitted details and maintained thereafter.

Introduction

The development site access road will require reducing the car park of the Black Horse Public House. A CCTV drainage survey has confirmed the pub drainage system is combined taking foul drainage, RWP's from roof and drainage channels from the car park. This network then discharges into the combined sewer in High Street along the site frontage.

Foul Drainage

A scheme for the foul drainage to discharge into the combined public sewer has been submitted to Welsh Water for approval via a S104 Application (Ref: PSA2269928). A connection onto the existing lateral from the public house drainage is proposed.

Surface Water

Following site investigations, we have determined the ground conditions are not suitable for discharge to ground. Infiltration tests failed and water levels only dropped by a maximum of 20mm over a 24hr period. As there are no watercourses (open or culverted) within the vicinity of the site we have requested a connection into the combined sewer from Welsh Water.

We have designed a surface water network with a restricted discharge into the combined sewer limiting the flow to the 1-year brownfield run-off rate less 30% betterment as requested by Welsh Water. Approximately 250sq.m. of the car park is currently draining to the combined sewer via drainage channels. See Coopers drawings in Appendix A for further information.

Condition 4 does state that no surface water shall be permitted to discharge or connect to the public sewerage system. However, Welsh Water have since agreed a restricted discharge. See attached correspondence in Appendix A which includes a Developer Control Officer comment on the S104 application response (Item 11) advising that the condition will require amending.

From 7th January 2019, all new developments of more than 1 house or where the construction area is of 100m² or more will require sustainable drainage to manage on-site surface water. Surface water drainage systems must be designed and built in accordance with mandatory standards for sustainable drainage published by Welsh Ministers.

Existing sites and developments with planning permission granted or deemed to be granted (whether or not subject to any conditions as to a reserved matter) or for which a valid application has been received but not determined by 7 January 2019, will not be required to apply for SAB approval.

However, SAB approval will still be required if the planning permission was granted subject to a condition as to a reserved matter and an application for approval of the reserved matter is not made before 7 January 2020. Therefore, this development will require SAB Approval and will need to comply with the National Standards for Sustainable Drainage published by Welsh Ministers.

Full details of the surface water drainage proposals are presented in Appendix A Coopers Drawings. In summary we are proposing:

- Water butt to each property (for garden re-use)
- Raingarden to each property (to meet 5mm interception criteria – source control)
- Tanked permeable paving with underdrain
- Contraflow chamber flow control limiting flows to 1.2 l/s with a 15mm orifice

These components will provide a sustainable drainage system in full compliance to SAB requirements and will provide a betterment on the existing brownfield run-off rates.

The developer will set up a management company to maintain the surface water drainage network for the lifetime of the development. This will include regular maintenance activities to ensure the system is fully functional at all times, and reconstruction of components where necessary. Full details of the management company and costs plans will be included in the SAB Full Application.

The Full SAB Application was submitted to Wrexham SABS on Friday 19th November 2021.

Appendix A

Welsh Water Correspondence

Andy Jones

From: Rhodri Perry <Rhodri.Perry@dwrcymru.com>
Sent: 28 October 2021 16:47
To: Andy Jones
Cc: Services Developer; paul@garobdevelopments.com
Subject: RE: Land to the south west of , the old Black Horse Public House,

Hi Andy,

Thank you for the below including attachments,

We are happy to accept surface water connection from development proposals, do you have an existing and proposed surface water discharge rates? We would be satisfied with at least 30% betterment on existing surface water discharge rate.

Thank you,

Rhodri



Rhodri Perry

Development Control Officer | Developer Services
Dŵr Cymru Welsh Water



W: dwrcymru.com



E: developer.services@dwrcymru.com



T: 0800 917 2652 | M: 07557 849514



A: PO Box 3146, Cardiff, CF30 0EH



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From: Andy Jones <ajones@coopers.co.uk>
Sent: 25 October 2021 17:04
To: Rhodri Perry <Rhodri.Perry@dwrcymru.com>
Cc: Services Developer <developer.services@dwrcymru.com>; paul@garobdevelopments.com
Subject: Land to the south west of , the old Black Horse Public House,

***** External Mail *****

ESC P/2016/0809

**Land to the south west of , the old Black Horse Public House,
High Street, Rhostyllen, Wrexham , LL14 4AG**

Hi Rhodri

We will shortly be submitting a S104 application for the foul sewers on the above 3 dwelling development in Wrexham. We are proposing to discharge into the combined sewer in High Street. Can you please confirm this is acceptable and also if the receiving Wastewater Treatment Works (presumably Five Fords) benefits from a

phosphate permit and has capacity for the additional flows. This correspondence will be required to satisfy NRW.

Recent site investigation works confirmed infiltration tests failed so we are currently investigating a surface water discharge in the highway drain in High Street. If this proves unacceptable with WCBC would Welsh Water consider a surface water connection into the combined sewer?. We have undertaken CCTV confirming the public house currently has a combined drainage system taking both foul and surface water flows which discharge into the combined sewer. If we get to this stage we can collate all information and provide an evidence based report but we would like your initial comments should a surface water connection into the public sewers be required.

