

Hendre Farm Drive

Newport

New Residential Development



Willis Construction

Flood Consequences Assessment

&

Drainage Strategy

July 2025



107 Cowbridge Road East

CARDIFF, CF11 9AG

t: 029 2030 2521

INTENTIONALLY BLANK PAGE

DOCUMENT CONTROL

Project Number	2307
Project Title	New Residential Development, Hendre Farm Drive, Newport
Client	Willis Construction
Document Title	Flood Consequences Assessment and Drainage Strategy

Prepared by	Checked by	Verified by	Approved by
Patryk Obermajer Civil Engineer	Tony Owens-Redwood Director	Stephen Davis Director	Tony Owens-Redwood Director

Issue History

Issue	Revision date	Details	By	Position
1 st	03/03/2023	First Issue	Patryk Obermajer	Civil Engineer
2 nd	29/08/2023	Layout amended	T Owens-Redwood	Director
3 rd	30/09/2024	Layout amended	T Owens-Redwood	Director
4 th	09/10/2024	Layout amended	T Owens-Redwood	Director
5 th	25/11/2024	Pre-SAB Issue	T Owens-Redwood	Director
6 th	18/07/2025	Revised to amended TAN 15	T Owens-Redwood	Director

Contents

1	Introduction	1
	Existing Site.....	1
	Geology and Hydrogeology	2
	Development Proposals	3
2	Flood Consequences Assessment	5
	Flood Maps – NRW	5
	Development Category – Flood Zones Compatibility.....	5
3	Drainage Strategy	7
	Surface Water Features.....	7
	Existing Sewers	7
	Foul Drainage.....	7
	Surface Water Drainage	7
4	Conclusions	11

Figures

Figure 1. Site Location plan.....	1
Figure 2. Site Topography from site survey	2
Figure 3. Site Plan.....	4
Figure 4. Flood Map for Planning	6
Figure 5. DCWW - Sewer Records.....	7

Tables

Table 1. Flood Risk Summary	5
Table 2. S1 Surface Water Runoff Destination	9
Table 3. Peak Discharge Rates	9

Appendices

Appendix A.....	Infiltration Testing
Appendix B.....	NRW Flood Maps
Appendix C.....	Engineering Layout
Appendix D.....	Architects Layout

1 Introduction

PHG Consulting have been commissioned by Willis Construction to undertake a Flood Consequences Assessment report to support the planning application.

The purpose of the report is to identify existing flood risk at the site and ensures that surface and foul water drainage will not affect the downstream catchments detrimentally.

The report demonstrates how surface runoff from the development will be designed to prevent increased flood risk elsewhere.

Existing Site

The existing site is brownfield and covers an area of 0.877ha. The site is located north of A48 at National Grid reference ST354881 as shown in Figure 1 below.



Figure 1. Site Location plan

The eastern boundary of the site is bound by houses and to the north by Hendre Farm Drive. The site levels fall from north to south towards the watercourse parallel to the southmost boundary. The average gradient across the site is 1 in 12. Existing levels are shown in Figure 2.



Figure 2. Site Topography from site survey

Geology and Hydrogeology

The Site Investigation works has found the site to be underlain by made ground and stiff and silty clay.

The WRAP map shows that the site is in a WRAP class 3 of mixed permeable and impermeable soils.

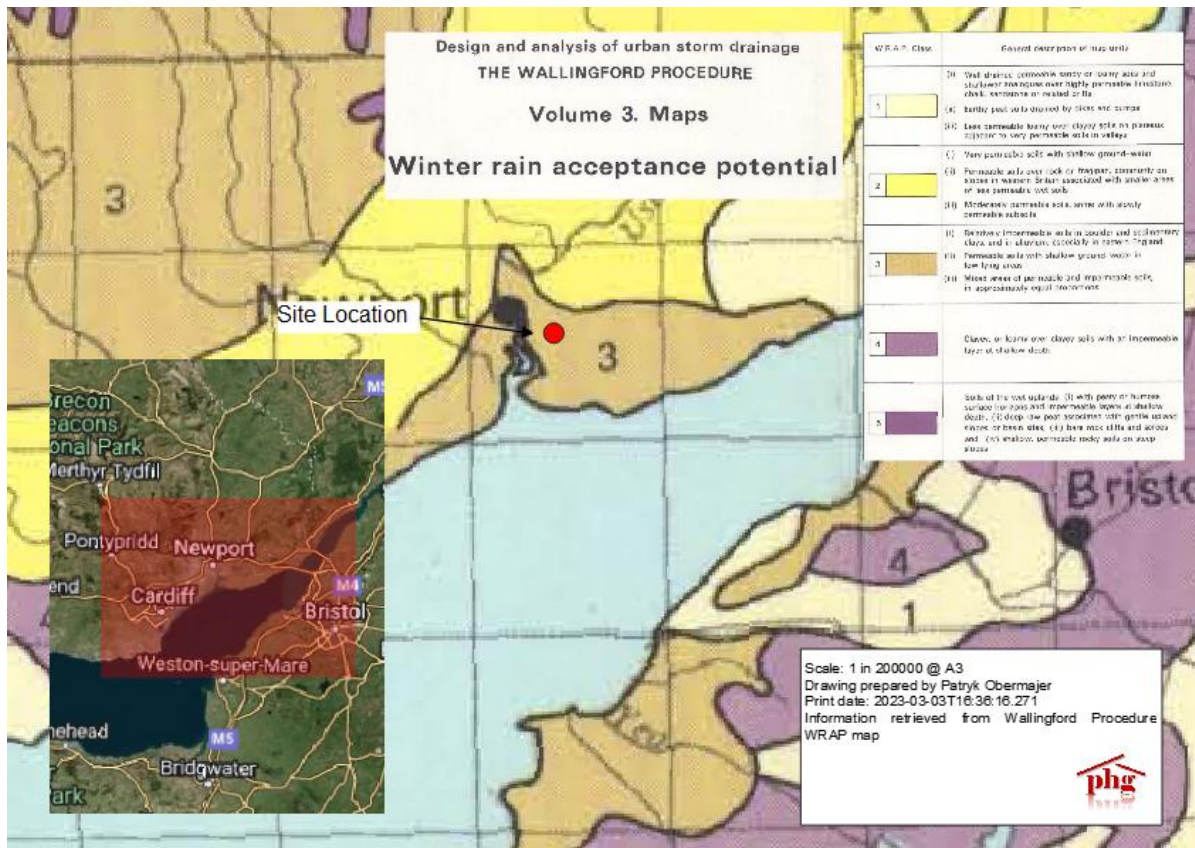


Figure 3. WRAP MAP

Infiltration testing was undertaken during the site investigation works. Two falling head tests were carried out and no infiltration was recorded in either test. Infiltration test information and an extract from the SI report can be found at Appendix A.

Development Proposals

The proposed development is for a residential area comprising 32 units along with associated infrastructure.

2 Flood Consequences Assessment

The assessment considers all sources of flooding pertaining to the site and immediate vicinity, determine the risk of flooding (flood frequency) and the effect (flood consequences). In Wales, the planning policy regarding flooding is governed by TAN15: Development and Flood Risk document. This report has been prepared according to TAN15.

