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Residential Development at

TRASTON ROAD, NEWPORT

Bron Afan / Wellspring

Flood Consequence Assessment and Drainage Strategy Technical Note

1st Issue

December 2024

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Revision History

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1st	05/12/2024	First Issue	T Owens-Redwood	Director

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1. Introduction

PHG Consulting have been commissioned to provide engineering support for a planning application consisting of residential dwellings on a site off Traston Road, Newport. The site benefits from a current planning permission and the revised scheme looks to introduce a sewerage pumping station to manage foul flows and adjust some of the dwellings.

The existing site is greenfield and covers an area of 0.85 ha. The site is located off Traston Road, Liswerry, Newport, at the National Grid reference ST337863.

2. Planning History

As stated, the development site currently has planning approval, application 05/0287 was granted with conditions in August 2012, with conditions 3 and 16 relating to surface water drainage and flood risk. These are replicated below, with the full approval notice included as Appendix A.

(3) No development shall commence until full details of the surface water drainage system has been submitted to and approved in writing by the Local Planning Authority. The details shall be implemented fully in accordance with the approved scheme prior to the first occupation of any dwelling.

Reason: To ensure adequate drainage is provided.

(16) The Finished Floor Levels at ground floor level of the dwellings hereby approved shall be constructed in accordance with the levels shown on the plan labeled (sic) (Figure 4), contained within the correspondence dated 24th October 2011.

Reason: To reduce the risk of flooding.

Subsequent Condition Discharge applications were submitted for various conditions on the site, including Condition 3. Planning application 17/0382 was granted partial discharge of the surface water related condition, with planning application 17/0639 gaining approval for the surface water condition. The decision notices for these two applications are included at Appendix A.

The approval of planning application 17/0639 satisfies Condition 3.

Condition 16 requires the FFLs of the site to be constructed in line with the levels stipulated in the approved FCA (dated July 2009) and referred to in the Note to Applicant (Note 1) of the 05/0287 approval.

3. Flood Risk and Consequence

The development will not alter the flood risk or its consequences. The site already has planning approval for residential use, applicable to the current or any future applications.

The approved **Flood Consequences Assessment (FCA)** determined that the Finished Floor Levels (FFLs) must be raised above the existing ground levels to **6.80m AOD**. Since the flood risk at the site remains unchanged since the FCA was submitted, adherence to these levels is required.

Additionally, as the flood risk is associated with tidal sources, raising the site levels will not displace floodwater. Therefore, compensatory storage is not necessary.

4. Drainage Strategy

Foul Water Management

The initial foul water strategy approved during the original planning application could not be executed due to the levels of the existing public sewer network. A previously approved Non-Material Amendment (NMA) application proposed the inclusion of a foul water pumping station. This revised planning application maintains the use of a pumping station to manage the development's wastewater flows.

The foul water pumping station will discharge into an existing public sewer located on Traston Close. Further investigations are necessary to determine the depth of the existing sewer.

Surface Water Management

The surface water drainage strategy aligns with the National Standards for Sustainable Drainage Systems (SuDS) as set by the Welsh Government. Key principles include:

- Proximity and Source Control: Managing water near the surface and as close to the runoff source as possible.
- Rainwater Harvesting: Each plot will include water butts to provide a supply of potable water.
- Pollution Prevention: The drainage system will prevent pollution at the source using the simple index method, supported by SuDS features to manage potential contaminants.
- Flow Control: Runoff will be limited to a discharge rate of 3.4 l/s.
- Climate Resilience: The system is designed to accommodate storm events up to and including the 1-in-100-year return period, with an additional 40% allowance for climate change and a 10% adjustment for urban creep.
- SuDS Management Train: A robust system is used instead of a single "end-of-pipe" solution, such as a pond, ensuring:
- Enhanced amenity and biodiversity benefits.
- Optimal use of available land through multifunctional public spaces.
- Reliable and safe operation over the development’s design life.
- Minimal need for pumping wherever possible.
- Affordability in terms of construction and long-term maintenance.

Compliance with SuDS Standards

S1 – Surface Water Runoff Destinations

Level 1: Water reuse will be considered at the detailed design stage, although individual rainwater harvesting systems have been deemed uneconomical. Rainwater butts will be included in the design.