Regards

Andy Jones

Senior Infrastructure Engineer

COOPERS

Park House, Sandpiper Court, Chester Business Park, Chester, CH4 9QU

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Mr Andy Jones
Coopers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Date: 18/11/2021
Our Ref: PSA2269928

Dear Sir,

Proposed Section 104 Agreement re. Land at Black Horse, High Street, Rhostyllen LL14 4AD

We write with regards to your application for an adoption agreement at the above location.

We would be grateful if you could provide the following in relation to main drawing **(7888/01)**, accompanying drawings and full application pack –

General

1. Thank you for the cost estimate (including breakdown of costs) for the adoptable drainage elements. The surety amount in this instance will be £1824.90.
2. Please ensure that the main drawing illustrates (as required);
 - development boundary in constant green border
 - proposed foul adoptable system in clear constant brown
 - proposed combined adoptable system in purple if adoptable
 - proposed surface water adoptable system in constant blue if adoptable
 - affected third party land in constant red border if applicable
 - minimum 6 metre easement in clear yellow fill (e.g., in 3rd party land) if applicable
 - all other details, colours, and annotation in clear black / grey (including private / non-adoptable drainage / private surface water system and existing sewers)
 - ensure that key / legend details reflect above aspectsfurther guidance can be obtained from “Single Property – Proposed Lateral Drain Adoption” or “Multiple Properties – adoption of sewerage networks” – Guidance Notes on the Developer Services website.
3. Please ensure that the drawing layout conforms with required access and typical layouts. An adoptable inspection chamber within end curtilage of dwelling to denote start of adoptable lateral. Please refer to B.3 – B.6 (page 13 – 16) typical layouts of “Sewers for Adoption” 7th Edition for further guidance.

4. Thank you for the Manhole Connection Plan with regards to the proposed connection regarding chamber C1, using the examples on the plan in the application form as a guide. The mode of connection will also require assessing and confirming with our operational colleagues.
5. Please provide pipe diameter and gradient of all adoptable sewers and pipe diameter of existing sewers next to proposed and existing sewer lengths in main drawing for review.
6. Please confirm that all necessary investigations have been carried to ensure that there are no existing or transferred (previously private but now public) live sewers serving other properties crossing site.
7. Please confirm that there are no structures or retaining features on site in relation to the proposed adoptable works or existing DCWW sewer. If so, please provide annotate on long sectional drawing detailing any sewers proposed to pass through such structures. Further to this please ensure that all supporting information i.e., loading calculation (if required) are submitted in support of the application in line with the requirements of set out in section B6 of "Sewers for Adoption" 7th Edition.
8. Please ensure that all proposed adoptable, diverted, and existing sewers are located away (a minimum of 3 metres if possible) from permeable paved areas / surface water system and features (SUDS). We may be unable to adopt sewers underneath these arrangements. A (SUDS) design requires careful consideration with regards to proposed adoptable, diverted, and existing sewers. Please provide information to demonstrate how safe access can be achieved and without undermining SUDS features.
9. Please provide detailed cross section where the foul sewer is crossing the highway drain surface water system, together with protection measures details for review.
10. The downstream section of proposed foul chamber (C1) within the development boundary would appear to be private according to the mapping records and may require including for adoption as part of the proposed S104 agreement and coloured accordingly. CCTV of this length will also be required for review. Please note we are not permitted to access external links or accept USB mass storage devices.

Development Control Officer comments

11. No development until scheme for foul / surface water / land drainage submitted and approved by LPA, implemented in accordance with agreed timescale. No surface water / land drainage directly / indirectly to public sewer, foul and surface water drained separately (have confirmed that we will accept surface water on this site on basis that existing discharge and would require at least 30% betterment, not yet received confirmed rate - have advised that the drainage condition will require amending).

To aid the S104 process please address the above comments and include the comment numbers in your response.

Our response is based on the information provided in your initial application and as elements were missing, we reserve the right to review our representation and provide further comments on your following submission.

We trust that the above is satisfactory, however should you have any queries then please contact Developer Services on 0800 917 2652 or email developer.services@dwrcymru.com. Please quote our reference number in all communications and correspondence.

Yours faithfully,

We're not-for-profit. Every single penny we make goes back into looking after your water and environment. You can contact us in Welsh or English.

Rydym yn gwmni nid-er-elw. Mae pob ceiniog a wnawn yn mynd i ofalu am eich dŵr a'ch amgylchedd. Cysylltwch a ni yn Gymraeg neu'n Saesneg.

Dŵr Cymru Cyf. (No./Rhif 2366777)
A limited Company registered in Wales:
Cwmni cyfyngedig wedi'i gofrestru yng Nghymru:

Linea, Fortran Road, St Mellons, Cardiff, CF3 0LT

B Roberts

Bryn Roberts
Project Engineer
Developer Services

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Rydym yn gwmni nid-er-elw. Mae pob ceiniog a wnawn yn mynd i ofalu am eich dŵr a'ch amgylchedd. Cysylltwch a ni yn Gymraeg neu'n Saesneg.

