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Created Life Three (Bicester) Limited
Skimmingdish Lane, Bicester
Drainage Strategy

Preliminary P1	
Reference	**DS/01**
Issue	**Rev P4**
Date	**June 2021**

Document Control

Document	Skimmingdish Lane, Bicester				
Project No.	220029	Author	GHB	Checked	TS

Document Issue

Revision	Date	Status	Author	Notes
P1	10/06/21	Preliminary	POA	
P2	22/06/21	Planning	POA	
P3	23/06/21	Planning	POA	
P4	28/06/21	Planning	POA	

Distribution

Name	Company/Department	Hard/Soft copies	Date
S. Berry	Created Life Three (Bicester) Limited.	Soft	10/06/21
S. Berry	Created Life Three (Bicester) Limited.	Soft	22/06/21
S. Berry	Created Life Three (Bicester) Limited.	Soft	23/06/21
S. Berry	Created Life Three (Bicester) Limited.	Soft	23/06/21

Contents

1. Introduction

a. This Drainage Strategy has been prepared by Paul Owen Associates Ltd on behalf of Created Life Three (Bicester) Limited to support a planning application for a new drive through unit at Skimmingdish Lane, Bicester.

b. This Drainage Strategy has been undertaken to support the planning application for the new restaurant see site location plan in Appendix A.

c. This report is prepared for the sole use Created Life Three (Bicester) Limited. No third party may rely upon this report unless express written permission is granted by Paul Owen Associates Limited.

2. Site Description

a. The site is located to the North East of Skimmingdish Lane, Bicester OS Grid Ref SP 60026 23386.

b. The existing site consists of a green field site.

3. Proposed Development

a. It is proposed to undertake a development of the site comprising of a drive through restaurants together with the associated roads and car parking.

b. The proposed impermeable area is 1977m².

4. Proposed Drainage Strategy

a. Planning Policy and Guidance

i. National Planning Policy Framework (NPPF) – The site falls within Flood Zone 1 giving the site a greater than 1 in 1000 year flood risk from rivers and sea. The NPPF for such sites aims to seek opportunities to reduce the overall flood risk in the area with the use of sustainable drainage systems (SuDS) on site. The EA Flood Map for the site is shown in Appendix G.

ii. Environment Agency Policy – The EA require that the run-off from the site is managed so that there is no increase in flood risk off site for rainfall events up and including the 100 year critical event including an allowance for climate change. Their Ground Water Protection Policy requires that infiltration drainage solutions are not used within areas of contaminated land and places restrictions on drainage and development types within Source Protection Zones (SPZ) of abstraction points. The Environment Agency has produced pollution prevention guidelines on the use and design of oil separators in surface water drainage systems (PPG3). Efforts should be made so that the post development volume and peak rate of runoff should not be greater that of the predevelopment for the same rainfall event.

iii. Thames Water Policy
Sewers that are to be adopted should be designed and constructed in accordance with the requirements of Sewers for Adoption 7th Edition.

iv. Building Regulations – Part H of the building regulations states that Rainfall from a system shall discharge to one of the following listed in order of priority:-
- An adequate soakaway or some other adequate infiltration system.
- A water course
- A sewer

b. Design Development

i. Existing Drainage Regime – The existing site consists of green field site and drains to the south east towards the existing water course

Green Field Site Runoff Rates for existing site.

Return Period	Green Field Discharge Rate (l/s)	Discharge from existing site (l/s)
1 yr	0.02	0.02
30 yr	0.07	0.07
100 yr	0.09	0.09

c. Proposed Surface Water Drainage.

i. The site investigation states that the ground conditions "according to information published by the British Geological Survey (BGS) (1:50,000 Drift Edition, Sheet 219, Buckingham) the site is shown as being the Cornbrash Formation (limestone, grey to brown, rubbly) of the Great Oolite Group (GtO). An area of possible overlying Alluvium is shown in the far southern portion of the current site". No ground water was encountered during the site investigation.

ii. The site investigation states that "Soakage was found to be "good" within the standpipe fitted within borehole BH1, however, owing to the shallow depth of the test the results pertain to the superficial deposits overlying the Limestone". The result of the soakage test was 3.43E-06. This result puts the soakage at the bottom of good and the top of poor. Soakaway calculations based on the result above give half drain down times in excess of 24 hours which is deemed to be unacceptable in BRE365. Therefore soakaway are not considered to be suitable for this site.

iii. The site does not lie within an Environment Agency Source Protection Zone (SPZ).

iv. The project requires flood compensation storage which is discussed in the Flood Risk Assessment which has been agreed in principal with the Environment Agency. The Environment Agency require that the flood compensation storage should discharge to the existing ditch south east of the site.

v. It is proposed to drain surface water from the new development to the existing ditch to the south east of the site controlling the flow to a practical minimum and providing attenuation storage for the critical 100 year storm with an allowance of 40% for climate change. This would be subject to Local Authority approval.

Attenuation volumes required for site runoff rates for proposed development.

Return Period	Practical Minimum Discharge Rate (l/s)	Estimated Volume of Attenuation Required m³
30 yr +40%	5.0	63.6
100 yr +40%	5.0	88.7

vi. We have considered the following SUDs systems and shown the systems that have been included in the design and reasons they have not been used if they have not been included. The site layout has precluded some of the systems available.

Suds Systems

SuDs System	Yes/No/ Possible	Reasons system has not been used
Soakaways	No	Not suitable.
Rainwater Harvesting	No	No Site Requirement
Green Roofs	No	No Site Requirement
Infiltration Systems	No	Further investigation required.
Filter strips	No	Site layout not suitable to allow room for this.
Filter Drains	No	Site layout not suitable to allow room for this.
Swales	No	Site layout not suitable to allow room for this.
Bioretention Systems	No	Site layout not suitable to allow room for this.
Porous Pavements	No	Not suitable.
Attenuation Storage Tanks	Yes	
Retention Basins	No	Site layout not suitable to allow room for this.
Ponds and Wetlands	No	Site layout not suitable to allow room for this.

d. Proposed Foul Drainage

i. Foul drainage will discharge to the existing foul pumping main in Sikmmingdisk Lane. This would be subject to Thames Water approval.

ii. Any drains that are required to be adopted by Thames Water will need to be constructed in accordance with Sewers for Adoption.

5. Maintenance

a. Maintenance of the drainage for of the proposed restaurants is to be the responsibility of the owner of the property.

b. Petrol Interceptor - Regular inspections are required to ensure the long term operation of the petrol interceptor. Inspections and cleaning should be carried out annually or as required. All maintenance and inspections should be carried out by experienced personnel. The interceptor should have a automatic monitor to indicate when oil or silt needs to be removed.

c. Attenuation Tank - Regular inspections are required to ensure the long term operation of the attenuation tank. These inspections should be carried out monthly for the first three months of operation and annually thereafter. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel.

d. Gullies - Regular inspections and maintenance are required to ensure the long term operation of the gullies in the development. Inspections and cleaning should be carried out annually or as required. All maintenance and inspections should be carried out by experienced personnel.

e. Drainage channels - Regular inspections and maintenance are required to ensure the long term operation of the drainage channels in the development. Inspections and cleaning should be carried out annually or as required. All maintenance and inspections should be carried out by experienced personnel.

f. Flow control device - Regular inspections should be carried out to ensure the long term operation of the drainage system. Inspections should be carried out annually or as required. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel.

g. Silt Traps - Regular inspections should be carried out to ensure the long term operation of the drainage system. Inspections should be carried out annually or as required. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel.

h. Manholes - Regular inspections should be carried out to ensure the long term operation of the drainage system. Inspections should be carried out annually or as required. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel.

i. Pipelines -Regular inspections should be carried out to ensure the long term operation of the drainage system. Inspections should be carried out annually or as required. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel.

j. Pumping Station -Regular inspections should be carried out to ensure the long term operation of the drainage system. Inspections should be carried out annually or as required. Any maintenance work required identified during the inspections should carried out as required. All maintenance and inspections should be carried out by experienced personnel

Operation and maintenance activity	SUDs Component												
	Pond N/A	Wetland N/A	Detention basin N/A	Infiltration Basin N/A	Soakaway N/A	Infiltration Trench N/A	Filter drain N/A	Modular storage N/A	Pervious pavement N/A	Swale/Bioretention/Trees N/A	Filter strip N/A	Green roofs N/A	Attenuation Tank
Regular Maintenance													
Inspection	●	●	●	●	●	●	●	●	●	●	●	●	●
Litter and debris removal	●	●	●	●	○	●	●	○	●	●	●		○
Grass cutting	●	●	●	●	○	●	●	○	○	●	●		
Weed and invasive plant control	○	○	○	○		○	○		○		○	●	
Shrub management	○	○	○	○					○	○	○		
Shoreline vegetation management	●	●	○										
Aquatic vegetation management	●	●	○										
Occasional Maintenance													
Sediment management	●	●	●	●	●	●	●	●	●	●	●		●
Vegetation replacement	○	○	○	○						○	○	●	
Vacuum sweeping and brushing									●				
Remedial Maintenance													
Structure rehabilitation/repair	○	○	○	○	○	○	○	○	○	○	○	○	○
Infiltration surface reconditioning				○	○	○	○		○	○	○		

Key

● will be required

○ may be required

Operation and maintenance activity	Drainage Component										
	Petrol Interceptor	Grease Trap	Gully	Drainage Channel	Flow Control device	Silt Traps	Manholes	Pipelines	Ditches N/A	Pumping Station	
Regular Maintenance											
Inspection	●	●	●	●	●	●	●	●	●	●	
Litter and debris removal	●	●	●	●	●	●	○	○	●	●	
Grass cutting									○		
Weed and invasive plant control									○		
Shrub management									○		
Shoreline vegetation management									○		
Aquatic vegetation management									○		
Occasional Maintenance											
Sediment management	●	●	●	●	●	●	○	○	○	●	
Vegetation replacement									○		
Remedial Maintenance											
Structure rehabilitation/repair	○	○	○	○	○	○	○	○	○	○	

Key

● will be required

○ may be required

.

