Drainage Strategy Report (DSR)

40 Victoria Road

Fleur De Lis

Caerphilly

NP12 3UG

Prepared for:

Mr Tony Carrafa

REF: 17341 – DSR - 3

DATE: Oct 2023

Vale Consultancy

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Document Control

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Client	Mr Tony Carrafa
Vale Consultancy Ref:	17341– DSR- R03

Document Checking:

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Verified By:	S Hardacre	Signed:	[redacted]

Issue	Date	Status
01	26/05/2023	First issue
02	19/09/2023	Second Issue
03	26/10/2023	Third Issue

1 CONTENTS

Limitations

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Purpose of the Report

The purpose of the report is to describe the proposed strategy for the discharge of the foul and surface water drainage serving the development in support of the planning proposals. This report will also be submitted alongside the SAB application for the site and will demonstrate that the proposals meet the statutory standards for sustainable drainage systems.

INTRODUCTION

1.1 Site Location

The application site is located behind 40 Victoria Road, Fleur de Lis, Caerphilly, NP12 3UG Grid Ref: ST 15499 96249.

Refer to the Site Location Plan, Figure 1 below.

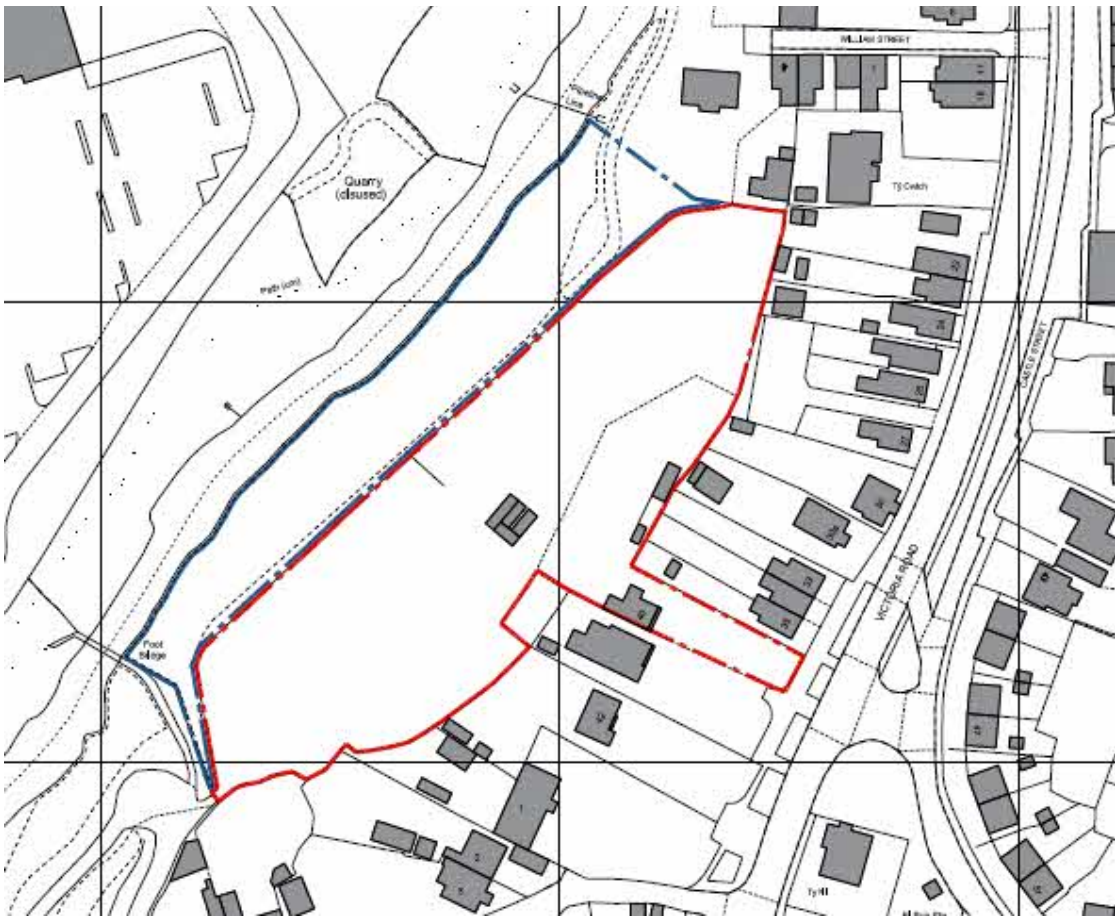

Figure 1 : Site Location Plan

1.2 Proposed Development

The proposal is to demolish the existing building at 40 Victoria Road to create an access to the parcel of land to the rear. The parcel of land to the rear will comprise 5 new residential units and all other associated infrastructure.

Refer to Appendix A - Proposed Development Plans

1.3 Existing Topography

The overall site boundary is approximately 7314m^2 in area and comprises the existing number 40 Victoria Road.

A topographical survey has been undertaken and provided by Zenith in April 2023. The survey was carried out to an arbitrary local grid. The benchmark of 100.00 was set from station Z1 located on Victoria Road outside house number 24. There is a fall across the site from the east to the west and existing levels predominately range between 2.2m above benchmark on Castle Street opposite the site access to the east and 9.2m below benchmark to the far north west of the site.

The site is accessed via an existing driveway for 40 Victoria Road. In order to access the site to the rear of the plot, demolition of the existing plot 40 Victoria Road will be required to create the road.

Refer to Appendix B – Topographical Plans.

1.4 Existing Geology

Infiltration testing has been carried out on site by Gibbs Geotechnical in May 2023 to BRE365. Six tests were carried out on site. One was carried out in the proposed garden area of each plot, and one was carried out in the garden of the existing 40 Victoria Road which will be in the vicinity of the proposed access road. The five soakaways within the gardens, adjacent to the western boundary returned favourable rates, however, the pit adjacent to the access did not return a rate that would be capable of designing a soakaway feature with a suitable half drain time.

Refer to Appendix C – Infiltration Testing.

British Geological Society Mapping indicates that there are some superficial deposits at the eastern side of the application site:

Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

The bedrock geology site wide is recorded as follows:

Grovesend Formation - Sandstone. Sedimentary bedrock formed between 309.5 and 308 million years ago during the Carboniferous period.

The mapping is strongly corroborated by the pit logs provided by Gibbs Geotechnical. The rates are also stongly corroborated whereby to the east where the less porous Till is superficially deposited, infiltration was not favourable, but good rates of infiltration were found directly into the more porous Sandstone.

1.5 Flood Risk

There is a standalone report, 17341 – Flood consequence Assessment, which looks specifically into Flood risk at the application site.

2 DRAINAGE SYSTEMS ASSESSMENT

2.1 Existing Drainage Systems

DCWW asset plans shows that there is a 225mm Combined sewer which crosses the application site along the eastern boundary conveying flows from south to north. DCWW asset plans also indicate the presence of a 150mm surface water sewer within Victoria Road at the site access which convey flows from north to south.

