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RESOLVEN PARK 3G PITCH

SAB COMPLIANCE STRATEGY REPORT

prepared for

SOUTH WALES SPORTS GROUNDS

Date: JUNE 2025

Document ref no. 25206-R-601-SAB COMPLIANCE STRATEGY- A



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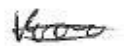
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DRAINAGE STRATEGY

25206

Document Control

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Revision History

Revision	Date	Purpose/Status	Approved
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B			
C			
D			
E			
F			

Distribution

	Function Title	Company	Name
1		[Company]	
2			
3			

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References

1	CIRIA – The SuDS Manual (C753)
2	UK SUDS (www.uksuds.com)
3	Welsh Water Asset Plans
5	Google Maps
6	Ordnance Survey Mapping
7	BRE Digest 365 Soakaway Design
8	National Soil Resources Institute (SoilScapes)
10	NRW Flood Risk Maps for Planning
12	-

Abbreviations

DCWW	DWR Cymru Welsh Water
A.O.D.	Above Ordnance Datum
NRW	Natural Resources Wales
FW	Foul Water
SW	Surface Water
SuDS	Sustainable Drainage Systems
l/s	Litres Per Second

This document has been created during the design stage of the project and should not be used as a replacement for the final operation and maintenance requirements of the proposed works. It shall remain relative only to those features identified on the attached plan. This document is intended to support the development of the official operation and maintenance document which shall be the responsibility of the principal contractor.

This document is for the exclusive use of the client and should not be used in whole or in part by any third parties without the express written permission of QuadConsult Limited.

1.0 INTRODUCTION

- 1.1 QuadConsult Ltd was commissioned to produce a drainage strategy for Resolven Park 3G Pitch by South Wales Sports Grounds
- 1.2 This report will draw upon information supplied by the Client and that available within the public domain including the local authority Planning Portal.
- 1.3 The aim of this report is to demonstrate that a suitable site-specific surface and foul water drainage strategy can be implemented to service the proposed development.
- 1.4 This report is prepared in accordance with the *Statutory National Standards for Sustainable Drainage in Wales* (2019)

2.0 SITE LOCATION & DESCRIPTION

- 2.1 The site is located south of the A465 and north of Vaughan Avenue in Resolven, Neath. Nearest post code is SA11 4HW, site coordinates 282609, 202691.
- 2.2 The existing site topography (Appendix 1), the existing topography indicates a fall from east to west.



Figure 1 – Site Location Plan

3.0 EXISTING DRAINAGE

3.1 Land Drainage

The topographical survey indicates a ditch running along the eastern boundary, Surface water running into the ditch is likely to discharge directly into the adjacent River Afan.

3.2 Overland Flow & Exceedance Routes

Existing exceedance, overland flow paths would follow the existing topography and discharge flows onto an adjacent positively drained access road to the west of the site.

3.3 Surface Water Drainage Network

Welsh Water Asset plans indicate no existing surface water sewers within or adjacent to the site.

3.4 Foul Water Drainage Network

Welsh Water Asset plans indicate no existing foul water sewers within or adjacent to the site.

3.5 Combined Drainage

Welsh Water Asset plan (Appendix 8) indicates an existing 225mm cast iron combined sewer running southeast to northwest direction across the site.

3.6 Other Drainage

No other drainage or culverted watercourses are noted on the current information available.

4.0 EXISTING FLOOD RISK

NRW flood maps for planning indicate the development parcel is within the following flood zones.

4.1 Flood Risk from Rivers

NRW flood mapping (Refer to Appendix 3) indicates Flood Zone 3 - Areas with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change. The site is noted to be located within a TAN15 Defended Zone

4.2 Flood Risk from Sea

NRW flood mapping (Refer to Appendix 3) indicates little / no risk of flooding from the Sea.

4.3 Flood Risk from Surface Water & Small Watercourses

NRW flood mapping (Refer to Appendix 3) indicates little / no risk of flooding from Surface water / Local Watercourses. An area of Flood zone 2 and 3 is noted to an access road located west of the site.

4.4 Flood Risk from Reservoir

NRW flood mapping (Refer to Appendix 3) indicates little / no risk of flooding from the Reservoirs. It is noted the areas to the north and west are at risk from the Ystradfellte reservoir.

4.5 Other Flood Risk (Mines, Piped Network, etc)

NRW flood mapping (Refer to Appendix 3) indicates no recorded flood events within the development boundary. The presence of any live Welsh Water / local authority assets throughout and adjacent to the site could pose a flood risk due to failure of infrastructure.

5.0 PROPOSED DRAINAGE STRATEGY

5.1 Surface Water

The surface water drainage for the proposal will comply with SAB/SuDS protocols, and work within the site layout & constraints of the proposed development.

Following positive results and recommendations from the investigating geotechnical engineers, infiltration is proposed to dispose of surface water. The lowest recorded rate of 4.69×10^{-5} has been used within the soakaway calculation. A factor of safety of 5 has been utilised along with a CV value of 1 within the calculations (Refer to Appendix 9). A 300mm Type 3 subbase is proposed for the 3G makeup. The 300mm depth of Type 3 stone will represent a 150mm free board to adequately dispose of the surface water generated by the catchment.

Under the current Welsh Government policy, any surface water infrastructure conveying flows from more than 1 curtilage requires adoption by the local authority SAB. The current scheme will entirely within a single curtilage, therefore adoption may not be required.

Any infrastructure being adopted by the local authority SAB will be subject to commuted sums calculated for the lifetime maintenance and end of life replacement construction costs. Under a single development curtilage, the surface water elements can be kept private. In both instances the adopted / private network must be maintained in accordance with the project maintenance schedule and CIRIA SuDS manual guidance.

5.2 Foul Drainage

No Additional Foul drainage is proposed for the sports pitch development.

5.3 Land Drainage

No proposed land drainage is noted within the development.

5.4 Other Drainage

No other drainage is proposed within the land boundary.

6.0 COMPLIANCE WITH NATIONAL SUDS STANDARDS

6.1 Standard S1 – Surface Water Destination

Priority Level 1 – Reuse of Rainwater

Unfortunately, this type of development offers no requirement for rainwater reuse.

Priority Level 2 – Infiltration to Ground

Onsite testing was conducted by TerraFirma Geotechnical Engineers in line with BRE365 guidance (Refer to Appendix 7). The testing along with geotechnical recommendations indicate infiltration as a viable option for the site to dispose of surface water.

Priority Level 3 – Discharge to Water Body

River Neath and Clydach Brook are both noted to be outside of the local vicinity with no direct connection possible. Some more localised drainage ditches/unnamed watercourse are noted with in closer proximity.