Flood Maps – NRW

The Natural Resources for Wales (NRW) have issued Flood Maps for Planning (FMfP) in accordance with TAN15, all areas of Wales have been designated a flood zone in relation to the risk of flooding.

The site is in Flood Zone 1 as per the Flood Map for Planning (new TAN15), i.e., suitable for highly vulnerable development.

Table 1. Flood Risk Summary

Source of Flooding	Risk Probability	Remarks
Risk from Rivers	NO – Flooding (very low)	Appendix B demonstrates the site to be flood free (very low, less than 0.1% probability)
Risk from Surface Water & Small Watercourses	Yes – Zone 3 and Zone 2	Appendix B demonstrates southern part of the site is within Zone 3 and Zone 2 of Surface Water and Small Watercourses due to the proximity of a watercourse running along the southern boundary.
Risk from Reservoirs	NO – Flooding (very low)	Appendix B demonstrates the site to be flood free (very low, less than 0.1% probability)
Risk from Sea	NO – Flooding (very low)	Appendix B demonstrates the site to be flood free (very low, less than 0.1% probability)

Development Category – Flood Zones Compatibility

The site development is classified as Highly Vulnerable Development, its design life is 100 years¹. As mentioned above, the site is in **Flood Zone1** according to TAN15.

Southern part of the site is at risk of flooding from Small Watercourses and Surface Water, parts of the site are within Zone 2 and Zone 3 due to the proximity of the watercourse running

¹ Guidance on Climate Change Allowances for Planning Purposes, CL-03-16, Welsh Government

along the southern boundary. The levels will be raised, and the FFLs of the proposed dwellings will be above the existing, which will reduce the risk of surface water and small watercourses flooding in and around the dwellings.

The development is brownfield and will not lead to an increase of flood risk to adjacent and downstream catchments. The development will also result in a reduction to surface water runoff rates and volumes due to the introduction of SuDS features and controlled discharge.

Therefore, the development is permitted on the grounds of flood risk.



Figure 4. Flood Map for Planning

3 Drainage Strategy

Surface Water Features

There is an unnamed watercourse running through the south of the development site. The watercourse is a tributary to Liswerry Pill Reen, and, further downstream, to the River Usk. The channel bed is of concrete; a section of the watercourse within the site is culverted.

Existing Sewers

There are public sewer networks, both foul and surface water, passing through the development site as shown by Welsh Water (DCWW) sewer records in Figure 5.



Figure 5. DCWW- Sewer Records

Foul Drainage

Based on site topography, a gravity connection is achievable, and the proposed connection is to be made to the foul system within the site. A Section 104 will be made to DCWW.

Surface Water Drainage

The site is brownfield and currently has active drainage connections into the watercourse. The brownfield site currently contains 0.33ha of impermeable surfacing. Using FEH rainfall data and the rational method, the peak runoff during each rainfall event have been calculated;

Rainfall Intensities (I):

1-year event: 8.86 mm/hr

30-year event: 31.08 mm/hr

100-year event: 39.6 mm/hr

Runoff Coefficient (C): Typically 0.9 for impermeable surfaces like concrete or tarmac

Rational Method

$$Q=2.78 \times C \times I \times A$$

Where:

Q = Peak runoff rate (litres/second)

C = Runoff coefficient (dimensionless)

I = Rainfall intensity (mm/hr)

A = Area (hectares)

2.78 = Unit conversion factor

1-Year Return Period

$$Q_{1yr}=2.78 \times 0.9 \times 8.86 \times 0.33=7.31 \text{ l/s}$$

30-Year Return Period

$$Q_{30yr}=2.78 \times 0.9 \times 31.08 \times 0.33=25.65 \text{ l/s}$$

100-Year Return Period

$$Q_{100yr}=2.78 \times 0.9 \times 39.6 \times 0.33=32.68 \text{ l/s}$$

The site is in Newport Council which is the Lead Local Flood Authority (LLFA) and the Sustainable Drainage Approval Body (SAB).

The Drainage Strategy will be undertaken in accordance with the SuDS Standards². A Full SAB application has been submitted for the approval of surface water drainage system. The design of the SuDS features and the assessment of their efficiency to satisfy the SuDS Standards is undertaken by following the SuDS Manual³ and national guidance.

Standard S1, regarding the surface water destination has five levels of priority as shown in Table 2.

Table 2. S1 Surface Water Runoff Destination

Priority Level	Surface Water Destination	Acceptability / Selection
Level 1	Surface water runoff is collected for use	Collection of water for re-use will be evaluated during the detail design stage
Level 2	Surface water runoff is infiltrated to ground	Infiltration testing has been carried out. Infiltration rates have been confirmed to be insufficient
Level 3	Surface water runoff is discharged to a surface water body	Surface water to be discharged to the watercourse running along the southern boundary
Level 4	Surface water runoff is discharged to a surface water sewer etc.	NA
Level 5	Surface water runoff is discharged to a combined sewer	N/A

Surface water will be managed as close to the source of runoff as possible using green features such as swales and raingardens. Where possible driveways and access roads will be constructed using permeable paving. On site attenuation will be provided in individually flow-restricted permeable paving systems, attenuation basins, and raingardens. Post-development peak discharge rate will be restricted to 2.8 l/s, which will provide a betterment compared with the existing rates as shown in Table 2.

Table 3. Peak Discharge Rates

Storm	Exiting Peak Rate	Proposed Peak Rate	Betterment
1 year	7.31l/s	2.8l/s	62%
30 year	25.65l/s	2.8l/s	90%
100 year	32.68l/s	2.8l/s	92%

² Sustainable Drainage (SuDS) Statutory Guidance, Welsh Government 2019

³ The SuDS Manual. CIRIA 753, 2015

The proposed SuDS system will be flood free for 1 in 100 year rainfall event plus 40% allowance for increase due to climate change.

A copy of the Engineering Layout showing the drainage strategy is attached at Appendix C.

4 Conclusions

- The site is in Flood Zone 1, i.e., is at very low risk of fluvial/tidal flooding.
- The development is characterised as Highly Vulnerable and is permitted in Flood Zone 1 according to TAN15.
- The site is within Zone 2 and 3 of Surface Water and Small Watercourses of Flood Map for Planning. The site levels and FFLs towards the south will be raised to minimise the risk.
- The development is not increasing flooding elsewhere as the onsite drainage system will be designed to manage storm events up to and including the 1in100yr plus 40% allowance for rainfall intensity due to climate change.
- Surface water runoff will be managed by a number of localised on-plot infiltration SuDS components.
- Gravity connection will be made to discharge the foul system.
- Surface water drainage will discharge to the watercourse, due to lack of infiltration. The proposed rates discharge rates will offer a betterment on the existing peak rates.

Appendix A Infiltration Testing

Willis Construction

OPEN HEARTH, RINGLAND, NEWPORT

Site Investigation Report

14144/LS/23/SI

Report Extract

7.3 WEATHERED BEDROCK (CONTINUED)

The weathered strata was recorded in all windowless sample locations from depths ranging from 0.3m/2.2m below ground level and recorded to depths of >3.7m below existing ground level.

