

Danan Group Limited
**Plot 5700, North Wales
Business Park**
Drainage Strategy Report

95038-RP-D-0001

Rev: P02

September 2026

Document History

Job Number: 95038		Document Ref: RP-D-0001		
P02	Drainage Strategy	SB	RH	22.09.2026
P01	Drainage Strategy	SB	RH	17.09.2026
Revision	Purpose Description	Originated	Authorised	Date

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1 Introduction

1.1 Commission

JP Structural Design were appointed by Danan Group Limited to produce a Drainage Strategy for the proposed construction of a residential care home units at North Wales Business Park, Abergele. The unit is to be effectively built as 2 blocks with a bridge link between the buildings

1.2 Limitations

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The findings of this Strategy have been based on data available at the time of the study and on the review of available information that has been undertaken to date. They relate to the current development proposals as outlined in **Appendix A**. Should the proposed end use of the site change after the completion of this assessment, then the findings of this report will need to be reviewed and updated accordingly.

2 Existing Site and Proposed Development

2.1 Existing Site

The site covers is an undeveloped plot of the North Wales Technology Park (NWTP) to the east of Cae Eithin. The site covers an area of approximately 4,300 m² as shown on the site information drawing in **Appendix B**. The site is roughly square with a fall of circa 1.35m south to north.

2.2 Existing Drainage

On-site investigations confirm that the site has a foul water sewer running across the site onto Heol Awel as shown in the **Appendix C**. The NWTP surface water design comprised a number of holding ponds and swales which all ultimately fed to the Northern Pond as shown in the image of a Capita Symonds drawing in **Appendix D**. The northern pond outfall is believed to discharge to a local watercourse which passes under the A55 and out to the Sea.

2.3 Existing Flood Risk

As stated above, the site covers an area of approximately 0.430 Ha as an undeveloped Plot of the NWTP, as shown in **Appendix E**, the site shows some very minor surface water flooding which we believe will be alleviated by the development of the land and the installation of a formal drainage system..

2.4 Ground Conditions

The surface geology of the site has been reviewed from the British Geological Survey (BGS) online geology maps. The geology map indicates that the site is superficially underlain by "Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period." The bedrock geology is described as "Warwickshire Group-Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 297.5 and 318 million years ago during the Carboniferous period."

Further more historical Boreholes from the area confirm the site to be underlain by stiff clays as shown in **Appendix F**. Noting the NWTP development also comprised a number of swales and balancing ponds and it is accepted that soakaways will not form a viable means of draining the site.

2.5 Proposed Development

The proposed scheme consists of the construction of 2 Residential Care Units as depicted in **Appendix A**.

3 Drainage Proposals

3.1 Foul Drainage

The foul drainage disposal is proposed to follow the requirements of Building Regulations 2010 Part H (2015 Edition) Drainage and Waste Disposal and Sewers for Adoption 7th Edition. Part H1 of the above document contains the following requirements:

“An adequate system of drainage shall be provided to carry foul water from appliances within the building on to the following, listed in order of priority.”

- a) A public sewer or where that is not reasonably practicable
- b) A private sewer communicating with a public sewer, or where that is not reasonably practicable,
- c) Either a septic tank which has appropriate form of secondary treatment or another wastewater treatment system; or, where that is not reasonably practicable,
- d) A cesspool

Following a review of the sewer records it has been confirmed that the site can be served by the foul system that crosses the site. It is therefore proposed to apply to Welsh Water for the various S106 agreements as required to discharge the proposed units to the existing sewer.

The proposed drainage layout can be found in **Appendix G**.

3.2 Surface Water Drainage

It is acknowledged that the satisfactory collection, control and discharge of storm water is now a principle planning and design consideration. Part H of the Building Regulations 2002 recommends that surface water run-off shall discharge to one of the following, listed in order of priority:

- a) an adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable,
- b) a watercourse, or, where that is not reasonably practicable,
- c) a sewer.

It is necessary to identify the most appropriate method of controlling and discharging surface water. The design should seek to improve the local run-off profile by using systems that can either attenuate run-off and reduce peak flow rates or positively impact on the existing flood profile.

The site is subject to a SAB Application and the detailed Application form is therefore contained in **Appendix H**.

3.3 Ground Infiltration Techniques

Geotechnical investigation information is not available at the time of writing, however as stated earlier, published geotechnical sources suggest that infiltration techniques will not be a viable solution for the development.

3.4 Discharge to Watercourse

As mentioned previously there is a swale to the east of the site, which forms part of the NWTP surface water drainage network. It is assumed that allowance will have been made for the discharge off this plot into the network, although noting that the Northern Pond is unrestricted, we believe it was anticipated that the plots would be restricted within the site. As stated earlier the network will ultimately discharge out to sea.

3.5 Connection To Sewer

Connection to public sewer system is not required.

3.6 Surface Water Calculations

Noting that the site is dissected by the Foul Sewer and that this will be covered by easement which won't be allowed attenuation / limited crossings etc - it has therefore been considered the best solution to drain the 2 blocks separately.

It has been proposed to restrict the peak forward flow from both halves of the site to 2 l/s and provide attenuation to cater for Storm Events up to and including the 1 in 100 year event with a 40% allowance for climatic change.

The Surface Water model calculations are contained in **Appendix I** and the schematic layout is contained in **Appendix J**.

4 Conclusions

4.1 Conclusions

The proposed site is free from any existing flood risk and there are suitable points of connection for the disposal of the foul and surface water run-off generated by the proposed development.

We would expect the proposed development to be free from general objections in respect to draining the site but anticipate that the use of infiltration techniques will not be possible. There will also be suitable conditions imposed to ensure that the drainage proposals are designed and constructed in accordance with relevant statutory requirements.

Appendix A – Site Layout



- Legend**
- Application Site
 - Grass
 - Planting (Spec TBC)
 - Block Paving
 - Tarmac
 - Paving

Landscaping is indicative only.



jack@felgateandpartners.co.uk
www.felgateandpartners.co.uk
07904626682

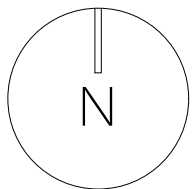
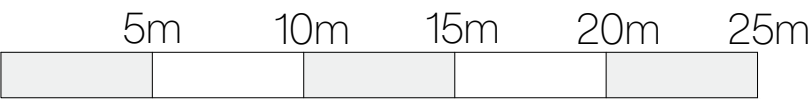
**Plot 5700,
North Wales Business
Park, Abergele,
Conwy, LL22 8LJ**

Rev	Notes	Date
a	Footpath amended	08/2026
b	Footpath amended	08/2026
c	Road amended	09/2026
d	Road amended	09/2026

Proposed Site Plan
July 2026
A1
D013.004
1 - 1

GENERAL NOTES:
ALL DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO FABRICATION BY THE CONTRACTOR. DRAWINGS TO BE READ IN CONJUNCTION WITH ANY REFERENCED DOCUMENTATION. PLANS NOT TO BE REPRODUCED WITHOUT THE PRIOR CONFIRMATION FROM FELGATE AND PARTNERS LIMITED. THIS DRAWING IS SUBJECT TO COPYRIGHT.