Deemed not required for this development.

Priority Level 4 – Discharge to Surface Water Sewer, Highway Drain, or other System

Currently, no surface water sewers, either DCWW or local authority highways owned have been identified with proximity to the site.

Deemed not required for this development.

Priority Level 5: Discharge to a Combined Sewer – N/A

Deemed not required for this development.

6.2 Standard S2 – Surface Water Runoff Hydraulic Control

It is proposed that the attenuation system be designed such that it is sufficient to store critical storm duration flows in the 100yr+40% event. Calculations are appended. The proposed pitch makeup will offer improvements over existing rates to greater percolation of the pitch makeup and greater opportunity to maximise infiltration. A factor of safety of 5 along with a CV value of 1 has been utilised within the design calculations. A 50% redundancy volume is also noted with the 300mm Type 3 subbase layer.

First 5mm Interception

The development (Sports Pitch) would be extremely low risk in contributing possible contamination. Interception mechanisms as outlined in Welsh Government guidance table G2.1 will be required to ensure compliance with the requirement of zero runoff for the first 5mm rainfall for 80% of storm events during the summer and 50% in winter.

The provision of pitch sub layers will act as a filter; the use of catchpit chambers will also work towards the objective of first 5mm interception. Deemed to comply with the SAB standards.

Exceedance/Blockage

Any exceedance flows will follow surface topography. The topography is such that any excess flows will be directed onto an adjacent access road surveyed by a positive drainage system of Gullies and a piped network.

6.3 Standard S3 – Water Quality

The provision of pitch sub layers will act as a filter; the use of catchpit chambers will also work towards the objective of first 5mm interception. Deemed to comply with the SAB standards.

6.4 Standard S4 – Amenity

The proposed sports pitch will offer a fantastic amenity facility, not only for the local sports clubs but also for the wider community.

6.5 Standard S5 – Biodiversity

The proposed pitch will not impact on the surrounding high value habitat; wind flower seed mix could be utilised in open areas outside of the sports pitch if required.

6.6 Standard S6 - Construction, Operation and Maintenance and Structural Integrity

The infrastructure maintenance will be dealt with at a facility level as all of the systems employed are contained within a single curtilage application. All of the proposed SuDS infrastructure is in accessible areas for ease of maintenance. The surface water network including any land drainage will be designed to be fully roddable and jettable, with suitably positioned rodding eyes and mini-access chambers.

The SuDS devices are low maintenance surface/shallow items with established regular maintenance regimes.

The proposed design solution has been designed in accordance with the SuDS manual and is generally served by shallow SuDs features and accessible details. There are no inherent safety issues with the proposed scheme.

The principal issue is the management of the pitch drainage, which primarily involves periodic inspection to check the chambers and pipe network are clear and ensure the free-flowing operation. These inspections will also serve to monitor the build-up of any silt in the system to facilitate any cleaning required.

7.0 SUMMARY & RECOMMENDATIONS

7.1 SUMMARY

The proposed development will follow current Welsh Government, local authority, and Welsh Water guidance in relation to drainage strategy. The surface water network will follow the principles set out in the Ciria SuDs manual (C753) and Local SAB requirements. The surface water will be collected, treated, and discharged to a viable source at an acceptable rate following SAB hierarchy guidance. Where appropriate, surface water elements will be adopted by the local authority through SAB application process.

Surface Water Strategy Summary: -

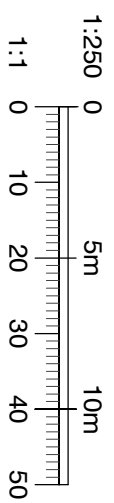
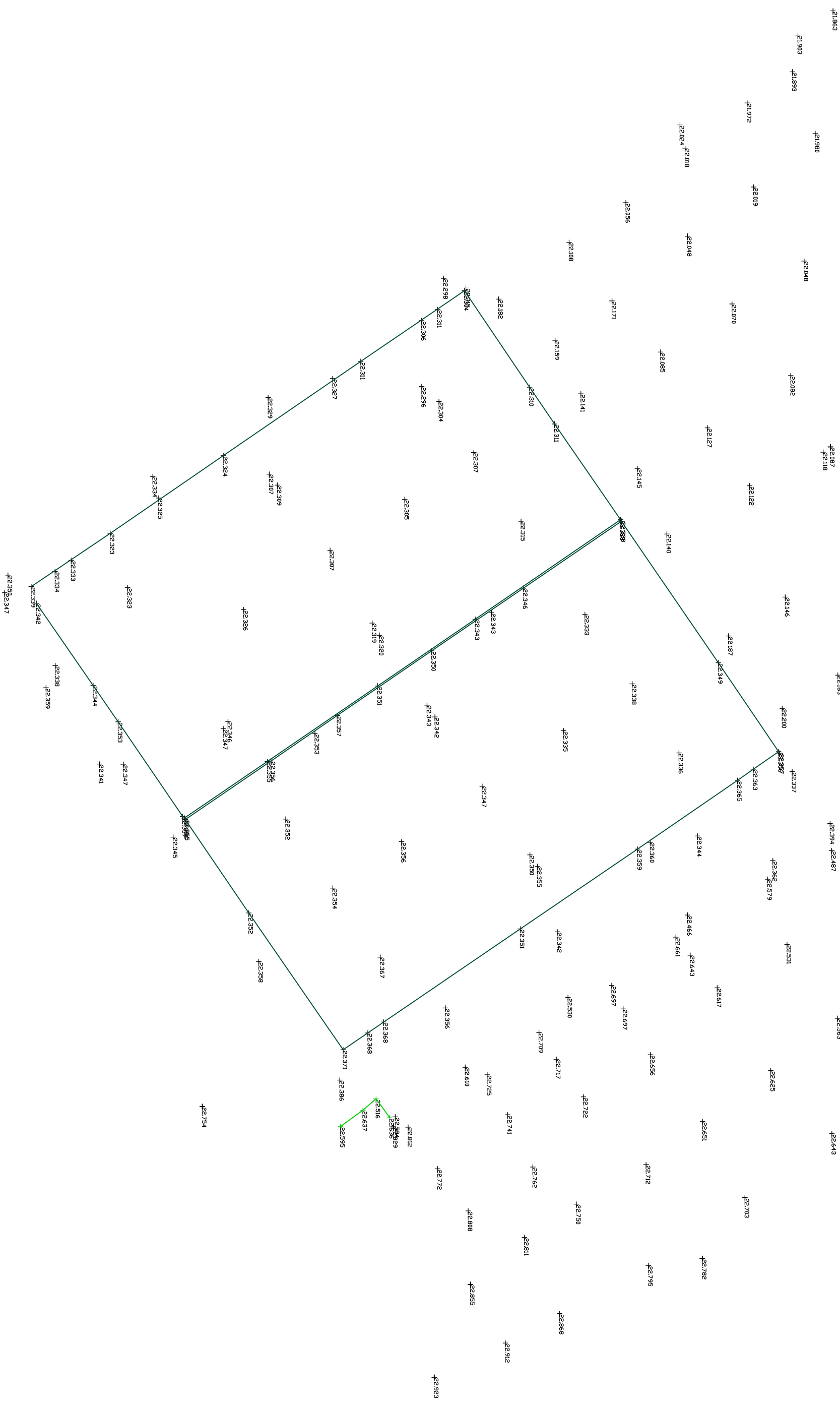
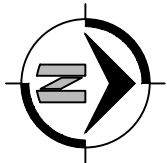
- Existing Catchment Area 2565m² (0.256ha)
- Proposed Catchment Area 2565m² (0.256ha)
- Disposal via infiltration
- No increase in levels or reduction in flood storage volume
- Calculations based on FEH Rainfall Data
- CV Value of 1 Utilised for Calculations
- Safety Factor of 5 incorporated within Calculations.