The completely weathered mudstone strata typically comprised of firm to stiff becoming stiff to hard red and orange brown friable silty clay with gravels of fine mudstone lithorelicts. Localised light green reduction spots were commonly encountered with depth. Locally the weathered strata was also slightly sandy.

The in-situ SPT tests undertaken within the windowless sample boreholes indicated an increase in stiffness with depth, with values ranging from 12 to 59, the average being 41.

The results of the Atterberg Limits testing indicates that the natural strata has plasticity indices ranging between 15% and 20%. The modified plasticity indices range between 9% and 15%, indicating that the natural strata vary from non-plastic to soils of low volume change potential.

The windowless sample logs and the hand excavated trial pit log are presented in Appendices D and E respectively.

7.5 GROUNDWATER

Groundwater was only encountered within one windowless sample borehole, WS05. Groundwater was encountered at 0.4mbgl and consisted of perched groundwater at the interface between the granular made ground and the cohesive low permeability underlying natural strata.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

7.6 FALLING HEAD PERMEABILITY TESTING

Two falling head tests were undertaken at the site, within WS02 and WS05 respectively.

Both windowless sample boreholes were rapidly filled with water.

No infiltration was recorded in either test. This is likely due to the low permeability of the underlying weathered mudstone/stiff clay deposits.


7.6 FALLING HEAD PERMEABILITY TESTING (CONTINUED)

It should be noted that this initial testing should only be regarded as indicative.


The results of the falling head permeability tests are presented in Appendix F.


APPENDIX D

WINDOWLESS SAMPLE BOREHOLE LOGS


 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: Open Hearth, Ringland	Project No.: 14144	Borehole No.: WS01 Sheet 1 of 1
	Location: Newport	Client: Willis Construction	Coordinates:
Equipment: Dart 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS


Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.20		(Disturbed Topsoil) Loose to medium dense dark brown very clayey gravelly SAND with frequent rootlets. Gravel is fine to coarse sub angular and angular mudstone with occasional plastic and brick fragments.	
		1.00	C	N=33 (0,0/4,8,10,11)			(MADE GROUND) Firm becoming firm to stiff orange brown slightly sandy gravelly CLAY with occasional cobbles sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone, occasional brick fragments, slag and clinker.	
		1.70	D		1.65		Stiff becoming hard red and orange brown mottled light green slightly friable silty CLAY.	
		1.80	C	N=59 (7,8/59 for 245mm)	1.80		End of Borehole at 1.80 m	






Remarks: 1. Windowless sample borehole refused at 1.8mbgl. 2. No groundwater encountered.	Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
---	---	--	---


	Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: Open Hearth, Ringland	Project No.: 14144	Borehole No.: WS02 Sheet 1 of 1
	Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale: 1:25	
Diameter of Boring: 101+97mm	Depth of Casing:	Dates: 04/01/2023 -	Logged By: LS	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10		(MADE GROUND) Bituminous Material.	
		0.30	ES				(MADE GROUND) Compact grey gravel over loose grey sandy slightly silty GRAVEL. Gravel is fine to coarse sub angular and angular limestone.	
					0.70		(MADE GROUND) Medium dense beige and light brown slightly clayey slightly sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone.	
		1.00	C	N=12 (2,2/2,3,3,4)	1.00		(MADE GROUND) Medium dense slightly silty slightly sandy COBBLES of sub angular and angular sandstone.	
					1.50		Firm orange brown slightly sandy gravelly CLAY with occasional cobbles of sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone.	
		1.70	C	N=50 (4,5/50 for 235mm)	1.70		Stiff becoming hard red and orange brown mottled light green slightly friable silty CLAY.	
							End of Borehole at 1.70 m	

Remarks: 1. Windowless sample borehole refused at 1.7mbgl. 2. No groundwater encountered.	Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
---	---	--	---

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name:	Project No.:	Borehole No.:
	Open Hearth, Ringland	14144	WS03
Location: Newport	Client: Willis Construction	Coordinates:	Sheet 1 of 1 Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10			0.10		(MADE GROUND) Bituminous Material.	
		0.20	ES		0.30		(MADE GROUND) Medium dense grey very clayey sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone, ash, slag and clinker.	
							Firm becoming stiff orange brown very friable silty CLAY.	
		1.00	C	N=42 (2,7/6,8,12,16)			<i>Becoming mottled green below 0.8mbgl.</i>	
		1.50	D		1.50		End of Borehole at 1.50 m	


Remarks: 1. Windowless sample borehole refused at 1.5mbgl. 2. No groundwater encountered.	Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
---	---	--	---


	Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name: Open Hearth, Ringland	Project No.: 14144	Borehole No.: WS04 Sheet 1 of 1
	Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS


Equipment: DART 346	Diameter of Casing:	Level:	Scale: 1:25
----------------------------	---------------------	--------	-----------------------


Diameter of Boring: 101+97+86+75mm	Depth of Casing:	Dates: 04/01/2023 -	Logged By: LS
---	------------------	-------------------------------	-------------------------

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10		(MADE GROUND) Bituminous Material.		
		0.40	ES		0.40		(MADE GROUND) Loose to medium dense dark grey slightly sandy slightly clayey GRAVEL. Gravel is fine to coarse sub angular and angular limestone and occasional brick fragments, ash, slag and clinker.		
					0.70		(MADE GROUND) Soft dark and orange brown silty gravelly CLAY with occasional cobbles of sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone.		
					0.90		<i>Becoming light brown below 0.65mbgl.</i>		
		1.00	C	N=6 (1,1/2,1,2,1)			(MADE GROUND) Loose dark grey and black clayey sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone and occasional ash, slag and clinker	1	
							(MADE GROUND) Soft light brown and orange brown gravelly silty CLAY. Gravel is fine to coarse sub angular and angular mudstone and occasional ash, slag and clinker.		
		2.00	C	N=7 (1,2/2,1,2,2)				2	
					2.20		Firm becoming stiff red brown silty CLAY with fine grained mudstone lithorelicts.		
		3.00	C	N=23 (2,3/3,7,7,6)				3	
		3.70	C	N=52 (7,8/52 for 235mm)	3.70			4	
								End of Borehole at 3.70 m	5

Remarks: 1. Windowless sample borehole refused at 3.7mbgl. 2. No groundwater encountered.	Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
---	---	--	---

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com	Project Name:	Project No.:	Borehole No.:
	Open Hearth, Ringland	14144	WS05
Location: Newport	Client: Willis Construction	Coordinates:	Sheet 1 of 1 Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10		(MADE GROUND) Bituminous Material.	
					0.40		(SUB BASE) Compact orange and beige clayey slightly sandy GRAVEL of fine to coarse sub angular and angular limestone.	
	0.40 	0.30	ES				Firm becoming stiff orange brown silty friable CLAY with occasional light green spots.	
		1.00	C	N=51 (7,9/10,11,14,16)	1.00		Stiff becoming hard of gravelly silty CLAY. Gravel is fine to coarse sub angular and angular mudstone.	
		1.10	D					
		1.30	C	50 (17,19/50 for 100mm)				
					1.50		End of Borehole at 1.50 m	

Remarks: 1. Windowless sample borehole refused at 1.5mgl. 2. Perched groundwater encountered at 0.4mbgl.	Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)	W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
--	---	--	---