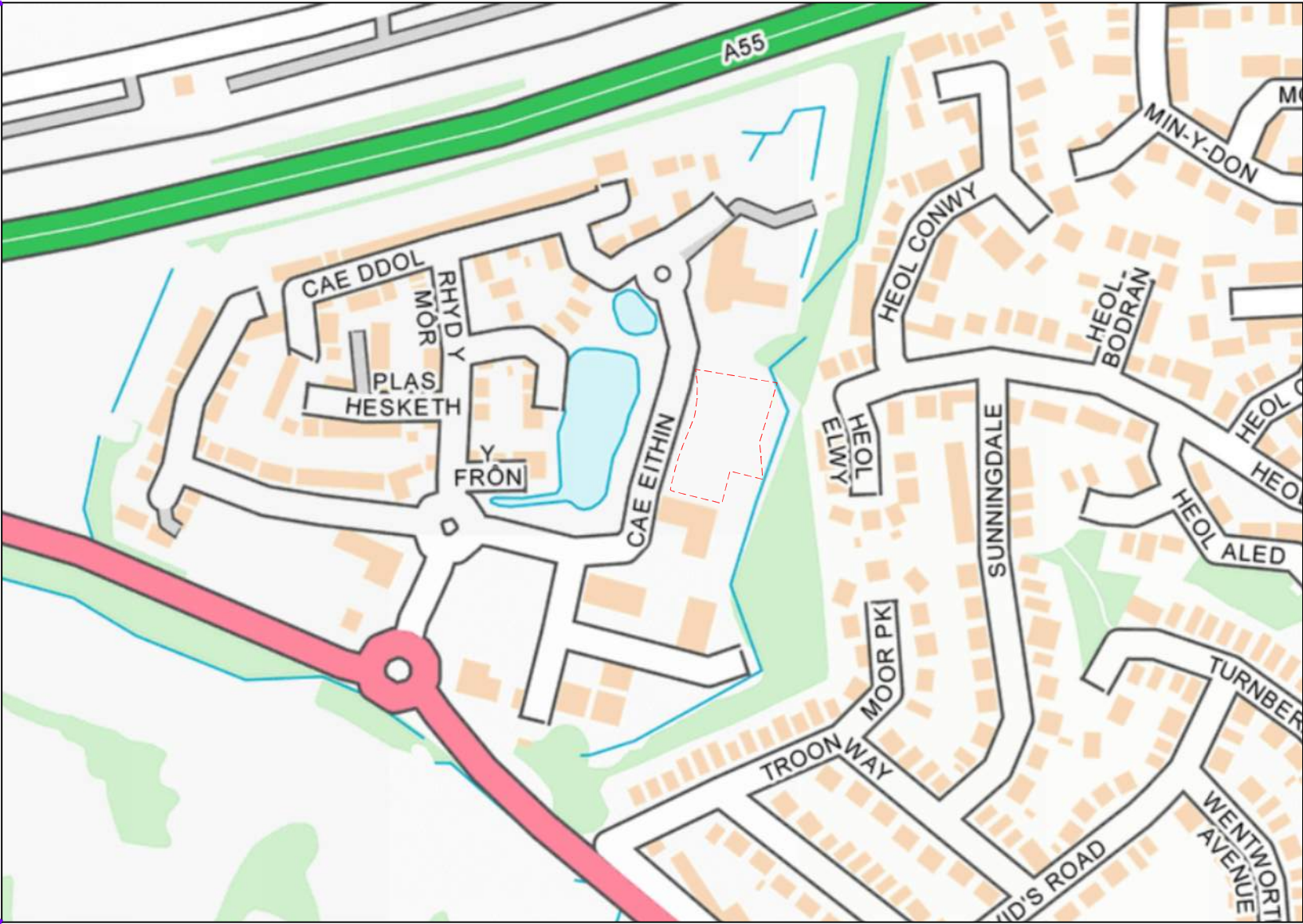
Site Plan
Scale 1:250



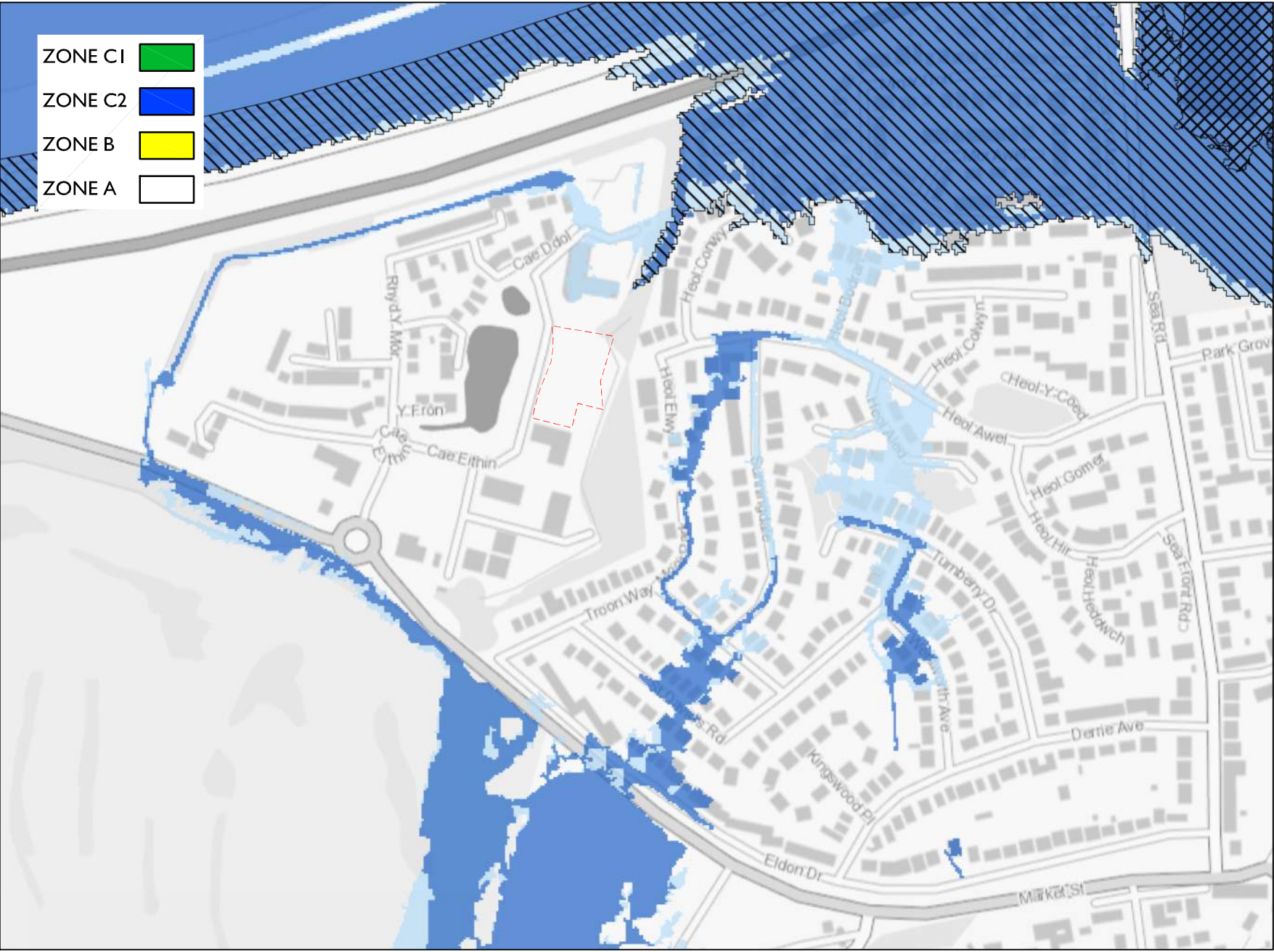
Appendix B – Site Information Drawing



APPROX SCALE 1:100,000



APPROX SCALE 1:5,000



DEVELOPMENT ADVICE MAP
APPROX SCALE 1:5,000



FLOOD RISK MAP
APPROX SCALE 1:5,000



PROPOSED / EXISTING IMPERMEABLE AREA
APPROX SCALE 1:333



EXISTING SATELLITE IMAGE
APPROX SCALE 1:1,000

SITE CO-ORDINATES
OS X (Eastings) 293702
OS Y (Northings) 378055
Nearest Post Code LL22 8LJ
Nat Grid SH937780 / SH9370278055

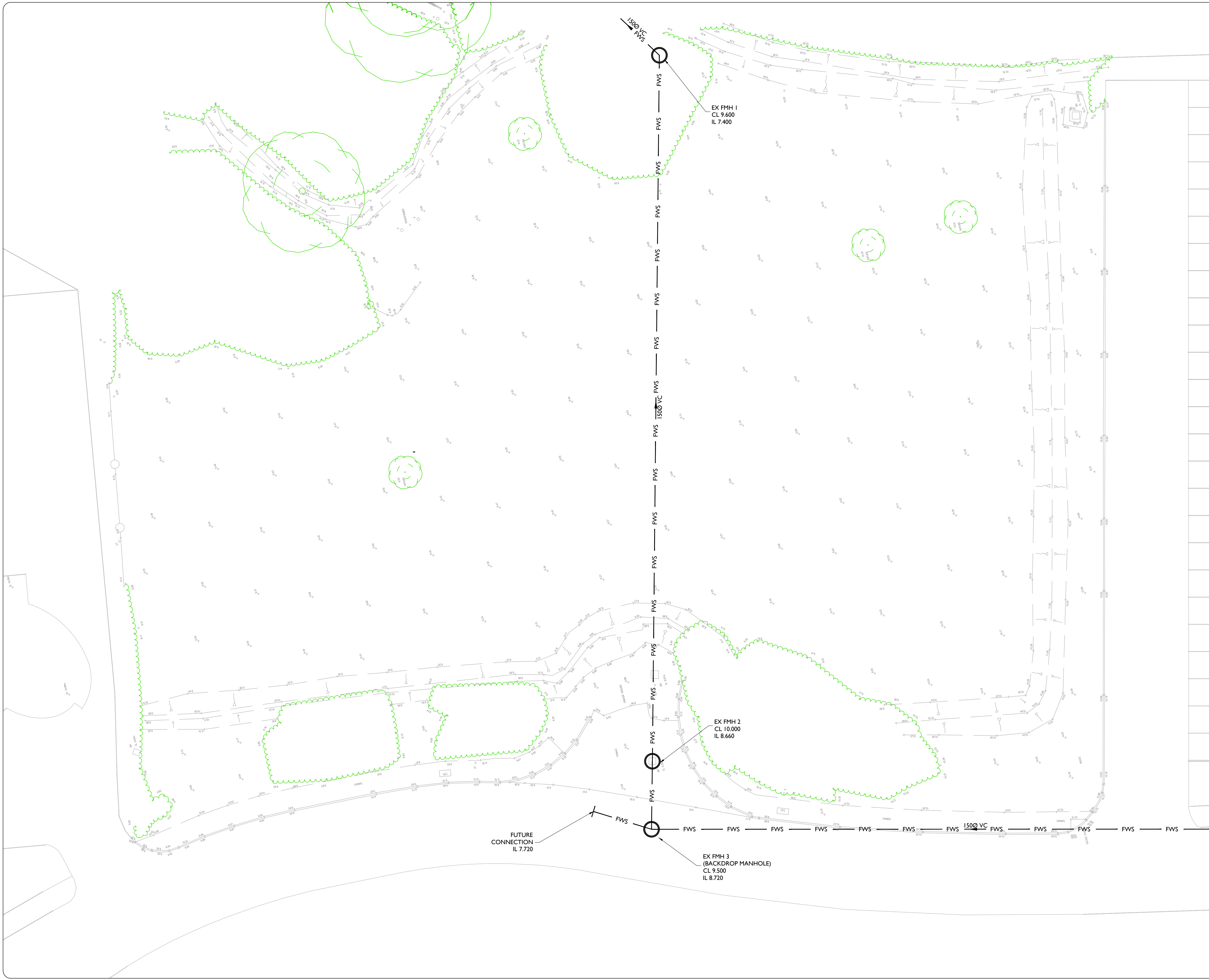


AREAS
SITE BOUNDARY 4,280 SQ M
IMPERMEABLE AREA (TO ATTENUATION 1) 1,480 SQ M
IMPERMEABLE AREA (TO ATTENUATION 2) 1,600 SQ M
TOTAL CATCHMENT AREA AFTER DEVELOPMENT 3,080 sq m