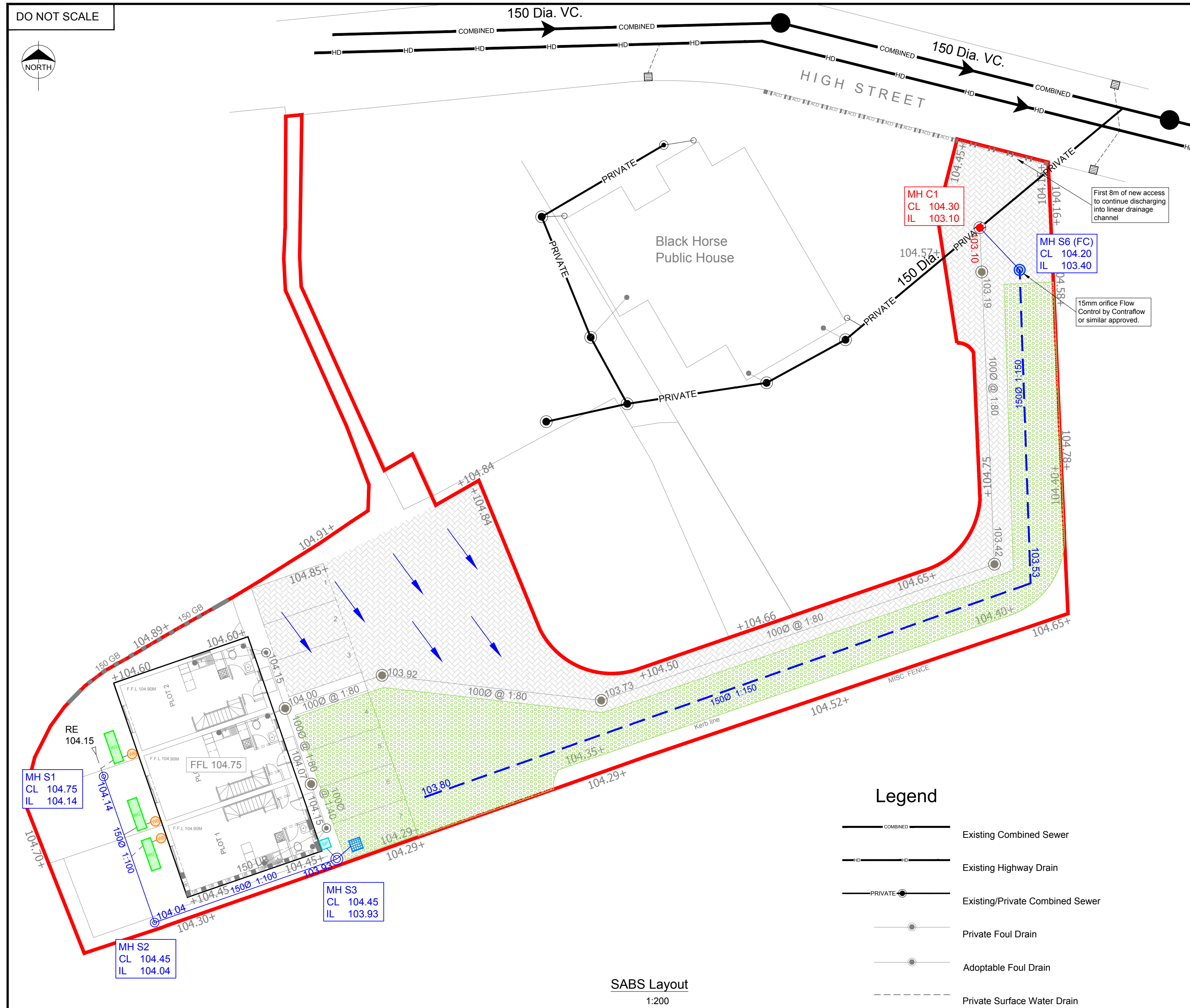
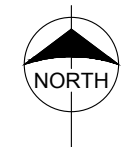
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Appendix B

Coopers Drawings

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SABS Layout
1:200

Legend

- COMBINED Existing Combined Sewer
- HD Existing Highway Drain
- PRIVATE Existing/Private Combined Sewer
- Private Foul Drain
- Adoptable Foul Drain
- Private Surface Water Drain
- Adoptable SABS Surface water drain
- Perforated Underdrain
- Permeable Paving
- Traditional Block Paving
- Rear Rain Garden
- SVP
- Rodding Eye
- Diffuser Unit
- Water Butt

Surface Water Flow Rates

Site Area = 470sq.m.

Existing Brownfied Run-off Rates

Based on existing impermeable area = 250sq.m

1yr = 1.75 l/s
30yr = 4.28 l/s
100yr = 5.52 l/s

Proposed Run-off Rates

30% betterment on 1-year

1yr = 1.20 l/s
30yr = 1.20 l/s
100yr = 1.20 l/s

Total Imp Area = 730sq.m.

Flow Control = 25mm orifice plate at 0.8m design head

39cu.m. Storage required

Permeable driveway (Min 260sq.m. x 500mm deep)

The specification in all respects shall be in accordance with the current Wrexham County Borough Council Specification and Construction publication in force in the county at the time of construction

5mm interception

Permeable paving meets criteria

130sq.m. roof area requires 0.65cu.m. interception.