APPENDIX F

FALLING HEAD PERMEABILITY TEST RESULTS

PERMEABILITY TEST DATA

PROJECT	Open Hearth, Ringland, Newport	JOB No.	14144
TYPE	FALLING		
DATE	04.01.23	TIME	10:00 hrs
BOREHOLE NUMBER	WS02	TEST No.	1
Depth of borehole at start of test (mBGL) h_i			1.70 m
Depth of borehole at end of test (mBGL) h_e			1.70 m
Borehole diameter (m) D			0.087 m
Piezometer diameter (m) d			m
Filter Backfill			No
Soil in casing (m) L			0.00 m
L/D Ratio			19.5
Hole in Soil below base of casing (m) L			1.70 m
Depth of casing (mBGL) h_c			0.00 m
Height of casing above ground level h_{uc}			0.00 m
Ground water level (mBGL) H_0			1.70 m
Water level at start of test below top of casing h_0			0.00 m
		H_0 TEST	1.70 m

Elapsed Time		Depth of water below top of casing	Head of Water	Ratio
t (mins)	t (s)	h (m)	H = (H ₀ - h) (m)	H/H ₀
0	0	1.00	0.7	0.41
0.5	30	1.00	0.7	0.41
2	120	1.00	0.7	0.41
5	300	1.00	0.7	0.41
10	600	1.00	0.7	0.41
20	1200	1.00	0.7	0.41
40	2400	1.00	0.7	0.41
60	3600	1.00	0.7	0.41
100	6000	1.00	0.7	0.41

TEST SECTION	
Length	L = 1.70 m
Area	A = 0.4706 m ²

INTAKE FACTOR	Refer to BS 5930 Figure 7
Type	Special
F =	$\frac{D^2 \cdot 3.32 \cdot T \cdot (L/D)}{\log_e[1.1(L/D) + ((1+1.1(L/D))^2)^{0.5}]}$
F =	3.31

TIME LAG	T = Time from start of test when h = 0.37 h ₀
	See graph opposite
T =	N/A s

PERMEABILITY	
K = A / (F * T)	
K =	N/A m/s

COMMENTS Infiltration not observed

PERMEABILITY TEST DATA

PROJECT	Open Hearth, Ringland, Newport	JOB No.	14144
TYPE	FALLING		
DATE	04.01.23	TIME	13:00 hrs
BOREHOLE NUMBER	WS05	TEST No.	1
Depth of borehole at start of test (mBGL) h_i			1.50 m
Depth of borehole at end of test (mBGL) h_e			1.50 m
Borehole diameter (m) D			0.087 m
Piezometer diameter (m) d			m
Filter Backfill			No
Soil in casing (m) L			0.00 m
L/D Ratio			17.2
Hole in Soil below base of casing (m) L			1.50 m
Depth of casing (mBGL) h_c			0.00 m
Height of casing above ground level h_{uc}			0.00 m
Ground water level (mBGL) H_0			0.40 m
Water level at start of test below top of casing h_0			0.00 m
		H_0 TEST	0.40 m

Elapsed Time		Depth of water below top of casing	Head of Water	Ratio
t (mins)	t (s)	h (m)	H = (H ₀ - h) (m)	H/H ₀
0	0	0.40	0.0	0.00
0.5	30	0.40	0.0	0.00
2	120	0.40	0.0	0.00
3	180	0.40	0.0	0.00
4	240	0.40	0.0	0.00
5	300	0.40	0.0	0.00
6	360	0.40	0.0	0.00
7	420	0.40	0.0	0.00
8	480	0.40	0.0	0.00
10	600	0.40	0.0	0.00
15	900	0.40	0.0	0.00
30	1800	0.40	0.0	0.00
60	3600	0.40	0.0	0.00

TEST SECTION	
Length	L = 1.50 m
Area	A = 0.4159 m ²

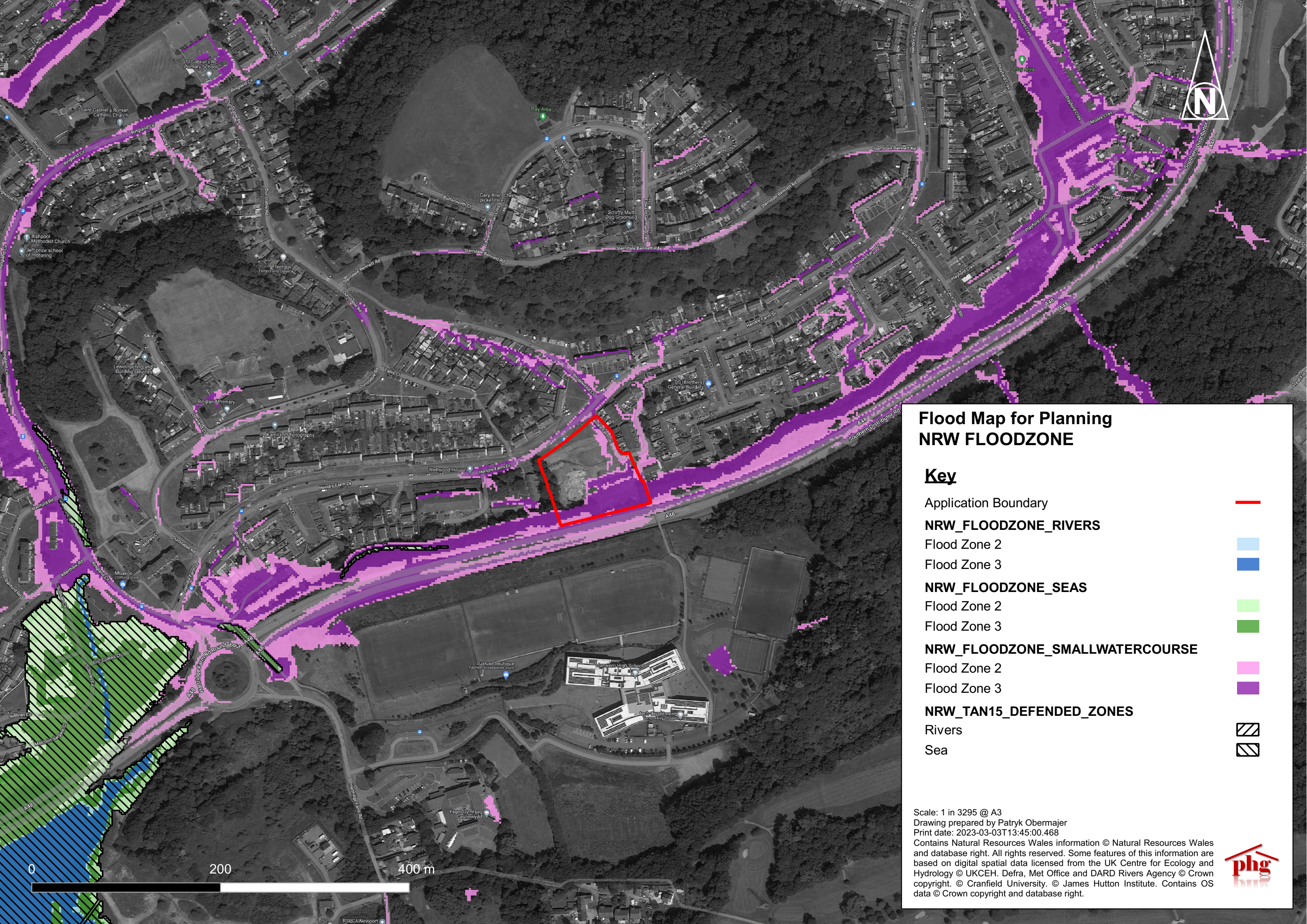
INTAKE FACTOR	Refer to BS 5930 Figure 7
Type	Special
F =	$\frac{D^2 \cdot 3.32 \cdot T \cdot (L/D)}{\log_e[1.1(L/D) + ((1+1.1(L/D))^2)^{0.5}]}$
F =	3.03