REV	DESCRIPTION	BY	CHK	APR	DATE
-	-	-	-	-	-

+44 (0)1244 956000 www.jpsstructural.co.uk info@jpsstructural.co.uk	
PURPOSE OF ISSUE	STATUS
PRELIMINARY	P
PROJECT	
PLOT 5700 NORTH WALES BUSINESS PARK	
TITLE	
DRAINAGE SCHEME SITE INFORMATION	
CLIENT	
DANAN GROUP LIMITED	
DRAWN BY	CHECKED BY
SB	RH
APPROVED BY	JP
DATE	SCALE (@ A1)
-	As Shown
PROJECT NUMBER	95038
DRAWING NUMBER	REV
95038-JPS-XX-XX-DR-C-1003	P01

Appendix C – Existing Drainage Layout



EXISTING DRAINAGE NOTES

THE LOCATION LINE & LEVEL OF ALL KNOWN EXISTING DRAINAGE PIPEWORK INDICATED ON THIS DRAWING IS APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY.

KEY

- FWS EXISTING FOUL WATER SEWER
- SWS EXISTING SW SEWER
- CFS EXISTING COMBINED SEWER
- HD EXISTING HIGHWAY DRAIN
- EXISTING FOUL DRAIN
- EXISTING SW DRAIN
- EXISTING COMBINED FLOW DRAIN
- ASSUMED EXISTING DRAINAGE
- SHOWN FROM RECORD INFORMATION

THIS DRAWING HAS BEEN PRODUCED BY COMPARING INFORMATION FROM VARIOUS RECORD PLANS AGAINST THE TOPOGRAPHICAL SURVEY DATA OBTAINED. AS SUCH THE ACCURACY CANNOT BE GUARANTEED AND THE CONTRACTOR IS TO VERIFY THE EXISTING LAYOUT & LEVELS PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS.



REV	DESCRIPTION	BY	CHK	APR	DATE

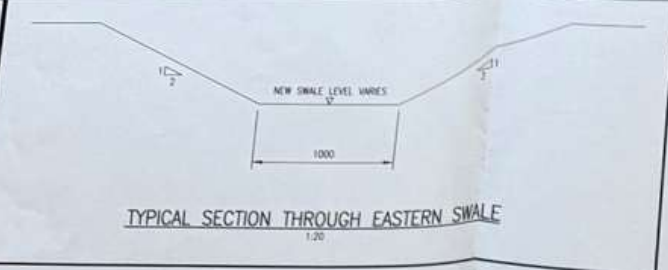
JPS CIVIL + STRUCTURAL ENGINEERS

+44 (0)1244 956000 | www.jpstructural.co.uk | info@jpstructural.co.uk

PURPOSE OF ISSUE		PRELIMINARY		STATUS	P
PROJECT					
PLOT 5700 NORTH WALES BUSINESS PARK					
TITLE					
DRAINAGE SCHEME EXISTING LAYOUT					
CLIENT					
DANAN GROUP LIMITED					
DRAWN BY		CHECKED BY		APPROVED BY	
SB		RH		JP	
DATE		SCALE (@ A1)		PROJECT NUMBER	
17.09.2026		1:150		95038	
DRAWING NUMBER				REV	
95038-JPS-XX-XX-DR-C-0601					P01

Appendix D – North Wales Technology Park Swales

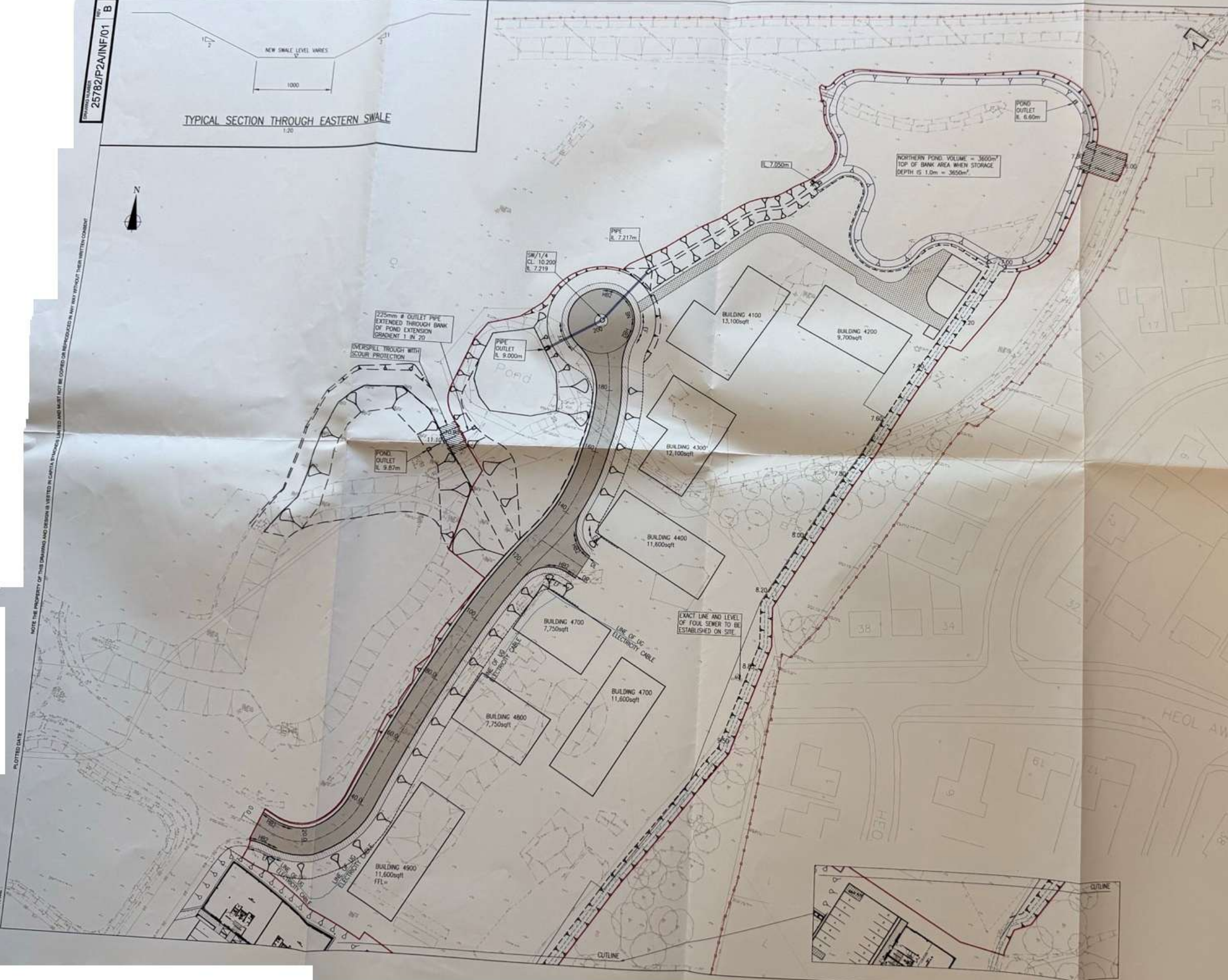
25782/P2A/INF/01
B



NOTE: THE PROPERTY OF THIS DRAWING AND DESIGN IS RESERVED IN CAPITA SYMONDS LIMITED AND MUST NOT BE COPIED OR REPRODUCED IN ANY WAY WITHOUT THEIR WRITTEN CONSENT.

PLOTTED DATE:

CAD FILE NAME:



NOTES:
1. STREETLIGHTING TO BE PROVIDED IN ACCORDANCE WITH CONRY COUNTY BOROUGH COUNCIL PUBLICATION 'ROADS FOR ADOPTION IN CONRY'.