The topographical survey also traces the 225mm combined sewer. It indicates that there is a chamber to the rear of the existing 40 Victoria Road site and that the size of the sewer is thought to be 150mm instead of 225mm. All connections from Plot 40, both surface water and foul connect into this manhole.

Given the exact routing of the sewer is unknown, a CCTV survey has been commissioned to ascertain the exact location of the DCWW sewer within the application site.

Refer to Appendix B – Topographical Plans.

Refer to Appendix D- DCWW Assets Plans

3 PROPOSED SURFACE WATER DRAINAGE SYSTEMS

SuDS hierarchy of surface water discharge locations

The following receptors have been considered for surface water runoff on site, in order of SuDS preference.

1. Surface Water collection for reuse.
2. Discharge by infiltration into ground
3. Discharge into open surface water body
4. Discharge into surface water sewer, highway drain, or other drainage system
5. Discharge into combined sewer.

Priority Level 1 - Surface water collected for reuse:

Rainwater butts will be used to collect rainwater from the roof of the buildings. Water butt locations are marked on the Proposed Drainage Strategy. The site will also benefit from rainwater gardens, which will also reuse water at source.

Priority Level 2 – Discharge via infiltration into ground (Preferred Solution)

Infiltration testing has been carried out on site by Gibbs Geotechnical in April 2023 to BRE365. The infiltration rates along the west of the site were favourable, so the proposed method of discharge from the site is via infiltration to the ground. A proposed catchment plan has been drawn up which separates the site into six separate catchment areas, five separate plots and the access road. Given the test adjacent to the access road was unsuitable, this area has been shown as connecting into a basin and soakaway system

between Plot 1 and Plot 2 and 5 five individual soakaways as crates with rainwater gardens above are proposed. Infiltration rates for the five useable areas vary from 1.39 x 10^{-5} to 9.01 x 10^{-5}.

Refer to Appendix C- Infiltration Testing

Refer to Appendix F- Proposed Drainage Strategy

Priority Level 3 – Discharge into open surface water body

A better solution is available, this option is not explored.

Priority Level 4 – Discharge into surface water sewer, highway drain or other drainage system

A better solution is available, this option is not explored.

Priority Level 5 – Discharge into combined sewer

A better solution is available, this option is not explored.

3.1.1 Surface Water Runoff Hydraulic Control and Attenuation

The existing site has an impermeable area of area of 652m^2. Following the development, the impermeable areas for the site will become 1786m^2. The existing site discharges surface water to the combined sewer, however, the development will remove all surface water flows from the site to the combined sewer, which will significantly reduce the loading on the sewer.

A phased approach to the development is proposed. Phase 1 will consist of Plot 1 and the proposed access infrastructure and Phase 2 will consist of the remaining four plots. It is proposed that the site access road will become adoptable in Phase 2 of the development by the SAB. It will drain via traditional gulleys into an attenuation basin before a flow control device limited to 0.3/s allowing flows into an infiltration crate in a proposed shared space between Plot 1 and Plot 2.

It is proposed that individual plot driveways will be constructed from lined permeable paving discharging to the plot soakaways. Due to gradients across the site, storage within the sub base of the permeable paving is not considered suitable. The roof areas will discharge into rainwater butts which will have a high-level overflow into a below ground network discharging to a raingarden with crates below, before infiltration into the ground.

Attenuation will be provided in the rain gardens, which will be constructed as per the detail provided within the drainage strategy drawing. Calculations have been provided which demonstrate the effectiveness of the system up to the Q100 + 40% Climate Change Storm. Details of each catchment are summarised in Table 1 below and calculations are provided in Appendix E. A factor of Safety of 2.0 has been applied. The areas also include a 10% uplift for urban creep.

Table 2 below provides run off rates from the site based on the greenfield rates from the area of 7.313ha.

Table 1: Attenuation Calculations

Catchment Numbers	Catchment Area (inc 10% urban creep) (m^2)	Infiltration Rate (m/s)	Raingarden Area (m^3) (1.65m depth as per detail)	Invert Level (based on datum)
1	241	$1.9x10^{-5}$	4.5m x 4m	92.25
2	330	$2.31x10^{-5}$	5.5m x 4.5m	92.95
3	278	$6.21x10^{-5}$	5m x 3m	93.95
4	223	$1.2x10^{-5}$	8.5m x 2.5m	94.80
5	457	$1.8x10^{-5}$	12m x 3m	94.05
6 & 7	396 (no urban creep)	$1.2x10^{-5}$	5m x 4m x 0.8m deep (crate only no raingarden above) Additional Pond and HB limited to 0.3/s to limit flows to infiltration device	95.00

Table 2: Run Off Rates

Storm Event	Greenfield Discharge Rate (l/s)
Q1	55.4
Qbar	62.9
Q30	110.9
Q100	137.2
Q100 + 40%	192.1

Refer to Appendix E – Calculations (Qbar and Attenuation).

Refer to Appendix F – Proposed Drainage Strategy

Interception

By providing interception of runoff through SuDS systems developed sites can be designed so to have zero runoff for most small rainfall events and more closely replicate the surface water characteristics of its former greenfield state.

This site firstly provides a rainwater harvesting system for roof areas. All road areas have interception provided through the lined permeable paving system or the attenuation basin. Both areas then combine into the rain garden where further interception will be provided. As well as this, as infiltration is the final discharge methodology, all areas can be deemed to be fully compliant.

Exceedance Event

The SuDS system has been designed for the 1 in 100 years plus 40% CC event. In the highly unlikely event that the system surcharges and floods during an exceedance event, flows would flood over the land to the rear of the plots to the watercourse, with all the land in the developer's control as a riparian owner. The allowance for urban creep further reduces the risk for exceedance to occur.

Water Quality

Water quality is managed on site through a treatment train system. Filtration prior to entry into the rainwater harvesting system, permeable paving, attenuation basin and the rain garden, all provide water quality betterment and more than adequately achieve the coefficients for removal of all contaminants in line with the Simple Index Approach in line with a treatment train.

Amenity

The site's drainage system adds amenity value. Firstly, the rainwater harvesting system encourages the upkeep of the green spaces on the site. Secondly, the permeable paved area creates a useable space to facilitate recreational activity and outdoor use. Thirdly, the attenuation basin, creates an aesthetic green area in the outdoor space. Finally, the rain garden creates green areas in close proximity to the homes for enhanced amenity benefits.

Biodiversity

The rainwater harvesting system encourages the use of the garden facilities at the site so have an indirect benefit to biodiversity at the site. The bioretention area will include planting to a separate planting schedule, which will ensure biodiversity is met. The attenuation basin will also be planted with full details included within the planting schedule. The planting schedule will be provided at full SAB/detailed design phase.

Maintenance

The surface water infrastructure on site will be managed by the individual plot owners The shared driveway drainage (permeable paving), will be jointly managed by all five landowners, with a covenant in place to ensure that the area is maintained suitably. A detailed SuDS maintenance and operation plan will be submitted separately at detailed design stage/ full SAB application which will include but will not be limited to: rainwater harvesting systems; permeable paving; pipework; attenuation basin and rain gardens.

4 Foul Water Drainage

The topographical survey indicates that there is a DCWW sewer crossing the application site.