TIME LAG	T = Time from start of test when h = 0.37 h ₀
	See graph opposite
T =	N/A s

PERMEABILITY	
K = A / (F * T)	
K =	N/A m/s

COMMENTS Infiltration not observed

Appendix B NRW Flood Maps




Flood Map for Planning NRW FLOODZONE

Key

- Application Boundary
- NRW_FLOODZONE_RIVERS**
- Flood Zone 2
- Flood Zone 3
- NRW_FLOODZONE_SEAS**
- Flood Zone 2
- Flood Zone 3
- NRW_FLOODZONE_SMALLWATERCOURSE**
- Flood Zone 2
- Flood Zone 3
- NRW_TAN15_DEFENDED_ZONES**
- Rivers
- Sea

Scale: 1 in 3295 @ A3
 Drawing prepared by Patryk Obermajer
 Print date: 2023-03-03T13:45:00.468
 Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved. Some features of this information are based on digital spatial data licensed from the UK Centre for Ecology and Hydrology © UKCEH, Defra, Met Office and DARD Rivers Agency © Crown copyright. © Cranfield University. © James Hutton Institute. Contains OS data © Crown copyright and database right.



Appendix C Engineering Appraisal

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 Engineer.
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

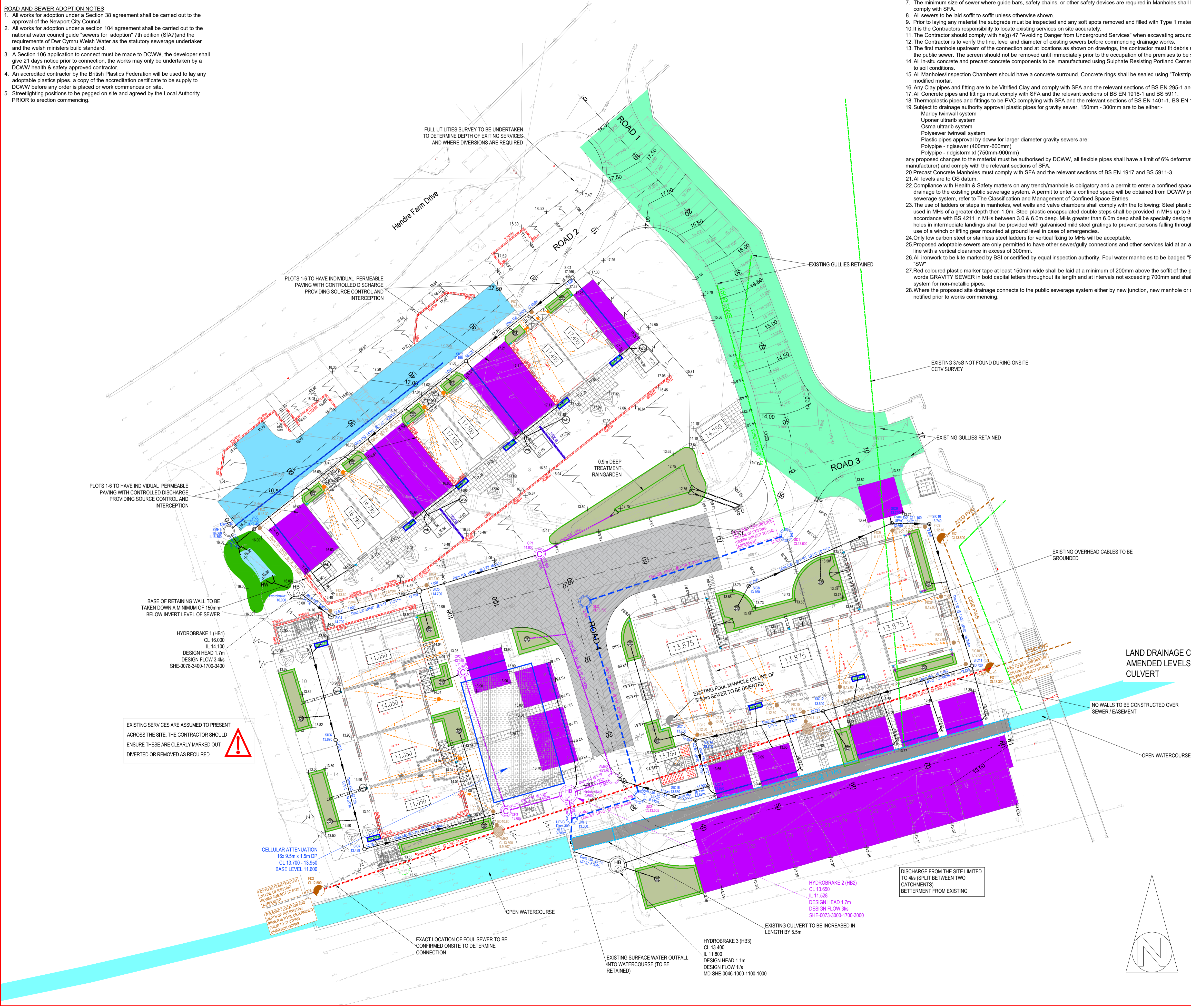
1. All works for adoption under a Section 38 agreement shall be carried out to the approval of the Newport City Council.
2. All works for adoption under a section 104 agreement shall be carried out to the national water council guide "sewers for adoption" 7th edition (SIA7) and the requirements of Dwr 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 supplied 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.