Level 2: Infiltration is unfeasible due to poor soil permeability.

Level 3: Surface water will discharge into an existing watercourse at the site boundary.

Level 4: Not applicable as discharging to Level 3.

Level 5: Not applicable as discharging to Level 3.

S2 – Hydraulic Control

Attenuation storage will accommodate rainfall events up to a 1-in-100-year return period with a 40% allowance for climate change.

Peak discharge rates are restricted to 3.4 l/s for the same event.

The system will capture and manage the first 5 mm of rainfall for most events using shallow features to maximize infiltration.

Hydraulic calculations and the engineering layout are provided in Appendix A.

S3 – Water Quality

Multiple green SuDS features will ensure the water quality meets national standards.

S4 – Amenity

SuDS features will enhance the site's amenity value, providing high-quality public spaces that promote health, well-being, and climate resilience.

S5 – Biodiversity

The design incorporates features to boost biodiversity, creating green and blue corridors and enhancing ecological networks. A planting plan will ensure these benefits are maximized throughout the site's lifecycle.

S6 – Construction, Operation, and Maintenance

The SuDS system is designed for safe and straightforward construction, maintenance, and operation while minimizing environmental impacts.

This strategy reflects a comprehensive approach to managing foul and surface water, ensuring sustainability, compliance, and long-term functionality for the development.

Appendix A - Hydraulic Calculations and Engineering Layout

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	1999
Site Location	GB 333706 186335 ST 33706 86335
C (1km)	0.000
D1 (1km)	0.000
D2 (1km)	0.000
D3 (1km)	0.000
E (1km)	0.000
F (1km)	0.000
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.239	4-8	0.188	8-12	0.001

Total Area Contributing (ha) = 0.427

Total Pipe Volume (m³) = 28.547

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

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)

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	17.782	0.040	450.0	0.032	5.00	0.0	0.600	o	450	Pipe/Conduit	
1.001	60.152	0.134	450.0	0.109	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.002	37.164	0.083	447.8	0.117	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.003	25.430	0.057	450.0	0.095	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.004	13.187	0.029	450.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	18.804	0.043	437.3	0.073	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	6.975	0.023	303.3	0.000	0.00	0.0	0.600	o	450	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	11.30	5.31	5.559	0.032	0.0	0.0	0.0	0.95	151.4	1.0
1.001	9.43	6.36	5.519	0.142	0.0	0.0	0.0	0.95	151.4	3.6
1.002	8.55	7.01	5.385	0.259	0.0	0.0	0.0	0.95	151.8	6.0
1.003	8.04	7.46	5.302	0.354	0.0	0.0	0.0	0.95	151.4	7.7
1.004	7.80	7.69	5.245	0.354	0.0	0.0	0.0	0.95	151.4	7.7
1.005	7.49	8.01	5.216	0.427	0.0	0.0	0.0	0.97	153.6	8.7
1.006	7.39	8.11	5.173	0.427	0.0	0.0	0.0	1.16	184.8	8.7