A CCTV of this line has been undertaken. The CCTV indicated the sewer alignment and depth and based on this a gravitational connection from the site is viable.

A capacity check and pre-development enquiry should be carried out with DCWW to ensure that their network has sufficient capacity at the proposed point of connection. However, given the removal of surface water from the system as part of this development, it is assumed that capacity will exist (as betterment will occur).

The final connection to the DCWW asset will require approval by DCWW under a Section 106 agreement and the foul serving Plots 2-4 will require adoption under a S104 agreement with DCWW, as part of Phase 2 of the development.

Flow Rates:

Daily loadings and peak flows have been calculated below. Rates have been used in accordance with Flows and Loads 4. Based on 5 residential dwelling and a dry weather flow of 6, a peak flow rate of 0.23/s has been calculated.

5.0 CONCLUSIONS

The proposal is to demolish the existing building at 40 Victoria Road to create an access to the parcel of land to the rear. The parcel of land to the rear will comprise 5 new residential units and all other associated infrastructure.

It is proposed that the site access road will become adoptable in Phase 2 of the development by the SAB. It will drain via traditional gulleys into an attenuation basin before a flow control device limited to 0.3/s allowing flows into an infiltration crate in a proposed shared space to between Plot 1 and Plot 2. It is proposed that individual plot driveways will be constructed from lined permeable paving discharging to the plot soakaways. Due to gradients across the site, storage within the sub base of the permeable paving is not considered suitable. The roof areas will discharge into rainwater butts which will have a high-level overflow into a below ground network discharging to a raingarden with crates below, before infiltration into the ground.

It is proposed that foul from the site will discharge to the existing combined DCWW sewer. Connections will be subject to S104 and S106 applications with DCWW. A peak foul water flow of 0.23l/s has been calculated for the development. A CCTV survey of the existing asset has been carried out to prove a gravitational connection to the sewer is viable.

APPENDIX A: Proposed Development Plans

2 0 2 4 6 8 10 m

1:250

ACCOMMODATION SCHEDULE

5no. 5 Bedroom Houses
TOTAL UNITS 5NO

Parking - 3 spaces per House

SITE KEY

- PATIO & PRIVATE PATHS
- RAINWATER GARDENS
- BLOCK PAVING - PARKING BAYS
- BLOCK PAVING - SHARED SURFACE
- PRIVATE DRIVE
- PRIVATE AMENITY GARDENS
- DRAINAGE EASEMENT
- REFUSE COLLECTION POINT
- EXISTING TREES
- EXISTING ROOT PROTECTION ZONE
- PROPOSED STREET TREES
- 1.8M HIGH FEATHER LAPPED FENCE
- 0.9M TIMBER KNEE RAIL
- PROPOSED HEDGE

SOFT LANDSCAPING
REFER TO SEAPRATE LANDSCAPE DRAWINGS

PLOT 1
PLOT 2
PLOT 3
PLOT 4
PLOT 5

F.F.L 96.150
F.F.L 96.600
F.F.L 96.900
F.F.L 96.150
F.F.L 94.950

Existing 6m
Sewer easement

Refuse Collection
Point

new hedge along
access road boundary

existing hedge
retained

relocated
street lighting
column

2.5m x 43m visibility splay

2.5m x 43m visibility splay (43.000)

196300N

31445E

01 PROPOSED SITE LAYOUT
1 : 250

Revisions

A	23.08.23	Amendments following drawing review
B	30.08.23	Minor layout changes
C	30.08.23	Sewer easement re-positioned

North

Notes

Do not scale from this drawing. Use figured dimensions only, which are displayed in millimeters unless stated otherwise. The contractor is requested to check all dimensions before work is put in hand. Any discrepancies within the drawing should be reported prior to commencement of works.

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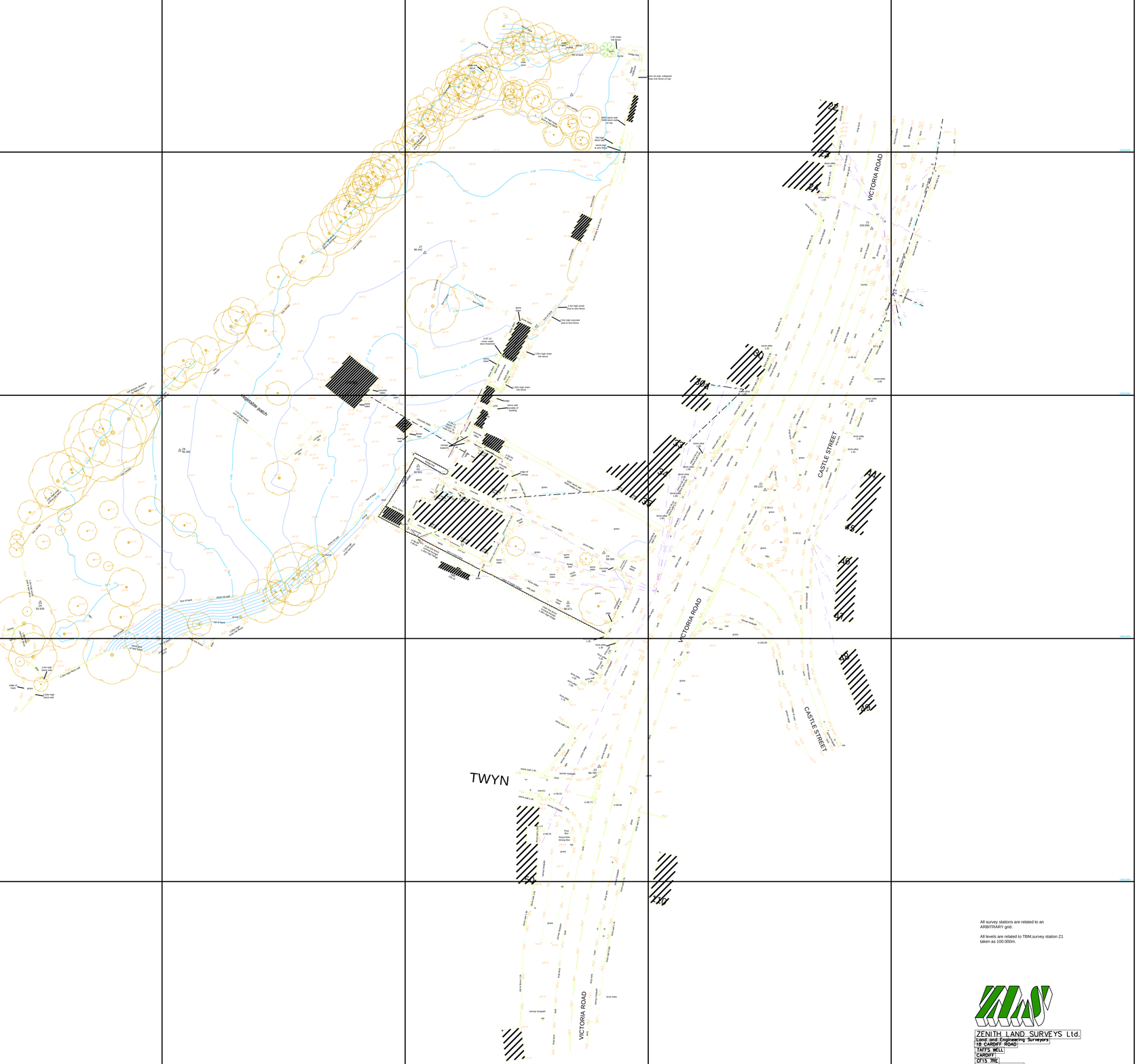
Project	40 VICTORIA ROAD, FLEUR-DE-LIS, BLACKWOOD
Project number	N345
Client	MR & MRS CARRAFA
Title	Proposed Site Layout
Drawing number	A1.3
Scale	1 : 250 at A1
Revision	C
Status	**INFORMATION**
Drawn	PC
Date	23.08.23

APPENDIX B: Topographical Plans

VICTORIA ROAD, FLEUR DE LYS

drawing no.19661.dwg

N



All survey stations are related to an ARBITRARY grd.