DRAINAGE SPECIFICATION NOTES

1. The planning, design and construction of sewers shall be in accordance with the SFA7 and the Civil Engineering Specification for the Water Industry (CESWI) and DCWW amendments to CESWI.
2. All Adoptable sewers within adoptable highway with less than 1.2m cover to have concrete surround with flexible joints. All adoptable sewers within grassed areas with cover less than 0.9m to have concrete surround with flexible joints. All areas with greater cover than the minimum required to have type S bed and surround.
3. MH covers & frames shall be ductile iron with a minimum square opening of 675x675mm and comply with the relevant provisions of BS EN 124, BS 7903 and DMRB document HA104/09. Covers shall be double triangle for 675mm square openings and be provided with loose bolted connections. Frame depths shall be 150mm but in any case all frames shall comply with SFA. Sealed and lockable covers to be supplied where specified on manhole schedule.
4. Where sewers and manholes are located in the highway, the outside of the sewer should be in the vehicle carriageway and be at least 1m from the kerb line. External faces of manholes should be at least 0.5m for the kerb line.
5. Use of this drawing does not absolve the client from his responsibilities under the Health and Safety: The Construction Design and Management Regulations 2015. The Principle Designer is required to contact PHG Consulting prior to permitting this drawing to be used in connection with any construction works.
6. All private drainage to comply with current Building Regulations, BS EN-752 Drain and Sewer Systems outside Buildings and other relevant British Standards and Codes of Practices.
7. The minimum size of sewer where guide bars, safety chains, or other safety devices are required in Manholes shall be 450mm diameter. All safety chains shall comply with SFA.
8. All sewers to be laid soffit to soffit unless otherwise shown.
9. Prior to laying any material the subgrade must be inspected and any soft spots removed and filled with Type 1 material to SHW Clause 803
10. It is the Contractors responsibility to locate existing services on site accurately.
11. The Contractor should comply with h5(g) 47 "Avoiding Danger from Underground Services" when excavating around existing services.
12. The Contractor is to verify the line, level and diameter of existing sewers before commencing drainage works.
13. The first manhole upstream of the connection and at locations as shown on drawings, the contractor must fit debris screens in order to prevent debris entering the public sewer. The screen should not be removed until immediately prior to the occupation of the premises to be served by the sewer.
14. All in-situ concrete and precast concrete components to be manufactured using Sulphate Resisting Portland Cement, (SRPC) to BS 4027, if required, subject to soil conditions.
15. All Manholes/Inspection Chambers should have a concrete surround. Concrete rings shall be sealed using "Tokstrip" and lifting eyes pointed with resin modified mortar.
16. Any Clay pipes and fittings are to be Vitrified Clay and comply with SFA and the relevant sections of BS EN 295-1 and BS 5911.
17. All Concrete pipes and fittings must comply with SFA and the relevant sections of BS EN 1916-1 and BS 5911.
18. Thermoplastic pipes and fittings to be PVC complying with SFA and the relevant sections of BS EN 1401-1, BS EN 1852, BS EN 12666-1, BS EN 13476-1.
19. Subject to drainage authority approval plastic pipes for gravity sewer, 150mm - 300mm are to be either:-
 Marley twinwall system
 Uponor ultrarib system
 Osmia ultrarib system
 Polysewer twinwall system
 Plastic pipes approval by down for larger diameter gravity sewers are:
 Polytype - rigisewer (400mm-600mm)
 Polytype - rigistorm xl (750mm-900mm)
 any proposed changes to the material must be authorised by DCWW, all flexible pipes shall have a limit of 6% deformation (calculations may be obtained from manufacturer) and comply with the relevant sections of SFA.
20. Precast Concrete Manholes must comply with SFA and the relevant sections of BS EN 1917 and BS 5911-3.
21. All levels are to OS datum.
22. Compliance with Health & Safety matters on any trench/manhole is obligatory and a permit to enter a confined space is required when connecting site drainage to the existing public sewerage system. A permit to enter a confined space will be obtained from DCWW prior to the works commencing on any public sewerage system, refer to The Classification and Management of Confined Space Entries.
23. The use of ladders or steps in manholes, wet wells and valve chambers shall comply with the following: Steel plastic encapsulated MH single steps shall not be used in MHs of a greater depth than 1.0m. Steel plastic encapsulated double steps shall be provided in MHs up to 3.0m in depth. Ladders shall be provided in accordance with BS 4211 in MHs between 3.0 & 6.0m deep. MHs greater than 6.0m deep shall be specially designed and have intermediate landings. Access holes in intermediate landings shall be provided with galvanised mild steel gratings to prevent persons falling through. The design of deep MHs shall permit the use of a winch or lifting gear mounted at ground level in case of emergencies.
24. Only low carbon steel or stainless steel ladders for vertical fixing to MHs will be acceptable.
25. Proposed adoptable sewers are only permitted to have other sewer/gully connections and other services laid at an angle of between 45° and 90° across the line with a vertical clearance in excess of 300mm.
26. All ironwork to be kite marked by BSI or certified by equal inspection authority. Foul water manholes to be badged "FW". Surface water manholes to be badged "SW".
27. Red coloured plastic marker tape at least 150mm wide shall be laid at a minimum of 200mm above the soffit of the pipe. The tape shall be printed with the words GRAVITY SEWER in bold capital letters throughout its length and at intervals not exceeding 700mm and shall incorporate a corrosion resistant tracing system for non-metallic pipes.
28. Where the proposed site drainage connects to the public sewerage system either by new junction, new manhole or at an existing manhole, DCWW must be notified prior to works commencing.

Legend

- Proposed Surface Water Sewer Diversion (Section 185)
- Proposed Welsh Water Foul Sewer (Section 104)
- Proposed Welsh Water Sewer Diversion (Section 185)
- Existing Welsh Water Sewer Removed (Section 185)
- Existing Welsh Water Foul Water Sewer
- Existing Welsh Water Surface Water Sewer
- Proposed Hydrobrake flow control (SAB)
- Proposed SAB Surface Water Drain (SAB).
- SuDS Swale (adoptable by the SAB)
- SuDS Permeable Paving (private only serving a single plot) 60mm block, 50mm grit, 350mm subbase
- SuDS Permeable Paving (To be retained by Housing Association) 80mm block, 50mm grit, subbase as noted
- SuDS Permeable Paving (Adoptable) 80mm block, 50mm grit, subbase as noted
- Service Strip (Adoptable)
- RainGarden
- Proposed Cellular Attenuation
- Finished Floor Level (FFL)
- Retaining Wall
- Underbuild
- Road gully & connection
- Existing highway
- Steps (R = riser (maximum rise 150mm) G = going (minimum going 280mm) maximum of 12 steps per flight)
- SuDS planter
- Precast headwall
- Raingarden overflow
- Rainwater Butt (with overflow)
- Rainwater Pipe
- Private surface water inspection chamber <3.0m deep with restricted access depths over 1.2m.
- Rodding eye (450mm deep unless noted otherwise)
- Catchpit
- Channel / Aco drain or similar approved (150mm wide at garage threshold)
- SuDS swale inlet
- Existing watercourse
- Building Regulations Part M level landing (1200 x 1200, to be graded away from threshold at 1:60)
- Permeable paving under drain
- Adoptable foul lateral drain (1000 unless shown otherwise) (SFA7th)
- Adoptable foul inspection chamber <3.0m deep with restricted access depths over 1.2m (Refer to lateral schedule - SFA7th).
- Private foul drain (1000 unless shown otherwise)
- Private foul inspection chamber <3.0m deep with restricted access depths over 1.2m (700mm deep unless noted)



LAND DRAINAGE CONSENT REQUIRED TO AMENDED LEVELS OVER EXISTING CULVERT

NO WALLS TO BE CONSTRUCTED OVER SEWER EASEMENT

OPEN WATERCOURSE

EXISTING SERVICES ARE ASSUMED TO PRESENT ACROSS THE SITE. THE CONTRACTOR SHOULD ENSURE THESE ARE CLEARLY MARKED OUT, DIVERTED OR REMOVED AS REQUIRED