This can be provided within 3 No. 180 litre water butts and 3 No. rain gardens

Maintenance / Responsibilities

Maintenance of all surface water components will be subject to SAB approval and will be maintained by the property owner for the lifetime of the development

Maintenance requirements will be detailed in a 'SUDS Management Plan' produced to address the frequency and type of maintenance activities. This will be made available to the homeowner on purchase.



Water Butt



SUDS Rain Garden



Permeable Block paving



Flow Control

SUDS Strategy

The prime function of SuDS, as with conventional drainage, is to provide effective surface water drainage, ensuring the greatest degree of flood risk protection over the long term both within and downstream of the development and prevent pollution. However, SuDS approaches can bring wider benefits too. Appropriately designed, constructed and maintained, SuDS are more sustainable than conventional drainage systems and can help to:

- Reduce run-off surface water flow-rates and/or volumes and hence reduce the risk of flooding
- Encourage natural groundwater re-charge
- Reduce pollutant concentrations in storm water
- Provide habitat for wildlife.

There are many site-specific factors which will influence the choice of any single or combination of SuDS devices used within a development. The primary factors are:

- Whether the development is domestic, commercial or industrial
- Whether the underlying ground is contaminated. If so, infiltration systems will most probably not be permitted.
- Whether the underlying ground is permeable enough for infiltration systems to be considered.
- Whether the ground water levels are deep enough for infiltration systems to be considered
- Whether the site is steeply sloping and its general topography
- The availability of space inside the development for each potential SUDS facility.
- Health & Safety aspects should the development be likely to be inhabited or used by children.

To ensure no increased flood risk to offsite land and development, disposal of surface water to the ground is encouraged and runoff volumes will be reduced through the SuDS management train where ground conditions permit. Where ground conditions are unsuitable, a discharge to an open water body / sewer will be necessary with rates restricted to the existing site conditions.

SUDS Methods

Method	Comment	Suitability for Development
Green Roofs	Can be used on suitable low -rise buildings to provide retention, attenuation and treatment of rainwater, and promotes evaporation and local biodiversity.	Not suitable: Architectural proposals for the development involve a pitched roof arrangement which are not suitable for green roofs.
Rainwater Harvesting	Rainwater harvesting reduces the total runoff volume from the developed site, and reduces treated water consumption.	Not suitable: Additional costs of installation would have severe effect on viability of the development. Running and maintenance costs would not be acceptable to our client. The ability to restrict peak flow rates and short-term peak volumes is non-existent where a critical storm event occurs. Water butts will be provided on rear RWP for garden re-use
Infiltration	Reduces total run off volume from the development	Not suitable: Site Investigation has determined the site is underlain by clay which will not allow for infiltration
Permeable Surfacing (Infiltration)	Reduces total run off volume from the development. Can be used to enhance quality of run -off water.	Not suitable: Site Investigation has determined the site is underlain by clay which will not allow for infiltration
Permeable Surfacing (Tanked)	Can be used to enhance quality of run -off water. Sub -base provides 'source' storage and reduces the volume of storage downstream. The storage can be created with selection of the stone fill or use of plastic box systems. Impermeable membrane at base of construction to prevent impact on pavement stability	Suitable: Access and parking areas to incorporate permeable paving subject to detailed design
Swales, basins and ponds	Provide areas for above ground surface run off storage. Swales also allow filtering of particulate matter, improving water quality.	Not Suitable: Layout and topography do not allow for these components.
Bio-Retention Areas	Collect and retain run -off to help improve water quality, prior to discharge in piped system or infiltration	Suitable: SUDS Planters / rain gardens can be provided on RWP's of property.
Geocellular storage	Suitable for sites with insufficient space for basins etc. Suitable for sites where topography prevents the use of open basins etc. Can be very effective infiltration devices subject to ground conditions.	Not Suitable: A tank would be very shallow and potentially require a protection concrete slab above
Large Pipes, conduits and tanks	Suitable for sites with insufficient space for basins etc. Provide a volume of below ground storage with a high void ratio and good man entry provision to allow for future maintenance and cleaning. Generally, be suitable for adoption by the statutory water company.	Not Suitable: Other more sustainable means of drainage using SUDS methods is available within application boundary.

Drainage Strategy

Existing Drainage

The site is currently greenfield and does not benefit from any drainage connections

Proposed Foul

We are proposing to discharge foul flows into the 150 Dia combined sewer located in the highway to the front of the site

Proposed Surface Water

1. Collection for re-use

The developer is not proposing the use of rainwater harvesting for re-use within the dwellings. Rainwater harvesting alone would not be adequate to deal with the surface water flows from the site and provision will be required for an overflow to a Level 2 or lower priority runoff destination. Therefore RWH systems are not considered a cost effective solution for managing surface water and a lower priority runoff destination is required.

Water butts will be installed on a front RWP for garden re-use and car washing

Rain gardens will also be installed on RWP's

2. Infiltration

Site Investigation has determined the site is not suitable for infiltration due to the cohesive underlying strata

3. Watercourse

There are no watercourses within the vicinity of the site where a surface water connection from the site can be considered viable.