All levels are related to TBM,survey station Z1 taken as 100.000m.

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Land and Engineering Surveyors
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APPENDIX C: Infiltration Testing

Infiltration Testing For:

40 Victoria Road,
Fleur-de-lis,
Blackwood
NP12 3UG

Prepared for: Vale Consultancy

REF: Blackwood #397

DATE: 02.05.2023

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Document Control

Project	**Blackwood**
Client	**Vale Consultancy**
Ref:	**Blackwood #397**

Document Checking:

Prepared By: **Oliver Gibbs** **Signed:** [redacted]

Issue	Date	Status
01	02/05/2023	Written and submitted
02		
03		

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1 Introduction

1.1 Brief

Gibbs Geotechnical has been instructed by the Vale Consultancy (the Client) to undertake 6 soil infiltration tests to BRE365 standard, at the land to the rear of 40 Victoria Road, Fleur-de-lis, Blackwood, NP12 3UG.

National Grid Reference: ST154962 – Easting 315485, Northing 196263

Latitude, Longitude: 51.658770 , -3.2232079

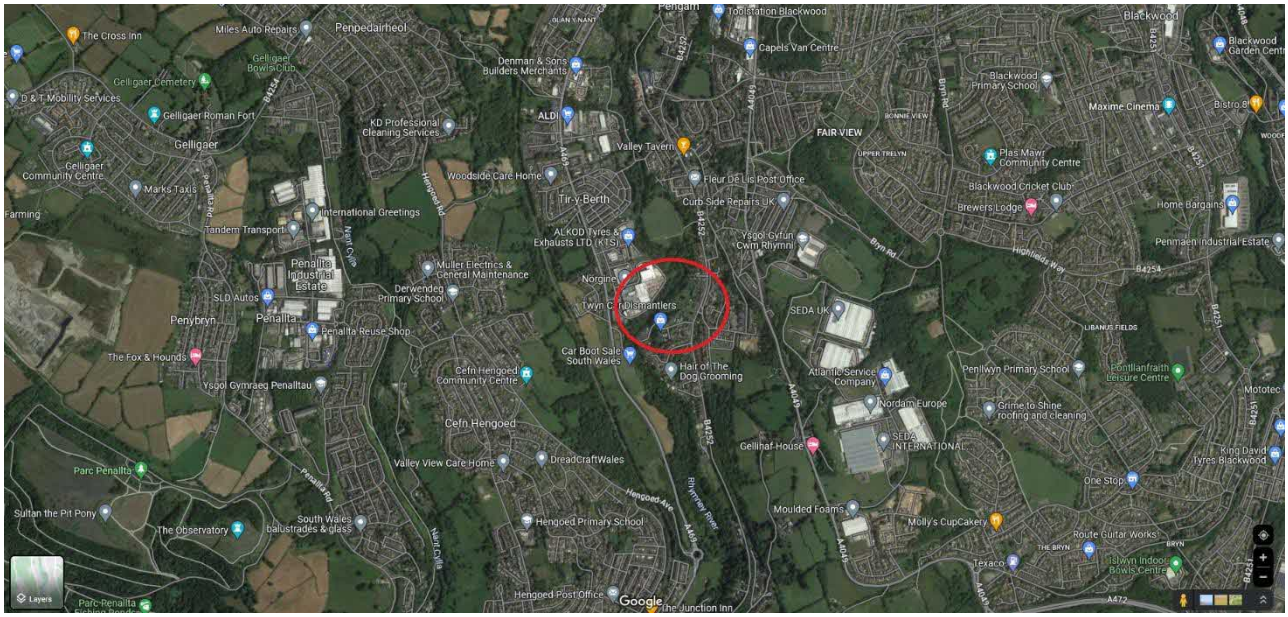

Figure 1 - Site location

Six BRE365 infiltration tests have been proposed to determine the local geology and permeation rates on site. These test pits will be 0.5x1x0.5m minimum and tested a maximum of 3 times or as many as possible in the timeframe allowed. Refer to Appendix A – Site Test Plans

1.2 Site Investigations

The test pits were located evenly across the site, which was grassed and level, bordered to the North-West by the Rhymney River.

The tests were performed by Gabriel Usher (of Gibbs Geotechnical) on the 26/27th of April 2023. Refer to Appendix B – Site photos

2 Site findings

The following tests were performed to the best of the ability of those involved, subject to site constraints and weather conditions. All pits were successfully excavated to 1.0m depth, shown in the location on Appendix A. Grassed loam was present from surface level to 0.3m depth at which point a till/alluvium/clay mix was encountered until the full 1.0m depth was attained.

2.1 British Geological Records

Local searches from the British Geological Survey (BGS) online records show the site to have the following superficial soils and bedrock:

Bedrock:	Grovesend Formation - Sandstone. Sedimentary bedrock formed between 309.5 and 308 million years ago during the Carboniferous period.
Superficial soils	Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

Refer to Appendix C for BGS records http://mapapps.bgs.ac.uk/geologyofbritain3d/

2.2 Trial pit soil conditions

Soils encountered were logged at the following approximate depths:

Pit 1

Topsoil:	0-0.2m	- Grassed loam
Superficial soils:	0.2-1.0m	- Clay

Pit 2

Topsoil:	0-0.25m	- Grassed loam
Superficial soils:	0.25-1.0m	- Till/alluvium

Pit 3 -

Topsoil:	0-0.3m	- Grassed loam
Superficial soils:	0.3-1.0m	- Made ground

Pit 4 -

Topsoil:	0-0.3m	- Grassed loam
Superficial soils:	0.3-1.0m	- Till/alluvium

Pit 5 -

Topsoil:	0-0.3m	- Grassed loam
Superficial soils:	0.3-1.0m	- Till/alluvium

Pit 6 -

Topsoil:	0-0.3m	- Grassed loam
Superficial soils:	0.3-1.0m	- Till/alluvium

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Results

Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

Trial Pit	1	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Clay
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