- KEY
- SITE BOUNDARY FENCE/WALL
 - PROPOSED PHASE 2A BOUNDARY
 - PROPOSED CARRIAGEWAY
 - PROPOSED FOOTWAY
 - H&B KERB
 - EDGING KERB
 - DROPPED CROSSING ARRANGEMENT. SEE DRAWING 25782/PNF/SD/02.
 - POND EXTENSION TO BE CARRIED OUT AS PART OF PHASE 2A WORKS
 - APPROXIMATE LINE OF PROPOSED EASTERN SWALE
 - GRASSCRETE ACCESS TRACK

B	PHASE 2A BOUNDARY AMENDED	CR	NWO	-	18.04	2008
A	ISSUED FOR CONSTRUCTION	CR	NWO	-	16.04	2008
REV		DR	CH	PA	DATE	
DRAWN BY	CHECKED BY	PASSED BY	DATE			
MK	NWO	JES	FEB.08			

SCALE @ A1	ISSUING OFFICE
1:500	COLWYN BAY

NORTH WALES BUSINESS PARK, ABERGELE

**PHASE 2A
HIGHWAY LAYOUT AND
EASTERN SWALE DETAILS**

**NORTH WALES
TECHNOLOGY PARK
LIMITED**

CAPITA SYMONDS
Penrhos Minor, Oak Drive, Colwyn Bay,
North Wales, LL29 7YV
Tel: 01492 531000
Fax: 01492 531001

DRAWING NUMBER
25782/P2A/INF/01

REV
B

Appendix E – EA Flood Risk Plan



)ORRG 5LVN IURP 5LYHUV

+ L J K

0 H G L X P

/ R Z

)ORRG 5LVN IURP WKH 6HD

+ L J K

0HGLXP

/ R Z

)ORRG 5LVN IURP 6XUIDFH :DWHU
:DWHUFRXUVHV

+ L J K

0 H G I X P

187

51 VN /HYHO 80GHU 5HYI HZ

KWWSV QDWXUDOUHVRXUFHV ZDOHV IOF
FRDVWDO HURVLRQ ULVN PDSV "ODQJ HQ

```

< 15: &1& 6RPH LQIRUPDWLRQ GHULYHG IURP < 8. &HQWU
8. &(+ WKH (QYLURQPHQW $JHQF\ < ($ DQG *HWPDSSLQJ 3
DRRG DOG
/LPLWHG 'HIUD < 0HW 2IILFH DQG '$' 5LYHUV $JHQF\ <
+XWWRQ ,QVWLWXWH < 2UGDQFH 6XUYH\ < /DQG BURS

```

Appendix F – Historical Borehole Record



DENBIGHSHIRE COUNTY COUNCIL
COUNTY SURVEYORS DEPARTMENT

BOREHOLE RECORD

Date 14th and 15th May 1962 Location S.S. 17+00 Sheet No. 1
Surface Level Formation Level
Nominal B.H. Dia. 6 inch Scale 2 ft. to 1 inch
Watertable Level, & Date No water.
Remarks M/c by 'Speedy' apparatus. Not accurate.

Strata	Sample No.	Sample Depth	B.H.	Depth	RL	Remarks
topsoil						M/c NE of blow per ft to drive Ua
soft light-brown sandy CLAY.	1	1'-2"		1'-2"		
firm brown silty fissured CLAY.	2	2'-0"		1'-10"		
soft brown fissured silty CLAY.	3	2'-6"		2'-4"		10.5%
firm brown silty fissured CLAY.	4	6'-0"		6'-0"		9%
	5	7'-6"				12.5%
	6	8'-0"				
	7	8'-6"		9'-6"		14%
firm brown silty CLAY with organic traces.		10'-0"				
	8	12'-0"		12'-0"		(366) 31 completed @ 12'-9"

PROPOSED

ABERGELE - LLANDDULAS BY-PASS

Borehole No. 19

Investigation No.
531/N/547

■ Undisturbed Sample ! Drag Sample * Jar ▽ Penetration Test

Appendix G – Proposed Drainage Layout

DU - ABOVE GROUND BIOLOGICAL DRAIN
MAINTENANCE DOSING UNIT TO CATER
FOR FATS OILS AND GREASE WASTE
PRODUCED FROM KITCHEN AREA

ALTHON ONE PIECE GLASS REINFORCED
CEMENT HEADWALL REF H3C TO SUIT 1500
PIPE. TO BE INSTALLED TO MANUFACTURES
RECOMMENDATIONS
IL 8.75

ATTENUATION TANK 2
72m³ OF AQUACELL 'NG' GEOCELLULAR
BLOCKS - 10 UNITS x 19 UNITS x 2 UNITS
(10m x 9.5m x 0.8m AT 95% VOID RATIO)
TO BE INSTALLED IN ACCORDANCE WITH
MANUFACTURER'S GUIDANCE &
RECOMMENDATIONS
CL 10.70
TOP 10.15
IL 9.35

SMH 3.0
WITH FLOW CONTROL
DEVICE TO LIMIT FORWARD
FLOW TO 2 l/s @ 0.8m HEAD
CL 10.60
IL 9.25

ALTHON ONE PIECE GLASS REINFORCED
CEMENT HEADWALL REF H3C TO SUIT 1500
PIPE. TO BE INSTALLED TO MANUFACTURES
RECOMMENDATIONS
IL 9.25

SMH 1.0
WITH FLOW CONTROL
DEVICE TO LIMIT FORWARD
FLOW TO 2 l/s @ 0.8m HEAD
CL 10.60
IL 9.40

ATTENUATION TANK 1
65m³ OF AQUACELL 'NG' GEOCELLULAR
BLOCKS - 10 UNITS x 17 UNITS x 2 UNITS
(10m x 8.5m x 0.8m AT 95% VOID RATIO) TO
BE INSTALLED IN ACCORDANCE WITH
MANUFACTURER'S GUIDANCE &
RECOMMENDATIONS
CL 10.60
TOP 10.30
IL 9.50

NOTES

1. THE WORKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, NATIONAL BUILDING SPECIFICATION (NBS) AND SEWERS FOR ADOPTION, 7TH EDITION.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS, ARCHITECTS DRAWINGS, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
3. THE LOCATION, LINE & LEVEL OF ALL KNOWN EXISTING BURIED SERVICE MAINS AND DRAINAGE PIPEWORK INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE & LEVEL, BY WAY OF HAND EXCAVATED TRAIL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE MAINS / DRAINAGE INSTALLATIONS.
4. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
5. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
6. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE MITIGATION OF ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
7. THE CONTRACTOR SHALL MAKE ALLOWANCE FOR RAISING / LOWERING ALL EXISTING ACCESS COVERS & FRAMES TO SUIT NEW FINISHED LEVELS.
8. PIPES REQUIRE A TYPE 2 CONCRETE BED & SURROUND WHEN THEY HAVE SHALLOW COVER (LESS THAN 900mm IN TRAFFICKED AREAS OR 500mm IN NON-TRAFFICKED AREAS)
9. ALL SOFT / HARD PAVED AREAS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED UPON COMPLETION OF THE WORKS. ALL SURFACE MARKINGS DAMAGED BY THE WORKS SHALL BE FULLY REINSTATED.
10. ALL SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF SITE.

KEY

- ⊙ FWS EXISTING FOUL PUBLIC SEWER
⊙ PROPOSED FOUL SEWER
⊙ PROPOSED SW SEWER
○ FO PROPOSED FOUL OUTLET
○ RWP PROPOSED RAIN WATER DOWN PIPE
— PROPOSED SEWER EASEMENT



REV	DESCRIPTION	BY	CHK	APR	DATE
P02	UPDATED AS PER LATEST COMMENTS	SB	RH	JP	22.09.2026



PURPOSE OF ISSUE	PRELIMINARY	STATUS	P
PROJECT	PLOT 5700 NORTH WALES BUSINESS PARK		
TITLE	DRAINAGE SCHEME PROPOSED LAYOUT		
CLIENT	DANAN GROUP LIMITED		
DRAWN BY	SB	CHECKED BY	RH
DATE	17.09.2026	APPROVED BY	JP
DRAWING NUMBER	95038-JPS-XX-XX-DR-C-0602	PROJECT NUMBER	95038
		REV	P02

Appendix H – SAB Application Form

1. Applicant Details

Applicant Name and Address

Title and Name		
Company		Danan Properties (Widnes) Limited
Suffix (unit/name/number)		13
Address line 1		Curzon Park South
Address line 2		
Address line 3		
Town		Chester
County		Cheshire
Postcode		CH4 8AA
Phone number	Mobile	
	Works	
	Home	
e-mail address		Sanjay@danangroup.co.uk

Agent Name and Address

Title and Name		Russell Hardy
Company		JP Structural Design LTD
Suffix (unit/name/number)		Unit 6
Address line 1		Edison Court
Address line 2		Ellice Way
Address line 3		Wrexham Technology Park
Town		
County		Wrexham
Postcode		LL13 7YT
Phone number	Mobile	07711107672
	Works	
	Home	
e-mail address		russell@jpstructural.co.uk

Preferred contact	Applicant ☐	Agent ☒
--------------------------	------------------------------------	---

2. Site Details

A general description of site location supported by a plan specifying the construction area and the extent of the drainage system for which approval is sought **MUST** be submitted. Plans shall be at a scale of 1:2500. All plans **MUST** show the direction of North.