7.2 RECOMMENDATIONS

The following actions are recommended to allow a robust suitable site-specific surface water drainage strategy can be implemented to service the proposed development.

- PreSAB application to local authority based on the above strategy and addressing any comments from any pre application meeting.
- Confirm with Welsh Water (DCWW) the arrangement to protect their existing asset.
- Full SAB application based on comments received from PreSAB application.
- Contractor to confirm infiltration rates at formation of proposed granular layer.

APPENDIX 1 – EXISTING SITE SURVEY



**APPENDIX 2 – EXISTING DRAINAGE SURVEY
(Not Applicable)**

APPENDIX 3 – PROPOSED SITE LAYOUT



NORTH

NOTES :

KEY

- Existing Site Boundary
- Proposed Site Boundary
- Proposed 3G Surface
- Proposed Line Marking

REV	DATE	DESCRIPTION	DRAWN BY	APPR BY
PO1	06.05.25	First Issue	JA	RJ

DRAWING NUMBER :	VP RN - 0001
BIM NUMBER	REV:
n/a	PO1

PROJECT TITLE :	STATUS:
VAUGHAN PARK RESOLVEN 3G	REV:
	PO1

DRAWING TITLE :
PROPOSED GENERAL ARRANGEMENT

DATE : 06.05.25	JOB NO : VPRN
DRAWN BY : JA	SCALE : 1:250
APPROVED BY : RJ	PRINTED SIZE: A3

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DO NOT SCALE FROM THIS DRAWING

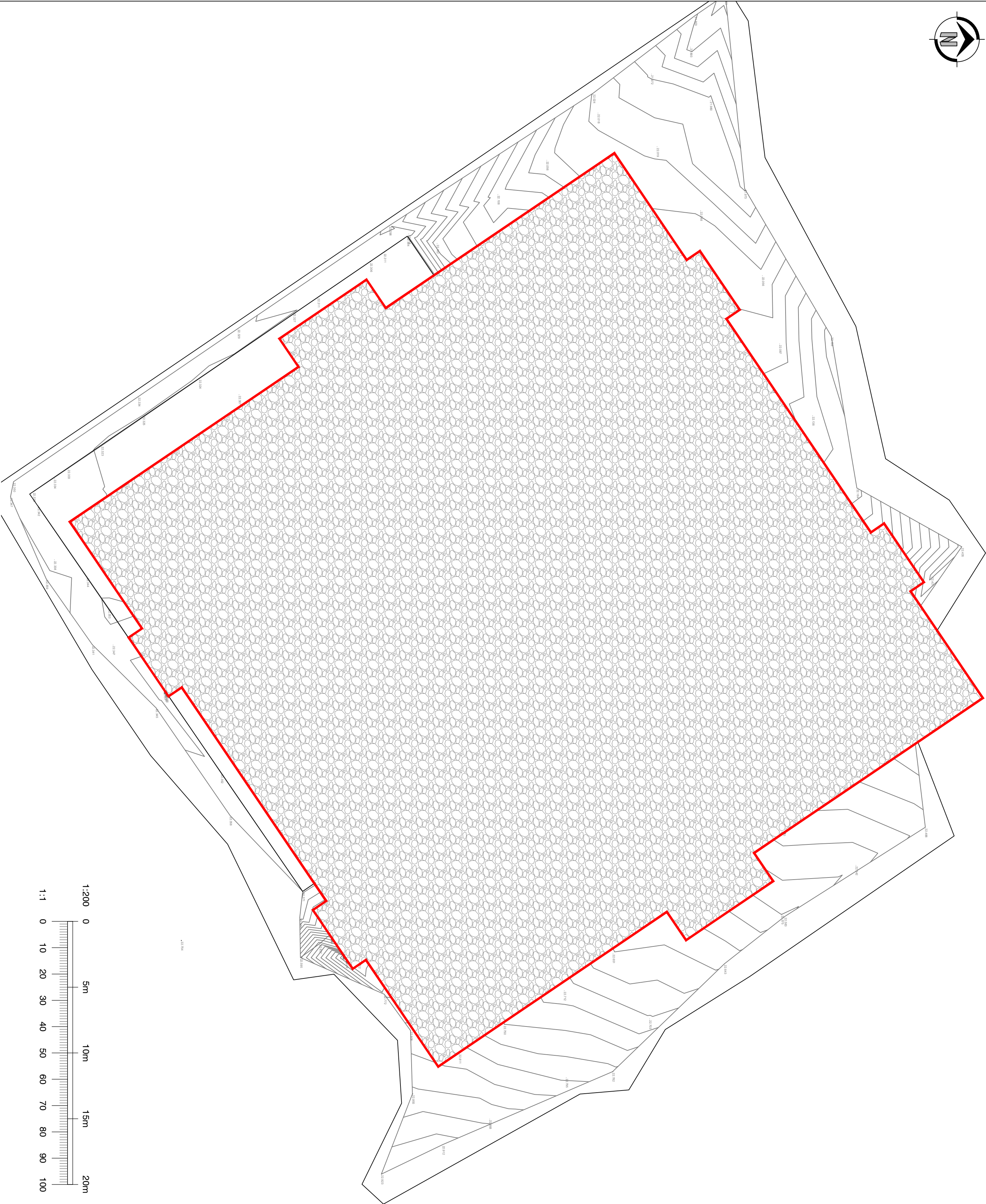
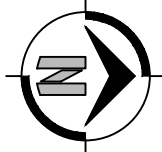
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CONTRACTORS TO REFER TO THE SPECIFICATION BY DEFAULT.
RESIDUAL RISKS ARE NOT HIGHLIGHTED IN THIS DRAWING AND FURTHER INFORMATION SHOULD BE SOUGHT