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	6.375	0.816	Open Manhole	1350	1.000	5.559	450				
2	6.650	1.131	Open Manhole	1350	1.001	5.519	450	1.000	5.519	450	
3	6.680	1.295	Open Manhole	1350	1.002	5.385	450	1.001	5.385	450	
4	6.600	1.298	Open Manhole	1350	1.003	5.302	450	1.002	5.302	450	
5	6.850	1.605	Open Manhole	1350	1.004	5.245	450	1.003	5.245	450	
6	6.700	1.484	Open Manhole	1350	1.005	5.216	450	1.004	5.216	450	
7	6.300	1.127	Open Manhole	1350	1.006	5.173	450	1.005	5.173	450	
	6.100	0.950	Open Manhole	0		OUTFALL		1.006	5.150	450	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	333780.903	186276.598	333780.903	186276.598	Required	
2	333772.410	186292.220	333772.410	186292.220	Required	
3	333727.607	186332.356	333727.607	186332.356	Required	
4	333698.928	186355.992	333698.928	186355.992	Required	
5	333679.916	186372.880	333679.916	186372.880	Required	
6	333668.973	186380.239	333668.973	186380.239	Required	
7	333650.328	186377.799	333650.328	186377.799	Required	
	333647.476	186384.164			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	450	1	6.375	5.559	0.366	Open Manhole	1350
1.001	o	450	2	6.650	5.519	0.681	Open Manhole	1350
1.002	o	450	3	6.680	5.385	0.845	Open Manhole	1350
1.003	o	450	4	6.600	5.302	0.848	Open Manhole	1350
1.004	o	450	5	6.850	5.245	1.155	Open Manhole	1350
1.005	o	450	6	6.700	5.216	1.034	Open Manhole	1350
1.006	o	450	7	6.300	5.173	0.677	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	17.782	450.0	2	6.650	5.519	0.681	Open Manhole	1350
1.001	60.152	450.0	3	6.680	5.385	0.845	Open Manhole	1350
1.002	37.164	447.8	4	6.600	5.302	0.848	Open Manhole	1350
1.003	25.430	450.0	5	6.850	5.245	1.155	Open Manhole	1350
1.004	13.187	450.0	6	6.700	5.216	1.034	Open Manhole	1350
1.005	18.804	437.3	7	6.300	5.173	0.677	Open Manhole	1350
1.006	6.975	303.3		6.100	5.150	0.500	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.032	0.032	0.032
1.001	User	-	100	0.109	0.109	0.109
1.002	User	-	100	0.117	0.117	0.117
1.003	User	-	100	0.095	0.095	0.095
1.004	-	-	100	0.000	0.000	0.000
1.005	User	-	100	0.073	0.073	0.073
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.427	0.427	0.427

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)
1.006		6.100	5.150	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	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	5
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	2
FEH Rainfall Version	1999
Site Location	GB 333706 186335 ST 33706 86335
C (1km)	0.000
D1 (1km)	0.000
D2 (1km)	0.000
D3 (1km)	0.000
E (1km)	0.000
F (1km)	0.000
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 7, DS/PN: 1.006, Volume (m³): 4.4

Unit Reference	MD-SHE-0085-3400-1200-3400
Design Head (m)	1.200
Design Flow (l/s)	3.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	85
Invert Level (m)	5.173
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.4	Kick-Flo®	0.743	2.7
Flush-Flo™	0.363	3.4	Mean Flow over Head Range	-	3.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.5	1.200	3.4	3.000	5.2	7.000	7.7
0.200	3.2	1.400	3.6	3.500	5.6	7.500	8.0
0.300	3.4	1.600	3.9	4.000	5.9	8.000	8.3
0.400	3.4	1.800	4.1	4.500	6.3	8.500	8.5
0.500	3.3	2.000	4.3	5.000	6.6	9.000	8.7
0.600	3.2	2.200	4.5	5.500	6.9	9.500	9.0
0.800	2.8	2.400	4.7	6.000	7.2		
1.000	3.1	2.600	4.9	6.500	7.5		

Storage Structures for Storm

Tank or Pond Manhole: 1, DS/PN: 1.000

Invert Level (m) 6.175

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	61.0	0.200	111.7

Cellular Storage Manhole: 2, DS/PN: 1.001

Invert Level (m) 5.519 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	67.5	67.5	0.801	0.0	93.9
0.800	67.5	93.9			

Tank or Pond Manhole: 4, DS/PN: 1.003

Invert Level (m) 6.450

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	44.0	0.150	101.4

Cellular Storage Manhole: 6, DS/PN: 1.005

Invert Level (m) 5.218 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	81.0	81.0	1.300	0.0	127.8
1.200	81.0	127.8			

Tank or Pond Manhole: 7, DS/PN: 1.006

Invert Level (m) 5.173

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	81.0	1.127	251.0

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	5
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 333706 186335 ST 33706 86335
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	30 Summer	2	+0%	100/120 Summer				5.638
1.001	2	30 Summer	2	+0%	100/60 Summer				5.621
1.002	3	480 Summer	2	+0%	100/15 Summer				5.577
1.003	4	480 Summer	2	+0%	30/240 Summer				5.576
1.004	5	480 Summer	2	+0%	30/120 Summer				5.575
1.005	6	480 Summer	2	+0%	30/60 Summer				5.574
1.006	7	480 Summer	2	+0%	30/60 Summer				5.573