6. Conclusions and Recommendations

a. It is proposed to drain surface water from the new development to the existing ditch to the south east of the site controlling the flow to a practical minimum and providing attenuation storage for the critical 100 year storm with an allowance of 40% for climate change. This would be subject to Local Authority approval.

b. The decision to discharge the surface water into the positive drainage system is based information obtained to date in the site investigation, which indicates that the initial infiltration results on the upper levels are not suitable for soakaways.

c. The green field site run off from the site is 0.07 l/s for the 30 year storm and 0.09 l/s for the 100 year storm.

d. The proposed 5 l/s discharge taken as the practical minimum.

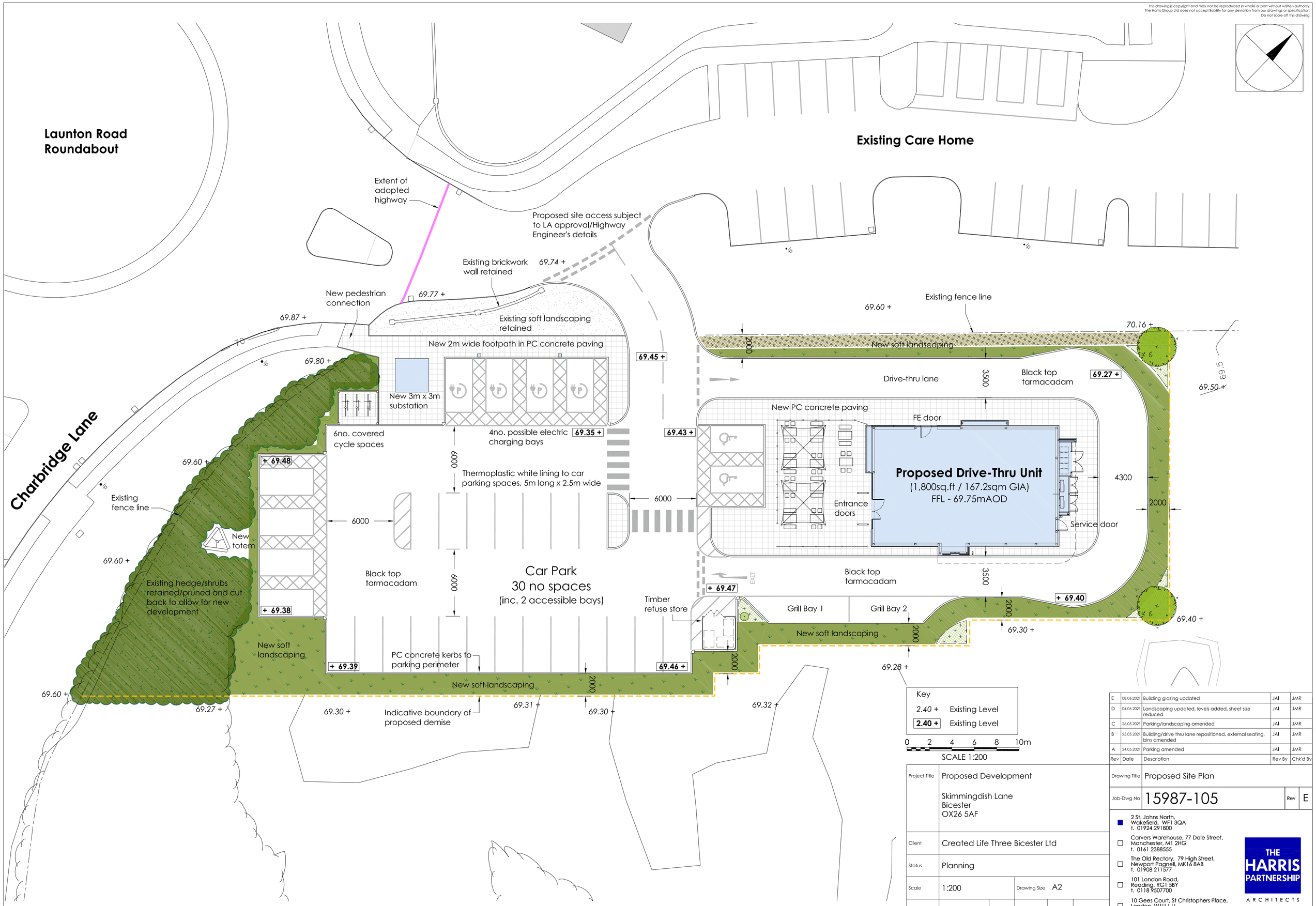
e. Discharge of foul water from the site should be to the existing foul pumping main in Skimmingdish Lane subject to Thames Water approval.

Appendix A – Site Location Plan

Site

Location Plan

Appendix B – Proposed Site Layout



Key

2.40 +	Existing Level
2.40 +	Existing Level

0 2 4 6 8 10m

SCALE 1:200

Rev	Date	Description	Rev By	Chk'd By
E	08.06.2021	Building glazing updated	JAI	JMR
D	04.06.2021	Landscaping updated, levels added, sheet size reduced	JAI	JMR
C	26.05.2021	Parking/landscaping amended	JAI	JMR
B	25.05.2021	Building/drive thru lane repositioned, external seating, bins amended	JAI	JMR
A	24.05.2021	Parking amended	JAI	JMR

Project Title	Proposed Development Skimmingdish Lane Bicester OX26 5AF
Client	Created Life Three Bicester Ltd
Status	Planning
Scale	1:200
Drawing Size	A2
Date	18/05/2021
Drawn By	James I
Checked	JMR
Drawing Title	Proposed Site Plan
Job-Dwg No	15987-105
Rev	E

■ 2 St. Johns North, Wakefield, WF1 3QA t. 01924 291800
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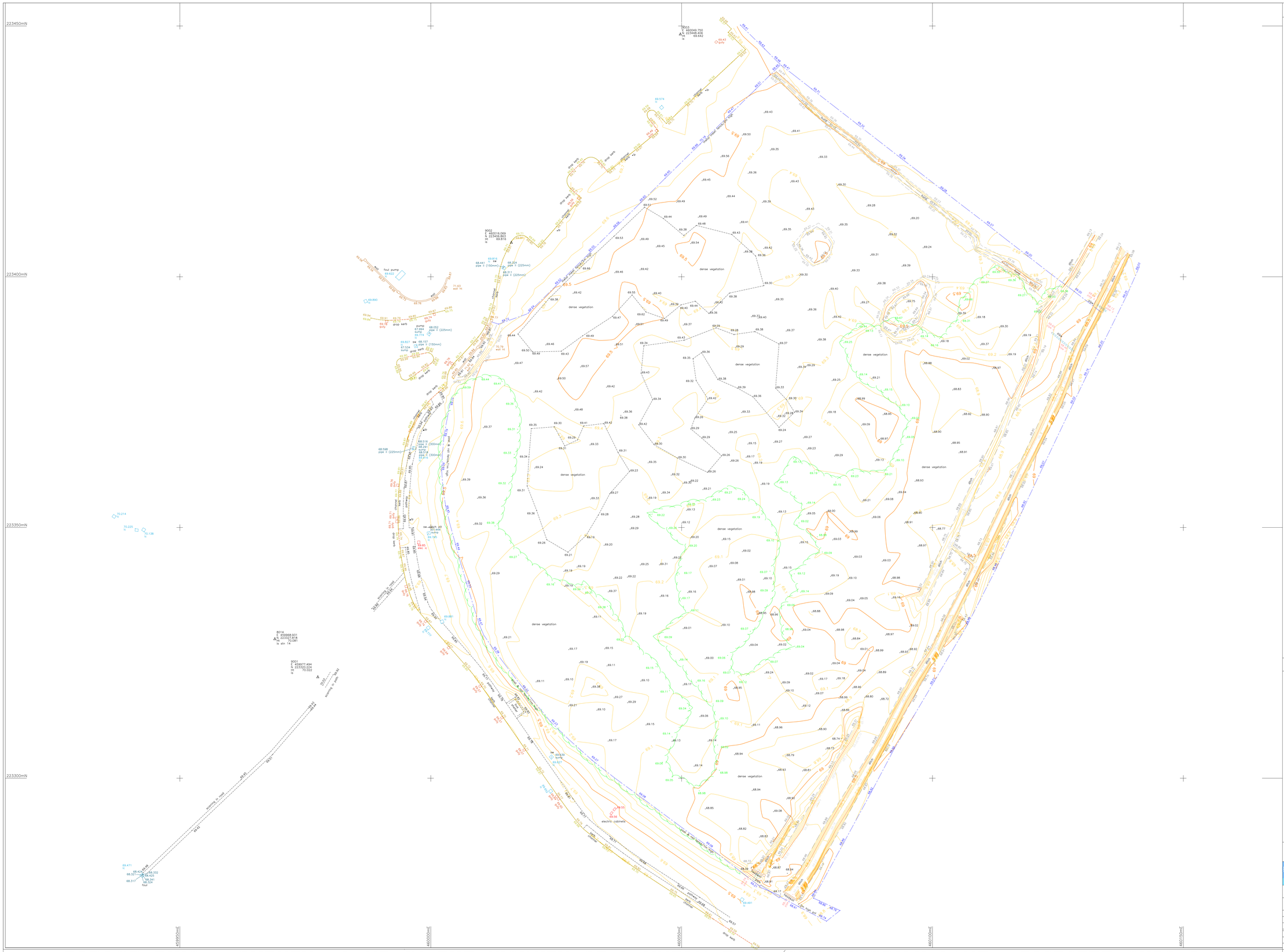
CAD file reference J:\15987\17.0 Drawings\100 Series-Planning

Appendix C – Topographical Survey



NOTES

1. The accuracy of this drawing is dependant on the original specification and MWSC should be consulted before use of other scales or use in CAD form.
2. Where underground services are shown, all reasonable care has been taken within the spirit of the original specification and requirement. Before use of this information the user should consult MWSC and satisfy themselves of the completeness and accuracy of such detail before undertaking any works.
3. All reasonable care has been taken in the survey detail represented on this drawing but any discrepancies must be reported to MWSC immediately. This plan has been produced to meet our clients specification and budgetary and time constraints of our clients. Any comments are most welcome.
4. This drawing is the property of MIKE WORBY SURVEY CONSULTANCY It may not be copied, altered or incorporated into any other data without prior consent.
5. Layers prefixed by 'HIDE' contain level data that may be of interest to the user but have been "turned off" to assist in the overall clarity of the drawing
6. Elevations are orthorectified images referenced to a single plane . Some distortion may occur where features do not lie on this plane.
7. Critical dimensions should be verified by the user on site.
8. Tree types shown on this drawing cannot be guaranteed and if critical should be verified by an arboriculturist.
9. Tree spreads and diameters are averages unless otherwise indicated.
10. This plan has been produced for the client detailed below or their appointed appointed agent to an agreed specification and defines the limit of MWSC liability
11. The Survey Reference System has been derived from Dual Frequency GPS Observations taken on 7th April 2021 using Trimble VRS (RNSS technology. Easting,Northing, Level values have been calculated from Ordnance Survey OSnet (GPS Satellite Transmissions) for the above date , the resultant grid coordinates derived from the OSGB36 reference framework and a 'plane' Grid created with scale factor = 1.0000

All levels are related to Ordnance Survey Ortnometric Height.