4. Highway Drain

A highway drain is present directly outside the site located in High Street. However, a CCTV drainage survey has confirmed this asset is heavily silted and manholes are in poor condition. Therefore this is not considered a suitable receptor for surface water flows from the development

4. Surface water sewer

There are no surface water sewers within the vicinity of the site

5. Combined sewer

A CCTV drainage survey has confirmed the site currently benefits from a surface and foul water connection into the combined sewer. We are therefore proposing to discharge into this asset at a restricted flow rate which provided betterment on the existing flows.

APPROVAL

coopers
chartered consulting engineers

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Park House
Sandpiper Court
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CH4 9QU

Client

GAROB DEVELOPMENTS LTD

Project

**BLACK HORSE SITE,
WREXHAM.**

Title

Surface Water SABS Layout

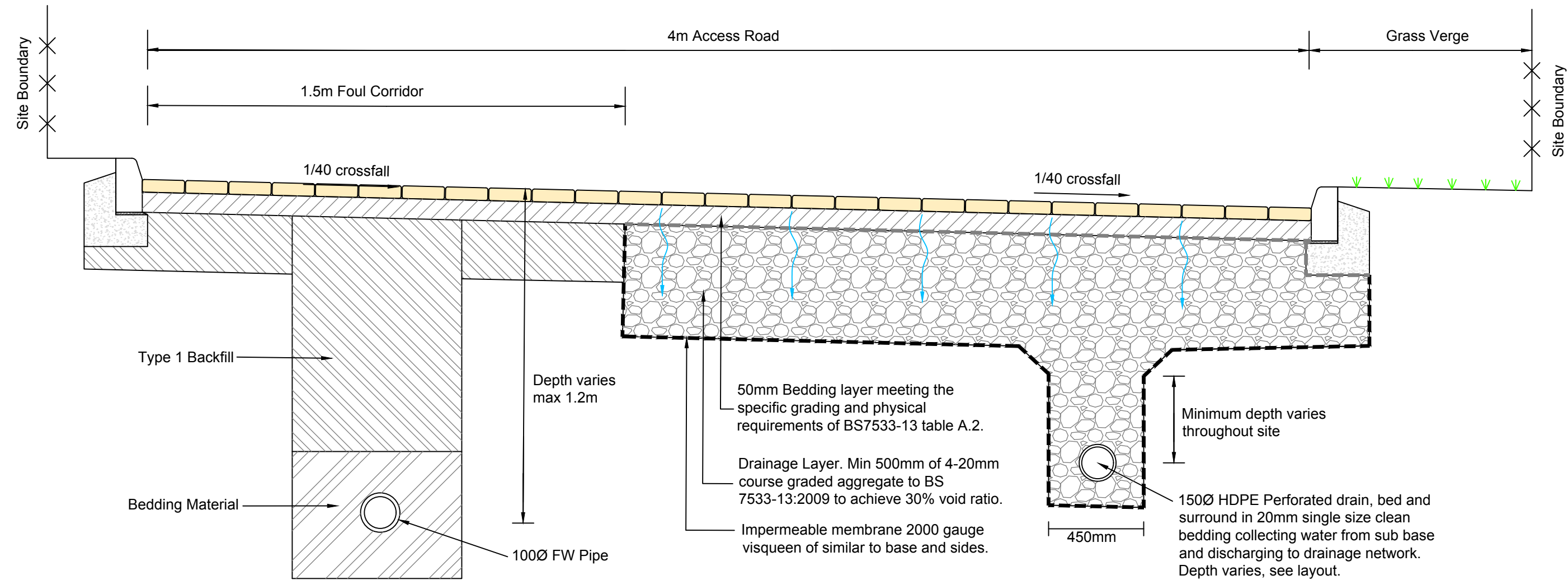
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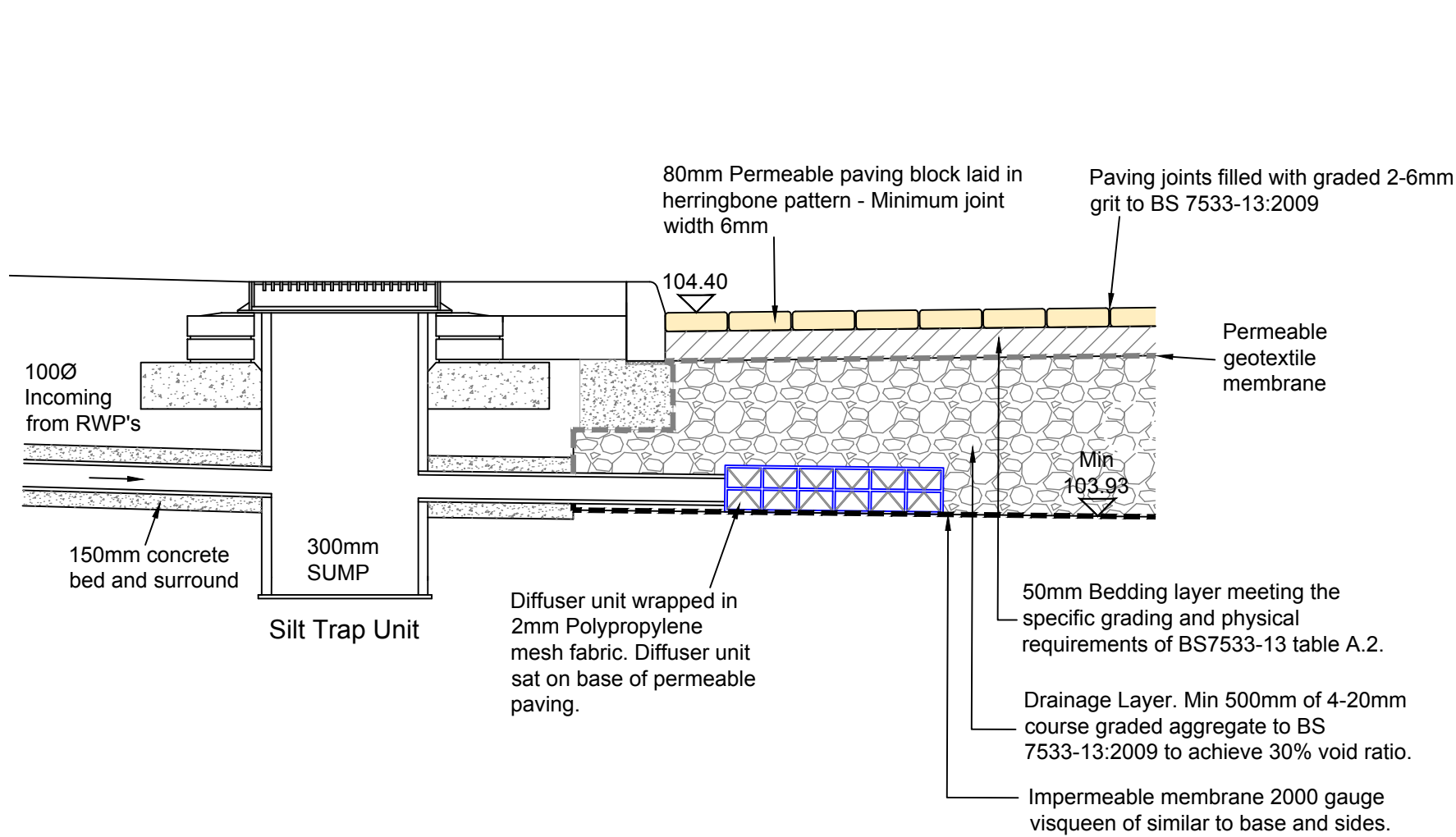
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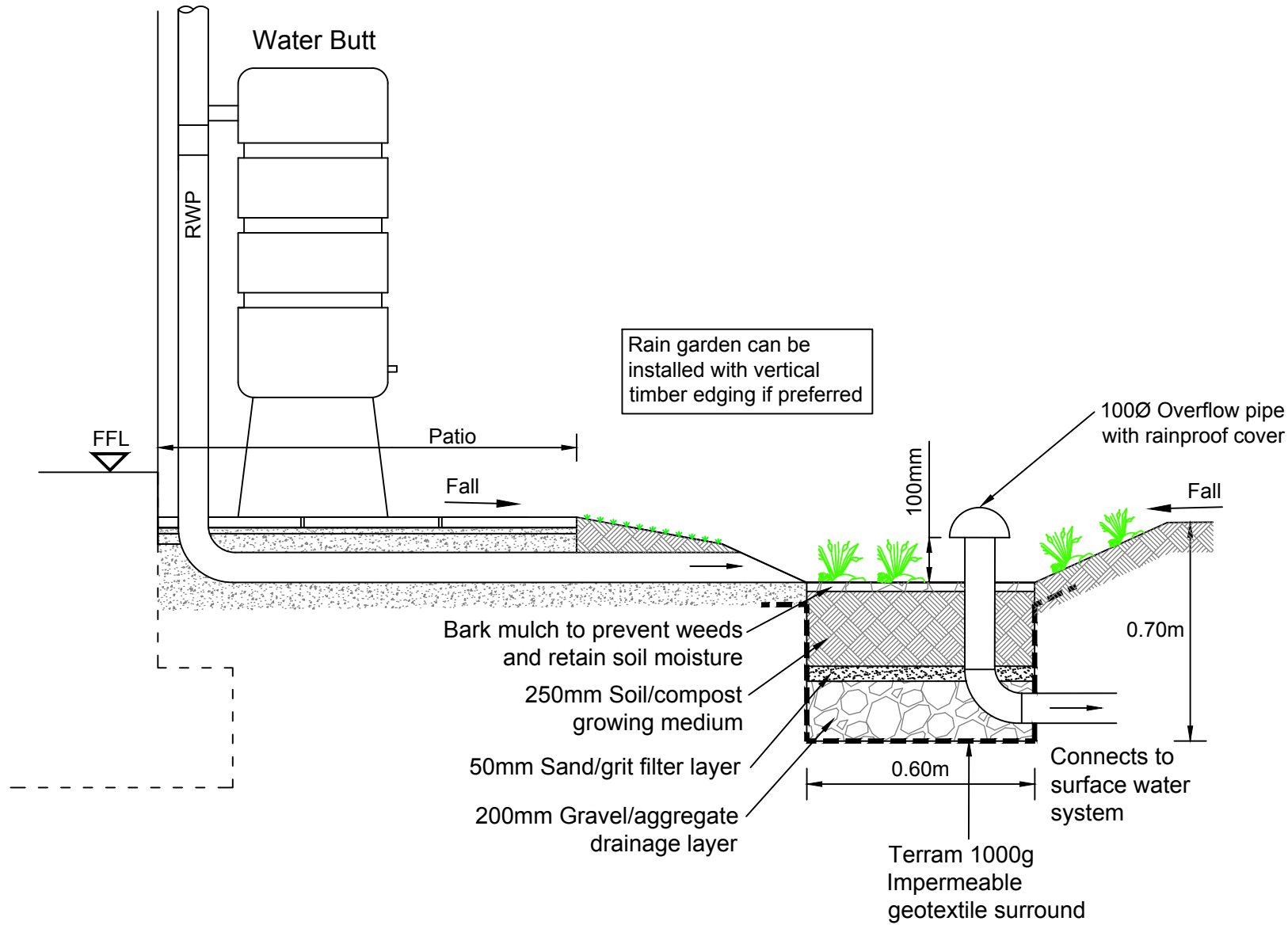
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Section Through Foul corridor and Permeable Paving
NTS