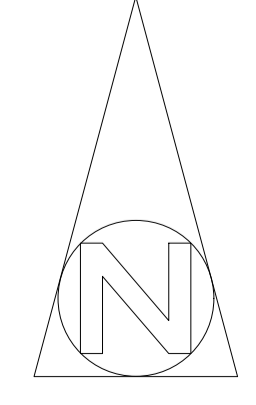
CELLULAR ATTENUATION
16x 9.5m x 1.5m DP
CL 13.700 - 13.950
BASE LEVEL 11.600

HYDROBRAKE 1 (HB1)
CL 16.000
IL 14.100
DESIGN HEAD 1.7m
DESIGN FLOW 3.4ls
SHE-0078-3000-1700-3400

HYDROBRAKE 2 (HB2)
CL 13.650
IL 11.520
DESIGN HEAD 1.7m
DESIGN FLOW 3ls
SHE-0073-3000-1700-3000

HYDROBRAKE 3 (HB3)
CL 13.400
DESIGN HEAD 1.1m
DESIGN FLOW 1ls
MD-SHE-0046-1000-1100-1000

DISCHARGE FROM THE SITE LIMITED TO 40% SPLIT BETWEEN TWO CATCHMENTS BETTERMENT FROM EXISTING



CLIENT: **WILLIS CONSTRUCTION**

CONSULTING ENGINEERS
PHG CONSULTING LTD
107 COMMERCE ROAD EAST
CARDIFF CF 11 9AG
T: +44(0)29 2030 2521
E: enquiries@phg-consulting.com
W: www.phg-consulting.co.uk

REV	DATE	DETAILS	AMENDMENTS	BY	CHK
K	18/07/2025	External levels reviewed		TOR	SJD
J	29/04/2025	Layout, drainage and levels amended		TOR	SJD
H	18/02/2025	Raingarden outside plot 1 amended		TOR	SJD
G	29/01/2025	Layout Updated		TOR	SJD
F	22/11/2024	Issued for Pre-SAB		TOR	SJD
E	09/10/2024	Layout revised		TOR	SJD
D	30/09/2024	Layout revised		TOR	SJD
C	29/08/2023	Layout revised		TOR	SJD
B	08/07/2023	Layout revised		TOR	SJD
A	09/03/2023	Layout revised		TOR	SJD

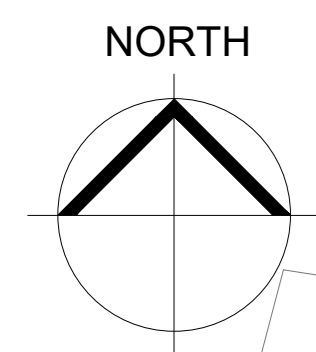
PROJECT: **Willis Construction Open Hearth Hendre Farm Drive, Newport**

DRAWING TITLE: **Engineering Appraisal**

DRAWN	CHK	STATUS	SCALE
TOR	SJD	Information	1:250 @ A1

DATE	JOB NO.	DRG. NO.	REV.
Oct 2022	2307	100	K

Appendix D Architects Layout



- LEGEND**
- DENOTES SITE APPLICATION BOUNDARY
 - DENOTES 1800MM HIGH TREATED CLOSE BOARDED FENCE.
 - DENOTES 900MM HIGH GALVANISED FLAT TOP RAILINGS.
 - DENOTES FACING BRICK RETAINING BOUNDARY WALLS - REFER TO ENGINEERS DRAWINGS FOR R.WALL DETAILS.
 - DENOTES 500mm HIGH TIMBER TREATED KNEE RAIL.
 - DENOTES 1800mm HIGH FACING BRICKWORK BOUNDARY / PART RETAINING WALLS WHERE NECESSARY.
 - DENOTES AREA IN TOBERMORRE PERMEABLE PAVING SYSTEM AS DENOTED - COLOUR: GREY
 - DENOTES AREA IN TOBERMORRE PERMEABLE PAVING SYSTEM AS DENOTED - COLOUR: MULTI RED / BRINDL.
 - DENOTES 2.6M X 4.8M TOBERMORRE PERMEABLE PAVING SYSTEM PARKING BAYS WITH 50MM X 100MM P.C CONCRETE PATH EDGING TO DELINEATE BAYS.
 - DENOTES AREA OF NEW 2M WIDE TARMACADAM FOOTWAYS TO PERIMETER OF SITE.
 - DENOTES AREA OF NEW TARMACADAM ACCESS ROAD INTO SITE.
 - DENOTES AREAS OF 450 X 450MM P.C CONC. PAVING SLABS TO FORM PATIO AREAS AND 900MM MIN FOOTPATHS TO TO CURBEDGE OF RETAIL AND 1200MM WIDE TO TO CURTILAGE OF FLATS.
 - DENOTES AREAS OF INFORMAL PLANTING / LANDSCAPING AREAS. AS PER TREE SPECIES MIX IN LANDSCAPING SCHEDULE.
 - DENOTES AREAS OF RAIN GARDENS TO ASSIST SUDDS DRAINAGE DESIGN & BIODIVERSITY AS PER TREE SPECIES MIX IN LANDSCAPING SCHEDULE.
 - DENOTES SHRUB BOUNDARIES - REFER TO LANDSCAPE LAYOUT FOR FURTHER DETAILS
 - DENOTES FENCE REINFORCED SHRUB BOUNDARIES AROUND CULVERT - REFER TO LANDSCAPE LAYOUT FOR FURTHER DETAILS
 - DENOTES 1.8M HIGH - 900MM WIDE TIMBER GATE WITH A SECURITY LOCK. IN COMPLIANCE WITH BS8300 - NOTE GATE TO BE SIMILAR HEIGHT TO ADJACENT WALL/GATE IF APPLICABLE.
 - DENOTES NEW TREE PLANTING (REFER TO LANDSCAPE DRAWING FOR TYPES AND SCHEDULES)
 - DENOTES EXISTING TREES TO BE REMOVED
 - DENOTES EXISTING TREES TO REMAIN WITH ROUTE BARRIER AND CONDITION DESIGNATION AS PER ACCOMPANYING TREE REPORT
 - DENOTES 2.9M DIAMETER ROTARY DRYER SET IN CONCRETE - PROVIDING 4M MIN. OF LINE FOR 2 BED DWELLINGS, 6M MIN. FOR 3 BED DWELLINGS
 - DENOTES PAVED CONCRETE HARDSTANDING FOR COMMUNAL BIN STORES HOSTING REFUSE BINS TO SUIT LA REQUIREMENTS
 - DENOTES ROBUST TREATED TIMBER FRAMED SHED WITH INDOOR SHELF OR SIMILAR TYPE STEEL FRAMED RACK BOTH BOLTED TO 150MM THICK CONCRETE BASE - PROVIDING SPACE FOR INDOOR BICYCLES AND 1M² GARDEN STORE SPACE. PERMANENT LOCK TO BE PROVIDED TO SHED DOOR. CONFORMING TO BS 3621:2004.
 - DENOTES POSITION OF IBSTOCK OR SIMILAR SWIFT BOX IN SMOOTH RED - TO BE INSTALLED AT MIN. 5M FROM EXTERNAL GROUND LEVEL
 - DENOTES POSITION OF IBSTOCK BAT RICK (TYPE A) OR SIMILAR - REFER TO INDIVIDUAL ELEVATIONS FOR EXACT LOCATION