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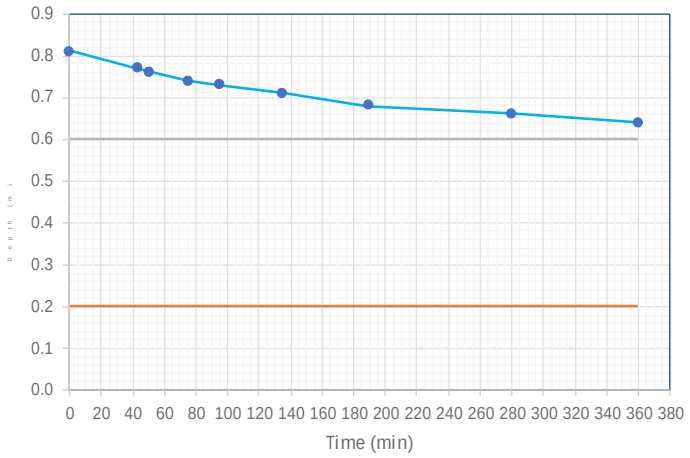
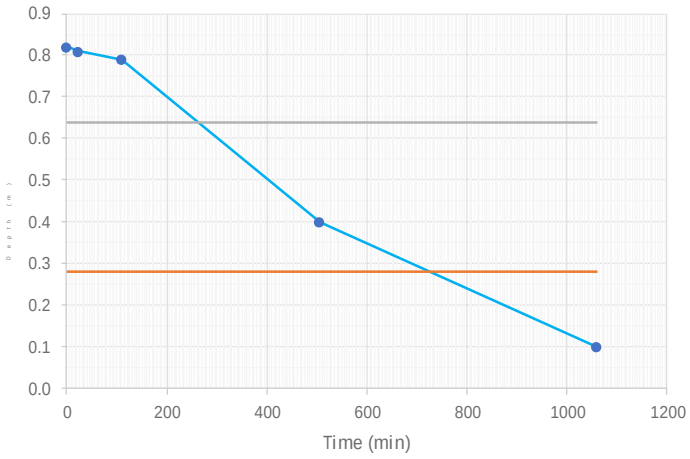
Test No.	Time (min)	Depth (m)			
1	0	0.81	time 75% =	N/A	
	43	0.77	time 25% =	N/A	
	51	0.76	Area =	0.5	
	75	0.74	Vp 75% =	0.6	
	95	0.73	Vp 25% =	0.2	
	135	0.71			
	189	0.68			
	280	0.66			
	360	0.64			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	N/A	s
			f =	N/A	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.82	time 75% =	250	
	21	0.81	time 25% =	720	
	109	0.79	Area =	0.5	
	1060	0.10	Vp 75% =	0.6	
			Vp 25% =	0.2	
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	28200	s
			f =	3.83E-06	m/s



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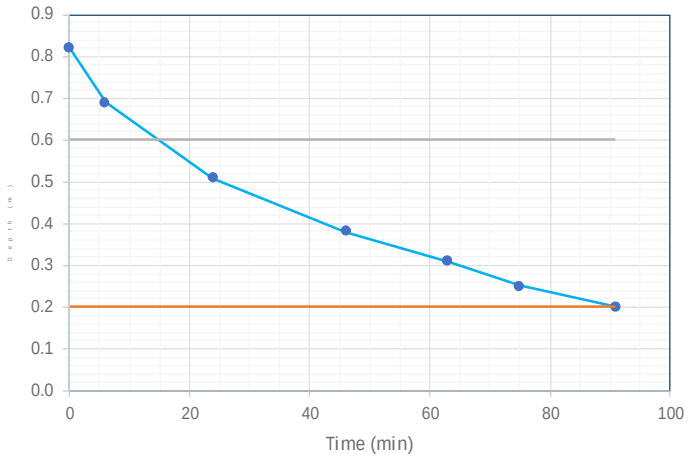
Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

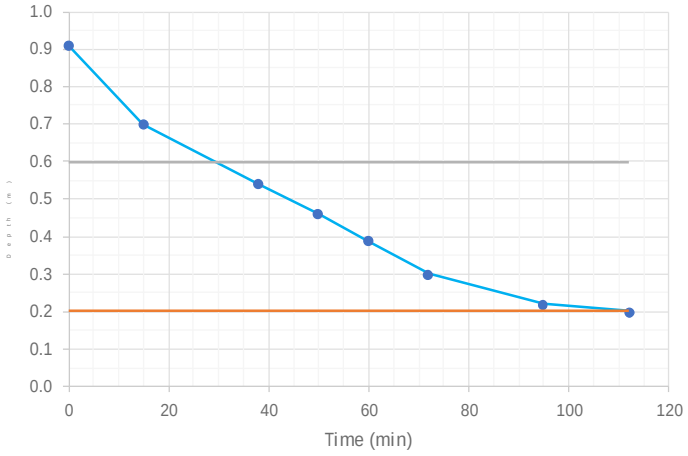
Trial Pit	2	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Clay
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

GibbsGeoTechnical

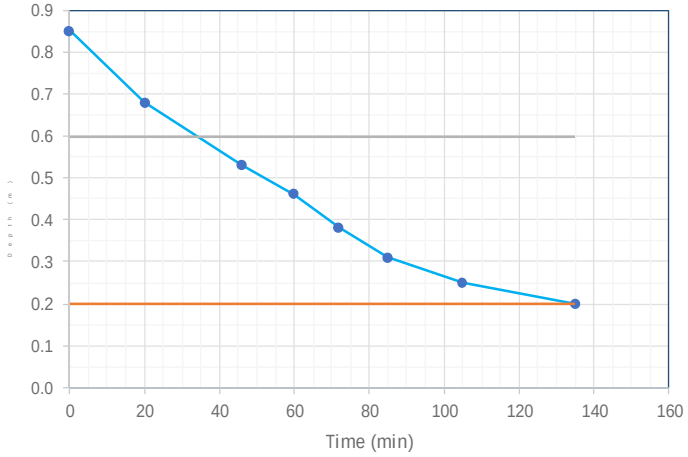
Test No.	Time (min)	Depth (m)			
1	0	0.82	time 75% =	17.5	
	6	0.69	time 25% =	91	
	24	0.51	Area =	0.5	
	46	0.38	Vp 75% =	0.6	
	63	0.31	Vp 25% =	0.2	
	75	0.25			
	91	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	4410	s
			f =	2.45E-05	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.91	time 75% =	29	
	15	0.70	time 25% =	112	
	38	0.54	Area =	0.5	
	50	0.46	Vp 75% =	0.6	
	60	0.39	Vp 25% =	0.2	
	72	0.30			
	95	0.22			
	112	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	4980	s
			f =	2.17E-05	m/s



Test No.	Time (min)	Depth (m)			
3	0	0.85	time 75% =	35	
	20	0.68	time 25% =	135	
	46	0.53	Area =	0.5	
	60	0.46	Vp 75% =	0.6	
	72	0.38	Vp 25% =	0.2	
	85	0.31			
	105	0.25			
	135	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	6000	s
			f =	1.80E-05	m/s



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Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

Trial Pit	3	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Made ground
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