Section Through Permeable Paving
NTS



Typical Rear Rain Garden
Detail

Notes

1. The specification in all respects shall be in accordance with the current Wrexham County Council Specification and Construction publication in force in the county at the time of construction
2. All private drainage works are to comply fully with Part H of the Building Regulations.
3. All existing invert levels to be checked by the contractor at the start of works and any other discrepancies notified to the Engineer prior to commencing works. All levels are based on topographical survey information provided by others.
4. It is the responsibility of the Contractor to verify all information given with regards to existing services and drainage connections etc. prior to commencing the works.
5. The Contractor shall adhere to the CDM Regulations at all times.
6. Only trained personnel shall be permitted to enter confined spaces.
7. All materials to bear the relevant B.S. Kitemark and comply fully with the Sewers for Adoption 7th Specification. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur to withstand a class 3 condition).
8. Cover loadings shall be as detailed on the Manhole Schedule.
9. Drain trenches should not be excavated lower than the foundations of any building nearby unless either:
 - a) The trench is within 1m of the foundation, the trench is filled with concrete up to the lowest level of the foundation, or
 - b) Where the trench is further than 1m from the building, the trench is filled with concrete to a level below the lowest level for the building equal to the distance from the build, less 150mm.
11. Manhole covers to be marked FWS or SW as appropriate

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Client

GAROB DEVELOPMENTS LTD

Project

BLACK HORSE SITE,
WREXHAM.

Title

SABS Details

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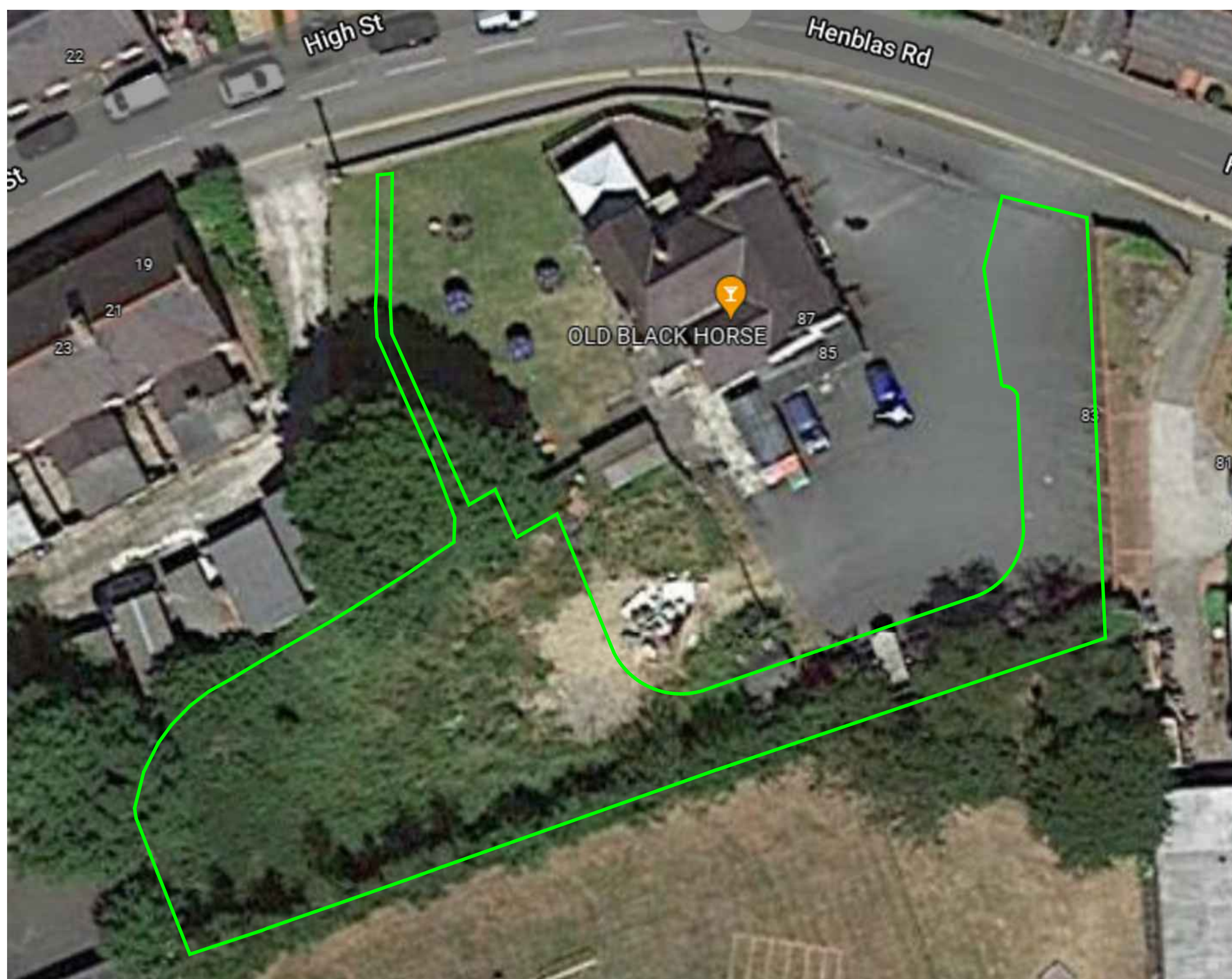
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Existing Impermeable Areas