Name of proposed development	Plot 5700
-------------------------------------	-----------

Grid Reference (E/N)	293702	378055
Suffix (unit/name/number)	Plot 5700	
Address line 1	North Wales Business Park	
Address line 2	Abergele	
Address line 3		
Town		
County	Conwy	
Postcode	LL22 8LJ	

Description of proposed development	2 No new Care Home dwellings	
Total application site area (Ha)	0.430 Ha	
Is the existing site currently developed i.e. Brownfield or is it currently undeveloped i.e. Greenfield?	Greenfield	
Existing use	Undeveloped Land	
Proposed use	Residential	
Does the site cross more than one SAB area?	Yes ☐	No ☒
If "Yes", please confirm the proportionate area in each SAB below: (The main contact will be the SAB that has most of the surface water drainage system within its boundary.)		

SAB	% of Site Area

3. Interest in the Land

What interest do you have in the land?		
Owner	Yes ☒	No ☐
Prospective Owner	Yes ☐	No ☐
Other (please provide details)		

4. Application

Has any prior advice been sought from the SAB about this application?		Yes ☐	No ☒
If Yes, please complete the following information about the advice you were given. This will help the SAB to deal with this application more efficiently.			
Officer Name			
Reference number		Date	- - -
Details of pre-application advice received			

Does this application relate to any other SAB application already made?	Yes ☐	No ☒
If "Yes", please provide SAB Reference number		

Is this application part of a phased approach to development of the site, or one of multiple applications for the same site?	Yes ☐	No ☒
If "Yes", please provide brief details		

Is this application one of two or more applications made at the same time, each setting out an alternative proposal for construction of a drainage system	Yes ☐	No ☒
If "Yes", please provide details of other applications made at the same time (include SAB Reference number if available)		

5. Application Fee

It is recommended you contact the SAB directly to ensure the correct fee is paid with the application.

		Area of Land (Ha)	Fraction	Fees
Application fee		N/A	N/A	£350.00
Each 0.1ha or fraction of 0.1ha, for first 0.5ha	£70.00	0.5	5	£350.00
Each 0.1ha or fraction of 0.1ha, from 0.5ha up to and including 1ha	£50.00			
Each 0.1ha or fraction of 0.1ha, from 1ha up to and including 5ha	£20.00			
Each additional 0.1ha or fraction of 0.1ha above 5Ha.	£10.00			
Is the applicant a town/community council?		If yes, application fee is half the amount		No
If applicable - reduction of 50% application fee due to this being an alternative proposal made at the same time.				
If applicable - application fee adjustment due to cross-SAB area approvals needed.				
			Total Fees	£700

6. Environmental Impact Assessment (EiA) Statement

Does this application relate to a development that is the subject of an EiA application under the Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017(1)?	Yes ☐	No ☒
---	---------------------------------	---

7. Compliance with Statutory National Standards for Sustainable Drainage Systems (SuDS)

All sustainable drainage systems **MUST** comply with the [Statutory National Standards for Sustainable Drainage Systems \(SuDS\) for Wales](#). You are advised to refer to the detailed text in the Standards that relate to the information required below. The Standards are re-produced, in the [Guidance](#) to assist in completing this application form.

Standard Principles

The Principles listed below will underpin the design of surface water management schemes to meet the Statutory National Standards. Please provide a brief summary in each of the boxes below relating to each of the bulleted Standard Principles and itemised Standards 1 to 6, showing how your proposed drainage scheme complies with this statutory requirement.

Compliance with Standard Principles

My proposed surface water drainage scheme will comply in the following way/s:

The ground is known to be unsuitable for infiltration measures, although in keeping with the ideology of a SUDs Management Train we have therefore incorporated the following;

Good Housekeeping Measures

It is intended to install rainwater butts as measure for harvesting an element of rainwater which can then be used for plant irrigation, cleaning etc.

Site Source Controls

An attenuation tank has been included with a hydrobrake manhole chamber to restrict forward flow. It is proposed to connect into the previously designed and constructed North Wales Technology Park swales and balancing ponds before ultimately discharging to a local water course and to the sea.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-1003 – Site Information
2. 95038-JPS-XX-XX-DR-C-0601 – Existing Drainage
3. 95038-JPS-XX-XX-DR-C-0602 – Proposed Drainage

Standards 1 to 6

Compliance with Standard S1 - Surface water runoff destination

My proposed surface water drainage scheme will comply in the following way/s:

In determining a suitable methodology for disposal of surface water flows from this development, it is necessary to explore the technical options outlined under Standard S1 of the SNSSUDS 2018 document published by Welsh Government. This states that disposal should be made through the hierarchical approach which are, in order of preference; surface water runoff collected for use, infiltration methods, discharge to surface water body, discharge to a surface water sewer, highway sewer or another drainage system and finally discharge to a combined sewer. Each of these options are considered below.

Collected for Use

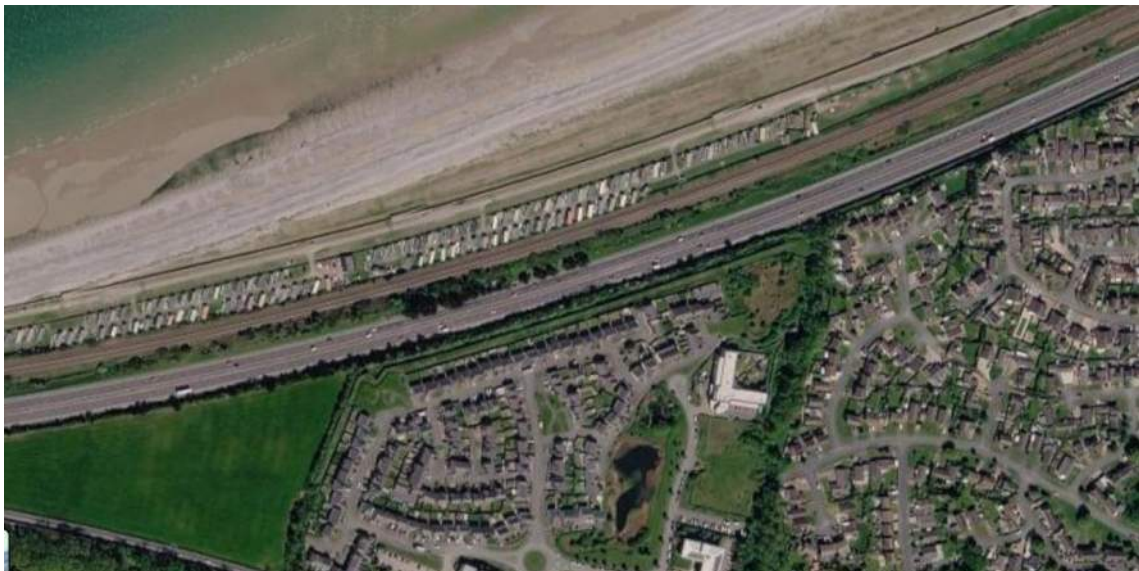
Due to the use of the site as an assisted living residents, it is intended to install rainwater butts for an element of rainwater to be collected.

Infiltration Methods

At the time of writing infiltration tests have not been undertaken. However it is assumed that infiltration methods would not be a viable solution as the wider development drainage strategy shows surface water to discharge into relevant brooks which ultimately discharges to the sea

Discharge to Surface Water Body

Due to the location of the site, approximately 500m from the sea, the adjacent housing estates and North Wales Technology Park has been designed with restricted outfalls and balancing ponds with swales. This all flows towards a culvert underneath the A55 / railway lines and out into the sea.



Our intention is to therefore limit the discharge rate to the swale located to the east of the site.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-1003 - Site Information
2. 95038-JPS-XX-XX-DR-C-0601 - Existing Drainage
3. 95038-JPS-XX-XX-DR-C-0602 - Proposed Drainage
4. Hydraulic Calculations

Compliance with Standard S2 - Surface water runoff hydraulic control

My proposed surface water drainage scheme will comply in the following way/s:

In accordance with statutory guidelines, the development of this site should not increase flood risk elsewhere and as such, all runoff should be contained within the site boundary for storm events up to and including a 1 in 100-year design period, plus a 40% allowance for climate change.

Noting that the site is dissected by a Foul Sewer and that this will be covered by easement which won't be allowed attenuation / limited crossings etc - it has therefore been considered the best solution to drain the 2 proposed blocks separately. It has been proposed to restrict the peak forward flow from both halves of the site to 2 l/s and provide attenuation to cater for Storm Events up to and including the 1 in 100 year event with a 40% allowance for climatic change.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-1003 - Site Information
2. 95038-JPS-XX-XX-DR-C-0602 - Proposed Drainage
3. Hydraulic Calculations
4. Drainage Schematic

Compliance with Standard S3 - Water Quality

My proposed surface water drainage scheme will comply in the following way/s:

Due to the easement which will cover the sewer it was considered that this limits the opportunity to introduce some additional features such as permeable paving. However the proposed sump gullies and catch pit manhole are deemed to be sufficient to remove the suspended sediments from the roof and car park surface water for a development of this size and nature.

It should be noted that the outfall will then enter swales and a balancing pond in which Settlement will also occur, ensuring that excessive sediment is not added to the watercourse. The swale and pond planting will also treat any run-off through bio-remediation.