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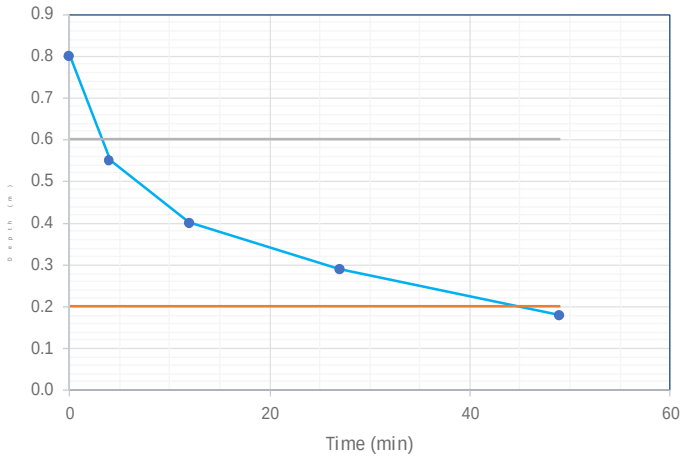
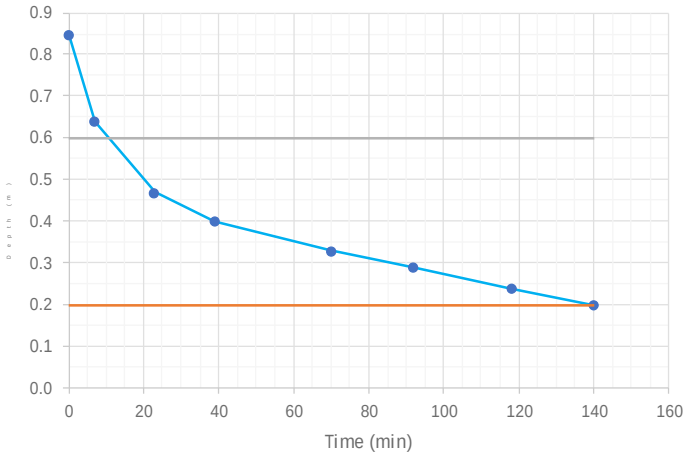
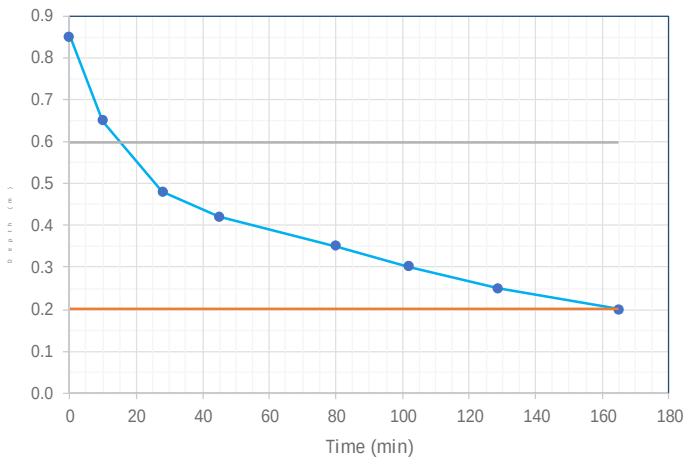
Test No.	Time (min)	Depth (m)			
1	0	0.80	time 75% =	2	
	4	0.55	time 25% =	44	
	12	0.40	Area =	0.5	
	27	0.29	Vp 75% =	0.6	
	49	0.18	Vp 25% =	0.2	
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	2520	s
			f =	4.29E-05	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.85	time 75% =	10	
	7	0.64	time 25% =	140	
	23	0.47	Area =	0.5	
	39	0.40	Vp 75% =	0.6	
	70	0.33	Vp 25% =	0.2	
	92	0.29			
	118	0.24			
	140	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	7800	s
			f =	1.39E-05	m/s



Test No.	Time (min)	Depth (m)			
3	0	0.85	time 75% =	15	
	10	0.65	time 25% =	165	
	28	0.48	Area =	0.5	
	45	0.42	Vp 75% =	0.6	
	80	0.35	Vp 25% =	0.2	
	102	0.30			
	129	0.25			
	165	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	9000	s
			f =	1.20E-05	m/s



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Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

Trial Pit	4	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Till/alluvium
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

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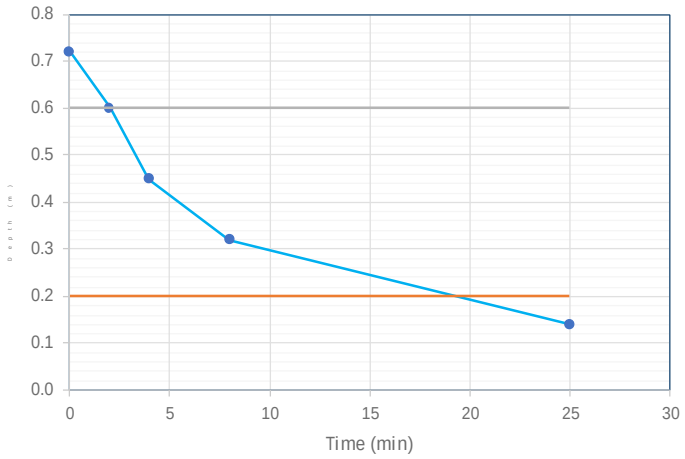
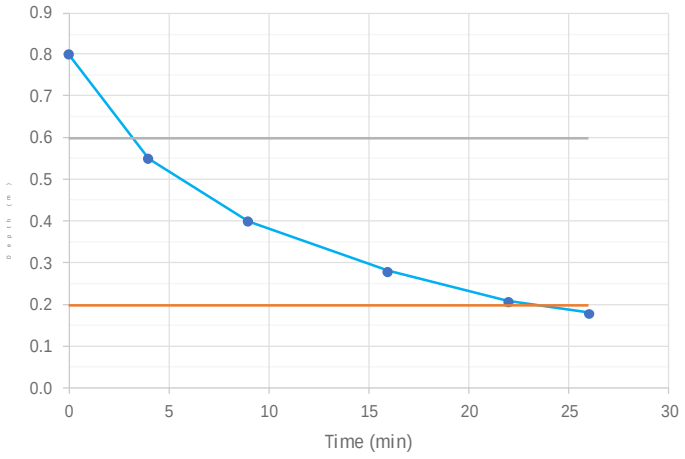
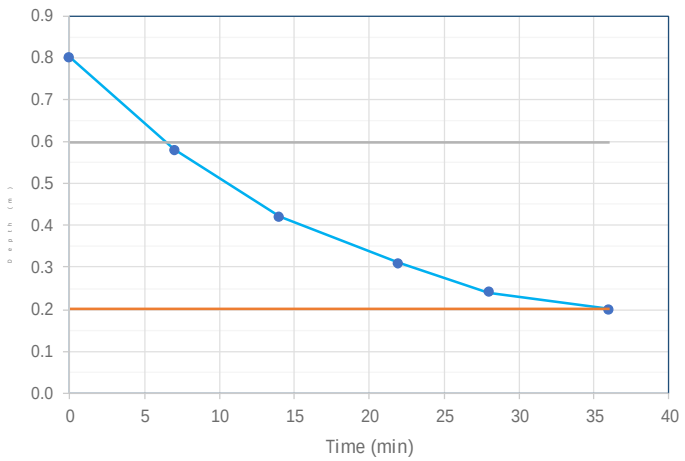
Test No.	Time (min)	Depth (m)			
1	0	0.72	time 75% =	2	
	2	0.60	time 25% =	19	
	4	0.45	Area =	0.5	
	8	0.32	Vp 75% =	0.6	
	25	0.14	Vp 25% =	0.2	
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	1020	s
			f =	1.06E-04	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.80	time 75% =	3	
	4	0.55	time 25% =	23	
	9	0.40	Area =	0.5	
	16	0.28	Vp 75% =	0.6	
	22	0.21	Vp 25% =	0.2	
	26	0.18	Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	1200	s
			f =	9.01E-05	m/s