ALWAYS CHECK FOR LATER REVISIONS OF THIS DRAWING



APPENDIX 4 – PROPOSED DRAINAGE STRATEGY PLAN



GENERAL NOTES

1. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist documents provided.
2. Any discrepancies within all relevant drawings are to be reported to QuadConsult Ltd immediately.
3. All dimensions and levels are in metres, U.N.O..
4. Do not scale from this drawing - use figured dimensions only.
5. This drawing is schematic for clarity only, positions of pipe runs and manholes may vary on site due to site conditions.
6. Surface water drainage subject to S104 / SAB approval where appropriate with the relevant authority.
7. Foul Drainage subject to S104 approval with relevant water authority.
8. All private drainage to be installed in accordance with Part H of building regulations and the developers warranty provider.
9. The contractor is at risk if construction is progressed without relevant S104, S106, S278, S38, OWC etc agreement being in place with the relevant authorities.

 GRANULAR SOAKAWAY LAYER
TYPE 3 FILL WITH MIN 30% VOID RATIO

Soakaway design is based on the following criteria: -

- Factor of safety of 5
- Minimum depth of 300mm Type 3 fill
- Minimum infiltration rate of 0.16900m/hr (4.69x10.5m/sec)

Rev	Date	Description	By
-----	------	-------------	----

Dimensions to be verified on site.
This drawing should not be scaled. Use figured dimensions only.
Any discrepancies should be referred to the Engineer prior to work being put in hand.
This drawing is copyright.

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Consulting Civil & Structural Engineers



Client

SOUTH WALES

SPORTS GROUP

Project

RESOLVEN PARK 3G PITCH

Title

PROPOSED DRAINAGE PLAN

Drawing Status

APPROVAL

Designed by	Drawn by	Checked by	Date	Scale @ A2 size
BC	BC	ML	JUN 25	1:200
Drawing No				

25206C-005-0



NORTH

NOTES :

KEY

- Existing Site Boundary
- Proposed Pitch / Boundary / Line Markings
- Existing National Grid Underground LV
- Existing National Grid Overhead Line HV
- Existing Wales and West Low Pressure (LP)
- Existing Combined Drainage Route
- Existing Combined Drainage Route
- Existing Combined Drainage Manhole
- Proposed Pitch Infiltration Area
- Easement (6m = 3m either side of ex. drain)

PO3	11.08.2025	Drainage proposal amended	JA	RJ
PO2	29.07.2025	Drainage proposal amended	JA	RJ
PO1	24.07.2025	First Issue	JA	RJ
REV	DATE	DESCRIPTION	DRAWN BY	APPR BY

DRAWING NUMBER :
C0428 - VPRN - 0002

BIM NUMBER	STATUS:
N/A	REV: PO3

PROJECT TITLE :
VAUGHAN PARK RESOLVEN 3G

DRAWING TITLE :
PROPOSED DRAINAGE LAYOUT

DATE : 06.05.25	JOB NO : VPRN
DRAWN BY : JA	SCALE : 1:250
APPROVED BY : RJ	PRINTED SIZE: A3

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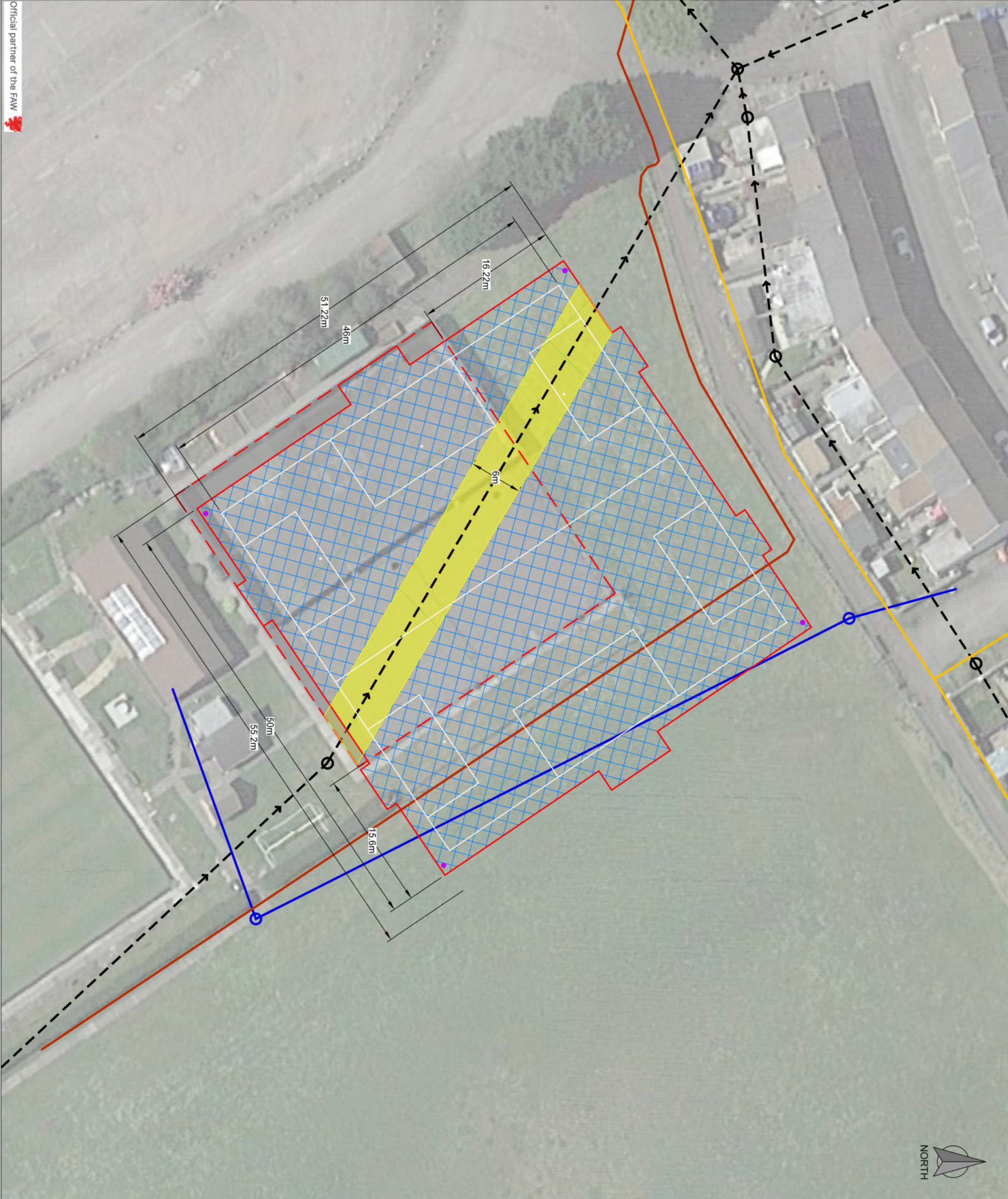
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APPENDIX 5 – PROPOSED CONSTRUCTION DETAILS