N

ABBREVIATIONS

ab	Air Brick	dh	Dust Height	p/r/f	Post & Rail Fence
bot	Bollard or Bottom	Height/p	Down Pipe	p/w/f	Post & Wire Fence
bb	Belisha Beacon	ecb	Electricity Control Box	r	Render
bd	Back Drop	elec	Electricity	rad	Radiator
bh	Borehole or Beam Height	ep	Electricity Pole	re	Reading Eye
bl	Bin Level	f	Fence Post	rg	Road Ground
bp	Brick Piaiers	hyd	Fire Hydrant	rs	Road Sign
ret w	Brick Retaining Wall	fff	Floor Level	rsj	Rolled Steel Joist
bt	British Telecom	gas	Gas Meter	rwp	Rain Water Pipe
bt	British Telecom	gov	Gas Valve	s	Spread or Stone
bt/cb	BT Control Box	h	Height in Metres	sv	Stop Valve
b/w	Bollard Wire	hl	Head Head Height	sp	Spot Height or Skylight
b/w/f	Barbed Wire Fence	ht	Height	sp	Arch Springer Height
c	Window Cill Height	io	Inspection Cover	sps	Stone Paving Slabs
cb	Control Box	il	Invert Level	sw	Stone Wall
c/p/f	Close Boarded Fence	i/r/f	Iron Railing Fence	t/cbu	Traffic Control
cc	Concrete Cover Slab	kp	Kerb Height Point	t	Tree Trunk
ccb	Cable TV Control Box	ka	Kerb Outlet	tl	Traffic Light
c/r/f	Corrugated Iron Fence	l	Light	tp	Telephone Pole
c/s	Cast Spout	lp	Lamp Post	u/s	Underside Of Stiles
c/l/f	Chain Link Fence	mh	Manhole	u/l	Unable To Lift
cl/s/f	Chain Link Security Fence	mw	Meter	v	Vent
c/p/f	Close Boarded Fence	o	Outlet Iron Pipe	vp	Vent Pipe
cp	Concrete Paving Slabs	o/h	Overhead	w	Window
cr	Arch Crown Height	p	Post	wl	Water Level
crw	Concrete Retaining Wall	pal/f	Palisade Fence	wm	Water Meter
ceiy	Ceiling Slopes Up	p/p	Picket Fence	w/m/f	Wire Mesh Fence
ceid	Ceiling Slopes Down	p/r	Post & Rail	w/p/f	Wire Post Fence
cw	Concrete Wall	pl	Pavement Light	wv	Water Valve
d	Diameter or Doors	pm	Parking Meter	ø	Diameter

SYMBOLS

Shrub
Tree (multibole)
Tree (single bole)
Banks
Top
Bottom
Floor to Ceiling Height
False Ceiling Height
Gate
Overhead Detail
Change in Elevation
Fences
Overhead Cables
Change in Surface
Edge of Vegetation
Survey Station
Foul Water Sewer
Surface Water Sewer
Combined Sewer
Water Main
Gas Lp Main

0 5 10
scale bar (metres)

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SURVEYORS TO THE THE BUILT ENVIRONMENT
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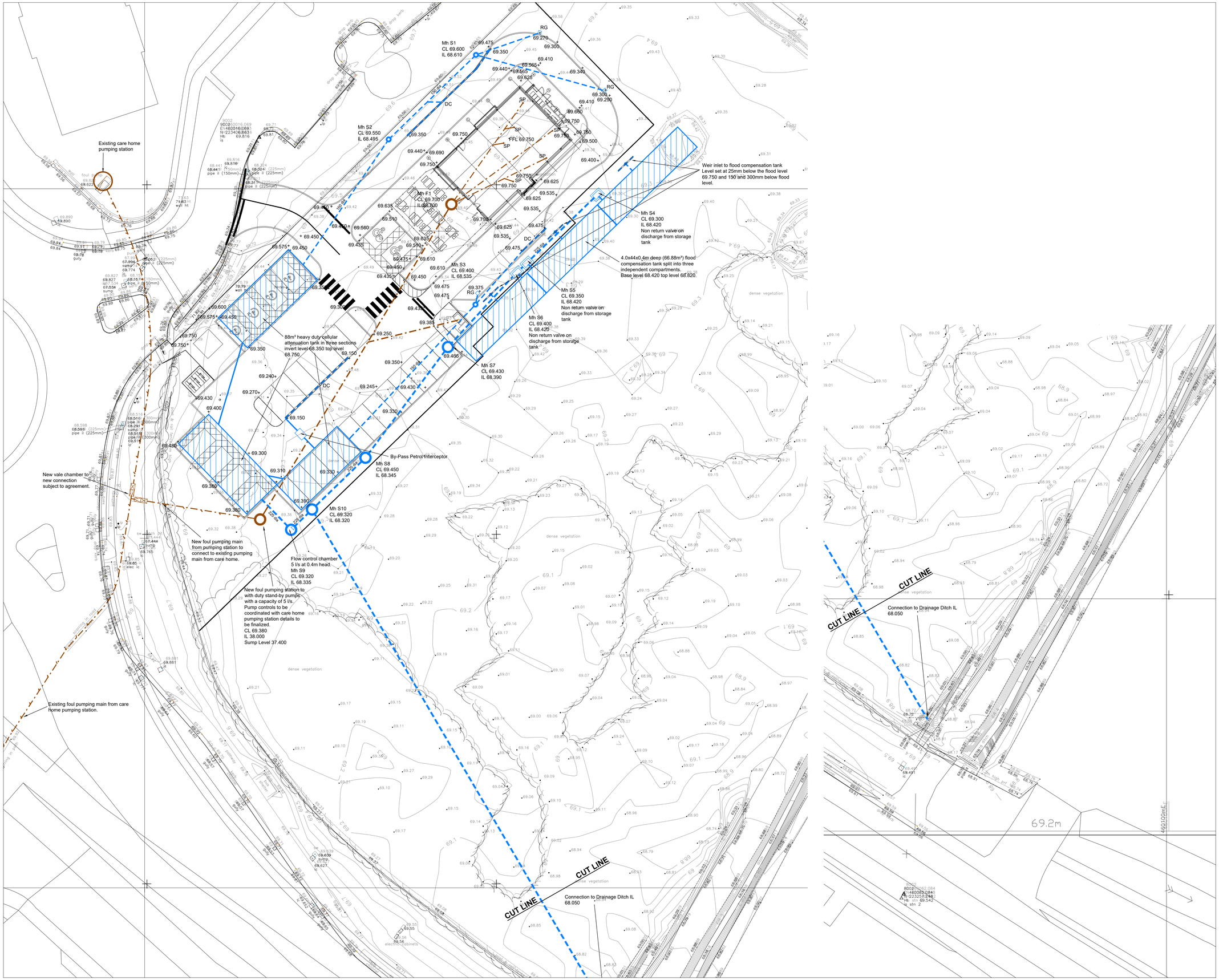
Scale:	1 : 250 (A0)
Drawing no:	0321-34-01
Date:	surveyed April 2021
Drawn:	
File no.	

	Date	Amendments	Name
E			
D			
C			
B			
A			

TOPOGRAPHIC SURVEY –LAND IN THE VICINITY OF LAUNTON ROAD/SKIMMINGDISH LANE , BICESTER OX26 5AF

Appendix D – Proposed Drainage.