To note the bin store area will also be drained separately to the foul drainage system.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-0602 - Proposed Drainage
2. 25782/P2A/INF/01 - B - Eastern Swale Details

Compliance with Standard S4 - Amenity

My proposed surface water drainage scheme will comply in the following way/s:

SuDS components (like the swale and ponds) provide an array of amenity, recreational and biodiversity benefits. The swale once opened will create a visually attractive green (vegetated and landscaped) and blue (water) corridors connecting people to water. This in turn can improve the well-being of people that live or work in, or visit or pass through, the area.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-0602 - Proposed Drainage
2. 25782/P2A/INF/01 - B - Eastern Swale Details

Compliance with Standard S5 - Biodiversity

My proposed surface water drainage scheme will comply in the following way/s:

The SuDS scheme biodiversity strategy should revolve around the creation of significant and varied habitat to increase the overall biodiversity of the site and ecological value. We'd hope however that it is acknowledge that this development comprises the development of a Plot within the North Wales Technology Park

We hope it is therefore also considered that the park infrastructure already contains balancing ponds and swales which this system will add to enhance the general eco system and simultaneously act as a water settlement system to clean sediments from the water.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown in [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 25782/P2A/INF/01 - B - Eastern Swale Details

Compliance with Standard S6 - Design of drainage for Construction and Maintenance and Structural Integrity

My proposed surface water drainage scheme will comply in the following way/s:

Just to confirm, the proposed system will not be required for adoption as it does not serve more than one property. However, it will still be designed to the standards set out in Ciria C753 & Sewers for Adoption 7th Edition. The proposed drainage scheme consists of predominantly standard products and methods of construction that should not concern a suitably experienced and qualified contractor.

An O&M manual will also be provided in due course, including the final 'As Built' constructions drawings and a maintenance schedule for the drainage system.

Relevant items of supporting information (e.g. evidence, technical documents, plans and drawings etc.), as shown [Table A](#) and [Table B](#) of this Guidance **MUST** be listed below, and all relevant material submitted.

1. 95038-JPS-XX-XX-DR-C-0602 - Proposed Drainage
2. 95038-RP-D-0002 - O&M Plan

8. Assessment of Flood Risk

Is the site within an area at risk of flooding? Refer to Natural Resources Wales Development Advice maps. (Natural Resources Wales / Development and flood risk)	Yes ☐	No ☒
If the proposed development is within the area at risk of flooding, you will need to consider whether it is appropriate to submit a flood consequences assessment. (Refer to Technical Advice Note 15 (TAN15)).		

Is the site located within an area susceptible to surface water flooding? Refer to NRW Surface Water Flood Maps .	Yes ☐	No ☒
Is the site located within an area susceptible to groundwater flooding?	Yes ☐	No ☒
Is there a watercourse (as defined under Section 72 Land Drainage Act 1991) located within 20m of the proposed development?	Yes ☐	No ☒

9. Surface Water Discharge Hierarchy

Surface water drainage arrangements shall demonstrate the proposed surface water drainage complies with National SuDS Standards. As much of the runoff as possible should be discharged to each hierarchy element before a lower hierarchy element is considered. Collection and infiltration methods of drainage are required to be considered in the first instance. With reference to the hierarchy levels below, please indicate your proposed drainage arrangements.

Level	Yes	No
1. Collect for use	☒	☐
2. Infiltration	☐	☒
3. To watercourse	☒	☐
a. Is it an Ordinary Watercourse?	☒	☐
b. Is it a Main River?	☐	☒
4. To surface water sewer	☐	☒
a. Is it a Highway drain?	☐	☒
b. Is it a public sewer?	☐	☒
c. Is it a private sewer?	☐	☒
d. Other	☐	☒
5. To combined sewer	☐	☒

Has advice been sought from the asset owners?	Yes ☐	No ☒
Has advice been sought from the land owners?	Yes ☐	No ☒

10. Infiltration Assessment

Where infiltration drainage is proposed, testing should be carried out to a methodology agreed with the SAB e.g. [Infiltration Drainage - Manual of Good Practice \(CIRIA R156\)](#) and [BRE Soakaway Design \(DG 365 – 2016\)](#), and be used to inform the design, construction, maintenance, testing and assessment of infiltration systems.

Has infiltration testing been carried out?		Yes ☐	No ☒
Analysis of development Geology (including both bedrock and superficial deposits where known)			
Depth to groundwater (metres)			
Borehole testing	Reference		
	Date		
Has a Contaminated Land Assessment been undertaken?		Yes ☐	No ☒
Is the infiltration drainage proposed on contaminated land?		Yes ☐	No ☒
Infiltration test result		N/A	

11. Non-performance Bond, Adoption, Operation & Maintenance

What are your proposals regarding cost of works, adoption and maintenance of the SuDS scheme?

Non-performance Bond - Estimated cost of work	N/A
Adoption (including land agreements etc)	N/A
Funded Maintenance Plan for the lifetime of the development	N/A

12. SuDS Scheme Application Checklist

Please complete the following checklist and make sure you have read the Guidance on Making SuDS Applications for SAB Approval, the Guidance on completing the Full Application Form, and provided all the necessary information in support of your application:	
Correct Full Application fee.	Yes ☒
Completed, signed and dated Full Application form.	Yes ☒
Plan/s specifying the construction area and the extent of the drainage system for which approval is sought. All plan/s shall be at a scale of 1:2500 and MUST show the direction of North.	Yes ☒
Taken account of SAB Guidance on technical information to be submitted to enable SAB to assess your Full Application.	Yes ☒

13. Declaration

I/ we hereby apply for SuDS Approval as described in this form and the accompanying plans/drawings and additional information. I confirm that I have read and complied with the National SuDS Standards and, to the best of my knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the persons giving them.

This form has been completed using evidence from the Flood Consequences Assessment where applicable, surface water drainage strategy and site plans and associated documents.

This form has been completed using accurate information. It can be used as a summary of the detailed surface water drainage proposals on this site, and clearly shows that these drainage proposals conform to the National SuDS Standards for Wales.

Form completed by	Russell Hardy
Signature	
Qualification of person responsible for signing off this application	BSc Civil Engineering
Company	JP Structural Design LTD
On behalf of (Client's details)	Danan Properties (Widnes) Limited
Date	17.09.2026

Disclaimer

Information provided on this form and in supporting documents may be published on the SABs SuDS register and website and be made publicly available.

Appendix I – Surface Water Calculations



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	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)
SMH 1.5	0.021	4.00	10.850	1200	57.662	36.783	0.500
SMH 1.4	0.021	4.00	10.850	1200	91.972	37.101	0.850
SMH 1.3	0.007	4.00	10.950	1200	91.954	59.121	1.100
SMH 2.0	0.004	4.00	10.850	1200	58.404	59.380	0.500
SMH 1.2	0.034	4.00	10.850	1200	62.120	59.255	1.200
SMH 1.1	0.040	4.00	10.800	1200	62.075	69.010	1.240
TANK 1	0.021	4.00	10.600	1200	62.078	75.510	1.100
SMH 1.0			10.600	1200	62.103	88.016	1.200
OUTLET 1			9.900	1200	62.205	95.756	0.650
SMH 3.5	0.020	4.00	10.850	1200	46.083	39.008	0.500
SMH 3.4	0.024	4.00	10.850	1200	8.739	38.998	0.870
SMH 3.3	0.019	4.00	10.850	1200	8.499	58.289	1.060
SMH 3.2	0.011	4.00	10.850	1200	12.467	71.448	1.200
SMH 3.1	0.009	4.00	10.850	1200	16.959	78.799	1.290
SMH 4.0	0.027	4.00	10.850	1200	37.581	58.599	0.630
TANK 2	0.051	4.00	10.700	1200	39.225	78.817	1.350
SMH 3.0			10.600	1200	39.867	83.278	1.350
OUTLET 2			9.000	1200	33.540	87.814	0.250

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SMH 1.5	SMH 1.4	34.311	0.600	10.350	10.000	0.350	98.0	150	4.56	50.0
1.001	SMH 1.4	SMH 1.3	22.020	0.600	10.000	9.850	0.150	146.8	150	5.01	50.0
1.002	SMH 1.3	SMH 1.2	29.834	0.600	9.850	9.650	0.200	149.2	225	5.47	50.0
2.000	SMH 2.0	SMH 1.2	3.718	0.600	10.350	9.650	0.700	5.3	150	4.01	50.0
1.003	SMH 1.2	SMH 1.1	9.755	0.600	9.650	9.560	0.090	108.4	225	5.60	50.0
1.004	SMH 1.1	TANK 1	6.500	0.600	9.560	9.500	0.060	108.3	225	5.69	50.0
1.005	TANK 1	SMH 1.0	12.506	0.600	9.500	9.400	0.100	125.1	225	5.87	50.0
1.006	SMH 1.0	OUTLET 1	7.741	0.600	9.400	9.250	0.150	51.6	225	5.94	50.0
3.000	SMH 3.5	SMH 3.4	37.344	0.600	10.350	9.980	0.370	100.9	150	4.62	50.0
3.001	SMH 3.4	SMH 3.3	19.292	0.600	9.980	9.790	0.190	101.5	150	4.95	50.0
3.002	SMH 3.3	SMH 3.2	13.744	0.600	9.790	9.650	0.140	98.2	150	5.17	50.0
3.003	SMH 3.2	SMH 3.1	8.615	0.600	9.650	9.560	0.090	95.7	225	5.28	50.0
3.004	SMH 3.1	TANK 2	22.266	0.600	9.560	9.350	0.210	106.0	225	5.57	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.015	17.9	4.0	0.350	0.700	0.021	0.0	48	0.816
1.001	0.827	14.6	8.0	0.700	0.950	0.042	0.0	79	0.844
1.002	1.068	42.5	9.3	0.875	0.975	0.049	0.0	72	0.861
2.000	4.402	77.8	0.8	0.350	1.050	0.004	0.0	10	1.370
1.003	1.255	49.9	16.5	0.975	1.015	0.087	0.0	89	1.131
1.004	1.255	49.9	24.1	1.015	0.875	0.127	0.0	110	1.245
1.005	1.168	46.4	28.1	0.875	0.975	0.148	0.0	126	1.220
1.006	1.825	72.5	28.1	0.975	0.425	0.148	0.0	97	1.712
3.000	1.000	17.7	3.8	0.350	0.720	0.020	0.0	47	0.798
3.001	0.997	17.6	8.3	0.720	0.910	0.044	0.0	73	0.985
3.002	1.014	17.9	12.0	0.910	1.050	0.063	0.0	90	1.086
3.003	1.336	53.1	14.0	0.975	1.065	0.074	0.0	79	1.131
3.004	1.269	50.5	15.7	1.065	1.125	0.083	0.0	87	1.127