NOTES :

KEY

REV	DATE	DESCRIPTION	DRAWN BY APPR BY
PO2	11.08.25	Details updated	JA RJ
PO1	08.05.25	First Issue	JA RJ

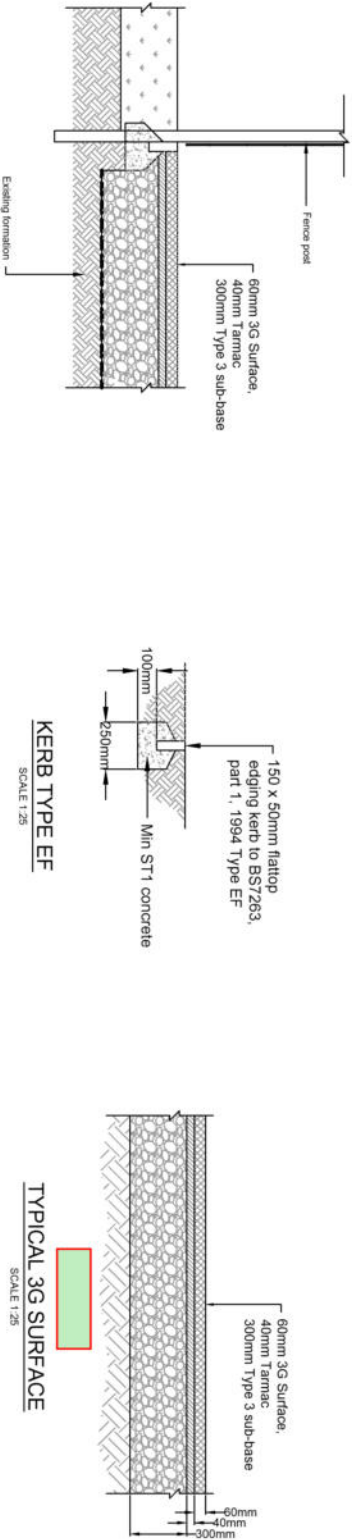
DRAWING NUMBER : C0428 - VPRN - 0003		STATUS: INFORMATION REV: PO2	
BIM NUMBER N/A			

PROJECT TITLE :
VAUGHAN PARK RESOLVEN 3G

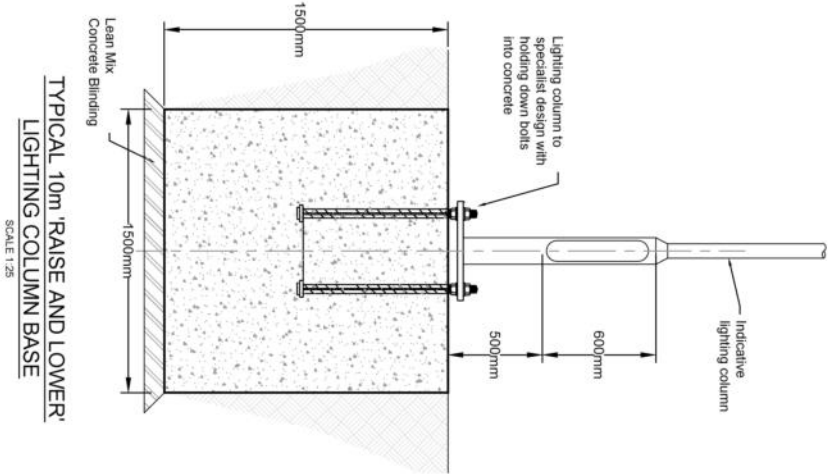
DRAWING TITLE :
PROPOSED TYPICAL DETAILS

DATE : 08.05.25	JOB NO : VPRN
DRAWN BY : JA	SCALE : 1:250
APPROVED BY : RJ	PRINTED SIZE: A3

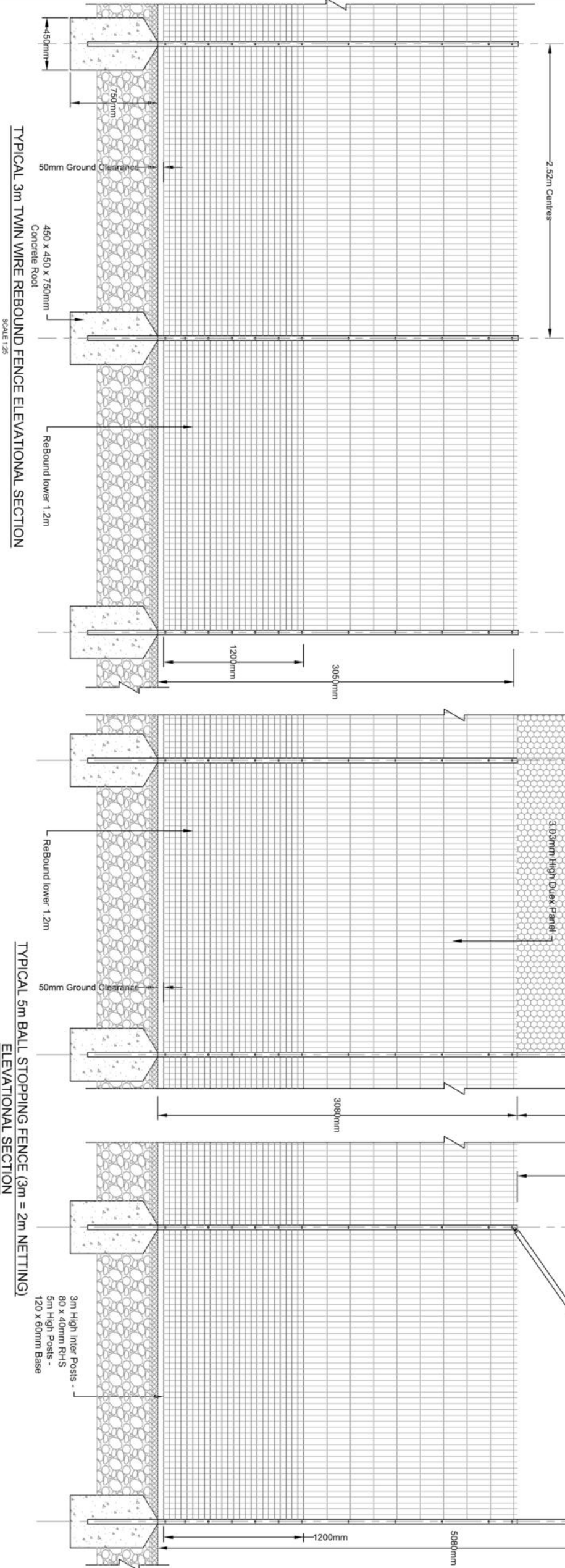
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TYPICAL 3G CONSTRUCTION DETAIL
SCALE 1:25