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DRAINAGE

1. INVERT LEVELS AND POSITIONS OF EXISTING DRAINS / CHAMBERS / SEWERS WHERE NEW CONNECTIONS ARE TO BE MADE MUST BE CHECKED AND CONFIRMED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS.
2. THE CONTRACTOR IS MAKE APPLICATION TO THE WATER AUTHORITY FOR THE DIRECT OR INDIRECT CONNECTIONS FOR THE FOUL AND SURFACE WATER TO THE PUBLIC SEWERS.
3. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'SEWERS FOR ADOPTION' AS APPROPRIATE.
4. ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DETAILS AND THE REQUIREMENTS OF BSEN 752.
5. FOR SETTING-OUT DIMENSIONS OF SVP'S, RWP'S ETC. REFER TO ARCHITECT'S OR MECHANICAL ENGINEER'S DRAWINGS.
6. SEWERS UP TO 300mm DIAMETER TO BE VITRIFIED CLAY. EXTRA STRENGTH TO BSEN 295 OR BS 65 WITH PLAIN ENDED SLEEVED OR SOCKETED FLEXIBLE JOINTS OR PLASTIC TO BS 4660 AND BS:EN 1401-1. ALL SEWERS OF 375mm DIAMETER AND OVER, TO BE SULPHATE RESISTING CONCRETE CLASS M WITH SOCKETED FLEXIBLE JOINTS. ALL PLASTIC PIPEWORK SHALL BE CAPABLE OF DEMONSTRATING A JETTING RESISTANCE OF 4000psi (280bar) WITHOUT DAMAGE WHEN TESTED IN ACCORDANCE WITH WITH SECTION 6.10 OF WIS 4-35-01.
7. INVERTS OF INCOMING BRANCHES SHALL BE AT SPRINGING LEVEL TO THE MAIN PIPE AND FORMED GENERALLY USING CHANNEL PIPES AND SLIPPER BENDS, CUT TO SUIT.
8. ALL PRECAST CONCRETE UNITS USED IN THE DRAINAGE WORKS SHALL BE MANUFACTURED USING SULPHATE RESISTING CEMENT.
9. EPDM JOINTS ARE TO BE USED IN AREAS WHERE CONCENTRATED COCO COLA WILL BE USED.
10. MANHOLE COVERS AND FRAMES IN VEHICULAR AREAS SHALL BE CAST IRON TO BSEN 124, GRADE D400 AND IN PEDESTRIAN AREAS GRADE B125. COVERS AND FRAMES IN BLOCK PAVED AREAS SHALL BE RECESSED FABRICATED STEEL AS MANUFACTURED BY DRAINAGE SYSTEMS, LIST NO. 6333, OR SIMILAR APPROVED.
11. COVER LEVELS ARE TO ADJUSTED LOCALLY TO SUIT FINISHED GROUND LEVELS.
12. DRAINAGE CHANNELS SHALL BE LAID STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS WITH PARTICULAR CARE BEING TAKEN TO PREVENT DAMAGE DURING INSTALLATION, PAVEMENT CONSTRUCTION OR SURFACING ETC.
13. ALL ROAD GULLY AND DRAINAGE CHANNEL CONNECTIONS SHALL BE 150MM DIAMETER UNLESS OTHERWISE SPECIFIED.
14. ALL FOUL AND RAIN WATER PIPE CONNECTIONS SHALL BE 100MM DIAMETER UNLESS OTHERWISE SPECIFIED.
15. INTERNAL DRAINAGE SHOWN IS INDICATIVE. FINAL DESIGN SUBJECT TO FINAL INTERNAL LAYOUT.
16. ALL PUMPING APPARATUS, EQUIPMENT AND MATERIALS SUPPLIED, TOGETHER WITH ALL WORK UNDERTAKEN SHALL COMPLY WITH THE APPROPRIATE BRITISH STANDARDS, SPECIFICATIONS, BS 7671, THE IEE REGULATIONS FOR ELECTRICAL INSTALLATIONS, THE ELECTRICITY AT WORK REGULATIONS 1989 AND THE REQUIREMENTS OF THE ELECTRICITY COMPANY.
17. PUMPS AND ELECTRICAL EQUIPMENT WITHIN THE WET WELL SHALL BE DESIGNED FOR HAZARDOUS ZONE 1 PROTECTION.
18. PUMPING MAINS SHALL BE ADEQUATELY RESTRAINED AT CONNECTIONS AND BENDS AGAINST THRUSTS PRODUCED BY INTERNAL WATER PRESSURE AND VELOCITY.

Rev	Date	Description	Drn	Chk'd
P4	23/06/21	FLOOD COMPENSATION TANK AMMENDED	GHB	TS
P3	21/06/21	ISSUED FOR COMMENT	GHB	TS
P2	08/06/21	ISSUED FOR COMMENT	GHB	TS
P1	19/05/21	PRELIMINARY ISSUE	GHB	TS

Revisions

Drawing Originator

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Drawing Status

PRELIMINARY

Project Name

BICESTER

Drawn by	Drawn Date	Checked by	Scale
GHB	19/05/21	TS	1/250

Title

Original drawing sheet is A1

DRAINAGE LAYOUT

Drawing Number

220029/100

Revision

P4

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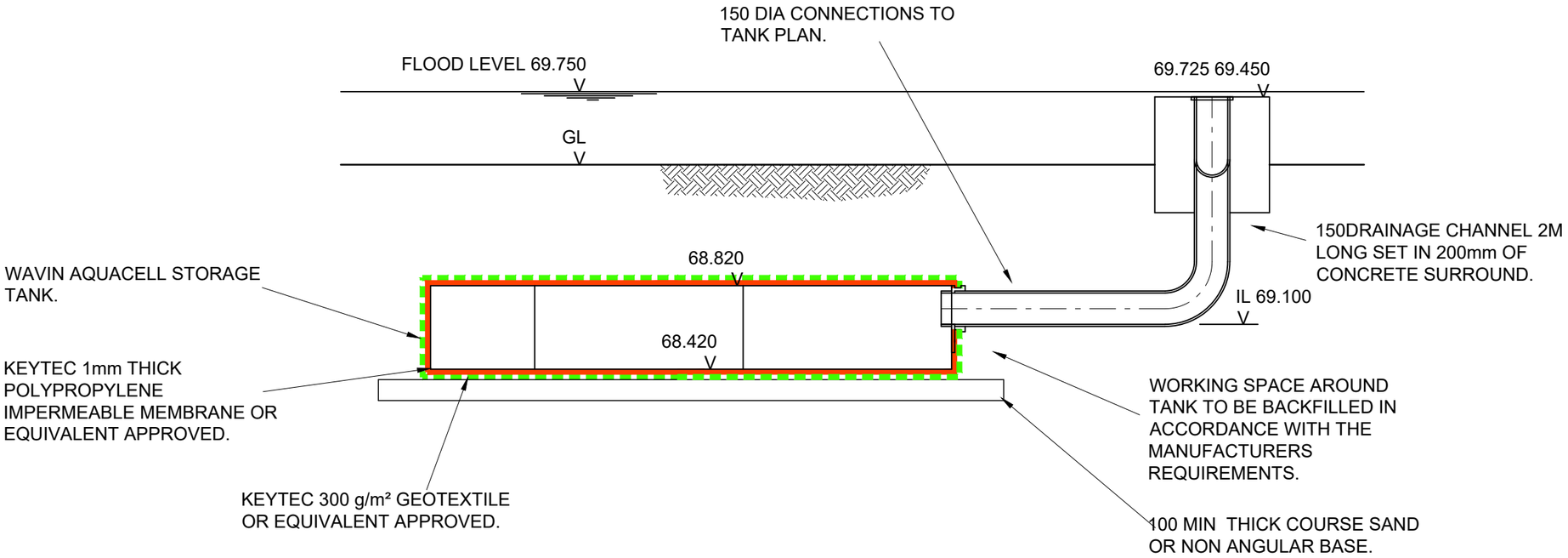
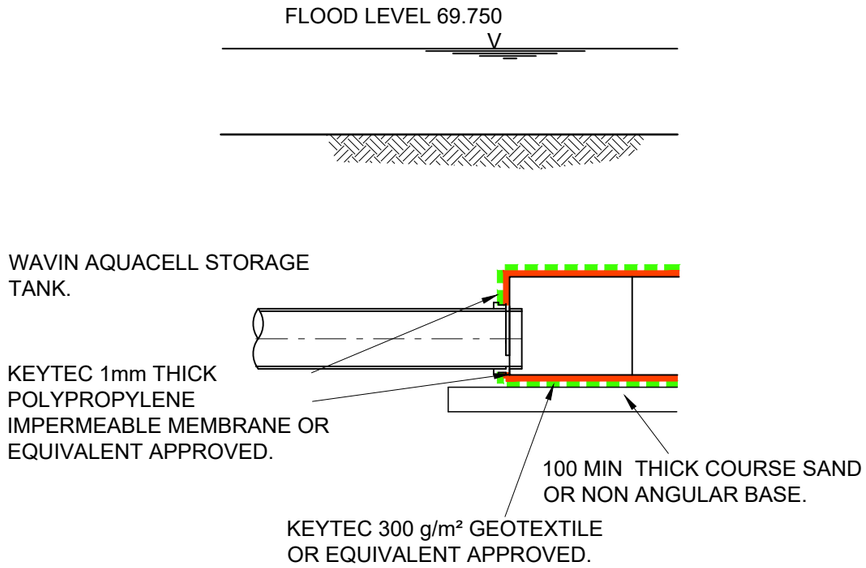


TANK INLET



TANK OUTLET

Rev	Date	Description	Drn	Chk'd
P1	21/06/21	PRELIMINARY ISSUE	GHB	TS

Revisions

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Project Name: BICESTER

Title: FLOOD COMPENSATION STORAGE DETAILS

Original drawing sheet is A3

Drawn by	Drawn Date	Checked by	Scale
GHB	June 21	TS	1:50

Drawing Number: 220029/101

Revision: P1

Appendix E – EA Flood Maps

Flood risk

Extent of flooding

Location

Enter a place or postcode

Extent of flooding from reservoirs

Maximum extent of flooding Location you selected

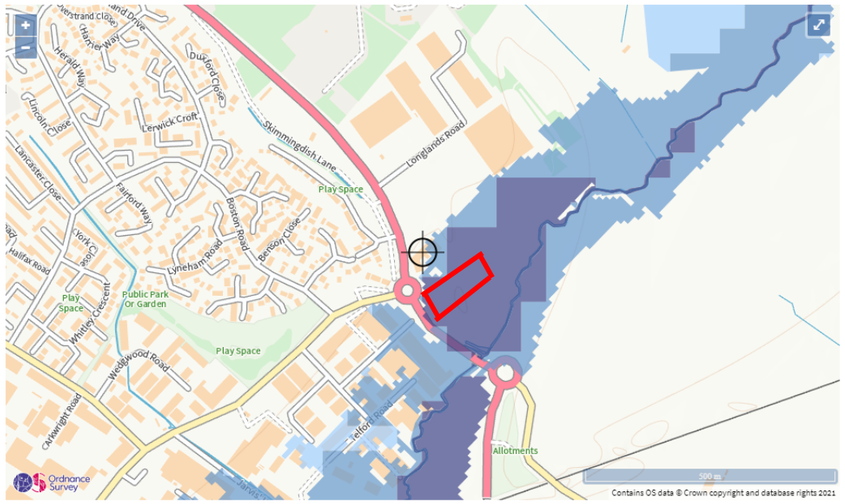
Flood Risk from Reservoirs

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from rivers or the sea

High Medium Low Very low Location you selected

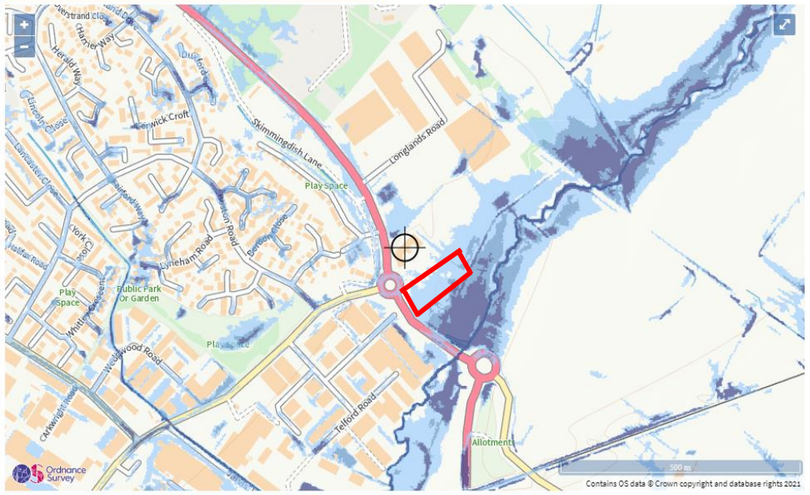
Flood Risk from Rivers and Sea

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from surface water

High Medium Low Very low Location you selected

Pluvial Flood Risk Map

Appendix F – Calculations

Summary of Results for 30 year Return Period (+40%)