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.371	0.000	0.05			5.4	OK	
1.001	2	-0.348	0.000	0.10		16	13.7	OK	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	-0.258	0.000	0.08			10.7	OK	
1.003	4	-0.176	0.000	0.11			14.2	OK	
1.004	5	-0.120	0.000	0.15			13.5	OK	
1.005	6	-0.092	0.000	0.10		340	11.2	OK	
1.006	7	-0.050	0.000	0.03			3.4	OK	

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	5
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 333706 186335 ST 33706 86335
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	480 Winter	30	+0%	100/120 Summer				5.821
1.001	2	480 Winter	30	+0%	100/60 Summer				5.821
1.002	3	480 Winter	30	+0%	100/15 Summer				5.821
1.003	4	480 Winter	30	+0%	30/240 Summer				5.817
1.004	5	480 Winter	30	+0%	30/120 Summer				5.816
1.005	6	480 Winter	30	+0%	30/60 Summer				5.815
1.006	7	480 Winter	30	+0%	30/60 Summer				5.814

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.188	0.000	0.01			1.6	OK	
1.001	2	-0.148	0.000	0.04		278	5.6	OK	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	-0.014	0.000	0.07			9.8	OK	
1.003	4	0.065	0.000	0.10			13.2	SURCHARGED	
1.004	5	0.121	0.000	0.13			12.4	SURCHARGED	
1.005	6	0.149	0.000	0.12		541	13.2	SURCHARGED	
1.006	7	0.191	0.000	0.03			3.4	SURCHARGED	

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	5
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 333706 186335 ST 33706 86335
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

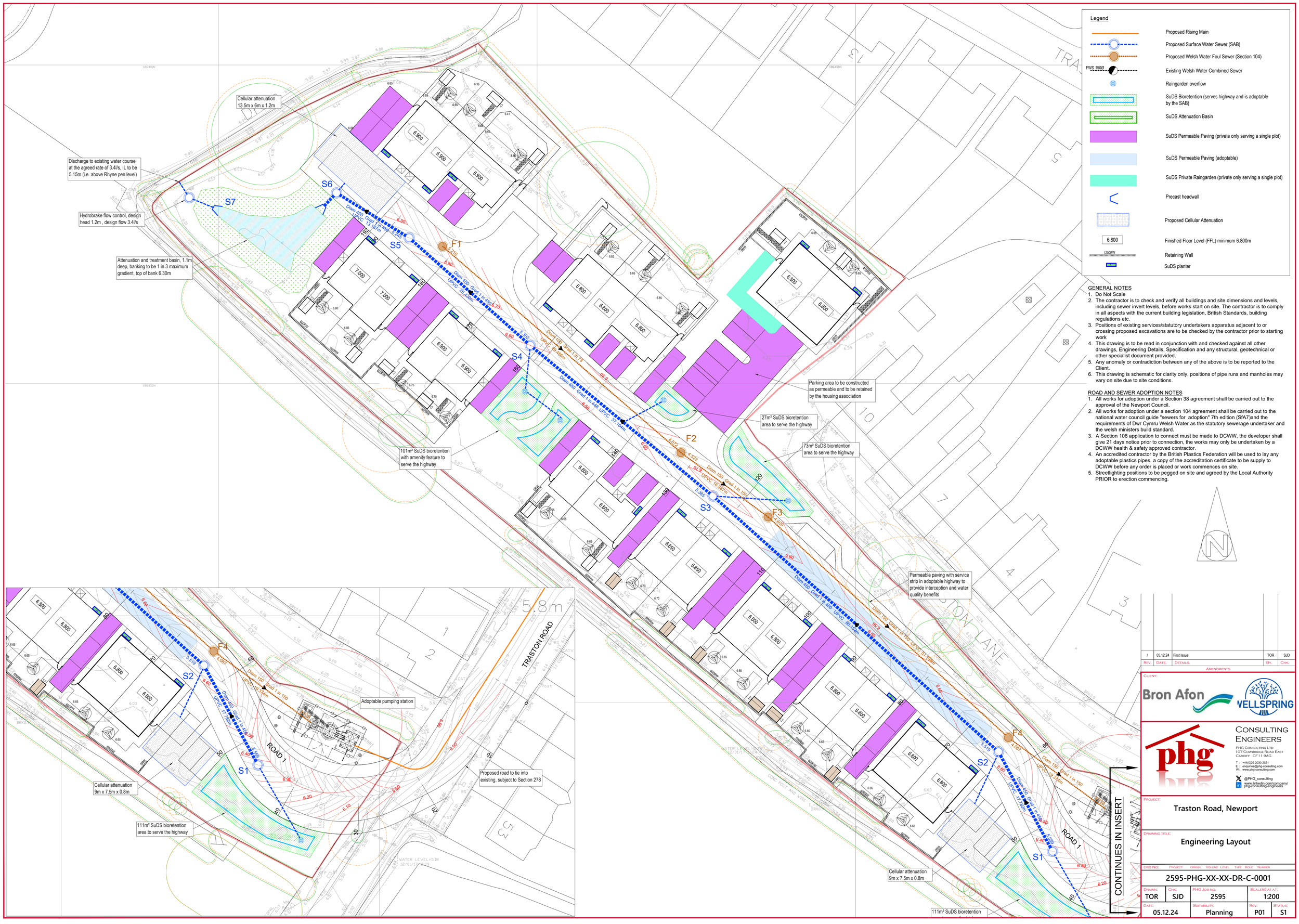
Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	480 Winter	100	+40%	100/120 Summer				6.302
1.001	2	480 Winter	100	+40%	100/60 Summer				6.302
1.002	3	480 Winter	100	+40%	100/15 Summer				6.302
1.003	4	480 Winter	100	+40%	30/240 Summer				6.301
1.004	5	480 Winter	100	+40%	30/120 Summer				6.299
1.005	6	480 Winter	100	+40%	30/60 Summer				6.298
1.006	7	480 Winter	100	+40%	30/60 Summer				6.297