TYPICAL 10m RAISE AND LOWER
LIGHTING COLUMN BASE
SCALE 1:25



TYPICAL 3m TWIN WIRE REBOUND FENCE ELEVATIONAL SECTION
SCALE 1:25

TYPICAL 5m BALL STOPPING FENCE (3m = 2m NETTING)
ELEVATIONAL SECTION
SCALE 1:25



**APPENDIX 6 – EXISTING DISCHARGE RATES
(Not Applicable)**

APPENDIX 7 – INFILTRATION TEST RESULTS

Our Ref: DE/25-288-CA/SOAKAWAY

Your Ref:

Contact: David Emanuel

4th June 2025

South Wales Sports Grounds

For the attention of Mr Richard Musgrove

Dear Richard,

SOIL SOAKAWAY TESTING: SPORTS GROUND, RESOLVEN

TFW Group Limited has been retained by South Wales Sports Grounds to perform soakaway tests at the above site for a proposed sports ground.

On 2nd June 2025, two Soakaway Tests were performed within 1.0m deep trial pits. Test data is presented in **Annex A**, and the test locations are presented in **Figure 01**.



Figure 01. Test Locations

Ground Conditions encountered are summarised in **Table 01**.

Table 1 Summary of Ground Conditions

Location	Depth	Description
SA01	0.00 – 0.14	MADE GROUND: Firm, brown, slightly gravelly, slightly sandy SILT/CLAY
SA01	0.14 – 1.00	MADE GROUND: Black to red-brown, slightly silty, sandy GRAVEL including brick, glass, clinker and shale.
SA02	0.00 – 0.40	MADE GROUND: Firm, brown, slightly gravelly, slightly sandy SILT/CLAY
SA02	0.40 – 1.00	MADE GROUND: Black to red-brown, slightly silty, sandy GRAVEL including brick, glass, clinker and shale.

A summary of the soakaway test results is presented in **Table 02**.

Table 2 Summary of Soakaway Test Results

Location	Test Results
SA01	$5.71 \times 10^{-5} \text{ ms}^{-1}$ to $7.78 \times 10^{-5} \text{ ms}^{-1}$
SA02	$4.72 \times 10^{-5} \text{ ms}^{-1}$ to $6.51 \times 10^{-5} \text{ ms}^{-1}$

After the tests, the trial pits were extended 1.0m below the base of the test to confirm groundwater was not present.

We trust that the above is to your satisfaction, however, if you have any queries or require any further information, please do not hesitate to contact us.

Yours sincerely
for: **TFW Group Limited**



David Emanuel

Enc.