250 sq.m Public House car park
Total = 250 sq.m



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eeers
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Client	
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GAROB DEVELOPMENTS LTD

	Project

BLACK HORSE SITE,
WREXHAM.

	Title
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Existing Impermeable Area

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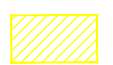


Legend

Proposed Impermeable Areas



600 sq.m Access Road / Parking



130 sq.m Plots

Total = 730 sq.m

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Project
**BLACK HORSE SITE,
WREXHAM.**

Title
Proposed Impermeable Area

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Appendix C

Surface Water MicroDrainage Calculations

Coopers		Page 2
Park House Sandpiper Court Chester CH4 9QU	Land at Black Horse Rhostyllen, Wrexham SW Design	
Date 15/11/2021 File 7888 SW01.SRCX	Designed by Coopers Checked by AJ	
Micro Drainage		Source Control 2018.1.1

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	103.755	0.255	0.0	0.6	0.6	19.9	0 K
60 min Winter	103.834	0.334	0.0	0.7	0.7	26.1	0 K
120 min Winter	103.912	0.412	0.0	0.8	0.8	32.2	Flood Risk
180 min Winter	103.951	0.451	0.0	0.9	0.9	35.2	Flood Risk
240 min Winter	103.970	0.470	0.0	0.9	0.9	36.7	Flood Risk
360 min Winter	103.987	0.487	0.0	0.9	0.9	38.0	Flood Risk
480 min Winter	103.993	0.493	0.0	0.9	0.9	38.4	Flood Risk
600 min Winter	103.996	0.496	0.0	0.9	0.9	38.7	Flood Risk
720 min Winter	103.995	0.495	0.0	0.9	0.9	38.6	Flood Risk
960 min Winter	103.985	0.485	0.0	0.9	0.9	37.8	Flood Risk
1440 min Winter	103.954	0.454	0.0	0.9	0.9	35.4	Flood Risk
2160 min Winter	103.901	0.401	0.0	0.8	0.8	31.3	Flood Risk
2880 min Winter	103.852	0.352	0.0	0.8	0.8	27.5	0 K
4320 min Winter	103.774	0.274	0.0	0.7	0.7	21.4	0 K
5760 min Winter	103.719	0.219	0.0	0.6	0.6	17.1	0 K
7200 min Winter	103.679	0.179	0.0	0.5	0.5	14.0	0 K
8640 min Winter	103.650	0.150	0.0	0.5	0.5	11.7	0 K
10080 min Winter	103.627	0.127	0.0	0.4	0.4	9.9	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	71.348	0.0	20.0	33
60 min Winter	47.182	0.0	27.4	62
120 min Winter	30.146	0.0	35.4	120
180 min Winter	22.825	0.0	40.4	176
240 min Winter	18.579	0.0	43.9	232
360 min Winter	13.848	0.0	49.2	340
480 min Winter	11.235	0.0	53.3	386
600 min Winter	9.543	0.0	56.6	462
720 min Winter	8.346	0.0	59.4	540
960 min Winter	6.748	0.0	64.0	692
1440 min Winter	4.988	0.0	70.8	992
2160 min Winter	3.678	0.0	78.6	1408
2880 min Winter	2.957	0.0	84.0	1816
4320 min Winter	2.170	0.0	91.9	2592
5760 min Winter	1.742	0.0	98.1	3344
7200 min Winter	1.471	0.0	102.9	4040
8640 min Winter	1.281	0.0	107.0	4760
10080 min Winter	1.139	0.0	110.5	5544

Coopers		Page 3																														
Park House Sandpiper Court Chester CH4 9QU	Land at Black Horse Rhostyllen, Wrexham SW Design																															
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