Half Drain Time : 120 minutes

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	4.4	0.0	4.4	68.6663	0.1662	36.3	O K
30 Summer	5.0	0.0	5.0	68.7078	0.2077	45.4	O K
60 Summer	5.0	0.0	5.0	68.7403	0.2402	52.5	O K
120 Summer	5.0	0.0	5.0	68.7548	0.2547	55.7	O K
180 Summer	5.0	0.0	5.0	68.7557	0.2557	55.9	O K
240 Summer	5.0	0.0	5.0	68.7518	0.2517	55.0	O K
360 Summer	5.0	0.0	5.0	68.7388	0.2387	52.1	O K
480 Summer	5.0	0.0	5.0	68.7233	0.2232	48.8	O K
600 Summer	5.0	0.0	5.0	68.7083	0.2082	45.6	O K
720 Summer	4.9	0.0	4.9	68.6958	0.1957	42.7	O K
960 Summer	4.5	0.0	4.5	68.6738	0.1737	38.0	O K
1440 Summer	4.0	0.0	4.0	68.6408	0.1408	30.8	O K
2160 Summer	3.5	0.0	3.5	68.6083	0.1083	23.7	O K
2880 Summer	3.0	0.0	3.0	68.5908	0.0908	19.8	O K
4320 Summer	2.3	0.0	2.3	68.5703	0.0703	15.3	O K
5760 Summer	1.9	0.0	1.9	68.5578	0.0578	12.6	O K
7200 Summer	1.6	0.0	1.6	68.5493	0.0492	10.8	O K
8640 Summer	1.4	0.0	1.4	68.5433	0.0432	9.5	O K
10080 Summer	1.3	0.0	1.3	68.5388	0.0387	8.4	O K
15 Winter	4.7	0.0	4.7	68.6868	0.1867	40.8	O K
30 Winter	5.0	0.0	5.0	68.7348	0.2347	51.3	O K
60 Winter	5.0	0.0	5.0	68.7738	0.2737	59.8	O K
120 Winter	5.0	0.0	5.0	68.7912	0.2912	63.6	O K
180 Winter	5.0	0.0	5.0	68.7893	0.2892	63.2	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	76.03	21
30 Summer	49.50	34
60 Summer	30.81	62
120 Summer	18.61	100
180 Summer	13.72	132
240 Summer	10.99	166
360 Summer	8.03	234
480 Summer	6.43	300
600 Summer	5.40	364
720 Summer	4.69	428
960 Summer	3.74	554
1440 Summer	2.72	798
2160 Summer	1.98	1152
2880 Summer	1.58	1504
4320 Summer	1.14	2248
5760 Summer	0.91	2944
7200 Summer	0.76	3680
8640 Summer	0.66	4408
10080 Summer	0.58	5144
15 Winter	76.03	21
30 Winter	49.50	34
60 Winter	30.81	62
120 Winter	18.61	114
180 Winter	13.72	142

Summary of Results for 30 year Return Period (+40%)

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
240 Winter	5.0	0.0	5.0	68.7818	0.2817	61.6	O K
360 Winter	5.0	0.0	5.0	68.7598	0.2597	56.7	O K
480 Winter	5.0	0.0	5.0	68.7353	0.2352	51.4	O K
600 Winter	5.0	0.0	5.0	68.7128	0.2127	46.5	O K
720 Winter	4.9	0.0	4.9	68.6943	0.1942	42.4	O K
960 Winter	4.4	0.0	4.4	68.6648	0.1648	36.0	O K
1440 Winter	3.7	0.0	3.7	68.6228	0.1228	26.8	O K
2160 Winter	3.0	0.0	3.0	68.5903	0.0903	19.7	O K
2880 Winter	2.4	0.0	2.4	68.5738	0.0738	16.1	O K
4320 Winter	1.8	0.0	1.8	68.5548	0.0548	11.9	O K
5760 Winter	1.5	0.0	1.5	68.5443	0.0442	9.6	O K
7200 Winter	1.2	0.0	1.2	68.5373	0.0372	8.1	O K
8640 Winter	1.1	0.0	1.1	68.5323	0.0322	7.0	O K
10080 Winter	0.9	0.0	0.9	68.5283	0.0282	6.2	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
240 Winter	10.99	180
360 Winter	8.03	254
480 Winter	6.43	324
600 Winter	5.40	388
720 Winter	4.69	452
960 Winter	3.74	582
1440 Winter	2.72	826
2160 Winter	1.98	1172
2880 Winter	1.58	1532
4320 Winter	1.14	2252
5760 Winter	0.91	2992
7200 Winter	0.76	3720
8640 Winter	0.66	4408
10080 Winter	0.58	5152

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	30	Longest Storm (mins)	10080
M5-60 (mm)	20.000	Summer Storms	Yes
Ratio-R	0.400	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+40
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.197

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.097	4	8	0.100

Cellular Storage Details

Infil Coef - Base (m/hr)	0.000000	Porosity	0.95
Infil Coef - Sides (m/hr)	0.000000	Invert Level (m)	68.500
Safety Factor	2.0	Ground Level (m)	69.300

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	230.0	0.60	230.0	1.20	230.0	1.80	230.0	2.40	230.0
0.10	230.0	0.70	230.0	1.30	230.0	1.90	230.0	2.50	230.0
0.20	230.0	0.80	230.0	1.40	230.0	2.00	230.0		
0.30	230.0	0.90	230.0	1.50	230.0	2.10	230.0		
0.40	230.0	1.00	230.0	1.60	230.0	2.20	230.0		
0.50	230.0	1.10	230.0	1.70	230.0	2.30	230.0		

Hydro-Brake Outflow Control

Design Head (m)	0.400	Hydro-Brake Type	MD5	Invert Level (m)	68.500
Design Flow (l/s)	5.0	Diameter (mm)	110		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	3.3	0.80	6.5	2.00	10.3	4.00	14.5	7.00	19.2
0.20	5.0	1.00	7.3	2.20	10.8	4.50	15.4	7.50	19.9
0.30	5.0	1.20	7.9	2.40	11.2	5.00	16.2	8.00	20.5
0.40	5.0	1.40	8.6	2.60	11.7	5.50	17.0	8.50	21.1
0.50	5.3	1.60	9.2	3.00	12.6	6.00	17.8	9.00	21.8
0.60	5.7	1.80	9.7	3.50	13.6	6.50	18.5	9.50	22.3

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 161 minutes

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	5.0	0.0	5.0	68.7173	0.2172	47.4	O K
30 Summer	5.0	0.0	5.0	68.7772	0.2772	60.6	O K
60 Summer	5.0	0.0	5.0	68.8273	0.3272	71.5	O K
120 Summer	5.0	0.0	5.0	68.8533	0.3532	77.2	O K
180 Summer	5.0	0.0	5.0	68.8543	0.3542	77.4	O K
240 Summer	5.0	0.0	5.0	68.8492	0.3492	76.3	O K
360 Summer	5.0	0.0	5.0	68.8328	0.3327	72.8	O K
480 Summer	5.0	0.0	5.0	68.8143	0.3142	68.6	O K
600 Summer	5.0	0.0	5.0	68.7948	0.2947	64.4	O K
720 Summer	5.0	0.0	5.0	68.7758	0.2757	60.2	O K
960 Summer	5.0	0.0	5.0	68.7403	0.2402	52.5	O K
1440 Summer	4.8	0.0	4.8	68.6903	0.1902	41.6	O K
2160 Summer	4.1	0.0	4.1	68.6463	0.1463	31.9	O K
2880 Summer	3.6	0.0	3.6	68.6173	0.1173	25.6	O K
4320 Summer	2.9	0.0	2.9	68.5873	0.0873	19.0	O K
5760 Summer	2.4	0.0	2.4	68.5713	0.0713	15.6	O K
7200 Summer	2.0	0.0	2.0	68.5608	0.0608	13.3	O K
8640 Summer	1.8	0.0	1.8	68.5533	0.0532	11.6	O K
10080 Summer	1.6	0.0	1.6	68.5473	0.0472	10.3	O K
15 Winter	5.0	0.0	5.0	68.7443	0.2442	53.4	O K
30 Winter	5.0	0.0	5.0	68.8133	0.3132	68.5	O K
60 Winter	5.0	0.0	5.0	68.8723	0.3722	81.3	O K
120 Winter	5.0	0.0	5.0	68.9062	0.4062	88.7	O K
180 Winter	5.0	0.0	5.0	68.9042	0.4042	88.4	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	98.68	21
30 Summer	64.79	35
60 Summer	40.51	64
120 Summer	24.46	116
180 Summer	17.96	144
240 Summer	14.34	176
360 Summer	10.42	244
480 Summer	8.30	312
600 Summer	6.96	378
720 Summer	6.02	444
960 Summer	4.78	570
1440 Summer	3.46	810
2160 Summer	2.49	1172
2880 Summer	1.98	1528
4320 Summer	1.42	2248
5760 Summer	1.12	2944
7200 Summer	0.94	3680
8640 Summer	0.81	4408
10080 Summer	0.71	5144
15 Winter	98.68	21
30 Winter	64.79	35
60 Winter	40.51	62
120 Winter	24.46	118
180 Winter	17.96	166

Summary of Results for 100 year Return Period (+40%)