Test No.	Time (min)	Depth (m)			
3	0	0.80	time 75% =	7	
	7	0.58	time 25% =	36	
	14	0.42	Area =	0.5	
	22	0.31	Vp 75% =	0.6	
	28	0.24	Vp 25% =	0.2	
	36	0.20	Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	1740	s
			f =	6.21E-05	m/s



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Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

Trial Pit	5	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Till/alluvium
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

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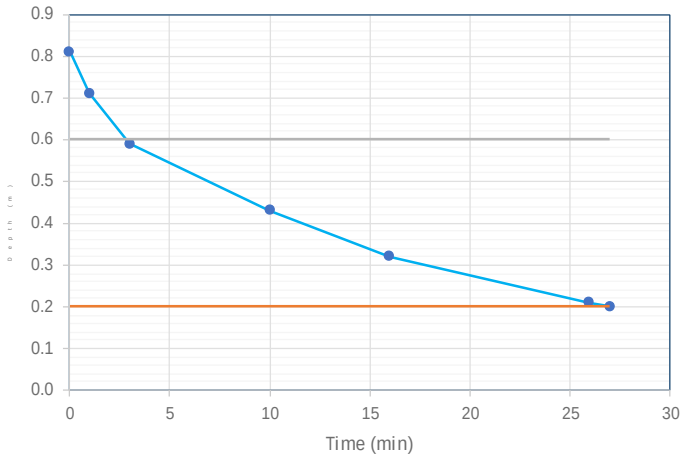
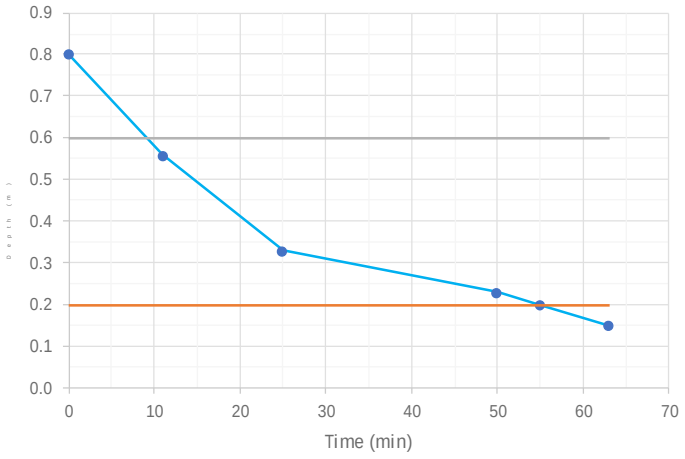
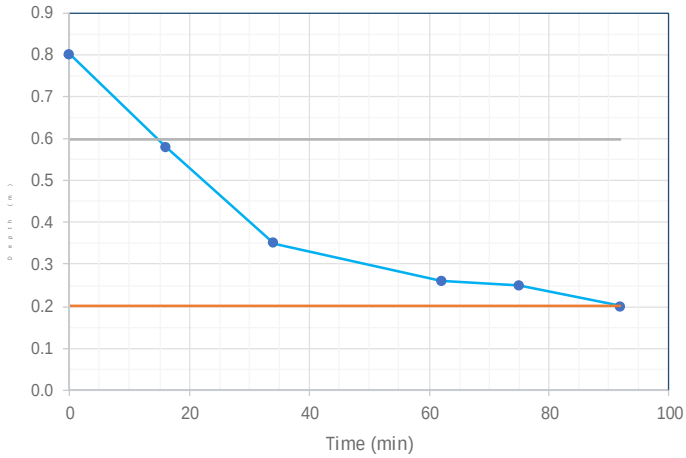
Test No.	Time (min)	Depth (m)			
1	0	0.81	time 75% =	3	
	1	0.71	time 25% =	27	
	3	0.59	Area =	0.5	
	10	0.43	Vp 75% =	0.6	
	16	0.32	Vp 25% =	0.2	
	26	0.21			
	27	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	1440	s
			f =	7.51E-05	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.80	time 75% =	9	
	11	0.56	time 25% =	55	
	25	0.33	Area =	0.5	
	50	0.23	Vp 75% =	0.6	
	55	0.20	Vp 25% =	0.2	
	63	0.15			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	2760	s
			f =	3.92E-05	m/s



Test No.	Time (min)	Depth (m)			
3	0	0.80	time 75% =	14	
	16	0.58	time 25% =	92	
	34	0.35	Area =	0.5	
	62	0.26	Vp 75% =	0.6	
	75	0.25	Vp 25% =	0.2	
	92	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	4680	s
			f =	2.31E-05	m/s



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Soakaway Test Results - BRE 365 Digest standards

Site: 40 Victoria Road
Client: Vale Consultancy

Trial Pit	6	Date:	26-27/04/2023
		Performed by:	Oliver Gibbs
Dimensions	(m)	Weather:	Sunny
Width	1	Topsoil:	Grassed loam
Length	0.5	Superficial soil:	Till/alluvium
Effective depth	0.9	Comments:	
Total depth of hole	0.9		