Annex A – Soakaway Test Results

**Annex A
Soakaway Test
Results**

Trial Pit Soakaway



Site Name: Resolven
Project Number: TF-24-237-CA
Date: 02/06/2025
Engineer: DE

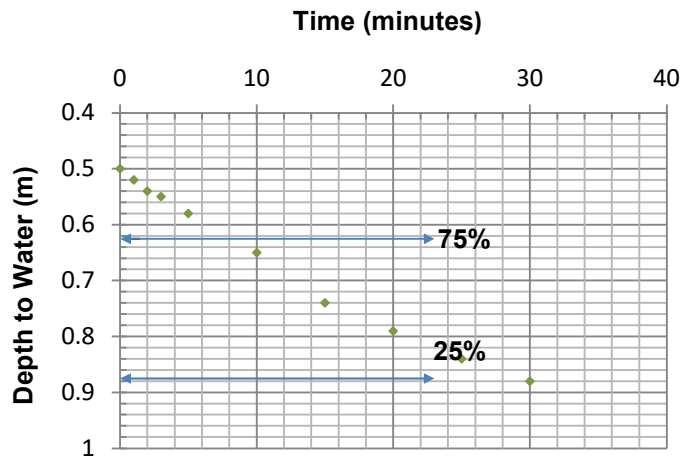
Trial Pit: **SA01/25**

TEST 1

Length 1.90 m
Width 0.30 m
Depth 1.00 m
Fill Level 0.50 m

V_{p75-25} 0.143 m³
 a_{p50} 1.67 m²
 t_{p75-25} 22 minutes

Soil Infiltration Rate, f 6.46E-05 ms⁻¹

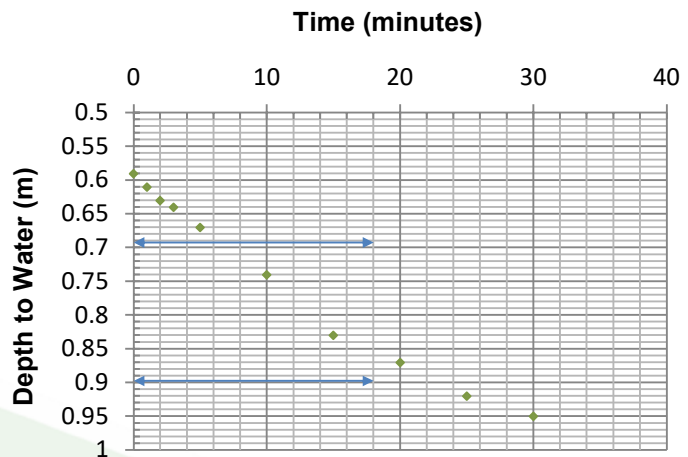


TEST 2

Length 1.90 m
Width 0.30 m
Depth 1.00 m
Fill Level 0.59 m

V_{p75-25} 0.117 m³
 a_{p50} 1.472 m²
 t_{p75-25} 17 minutes

Soil Infiltration Rate, f 7.78E-05 ms⁻¹

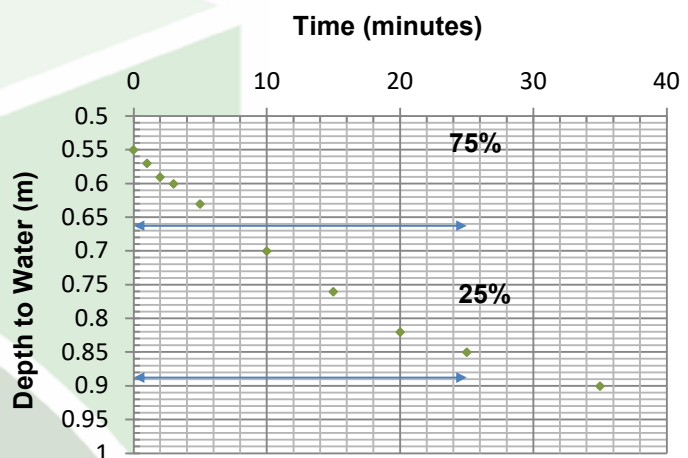


TEST 3

Length 1.90 m
Width 0.30 m
Depth 1.00 m
Fill Level 0.55 m

V_{p75-25} 0.128 m³
 a_{p50} 1.56 m²
 t_{p75-25} 24 minutes

Soil Infiltration Rate, f 5.71E-05 ms⁻¹



REMARKS:

Test carried out in accordance with BRE Digest 365 (2016)

Trial Pit Soakaway



Site Name: Resolven
Project Number: TF-24-237-CA
Date: 02/06/2025
Engineer: DE

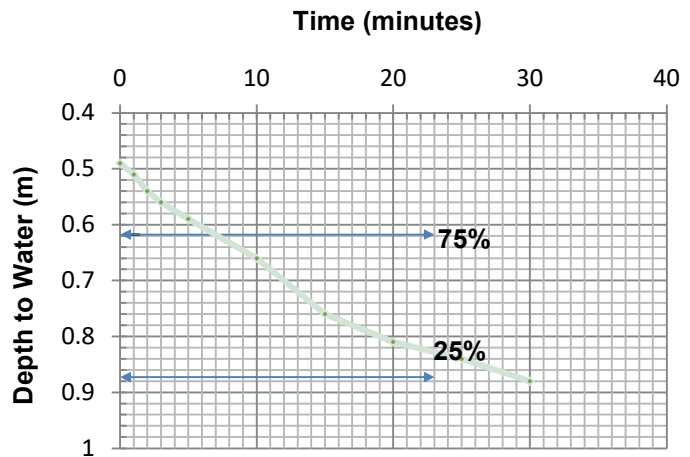
Trial Pit: SA02/25

TEST 1

Length	1.90 m
Width	0.30 m
Depth	1.00 m
Fill Level	0.49 m

V_{p75-25} 0.145 m³
 a_{p50} 1.692 m²
 t_{p75-25} 22 minutes

Soil Infiltration Rate, f 6.51E-05 ms⁻¹

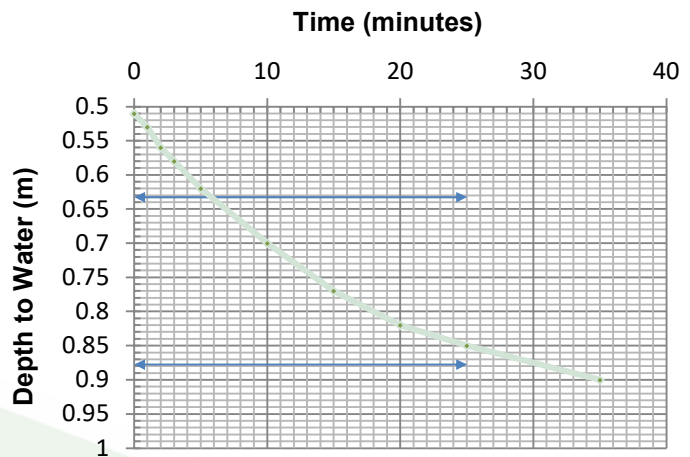


TEST 2

Length	1.90 m
Width	0.30 m
Depth	1.00 m
Fill Level	0.51 m

V_{p75-25} 0.14 m³
 a_{p50} 1.648 m²
 t_{p75-25} 24 minutes

Soil Infiltration Rate, f 5.88E-05 ms⁻¹

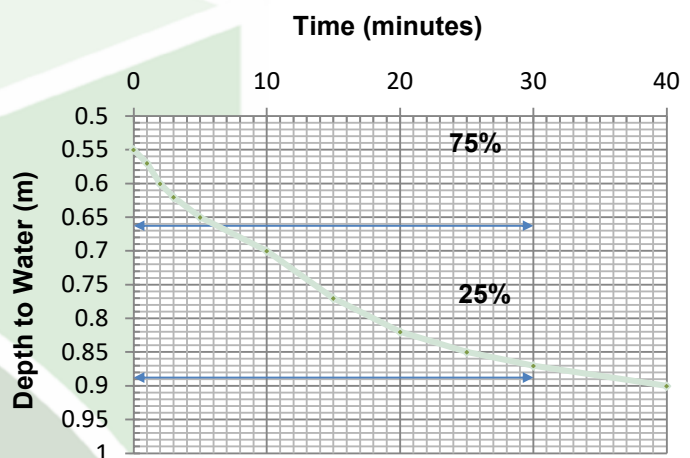


TEST 3

Length	1.90 m
Width	0.30 m
Depth	1.00 m
Fill Level	0.55 m

V_{p75-25} 0.128 m³
 a_{p50} 1.56 m²
 t_{p75-25} 29 minutes

Soil Infiltration Rate, f 4.72E-05 ms⁻¹



REMARKS:

Test carried out in accordance with BRE Digest 365 (2016)

APPENDIX 8 – WELSH WATER ASSET MAPS

RESOLVEN PARK 3G PITCH



APPENDIX 9 – PROPOSED SURFACE WATER CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Pitch	0.300	5.00	22.300	600	282630.000	202717.000	0.300
Outlet			22.300	600	282588.000	202688.000	0.555