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
240 Winter	5.0	0.0	5.0	68.8963	0.3962	86.5	O K
360 Winter	5.0	0.0	5.0	68.8717	0.3717	81.2	O K
480 Winter	5.0	0.0	5.0	68.8427	0.3427	74.9	O K
600 Winter	5.0	0.0	5.0	68.8127	0.3127	68.4	O K
720 Winter	5.0	0.0	5.0	68.7837	0.2837	62.0	O K
960 Winter	5.0	0.0	5.0	68.7328	0.2327	50.8	O K
1440 Winter	4.5	0.0	4.5	68.6708	0.1708	37.3	O K
2160 Winter	3.6	0.0	3.6	68.6188	0.1188	25.9	O K
2880 Winter	3.1	0.0	3.1	68.5923	0.0923	20.2	O K
4320 Winter	2.2	0.0	2.2	68.5678	0.0678	14.9	O K
5760 Winter	1.8	0.0	1.8	68.5543	0.0542	11.9	O K
7200 Winter	1.5	0.0	1.5	68.5453	0.0452	9.9	O K
8640 Winter	1.3	0.0	1.3	68.5393	0.0392	8.6	O K
10080 Winter	1.2	0.0	1.2	68.5348	0.0347	7.6	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
240 Winter	14.34	190
360 Winter	10.42	266
480 Winter	8.30	340
600 Winter	6.96	410
720 Winter	6.02	476
960 Winter	4.78	600
1440 Winter	3.46	840
2160 Winter	2.49	1196
2880 Winter	1.98	1532
4320 Winter	1.42	2252
5760 Winter	1.12	2992
7200 Winter	0.94	3744
8640 Winter	0.81	4408
10080 Winter	0.71	5136

Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	20.000	Summer Storms	Yes
Ratio-R	0.400	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+40
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.197

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.097	4	8	0.100

Cellular Storage Details

Infil Coef - Base (m/hr)	0.000000	Porosity	0.95
Infil Coef - Sides (m/hr)	0.000000	Invert Level (m)	68.500
Safety Factor	2.0	Ground Level (m)	69.300

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	230.0	0.60	230.0	1.20	230.0	1.80	230.0	2.40	230.0
0.10	230.0	0.70	230.0	1.30	230.0	1.90	230.0	2.50	230.0
0.20	230.0	0.80	230.0	1.40	230.0	2.00	230.0		
0.30	230.0	0.90	230.0	1.50	230.0	2.10	230.0		
0.40	230.0	1.00	230.0	1.60	230.0	2.20	230.0		
0.50	230.0	1.10	230.0	1.70	230.0	2.30	230.0		

Hydro-Brake Outflow Control

Design Head (m)	0.400	Hydro-Brake Type	MD5	Invert Level (m)	68.500
Design Flow (l/s)	5.0	Diameter (mm)	110		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	3.3	0.80	6.5	2.00	10.3	4.00	14.5	7.00	19.2
0.20	5.0	1.00	7.3	2.20	10.8	4.50	15.4	7.50	19.9
0.30	5.0	1.20	7.9	2.40	11.2	5.00	16.2	8.00	20.5
0.40	5.0	1.40	8.6	2.60	11.7	5.50	17.0	8.50	21.1
0.50	5.3	1.60	9.2	3.00	12.6	6.00	17.8	9.00	21.8
0.60	5.7	1.80	9.7	3.50	13.6	6.50	18.5	9.50	22.3

Appendix G – Green Field Site Run off Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Gavin Bayes
Site name:	Simmingdish Lane
Site location:	Bicester

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be
the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.90793° N
Longitude:	1.129° W
Reference:	3553578806
Date:	Jun 09 2021 10:25

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.198

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	1	1
HOST class:	N/A	N/A
SPR/SPRHOST:	0.1	0.1

Hydrological characteristics

	Default	Edited
SAAR (mm):	620	620
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.03	0.03
1 in 1 year (l/s):	0.02	0.02
1 in 30 years (l/s):	0.07	0.07
1 in 100 year (l/s):	0.09	0.09
1 in 200 years (l/s):	0.11	0.11

Appendix H – Typical Product Data

Conder® OIL/WATER SEPARATORS

THE PARTNER OF CHOICE

PREMIER TECH AQUA

40 years OF PASSION

Premier Tech Aqua's range of Conder Oil Separators are for installation on surface water drainage systems and are designed to prevent hydrocarbons (e.g. diesel, petrol, engine oil) from mixing with surface water and entering our drainage systems.

Pollution prevention is a critical part of sustainable drainage systems and statutory regulations are in force to control the discharge of hydrocarbons, with severe penalties imposed for non-compliance.

Compliance

Premier Tech Aqua's range of Conder Oil Separators full conform to both the Environment Agency's latest PPG guidelines and European standard BSEN-858-1-2 and are proven to effectively separate oil and water. Under test, the Conder Bypass performed to less than 1 mg/L and in doing so guarantees minimal environmental impact and ensures public safety.

Classes of Separators

There are two classes of separators which are defined by performance.

Class 1	Class 2*
Class 1 Separators are designed to achieve a concentration of less than 5 mg/L of oil under standard test conditions. These conditions are required for discharges to surface water drains and the water environment.	Class 2 Separators are designed to achieve a concentration of less than 100 mg/L oil under standard test conditions and are suitable for dealing with discharges where a lower quality requirement applies, such as discharges to the foul sewer.

*Class 2 available in forecourt separators only.

Selecting the Right Conder Separator

Premier Tech Aqua offers a full range of Separators for various uses and applications:

- Bypass Separator
- Full Retention Separator
- Forecourt Separator
- Wash Down and Silt Separators

If you're unsure of what type of Conder Oil Separator you require, please use the chart below to help you identify the most suitable product for your project.

The guidance given is for the use of separators in surface water drainage systems that discharge to rivers and soakways.

Is there a risk of oil contaminating the drainage from the site?

YES	YES	YES	YES	NO
Risk of infrequent light contamination and potential for small spills only e.g. car park.	Risk of regular contamination of surface water run off with oil and/or risk of larger spills e.g. vehicle maintenance area, goods vehicle parking or vehicle manoeuvring.	Risk of regular Drainage will also contain dissolved oils, detergents or degreasers such as vehicle wash water and trade effluents e.g. industrial sites.	Fuel oils are delivered to and dispensed on site e.g. retail fuel forecourts.	Very low risk of oil contamination e.g. roofwater.
YES				YES
Source control SUDS must be considered and incorporated where suitable.				Separator not required.
IF NOT SUITABLE	YES	YES	YES	
By-pass separator with alarm required. Class 1 if discharge to surface water. Class 2 if discharge to foul sewer.	Full retention separator with alarm required. Class 1 if discharge to surface water. Class 2 if discharge to foul sewer.	Trade effluents must be directed to the foul sewer. It may need to pass through a separator before discharge to sewer to remove.	Full retention forecourt separator with alarm required. Class 1 if discharge to surface water. Class 2 if discharge to foul sewer.	Clean water should not be passed through the separator unless the size of the unit is increased accordingly.

The use of SUDS should be considered at all sites and they should be incorporated where suitable. SUDS can be used to polish the effluent from these separators before it enters the environment.

Source control SUDS should be considered where possible.

Separator Alarms

All oil separators are required by legislation to be fitted with an oil level alarm system with recommendations that the alarm is installed, tested, commissioned and regularly serviced by a qualified technician.

The alarm indicates when the separator is in need of immediate maintenance in order for it to continue to work effectively. Premier Tech Aqua can offer a full technical and service package for a variety of alarm options.

Conder Bypass Separators

Premier Tech Aqua's range of Conder Bypass Separators are used to fully treat all flows generated by rainfall rates of up to 6.5 mm/hr. Conder Bypass Separators are used when it is considered an acceptable risk not to provide full treatment for high flows, for example where only small spillages occur and the risk of spillage is small.

Typical Applications

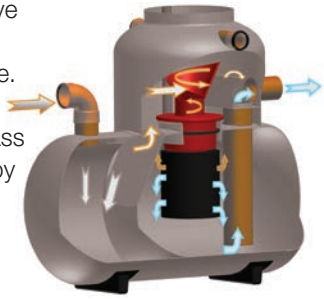
- Car parks
- Roadways and major trunk roads
- Light industrial and goods yards

Features and Benefits

- Innovative design
- Compact and easy to handle/install
- Fully compliant to the Environment Agency's PPG3 guidelines
- Low product and install costs
- Full BSI certification
- Exceeds industry standards
- Easy to service
- Fully tested and verified with a range from CNSB 3 to CNSB 1000 (Class 1)

Performance

Conder Bypass Separators have been designed to treat all flow up to the designed nominal size. Any flow in excess of the nominal size is allowed to bypass the separation chamber, thereby keeping the separated and trapped oil safe.



How it Works

Step 1

During the early part of a rain storm, which is a time of high oil contamination, all of the contaminated water flow passes through the sediment collection chamber and enters the separation chamber through a patented oil skimming and filter device.

Step 2

All of the oil then proceeds to the separation chamber where it is separated to the Class 1 standard of 5 mg/L and safely trapped.

Step 3

As the rainstorm builds up to its maximum and the level of oil contamination reduces significantly, the nominal size flow continues to pass through the separation chamber and any excess flow of virtually clean water is allowed to bypass directly to the outlet.

Specifications

Larger models up to CNSB 1000 are available.

Area Drained (m^2)	Tank Code including Silt	Length including Silt (mm)	Silt Capacity (L)	Oil Storage Capacity (L)	Diameter (mm)	Height (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Access (mm)
1667	CNSB3s/21	1400	300	45	1026	2200	1730	1680	750
2500	CNSB4.5s/21	1785	450	67.5	1026	1875	1270	1220	600
3333	CNSB6s/21	1975	600	90	1026	1875	1270	1220	600
4444	CNSB8s/21	2165	800	120	1026	1875	1270	1220	600
5555	CNSB10s/21	2485	1000	150	1026	1875	1270	1220	600
8333	CNSB15s/21	2670	1500	225	1210	2150	1450	1400	600
11111	CNSB20s/21	3115	2000	300	1210	2150	1450	1400	600
13889	CNSB25s/21	3555	2500	375	1210	2150	1450	1400	600
16667	CNSB30s/21	3470	3000	450	1510	2690	1770	1720	750
22222	CNSB40s/21	4040	4000	600	1510	2690	1770	1720	750
27778	CNSB50s/21	4655	5000	750	1510	2690	1770	1720	750
33333	CNSB60s/21	4415	6000	900	1880	3300	2025	1975	2 x 600
44444	CNSB80s/21	5225	8000	1200	1880	3300	2025	1975	2 x 600
55556	CNSB100s/21	6010	10,000	1500	1880	3300	2025	1975	2 x 600

Note: It is a requirement of PPG3 that you have a silt capacity either in your tank or in an upstream catch pit.