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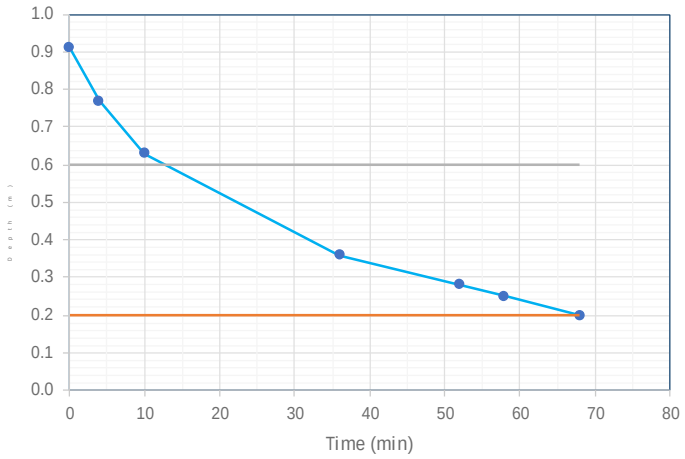
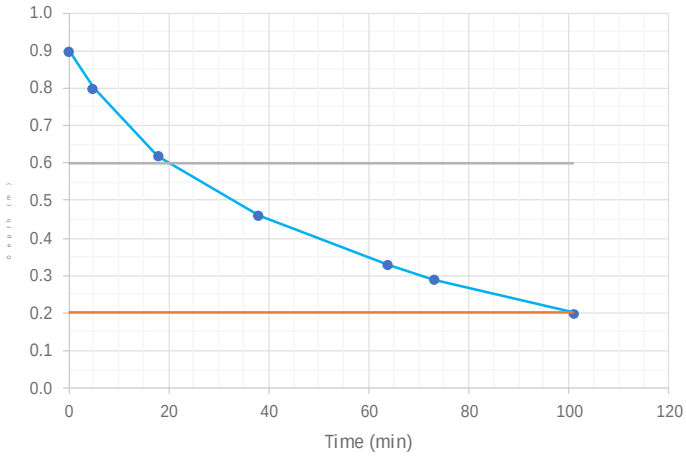
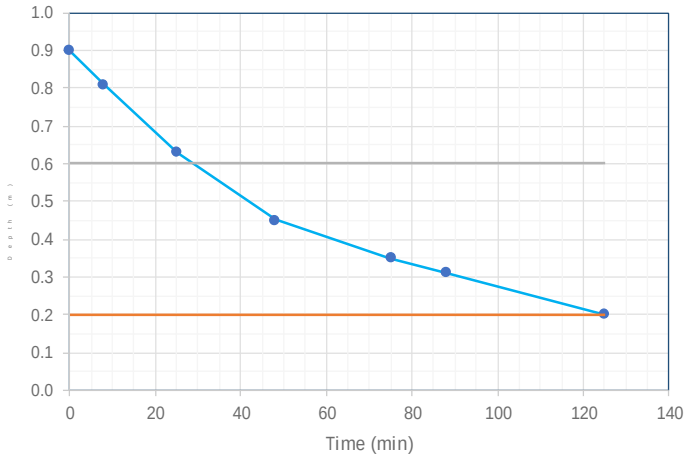
Test No.	Time (min)	Depth (m)			
1	0	0.91	time 75% =	12	
	4	0.77	time 25% =	68	
	10	0.63	Area =	0.5	
	36	0.36	Vp 75% =	0.6	
	52	0.28	Vp 25% =	0.2	
	58	0.25			
	68	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	3360	s
			f =	3.22E-05	m/s



Test No.	Time (min)	Depth (m)			
2	0	0.90	time 75% =	19	
	5	0.80	time 25% =	101	
	18	0.62	Area =	0.5	
	38	0.46	Vp 75% =	0.6	
	64	0.33	Vp 25% =	0.2	
	73	0.29			
	101	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	4920	s
			f =	2.20E-05	m/s



Test No.	Time (min)	Depth (m)			
3	0	0.90	time 75% =	30	
	8	0.81	time 25% =	125	
	25	0.63	Area =	0.5	
	48	0.45	Vp 75% =	0.6	
	75	0.35	Vp 25% =	0.2	
	88	0.31			
	125	0.20			
			Vp75-25 =	0.2	m
			As50 =	1.85	m²
			tp75-25 =	5700	s
			f =	1.90E-05	m/s



3 Conclusions

The tests which could be performed in the timeframe allowed found infiltration results of:

Test Pit 1: 3.83E-06m/s
Test Pit 2: 1.80E-05m/s
Test Pit 3: 1.20E-05m/s
Test Pit 4: 6.21E-05m/s
Test Pit 5: 2.31E-05m/s
Test Pit 6: 1.90E-05m/s

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APPENDIX A: Site Test Plans

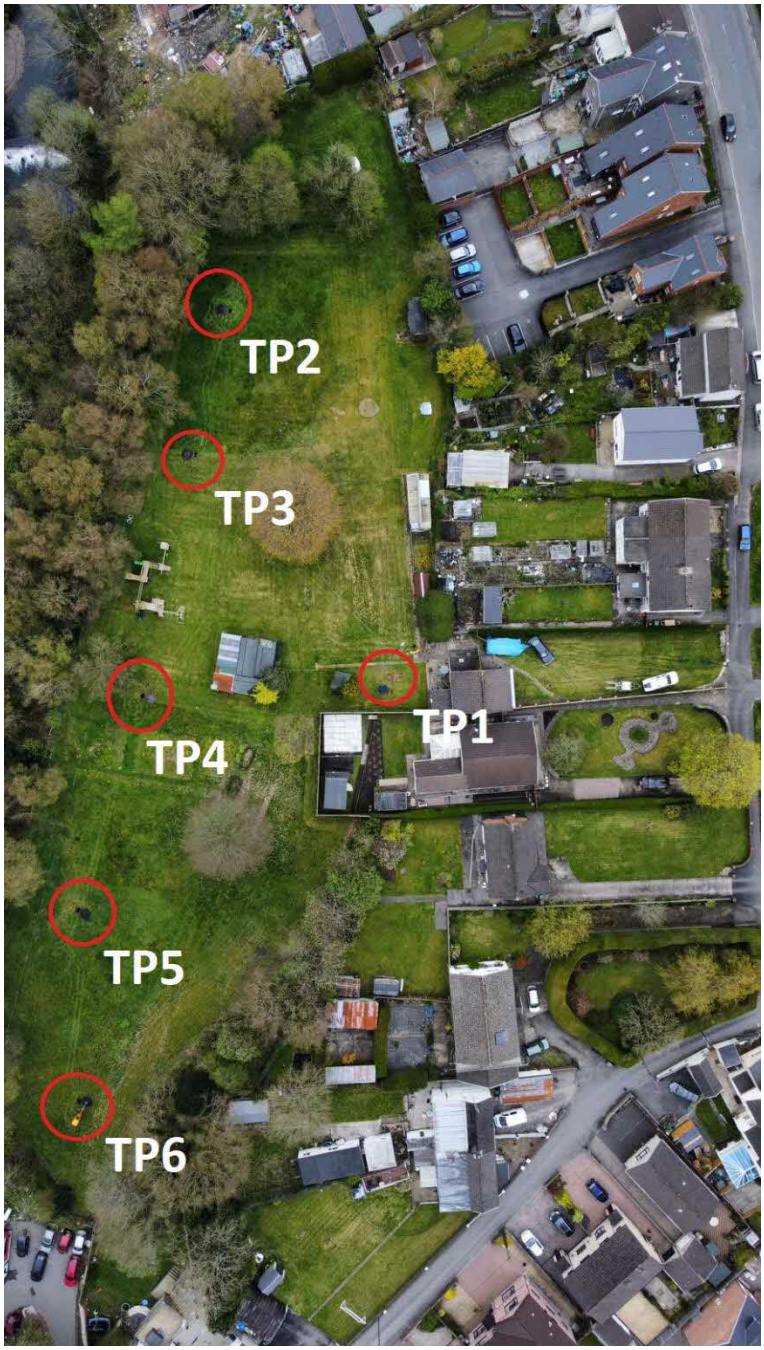

Figure 1- Test pit locations