Node Pitch Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.16900	Invert Level (m)	21.900	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.16900	Time to half empty (mins)	84	Depth (m)	
Safety Factor	5.0	Width (m)	50.000	Inf Depth (m)	
Porosity	0.30	Length (m)	50.000		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute summer	Pitch	74	21.968	-0.032	30.1	17.2555	0.0000	OK
15 minute summer	Outlet	1	21.745	0.000	0.0	0.0000	0.0000	OK
Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	Pitch	Overflow	Outlet	0.0	0.000	0.000	0.0000	
120 minute summer	Pitch	Infiltration		16.0				
15 minute summer	Outlet	Weir		0.0				0.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	Pitch	42	22.013	0.013	86.8	47.3501	0.0000	OK
120 minute summer	Outlet	94	21.783	0.038	0.2	0.0107	0.0000	OK
Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	Pitch	Overflow	Outlet	0.2	0.299	0.015	0.0832	
60 minute summer	Pitch	Infiltration		23.6				
120 minute summer	Outlet	Weir		0.0				0.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	Pitch	84	22.085	0.085	104.6	102.8393	0.0000	OK
60 minute summer	Outlet	39	22.105	0.360	4.9	0.1019	0.0000	OK
Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	Pitch	Overflow	Outlet	3.6	0.530	0.290	0.6043	
120 minute summer	Pitch	Infiltration		23.7				
60 minute summer	Outlet	Weir		0.0				0.0

APPENDIX 10 – RAINWATER HARVESTING VIABILITY STATEMENT

Rainwater Harvesting Viability Assessment

The developer has confirmed there is no requirement for rainwater harvesting for the proposed development from the point of construction or throughout the design life of the development.

The proposed site is currently within easy connectivity to the Welsh Water potable water network. Resolven is not currently or likely to be in the future classed as in danger of suffering regular drought water rationing. Welsh Water draft Drought Plan 2020 also states the unlikelihood of any water rationing being realised within the next 30. Welsh Water highlight 2018 as being a very hot year with increased demand on their network but like other parts of the UK did not have to introduce any restriction in the form of hosepipe bans or limited access to the potable water supply.

References:

<https://www.dwrcymru.com/en/our-services/water/water-resources/draft-drought-plan-2020>

APPENDIX 11 – PROPOSED POLLUTION REMOVAL CALCULATIONS

POLLUTION REMOVAL & WATER QUALITY MANAGEMENT SCHEDULE

CIRIA 753 The SuDS Manual Chapter 26, provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.

As the proposed drainage strategy proposes to discharge runoff to ground, Chapter 26.3 'Protecting Groundwater' is particularly relevant.

Runoff from residential roofing and pedestrian areas is viewed as low risk (Table 4.3) and the proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk still further. For example, the use of porous paving reduces flow velocities and increase retention times promoting a level of absorption into the upper soils (intergranular flow) prior to discharge to ground (fracture flow).

We propose to apply a simple qualitative method to assess the risk (Simple Index Approach), and proposed mitigation measures as defined in Table 26.1 CIRIA SuDS Manual.

Total SuDS Mitigation Index = Mitigation Index₁ + 0.5 Mitigation Index₂

Sports Pitch:

Sports Pitch (100%)	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
	(Very Low)	(0.2)	(0.2)	(0.05)
Weighted value		0.20	0.2	0.05
Total hazard Index		0.20	0.20	0.05

Comparing against the mitigation indices shown below.

SuDS Individual Component Mitigation Indices

	Suspended Solids	Metals	Hydrocarbons
Pervious Surface	0.7	0.6	0.7

However, within the outline drainage scheme a multi staged treatment is proposed for the majority of the site where practical, creating a Suds Management Train improving treatment locally and further reducing risk with the best and worst case outlined within Table 4.

Table 4 – Total SuDS Mitigation Index

Total SuDS Mitigation Index = Mitigation Index₁ + 0.5 Mitigation Index₂

	Suspended Solids	Metals	Hydrocarbons
Pitch Discharge – Pervious Paving	0.7	0.6	0.7
Comparison with Hazard Index	ALL PASS >0.2	ALL PASS >0.20	ALL PASS >0.05

APPENDIX 12 – SURFACE WATER MAINTENANCE SCHEDULE

Maintenance Plan for the surface water system.

To ensure the surface water systems to function as intended it is important appropriate maintenance arrangements are in place.

The surface water from the proposed development will be maintained in accordance with CIRIA C753 Chapter 32.

Storm Water Maintenance Management Schedule (CIRIA C753 – The SuDS Manual)

Operation and maintenance activity	SuDS component												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/trees	Filter strip	Green roofs	Proprietary treatment systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■		□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■		
Weed and invasive plant control	□	□	□	□		□	□		□		□	■	
Shrub management (including pruning)	□	□	□	□					□	□	□		
Shoreline vegetation management	■	■	□										
Aquatic vegetation management	■	■	□										
Occasional maintenance													
Sediment management ¹	■	■	■	■	■	■	■	■	■	■	■		■
Vegetation replacement	□	□	□	□						□	□	■	
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□	
Infiltration surface reconditioning				□	□	□	□		□	□	□		

Key

- will be required
- may be required

Notes

- 1 Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

Proposed Site SuDS Features

1. Pervious Surfacing

The maintenance management will be highlighted in 3 categories: -

Regular Maintenance

Regular maintenance comprises tasks that are likely to be required regularly to maintain and observe the drainage system typically on a monthly programme.

- Inspection - (Elements – 1,)
- Litter and Debris Removal - (Elements - 1)
- Grass Cutting - (Elements – N/A)
- Shrub Management - (Elements – N/A)

Occasional Maintenance

Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the regular tasks, typically annually.

- Sediment management - (Elements – 1)
- Catchpit / Silt trap cleaning - (Elements – N/A)
- Pipe jetting if required - (Elements – N/A)
- Vegetation Replacement - (Elements – N/A)
- Vacuum Sweeping and Brushing - (Elements - 1)

Remedial Maintenance

Remedial maintenance describes the intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design, construction, and regular maintenance activities. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and so timings are difficult to predict.

- Structure Rehabilitation / Repair - (Elements – 1)

Site Specific Maintenance Plan

1. Permeable Surfacing

Maintenance to be carried in accordance with Ciria Suds Manual (Chapter 20 & Table 20.1.5) and to include but not limited to the following actions: -

- Annual visual inspections to be undertaken of the pervious system with litter and debris removed.
- Brush / Vacuum, replacing any lost jointing material every year. Sediment management to be undertaken at the same time. Upstream chamber of discharge pipe to be inspected and cleaned yearly.
- Remedial maintenance will be undertaken intermittently following the outcome of monthly inspections if required. This may consist of the following items –
 - Weed control
 - Replacement of damaged blocks
 - Repair any rutting
 - Cleaning for aesthetics of the paving blocks
 - De-icing during winter months
 - Inspection of ponding during or following heavy rainfall

The local council has confirmed they will be responsible for the daily / weekly maintenance and cleaning regimes. They will also use a management company / specialist for the annual maintenance and any Structure Rehabilitation / Repairs.