Conder Full Retention Separators

Premier Tech Aqua's range of Conder Full Retention Separators are designed to treat the full flow that can be delivered by a drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65 mm/hr. Full Retention Separators are used where there is a risk of regular contamination with oil and a foreseeable risk of significant spillages.

Typical Applications

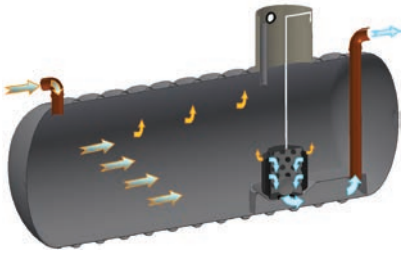
- Sites with a high-risk of oil contamination
- Fuel storage depots
- Refuelling facilities
- Petrol forecourts
- Vehicle maintenance areas/workshops
- Where discharge is to a sensitive environment

Features and Benefits

- All surface water is treated
- Automatic closure device (ACD) fitted as standard

Performance

All Conder Full Retention Separators have an automatic closure device (ACD) fitted as standard. This is compulsory for all PPG3 compliant Full Retention Separators and prevents accumulated pollutants flowing through the unit when maximum storage level is reached.



How it Works

Step 1

Contaminated water enters the separator where the liquid is retained for a sufficient period to ensure that the lighter than water pollutants (such as oil, petrol) separate and rise to the surface of the water.

Step 2

The decontaminated water then passes through the coalescing filter before it is safely discharged from the separator, with the remaining pollutants being retained in the separator.

Step 3

Retained pollutants must be emptied from the separator once the level of oil is reached, or the oil level alarm is activated. This waste should be removed from the separator under the terms of The Waste Management Code of Practice.

Specifications Larger models available upon request.

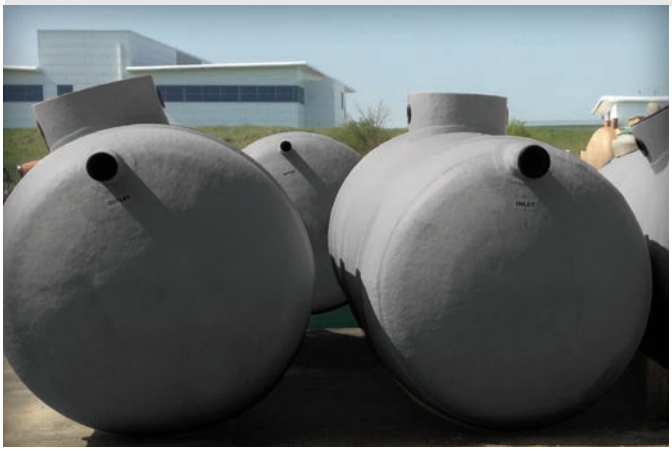
Area Drained (m^2)	Tank code Incl. Silt	Length including Silt (mm)	Slit Capacity (L)	Oil Storage Capacity	Diameter (mm)	Height (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)
222	CNS4s/11	2319	400	40	1026	1655	1295	1245
333	CNS6s/11	3414	600	60	1026	1655	1295	1245
444	CNS8s/11	3197	800	80	1210	1855	1480	1430
556	CNS10s/11	3957	1000	100	1210	1855	1480	1430
833	CNS15s/11	3870	1500	150	1510	2180	1780	1730
1111	CNS20s/11	5060	2000	200	1510	2180	1780	1730
1667	CNS30s/11	5369	3000	300	1880	2560	2030	1980
2222	CNS40s/11	7059	4000	400	1880	2560	2030	1980
2778	CNS50s/11	4080	5000	500	2600	3315	2730	2680
3333	CNS60s/11	4805	6000	600	2600	3315	2730	2680
3889	CNS70s/11	5529	7000	700	2600	3315	2730	2680
4444	CNS80s/11	6254	8000	800	2600	3315	2730	2680
5556	CNS100s/11	6751	10,000	1,000	2600	3315	2730	2680

Note: It is a requirement of PPG3 that you have a silt capacity either in your tank or in an upstream catch pit.

Conder Forecourt Separators

Conder Forecourt Separators have been designed for specific use in petrol filling stations and other similar applications. The size of this separator has been specifically increased in order to retain the possible loss of the contents from one compartment of a road tanker, which could be up to 7,600 litres.

Forecourt Separators are an essential infrastructure requirement for all forecourts so as to ensure compliance with both health and safety and environmental legislation.



Typical Applications

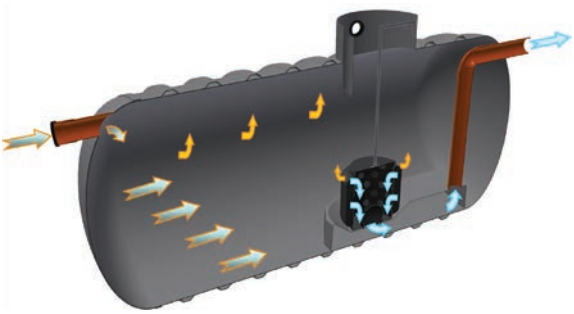
- Petrol forecourts
- Refuelling facilities
- Fuel storage depot

Features and Benefits

- All surface water is treated
- Available in Class 1 and Class 2
- Automatic Closure Device (ACD) fitted as standard
- Includes 2000L silt capacity

Performance

All Conder Forecourt Separators have an automatic closure device (ACD) fitted as standard. This is compulsory for all PPG3 compliant Full Retention Separators and prevents accumulated pollutants flowing through the unit when maximum storage level is reached.



How it Works

Step 1

Contaminated water enters the separator where the liquid is retained for a sufficient period to ensure that the lighter than water pollutants (such as oil, petrol) separate and rise to the surface of the water.

Step 2

The decontaminated water then passes through the coalescing filter before it is safely discharged from the separator, with the remaining pollutants being retained in the separator.

Step 3

Retained pollutants must be emptied from the separator once the level of oil is reached, or the oil level alarm is activated. This waste should be removed from the separator under the terms of The Waste Management Code of Practice.

Specifications

Tank Code	Volume (L)	Length (mm)	Diameter (mm)	Height (mm)	Base to Inlet (mm)	Base to Outlet (mm)	Access (mm)
ANO/11*	10,000	4,250	1,800	2,100	1,600	1,550	750
ANT/12**	10,000	4,250	1,800	2,100	1,600	1,550	750
LNO/11***	10,000	4,250	1,800	2,100	1,600	1,550	750

*Class 1 Forecourt Separator suitable for discharging to surface water drains

**Class 2 Forecourt Separator suitable for discharging to foul drains only

***Class 1 Forecourt Separator suitable for installation in granular materials

Conder Washdown and Silt Separators

Premier Tech Aqua's range of Conder Washdown and Silt Separators are for use in areas such as car washes, pressure wash facilities or other cleaning facilities and must be discharged to the foul water drainage system in accordance with PPG13.

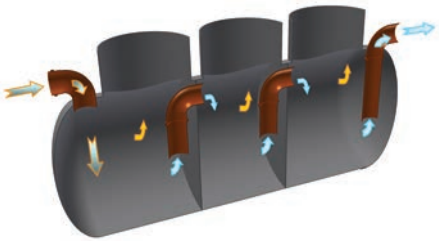
Typical Applications

- Car wash facilities
- Tool hire depots
- Pressure washer facilities

Features and Benefits

- Available in 1,2 and 3 stage options
- Efficient silt and hydrocarbon removal

Performance



The Environment Agency's PPG13 requires that discharge from pressure washers must discharge to a foul drainage system. Where there is no foul drainage available, the effluent must be contained within a sealed drainage system or catchpit for disposal by a licenced waste contractor.

Silt build-up is the primary concern with washdown facilities and so our range of Conder Washdown and Silt Separators are used to remove the silt and will allow some separation of hydrocarbons.

Detergents that are used in wash down areas will break down and disperse hydrocarbons (hindering the separation process). Therefore, it is important to remember the main function of wash down separators is to remove silt.

How it Works

Step 1

Contaminated wash down water enters the unit where the heavier solids, silts and settle to the bottom of the tank.

Step 2

The lighter liquids, hydrocarbons, will rise to the surface and be retained within the tank.

Step 3

Treated water will exit the separator via the dipped outlet.

Specifications

Although it is recognised that single stage separators give the most efficient separation, 2 and 3 chamber Conder Washdown and Silt Separators are available on request.

Tank Code	Capacity (L)	Silt Storage	Diameter (mm)	Length (mm)	Access Diameter (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)
CWS2/12	2,000	1,000	1,000	2,713	600	1,290	1,240
CWS3/12	3,000	1,500	1,200	2,853	600	1,475	1,425
CWS4/12	4,000	2,000	1,200	3,737	600	1,475	1,425
CWS6/12	6,000	3,000	1,500	3,636	600	1,775	1,725
CWS8/12	8,000	4,000	1,800	3,443	600	2,030	1,980
CWS10/12	10,000	5,000	1,800	4,250	600	2,030	1,980

Conder FST Silt Trap

Large quantities of silt can be associated with washdown areas. The Conder FST range of silt traps is ideal for easy removal of silt either manually or by a waste disposal contractor.

The FST range of silt traps are available with varying grades of covers from B125 up to E600 to allow installation in all types of vehicle or plant washdown facilities.

Conder Alarm Systems

All separators must be fitted with an alarm in order to provide visual and audible warning when the level of oil reaches 90% of its storage volume, as required by The Environment Agency's PPG3.

The alarm system will then be triggered to indicate that the separator is in need of immediate emptying, in order to continue effective operation.