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	SMH 4.0	TANK 2	20.285	0.600	10.220	9.350	0.870	23.3	225	4.12	50.0
3.005	TANK 2	SMH 3.0	4.507	0.600	9.350	9.250	0.100	45.1	225	5.61	50.0
3.006	SMH 3.0	OUTLET 2	7.785	0.600	9.250	8.750	0.500	15.6	225	5.65	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	2.721	108.2	5.1	0.405	1.125	0.027	0.0	33	1.405
3.005	1.953	77.7	30.5	1.125	1.125	0.161	0.0	98	1.840
3.006	3.332	132.5	30.5	1.125	0.025	0.161	0.0	73	2.725

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	20.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node SMH 1.0 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	9.400	Product Number	CTL-SHE-0067-2000-1000-2000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node SMH 3.0 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	3.006	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0066-2000-1100-2000
Invert Level (m)	9.250	Min Outlet Diameter (m)	0.100
Design Depth (m)	1.100	Min Node Diameter (mm)	1200
Design Flow (l/s)	2.0		

Node TANK 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	85.0	0.0	0.800	85.0	0.0	0.801	0.0	0.0

Node TANK 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	95.0	0.0	0.800	95.0	0.0	0.801	0.0	0.0



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SMH 1.5	11	10.512	0.162	13.0	0.3200	0.0000	SURCHARGED
15 minute winter	SMH 1.4	11	10.400	0.400	25.2	0.6502	0.0000	SURCHARGED
360 minute winter	SMH 1.3	344	10.290	0.440	4.4	0.5535	0.0000	SURCHARGED
15 minute summer	SMH 2.0	10	10.368	0.018	2.5	0.0238	0.0000	OK
360 minute winter	SMH 1.2	344	10.290	0.640	7.4	1.0867	0.0000	SURCHARGED
360 minute winter	SMH 1.1	344	10.290	0.730	10.3	1.2963	0.0000	SURCHARGED
360 minute winter	TANK 1	344	10.290	0.790	12.0	68.3258	0.0000	SURCHARGED
360 minute winter	SMH 1.0	344	10.290	0.890	6.3	1.0061	0.0000	SURCHARGED
15 minute summer	OUTLET 1	1	9.250	0.000	2.0	0.0000	0.0000	OK
15 minute winter	SMH 3.5	12	10.671	0.321	12.3	0.6191	0.0000	FLOOD RISK
15 minute winter	SMH 3.4	11	10.560	0.580	25.1	0.9757	0.0000	FLOOD RISK
360 minute winter	SMH 3.3	344	10.295	0.505	5.6	0.7521	0.0000	SURCHARGED
360 minute winter	SMH 3.2	344	10.295	0.645	6.6	0.8472	0.0000	SURCHARGED
360 minute winter	SMH 3.1	344	10.295	0.735	7.1	0.9338	0.0000	SURCHARGED
360 minute winter	SMH 4.0	344	10.295	0.075	2.4	0.1484	0.0000	OK
360 minute winter	TANK 2	344	10.295	0.945	13.6	77.8300	0.0000	SURCHARGED
360 minute winter	SMH 3.0	344	10.294	1.044	8.2	1.1813	0.0000	SURCHARGED
15 minute summer	OUTLET 2	1	8.750	0.000	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SMH 1.5	1.000	SMH 1.4	12.2	0.763	0.681	0.6040	
15 minute winter	SMH 1.4	1.001	SMH 1.3	20.8	1.182	1.424	0.3877	
360 minute winter	SMH 1.3	1.002	SMH 1.2	4.2	0.535	0.098	1.1865	
15 minute summer	SMH 2.0	2.000	SMH 1.2	2.5	0.222	0.032	0.0350	
360 minute winter	SMH 1.2	1.003	SMH 1.1	6.8	0.630	0.136	0.3880	
360 minute winter	SMH 1.1	1.004	TANK 1	10.1	0.863	0.202	0.2585	
360 minute winter	TANK 1	1.005	SMH 1.0	6.3	0.306	0.135	0.4974	
360 minute winter	SMH 1.0	Hydro-Brake®	OUTLET 1	2.0				60.9
15 minute winter	SMH 3.5	3.000	SMH 3.4	10.4	0.669	0.586	0.6574	
15 minute winter	SMH 3.4	3.001	SMH 3.3	20.2	1.147	1.146	0.3396	
360 minute winter	SMH 3.3	3.002	SMH 3.2	5.6	0.887	0.311	0.2420	
360 minute winter	SMH 3.2	3.003	SMH 3.1	6.3	0.785	0.118	0.3426	
360 minute winter	SMH 3.1	3.004	TANK 2	6.7	0.703	0.132	0.8855	
360 minute winter	SMH 4.0	4.000	TANK 2	2.4	0.789	0.022	0.5199	
360 minute winter	TANK 2	3.005	SMH 3.0	8.2	0.446	0.105	0.1792	
360 minute winter	SMH 3.0	Hydro-Brake®	OUTLET 2	2.0				59.9

Appendix J – Drainage Schematic Layout



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	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)
SMH 1.5	0.021	4.00	10.850	1200	57.662	36.783	0.500
SMH 1.4	0.021	4.00	10.850	1200	91.972	37.101	0.850
SMH 1.3	0.007	4.00	10.950	1200	91.954	59.121	1.100
SMH 2.0	0.004	4.00	10.850	1200	58.404	59.380	0.500
SMH 1.2	0.034	4.00	10.850	1200	62.120	59.255	1.200
SMH 1.1	0.040	4.00	10.800	1200	62.075	69.010	1.240
TANK 1	0.021	4.00	10.600	1200	62.078	75.510	1.100
SMH 1.0			10.600	1200	62.103	88.016	1.200
OUTLET 1			9.900	1200	62.205	95.756	0.650
SMH 3.5	0.020	4.00	10.850	1200	46.083	39.008	0.500
SMH 3.4	0.024	4.00	10.850	1200	8.739	38.998	0.870
SMH 3.3	0.019	4.00	10.850	1200	8.499	58.289	1.060
SMH 3.2	0.011	4.00	10.850	1200	12.467	71.448	1.200
SMH 3.1	0.009	4.00	10.850	1200	16.959	78.799	1.290
SMH 4.0	0.027	4.00	10.850	1200	37.581	58.599	0.630
TANK 2	0.051	4.00	10.700	1200	39.225	78.817	1.350
SMH 3.0			10.600	1200	39.867	83.278	1.350
OUTLET 2			9.000	1200	33.540	87.814	0.250