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.293	0.000	0.03			2.9	FLOOD RISK	
1.001	2	0.333	0.000	0.08		849	10.7	SURCHARGED	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	0.467	0.000	0.15			20.1	SURCHARGED	
1.003	4	0.549	0.000	0.22			28.3	FLOOD RISK	
1.004	5	0.604	0.000	0.30			28.0	SURCHARGED	
1.005	6	0.632	0.000	0.21		1122	24.4	SURCHARGED	
1.006	7	0.674	0.000	0.03			3.4	FLOOD RISK	



GENERAL NOTES

1. Do Not Scale
2. The contractor is to check and verify all buildings and site dimensions and levels, including sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British Standards, building regulations etc.
3. Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work
4. This drawing is to be read in conjunction with and checked against all other drawings, Engineering Details, Specification and any structural, geotechnical or other specialist document provided.
5. Any anomaly or contradiction between any of the above is to be reported to the Client.
6. This drawing is schematic for clarity only, positions of pipe runs and manholes may vary on site due to site conditions.

ROAD AND SEWER ADOPTION NOTES

1. All works for adoption under a Section 38 agreement shall be carried out to the approval of the Newport Council.
2. All works for adoption under a section 104 agreement shall be carried out to the national water council guide "sewers for adoption" 7th edition (SfA7)and the requirements of Dwr Cymru Welsh Water as the statutory sewerage undertaker and the welsh ministers build standard.
3. A Section 106 application to connect must be made to DCWW, the developer shall give 21 days notice prior to connection, the works may only be undertaken by a DCWW health & safety approved contractor.
4. An accredited contractor by the British Plastics Federation will be used to lay any adoptable plastics pipes. a copy of the accreditation certificate to be supply to DCWW before any order is placed or work commences on site.
5. Streetlighting positions to be pegged on site and agreed by the Local Authority PRIOR to erection commencing.

Rev.	Date.	Details.	By.	Chk.
I	05.12.24	First Issue	TOR	SJD

Amendments

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Project: Traston Road, Newport

Drawing Title: Engineering Layout

Org No:	Project	Origin	Volume Level	Type	Role	Number
2595-PHG-XX-XX-DR-C-0001						

Drawn:	Chk:	PHG Job No.	Scale@ A1:
TOR	SJD	2595	1:200

Date:	Suitability:	Rev:	Status:
05.12.24	Planning	P01	S1