FLATS - PLOTS 1-6	GIA (M ²)	GIA (FF)
1	90	968
2	82	882
3	82	882
4	82	882
5	82	882
6	82	882
FLATS - PLOTS 7-14		
7	64.5	694
8	69	742
9	53	570
10	53	570
11	53	570
12	53	570
13	64.5	694
14	69	742
FLATS - PLOTS 15-23		
15	60.8	654
16	54.7	588
17	54.7	588
18	54.7	588
19	54.7	588
20	54.1	582
21	60.8	654
22	54.7	588
23	54.7	588
FLATS - PLOTS 24-32		
24	54.7	588
25	54.7	588
26	54.1	588
27	60.8	654
28	54.7	588
29	54.7	588
30	54.7	588
31	54.7	588
32	54.1	582

PLOT SCHEDULE

FLAT TYPE	NO.
2P 18 FLAT TYPE	19
3P 28 FLAT TYPE	7
4P 28 HOUSE TYPE	6
TOTAL NUMBER OF UNITS	32

REFER TO CONSULTING ENGINEERING DRAWINGS FOR FINISH FLOOR LEVELS AND DRAINAGE DETAILS.
REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR DETAILS OF LANDSCAPING PROTOCOLS.

--- DENOTES 2.6M X 4.8M PARKING BAY.
--- LHM DENOTES LHM TIME HOME COMPLIANT PARKING SPACE.

PARKING SCHEDULE

UNIT TYPE	No.	PARKING SPACES
4 PERSON 2 BEDROOM HOUSE TYPE	6	12
3 PERSON 2 BEDROOM FLAT TYPE	7	14
2 PERSON 1 BEDROOM FLAT TYPE	19	38
Sub Total	22	64
VISIONS (OFF STREET)	3	2
VISIONS (ON STREET)	2	2
TOTAL	27	70

- STRENGTHS**
- SITE LOCATED WITHIN EXISTING URBAN SURROUNDINGS.
 - SURFACE WATER DRAINAGE DRAINAGE AND CONNECTION ON-SITE
 - EAST ACCESS TO SURROUNDING SUSTAINABLE FOOTPATHS / ROAD / BUS STOP ETC
 - USE OF PLANTING/ SOFT LANDSCAPING SET OUT TO SOFTEN CAR PARKING AREAS.
 - CREATION OF KEY FOCAL POINTS THROUGHOUT THE SITE USING BOTH HARD AND SOFT LANDSCAPING.
 - SUSTAINABILITY CLOSE TO LOCAL SHOPS AND AMENITIES.
 - BROWN FIELD SITE WITH USE OF EXISTING LAND
 - EXISTING SERVICES PRESENT ON SITE REDUCING THE NEED TO DISRUPT NEIGHBORING ROADS AND FOOTWAYS.
- WEAKNESSES**
- EXISTING SITE ACCESS DETERMINES SITE LAYOUT DESIGN AND GRADIENTS
 - LARGE RETAINING WALLS REQUIRED
 - NUMBER OF UNITS BASED ON USE OF NON ADAPTABLE ROAD AND PRIVATE DRIVES.
 - SURFACE WATER RUN OFFS
 - VERY STEEP TOPOGRAPHY
 - ABUNDANCE OF TREES
 - AMOUNT OF ENGAGEMENTS TO SOUTH OF SITE
 - LARGE DIVERSIONS REQUIRED
- THREATS**
- POTENTIAL TRAFFIC GENERATION FROM THE SCHEME.
 - LOSS OF TREES AND ECOLOGY
 - LOSS OF ECOLOGICAL FEATURES.
 - ADEQUATE SUPPLIES FROM SERVICE PROVIDERS
 - LOSS OF GREEN SPACES
- OPPORTUNITIES**
- TO INCORPORATE EXISTING HEDGEROWS AND MATURE TREES INTO THE DESIGN.
 - TO PROMOTE SUSTAINABLE SURFACE WATER DRAINAGE DESIGN (SUDDS)
 - TO OPTIMIZE VIEWS INTO AND OUT OF THE SITE FROM KEY VANTAGE POINTS.
 - TO ENCOURAGE A MIX OF HOUSE TYPES TO REFLECT PROVISION FOUND LOCALLY.
 - TO RETAIN THE WILDLIFE AND ECOLOGICAL CORRIDORS AS AN ECOLOGICAL ASSET AND TO PROVIDE OPPORTUNITIES FOR RECREATION.
 - TO USE RENEWABLE AND LOW- OR ZERO-CARBON TECHNOLOGIES.
 - TO PROVIDE AFFORDABLE HOMES TO STRENGTHEN THE DIVERSITY OF HOUSING TENURE IN THE AREA.
 - TO ACHIEVE A HIGH QUALITY DEVELOPMENT WITH A STRONG IDENTITY, ACTIVITY AND A STRONG 'ISSUE OF PLACE'
 - TO PROMOTE HOME WORKING OPPORTUNITIES WITHIN EACH DWELLING.
 - POTENTIAL FOR RESIDENTS TO LIVE AND WORK IN CLOSE PROXIMITY REDUCING THE NEED TO TRAVEL.
 - TO INCORPORATE SUSTAINABLE URBAN DRAINAGE SYSTEMS TO MANAGE SURFACE WATER ON THE SITE.
 - TO USE NEW PLANTING AND LANDSCAPE BUFFERS TO SOFTEN THE VISUAL IMPACT OF NEW DEVELOPMENT ON THE LANDSCAPE.
- DESIGN STRATEGIES AND OBJECTIVES HAVE BEEN DEVELOPED FROM THE SWOT ANALYSIS THAT SEEK TO BUILD ON EXISTING STRENGTHS, MATCH STRENGTHS WITH OPPORTUNITIES AND REMOVE WEAKNESSES. PARTICULAR ATTENTION HAS BEEN GIVEN TO WEAKNESSES THAT CAN BE MATCHED WITH THREATS, AS IN SUCH CASES THE THREATS ARE MOST LIKELY TO BE REUSED.



EXTERNAL BIKE ENCLOSURE NTS
BICYCLE STANDS - RESIDENTIAL & RETAIL
Semi vertical stacking rack system - Bikedock solutions
info@bikedocksolutions.com
0800 6126113

PROPOSED SITE LAYOUT
Scale 1:200

SITE AREA: 2 ACRES
SITE OWNERSHIP AREA: 2 ACRES
DEVELOPABLE SITE AREA: 1.2 ACRES

0 2 4 6 8 10m
SCALE 1:200

Revisions

Rev. No.	Date	By	Check	Scale	Revision
1	24/09/24	LT	CM	1:200 @ A0	C

Drawing Purpose
DRAWING PURPOSE: PLANNING

Client
Client: Melin Homes

Job Title
Job Title: Open Heath, Ringland

Drawing No
Drawing No: LT2401.04.01

Branding Title
Branding Title: Proposed Site Layout

Date
Date: Sept 24

Checked
Checked: Kml

Scale
Scale: 1:200 @ A0

LeTruccodesign ARCHITECTURE
Suite 7, 35 Stow Park Circle
Newport, NP20 4HF
Tel: 07710390800 / 07710390801
info@letruccodesign.co.uk
www.letruccodesign.co.uk