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SMH 1.5	SMH 1.4	34.311	0.600	10.350	10.000	0.350	98.0	150	4.56	50.0
1.001	SMH 1.4	SMH 1.3	22.020	0.600	10.000	9.850	0.150	146.8	150	5.01	50.0
1.002	SMH 1.3	SMH 1.2	29.834	0.600	9.850	9.650	0.200	149.2	225	5.47	50.0
2.000	SMH 2.0	SMH 1.2	3.718	0.600	10.350	9.650	0.700	5.3	150	4.01	50.0
1.003	SMH 1.2	SMH 1.1	9.755	0.600	9.650	9.560	0.090	108.4	225	5.60	50.0
1.004	SMH 1.1	TANK 1	6.500	0.600	9.560	9.500	0.060	108.3	225	5.69	50.0
1.005	TANK 1	SMH 1.0	12.506	0.600	9.500	9.400	0.100	125.1	225	5.87	50.0
1.006	SMH 1.0	OUTLET 1	7.741	0.600	9.400	9.250	0.150	51.6	225	5.94	50.0
3.000	SMH 3.5	SMH 3.4	37.344	0.600	10.350	9.980	0.370	100.9	150	4.62	50.0
3.001	SMH 3.4	SMH 3.3	19.292	0.600	9.980	9.790	0.190	101.5	150	4.95	50.0
3.002	SMH 3.3	SMH 3.2	13.744	0.600	9.790	9.650	0.140	98.2	150	5.17	50.0
3.003	SMH 3.2	SMH 3.1	8.615	0.600	9.650	9.560	0.090	95.7	225	5.28	50.0
3.004	SMH 3.1	TANK 2	22.266	0.600	9.560	9.350	0.210	106.0	225	5.57	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.015	17.9	4.0	0.350	0.700	0.021	0.0	48	0.816
1.001	0.827	14.6	8.0	0.700	0.950	0.042	0.0	79	0.844
1.002	1.068	42.5	9.3	0.875	0.975	0.049	0.0	72	0.861
2.000	4.402	77.8	0.8	0.350	1.050	0.004	0.0	10	1.370
1.003	1.255	49.9	16.5	0.975	1.015	0.087	0.0	89	1.131
1.004	1.255	49.9	24.1	1.015	0.875	0.127	0.0	110	1.245
1.005	1.168	46.4	28.1	0.875	0.975	0.148	0.0	126	1.220
1.006	1.825	72.5	28.1	0.975	0.425	0.148	0.0	97	1.712
3.000	1.000	17.7	3.8	0.350	0.720	0.020	0.0	47	0.798
3.001	0.997	17.6	8.3	0.720	0.910	0.044	0.0	73	0.985
3.002	1.014	17.9	12.0	0.910	1.050	0.063	0.0	90	1.086
3.003	1.336	53.1	14.0	0.975	1.065	0.074	0.0	79	1.131
3.004	1.269	50.5	15.7	1.065	1.125	0.083	0.0	87	1.127



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	SMH 4.0	TANK 2	20.285	0.600	10.220	9.350	0.870	23.3	225	4.12	50.0
3.005	TANK 2	SMH 3.0	4.507	0.600	9.350	9.250	0.100	45.1	225	5.61	50.0
3.006	SMH 3.0	OUTLET 2	7.785	0.600	9.250	8.750	0.500	15.6	225	5.65	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	2.721	108.2	5.1	0.405	1.125	0.027	0.0	33	1.405
3.005	1.953	77.7	30.5	1.125	1.125	0.161	0.0	98	1.840
3.006	3.332	132.5	30.5	1.125	0.025	0.161	0.0	73	2.725

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	20.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node SMH 1.0 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	9.400	Product Number	CTL-SHE-0067-2000-1000-2000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node SMH 3.0 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	3.006	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0066-2000-1100-2000
Invert Level (m)	9.250	Min Outlet Diameter (m)	0.100
Design Depth (m)	1.100	Min Node Diameter (mm)	1200
Design Flow (l/s)	2.0		

Node TANK 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	85.0	0.0	0.800	85.0	0.0	0.801	0.0	0.0

Node TANK 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	95.0	0.0	0.800	95.0	0.0	0.801	0.0	0.0



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.59%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SMH 1.5	11	10.512	0.162	13.0	0.3200	0.0000	SURCHARGED
15 minute winter	SMH 1.4	11	10.400	0.400	25.2	0.6502	0.0000	SURCHARGED
360 minute winter	SMH 1.3	344	10.290	0.440	4.4	0.5535	0.0000	SURCHARGED
15 minute summer	SMH 2.0	10	10.368	0.018	2.5	0.0238	0.0000	OK
360 minute winter	SMH 1.2	344	10.290	0.640	7.4	1.0867	0.0000	SURCHARGED
360 minute winter	SMH 1.1	344	10.290	0.730	10.3	1.2963	0.0000	SURCHARGED
360 minute winter	TANK 1	344	10.290	0.790	12.0	68.3258	0.0000	SURCHARGED
360 minute winter	SMH 1.0	344	10.290	0.890	6.3	1.0061	0.0000	SURCHARGED
15 minute summer	OUTLET 1	1	9.250	0.000	2.0	0.0000	0.0000	OK
15 minute winter	SMH 3.5	12	10.671	0.321	12.3	0.6191	0.0000	FLOOD RISK
15 minute winter	SMH 3.4	11	10.560	0.580	25.1	0.9757	0.0000	FLOOD RISK
360 minute winter	SMH 3.3	344	10.295	0.505	5.6	0.7521	0.0000	SURCHARGED
360 minute winter	SMH 3.2	344	10.295	0.645	6.6	0.8472	0.0000	SURCHARGED
360 minute winter	SMH 3.1	344	10.295	0.735	7.1	0.9338	0.0000	SURCHARGED
360 minute winter	SMH 4.0	344	10.295	0.075	2.4	0.1484	0.0000	OK
360 minute winter	TANK 2	344	10.295	0.945	13.6	77.8300	0.0000	SURCHARGED
360 minute winter	SMH 3.0	344	10.294	1.044	8.2	1.1813	0.0000	SURCHARGED
15 minute summer	OUTLET 2	1	8.750	0.000	1.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SMH 1.5	1.000	SMH 1.4	12.2	0.763	0.681	0.6040	
15 minute winter	SMH 1.4	1.001	SMH 1.3	20.8	1.182	1.424	0.3877	
360 minute winter	SMH 1.3	1.002	SMH 1.2	4.2	0.535	0.098	1.1865	
15 minute summer	SMH 2.0	2.000	SMH 1.2	2.5	0.222	0.032	0.0350	
360 minute winter	SMH 1.2	1.003	SMH 1.1	6.8	0.630	0.136	0.3880	
360 minute winter	SMH 1.1	1.004	TANK 1	10.1	0.863	0.202	0.2585	
360 minute winter	TANK 1	1.005	SMH 1.0	6.3	0.306	0.135	0.4974	
360 minute winter	SMH 1.0	Hydro-Brake®	OUTLET 1	2.0				60.9
15 minute winter	SMH 3.5	3.000	SMH 3.4	10.4	0.669	0.586	0.6574	
15 minute winter	SMH 3.4	3.001	SMH 3.3	20.2	1.147	1.146	0.3396	
360 minute winter	SMH 3.3	3.002	SMH 3.2	5.6	0.887	0.311	0.2420	
360 minute winter	SMH 3.2	3.003	SMH 3.1	6.3	0.785	0.118	0.3426	
360 minute winter	SMH 3.1	3.004	TANK 2	6.7	0.703	0.132	0.8855	
360 minute winter	SMH 4.0	4.000	TANK 2	2.4	0.789	0.022	0.5199	
360 minute winter	TANK 2	3.005	SMH 3.0	8.2	0.446	0.105	0.1792	
360 minute winter	SMH 3.0	Hydro-Brake®	OUTLET 2	2.0				59.9

Appendix G – SAB Application

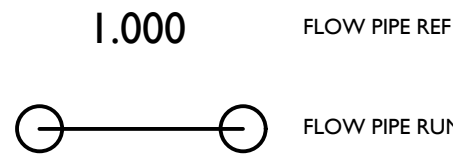


FLOW DRAINAGE NOTES

THIS DRAWING IS NOT FOR CONSTRUCTION.

THIS SKETCH PLAN HAS BEEN PRODUCED TO CORRELATE THE FLOW DRAINAGE MODEL WITH THE DRAINAGE PROPOSALS. WE HAVE ALSO HIGHLIGHTED WHERE IT HAS BEEN NECESSARY TO INCLUDE 'FALSE' CHAMBERS / NODES OR JUNCTIONS TO LOCATE THE STORAGE FACILITIES / SAB FEATURES ETC. NOTE THE ATTENUATION IS CREATED AS A NODE WITHIN THE MODEL WITH VOLUMETRIC PROPERTIES

KEY



CATCHMENT AREAS		
KEY	AREA m ² / HA	CONNECTION
	70 / 0.0070	SMH 1.3
	210 / 0.0210	SMH 1.5
	210 / 0.0210	SMH 1.4
	40 / 0.0040	SMH 2.0
	340 / 0.0340	SMH 1.2
	200 / 0.0200	SMH 3.5
	240 / 0.0240	SMH 3.4
	190 / 0.0190	SMH 3.3
	270 / 0.0270	SMH 4.0
	90 / 0.0090	SMH 3.1
	505 / 0.0505	TANK 2
	110 / 0.0110	SMH 3.2
	395 / 0.0395	SMH 1.1
	210 / 0.0210	TANK 1

TOTAL CATCHMENT AREA AFTER DEVELOPMENT
3,080 sq m

PO2	UPDATED AS PER LATEST COMMENTS	SB	RH	JP	22.09.2026
REV	DESCRIPTION	BY	CHK	APR	DATE



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STRUCTURAL
ENGINEERS

+44 (0)1244 956000 | www.jpstructural.co.uk | info@jpstructural.co.uk

PURPOSE OF ISSUE	PRELIMINARY			STATUS	P
PROJECT	PLOT 5700 NORTH WALES BUSINESS PARK				
TITLE	DRAINAGE SCHEME MODEL & CATCHMENT LAYOUT				
CLIENT	DANAN GROUP LIMITED				
DRAWN BY	SB	CHECKED BY	RH	APPROVED BY	JP
DATE	17.09.2026	SCALE (@ A1)	1:200	PROJECT NUMBER	95038
DRAWING NUMBER					REV
95038-JPS-XX-XX-DR-C-1001					P02