Features and Benefits

- Option for installation at a remote supervisory point
- Audible and visual
- Eliminates unnecessary waste management visits
- Easy installation
- Audible, visual and text message alert alarm systems available

Mains Powered System

Mains powered alarm systems are best suited to new build situations or sites where installation of the necessary cabling and ducting is straight forward and economical. The probe located in the separator will, when surrounded by floating hydrocarbons, activate an alarm condition on the remote panel to advise that the unit requires emptying.

Solar Powered System (Flashing Beacon)

This option requires no mains power supply or any significant cabling or ducting, making it extremely economical for large sites and retro fitting alarms to existing oil separators. A High Intensity Beacon will flash when a problem is detected.

Solar GSM Alarm

The Solar GSM Alarm sends a status report on your separator to a mobile phone number of your choice. The status of the GSM Alarm can also be tested at any time by simply sending a pre-recorded text message via your directed mobile phone, for additional peace of mind.

Peripherals

Coalescing Filters

The Conder Coalescing Filter is designed to separate residual oil in already separated oil/water and ensures a discharge quality of less than 5 mg/L of oil in water.

Features and Benefits

- Handle for easy removal and cleaning
- Flashing beacons (with option of siren kit)
- Kiosks
- Probe brackets
- Bas 1000 intrinsically safe junction box
- High level probe
- Silt level probe
- Oil level probe

Servicing

The Environmental Agency's PPG3 guidelines stipulate that every 6 months, and in accordance with manufacturer's instructions, experienced personnel should carry out maintenance to both the separator and alarm.

Premier Tech Aqua and our service partners can offer a full technical and service package including separator and alarm installation, commissioning, oil and silt removal and route service contracts.

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6.7 SPEL Grease Separators

SPEL Grease Separators are designed for use wherever it is necessary to separate greases and oils of vegetable and animal origin from wastewater, such as in trade or industrial plants/establishments

The units have two chambers, the first chamber is to remove and capture sludge, a sludge trap and the second chamber to separate out the grease.
SPEL Grease separators are available from 2,000litre to 10,000litre depending on the specific site requirements.

Example sites

- Commercial kitchens and large catering establishments, e.g. in inns, hotels, motorways service stations, canteens; grilling, roasting and frying facilities
- Food distribution points (with returnable crockery)
- Butcher's shops, with or without slaughtering facilities
- Meat and sausage factories, with or without slaughtering facilities
- Abattoirs; poultry slaughterers; tripe preparation plants; animal rendering plants; bone and glue boiling plants; soap factories
- Oil mills and vegetable oil refineries
- Margarine factories
- Pickling plants
- Fast-food preparation plants
- Chip and crisp producers
- Peanut roasting plants

Hotel, fast-food outlet site

To establish the size of unit for a typical hotel, restaurant or fast food outlet site the following information is required to calculate the model most suited.

- Number of meals
- Maximum waste water flow in litres
- Average waste water volume per day in m3
- Opening hours
- Average duration of operation each day
- Quantity of meat products per day

For other sites SPEL can advise the data required to establish the correct model size required.

Wastewater containing a considerable proportion of grease in a non-separable form (i.e. emulsified) from applications such as dairy, cheese making and fish processing, or from distribution points having only dish washing facilities, or from "wet waste compactors", will only be effectively treated in a SPEL Grease Separator under certain conditions. The wastewater may require further treatment.

Installation

Installation shall be in accordance with the Installation Instructions supplied with each mode.
They are for gravity flows and the upstream pipeline should be installed at a gradient of 2% (1:50) to prevent accumulation of grease.

The pipelines connected to the SPEL Grease Separator shall be adequately ventilated. Vent connections are provided for this purpose. A stack vent, if required, should be installed according The Building Regulations.

Temperature of the wastewater at the point of connection to the public sewer may be governed by the local authority.

Inspection and servicing

SPEL Grease Separators are designed to be simply and efficiently de-sludged using a suction tanker. Far simpler to removing baskets etc by hand.
They should be inspected weekly or monthly and emptied in accordance with operational experience.
The retained solids in the SPEL Grease Separator should be removed, the unit thoroughly flushed with clean water and refilled with clean water

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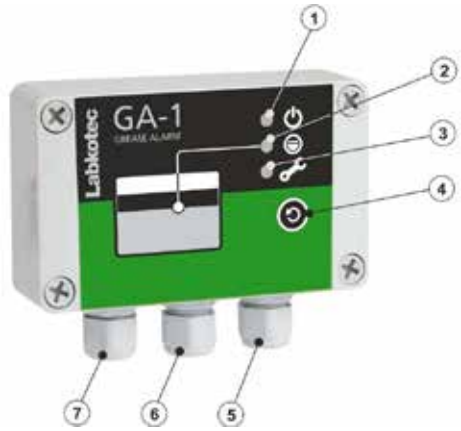
SPEL Automatic Alarm Monitoring System



GA-1 USER INTERFACE FEATURES

1. LED indicator for mains
2. LED indicator for alarm
3. LED indicator for fault
4. Alarm Reset/Test push button
5. Connector for GA-SG1 sensor
6. Relay output for monitoring and control purposes
7. Supply voltage

For total protection and peace of mind it is essential to install a SPEL GA-1 Automatic Alarm Monitoring System

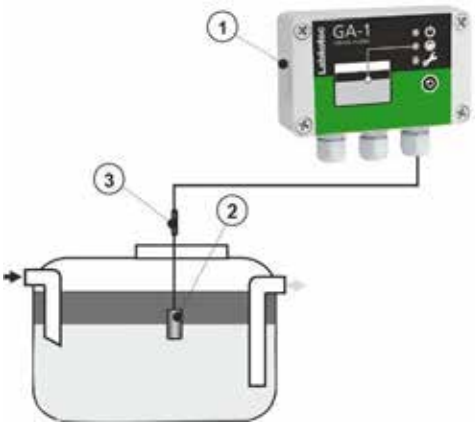
The GA-1 unit is an alarm device for monitoring the thickness of the grease layer accumulating in a grease separator.

The system consists of GA-1 control unit, GA-SG1 sensor and a cable joint.

SPEL GA-1 control unit features

The GA-SG1 sensor is installed into the grease separator and it supervises thickness of grease layer.

The LED indicators, push button and interfaces of the SPEL GA-1 control unit as above.



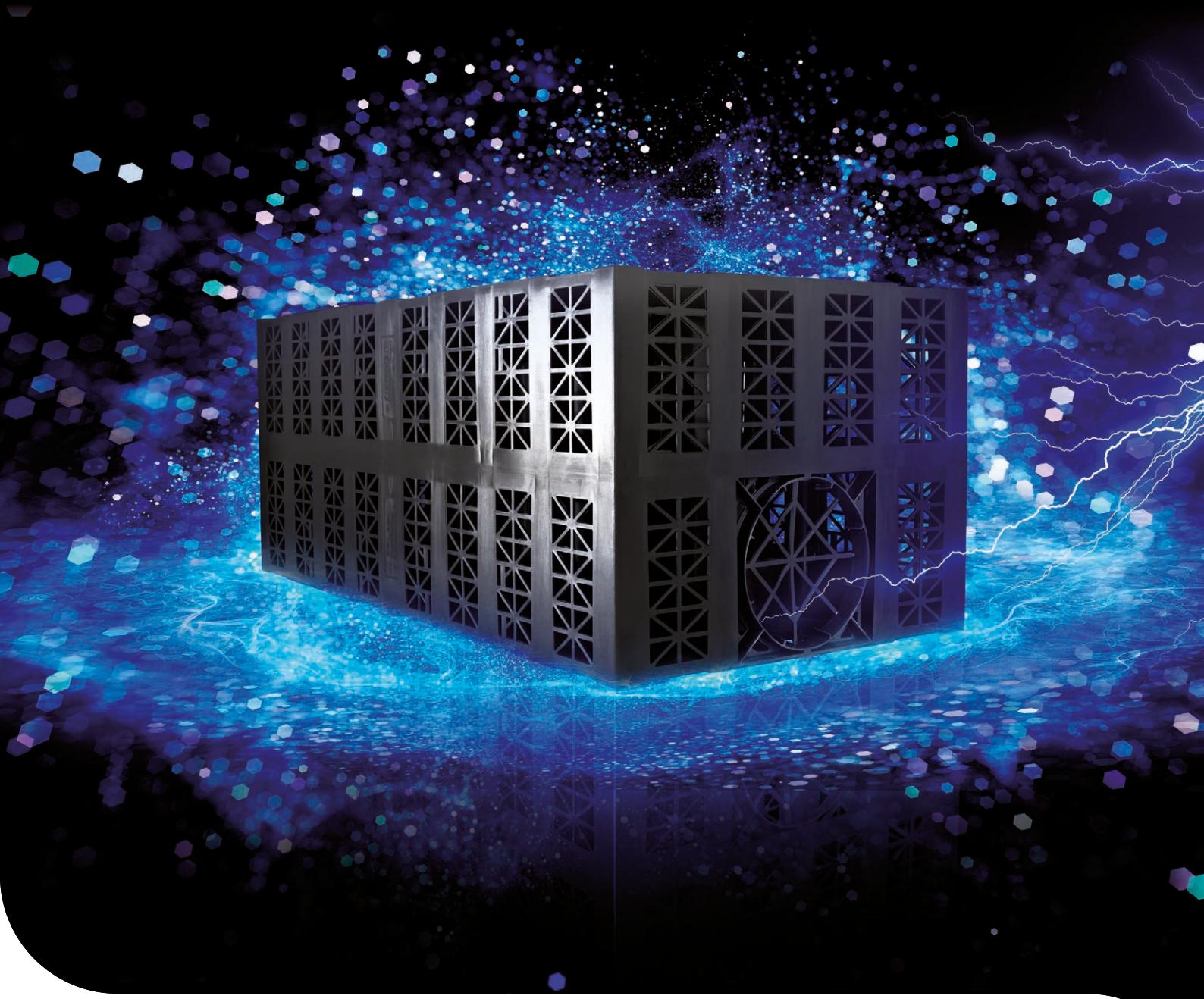
SYSTEM COMPONENTS:

1. GA-1 control unit
2. GA-SG1 sensor (grease alarm) with fixed cable
3. Cable joint

WATER MANAGEMENT

AquaCell systems

Product and installation manual



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